

European Agency for Safety and Health at Work

Supply chains' role in promoting safety and health in construction and agriculture: the LIFT-OSH project

Report



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Table of Contents

Executive summary	8
1 Introduction	14
2 Background	17
2.1 Supply chain management – definitions	17
2.2 Supply chain governance practices - definitions.....	18
3 Methodology	20
3.1 Overall design.....	20
3.2 Case selection	21
Search for best cases	21
Criteria for case selection	21
3.3 Data collection methods	22
3.4 Document collection	24
Interviews.....	25
On-site observation.....	26
3.5 Data analysis	27
4 Construction	28
4.1 Introduction.....	28
Business structure	28
Working Conditions and OSH in the construction sector	29
Market leverage in construction supply chains.....	29
Contractual governance.....	30
Relational governance	31
Four case studies in the construction sector	32
4.2 Client-led OSH management.....	33
Examples of 'client-led OSH management'	33
Reactions from main and subcontractors	37
Feasibility of client-led OSH management	38
4.3 Workplace notions of safety culture	40
Concrete workplace-level instruments and practices	41
Migrant workers and safety culture.....	47
Feasibility of safety culture efforts	47
4.4 Subcontractor assessment – you can't manage what you don't measure	49
Concrete workplace-level instruments and practices	51
Assessment during the project	57
Feasibility of subcontractor assessment.....	61
4.5 Carrots and Sticks – hybrid governance provide both incentives and penalties for compliance	62

Why hybrid governance is used.....	63
Formal subcontractor awards	64
Supply chain finance.....	67
Penalties	68
Feasibility of financial rewards and penalties	69
4.6 The role of OSH training in construction	70
Training before the start of work.....	71
During the work.....	72
Feasibility of OSH training	73
4.7 The role of communication of OSH in construction sites	76
Communication channels	78
Types of communication	79
Feasibility of communication of OSH.....	81
4.8 Conclusion and policy pointers.....	82
Contractual governance and safety in the construction sector.....	83
Relational governance and safety in the construction sector	84
Future research.....	85
Policy pointers.....	85
5 Agrifood.....	87
5.1 Characteristics of the European agri-food industry and sample description.....	87
The agri-food supply chain structure and dynamics	87
Working conditions and OSH in the agri-food sector.....	88
5.2 Contractual governance in agri-food context	89
Contractual governance in sustainable supply chain management	89
Contractual governance and OSH-related concerns.....	89
Contractual governance.....	91
OSH requirements from the focal firm	93
Certification's requirements and audits from the focal firm	94
Feasibility of contractual governance	96
Feasibility of certification.....	99
5.3 Relational governance in agri-food context	102
Long-term buyer-supplier relationship	104
Buyer-supplier collaboration	105
Personal relationship and informal communication	106
Supply chain flexibility.....	108
Training and technical assistance for small suppliers	109
Feasibility of relational governance	112
5.4 Conclusion	114
Contractual and relational governance to counterbalance industry pressures	114

Controversial role of contractual governance	115
Long-term relationships as market leverage for working conditions and OSH	116
CoC, certification and audits as market leverage	117
Future developments	118
6 Market leverage instruments across the industries: comparing and contrasting agri-food and construction	121
6.1 Relational Governance	121
6.2 Contractual Governance.....	122
6.3 Limited transferability between industries	123
7 Cross-sectoral conclusions	125
7.1 Context	125
7.2 Conclusions for policy.....	126
Policy pointers.....	127
7.3 Conclusions for managers – what works?.....	128
References	131
Annex A: Description of cases	140
Annex B: The interview thematic plans	144
Interview guide for managerial representatives from suppliers	144
Interview guide for agri-food procurement representatives	145
Interview guide for worker' representatives	146
Interviews with Stakeholders	146
Annex C: Case Reports.....	148
Agri-Food Case 1, Denmark.....	148
Agri-Food Case 2, Ireland	166
Agri-Food Case 3, Estonia	177
Agri-Food Case 4, Spain	192
Construction Case 1, Denmark	205
Construction, Case 2, Ireland	218
Construction, Case 3, Estonia	236
Construction, Case 4, Belgium	250

List of Tables

Table 1: Market leverage of working conditions and OSH in construction.....	9
Table 2: Market leverage of working conditions and OSH in agri-food.....	11
Table 3: Direct and indirect governance of OSH.....	19
Table 4: The three types of data	23
Table 5: Documents collected from the client in Danish construction case	24
Table 6: Overview of the interviews (Full case studies in Annex A).....	25
Table 7: Summary of Client-led OSH management.....	33
Table 8: Feasibility and elements of client-led OSH management	39
Table 9: Summary of workplace notions of safety culture.....	40
Table 10: Feasibility and elements for safety culture	48
Table 11: Types of subcontractor assessments	51
Table 12: Feasibility and elements of supplier assessment.....	62
Table 13: Summary of carrots and sticks (incentives and penalties).....	62
Table 14: Carrots and sticks.....	64
Table 15: Feasibility and elements for carrots and sticks	69
Table 16: Summary of training	70
Table 17: Feasibility for training	75
Table 18: Summary of communication	76
Table 19: Feasibility of communication	82
Table 20: Contractual governance in the agri-food sector	90
Table 21: Certifications requested by focal firms to suppliers and audits	94
Table 22: Feasibility of contractual governance	96
Table 23: Relational governance in agri-food sector.....	103
Table 24: Relational governance feasibility.....	112

List of Figures

Figure 1: The overall design of data collection.....	20
Figure 2: Market leverage influencing working conditions and OSH in agri-food	115
Figure C 1: Relationship between the focal company and its suppliers.....	148
Figure C 2: Supply chain and the distribution of roles in the agri-food supply chain	150
Figure C 3: Relationship between the focal firm and its suppliers	166
Figure C 4: Supply chain and the distribution of roles in the agri-food supply chain	170
Figure C 5: Relationship between the focal company and its suppliers.....	178
Figure C 6: Supply chain and the distribution of roles in the agri-food supply chain	179
Figure C 7: Relationship between the focal company and its suppliers.....	192
Figure C 8: Supply chain and the distribution of roles in the agri-food supply chain	193
Figure C 9: Visualization of the supply chain. Blue boxes represent 'active' nodes in our case, white boxes represent passive (not a part of our case)	209
Figure C 10: The relationship between the focal company and the subcontractors	224
Figure C 11: The relationship between the focal company and the subcontractors	237
Figure C 12: Relationship between the building client, the focal company and the three subcontractors	251

List of Boxes

Box 1: The Balanced Scorecard.....	49
Box 2: Quality and safety certification in the Irish case	52
Box 3: Information requirements in the tendering criteria - The Danish case	54
Box 4: Evaluation of subcontractors' OSH performance – The Irish case	59
Box 5: The 'traffic light system' in the Irish case	65
Box 6: Types of training.....	70
Box 7: Communication channels found in the four cases	78
Box 8: The Producer School in the Irish case	110

Executive Summary

The influence of buyer–supplier or client–contractor relations¹ in supply chains on working conditions and occupational safety and health (OSH) is growing. Buyers set conditions for their purchase, which define conditions at the supplier workplaces. These conditions can constitute both a threat and provide an opportunity for improvement of OSH.

This report presents the findings from eight in-depth case studies, looking at supply chain-based market leverage practices influencing OSH in the construction and agri-food sectors in Europe. The studies were conducted as part of the European Agency for Safety and Health at Work (EU-OSHA) project 'Leverage Instruments for Occupational Safety and Health – Lift-OSH (EU-OSHA, 2023)². Market-based leverage practices is here understood as practices through economic relationships used as leverage to improve OSH within other companies in the supply chain. The aim of the case studies is to identify and assess the possibilities for market leverage practices with the purpose of improving conditions for workers employed by suppliers. Each case study covers the relationship between a focal firm (the buyer) and three to five suppliers. In each case, the focal firms selected for further analysis constitute firms with a reputation for providing good conditions for their own workers as well as their suppliers'. The cases identified in this study thus constitute some of the better market leverage practices found in the two sectors. The average buyer–supplier relations will probably have less focus on working conditions and OSH.

The researchers visited the focal firm and the suppliers, interviewed representatives from both management and workers, made observations, and collected and analysed documents.

Supply chain governance of working conditions and OSH

The common term 'supply chain' covers a network of organisations that collectively provide value to a customer or end user of a system. The metaphor of a chain makes it easier to visualise the flows of goods, information and money that move between members of the network on their way to provide value to the customer. Yet, within this network of organisations, the most fundamental unit of a supply chain is a dyad; the link between two organisations (typically a buyer/client and a supplier/contractor) tied together by a contract and the flow of goods, money and information. One of the critical issues faced by these dyads is governing the relationship, ensuring that one member — typically the supplier or contractor — provides what they promise the buyer/client, although buyers also make promises to suppliers, for instance in the form of long-term relationships or certain types of support. This is a complex topic since both parties profit from providing the end consumer with what they want. However, the totality of profit is limited and hence the organisations are often fighting over their share of these fixed profits. A dyad is therefore using various (market-based) governance practices to secure the most beneficial outcome of their relations.

Supply chain governance can be classified according to two main methods:

Contractual governance:

- A formal set of rules governing the relationship between a buyer/client and a supplier/contractor, such as the distribution of responsibilities and roles in a business relationship, monitoring practices and non-compliances as well as prescription of the desired outcomes and outputs that must be accomplished.

Relational governance:

- The relationship between a buyer/client and a supplier/contractor are governed by informal social relations and shared norms. Important elements include flexibility, solidarity (mutual benefits) and information sharing.

¹ Throughout this report, the term buyer–supplier relations is used.

² EU-OSHA – European Agency for Safety and Health at Work, Improving OSH through supply chains: market-based initiatives in the agri-food and construction industries, 2023. Available at: <https://osha.europa.eu/en/publications/improving-osh-through-supply-chains-market-based-initiatives-agri-food-and-construction-industries>

The actual governance practice will most often be in a mixed or hybrid form with elements of both contractual and relational governance. For working conditions and OSH, both contractual and relational governance are relevant. Supply chain management conditions in contracts can directly influence OSH, for instance in the form of Codes of Conduct stipulating compliance with certain conditions for OSH, but there will also be indirect influence through contractual conditions for delivery and payment. Relational governance can result in good social relations, which for instance can give the supplier the flexibility to organise work in a healthy manner without overtime, and the buyer may help the supplier in solving specific OSH problems.

Supply chain governance of working conditions and OSH in the construction sector

Construction is one of the most important sectors in the European economy, and at the same time it is a high-risk sector characterised by high numbers of accidents, occupational diseases and precarious work. The building site is the key meeting place for buyer–supplier interactions in the construction sector, where both buyers and suppliers work together on one project and must control working conditions and OSH, which continuously change along with the progress of the construction process.

In the case studies, we identified a series of governance practices, which could help to improve OSH in the sector. Most practices are in hybrid forms with both contractual and relational elements.

Table 1: Market leverage of working conditions and OSH in construction

	Practice	Description
Client-led OSH management	Contractual	OSH management systems required in the contract between clients and main contractors. The contract describes roles and responsibilities.
	Relational	Actual roles and practices are relational in nature. They all hinge on the relations between client organisations and main- and subcontractors on site. Clients and main contractors follow up daily on OSH. Main contractors and subcontractors develop long-term relationships continuing from one construction site to the next.
Safety culture	Contractual	Clear and detailed rules and agreements on OSH, which are contractually enforceable, policed regularly and agreed on before the start of the project. Contracts stipulating a balanced division of financial and time pressures between the different actors on a building site.
	Relational	Key elements are relational: creating an open atmosphere when talking about OSH – both on good practices and mistakes – becomes possible on all levels at the building site. Knowledge sharing both top-down (education, awareness raising) and bottom-up (worker involvement, valorisation of their expertise and concerns).
Subcontractor assessment	Contractual	The subcontractors are formally assessed by the focal firm before signing the contract, as well as during the project delivery.
	Relational	The evaluation of subcontractors who have previously worked for the focal firm tend to be informal, where trust plays a more significant role, and positive evaluation secures new orders.

Incentives and penalties	Contractual	Signalling OSH priority with red, yellow and green cards and consequences in the form of awards and penalties included in the contract.
	Relational	The good relations secure future business and prompt payments.
Training	Contractual	Requirements for certain training to enter a construction site.
	Relational	Client/main contractor provides training before and during construction.
Communication	Contractual	Contractually stipulated occasions for communication and coordination (e.g. monthly safety meetings and coordination meetings).
	Relational	Open-style communication between various levels active on the building site, trust, constructive personal relations between key figures.

As indicated in Table 1, the case studies show a variety of governance practices. They both use contractual and relational elements — often applied in combination. To support the dissemination of these practices we suggest a few policy pointers targeting policymakers and practitioners:

For policymakers:

- Public and other professional building clients can lead the way to a more safe and healthy construction site by playing an active role from tendering, procurement and throughout the construction process.
- Labour inspectors can support the coordination and collaboration at construction sites by not only giving injunctions for the tangible infringements but also by including OSH management and coordination in the injunctions.
- Advisory services can help clients, main contractors and subcontractors develop coordination and collaboration by suggesting collaborative practices and application of coordination tools. Construction safety coordinators play a leading role here, as they are mandatory on all European construction sites with several contractors on the same site, and can function as the links between external advisory services and the workers on the site.
- Policies and requirements on safety trainings and certificates for construction workers could be harmonised across the EU, thus avoiding repetition and creating room for more in-depth and specialised training.
- Micro and small contractors face challenges due to the increase in formal requirements for documented OSH management procedures, and targeted programmes for these contractors are important to ensure that they can also develop more healthy and safe workplaces.

For practitioners:

- The active client role shows how important it is to not only ask for OSH management in the tender and include provisions in the contract, but also to follow up on a daily basis on the construction site.
- Development of good collaborative social relations is key to safety and health at the construction site. Positive awards and recognition of good practices constitute stronger promoters for safety than sanctions – although the possibility of sanctions is important as a foundation for the positive approach.
- Orchestration of several practices creates synergies: examples can be incentives and awards, (interactive) toolbox meeting, shared safety walks and tailored training.

Supply chain governance of working conditions and OSH in the agri-food sector

The agri-food sector is different from construction as the buyers and suppliers are placed in different — often far from each other — geographical locations. The buyers cannot influence suppliers in a direct and collaborative manner as the buyer — even in cases where personal meetings get priority — only rarely can be present at the supplier production site. The market leverage practice in agri-food is therefore far more indirect compared to construction. The most direct practice aimed at OSH is the use of Codes of Conduct and certifications with subsequent audits. The other relevant practices identified in the case studies are related to creating good buyer–supplier relations conducive to the suppliers' motivation and possibility to create stable and good working conditions.

Table 2: Market leverage of working conditions and OSH in agri-food

	Practice	Description
Contractual	Stable volumes and conditions	Volumes and prices predefined and agreed in a formal contract enable more stable work planning.
	Transparent product quality and delivery requirements	Sufficient notice about delivery/definition of delivery time avoids pressure and allows better working time planning.
	Certifications and audits including OSH requirements	Third-party auditors, buyers and suppliers have different understandings of the certification requirements, but they might help to set a minimum standard and stimulate a safety culture.
Relational	Long-term relationship	Many years of trading beyond contracts might provide more stable relationships and therefore better work planning.
	Buyer–supplier collaboration	Joint new product development, new packaging and production planning help to share goals and plan jointly.
	Informal buyer–supplier communications	Person-to-person relationships and informal communication to develop a shared understanding.
	Supply chain flexibility	Mutual understanding in response to supply disruptions (e.g. accept late delivery, reduced product variety) to alleviate pressure at work.
	Training and technical assistance	Buyer firms help small suppliers with technical and managerial knowledge and expertise, seeds and machinery, which provide better planned and more stable work processes.

The market leverage practices in agri-food having direct impact on OSH are of a more limited scale compared to construction and they mainly have an indirect effect. It would therefore be important to strengthen the buyer–supplier relations and the OSH content more explicitly. Both policymakers and practitioners can help in facilitating such a development.

For policymakers:

- Upcoming regulation under the European Green Deal on mandatory due diligence practices and reporting on value chain sustainability (Corporate Sustainability Reporting Due Diligence Directive (CSRDDD)) has the potential to be a key instrument for OSH and agri-food. However, as with the practice with certificates and audits, there is a risk of developing a paper tiger

with little influence on practice. Tailoring the due diligence regulation to agri-food with the many small suppliers with limited managerial capacity is crucial.

- One possibility could be to integrate due diligence with the existing certificates, as the application of many parallel certificates constitutes a burden for the small suppliers. Integration of the different certificates is therefore a priority. A model could be the Norwegian integrated certificate for food safety and OSH.³

For practitioners:

- Buyers give advice and make their own audits of food safety and environment but leave OSH to third-party certifying agencies. A stronger integration between the procurement units and CSR/social sustainability units in the buyer organisation would signal a stronger priority on OSH, as well as create advantages and synergies for the buyer organisation in their supplier management.
- Formal contracts of a longer duration – preferably several years – are important for suppliers. They can create stable conditions and open possibilities for longer-term investments.
- Personal trusting relationships help suppliers to plan their production and may facilitate more stable employment. Physical buyer visits to suppliers can help in building personal relations. During visits it would be an advantage to open up dialogue on all topics of interest for both buyer and supplier – including OSH.
- Delivery terms are normally determined in the contract – sometimes with fines for violating the terms. Yet, it is important to develop a trusting relationship where both parties are flexible and try to help each other in case of problems such as the supplier having difficulties delivering due to, for instance, adverse weather conditions.

Cross-sectoral comparison and conclusion

Our study of market leverage practices in construction and agri-food shows two sectors with quite different and distinct features. **Construction** is marked by the stakeholders, including the main contractor, subcontractors and often also the client, working together at a shared physical site. The close proximity opens possibilities for close relational governance and for the application of several direct OSH measures. **Agri-food** is quite different. Buyers and suppliers are physically separated — often operating in other countries and with long distances between the parties.

Despite these differences, market leverage in the supply chain can play a significant role for the improvement of working conditions and OSH in both sectors. However, market leverage cannot replace government regulation. Rather, market leverage builds on a platform of regulations requiring the actors in the sector to take care of health and safety. Stronger regulation will therefore also support stronger application of market leverage practices. The many direct OSH measures we identified in construction build on government regulation.

Market leverage in both sectors uses contractual and relational governance resulting in hybrid practices with elements of both. The sectors share one important feature of many examples of long-lasting relationships. In construction, for example, subcontractors and suppliers can usually look forward to continued business on future projects. This gives the buyers leverage to motivate suppliers to fulfil buyer expectations also for OSH. The same holds for suppliers in agri-food, who can expect new orders beyond the present contract.

Yet, beyond the long-lasting relationships, the market leverage is quite different for the two sectors. The construction sector has extensive tendering and contracting practices, which include demands for OSH performance. Although the contract is important as the foundation for the practices at the construction site, the relational governance constitutes the key part for OSH. The stakeholders collaborate during the construction process on a day-to-day basis and apply direct measures aimed at OSH. The contracts are rarely used in practice, as reference to contractual elements and possible dismissal of a subcontractor

³ See: <https://www.ksl.no/no/om-ksl-2/information-in-english>

creates conflicts and delays production, and the stakeholders prefer to find pragmatic solutions to emerging problems.

For the agri-food sector contracts play a different role. They form the basis for stable conditions at the suppliers, indirectly giving them the possibility to promote OSH. The contracts also provide the basis for the only direct OSH measure in the form of a requirement to comply with the buyers' Code of Conduct. Compliance is most often indicated by certificates with audits to verify the certificate conditions. GLOBALG.A.P. is the most common certificate, but the many parallel certificates required by different buyers hamper the effect. Suppliers use extensive resources to maintain certificates with the risk of focusing more on the paperwork and less on the tangible OSH measures in the certificate. The agri-food sector does not have the same kind of day-to-day personal relations as in construction, but relational governance is still important for both buyer and supplier to secure flexibility and mutual help to solve problems, which can avoid suppliers using overtime and help stabilise their working conditions.

The two most important general policy pointers from this cross-sectoral analysis are:

- The coming EU regulation under the so-called Green Deal of due diligence and environmental, social and governance, or ESG, reporting will be an important facilitator for OSH – for the agri-food sector. The CSRD is set to become mandatory in 2025, with the rules of the directive on Corporate Sustainability Due Diligence expected to take effect no sooner than 2026. However, it is important to tailor the enforcement of the regulation to the sector — especially for the many small suppliers — to avoid a large paper burden with negligible effect.
- Development of regulation and standards for tendering and procurement. Clear and transparent criteria for inclusion of OSH are missing but establishing these can help buyers to achieve what they ask for, make it easier for suppliers to fulfil requirements and give end consumers the possibility to assess OSH performance. A lot of knowledge already exists, and there are initiatives seeking to improve OSH in supply chains (e.g. 'Vision Zero Fund' created by the International Labour Organisation (ILO) to help disseminate knowledge through training and publications. The EU's Action Plan on Public Procurement is another example).

For managers there are three general learning points:

- **Using a positive approach**
Regulation traditionally focuses on infringements and fines (as contracts often do) as penalties for violations. Yet, our case studies suggest that much can be gained from a more positive approach, building on respect, positive feedback, rewards and recognition. Such an approach will also support a shared engagement in performance and thus lead to higher productivity.
- **Certificates and audits with reservations**
Certifications can be a useful tool for working conditions and OSH, but buyers tend to place too much faith in the certificates. They do not by themselves secure a safe and healthy workplace – active follow-up is necessary to indicate a tangible priority of OSH.
- **Building long-lasting relationships**
The case studies in both sectors show relationships stretching years beyond the formal contracts. The trust and mutual understanding built by such long relationships can benefit both parties' businesses and well as OSH performance. We acknowledge that this can pose difficulties for the public sector with tendering requirements made to protect against fraud. In public procurement, this may imply to opt for longer contracts, as short contracts make it difficult for the contractor/supplier to invest in and deliver social outcomes.⁴

⁴ See: <https://op.europa.eu/en/publication-detail/-/publication/cb70c481-0e29-4040-9be2-c408cddf081f>

1 Introduction

A supply chain is all of the processes required to deliver a product or service to an end customer (Handfield & Nichols, 1999). The public awareness of supply chains has increased with the supply challenges following the Covid-19 epidemic and the Russian-Ukrainian war. But supply chains have always existed and both national and global economies are heavily dependent on complex global supply chains. Over the last thirty years, factors such as open markets, reductions in transport costs, ICT-based communication and the growing economic importance of the service industry vis a vis traditional manufacturing industries (Baines et al., 2017) have made supply chains much more global and complex. The increases in globalisation and complexity have made supply chains harder to manage and more vulnerable to disruptions. Companies, national governments, and the EU have tried to meet these challenges with a series of measures such as risk analyses, diversification, and reshoring to make the European economy more resilient to supply chain shocks, since there is nothing to suggest that European companies will be any less reliant on their complex global supply chains in the future.

The globalisation of supply chains has created economic growth but has also less favourable consequences. Market forces in the supply chain push buyers to reduce their cost. Buyers, in turn, put price pressure on their suppliers, who then often pursue cost reductions at the expense of their workers, the environment, and society. In these buyer-supplier relationships the supplier typically has full responsibility for the consequences of production and the buyer typically receives the ordered goods or services without any responsibility for the harm the suppliers might do. The supplier has the full responsibility but only limited control of the production conditions as they are based on requirements decided by the buyer. A further problem is the cross-border nature of many buyer-supplier transactions, leaving little leeway for national authorities to control conditions (EU-OSHA, 2021). This often results in hazardous jobs and poor working conditions for suppliers' workers. We can, among recent examples of the negative consequences, mention the media debates about the conditions of posted workers in the European construction industry (Drahokoupil, 2015), or the spreading of COVID-19 through the ranks of the subcontracted labour force in the German meat-packing industry (Ban et al., 2022).

The result is a wide array of initiatives to maintain the economic benefits of complex global supply chains without the social and environmental harm they often entail. First, buying companies (mainly multinationals) have created guidelines and codes of conduct for their suppliers. Second, international organisations such as United Nations (UN), International Labour Organization (ILO) and the EU have created guidelines, conventions and standards aimed at improving occupational safety and health and working conditions across supply chains. Finally, many countries have followed with regulation aimed at increasing buyers' responsibility for the actions taken by their suppliers. A parallel development is the breakthrough of the global sustainability agenda with the UN sustainable development goals as the prime example forcing companies to put broader sustainability issues on the agenda.

Following these developments, (larger) buyers are increasingly taking responsibility for the consequences of their actions within their supply chains. Suppliers are asked to comply with codes of conduct and provide certificates and audits to prove compliance. Working conditions and OSH are included in tenders and contracts, and suppliers receive various forms of support from buyers in order to meet the required conditions (EU-OSHA, 2023b). The effectiveness of these measures is debated, and they may be used for window dressing, but they do also open up possibilities. In their 2021, review Walters and colleagues (2021) stated, that while the changes in supply chains over the last 30 years generally have had negative consequences for OSH, the power dynamics in the same supply chains and networks can potentially be utilised to improve compliance with OSH rules and regulation, and thereby improve the workers' conditions. However, the understanding of how these market leverage instruments are working is limited (EU-OSHA, 2021). Against this background, the aim of the Lift-OSH (Leverage Instruments for OSH) project is to create new knowledge about the use of market leverage to improve OSH.

The history behind the Lift-OSH project

Based on the review Walters and colleagues wrote for the European Agency for Occupational Safety and Health (EU-OSHA) (2021), EU-OSHA commissioned a new study of the market leverage practice and instruments in 2021. We formed a European research consortium under the leadership of Professor Peter Hasle from University of Southern Denmark (SDU), and with participants from six research

institutions based in five different EU27 countries. These were ESADE business school (Spain), Tallinn University of Technology (Estonia), KU Leuven (Belgium), University College Dublin (Ireland) and Team Workinglife (Denmark). The consortium consists of experienced researchers who either have areas of expertise in OSH-regulation, in OSH activities inside companies or in supply chain management. In this way the consortium is positioned to answer the call for research into the concrete market leverage practices clients/buyers and their suppliers apply to control and possibly improve working conditions and OSH.

EU-OSHA specified the study to focus on the construction and the agri-food sectors and a first outcome is the publication of a review report on the existing knowledge about market leverage influencing OSH in the two sectors: "Supporting compliance and better OSH practice through leverage in market-based initiatives in the agri-food and construction industries - a literature review" (EU-OSHA, 2023b). Another important activity is the organisation of two workshops for sectors experts and researchers, which has helped to focus the research. The project is called Lift-OSH (Leverage Instruments for OSH) to signal our commitment to 'lifting' the quality and focus occupational safety and health up.

Project goals

The goal of the Lift-OSH project is to contribute with practical and applicable knowledge policy makers and stakeholders at both national and European level to utilise to improve OSH and supply chain regulation. Furthermore, that the knowledge generated by the project can aid practitioners within the European union in using their own supply chain relationships and networks to increase OSH awareness and improve health and safety and working conditions in their supplier organisations.

To meet these goals, we structured our project around the following research questions:

1. Which market leverage instruments and practices with a potential for influencing working conditions and OSH are applied in the European construction and agri-food sectors?
 - Identification of market leverage practices related to contractual, relational and hybrid forms.
 - Assessment of the potential and limitations of the practices to influence working conditions and OSH.
2. What mechanisms make OSH leverage instruments and practices aimed at the supply chain relationship work in the European construction and agri-food sectors?
 - Influence of market leverage governance practices on working conditions and OSH.
 - Combinations of different governance practices working together.
3. What are specific contextual elements in the European construction and agri-food sectors that increase or decrease the effectiveness of OSH market leverage instruments and practices?
 - Conditions influencing the effectiveness of the market leverage instruments and practices.

The present report analyses eight in-depth case studies of a buyer (focal case) and 3-5 suppliers to each of the buyers. The analysis focuses on each of the two sectors with a cross-sector comparison in the end of the report. The main goal of the analysis is to identify relevant leverage practices and instruments across cases to describe what works for whom under which circumstances, and to analyse how the regulatory and cultural contexts of the five case-countries influence the effectiveness and implementation of the instruments and practices.

The analysis presented in this volume is also based on the insights we have gathered in the first part of the Lift-OSH project. This also means that we recommend readers to consult the review report from this project-phase (EU-OSHA, 2023b) to gain a complete insight into the understandings and conclusions prerequisite for our findings presented in this report.

Our main analytical approach is based on the approach of Ray Pawson and the research environment he has inspired, what is commonly known as the 'realist evaluation' tradition (cf. Dalkin et al., 2015; Pawson, 2006). This approach asks: 'what works for whom and under which circumstances?' The main idea is to identify the mechanism that can make a certain intervention work in a specific context. We apply this approach to study how specific market leverage practices and instruments work and how they can be used in a broader context (more about the approach in chapter 3: Methodology, and about mechanisms in the feasibility sections in chapters 4 and 5). The analytical approach has among others

been applied in supply chain studies (Meqdadi et al., 2020), OSH research (Jaspers et al., 2022; Uhrenholdt Madsen et al., 2020), and regulatory theory (Gilad, 2010), all of which have informed our approach and the formulation of our project.

Content of the report

After the executive summary and this introduction, we start by defining supply chain leverage instruments and practices, as well as distinguishing between contractual and relational types of supply chain governance (chapter 2). Thereafter follows a description of our methodological and analytical research strategy and the choices we have made along the way in chapter 3. Chapters 4 and 5 present our findings in the two sectors. We start with the instruments and practices found in the construction sector, followed by analyses of the agri-food sector. Both sections end with sector-specific conclusions and policy pointers. The final two chapters are cross-sectoral and discuss differences and similarities between the instruments and practices in the two sectors, and how the sectoral contexts shape and affect the instruments and practices (chapter 6). We conclude with reflections on the learnings from the two sectors and possibilities to apply the findings in other sectors.

The detailed reports on the case studies are published separately, and they can be read for further details on each of the eight supply networks we have studied⁵.

Acknowledgements

We take this opportunity to offer a warm thank you to our case companies. Both managers, staff professionals and last but not least the workers representatives in both focal cases and suppliers have used their valuable time to meet us and show their workplaces, and they have with kindness and openness answered our many – often sensitive - questions.

⁵ [Annex C](#).

2 Background

This chapter briefly reviews some core supply chain management and market leverage concepts that are used throughout the document. These concepts constitute the theoretical framework on which the Lift-OSH project rests. The definitions, concepts and the overview of empirical studies are, however, based on the review work we did in the first part of the Lift-OSH project. Therefore, we encourage all readers who want to go in-depth with any concepts or empirical phenomenon, to go back and read the review report in its entirety (EU-OSHA, 2023b).

2.1 Supply chain management – definitions

The simple definition of a supply chain is all of the processes required to deliver an end product or service to an end customer (Handfield & Nichols, 1999). Yet, this brief definition hides a great deal of the complexity that matters for the Lift-OSH project. First, supply chain processes can be done both internally and by other members of the supply chain. For instance, some large supermarket chains have their own fleet of trucks and own and operate the distribution centres used in their supply chain. Other supermarkets have external suppliers perform either or both processes. Transportation and distribution are processes that are needed to get value to the end customer, but the buying firm may decide to do these processes itself or have a supplier do them instead.

In this report our main concern is how the buying firms employ market leverage instruments and practices to influence their suppliers' compliance with requirements for working conditions and OSH. In other words, our focus is on processes that the buying firms have suppliers perform for them. While we acknowledge and collect data on supply chain processes done by the focal buying firms, our emphasis is on the processes done by suppliers. In the case of construction these suppliers, or more accurately subcontractors, are providing building services. The construction supply chain also includes material suppliers, suppliers of financing and others, but we concentrate on subcontractors whose primary responsibility is doing the actual construction work. Similarly, in agri-food we concentrate on suppliers who grow, consolidate, package and or process fruits and vegetables that the buying firms (typically large supermarket chains) then sell to end customers, while acknowledging that supermarkets buy a much wider array of food and have other types of suppliers.

Second, while it is common to describe the sum of a focal firm's supplier relationships as a supply chain, the reality is there are multiple types of supply chain relationships but the dyadic relations between two members of the supply chain, are the most fundamental relationship. These are typically relationships between a buyer and a supplier, and the dyadic relationships have been the focus of much of the supply chain management literature (Wu & Choi, 2005). But relationships can be more complex, often involving three or more members of the supply chain (Meqdadi et al., 2020; Wu & Choi, 2005). The research of the Lift-OSH project focuses on construction and agri-food (fruit and vegetables). In agri-foods these relationships are almost exclusively dyadic, in that the focal buying firms typically only interact with each supplier individually. In agri-foods there is often little interaction between a buying firm and multiple suppliers simultaneously. The construction dyads are a bit more complicated. Each focal buying firm has a unique contractual relationship with each supplier. However, the focal buying firm or main contractor, typically also has relationships with the clients, who can influence or have relationships with subcontractors. In addition, the nature of construction work means that on a construction site multiple suppliers are typically present simultaneously, and these suppliers will also have relationships with each other. The focus of the Lift-OSH project is on how focal buying firms use market leverage instruments to influence their suppliers' OSH behaviours, and much, but not all of what we observed was at the level of the individual relationship between a focal buyer and a single supplier. Plus, the buying firms have individual contracts with each supplier. Hence, we refer to each relationship or case, as a dyad. But we note that in some instances, especially on construction sites where multiple suppliers and perhaps the client could be present, the relationships are more complicated.

Third, three things flow between the members of a supply chain: money, goods, and information. Supply chain management is then the management of these three flows between members of the supply chain, in order to provide the most value. The focal firms will be managing their supply chains to meet multiple objectives: maximising their profits both now and into the future, creating value for end customers, and satisfying external stakeholders. The value, the Lift-OSH project is then most interested in, is providing safe and healthy workplaces in the agri-food and construction industries. More specifically, we

emphasise how the focal firms in construction and agri-foods, as particularly powerful nodes in the supply chain, use market leverage instruments as supply chain management practices to get their typically less powerful suppliers to comply with OSH requirements while also optimising the flow of goods, money and information that create value for end customers and profits for the firms providing that value.

2.2 Supply chain governance practices - definitions

Customers normally hold a lot of power in both the construction and agri-food sectors and can therefore influence their suppliers' behaviour (Williamson, 2008). However, other supply chain actors such as wholesale agents in the agri-food and main contractors in the construction sector can also influence suppliers. And suppliers have their own supply chain management strategies and seek to maximise their own profits. In other words, while providing the customer value should help to align all members of the supply chain, the reality is that the individual members of a supply chain also have numerous incentives to work at cross purposes or behave opportunistically. Hence, the basic idea of governance has been applied to numerous supply chain situations where (typically) buyers are trying to ensure a supplier does what is in the buyer's best interest, even if it might not be in the supplier's best interest.

For example, Tachizawa and Wong (2014) explore how buying firms use governance mechanisms such as formal contracts or close collaboration to ensure their suppliers engage in environmental initiatives while Hajmohammad and Vachon (2016) explore how buying firms use governance mechanisms such as codes of conduct or supplier development to manage and hopefully mitigate sustainability risks in their supply chains.

The literature on governing buyer-supplier relationships is part of a wider literature on governing inter-organisational relationships in general. This vast interorganisational governance literature provides the framework we use for understanding and categorising the market leverage instrument used in the studied case dyads. Specifically, the (supply chain) governance literature recognises three main methods of governing a relationship, contractual, relational, and hybrid governance (e.g. Carson et al., 2006a), and we use this well-understood and empirically validated concept of governance to categorise these practices into contractual governance, relational governance, and combined in hybrid governance.

Contractual governance "...highlights the importance of contracts between firms and its formal rules to safeguard against opportunism and conflict. Contractual governance may define outputs to be delivered, specify monitoring procedures, and detail duties, rights, and contingencies" (Cao & Lumineau, 2015a, p. 15). Contractual governance is often discussed as a formal form of governance, in that the 'rules' are codified. Contractual governance practices are then practices that are governed and inscribed in contracts or in other types of formalised documents. These practices make planning, enforcement and distribution of tasks and responsibilities easier for both the buyer and the supplier. Contractual governance instruments also include practices and processes that are defined and codified beforehand such as audits, scheduled meetings, and codes of conduct that must be followed. In our context contractual leverage instruments would be formal contractual terms that provide incentives related to OSH performance. These might be the actual contractual terms, specific policies relating to the supplier's OSH management or outcomes, codes of conduct, and supplier monitoring and audits. Yet, contractual rules aimed at supply chain management as such may also influence the OSH behaviour and performance by suppliers.

Relational governance in a buyer supplier dyad means that the relationship "...is governed by social relations and shared norms" (Poppo et al., 2008). Relational governance is often discussed as an informal form of governance, in that it does not involve formal rules. Often, relational governance practices do not rest upon formalised procedures or structures, but rather on informal relationships and trust, and will often result in activities such as information sharing or flexibility in terms of bending contractual terms. In our context these would be elements of social exchange such as increased trust, solidarity, and information sharing that are used to align suppliers with the buyer's desire for improved OSH performance outside of the contractual terms. Relational governance practices might include shared values, a promise of continuity (a long-term relationship), increased transparency and communication, an enhanced partnership, and supplier development and training efforts. These practices may both serve supply chain management needs and the aim to improve OSH.

Finally, firms can use hybrid governance, a combination of both relational and contractual mechanisms used simultaneously, to govern relationships (Keller et al., 2021a; Lumineau & Henderson, 2012). These hybrid leverage practices can take numerous forms. For instance, relationship building or maintaining activities such as an informal face-to-face meetings for geographically distant suppliers, can be contractually codified to make sure they occur (Keller et al., 2021a). Equally, these dyadic relationships tend to develop and change over time which often results in informal (relational) agreements that may not align with the contractual terms. Hybrid leverage practices then combine both formal contractual terms with relational means, with the informal relational practices exist in parallel to the contractual buyer-supplier relationship.

Lift-OSH investigate all types of market leverage practices that help focal firms directly or indirectly (Table 3) govern and steer their suppliers toward better OSH outcomes.

Table 3: Direct and indirect governance of OSH

	Governance	
	Contractual	Relational
Direct (Aimed at OSH)	OSH-management. Code of Conducts (CoC). Certificates. Audits.	Safety meetings. Training. Advise.
Indirect (Supply chain management)	Order giving and fines with late delivery.	Communication about expectations and needs.

3 Methodology

3.1 Overall design

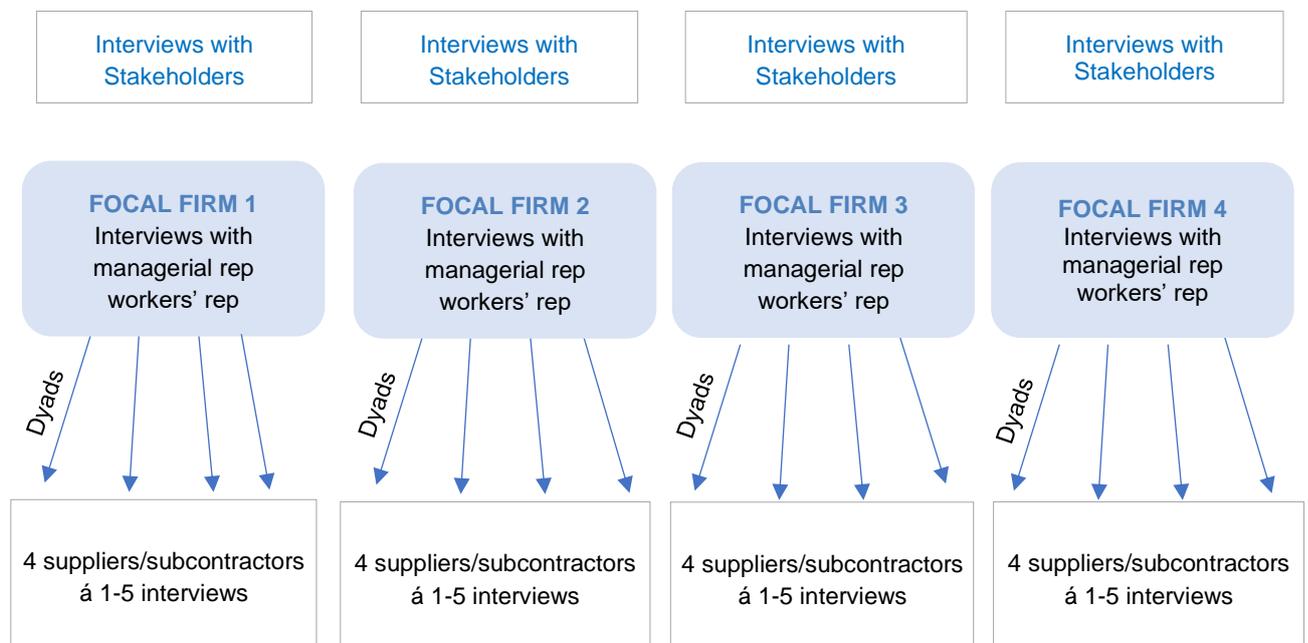
The purpose of gathering data in relation to the supply chain in this project is to identify potential market leverage instruments and practices that can enhance working conditions and OSH in buyer-supplier relationships. Additionally, the aim is to provide a comprehensive comparison of how OSH is managed in the relationships through different instruments and policies in the construction and agri-food sectors.

The unit of analysis is the dyad. Specifically, we define a dyad between two organisations with a transactional buyer-supplier relationship (exchange of goods, services, and information) in different countries across Europe. We selected a total of four case studies each containing four to six dyads, from each of the construction and agri-food sectors distributed on different geographical location. The construction cases were chosen from Denmark, Ireland, Estonia, and Belgium, while the agri-food cases were selected from Denmark, Ireland, Estonia, and Spain. However, the two sectors are rather different from each other and so are the actors involved in the dyads.

In the construction sector, dyads are project-based. Most of the supply chain is therefore represented with larger construction projects such as large infrastructure projects and large multiple housing projects. The time span of construction projects can vary considerably. Very large projects can span up to 10 – 15 years, but most construction projects have a shorter time span, thereby limiting close social relations, although social relations may be developed through cooperation from one project to another. Each dyad is formed by the focal organisation – which, for example, could be a multi-party partnership/consortium or main contractor and its partner(s) - with contractual relations including subcontractors.

In the agri-food sector, dyads are part of a supply chain delivering products to final consumers. Food supply chains consist of a wide range of actors that cultivate, manufacture, distribute and sell food, including small and large farmers, food processing facilities, transportation, distribution facilities, warehouses, and retailers. Each dyad is as formed by the focal organisation (a large retailer or processor) and its suppliers connected through contractual relationships (e.g., farmers). Figure 1 shows the overall design for each sector, which is repeated for each sector.

Figure 1: The overall design of data collection



We modified each case design to the specific nature of the selected case and circumstances, e.g., in the construction cases in Denmark and Belgium the client was added to the chain and in agri-food case in Spain the dyads were expanded with a first tier and second tier suppliers to the focal company.

3.2 Case selection

We used the principle of “purposeful sampling” to select critical and maximum variation cases as described below (Flyvbjerg, 2006; Palinkas et al., 2015; Yin, 2015).

The selection of case studies in both sectors followed two steps. First, we selected four focal organisations for each sector, which can be viewed as the best in class and with potential application of the most important market leverage practices. These focal firms each had a reputation of setting high standards for working conditions and OSH. Second, for each focal organisation, we selected four dyad partners with a strong OSH potential to show how market leverage is working in practice. We guaranteed full confidentiality and anonymity to all participants involved in the research.

Altogether, the sample consists of four focal cases with a total of 17 dyadic cases in agri-food sector and 17 dyadic cases in construction sector (including two building clients) and all together eight focal cases with 34 dyadic cases.

Search for best cases

We selected four focal cases in each sector applying several market leverage practices influencing OSH for workers. To identify ‘the best in class in their specific markets, we:

- built on the supply chain characteristics and the market leverage instruments developed in the comprehensive literature review (EU-OSHA, 2021);
- considered suggestions for cases made by the Focal Points (official representatives for EU-OSHA in each Member States) questionnaire and network interviews;
- contacted stakeholders in the two sectors; and
- used publicly available information to look for high-profile cases (e.g., through media reports) and to check which companies work with what instruments (e.g., membership lists of multi-stakeholder initiatives, websites of individual companies).

This process took place in funnel process of selection, where we excluded less promising cases, and continued scrutinising the most promising cases until we identified the cases likely to provide the highest value to the project. As the possibilities got narrowed down, contact was made to case informants to secure access.

Criteria for case selection

To provide maximum variation across cases, we selected:

- Focal organisations in different countries.
- Focal organisations’ suppliers operating in different countries.
- Focal organisations and suppliers of varied sizes.

For both sectors, the selection started with identification of the focal cases and subsequently the suppliers/subcontractors. Due to the different nature of the two sectors, each of them had supplementary specific criteria.

Construction sector

To guide the selection of construction projects and the different construction dyads, the specific criteria included:

- large construction projects involving many contractors and subcontractors (large and small); preferably with transnational (labour) sourcing to get a large amount of governance practices;
- focal organisations applying OSH practices and recognised by external stakeholders for their reputation;
- projects that enable access to contractual demands for working conditions, OSH, and other labour related agreements, as well as an ability to identify activities performed by labour inspectors, private social compliance initiatives, labour market organisations or others; and
- focal organisations should be in the EU (i.e., Ireland, Denmark, Belgium, Estonia) and supplier cases in both the national context and distributed in several other European countries.

Second, from the selected projects and focal organisations, we identified the relevant subcontractors and examined their use of sub-subcontractors or providers of labour. We focused on dyads that are 'active/operational' construction teams in the time frame of the study. We asked the focal organisation to identify at least ten different active dyads. We selected four active dyads for each focal organisation, securing a maximum variation across cases.

Agri-food sector

To start the selection of cases in the agri-food sector, we focused on fruits and vegetables producers because:

- the sub-sector is characterised by international supply chains (most production is in the South and the distribution is local and international). Other sub-sectors have mainly local supply chains (e.g., meat);
- the market is growing compared to other sub-sectors and this might be important to interpret future trends and needs;
- the rate of people employed in the sector is higher than in others (less automation);
- seasonality is a main aspect of the sector strongly related to OSH conditions;
- working conditions related to respect of workers' rights are questioned in some contexts;
- working conditions have been (re)exposed due to the COVID-19 pandemic; and
- precarious work is a common condition for workers in fruit and vegetable supply chains as this type of work allows the processor to reduce costs and increase flexibility, typically at the cost of the workers' well-being.

To select cases, we started by selecting the focal organisation based on following criteria:

- the focal organisation should be a processor/distributor or retailer conducting processing and value adding activities not limited to warehousing and packaging;
- the focal organisation should be 'the best in class' in their specific markets, meaning it should have a good working conditions and OSH reputation identified by means of stakeholder informants (such as focal points, local regulators, unions, industry experts). We excluded companies currently experiencing economic problems; and
- each focal organisation should be in a different country in the EU (i.e., Spain, Ireland, Denmark, Estonia) and have both national and international customers.

Next, from the selected focal organisations, we identified the suppliers. Each distributor or retailer identified a pool of at least ten strategic suppliers among primary independent producers with employed workers considering different geographic locations, sizes, and types of ownership (family business, corporate, cooperative). We analysed the characteristics of each of these suppliers and selected four suppliers for each focal organisation to get an even distribution of suppliers along the selection criteria.

Contact procedure

Each partner contacted focal organisations identified in its country of residence. Main information about the project aims and the involvement requested of the organisation and possible benefits were communicated. Once the focal organisation (and then the suppliers) agreed to participate in the study, the researchers signed a non-disclosure agreement to maintain anonymity of the data collected as needed. Confidentiality and anonymity of all participants involved in the research were guaranteed and ensured.

The description of selected cases is given in [Annex A](#).

3.3 Data collection methods

The qualitative data collection included three types of evidence (Table 4):

1. Document collection

- public documents such as information available on companies' web pages (e.g., last years' responsible commitment actions, sustainability reports, code of conduct, OSH mission/vision, media coverage); and

- internal documents (e.g., financial reports, focal company’s supply chain management overview, report on OSH indicators and accidents statistics, supplier guidelines, contract specifications, internal strategy papers).
2. **Semi-structured interviews** (with key informants in the companies’ focal organisations and suppliers/contractors and stakeholders). The interviewees include owners/top managers, supply chain/procurement managers, safety or OSH managers, compliance/sustainability/CSR responsible managers, workers (participation/OSH committee member and/or union representatives).
 3. **On-site visits** to focal companies and selected suppliers when possible (to get an impression of the application of governance practices and relational instruments).

Table 4: The three types of data

	Evidence	Focal firm	Suppliers / Sub-contractors
Documentation	Companies’ webpages	CSR, sustainability and OSH policies, certification documents, code of conduct and reports such as sustainability reports, responsible commitment action reports.	+ -/+
	Relevant internal documents	OSH indicators and accident statistics, supplier guidelines, contract specifications, internal strategy papers.	+ -/+
Informants / Interviews	Managerial representative	Information about application of governance in practice (for example, codes of conducts, which large supermarket chains require their suppliers to comply with) and mechanisms that might make them effective.	+ +
	Workers’ representatives, shop stewards and union representatives	Information about how the instruments is applied in practice; who benefits from the application of the instruments; what is the working conditions and OSH that the instrument is expected to improve; the constraints of implementation and possible solution(s).	+ -/+
	Stakeholders, the respective unions	What kind of initiatives exist (certification, good / common practices); relevant experience and examples with the instruments, overall attitudes across the cases.	+

Observation	Company visits and walk-around, usually arranged before or after the interviews	How are governance of OSH and maintaining decent working conditions applied in practice, what are the visible constraints, what works in practice, what seems to be formally applied etc.	+	-/+
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* +: data collection method used in every dyad; -/+: the method implemented in some of dyads, depending on availability; -: the method not applicable.

When triangulated, these sources provide the foundation for understanding the cases in depth (Crowe et al., 2011; Rashid et al., 2019) and allow us to assess how the leverage instruments work in the supply chains, including how findings can be compared within and across sectors.

All data were collected between December 2021 and November 2022.

3.4 Document collection

All focal companies have public information available on their respective websites (such as code of conduct, reports, OSH policy), which is easily accessible. While some of the suppliers and subcontractors also maintained their own websites, the information available was often (more) limited due to the small size of these companies, and some suppliers and subcontractors did not have a website available for public access.

Furthermore, as the basic agreement about access to information is obtained during the selection process, we received relevant internal documents about the application of specific contractual and relational governance for instant contracts, monitoring (audits) to compliment and verify the data collected during the interviews.

As an example, a list of documents collected from the client in the Danish construction case study is presented in Table 5.

Table 5: Documents collected from the client in Danish construction case

No	Description of documents from the client
1	Clients' OSH strategy to board.
2	Common basis document of OSH with requirements for main contractor responsibility and planning.
3	Course catalogue for safety school.
4	Demands about OSH information from main contractor in tender.
5	Demands about OSH information on subcontractors in tender.
6	Document about agreed changes to the original OSH requirements in the tender. Specifically, about coordination between client and main contractor (MC).
7	Document from tender material about how OSH used to evaluate offers.
8	Letter about participation in safety orientation from client to MC.
9	Occupational Health and Safety Clause (including the client's right to intervene, the MC remedial actions, financial sanctions, MC responsibility for subcontractors).
10	Requirements for monthly reporting from MC to client.
11	Safety vision from client.

Interviews

Semi-structured interviews with key informants constituted the most important data collection method as it gave the highest amount of information about the cases. Altogether 136 interviews were held (Table 6). The interviews followed the commonly accepted standards for research interviews (Brinkmann & Kvale, 2014; Yin, 2014) to secure validity and reliability.

Selection criteria for informants:

- The persons in the company with the most elaborate knowledge about how the contractual and relational governance are applied in practice, who included buyers posing the requirements and suppliers with compliance obligations; due to idiosyncrasies pertaining to knowledge we applied an inductive process based on dialogue with the companies to identify the most appropriate person.
- Representatives of the persons (workers) who should benefit from the application of the practices; selected in cooperation with the workers themselves. For this group there were some constraints as the workers were not, for instance, aware of codes of conducts, which large supermarket chains require their suppliers to comply with. We found solutions to these constraints on a case-by-case basis to ensure optimal knowledge elicitation. A typical solution could be to interview workers (e.g., shop stewards) about the general working conditions and OSH, which the practice is expected to improve. In other cases, the respective unions had relevant experience with the case and practice under investigation.

The interview guides were adapted to the specific context of each sector. We followed the interview thematic guides as closely as possible (see [Annex B](#)).

Interviews were conducted either digitally or in-person (preferred). Digital interviews were cost effective, provided access to interviews across different geographical locations and avoided constraints related to Covid-19. However, the research team took all necessary steps to ensure detailed and accurate information. Therefore, mainly in-person physical meetings were arranged to conduct interviews and gather more comprehensive and reliable information since the on-site visit was usually also organised before or after the interviews.

We kept in mind that:

- For construction, the study of supply chains related to large construction sites benefitted from physical visits to the site to get a possibility to directly observe how certain instruments work in practice. It also allowed to interview workers involved in the project on-site.
- For agri-food, there were also physical visits and direct observation of a workplace of both focal cases and suppliers.

In both cases, extra efforts were done to ensure the voice of non-digital savvy migrant workers.

Table 6: Overview of the interviews (Full case studies in Annex A)

Type of interview	Number of interviews		
	Total	Focal Company	Suppliers
Agri-food			
Case 1 – Denmark			
Management	17	4	13
Workers	6	1	5
Stakeholders	1	-	1
Case 2 – Ireland			
Management	15	11	4
Workers	1	-	1
Stakeholders	2	2	-

Type of interview	Number of interviews		
Case 3 - Estonia			
Management	8	3	5
Workers	7	3	4
Stakeholders	-	-	-
Case 4 - Spain			
Management	15	4	11
Workers	4	1	3
Stakeholders	1	1	
Construction			
Case 1 – Denmark			
Management	11	6	3
Workers	-	-	2
Stakeholders	-	-	-
Case 2 - Ireland			
Management	14	5	9
Workers	2	1	1
Stakeholders	-	-	-
Case 3 - Estonia			
Management	7	3	4
Workers	6	2	4
Stakeholders	-	-	-
Case 4 - Belgium			
Management	9	6	3
Workers	6	2	4
Stakeholders	4	4	

The interviews were conducted in the preferred language of the interviewee, which could be English or their native language. The interviewer proficient in the interviewee's mother tongue conducted the interview in that language, allowing for greater comfort and ease of communication. As a result, we conducted interviews in languages such as Danish, Spanish, Estonian, Dutch, and German. The duration of the interviews varied, the average being about 1 hour. All interviews were recorded and transcribed ad verbatim and analysed as described in the 'Data Analysis' section below.

On-site observation

On-site observations constituted an important part of the data collection and took place before or after the interviews. The researcher took an 'information seeker' role, detached from the system being observed. The role permitted observing the examined company's staff freely without giving recommendations or opinions.

Observations revealed data about tangible and behavioural features of a governance culture and practice within the company. The researcher observed and recorded what naturally occurred in the company.

Observations in construction took place at the construction sites, while agri-food included the headquarters/offices of the focal as well as their distribution centre where most employees are working. Suppliers were visited, when possible, in practice with a focus on consequences for working conditions and OSH of the governance practices applied by the focal firm.

3.5 Data analysis

To analyse the data gathered through the transcribed interviews, we first formulated basic descriptive codes to sort the data into more manageable groupings according to their content. The Lift-OSH researchers organised successive meetings to formulate and improve the descriptive coding scheme in an iterative process. We only used what we deemed as descriptive codes, i.e., codes that described the content of the account without giving any analytical meaning to said account (examples of descriptive codes are “formal communication”, “supplier assessment”, and “relationship between suppliers and focal firm”). We tested the coding scheme in a common coding process where all participants coded the same interviews (one from each sector) and when relevant, changed or added codes. Thus, we secured alignment of every coder in the meaning and delimitations of the various codes. Finally, we coded the raw data in NVivo1. When relevant documents and observations were coded in a comparable manner.

Thematic analysis based on abduction drawing on both theory and empirical findings formed the next step. We identified analytical themes through the literature (partly summarised in our draft review report (EU-OSHA, 2023b)) and additional literature identified since the review report. Additionally, we built on our immediate learning from interviews and direct observations as well as the overview created through the basic coding. The themes for in-depth analysis secure answers to our research questions.

A pair or a small group of researchers carried out analysis of each priority theme (or collection of related themes). The group selected at least two relevant cases from two different countries for in-depth analysis and developed supplementary analytical codes for the specific theme. The group aligned the supplementary codes on selected interviews by parallel coding as described above.

We used realist evaluation (Pawson, 2006; Wong et al., 2016), which aims to find out what works for whom under what circumstances as inspiration for the analytical approach. Assessment of the impact on OSH related to the selected theme formed a key part of the analysis. The assessment covered both practices directly aimed at OSH and SCM practices, which may have an indirect effect on working conditions and OSH.

Displays as suggested by Miles and Huberman (1994) (see also Verdinelli & Scagnoli, 2013) are used both as working tools and to present results in the report.

After coding all the data, we decided on the list of governance practices and instruments to be included in the report based on the evidence and the potential for improvement of OSH. The identified practices are quite different for construction (with a focus on direct OSH measures) and agri-food (with the focus on indirect measures). The analysis included middle-range theories to explain mechanism and feasibility and the context making the theories work. Middle-range theorising involves developing a comprehensive narrative that studies the causal mechanisms and the specific conditions under which these mechanisms lead to particular outcomes (Ruso et al., 2021). Middle-range theories can for instance be the how client-led OSH management work in construction or how relational flexibility in agri-food can help suppliers organise their work.

We divided the responsibility for the various governance practices. One partner took the main responsibility for describing a particular practice, however all partners contributed with data and local examples to all market leverage practices. In this way, we secured the comparative perspective.

In the following text cases are referred to in the following manner:

- Construction: country, type of case (client, main contractor, subcontractor with number).
- Agri-food: country, type of case (focal firm, subcontractor with number, second tier with number).

4 Construction

4.1 Introduction

The construction industry is one of the largest economic sectors in the EU, employing around six percent of the EU workforce and accounting for no less than nine percent of the European GDP (González García et al., 2021). The sector can be divided into several subsectors: 'civil engineering', which encompasses larger infrastructural projects such as railways, bridges, and tunnels; 'buildings', which in turn can be divided into 'residential' and 'non-residential' buildings; and 'specialised construction activities' (FIEC, 2020). The sector is further characterised by a high number of micro, small and medium-sized enterprises. Besides companies that plan, develop, and build structures or buildings, the construction sector comprises manufacturers, consultancies, and countless other actors providing supporting activities along the supply chain. According to the European Construction Industry Federation (FIEC, 2020), the construction sector records a strong multiplier effect: for each person working in construction, there are two further persons working in other sectors.

Research in the construction sector focusses mainly on the national context, and we did not find cross-European studies to describe the sector. We believe that this lack of cross-European research is due to the fact that the dynamics within the construction sector are still to a large extent particular to national contexts, although European and international dynamics (migration, EU legislation) are of increasing importance (Arnholtz & Lillie, 2020). Furthermore, there are organisational and institutional realities such as language, network and knowledge that lead researchers to focus on their own national contexts when studying the effect of OSH practices and instruments on the ground in the sector.

Business structure

Supply chains in the construction sector are rather idiosyncratic. The traditional linear logic of 'extraction-manufacturing-sale' does not apply. Instead, the construction site is characterised by companies from different tiers of the supply chain doing simultaneous work at the same geographical location (i.e., the worksite). Thus, globalisation in construction has not led to a widespread outsourcing of production processes to producers or service-providers abroad, as is the case in agri-food and other sectors. Instead, in construction, globalisation encouraged the subcontracting of tasks on-site to contractors across Europe, who then post workers abroad where labour is needed. These workers, nationals of a wide array of EU and non-EU states, can in this way work within the industrial relations frameworks of the posting company's country of origin if they follow national regulation in the host countries (Caro et al., 2015). This leads to so-called "dis-integrated organisational structures" (Ahlstrand, 2022) where flexibility is high and enhances the need for even more subcontracting of labour and services. The challenge of aligning the different actors that participate in the construction value chain, has also been pointed out in the literature (Rompoti et al., 2020).

These challenges are especially poignant when it comes to the so-called 'mega-projects' (van Marrewijk et al., 2008a). Van Marrewijk and colleagues define mega-projects as construction projects that are characterised by high complexity in terms of agreements with customers, design, non-linearity in terms of construction phases, and employment of both main contractor employees and subcontractor-employees in the same, or interdependent processes. The consequences are that these 'mega-projects' are even more at risk of disorganisation, which in turn can have grave consequences for health and safety.

However, there is an increasing tendency to rely on prefabricated units, manufactured outside the construction site and subsequently delivered and installed at the site. These processes tend to follow the same outsourcing logic as any other manufacturing process and can be partly or wholly outsourced to other countries (Ahlstrand, 2022). This trend is also evidenced by the increase in employment within manufacturing related to the construction sector (FIEC, 2020).

Power differences can be immense in construction supply chains. Principal contractors wield considerable authority over the subcontractors to which they outsource much of the actual work (James et al., 2015a). Short-term employment is widespread in the supply chain, and unionisation numbers vary considerably across the EU Member States, being particularly low among foreign workers providing short-term labour in the sector. Even though numerically small- and medium-sized enterprises dominate the construction sector, big construction projects are usually executed by a smaller number of large

construction enterprises. They serve as principal contractors, heading long sub-contracting chains where much of the work is eventually done by smaller companies and independent workers (James et al., 2015b).

This practice of subcontracting can lead to challenges for OSH management. As firms downstream their supply chains seek to appropriate a maximum of the value created, fierce competition for building contracts can lead to reduced attention for OSH. The division of roles in terms of OSH management can be unclear, and subcontracting workers are often less informed about important policies and procedures (Choe et al., 2020). The OSH knowledge-gap can be increased by the distances between construction sites and back offices of both contractors and subcontractors, which is an organisational necessity in the construction sector. In addition, subcontracting workers also run more risk due to longer hours, intensity of work, economic stress and their concentration in higher-risk segments of the supply chain (James et al., 2015a). In this regard, it is striking that the available research on OSH in integrated systems encompassing subcontractors in the construction sector is limited (Johansson et al., 2019).

In the construction sector, tasks and projects are limited in time and space, even though large projects can go on for many years. This often implies that standards, local rules and control systems, and worksite culture primarily exist embedded in the specific project and must be developed again in the next project. Even in larger and longer lasting projects, some supply chain relations are limited to parts of the project. As most tenders are optimistic about the timing, pressure on the production time and schedule will most often be the result. The supply chain relations thus have both a strong link to the contractual governance of the construction project and a considerable element of relational governance as different suppliers (contractors) work side by side at the same construction site. OSH at construction sites is strongly influenced by demands for cost reduction, but often even more so by the time constraints generated by optimistic planning of the construction projects.

Working Conditions and OSH in the construction sector

Construction is a high-risk sector in terms of work-related accidents (Blanc et al., 2022; James et al., 2015a). The sector has the highest occurrence of fatal accidents, and one of the highest when it comes to non-fatal accidents, according to Eurostat data⁶. The sector is also one of the three sectors in which workers are most likely to report muscular-skeletal disorders (MSDs). Data about ergonomic risks from the 2021 European Working Conditions Survey (EWCS), administered by Eurofound, shows that the construction sector is among the three highest scoring sectors whether it comes to exposure to repetitive movement, tiring and painful positions, or heavy lifting. When it comes to exposure to dangerous substances, the construction sector also scores above the EU28 average (EWCS, 2022).

Furthermore, the sector relies heavily on migrant labour, and migrant workers often find themselves in precarious positions (Shepherd et al., 2021). As supply chains become increasingly long, OSH responsibility is often delegated – along with the work – to small subcontractors experiencing considerable economic pressures. These small contractors often employ migrant workers, who are more vulnerable to diverse types of exploitation and problematic safety situations. Research has consistently shown that differences in terms of safety and health exist between ‘native’ and migrant construction workers (Shepherd et al., 2021).

Market leverage in construction supply chains

Safety and health standards can be protected and improved through a range of strategies. State-led control and enforcement of OSH regulation are traditionally seen as the crucial elements in this variety of approaches, and stronger regulation and enforcement have generally engendered better safety conditions.

However, regulatory enforcement has the strongest effect in the higher tiers of the chain, where power is concentrated in a limited number of publicly listed companies, while it proves to be the most difficult in lower tiers, where OSH risks are mostly found. Moreover, at least in the United Kingdom, inspection capacity has been reduced, while subcontracting practices have only complicated inspections. Policy

⁶ Eurostat data on accidents at work can be consulted here: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents_at_work_statistics#:~:text=2010%20to%202018-,Number%20of%20accidents,accidents%20for%20every%20fatal%20accident

makers thus increasingly look at governance mechanisms driven by principal contractors, but targeted at high-risk subcontractors further up the chain (James et al., 2015b; Walters & James, 2011).

Besides government attention to the potential of market-based leverage and the leading role of large contractors, trade unions can play a significant role in stimulating governance practices in construction supply chains. Leveraging reputational risk can help workers to incentivise their (principal-contracting) companies to improve conditions, also for workers in lower tiers of a subcontracting chain (Upstill-Goddard et al., 2012; Wright, 2016).

As is the case in many sectors, lead contractors find themselves in an ambivalent position. On the one hand, construction supply chains have become increasingly long and complex precisely because subcontracting allows principal contractors to outsource much of the work to smaller companies, often in several tiers, while appropriating a maximum of the value created. This pressure is at the source of problematic OSH performance in many construction supply chains (James et al., 2015b; Walters & James, 2011). On the other hand, lead companies fear reputational damage, for acts committed by their subcontractors (James et al., 2015a; Wright, 2016). As the most powerful actors in a contracting supply chain, principal contractors have at their disposal a variety of governance mechanisms to improve OSH conditions on a construction site. This challenge also relates to the building clients – especially the larger professional clients such as governments, multinational firms, and pension schemes. They are all sensitive to reputational risks and may raise OSH requirements in the supply chain, as for instance happened at the London Olympics and for the bridge between Copenhagen and Malmo (EU-OSHA, 2017; Spangenberg et al., 2002).

According to the literature review conducted by Walters & James (2011), three main strategies can be identified through which OSH is addressed within supply chains in construction: 'purchaser' procurement strategies, industry level certification schemes, and product-related initiatives. By using OSH standards as a key criterion in procurement, companies can ensure that the subcontractors they select to conduct a specific task, comply with OSH standards and regulations. However, the evidence on the successfulness of this approach appears to be mixed (Walters & James, 2011), for example as the compliance with these specifications is not always monitored.

Nevertheless, we found some good examples, notably in the cases where the size, prominence or degree of risk of the construction projects examined constituted reasons for a closer attention by inspectorates and other relevant authorities. One important instrument can be certification schemes, which have proven successful in improving the OSH competencies of both organisations and individuals (Walters & James, 2011). Another instrument are product-related initiatives launched by trade unions, sector federations or other organisations to help improve the safety, for example by providing detailed information sheets on how to use certain tools and materials (Walters & James, 2011).

Discussions in the literature are ongoing as to whether, and if so when and how, contractual and relational governance can be complementary, how benefits are distributed between buyer and supplier, what differences in perception exist between parties, etc. (Cao & Lumineau, 2015b; Poppo & Zenger, 2002; Um & Oh, 2020). This discussion will be presented in the next two sections.

Contractual governance

The nature of contractual relations between contractors, subcontractors and clients in a construction supply chain can vary considerably depending on the national legislative framework in place (e.g. concerning liability and subcontracting), even though Directive 2014/67/EU has partially harmonised these rules across the European Union (Houwerzijl & Peters, 2008). This might influence the extent and the way companies decide to govern their relationships related to OSH through contracts. A Spanish study shows that almost 70 percent of SMEs have added clauses and language about OSH in contracts with subcontractors in construction projects (Segarra Cañamares et al., 2017).

Research suggests that clear and detailed contractual terms are crucial for the successful functioning of inter-organisational relationships in construction projects (Rompoti et al., 2020). Formal contracts help clarify the roles and responsibilities of the involved contractors, set the outputs, and lay out the procedures regarding non-compliance. However, different types of contracts may be more or less suitable for different profiles of sub-contractors (Rompoti et al., 2020). In the context of governing OSH throughout a construction supply chain, successful instances of contractual governance include

monitoring systems put in place on a construction site, regular audits of all contractors present, and safety personnel having authority over all contractors present on a site (James et al., 2015a).

Research indicates that clients and main contractors use contractual means as part of their procurement strategies to ensure safer construction projects (e.g. EU-OSHA, 2012). In construction, an important type of leverage practice happens during the procurement and tendering phases. There are several examples in the literature of high profile construction projects, where prior OSH performance and current OSH capabilities were formal requirements to be met in construction clients' procurement decisions (EU-OSHA, 2012). Some building clients are looking at safety training, accident statistics and other important safety key performance indicators (KPIs) in their selection process. Researchers point to several large-scale construction projects that successfully reduced or prevented accidents by using contractual requirements in their supplier (subcontractor) selection procedures. Among them are the Danish-Swedish bridge over Oresund, the construction of a new terminal in Heathrow, UK, and a new car manufacturing plant in France (EU-OSHA, 2012). Besides this, the RESPIRO (Responsibility in Procurement) project developed a Guide on Socially Responsible Procurement of Building and Construction Works, which specifies how social and ethical requirements can be included in procurement contracts in the construction sector (EU-OSHA, 2012). Clients or main contractors often specify, which monitoring systems they put in place for the duration of the projects and stipulate the subsequent requirements for contractors and sub-contractors. Examples are clearly defined periodical audits by clients' safety personnel, guaranteed access to all parts of the worksite for external auditors or the regular delivery of safety KPIs to the client organisation.

Clients or main contractors may also require specific certificates verified by third party audits. Construction companies can adopt different standards to guide them in improving their safety and health performance (EU-OSHA, 2012). These standards and certifications can then serve as crucial ways for construction companies to show their engagement in OSH in the workplace, to both their clients and the wider public (Jones et al., 2006; Upstill-Goddard et al., 2012).

Relational governance

Relational governance is central to creating shared behavioural norms in construction as well as other supply chains (Bonatto, De Resende, et al., 2020; Poppo & Zenger, 2002). In client-contractor relationships, trust plays an essential role for the selection and subsequent operation of control and other governance mechanisms (Cerić et al., 2021; Manu et al., 2011). However, as the scale and complexity of a construction project increase, relational governance based on trust can become increasingly complex and burdensome, driving the proliferation of formal contractual governance mechanisms (Caldwell et al., 2009). In addition, the temporary nature of the supply chains in the sector can make it difficult to establish mutual trust and good working relationships between actors that have not collaborated before (Rompoti et al., 2020; Ruijter et al., 2021). This can lead to conflicts between the actors, especially in case of delays or unexpected costs.

Yet, the close physical proximity of contractors and their workers also opens opportunities for building social relations. Research shows that good personal relations between the central actors in a construction project (notably between the construction manager, site managers, foremen, specialist staff and subcontractors) are crucial for facilitating effective information flows, joint planning and managing problems and crisis situations (Caro et al., 2015), which can prove essential to OSH outcomes.

In a study on the road infrastructure megaproject 'Schiphol, Amsterdam and Almere' (SAA) in the Netherlands, Ruijter et al. (2021) examine how trust developed between the partners involved in this project through a series of different types of workshops (shared values, dealing with dilemmas, storytelling, fishbowl, the chair and role-playing) organised at various stages of project implementation (initiation, negotiation, formation, operation). Aware that contractual arrangements still leave questions open for interpretation, the SAA management focused on building trust with the different contractors involved, based on the principles of transparency and the ability to explain (Ruijter et al., 2021). Their aim was to build normative trust, i.e., trust that follows from personal relationships and is based on past behaviour and a shared identity, rather than calculative trust, i.e., trust based on structures and rewards. Importantly, this study shows that contractual arrangements proved insufficient as a blueprint for successful collaboration, and highlighted instead the importance of a resilient relational partnership and normative trust (Ruijter et al., 2021).

In their study of OSH knowledge transfer in the UK construction sector, Duryan and colleagues (Duryan et al., 2020) further show how successful OSH management between various partners in a construction project also relies on non-contractual factors such as culture and good communication. They also indicate that professional competencies can increase overall knowledge sharing between supply chain partners. In this way, larger firms with more resources for OSH professionals have an advantage over smaller firms with less resources when it comes to knowledge management. Furthermore, the study revealed that adaptation and tailoring OSH management tools to the specific project is important. Construction projects are too idiosyncratic for generic 'one size fits all' governance instruments to work, especially since tacit knowledge constitutes a major part of the knowledge communicated to subcontractors. Successful relational governance, therefore, depends on finding a way to communicate employees' tacit knowledge through the supply chain. Finally, the study reveals that a culture of OSH awareness has to be in place. This entails creating an environment where near-misses and small accidents are consistently reported by employees of both main- and subcontractors, without fearing retribution or reprimands. In other words, they need to trust each other, with trust being the foundation of relational governance (Bonatto, De Resende, et al., 2020; Poppo & Zenger, 2002).

We can thus conclude that in the construction sector, any relational governance practice influencing OSH needs to 1) be developed to fit the specific worksite and project, and 2) create opportunities for workers at all levels to participate, through knowledge sharing and idea generation, in the development of the safety practices on the site.

Four case studies in the construction sector

In the following sections, the empirical evidence obtained from the four case studies pertaining to the construction sector are presented. More details for each of the cases is presented in specific case reports⁷. The subsequent sections will highlight a number of key transversal 'types' of constellations of instruments and policies, in which different governance practices work together in order to achieve better safety outcomes on building sites. In the construction sector, most governance practices show a high level of hybridity – being in some way a mix of relational and contractual governance practices, heavily influenced by national and European legislation. A comprehensive synthesis is necessary and will allow us to understand how multiple relational and contractual forms of governance work together through a number of hybrid practices furthering safety.

Every section starts with an overview table, allowing the reader to orient themselves before starting the more detailed reading. These tables provide a brief description of the type of instrument and practice used, the country-cases it is found in, and the impacts it has on OSH outcomes and working conditions. Likewise, every section ends with a table that sums up the feasibility of the type of instrument, what parts of it are considered contractual or relational, and how the two blend together in the type of instrument described.

First, we describe an approach to OSH management where the leading role is taken up by the building client, facilitating multiple governance practices aimed at improving OSH. Safety culture plays a key role in the terminology used by all actors at the construction site, and we unwrap this concept to show how relational elements and contractual obligations work together in fostering specific notions of safety throughout large building sites. We then analyse how the assessment of subcontractor performance plays a significant role in large construction sites' OSH management, which is followed by a section on incentives and penalties relating to safety and health. Finally, two sections discuss training and communication as issues where different market leverage practices intersect in attempts to improve OSH outcomes on site. We finish with a conclusion that brings together insights from the different 'transversal' sections and distinguishes the contractual and relational governance practices. Like this we hope to inspire future policy aiming at the improvement of working conditions and OSH in the construction sector.

⁷ [Annex C](#).

4.2 Client-led OSH management

Table 7: Summary of Client-led OSH management

Market leverage	Description	Cases with examples	Working conditions and OSH impacts
Client-led OSH Management	Active and leading role by the construction client. Uses market leverage practices to drive OSH awareness and practices forward, and to build in-house construction management competences to manage OSH.	Denmark Belgium Estonia Accounts confirm practice in interview with Irish focal firm, however not on the selected project.	More comprehensive OSH management in place on construction sites compared to sole main contractor responsibility. Awareness on OSH from top-level management.

An interesting dynamic observed in several case studies, bringing together multiple leverage instruments, has resulted in what we have dubbed 'client-led OSH management'.

As we have shown previously (EU-OSHA, 2023b), significant power-distance exists in construction supply chains. Typically, the principal contractors outsource much of the actual work to subcontractors, who again hire subcontractors both to provide labour and specific skills and knowledge. This implies that the client is generally quite far away from any actual work being done on its building site (James et al., 2015b). Furthermore, even though the main contractors on large-scale construction projects are normally larger construction companies, the subcontractors are often SMEs, causing increased complexity and decreased transparency and quality of internal communication (James et al., 2015a).

Even though the client has some OSH responsibility in a legal and contractual sense, the client often outsources the actual OSH management to the main contractors. As indicated in a Danish survey from 2020 (Aldrich & Jespersen, 2020), the majority of Danish building clients did not engage in any concrete OSH-promoting activities beyond what was legally mandated and instead made do with various contractual clauses stipulating the main contractors' obligations. As a result, very few client companies took part in actual OSH practices 'on the ground'.

Contrasting with these usual practices, in three out of our four construction-cases, the building client is taking an active role. This may be a natural consequence of the constellation in the Estonian case, where the same organisation fulfils both the role of client and main contractor, but for the Belgian and the Danish companies this is not so. The following account, related after an accident happened on one of the sites, explains how the Danish client behaved before they decided to take the new active role, and illustrates how they now take a new and more cooperative stance.

"Before, we pointed to what wasn't working and went back home. Now we do a study together with the main- and subcontractor and learn together. We used to outsource it and ask them what you are going to do about it?" - OSH director in Danish Client firm.

Examples of 'client-led OSH management'

In the Danish case, this new client-led dynamic comprised a conscious strategic decision to manage safety better in future projects. The Danish focal company had experienced some rather high-profile mediatised cases of safety breaches and accidents in previous projects, and this experience pointed towards a new direction. The concrete strategy and instruments were developed with inspiration from the Danish oil and gas sector:

"We looked at what they were doing in oil/gas and that it was one-on-one with our processes. Why can they do something that we can't, and what is it they can do? When you find that the conditions under which we work are not

necessary, then you cannot go back. We can't be building something that we think is cool, but at the same time has some terrible personal costs. Oil/gas has been through the same process – we just copied it. They have different budgets and other parameters, e.g., if they do not have a security performance, then they do not get tasks. In the construction industry, it does not cost anything to have serious accidents at work.” - Safety manager in Danish Focal firm.

That the transition did occur is also corroborated by a safety manager from the main contractor, who has collaborated with the client firm before the current project, and therefore has been directly witnessing the changes that did take place:

“They were not really a set up for this, but after leaving and be away for a couple of years and coming back here, bang [client organisations name] had a vision they had a mandate, and they were going forward with this. Contractually speaking.” - Danish case, Main contractor, Safety manager.

The focal company developed their initial safety strategy in 2017 and started rolling it out in various active construction projects in 2018.

The Estonian focal firm uses a similar strategy, centring around a Zero Harm vision. The firm adopted OSH measures such as a user-friendly incident registration system, regular trainings for subcontractors and daily check-ups. In 2022, they added a new dimension to the safety initiative by focussing on organisational culture, leadership and prioritising preventive efforts. The core value for the company is a ‘safe, healthy and secure workplace’ which includes detailed goals, activities, and indicators for following up on OSH. In order to embed this policy in practice, the main contractor’s safety manager visits the construction site on a weekly basis and is available for work environment counselling to all subcontractors. The focal company asked an external construction OSH expert to do monthly audits. In addition, a senior on-site manager, who has received adequate safety training and developed relevant skills, performs an OSH conformity assessment once a month. Every year, an OSH audit is conducted by one of the company’s top managers who has also received previous OSH training. The focal firm manager states:

“Our main goal is to be visible in the site and cultivate good safety culture. We want to be available and make sure everyone is protected and a safe environment is created.” - Estonian case, Main contractor, Senior manager.

Similarly, in the Belgian case, the building client has a clear vision of how to approach safety and health related questions, investing considerable means in assuring this vision is shared by the main contracting consortium as well as the client’s own safety personnel. As in the Danish case, the approach to safety practiced in the petrochemical industry is referred to as an example throughout the interviews, certainly in interviews with management. Management of both the building client and the main contracting consortium largely agree on the approach taken to safety – being an open safety culture with a focus on collective improvement through positive incentives (more details are presented below in the ‘Carrot and Stick’ (incentives and penalties) theme).

“Eventually we have the same goal. We try to give each other some cover, because the things we see, bring to the surface, and try to solve together with the site managers, those are things that they didn’t see or maybe didn’t have the people for. So, you try to supplement that. We don’t want to do their work; I think we supplement and support them.” - Belgian case, Client.

Managerial commitment

According to our case studies, the client led OSH strategy hinges on the commitment and participation of top management in both the client organisation and the main contractor. Many sources mention commitment as the foundational aspect of a successful strategy. The oil and gas sector also provided inspiration for this crucial aspect in the Danish case:

“It has become a very well-integrated part because we have the support of the CEO. We had some high-profile meetings with people from the offshore industry which were very inspiring. They talk about safety in this way, that it

was part of a gifted and sensible business style to take the work environment seriously. Before, it wasn't high status to do work environment, we made it attractive and cool. " - Danish case, Client, Safety manager.

Besides being crucial in the beginning of the project, managerial commitment also is a key element in the enactment of the concrete instruments and practices applied on construction sites. This became evident in several cases. In the Danish case, top management organises several types of weekly meetings with the main contractor. The project directors of the two companies, for example, have three site-visits each week where OSH is the primary topic. That means that the two top-managers of the entire construction project walk a safety round, and flag safety issues such as missing PPE, guardrails or signs. The OSH-executive from the Danish focal firm explains why this is an important feature of their strategy:

"It's all about visibility and how many stars you have on your shoulders when you talk about this. It should fill up daily, but it should also be dosed correctly."
- Danish case, Client, OSH executive.

The managerial commitment plays a similar role in the Estonian case:

"We do it [safety efforts] through our top managers, who are well educated on OSH and can conduct safety rounds on-site whenever they are asked to. We provide long OSH trainings for them. It's our top priority." - Estonian case, Main contractor, Senior manager.

Local Construction Site Catalysts

Another leverage practice used as a part of the 'client-led OSH management' is the client organisations acting as catalysts for many processes on the projects. This is summed up in the following account from one of the OSH professionals from the Danish focal firm:

"We have a lot of interfaces when we need to coordinate OSH. We have chosen that the client tasks, in relation to coordinates, are placed with the contractors. Each of them has OSH coordinators in the execution and design phases. Now there is both contract 1 and contract 4 on site, there are ongoing transfers of areas between them, where OSH responsibilities follow." - Danish case, Client, OSH professional.

In the Belgian case, the building client has its own team of safety experts on every construction site in the project. These experts fulfil a supplementary and coordinating role, as it is the main contractor who has the responsibility for safeguarding OSH on the site. Through its safety department the client can monitor developments on all construction sites, coordinates efforts if they see trends emerging, and promotes its vision on safety throughout the various locations. This is part of the client's wish to maintain a relationship with the main contractor that is of a more cooperative nature than usually is the case with public works. This approach was chosen to avoid the tensions that usually underly a public construction project, where the main contractor tries to calculate in more costs than foreseen, while the client tries to limit going over budget, but still must get the work done without too many delays. This cooperative relationship is described by a manager from the main contractor in the following account:

"You must make things discussable up front, if you do not do that, you create the atmosphere of a public project. And there the contractor reasons in a different way. The lowest bidder gets the assignment. But then they can speculate on the demands. Like this you always create a game between contractor and client, where they are opposed. While now, things are discussable up front. We work together on this tender, execute it together, knowing each other's interests. I like it like this, you work in trust and with open books." - Belgian case, Main contractor, Safety Manager.

The concrete coordination of tasks within each phase (civil works, interior etc.) of the construction project falls to the main contractor within of the project. The client however is responsible for coordination between the main contractors of each of the project phases. This done to manage the increasing complexity and the safety risks resulting from a lack of coordination between the parties:

“There are some things they [the main contractors] can do much better than us, we don't build. We can facilitate and provide relationships between sub-entrepreneurs and entrepreneurs that make them think creatively and take care of each other.” - Danish case, Client, Safety manager.

This facilitating role can be seen in the way the active clients engage in the minutiae of OSH activities on the various building sites. Primarily, this happens through their own 'site-managers' who are a group of advisors employed by the Danish focal firm, but who have offices directly on the various building sites on the project, and not in the HQ as the rest of the Danish focal firm. Their role is to be “with the guys on the ground” as the overall site manager coordinator formulates it. Specifically, the function is described as follows:

“The worksite managers participate in the weekly OSH-meeting with representatives from the contractor and the subcontractor. Even at the [name of a particular structure] part, where the workforce is moving all the time.” - Danish case, client, Site manager.

By doing so, the focal firm maintains relationships with people fulfilling different functions on site, which again is necessary to be able to function as the constant catalyst and advisor to the main contractor and the subcontractors:

“The personal relation is extremely important. In the meetings on the sites there will be representatives, but inspections are made where the work is being conducted. The critical part of OSH is having the planning in place and making sure the execution is following planning. The planning is there because it's mitigating the risks. So, if you are not following the plan then you are not mitigating the risks for which it was designed.” - Danish case, Client, Site manager.

Furthermore, the contract between the main contractor and the client includes an appendix with a table of “common safety precautions”. The table should be filled out and maintained throughout the project's duration for every building site and is updated weekly by the site manager audits (from the client company) as well as from internal auditing conducted by the main contractor. The table is divided in three columns: Item (e.g., safety signs), tasks (establish/maintain and dismantle), and the name of the responsible person either for the main contractor or for subcontracting firms.

Finally, an interesting point about the role as catalysts is made by the safety manager in the Danish focal firm:

“My experience is that it is more difficult to form relationships and change the mindset around work environment with Danish contractors than with foreign ones. It is about the foreign contractors getting into a joint venture – for example, we work with a German and a French company that have nothing to do with each other. They come without a real culture – or two different cultures – and must make a new one. They are openminded that things must be different – they have to build something from scratch.” - Danish case, Client, Safety manager.

It is harder to enact the active client role when the main contractor has too many established structures, crystallising their own ways of doing things. This can lead to conflicts and inertia, rather than the ideal situation where the client organisation can design and implement the system from scratch together with the contractors.

Reservoir of knowledge

Finally, the internal knowledge base and capabilities in terms of OSH constitute a prime element of the new client role. In Denmark the client hired the staff necessary to obtain the in-house knowledge and competencies necessary to control and support their contractors. Thereby, they also changed their OSH staff from a skeletal staff that outsourced specialist jobs to external consultancy firms, to a fully-fledged OSH department with specialists in all major OSH areas. As an apt illustration of this development, the Danish client hired one of the consultants who previously worked for them through an external

engineering consultancy firm. The safety manager in the Danish company describes the reasons behind their strategy like this:

“We need to build knowledge in-house. We do not necessarily know the contractors before we start but we work with companies that are so large that they have built [large constructions] before.” - Danish case, Client, Safety manager.

The safety executive in the Danish client underlines that the knowledge strategy has to do with the fact that they only build large publicly funded construction projects. Therefore, the Danish client cannot freely choose the contractors they want to work with but has to comply with Danish and EU regulations on public tendering. It is thus necessary for the Danish client to have the knowledge and competences for controlling the OSH procedures in-house, as they cannot guarantee that the contractor will always have a good safety team on board.

From the expanded knowledge base follows another part of the new client role. The acquired in-house competences are used to participate in a lot of mundane OSH activities such as safety walks, accident analyses and safety promotion campaigns on the sites. In the Belgian construction case, the building client also has its own safety department with safety experts on the ground that monitor the situation on the building site on a daily basis. Moreover, the client has access to the data concerning safety and health of the main contracting consortium. To add to the activities of the team of safety experts with extensive expertise on the matter, the client can use the data to empirically assess the situation on the different construction sites it is operating and exchange insights with contractors. As the different sub-projects are not being executed completely simultaneously, but rather in an overlapping sequence, insights on safety – what works, what does not – from the earlier sites can be integrated into the later sites. This creates an ideal environment for the building client's safety team to build knowledge over a longer period – knowledge that can then be exchanged with the other actors on the construction sites. The site managers also spread knowledge and solutions that have emerged from local processes at the various construction sites to other sites in the process.

“It's very different, when I get involved, it's more at the project level. We try our hand at what works, what doesn't. If there is a place where there is poor space and a solution with a headlamp could help, then they will do it locally. Our site manager is skilled at sharing, so it will be passed around when they come up with a smart solution. There are a lot of initiatives that they come up with themselves where we have not been involved.” - Belgian case, Client, Site manager.

Reactions from main and subcontractors

As mentioned above, the Danish main contractor's safety manager noticed the change in attitudes from the Danish Client. However, from their perspective, the story is a little different in terms of who were the prime movers behind the actual changes in the safety approach on the project.

“There is a little bit in the contract, but it is very broad, so it is entirely up to the contractor what type of package they put together. So, we put a comprehensive system in place. More so than the [name of the other main contractor on another project for Danish focal firm]. They never had anything as comprehensive as what we did.” - Danish case, Main contractor, Safety Manager.

In this account, the reaction from the main contractor is that the Danish client had ideas and aspirations, but the practical implementation and system-design were the task of the main contractor. This, according to the main contractor, is because the Danish client has a top-heavy OSH organisation with too many academics, and not enough representatives in the “field” on the construction sites.

“The only part I disagree with them is that [client] only use academics. And academics and safety have great history of clash. Because what you read in a piece of paper is not a true reflection of the true work environment. And this has for me always been a big issue for me that they don't have their hands on. They got rid of most of the people who were hands on coordinators and went

with an academic approach. But from a work environmental perspective they have put some of on the site managers from [Danish focal firm]. Who have been managing the production kind of things, inspection, steel works....” - Danish case, Main contractor, Safety manager.

In other words, the safety manager from the main contractor believes that the active client role is focused on reports and paperwork, and not enough on concrete solutions to practical problems regarding safety and health on-site. However, in the end they deem them to be “a good client”:

“They are a very good client. They want to hear from our side and learn from this as well. So, they can be better as they progress. But yes, we had many long discussions about some of the techniques we need.” - Danish case, Main contractor, Safety manager.

The reactions to the active client role are mixed when it comes to the subcontractors. The representative from Subcontractor 1 – a Danish company specialising in indoor ventilation in large structures and involved as a subcontractor on previous projects run by the client, does not notice any substantial difference between the previous role of the client and the new one regarding OSH. However, the representative does acknowledge that the client is present on the weekly safety rounds, and that their site managers are also present in safety discussions between Subcontractor 1 and the main contractor. The manager of another subcontractor (Subcontractor 2), however, was quite impressed with the client's involvement in safety and health issues on-site.

“It is everywhere the safety orientation. You can't miss it. (...) Because it is present at all the sites. There [are] the toolboxes, regular notices from the supervisions, starting with the client. There is this whole web of preventing something ridiculous”. - Danish case, Subcontractor 2, Safety manager.

In Belgium something similar takes place. While the client's management tries to eliminate a hierarchical and negative atmosphere around safety, this succeeds only in part. The controlling role of safety experts is still experienced as too far from the reality of the building site, and too focused on respecting rules considered unpractical or unrealistic. As a manager from a subcontractor narrates:

“A lot of remarks, really a lot of remarks. But all those remarks, they are never ever a suggestion for improvement. ‘This is what I saw, that is not good’. According to you that's not good. Just start by saying ‘according to me that's not good’. For me it is good like that, if not I wouldn't have done it that way. [...] They have their rules, they put expectations very high.” - Belgian case, Subcontractor 1, Manager.

Feasibility of client-led OSH management

The most important contextual element relating to the Danish Client is undoubtedly their public/private ownership structure, and the fact that they are only responsible to politicians and the public in general. In this way they are, as the safety executive indicated, not strictly operating on market terms, as they have no direct competitors. The institutional environment of the company supports acts that can strengthen public legitimacy and compliance with rules and regulation. The institutional environment is self-evidently important for all large client companies in the construction industry, however due to increased visibility and scrutiny of publicly funded projects, the environment becomes especially important. In Belgium, the building client is also a publicly owned organisation, which is heavily scrutinised by the local and national public opinion. This greatly influences the importance of reputational factors and stresses the importance of maintaining the image of an organisation leading a socially and environmentally responsible building project.

Pressure on the main contractors is maintained through the client organisations, especially from politicians and board members, who again are acting upon normative pressures from their constituents and the media. But the pressures can also arise from private companies, from other stakeholders such as the local community, from trade unions, or from NGO's.

To deal with the normative pressures, the client organisations mimic what similar organisations have done in similar circumstances, for example in the oil and gas industry after some highly mediated

accidents in the 1970's. The client organisations decide to enact some form of an OSH professional liaison between themselves and the main contractors to ensure compliance with their system. By doing so, they put all their power as the client into this enforcement, which again forces the main-contractor and the subcontractors to comply, allowing the client a bigger jurisdiction in the concrete OSH activities. This differs substantially from the traditional client role, where the contractor would be reporting to them in predefined intervals.

The safety executive from the Danish case company describes how the new strategy is not assumed to become an economic asset for the company until the rest of the sector's client organisations follows suit. His/her argumentation rests upon the fact, that while the Danish case believe that the increased safety leads to more efficient and economic procedures, the rest of the sector is not following along, and therefore can still beat the Danish case on prices, as the price will be higher due to the increased costs of proper safety and health. That the active client role with expanded OSH requirements costs the client extra, is also confirmed in interviews with the main contractor and the subcontractors. However, as the client formulates the demands, in the end it becomes a sensible market decision to prioritise safety even if safety concerns generate extra costs or delay the project because of the contractual obligations and fines associated with them.

Even though the Irish case as such is not characterised by this type of client-relationship, the focal firm is familiar with the type of active client described in this section, especially when dealing with large-scale projects from multinational companies:

“If you've got a good safety performance level, you're going to win work with higher cultured, well-organised customers. So, we have a relationship with some blue-chip chains, mainly from the US, and we get repeat work from them always based on our performance, our efforts, our behaviours, our culture, our own safety. And we know it.” - Irish case, Client, Manager.

Furthermore, the Irish case shows that clients of this type increasingly create their own safety specialist functions, in order to create a liaison between client and main contractors. In this way, they can ensure that subcontractors' levels of preparedness and knowledge live up to the demands of the client. Thereby the active client-role is not solely found in public entities, but also in large private companies.

Table 8: Feasibility and elements of client-led OSH management

Feasibility	Governance
<p>Client-led OSH-management requires client-organisations with enough resources to maintain a full staff of technical experts in all aspects of building safety. Furthermore, there needs to be a certain level of public pressure from media or regulatory scrutiny, for client organisations to shoulder the costs that come with such an organisation. It is more likely that clients who regularly engage in large scale construction projects will have more success with this leverage practice, due to organisational learning.</p>	<p style="text-align: center;">Contractual</p> <p>Detailed OSH management systems are demanded in contract between clients and main contractors. All roles and responsibilities are described within contracts.</p> <p style="text-align: center;">Relational</p> <p>Actual roles and practices are relational in nature. They build on the active presence of the client on the construction sites and hinge on the relations between client organisations and main- and subcontractors on-site.</p>

4.3 Workplace notions of safety culture

Table 9: Summary of workplace notions of safety culture

Market leverage	Description	Cases with examples	Working conditions and OSH impacts
Safety culture	Extensive attention for creating a shared 'safety culture'. Uses governance practices to foster shared understandings and awareness of safety on various levels of the building site.	Denmark Belgium Estonia Ireland Differences between cases in top-down or bottom-up focus.	Positive impact on OSH across the building projects, if OSH policies and practices are successful in fostering a shared safety culture while recognising and valorising the multiplicity of safety cultures on a building site.

A central theme in many of the interviews across the construction sector cases is what we call 'safety culture'. It is a concept with many designated connotations, such as the general atmosphere around safety, how people think about safety, or the safety mindset or mentality. The 'Institute Pour Une Culture de Sécurité Industrielle (ICSI) defines safety culture as "a set of ways of doing and thinking that is widely shared by the employees of an organisation when it comes to controlling the most significant risks associated with its activities" (ICSI, 2017). As an alternative term, 'OSH Culture' is sometimes used. The European Agency for Safety and Health (EU-OSHA) defines organisational OSH culture as: "the totality of attitudes, (implicit) assumptions, beliefs, perceptions and habits of the members of an organisation that are relevant for OSH" (Zwetsloot & Steijger, 2022). Furthermore, according to EU-OSHA, it is primarily expressed "in policy, procedures, activities and behaviour, and is always an aspect of the organisational culture" (Zwetsloot & Steijger, 2022). There seems to be a broad consensus that a 'good' safety culture should include an active involvement of both workers and management, the recognition of worker's contributions to ideas on safety, the allocation of sufficient financial means to safety, an atmosphere of openness and trust, and good communication (Choudhry et al., 2007; ICSI, 2019).

We define safety culture as the result of complex interactions between organisations and their sub-units, mediated through organisations' formal and informal features, and influenced by the external environment (Le Coze, 2019; Silbey, 2009). This view on safety culture does not provide simple solutions, but nevertheless suggests some important aspects that should be integrated into a comprehensive approach to safety culture.

In much of the scientific literature, safety culture is considered as the foundation on which all other safety policies and practices are built. It has a defining influence on every effort an organisation makes to improve safety and should in return be one of the main focal points for every initiative to improve safety outcomes. When looking specifically at the construction sector, it makes little sense to look exclusively at the safety culture within a single organisation. In more complex projects such as the construction projects discussed here, different organisational cultures and sub-cultures co-exist, potentially resulting in conflicts and power struggles between them (van Marrewijk et al., 2008b). Thus, the construction project as the object of study is a process incorporating a large and ever changing number of separate organisations (ICSI, 2017, 2019).

In an attempt to fully grasp the complexity of the construction project, the present chapter aims to incorporate as many voices on safety culture as possible, from the building client's management to construction workers of the subcontractors. We show how safety culture brings together leverage instruments and practices of both a relational and contractual nature, and how they interact within the broader context of the building site. To this end, this chapter discusses the concrete instruments and practices found at the workplace level that manifest diverse types of safety culture and their potential effects on safety performance as well as other safety and health measures. The chapter concludes with a brief discussion of feasibility, proposing a few suggestions going beyond the concrete context of the cases at hand.

Concrete workplace-level instruments and practices

On the various levels of the organisations active on the building sites, the subject of safety culture – not always using that exact term – is posited by the actors as a central tenet of every successful safety and health policy. It is generally considered a kind of framework determining all other efforts for safety improvements on site, potentially rendering them useless or at least less effective, or galvanising their success. This is maybe where agreement across the different steps in the (sub-) contracting chain ends. Although consensus on the importance and omnipresence of something like a ‘good safety culture’ is widespread, people in various positions can have very different opinions about what it looks like in practice, where it comes from and what is working against it. Where these different perceptions of safety culture can be made to meet, intended effects of safety policies could end up more aligned with the experience by workers putting policies into daily practice on the construction site.

In the following paragraphs, we outline concrete practices and instruments concerning safety culture for distinct functions on the construction site, and for the different construction projects studied. This can enable the reader to grasp the diversity in perceptions present on the sites and will inform the subsequent discussion by offering a window into the lived experiences of the interlocutors addressed throughout the research. Where relevant, data from Belgium, Denmark, Estonia and Ireland are brought together. Later in this chapter, they will be juxtaposed to draw more general conclusions or highlight significant differences.

The building client

In large scale building projects, the building client is concerned about its public image and the public's perception of the project's ethical standards. When the building client is in some way connected to public authorities that can be held politically accountable for eventual errors or scandals, this will, a fortiori, be the case. Both the Belgian and the Danish cases show a significant role for the building client in stimulating a certain safety culture from ‘above’, by contractually obliging the main contractor and its subcontractors to conform to a certain set of standards. The two cases go even further, as the building clients set up their own network of safety personnel controlling the actors on site and stimulating a certain approach to safety and health. For Ireland, the main contractor perceived that the opportunity to work with ‘higher cultured’ and ‘well-organised’ clients is only available if their own level of safety culture is up to standard.

In the Belgian case, the building client has a clear vision of the safety culture the client wants to install in the different organisations present on site. Interestingly, when talking about safety culture, two sources of inspiration were repeatedly cited. People referred to the general safety approach as it exists in the Netherlands and the safety approach in the petrochemical sector. With these two as guiding examples, the building client tries to install in everyone present on site an open safety culture, where one can feel free to talk about near misses, where workers and safety personnel think together about what to improve and how, and where safety is for everyone a constant priority – from the top management to the workers on site. The building client tries to influence this in the Belgian construction case in a multiform manner. In training for their own safety personnel, the client aims to instil in them a care for a specific kind of safety culture promoting openness, horizontality, and collective responsibility for safety. The client also prioritised safety culture in their communication with the main contractor, and a shared agreement on this approach seemed to exist amongst safety experts of both organisations.

“We have just to make sure that the attitude is there. We sort of try to use these systems to create a certain culture, where people feel comfortable addressing each other. Where people are comfortable to communicate the things, they find important.” - Belgian case, Client, Safety expert.

In the Danish case, the client used the concept of OSH culture to describe their approach to OSH in general. As described in section 4.2, the Danish client company changed their role as a building client from a passive actor mainly supervising contractual obligations and leaving implementation and responsibility to the main contractor, to an approach where they took a much more active role in the OSH activities on their sites. This approach is described by one of the client's safety professionals:

"[Safety Vision] is a safety culture change – what kind of mindset do we want to raise? Partly as builders, and partly what we want our contractors to show."

- Danish case, Client, Safety professional.

The client company's version of safety culture revolves around two pillars: 1) mainstreaming OSH into all important processes on the various construction sites to make OSH concerns ubiquitous, and 2) by demonstrating top management's commitment and demanding top management commitment from their main contractor as well. The first pillar becomes visible by employing site managers having safety and health as a main responsibility alongside supervising the progress of the construction projects themselves. The second pillar is especially demonstrated in the weekly safety walks by the project managers from the client company and the main contractor. These safety walks make the commitment to the daily health and safety minutiae visible for workers and subcontractors alike.

The main contractor

In the Belgian and Danish cases, the main contractors seem to follow the building clients' – sometimes reluctantly – vision for the work to be done on safety culture. In the Estonian and Irish cases, the main contractors are the driving force behind the promotion of a specific kind of safety culture.

In the Belgian case, the main contractor also promotes a certain type of safety culture. The buildings for staff members displayed safety-related posters in noticeable places, as they were on the building site (accompanied by the necessary pictograms). The main contractor also participated actively in the national OSH day. Safety experts at the management level showed alignment in their vision and discourse with safety experts of the building client. Despite the consensus on the approach between higher management officials concerned with health and safety, the safety experts on the construction sites did not necessarily engage in the same approach to safety when doing their (often routine) job. Management of one of the companies included in the main contracting consortium stated:

"But you can win over the workers by asking questions! Yes, then they start to think with you. And if they start thinking with you, they automatically put a higher standard for themselves than they are used to. If you tell them they have to do something, they will resist it. But if you ask them how they would do it, within a given timeframe... Then you start thinking in a very different way. You get a very different experience for the workers, and they start correcting themselves. [...] There are just very different things that happen if you ask 'hey, how should I do this? Can you help me?'. But that is a very vulnerable question to ask, which is not yet common in our sector as a whole." - **Belgian case, Subcontractor 2, Manager.**

Safety managers made repeated efforts to promote a more open and constructive safety culture, but more hierarchical practices persisted on the ground, with safety personnel remaining socially distant from workers. While the main contractor considers itself as nurturing this progressive safety culture, they encountered problems when passing the message to their subcontractors, who are often more reluctant to accept the new practices, even though they recognise the authority of the main contractor to decide how to do things, and all the paperwork they were not used to do. This discrepancy remained a substantial challenge, which could not be fully tackled by the practices of both the client and the main contractor. Some interviewees also perceived more structural problems. In comparison to the Netherlands, some felt that in Belgium thinking about safety was still seen as an accessory to factors such as price and time. While lip service was being paid to safety concerns, price constituted by far the largest driver, resulting in more time pressures on site and a tendency to cut corners.

Some management respondents also put an emphasis on the low standards of education of workers, meaning that combined with a tight labour market, companies have difficulties in employing personnel that has sufficient safety skills. They consider workers as having a habit of not respecting rules if they are not enforced (due to a culture of manliness and negligence) and believed clear top-down discipline – including exemplary sanctions – towards them as necessary. According to these management respondents, this safety culture of workers, in combination with detailed work preparations, has the largest influence on safety. Price pressure is considered a less important factor for safety in this discourse. This showed that even at the management level, the envisioned safety culture promoted by the client did not always supplant earlier, more hierarchical notions about safety.

Management of one of the companies in the main contracting consortium expelled workers from the construction site for violation of safety regulation to set an example:

“If you don’t do that you’re lost. If you let a thing like that happen, and you don’t do that, things will just get out of control. [...] If you let it pass one time, then afterwards you can shout as loud as you want, it won’t work anymore.” - Belgian case, Subcontractor 1, Manager.

In the Danish case, the main contractors have clearly complied with the demand to have an all-encompassing focus on safety and health on the construction sites. When we visited the building site, the safety focus was everywhere. Posters in all common areas, screens near coffee machines, kitchens, and toilets with the newest statistics on accidents, near-misses last month and other safety and health related information. However, our interviews with the main contractor revealed a limited support to the focus on creating a common OSH culture.

“And this is the big challenge. And there is only one real answer: it must be discipline and it has to be punishment. And I am sorry, but when you put 50 different nationalities in the same arena, and you want to do it with the Danish approach where everyone is friends and so on... It doesn’t work. It needs to be discipline. And there needs to be some type of rewards but also on the other hand there needs to be some kind of punishment as well if you do not comply.” - Danish case, Main contractor, Overall safety manager.

An OSH manager from the main Danish contractor furthermore underlined that the safety focus requires constant attention. Especially the foremen for the various work teams can lose safety focus when it clashes with time management or deadlines. However, committed managers can make sure that safety is kept on the agenda through close monitoring. He mentions the daily toolbox meetings and the safety walks as some of the activities that helps to create the focus on safety.

In Estonia, the main contractor has taken total responsibility over OSH on their construction sites, providing safety training, regular safety walks, audits and supervision over the compliance with safety rules. Several activities are integrated in routine practice to monitor requirements and follow up on non-compliances as well as to ensure a safety culture that is considered ‘high’.

In contrast to the Danish case, the Estonian main contractor emphasises the creation of a ‘positive safety culture’ as a leverage practice that helps to ensure safety compliance as well as to reduce injuries, illnesses, and fatalities on construction worksites. The main contractor declares that they espouse a ‘Zero Harm’ vision with preventive measures (such as user-friendly incidents registration system, regular trainings of subcontractors, and daily check-ups) to ensure that no injuries were caused by their workplaces in previous years. However, in 2022, the company took the next step, putting greater focus on organisational culture, leadership and prioritising preventive efforts. They aim to create a philosophy around ‘what we can actively create for everyone, everywhere and every day’ instead of concentrating on ‘what we can avoid’. The core value for the company is a ‘safe, healthy and secure workplace’, which includes detailed goals, activities, and indicators for follow-up. In the context of the construction site, OSH indicators are an important part of the performance management system. During the interviews with the main contractors, the head of the construction stated:

“We know that a safety culture starts from and depends on top management. Then we have safety assurance, it is involving the whole management of the company. Every year the person in the position of manager or the head of the department, conducts safety audits. Every manager essentially must do at least 3 audit-inspections per year. Whether you are the CEO or the CFO (chief financial officer), it makes no difference. We have a manager’s checklist that should be used, and a manager has to visit the sites. During the audit-inspections, topics are controlled such as: whether the safety plan is in line with the construction plan, whether the risk assessment has been conducted and updated as appropriate and so on. If the top manager doesn’t know that much about safety yet, the safety audit can be completed together with the safety specialist. In addition, each top manager has to train his or her subordinates in the field of OSH. So, the managers have to have high

knowledge in safety, otherwise they wouldn't be able to carry it out. We have a dedicated training/learning programme for the regional managers. “ - Estonian case, Main contractor, Head of the construction.

In addition, the main contractor's representative claimed:

“Instruction and training are the most important part of creating a safety culture. We also have the help of training external partners/trainers. We have an annual group level awareness day. It is a day/ awareness day, where everywhere both in the office and in the field, work stops for a while and safety is talked about. There is a training programme, every year there is a focus on a specific topic.” - Estonian case, Main contractor, Representative.

The Irish focal firm is recognised for its safety culture in the industry. It has more strict rules and enforcement (e.g., mandatory PPE use) compared to other contractors, which is also elaborated in the 'Carrot and Stick' (incentives and penalties) section.

“There are less legal requirements in Europe in relation to simple things, [which] can be a big issue... whereas we will work with an Irish main contractor like (the focal firm), in Europe, they still produce that document even though it's not required, and we would still produce our site-specific safety statement. We can incorporate elements of health and safety as well, developed by (the focal firm).” - Irish case, Subcontractor 3, EHS manager.

That the focal company values safety is also clear in their criteria for subcontractor assessment. For example, in the Irish focal company, safety compliance weighs heavier than other indicators for the evaluation of subcontractors' overall performance.

“I would imagine the health and safety aspect of it is weigh that quite heavily as opposed to maybe something like problem resolution that you know, that might be weighted a bit further down because we would have our own our own staff does, that would be strong and problem resolution ... I don't know the breakdown.” - Irish case, Main contractor, Quantity Surveyor.

In all four cases, management of the main contractor has a rather top-down idea of how to promote a positive safety culture. Whether the building client or the main contractor is the driving force behind these efforts, the commitment to a constructive and open safety culture does not necessarily imply a departure from the classical management-centred view on safety. While the management level is seen as the locus where safety culture takes shape, workers are perceived as the subjects to which a policy is applied. This tendency is confirmed by several actors on the building sites and often causes tensions. The management emphasises the value of subcontractors' and workers' opinion. For example, in the Irish case, the main contractor provides an 'open door policy' for subcontractors to provide their opinions, and a QR code available for workers to participate in OSH improvement anonymously. However, apart from such bottom-up safety engagement initiatives, most formal OSH procedures (e.g., subcontractors submit their OSH paperwork to the main contractor for review) as contractual requirements are still imposed in a top-down manner.

Subcontractors

The subcontractors mainly have a following position when it comes to safety culture where they are expected to comply with the policies handed to them through the main contractor. As the subcontractors are selected (amongst other criteria) for their OSH track record, they also foster their own safety culture, and already have a set of practices and beliefs that correspond more or less with what is expected of them by the main contractors. Yet, we found tensions in some instances, mainly due to slightly different conceptions of safety and hierarchical relations that result in unsatisfactory communication.

In the Belgian case, the subcontractors' management considered their safety culture as an essential part of their identity – as a proper way of doing things. Even for time pressure from their clients, they expressed the importance of holding ground and maintain safety as a priority. However, many subcontractors were not accustomed to the particular safety approach taken by the client and the main contractor. While the building client tries to foster a novel safety culture on site, certain contractors

interpreted requests from safety experts or certain contractual safety requirements in a more hostile way. These tensions are exacerbated by the large turnover of personnel and the variety of contractors on site.

We found less tensions in the Danish case where the subcontractors tend to accept the client's approach to safety culture. Both the managers from the metal company and the ventilation company mentioned that safety is rather ubiquitous and that it cannot be escaped on the construction sites. The example is safety on the agenda at toolbox meetings and safety walks, emphasising the priority for the workers.

The subcontractors in the Estonian case found that audits play an important role for developing and maintaining 'good' safety culture on the construction site, as it gives immediate feedback on safe behaviour and habits. According to subcontractors, the main contractor differs from other clients by setting higher safety standards than the OSH law and paying more attention to OSH. The main contractor carefully plans deadlines and work organisation on the construction site in close cooperation with the subcontractors to remedy possible challenges and problems. Subcontractors reported several advantages of working for the main contractor in comparison with other clients such as timely payment, well organised work on the site, high safety standards with clear guidelines and safety training, followed by the strict control and, if needed, punishment. A representative from one subcontractor said that regular monitoring and auditing are important for a constructive safety culture in the construction site:

"I think that checking on us in the construction site makes us pay more attention to safety." - Estonian case, Subcontractor 4, Owner.

Another subcontractor claimed that the main contractor stands out from other similar companies in the Estonian construction market because of the Scandinavian background, which, in the subcontractor's view, reflects a high safety culture compared to other contractors:

"For them (e.g., for the main contractor), I believe, the money they make is less important than the low accident rate in the construction sites." - Estonian case, Subcontractor 4, Owner.

In Ireland, the focal company screens the subcontractors to ensure that they are collaborating with subcontractors that have a similar safety culture and respect for safety rules. Usually, the bigger subcontractors with a recognised safety management system in place have a good understanding of safety and thus have less barriers to comply with the specific safety rules.

"You get that sense from them during the supply chain questionnaires and the tender process and if they are upfront, and surely [we'll have] all the information, you know that's (the job) generally assigned to the [subcontractors with a] positive culture." - Irish case, Main contractor, OSH professional.

Furthermore, as the safety practices are already packaged into the tasks assigned to subcontractors, it is easier for the bigger companies with established OSH related human resource management to maintain a high level of safety (e.g., complete a large volume of OSH paperwork required by the focal company). If the cost suddenly goes up due to uncontrollable factors, it would be difficult for small subcontractors to maintain profits and OSH standards at the same time.

Construction workers

The workers themselves and their embodied safety culture have the strongest impact on health and safety outcomes. Workers on the same site are employed by different organisations, come from various socio-cultural backgrounds, and have very different past experiences in the construction sector. The site is, therefore, a meeting point where various safety cultures co-exist. While management of the building client and main contractor try to steer this safety culture 'top-down', workers develop different notions of safety 'from the bottom up', shaped by years of practical experience and encounters with colleagues and employers on building projects all over Europe. Research shows that workers have their own resources and types of knowledge on safety and are well positioned to identify concrete risky situations and criticise dangerous technologies or approaches (Silbey, 2009). It is often difficult for workers to voice this critique in hierarchical situations, just as it can be easy for superiors to discard these inputs as unvaluable or misguided. This dynamic can be amplified in contexts where workers for an example come from cultures with higher power distance. To the idea of management actively promoting and supporting safety culture, we must add the mirror image seen from down below, where workers strive

to work according to their perceptions of the risks in their job. For them, a constant negotiation takes place between controlling risks as they see fit, and meeting the requirements imposed top-down – be it time pressure or detailed safety protocols.

In the Belgian case, multiple construction workers and their foremen stressed the importance of their perception of safety culture. They tended to see it as something they cultivated and safeguarded within their company through years of work experience. Workers described the culture on an individual and a team level as a permanent state of vigilance, of being aware of your surroundings, and of a constant questioning of routine and behaviour.

A certain logic of antagonism between workers and management or safety personnel seems persistent, as the workers kept feeling their expertise and experience not respected by safety experts, whom they often considered not to be particularly helpful in improving safety in practice site. An example is expressed by a worker:

“An ‘almost-accident’ is almost never reported. If you do report the safety people will blow it out of proportion and use it to try and change the way we work.” - Belgian case, Subcontractor 2, Worker.

Multiple respondents used the Netherlands as a point of reference, affirming that there, safety policies and controls are stricter and safety culture more developed. In Belgium, safety policies are focused on procedures and formal requirements that are often lengthy and strenuous, without engendering real improvements for workers. They also criticised management for not sufficiently securing essential conditions for a safe and healthy environment, such as a clean and orderly building site, decent sanitation infrastructure, and running water in winter.

We did not find the same level of tensions in the other three construction cases, but with some difference in the reflections from the workers. In the Danish case, the workers' representative did not experience any tensions and the safety representative from the main contractor expressed satisfaction with the high focus on safety on the construction sites.

In the Estonian case, the worker's representatives confirmed that they are systematically involved in OSH activities, e.g., Awareness Day and OSH training. The main contractor provides training with emphasis on workers' opinions and suggestions as expressed by a worker:

“We are so well trained here, that we continue to follow the same safety practice also in other construction sites.” - Estonian case, Subcontractor 1, Worker.

The workers' representative added that at first, he was not used to pay so much attention to safety and, for example, to wear a helmet properly, but afterwards he adapted and is now used to all safety requirements on-site.

In the Irish case, a buddy system is used to create a cooperative safety culture. As most workers feel safer when working with their co-workers on site, the focal company has introduced a 'buddy system', which requires that at least two workers should be working together, instead of working on site alone.

Researcher: “So actually, you think your colleagues are also very important for your own safety as well?”

Interviewee: “Yeah, it's very important. That's [why] they have like a ‘buddy system’, so they know no one was allowed to work on their own. [It] always had to be two men working together. Just like makes job easier. Like you feel safer, when you have two men doing it. If you put one man at job, and he's on his own, you put pressure on him, he'll be rushing, he gets to finish, he may not think about safety, he may break the rules, like [not using] PPE. But if that's two men, and the work is split half between fifty and fifty [percent], between themselves, so kind of takes the pressure off.”

Irish case, Subcontractor 1, Operative worker.

A new worker is usually accompanied by an experienced worker to ensure the training received, reaches the level of competence required before commencing any task. Hence, a junior worker and an

experienced worker in one 'buddy system' can complement each other and create a safety climate by working together. Specifically, the new worker can learn techniques from the senior worker, and the senior worker may be more alert to the workplace safety hazards when sharing experiences with the junior counterpart.

Migrant workers and safety culture

The employment of migrant workers is widespread in the European construction sector. Combined with the often-short-term work relationships and the project-based sectoral logic, this naturally comes with challenges when working towards a shared safety culture, shared notions of safety, and efficient communication on safety issues. For example, in the Estonian case, one of the subcontractors stated that they try to set a good example for their own subcontractors (especially towards their own, native Estonian workers), but admits that it takes time to develop a shared safety culture with the project's migrant workers:

"I don't always know how my migrant workers are thinking while doing their regular routines. They come from Ukraine, from Tadjhikistan etc – and their working culture, as well as safety culture, develops over time." - Estonian case, Subcontractor 4, Owner.

Also, in the Belgian case, many of the same questions arise regarding migrant workers. A particular challenge that was raised in the interviews, is related to education and the recognition of safety certificates and education obtained abroad:

"The sector federation is going to check the quality of education, but this is only the education in Belgium. If someone comes and tells me: 'I just had eight hours of safety education in Bulgaria', who am I to decide if this is sufficient for us or not?" - Belgian case, Client, Safety expert.

Language barriers hamper the main contractor's communication with subcontractors. This 'semantic barrier to communication' includes not only language, but also reflects cultural differences, use of jargon or specific (e.g., technical) terminology that prevent effective communication. For example, in the Irish case, English is not the first language of subcontractors' workers. In the Estonian case, the main contractor introduced a pocket-size safety booklet with pictures and pictograms (language-free) provided to all workers. More generally, the main subcontractor took responsibility for OSH training and organised training in several languages. For example, in the Estonian case, the main contractor conducted OSH training for subcontractors' workers in the Estonian, Russian and English languages. In the Belgian case, the client uses pictures of accidents to illustrate what went wrong and what can be done better. Such tools illustrate safety regulations with pictograms explained in simple language, which can be translated by foremen who speak both the main language and the language of his team members. This system of communication works when teams working together, all speak a common language, and the contractors therefore take to select subcontractors where all team members speak the same language. The Irish case experiences similar problems:

"...the language, people coming from different countries...Chinese and Romanians, too, and we have a big site of Vietnam. [...] Working practices would be a lot different in their countries, that's the only issue we have to look at regard health and safety and going forwards, focus on non-nationals. Given they work from different countries, their standard of safety may be far below Ireland, so make sure they work safely, and language barrier could be another thing we look at again." - Irish case, Subcontractor, OSH professional.

Feasibility of safety culture efforts

The construction site constitutes a setting for the understanding of safety and development of a safety culture. In comparison to interactions between organisations in supply chains such as agri-food, the interactions at the same physical site are unique for construction. This creates a complex situation, where a multiplicity of safety cultures and sub-cultures interact and co-constitute one another. It is within this context that an ambitious building client or main contractor has to create a certain form of commonality, which inevitably from above valorises some cultural forms while disqualifying others.

In both the Belgian and the Danish case, the building clients are public authorities, and the building projects are highly mediatised. From the early negotiations of the projects' conception, they have been scrutinised by the general public, making the building clients worried about their public image. One consequence has been a high priority of OSH to avoid public outrage following accidents or health issues of workers.

Even though the concept of safety culture primarily suggests the importance of relational aspects, our cases show that contractual governance mechanisms are critical too. In accordance with what van Marrewijk et al. (2008) observe, the Belgian and Danish cases show unique contractual arrangements to be an important factor in fostering a common project (safety) culture between the client and the main contractors as well as subcontractors. The power balances and governance structures in the contract are key to avoiding conflicting dynamics. In the Belgian case, the use of a specific contract type established a balanced system to solve unforeseen cost increases, thus structurally aligning the practical and financial interests of the (public) building client and the main contractor, creating a more fertile environment for development of a shared safety culture.

This chapter highlights the general importance of all construction actors present on the building site assign to the shared safety culture. We have identified several good practices ranging from management engagement and educational efforts to novel contractual frameworks.

Table 10: Feasibility and elements for safety culture

Feasibility	Governance
<p>Actors on different levels of the building site should have structural ways of aligning their practical and economic interests.</p> <p>Reduced antagonism between client, main contractor, subcontractors and workers creates a fertile environment for a shared safety culture.</p>	<p style="text-align: center;">Contractual</p> <p>Clear and detailed rules and agreements on OSH, which are contractually enforceable, policed regularly and agreed before the start of the project.</p> <p>Contracts stipulating a balanced division of financial/time pressures between the different actors on a building site.</p> <p style="text-align: center;">Relational</p> <p>Key elements are relational: creating an open atmosphere where talk on OSH – both on good practices and mistakes – becomes possible on all levels of the building site.</p> <p>Knowledge sharing both top-down (education, awareness raising) and bottom-up (worker involvement, valorisation of their expertise and concerns).</p>

However, our findings also illustrate the substantial differences that exist as to how it is interpreted and practiced. Often, actors consider safety culture largely through their own lens, thus obscuring or minimising the other perceptions of safety culture that exists on the complex building projects at the centre of this research. These findings point towards possibilities for improvement.

From a safety perspective, it might be interesting to valorise other, more subaltern cultures/ways of looking at safety and health, thus not only giving certain groups a feeling of being heard and included, but also providing new cultural resources and novel practices to be adopted by safety experts. Allowing practices and insights from 'from the bottom up' is conducive to attaining a richer safety culture. This could be done through novel ways of relational governance (e.g., involving workers more in the detection of problems and fostering communication between the different levels). Leverage from contractual elements would probably be necessary for this to work. This could be part of the way to promote – from high management to the construction workers themselves – more open and horizontal approaches to safety and health that ensure involvement of construction workers.

Another important finding is that stakeholders suggest that more performant labour inspectorates could better enforce safety regulation, thus significantly influencing approaches to safety across and thereby change the safety culture shared within the sector.

4.4 Subcontractor assessment – you can't manage what you don't measure

Performance management systems that tie measures of organisational performance outcomes to incentives and rewards are a foundational component of management. For instance, Kaplan and Norton's various articles on the Balanced Scorecard (R. Kaplan & Norton, 1992) in the Harvard Business Review have been cited well over 100,000 times, and the balanced scorecard approach has been promoted by everyone from consultants to the Corporate Finance Institute⁸ and the American Society for Quality⁹. At their simplest, the Balanced Scorecard (and other similar performance management systems) are premised on the notion that “what you measure is what you get. Senior executives understand that their organisation's measurement system strongly affects the behaviour of managers and employees.” (R. Kaplan & Norton, 1992)

Box 1: The Balanced Scorecard

The balanced scorecard approach to performance measurement is built on four propositions (for further reading see also R. S. Kaplan & Norton, 1996, 2001).

1. First, measures that are linked to outcomes, will drive behaviours. If you judge managers' performance only on reducing costs, they will find ways to reduce costs, even if in so doing they harm other outcomes such as quality that matter to clients and customers. Hence, the notion that what you measure (in this example cost reductions) is what you get.
2. Top management traditionally relies on a narrow range of financial metrics such as profits, return on assets, or share price to judge organisational performance. But financials tend to be a poor predictor of the future and are not linked to outcomes customers care about. For instance, a construction firm could cut costs by using substandard materials and hiring workers with questionable skills. Initially, this might increase profits, but over time the poor quality would lead to rework, reputational harm, and perhaps buildings collapsing. Hence, organizations need to have a more 'balanced' approach that considers operational metrics and outcomes customers, and other stakeholders care about.
3. Related to the above, no one metric can capture the full extent of how an organisation is performing. Managers need a range of measures. But;
4. Measurement systems have to be relatively simple and contain a relatively small number of key performance indicators (KPIs).

The end result is to use a relatively small number of KPIs that capture a range of outcomes that matter both to the firm and its stakeholders. And critically for our context, by capturing operational outcomes and being aware of what matters to customers, a balanced scorecard (or any other similar measurement system) links what matters to top management to the everyday actions of frontline employees. In other words, the system used to measure performance on site for an individual construction project needs to tie what happens on the project site to outcomes that matter to the firm and other stakeholders.

The KPIs that matter for the human resource function, differ from the KPIs for managing a construction project. Hence, balanced scorecards have been developed for all sorts of specific contexts, including measuring subcontractor performance on construction sites. For example, Ng and Skitmore (2014) have developed a balanced scorecard with 10 key criteria that main contractors can use to track their sub-contractors' performance on a construction project: workmanship, progress, safety, environment, relationship, resource control, attitude toward claims, communication, promptness of payments, and general obligations. These KPIs are of course not the only options. But the point is that construction projects are often measured by focusing mainly on time and on budget. The balanced scorecard approach captures a wider array of outcomes that matter to the client and other stakeholders including workers and regulators.

The centrality of 'what you measure is what you get' to managerial thinking and research means that the Balanced Scorecard itself has been applied to the supply chain (see for instance Hult et al., 2008) and that more broadly supplier selection and assessment are central areas of supply chain thinking (e.g.

⁸ Corporate Finance Institute, 2023. <https://corporatefinanceinstitute.com/resources/management/balanced-scorecard/> accessed March 3, 2023.

⁹ American Society for Quality, 2023. <https://asq.org/quality-resources/balanced-scorecard> accessed March 3, 2023.

Kannan & Tan, 2002; Keller et al., 2021b). In the lexicon of this study, the performance management systems used for supplier selection and assessment form a key governance instrument used by buying firms to guide supplier behaviours and performance. However, for what you measure in a performance management system used for supplier selection and assessment to be what you get, managers need to be aware of three critical issues.

The first issue concerns the way measurement results are successfully translated into improved safety behaviour. The assumption is that the KPIs the system captures, are linked to incentives (and disincentives). In other words, measuring accidents, near misses, and hazard assessments will only improve OSH outcomes if these measures are used to guide behaviour.

In principle, this linkage is simple and easy to grasp. In practice it gets complicated by the second issue, humans' cognitive processing capabilities. Managers typically take a "more is better" approach to KPIs; thinking that if what you measure is what you get, keeping track of more things (having more KPIs) should improve performance across a wider range of performance outcomes. However, information processing limitations mean that humans can only track a limited number of KPIs at one time; more leads to information overload rather than improved performance (Nara et al., 2019). For instance, in the Irish construction case, the focal firm's measurement system is complex and no one is entirely sure, which metrics are emphasised or most important, making it unclear what must get done.

Equally, having more KPIs increase the likelihood that some of the KPIs will work at cross purposes to each other. For instance, the safety literature has long noted that organisations tend to trade off working safely for being productive or efficient (Zohar, 2000). For example, Pagell et al., (2014) found that when organisations separated measures for the productivity of the operations and the safety of the operational workers, they tended to emphasise production rather than safety. However, organisations who created composite measures were able to balance the two goals. For instance, an organisation with separate KPIs for units produced and number of near misses and injuries would likely end up with managers focussing on productivity rather than safety. However, if the KPI covered a single measure of the number of units produced without an injury then managers would not put workers at risk to speed up production.

The third issue is that performance management systems almost always create unintended consequences (Franco-Santos & Otley, 2018). For instance, rewards or recognition schemes, like KPIs, may inadvertently discourage workers from reporting incidents and even discourage implementing safety practices for the purpose of improving productivity (Al-Aubaidy et al., 2022).

Supply chain relationships further complicate the problems of what to emphasise and unintended consequences, since one of the central tensions in managing a supply chain is that every (for profit) member wants to maximise their profits, but doing so comes at a cost to others. In other words, a subcontractor's primary concern (and hence key KPI) is getting a project completed to be paid, while the main contractor prioritises working to specifications and safely above working fast. Hence, it is common for government construction contracts to be awarded based on the lowest bid price, yet there is plenty of evidence that low bids lead to more frequent and larger change orders (e.g. Jahren & Ashe, 1990; Love et al., 2017). Contractors and subcontractors 'game' the system by bidding very low to get the job with the assumptions / hope they will be able recoup their margin with frequent and large change orders.

In summary, what you measure is what you get, but selecting (in essence the initial assessment) and then assessing the performance of suppliers is far more complex in supply chain practice than it appears. Equally, while what you measure is what you get is seemingly objective, the reality is that assessing a supplier's / subcontractor's performance is often subjective. One of the most common assessment methods is past experience, where all the focal construction firms tend to rely on contractors who they have worked with before. This links to one of the most common governance instruments: the promise of future work for performing well on current work. We thus see both elements of relational governance through rather informal appraisals of firm performance and reputation and contractual governance – through contractually established KPIs and monitoring mechanisms.

Table 11: Types of subcontractor assessments

Market leverage	Description	Cases with examples	Working conditions and OSH impact
Subcontractor assessment	Measures, indicators and data that clients and main contractors use to assess OSH performance of their subcontractors.	All cases	OSH becomes a measurable item to be included in due diligence and evaluations before and after the contract respectively.
Assessment before signing the contract			
Assessment on new subcontractors	The focal firm examine a wide range of data (e.g., certifications, financial due diligence and insurances), mainly from third parties, to assess potential subcontractors.	Ireland Estonia Denmark	Subcontractors with insufficient capacity to ensure workers' health and safety could be ruled out in the first place.
Assessment on previously used subcontractors	The focal firm examine subcontractors' previous performance to decide whether to use them again.	All cases	Subcontractors with desirable performance have the chance to collaborate with the focal firm in the future, which encourages the OSH performance.
Assessment during the project			
Individual level assessment	The focal firm examine the behaviour of subcontractors' individual workers, in relation to safety compliance.	Ireland Estonia	Subcontractors' workers' safety-related behaviours will be encouraged.
Company level assessment	The focal firm examine subcontractors' performance such as cost, quality, on time delivery and OSH performance.	All cases	The evaluation on OSH can encourage subcontractors' safety priority, on condition that the operations KPIs are not conflicted with OSH KPIs.

Concrete workplace-level instruments and practices

New subcontractors

The selection of subcontractors / suppliers is a key supply chain activity across all industries. This is even more so in project-based industries like construction since all projects come to an end. Hence, the contractual relationship between the focal firms and their subcontractors also ends with the project. It is very common in construction (and in our data) for the main contractors (the focal firms in the data) to collaborate with the same subcontractors over and over again. However, the reality of projects ending is that some relationships will end or be put on pause either by choice or because one of the partners has other opportunities. The focal firms in construction and other project-based industries are selecting suppliers more frequently than their counterparts in agri-food who do not work in a project setting.

When selecting new subcontractors (who they had never contracted with previously), there is a heavy reliance on among others third parties via certifications, financial due diligence, and insurances. For instance, the Irish focal firm examined a wide range of data, mainly from third parties, to assess potential

subcontractors. They started with a Dun and Bradstreet¹⁰ report that assesses the potential subcontractor's financial health and riskiness. A Dun and Bradstreet report (or similar from other providers) is typically viewed as a business risk reduction tool that lets a buying firm determine if a potential subcontractor is stable and dependable, or if they will increase the focal firm's risk due to the potential subcontractor's current and previous business practices. For instance, a subcontractor with cashflow problems may not be able to pay their own employees or suppliers, which could put an entire construction project at risk of being stopped if the employees stop working or materials are not delivered. The same would be true of a potential supplier with a record of not paying their bills. Similarly, such a history would increase the risk of the subcontractor cutting corners to get paid faster or not finishing a job. In addition to using such reports, it is common to request accounting documents from potential subcontractors.

“And they will check them out, they will do due diligence on them mainly around the financial point of view, so they will do, you will get a Dun & Bradstreet report on (them). If any of the value of the subcontract document or the subcontracts are [questionable], our finance team needs to check out the subcontractor, so they would, you know request their current set of accounts that the finance team would review on top of doing it on Dun & Bradstreet report, and if that's all that, that all checks out, then they will engage with the subcontractor....” - Irish case, Main contractor, Procurement manager.

Box 2: Quality and safety certification in the Irish case

Assessing a potential subcontractor's financial health and riskiness is relatively easy because services like Dun and Bradstreet exist. Assessing the same subcontractor's ability to deliver projects to standard, be that quality standards or safety standards, is harder to assess. Hence, the focal firm in Ireland relies on a number of third-party certifications as indicators of competence:

- **ISO 45001:** a widely shared third party OSH standard for a safety management system which replaced OHSAS 18001.
- **ISO 9001:** the most common third-party certification that is mainly concerned with the existence of a quality management system.
- **Safe-T-cert:** a safety management system accreditation scheme based on the International Labour Office Guidelines on Occupational Safety and Health Management Systems, recognised in Ireland by the Government Construction Contracts Committee.

In addition, potential subcontractors are asked if they have any trade or professional certifications. For example, construction companies can be registered with the Construction Industry Register Ireland¹¹. CIRI is a government supported certification run in conjunction with the Irish construction industry that uses third party audits to certify a company as competent and capable to deliver projects in multiple aspects including OSH. CIRI members must renew their registration annually.

“As we can get into, what we're bringing in different assurance standards into the into the supply chain, so like yeah, we do ask them about like the (ISO9001:)200812 and as we asked about order QA systems if they have them. You know, we asked them responsible sourcing creations BES 600113 you know any kind of NSAI or British standard certification that they might have to list out, you know, so we do ask them various standards and accreditation questions, but I don't believe that we make decisions based on whether they have them or to extend them, we should, that's going to change.”
- Irish case, Main contractor, Procurement manager.

¹⁰ Dun and Bradstreet: <https://www.dnb.com/>

¹¹ CIRI, 2023 <https://cif.ie/service/construction-industry-register-ireland-ciri/> accessed March 3, 2023.

¹² SO 9001:2008(en) [Quality management systems — Requirements](#)

¹³ [BES 6001 Responsible Sourcing of Construction Products](#)

The subcontractors in the Irish case recognise the need for certifications:

“They want proof of this, they want to see comprehensive health and safety systems in place. You know. All companies nowadays generally would have the ISO standard for quality, environmental and health and safety as a minimum... we have to have them, or we won't get on to the tender list... then you have, you'll be accredited by ISO9001, the latest...Health and Safety. We have all the accreditations for all those standards, then we are audited annually, we renew independently.” - Irish case, Subcontractor 3, EHS manager.

A consequence of the extensive requirements for new contractors is that some, in particular, small subcontractors get excluded:

“Like we have to keep that level of health and safety as high as we possibly can, it's just, so you can make it sometimes difficult for our smaller subcontractors to come in and be expected to comply with so much, that they themselves wouldn't have or they might be working for other smaller contractors that don't require them to do so, so it's necessary but sometimes it can turn people off maybe work from [our company], but that's fine you know, we just, we do to sort of work with people that will comply with what we asked him to do, because it's for good reason.” - Irish main contractor, Procurement manager.

The focal firms in the other cases rely less on third party certifications but have an equally broad range of attributes that they use to assess potential subcontractors. For instance, the Estonian focal firm applies a software solution that is linked to an internal database that can track subcontractors' performance on multiple criteria over the course of a project. While this system is more useful for deciding when / if to use a previously used subcontractor again, it is also used for screening potential new contractors. The Estonian focal firm gives preference to subcontractors based on:

- Price and quality;
- A proven track record of working positively together;
- Procurement communication practices;
- Workflow in construction site, quality of construction work;
- Meeting deadlines;
- Communication both during the project and after the work is completed but the client has not signed off (e.g., a guarantee period); and
- Workplace health and safety (e.g., number of occupational accidents, monitoring of incidents).

Each KPI has a clear set of criteria for assessment so that the best possible subcontractor can be selected. Price and the quality of construction work are the main criteria, followed by previous positive experience working together which among others includes communication, OSH, and meeting deadlines.

Both the Irish and Estonian cases use software solutions (typically third party) to pre-qualify potential material suppliers and subcontractors. This is a wider trend in supply chain management. Software solutions can range from adaptations to existing Enterprise Resource Planning systems (e.g., SAP, ORACLE) to specialised software from providers such as SourceDogg¹⁴ or Achilles¹⁵. These specialised solutions in some way mirror the development of standards such as the ISO standards. For example, the ISO 9000 quality standard arose partially because prior to an agreed common quality standard, each buying firm needed to develop their own quality certification and a supplier who had numerous customers would need to be certified by each of them. This practice wasted a great deal of supplier time because the various buying firm's certifications tended to be highly similar but not identical. With a common third-party standard, the suppliers only need to be certified once, and buyers do not need to develop or enforce their own standards. Today, the proliferation of overlapping sustainability standards and individual buying firm codes of conduct cause problems for both buyers and suppliers. Software solutions try to address this issue by allowing suppliers to enter sustainability data (including information

¹⁴ SourceDogg, 2023. <https://www.sourcedogg.com> accessed March 5, 2023.

¹⁵ Achilles, 2023. <https://www.achilles.com> accessed March 5, 2023.

on OSH management and outcomes) once into the system and then have it available to multiple potential buyers. For instance, during the data collection the Irish focal firm implemented the Achilles system.

“We're going to have the six different levels of accreditation by Achilles and we're gonna have to map our supply chain each level, depending on the kind of risk profile or the value of their kind of works and you know, once Achilles have accredited them to certain levels, they do audits, they do desktop audits, and they do on site audits. You know that will satisfy us, we're not going to you know re-credit people just to meet the purpose and Achilles do that work for us, and so that's going to be that's going to be key, you know really big, big step for us.” - Irish case, Main contractor, Procurement manager.

These software solutions allow the buying firms to track more performance data from their own projects, capture data from third parties and other certifications, and to pre-qualify potential new subcontractors and material suppliers. Such software solutions have not been implemented in the Belgian and Danish cases.

Tendering

Contractor selection in construction projects is further complicated in publicly financed projects depending on an extensive tendering process. For instance, the Danish focal firm only engages in large-scale public projects and always has to tender their projects and select contractors based on a predefined set of rules and regulations, among others from the EU¹⁶. They award the contract to the bid that is most economically advantageous for the client, assessed on a number of sub-criteria (next to price) including technology, strength of solutions, management, and organisation (with OSH and quality as the main parts).

Box 3: Information requirements in the tendering criteria - The Danish case

The OSH criteria in the tender for the project used in the Danish case required potential subcontractors to supply information on:

- Lost-Time-Injury-Frequency (LTI's in one million hours) and in instances when the tenderer had high LTIF, a description of the causes.
- Detailed descriptions of the OSH management system and OSH system design (in spite of having a valid certification or not).
- A plan for the management of OSH in common areas and in areas where subcontractors work.
- Previous or current initiatives specific for OSH.
- Risks assessment and abatement plan for all potential major risks in the project.

The subcontractors are hired by the main contractor. The Danish client (i.e., the focal firm in this case) has a contractual right to assess all subcontractors that the main contractor wants to hire and to exclude subcontractors that do not meet their standards. In essence they are pre-approving subcontractors, and OSH is one of the parameters for the evaluation of potential subcontractors. All potential subcontractors must provide information on working conditions, collective bargaining practices and OSH-information such as LTIs, and whether they have been fined or had another verdict against them by the Danish work environment authorities. The contract manager from the Danish focal firm noted the following ways that OSH has been the reason to reject subcontractors in the past.

“If we have previous experience with a subcontractor that had a very sub-standard approach to OSH, then we would reject them. There has been one or two where we had said “no, we don't approve with this company, because we have had such bad experience with them OSH wise. They had so many

¹⁶ See European Union directive 2014/24.

accidents or a bad management approach.” - Danish case, Client, Contract manager.

Furthermore, the contract manager from the Danish client explained that they in some cases caution the contractor when data looks questionable but are not sufficient to reject a potential subcontractor:

“If they send us a new company that we have not worked with before, and they send us their OSH-data, that’s looks a bit questionable, we will say that we don’t have any experience with them, so we will approve them, but the contractor should be aware.” - Danish case, Client, Contract manager.

Formal measures – mostly based on past performance

The assessment of subcontractors relies on a wealth of formal and objective information (although the final assessment often rests on informal relations – see next section). These formal, typically software-based, systems capture the information noted above for new subcontractors as well as additional information on how a potential subcontractor performed on previous projects. In essence, the main contractor’s assessment of subcontractors’ previous performance informs the selection of subcontractors for subsequent projects.

Managers responsible for procurement or tendering place a lot of emphasis on the formal systems. For example, the procurement manager at the Irish contractor noted that the selection of subcontractors for a new project gives priority to their existing ‘preferred’ subcontractors, even when using data from the formal system.

“So they’ll have a tender list and they’d have, you know, their financial risk score that given by [our company], you know historic performance score examined in the system and they’ll have the insurance accreditation piece done and dusted, so it’d be a huge kind of piece of work done and covered for people that (who) would be procuring packages and yeah, I mentioned the performance scoring system, so the database is going to become our new performance scoring tool as well, so that’ll be all within there and communication, obviously, is key for us with our supply chain, and you know even expression of interest like if a supplier or subcontractor wants to work with [our company].” - Irish case, Main contractor, Procurement manager.

In case of multiple qualified subcontractors, the formal system allows the focal company to rank them. The Irish subcontractors were aware of their ranking and areas where they might need to improve to move up the rankings and increase their likelihood of getting future work.

Interviewee: “So the incentive is once you get the job done it during the time, you’ll be sure to toss up in high regard for the next job.”

Researcher: “So they have a rank of the subcontractors, and then you can move a little bit upper in their rank?”

Interviewee: “It’s absolutely, yes.”

Irish case, Subcontractor 3, Contract manager.

As most of our cases, the requirements - including OSH requirements - are made clear to the subcontractors before they sign the contract. These expectations will then, for instance in the Estonian case, be communicated to all workers through safety training and training materials in Estonian and other languages if needed.

On the surface, the system appears objective and formalised. But these performance management systems, like many, suffer from an overload of KPIs and uncertainty as to what exactly made one a good, preferred, or favourite supplier. In other words, the suppliers knew what was formally tracked, but they struggled to be sure how the various KPIs were weighted or prioritised when determining who got future work.

“OSH is just one element of in the supply chain. I mean their (subcontractors’) ability, their capacity, their approach to quality, their approach to safety, their approach to lead times it’s, it’s scored as an aggregate score as opposed to

an OSH score, so in the OSH space, we have a series of 10 areas that we score them on. And then, ironically, those same 10 areas are slightly changed to assess than regularly.” - Irish case, Main contractor, OSH professional.

Similarly, the construction manager in the Estonian case admits that their evaluation criteria are not very transparent and detailed. The assessed components may not have the same weighting and sometimes not all of the components are part of the assessment and selection process.

“As a rule, it turns out like this: we have the coordination of the results of the procurement. We have a clear procedure about who has to give the coordination. There are people on my team who have to give the coordination and they know how the cooperation with the selected subcontractor was in the past, including safety compliance. That is considered. Maybe, they don't look at the decision making based on the evaluation criterion, but on their knowledge and experience - is the contractor good and reliable or not. For those companies who we have no previous experience with, then the assessment criteria have to be followed.” - Estonian case, Main contractor, Construction manager.

The Belgian case may best summarise how the case firms combined their formal performance management systems with their informal relational assessments to select subcontractors. The Belgium contractors keep two lists. The first is a so-called 'blacklist' of subcontractors known to have poor past performance on safety or other criteria. The second one is an 'exceptionally good list' (what the Irish firm calls preferred or favourite subcontractors) of subcontractors who have performed well previously and are recommended for future work. While price is the primary criterion for subcontractor selection, both lists are consulted before a contractor is engaged; with a very strong preference for subcontractors on the exceptionally good list and a general avoidance of those on the blacklist. However, it must be noted that the so-called blacklist may not be a viable solution in public procurement.

Subcontractors used previously – a significant relational element

All the focal firms have detailed information on how they would assess a potential new subcontractor prior to working with them for the first time. However, in reality the focal firms use many of the same subcontractors for multiple projects over many years. In all four cases, all of the interviewed subcontractors had worked for the main contractors previously. Equally, in spite of all the formal and objective assessment methodologies, such as the software solutions that the Estonian and Irish firms have invested in, the key criteria seems to be relational and subjective. The main relational criteria relates to the trust developed from successfully completing previous projects together. For instance, the construction manager in the Estonian focal firm answered a question on what they rate on health and safety as follows:

“There are a few questions. There will be more this year when we have developed the system. Essentially, we monitor how subcontractors are doing and complying with safety requirements on an ongoing basis. Recording accidents and near-misses and comments - we constantly analyse these. There we see what safety level the subcontractor has. Often, when we start the first time with a new subcontractor, we see that the safety level is lower than our expectation and requirements. It can take a long time, before people understand what we expect of them or where we want to get to. That's why we prefer subcontractors who we have used previously.” - Estonian case, Main contractor, Construction manager.

Informal assessments

In addition to the formal measures this section presents assessments of an informal or relational nature. As companies often collaborate with the same subcontractors, there is an implicit assumption that these subcontractors do meet the formal prequalification expectations, though with little evidence.

The Belgian case is interesting, as one would expect a formal and highly 'objective' selection process for partners and subcontractors, given the large scale and complexity of the project. However, many of the arrangements were actually made through relational practices. The main contractor uses its

established business network and extensive in-house expertise to find the right contractors more easily for tasks requiring specific skills. They also indicated that due to the scale of the project, options are limited and the pool of capable contractors small.

Moreover, due to the scale and complexity, the project is being delivered by a main contracting consortium rather than just a single main contractor. This consortium consists of different kinds of firms, including some large construction groups. The new legal entity created especially for the construction project, can thereby access a vast network of specialised companies, subsidiaries, and usual subcontractors. Often, the main contractor chooses to directly engage with an associated contractor, thus rendering the formal tender procedure of secondary importance. This practice has clear benefits, besides commercial ones, as the workers from different contractors are already used to collaborating with each other, and the protocols, policies and rules have some uniformity.

Management of the Belgian consortium mentioned the specialised nature and large capacity of each of the consortium partners. The main contractor's freedom for selection of subcontractors is limited, as only very few subcontractors would be able to fulfil specialisation and scale requirements. The consortium partners, therefore, prefer collaborating with their well-known subcontractors. In the rare cases of selecting new subcontractors, informal consultations with trusted colleagues about the reputation of the unknown company play a significant role.

Depending on trusted colleagues and conducting informal searches were the norm in the cases. The focal construction firms are all very large and do numerous projects. One of the ways of finding 'good' subcontractors for a new project is to ask other project or site managers in the company who they would recommend. This was also a common practice at the Irish focal firm.

"We would promote from within, and if they're doing good practice, we probably shared with our other jobs as well and saying, 'here's the subcontractor, they're doing it such a way, they're using certain type of technology, that's really working well.' And we would promote them that way."
- Irish case, Main contractor, regional director.

The subcontractors who get selected over and over again, tend to perform well across a variety of criteria, one of which is OSH. The focal firms in all of the cases require a minimal level of OSH performance, as evidenced in the tendering requirements for subcontractors in Denmark, as well as the more informal assessments in Ireland and Estonia.

"We have our favourites, we have like, I have people that I use all the time, and someone else has people to use all the time, so you're trying to get them into the power position, as we'd say to give them the job, because they're the ones in order to perform best ...when I say perform best, they will you know that are good on quality, you know that are good health and safety, you know that they know what you expect and vice versa, so you don't have to go through all the learning curve again, you don't have to, you know you have a good subcontractor, a good replication." - Irish case, Main contractor, regional director.

As outlined above, the formal performance management systems in practice play a minor role. Being recommended to other projects in the company or being a 'favourite' based on not so formalised criteria, and future work forms the major reward for good subcontractor performance.

Assessment during the project

Anyone who has walked on a construction site, knows that working to the schedule – typically indicated by a centrally displayed GANTT chart – is of critical importance. Delays from one subcontractor can have cascading effects, and large projects rarely end on time (Assaf & Al-Hejji, 2006). Delays increase project costs due to changes in orders, inflation and other problems. Equally, it would be the rarest of construction sites in Europe where a visitor was not greeted at the entrance by a large sign on basic OSH rules and expectations.

However, relative to the agri-food cases, it is much harder in the construction project setting to keep track of whether suppliers are delivering on time and to the expected quality. But the nature of

construction projects does offer some advantages for a main contractor monitoring their subcontractors' OSH behaviours, as they can observe this behaviour in real time on the site. The ability to interact with the subcontractors' managers and workers in real time allows for a more detailed assessment of subcontractor performance while the project is being conducted, than observed in the agri-food cases.

Individual level

The primary job of a site manager for the focal main contractors is to ensure that a project is done to the standard – be that an 'on time' or a safety standard. They spend a great deal of their time making sure the work itself meets the schedule and the appropriate quality. And because they have visibility into their subcontractors' behaviour on site, they can easily observe if the work is being done safely. Again, this is a unique and leverageable element to construction projects that is very different from agri-food.

The main contractors evaluate the behaviour of subcontractors' individual workers on site in real time, using a combination of formal and informal assessments. All of the main contractors examined in the case studies, use a combination of contractually mandated meetings (such as daily whiteboard meetings, toolbox talks), and site walks along with regular observation to evaluate what is happening on site. The expected behaviour, especially safety behaviour based on codes, hazard assessments, and other rules, can be formal and contractually clear, but assessing if the behaviour is up to the standard, is typically much more subjective and informal. The behaviour being assessed, can be for a subcontractor's entire crew or just a single individual who is doing something notably good or bad.

When it comes to assessing the safety behaviours of the subcontractors' workers, the focal main contractors engage in similar but not identical measures. For instance, in the Irish case, when a subcontractor's worker violates the safety rules, the worker and the subcontractor receive a warning with a yellow notice or a red card, depending on the severity of the violation. If a worker's behaviour contributes to a positive safety climate on site, a green card is issued. The main contractor converts the number of notices to scores that are added (green cards) or deducted (yellow and red cards) from the subcontractor's OSH performance score (also see green cards in the carrots and sticks section that follows).

Similarly, in the Estonian case, a subcontractor's managers reported that they saw the focal company's representatives on the site every day, observing how the work was being conducted and monitoring safety requirements. Both the workers and managers are informed in a case of non-compliance.

"If focal company's representatives see non-compliances, they talk to you and make remarks and warnings and then penalties could be applied. We never received them, but I think it is also common here." - Estonian case, Subcontractor 3, Owner.

It was also confirmed by workers that the focal company conducts regular check-ups:

"Of course, you can try to ignore safety rules and, sometimes, not to put on personal protective equipment for a moment, but this will be noticed by the focal company and punishment will be implemented immediately." - Estonian case, Subcontractor 3, worker.

In the Danish case, there is no systematic assessment of the subcontractors' individual workers. However, all managers from both the main contractor and the client can issue a yellow or a red card to any employee they observe transgressing OSH rules and regulations, but this is not systematically registered. A similar practice was found in the Belgian case, where any safety responsible is allowed to comment on any individual workers' behaviour, in light of the open safety culture the client tries to create.

Assessment at subcontractor / company level

The focal firms assess the subcontractors during the project based on tracking cost, quality, on time delivery and OSH performance relative to the project plan and contractual obligations. The Irish focal firm uses a particularly extensive quantitative approach to assess if a subcontractor has fulfilled their KPIs according to a set of standards. Subcontractors with low scores are warned of the risk of losing either the current work or the possibility of future work. Once a subcontractor has collaborated with the focal company, a detailed performance record is stored in the database, which can be referenced in future procurement processes.

Box 4: Evaluation of subcontractors' OSH performance – The Irish case

The Irish focal firm uses a set of Likert scale (0-10 each) items to evaluate a subcontractor's OSH performance. Risk assessments and method statements (RAMS) and Records: A subcontractor will be given a high score (9-10) if RAMS have been produced to a high standard and records of inspections are kept up to date. A high standard of compliance should be achieved throughout the entire month. In addition, the records of inspections conducted should be a true reflection of the standard of equipment/workplace. Finally, the contractor's safety advisor should have visited the site, produced a report, and given feedback to the site team, within the period. Interestingly, the focal firm takes the speed of task completion into account when evaluating subcontractor's OSH performance. Key areas that are addressed include:

- **Take Time:** There are two parts in this measure, completion and quality. Completion simply indicates what percentage of the task has been done. For example, 90% completion equates to a score of 9, while 20% equates to a score of 2. Quality here means that the subcontractors proactively filled out the Take Time forms.
- **Attendance at health and safety meetings and whiteboard meetings:** If a subcontractor attends all supervisors' and daily whiteboard meetings and communicates the key points to the rest of their workforce, a high score can be given.
- **Personal Protective Equipment (PPE) use and site rules:** A high score is given if the subcontractor ensures PPE is well maintained, PPE is correctly used, training for correct use is available, and all RAMS (Risk Assessment Method Statement) have been kept up to date throughout the month.
- **Working at height:** A high score is given if good planning, full compliance and detailed records are in place for all working at height equipment.
- **Condition of work area:** If a high standard of site tidiness has been maintained throughout the month (including storage of plant, equipment and materials as well as trailing leads), the subcontractor will gain a high score.
- **Toolbox talks:** If toolbox talks are conducted relevant to the current site conditions at least once a week, and operatives can demonstrate a good understanding when questioned, the subcontractor can be scored high.
- **Control of permits:** a subcontractor with full understanding and compliance in the use of permits to work will be scored highly.
- **Green, yellow and red cards** (Green Card = +3. Yellow Card = -3. Red Card = -5).

In the Irish case, the system is exhaustive, but as the literature predicts, more indicators need not be better. All Irish respondents agreed on the key attributes that were assessed. But there is limited clarity on the relative weight given to each attribute, the weights can change, and what to do with the data is open to interpretation.

“There is a higher weighting given to health and safety score. So, if their score impacts? on health and safety, it'll do more for your overall score, and so we made that change, you know, three years ago to put a higher weighting on health and safety, whereas before that it was on equal weighting across the 11 criteria.” - Irish case, Main contractor, Procurement manager.

“Every two months we have subcontractor rating, the rating like so there's a matrix of maybe 15 different headings on safety, quality, environmental, program, resources, you know across them all and we mark them all across and if they start to fall into the red, so again it's a like a traffic light, we have red will be the poor performer, we have orange and green, and we might, when we see that, then we might go to the orange person and say look you're in danger of going into the red.” - Irish case, Main contractor, Regional director.

None of the other cases had a similar extensive system. In the Belgian case, an app is used by the main contractor to store all information on accidents, near misses and safety remarks and to create a

permanent record of safety performance on site. This information is identifiable to at least the subcontractors and sometimes the individual workers themselves. Subcontractors or individuals with recurring problems can be easily identified, which allows for correction of problems. These data are gathered by the main contractor and can be used for related purposes, such as risk assessments. Although much of this information is shared with the building client, this does not seem to be the case for the subcontractors. More specific KPIs on safety are deemed unproductive, believed to make the collection of data more difficult and hamper the development of an open and communicative atmosphere about safety and health. The focal firm emphasises an adequate analysis of safety incidents to identify root causes and prevent similar events from occurring in the future. The main contractor conducts the analysis and the outcomes are accessible for the building client to present a rough idea about the site safety performance.

The Danish case has a number of lagging KPIs in their OSH management system (i.e., indicators that measures OSH-outcomes such as accidents or work-related health problems). The subcontractors and the main contractor deliver these data every month to the focal firm, who evaluates the KPIs according to OSH performance indicated in the contract. The monthly data covers, besides the OSH data already mentioned, among other data on financial status, progress of the construction, design status, quality assessment, and environmental status.

In addition, the focal firms across the cases also monitor leading KPIs such as workers' attendance at training and introductory courses, top managers' attendance – both main and subcontractors – in safety meeting, safety walks, site inspections, and the results from inspections by the authorities.

In the Estonian case, the focal company has a near-misses registration system called BIA. Covering up incidents is not allowed on site and every incident must be reported to the focal company through the BIA system. The system also tracks the record of PPE compliance, maintenance of walkways and evacuation routes, and maintenance of working equipment and tools. It is an application with multiple checklists, which can be operated on mobile phone by the main contractor on a daily or weekly basis as part of their risk assessments or other OSH activities.

The way notification is forwarded depends on the event, usually either by phone or email (together with photos and explanatory notes), but sometimes orally. If the focal company's manager notices something, he or she notifies the subcontractor about the incident immediately, and they develop solutions together. A construction manager stated:

“Construction site teams must find and identify at least 60 near misses (non-compliances) per quarter that can be addressed and managed. Generally, there are more than 60 near misses identified. Such a systematic activity that it becomes an everyday part of the pitch.” - Estonian case, Main contractor, Construction manager.

Comparing across cases, we can observe some variance in the relative importance of safety within and across the cases. Both the Danish and Estonian cases perceived safety as being of equal importance to price, quality and on time delivery in subcontractor assessment and selection. The data from Belgium and Ireland show more ambiguity, in line with what the literature would predict. In settings with significant price and time pressure and complicated measurement systems, safety can end up as a sidecar (Hasle et al., 2021). For instance, while most of the Irish respondents expressed consistency on the relative weight of safety (non-negotiable/expected), the respondents expressed interesting variance – even from the focal contractor – as to the 'expected' level required for safety:

“If there's a poor, like a poor health and safety score. That's going to be dealt with on the project straight away, anyway, you know, so it's kind of, we're so strict on health and safety, there's no room for poor performance in that space.” - Irish case, Main contractor, Procurement manager.

To say this differently, even the subcontractor's employees had observed that the Irish focal firm places a high emphasis on safety when doing the work:

“They are very big on safety. All their work has been executed a safe way. Because as long as being a [main contractor] supervisors are around, if they're asking you to do something for them, they'll always be supervising, or

watching, making sure you are ok, you're safe." - Irish case, Subcontractor 1, Operative.

Yet, the priority placed on safety slipped in certain situations. For instance, many interviewees mentioned that when construction materials (e.g., concrete) arrived late to the site, OSH could suffer as they try to keep on schedule. For example, Irish Subcontractor 1 is responsible for formwork. They build the formwork, which provides a temporary structure to support freshly poured concrete, allowing it to cure until it can fully support itself. The focal company provides the materials and Subcontractor 1 is responsible for the actual work:

"The only thing is, as you know, the more pressure put on people to work, to get work done quicker, the more accidents. You can see that in our industry. Like, that's the only, the same everywhere, more pressure putting on people to work faster, safety kind of always drops. Yeah, it's same for [our company] as well like, we, we pour concrete every day, like the walls, the columns... it may not be able to get the concrete all day... [If the concrete can] come early, or you might be waiting for the crane. The crane didn't come over to you. There's always the reason why [we work in] last minute. You are under the pressure to get the work done." - Irish case, Subcontractor 1, OSH professional.

Similarly, in the Belgian case, some interviewees took the position that even if safety considerations are important for subcontractor selection and assessment; price - and thus time – is by far the most important factor in selection. Equally – and like the Irish case – some of the workers indicated that when time pressures mount, they feel forced to cut more corners and operate in less safe ways. Workers also noted that having to perform many of their tasks 100% according to the safety protocols, would take too much time. Thus, they feel obliged to make compromises on safety for the sake of cost/time considerations. One person compared the selection criteria for contractors to a cake and indicated that safety only constitutes a very small slice, with the biggest slices being price and quality. In other words, health and safety is prioritised if no extra cost is incurred to the main contractor.

Feasibility of subcontractor assessment

Safety as an order qualifier in the selection and assessment of suppliers could be a strong market leverage instrument. For this to work effectively, however, two preconditions need to be in place.

First, the importance of safety needs to be clearly articulated in the selection and assessment process. To be able to do so, firms must have the capacity to measure, track and compare safety performance in an accurate way and to do before, during and after a building project. This will involve more contractual elements, such as the clear stipulation of safety goals and KPIs, and the clear statement of selection criteria.

Second, the priority to work safely must not conflict with other priorities. When awarding contracts, the priority is traditionally price and the capacity to perform a certain task within a limited time. The data show that the focal firms struggle to get this right, especially when it comes to having a manageable number of KPIs and not letting safety come in conflict with other priorities when bidding or doing work under pressure.

Operations and supply chain management thinking has long highlighted the difference between order qualifiers and order winners (Hill, 2000). An order qualifier is an attribute a potential supplier must have to be considered to supply a good or a service; all qualified providers will need to have this attribute. An order winner is why a buyer chooses one supplier over another.

When put into the context of the focal main contractors' assessment of subcontractors; this means that safety is an order qualifier. Firms with poor safety records are typically not considered, but a very good safety record is not enough to 'win' a tender. Most of what is assessed formally, forms a part of being qualified to be a subcontractor. The focal firms then pick a qualified subcontractor based on mainly the informal assessment of a good, favourite or preferred subcontractor and of course a low price.

In general, the idea of safety as an order qualifier or must have, seems like the right path for ensuring all subcontractors work safely. In other words, a clear expectation for the minimal acceptable level of safety requires all potential subcontractors in a given market to have the safety management systems

and apply them correctly in order to be even considered. Safety as an order qualifier in selection and assessment could then be a strong market leverage instrument. But as noted above, the leverage only works if safety's role is clear and if the priority to work safety does not come in conflict with other priorities either when awarding contracts or managing the project.

Also, here we note the combination of relational and contractual elements (hybrid governance), when looking at the governance of safety and health through the lens of subcontractor evaluation and assessment. Consolidating safety as an order qualifier in the selection of contractors requires different ways of assessing safety performance. Formal assessments can occur both before and during the contract and can lead to formal inclusion or exclusion for future contracts, or a range of corrections within one contractual relation. The relational side of things is equally crucial, as the evaluation and selection are partly informal and based on the communication of reputation between companies.

As a result of Covid-19, the war in Ukraine and increasing inflation, there have been numerous supply chain disruptions, making it difficult for contractors or subcontractors to predict prices or get sufficient materials on time. In general, this puts the key metrics of price and delivery under significant pressure. Subcontractors whose work packages are at the later stages of the overall project (especially projects initially bid in 2020 or 2021) are under even greater pressure. Hence, while large construction projects often face significant cost and time pressures, the macro global context is making this worse, which could make it harder to maintain safety as a priority in assessment and selection.

Table 12: Feasibility and elements of supplier assessment

Feasibility	Governance
<p>Safety as an order qualifier in selection and assessment could be a strong market leverage instrument, if safety's role is clear and if the priority to work safely does not come in conflict with other priorities, either when awarding contracts or managing the project.</p>	<p style="text-align: center;">Contractual</p> <p>The subcontractors are usually formally assessed by the focal firm before signing the contract, as well as during the project delivery.</p> <p style="text-align: center;">Relational</p> <p>The evaluation on subcontractors who have previously collaborated with the focal firm tend to be informal, where relational trust plays an important role</p>

4.5 Carrots and Sticks – hybrid governance provide both incentives and penalties for compliance

Hybrid governance simultaneously combines elements of relational and contractual governance (Poppo & Zenger, 2002). Firms opt for hybrid governance because using purely contractual governance carries the risk of increased costs and opportunistic behaviour, whereas using purely relational governance carries a high delivery risk (Poppo & Zenger, 2002). Hence, the two forms of governance often co-exist (e.g. Carson et al., 2006b; Um & Oh, 2020) and sometimes contracts have informal clauses while relational means can also be codified (e.g. Keller et al., 2021b).

Table 13: Summary of carrots and sticks (incentives and penalties)

Market leverage	Description	Cases with examples	Working conditions and OSH impacts
Incentives and penalties	How the various focal firms use incentives and penalties to institute and enforce OSH-policies.	Denmark Belgium Estonia Ireland	Makes OSH concerns matter financially for subcontractors.

This section details one type of hybrid governance observed in some of the construction cases; the combination of 'carrots and sticks' (incentives and penalties, see table 13) to govern or guide the

behaviour of subcontractors and their workers. We observed a combination of contractually required minimum behaviours (the sticks) with relational rewards (the carrots). The following describes the basics of why and how hybrid governance is used in general and specifically in construction, and then details the observed behaviours. The hybrid governance practices can be roughly divided into three categories: 1) red, yellow and green cards, 2) supplier awards, and 3) supply chain finance. These governance mechanisms can target both company and individual level behaviours.

Why hybrid governance is used

Almost all managers, regardless of the projects they work on, want to avoid using contractual governance in the construction sector. When asked about the use of formal contracts to govern behaviour, managers typically indicate that:

“We work by those terms coming without even having to refer to it, so you very rarely have to take contract out of a of a drawer and then take a look at it and refer back to it.” - Irish case, Main contractor, Procurement manager.

This does not make the contract valueless. In the context of governance of interfirm collaborations, contracts can both be seen as project planning tools as well as external enforcement devices (Ryall & Sampson, 2009). Hence, while the contract specifies what each party in the relationship will deliver, ensuring that this does indeed happen, is best done using relational means. Frequent reference to the contract inevitably leads to arguing over the meaning of each clause, which increases cost and decreases trust. Equally, no matter how good the lawyers, some of the contractual clauses will still be vague enough to allow for opportunistic or undesired behaviours that fall within the contractual boundaries. Using relational governance assures that work is done to expectations and helps solve problems on a day-to-day basis. However, both parties know the contract exists if the relational means are not working. Equally, not having a contract and relying only on relational governance is generally not tenable and certainly not feasible in large construction projects.

While all managers prefer not to rely only on contractual governance, construction raises some additional issues that make hybrid forms of governance for some behaviours even more attractive. Placing blame for why a construction project is behind schedule, not meeting quality targets, or over budget is very difficult. Not only is the context hard to control (e.g., the weather), but multiple subcontractors work simultaneously on site and how and when each do their work will impact all of the other subcontractors' ability to do their own work. This makes apportioning blame when things go wrong, extremely tricky, and certainly more difficult than in the agri-food cases. To use one of the examples of late delivery of concrete by a third-party supplier in the Irish case from the assessment section: whose fault is it when the concrete formwork contractor fails to meet a quality target if they were rushing to finish their task on time because of this late delivery? Similarly, respondents in the cases described examples of incidents where blame (and therefore contractual responsibility) would be especially difficult to apportion. For example, an employee of one subcontractor dropped an object from height, partially because of problems with scaffolding (equipment supplied by a different subcontractor), and then this object landed in a space not identified as a risk on a third subcontractor's risk assessment. Apportioning blame for an employee of the third contractor being injured here would be fraught, while arguing over whose fault, would make it harder to prevent the same incident from occurring again. Using just 'sticks' in construction is difficult because placing blame for many forms of non-compliance on a construction site is much trickier than in agriculture or manufacturing.

Equally, many of the carrots (e.g., future business) are difficult if not impossible to formalise in a project-based sector with a great deal of cyclical. It is typical for manufacturing firms to promise suppliers that if they meet certain targets for their current work, they get rewards on future work. For instance, a supplier who reduces greenhouse gas emissions today might be promised an increase in future orders. But to make contractual promises of this nature to subcontractors in construction, where the next project is always uncertain, would be incredibly risky and is not done.

As shown in Table 14, we observed a combination of relationally governed “carrots” that are informally specified used together with contractually governed “sticks” that are more formally specified.

Table 14: Carrots and sticks

Market leverage	Description	Cases with examples	Working conditions and OSH impacts
Red, yellow and green cards	The focal firm has a scheme to incentivise / punish the behaviour of subcontractors' individual workers in relation to safety compliance.	Ireland Denmark	Subcontractors' workers' safety compliance will be incentivised (e.g., voucher), and safety non-compliance will be penalised by temporary work suspension.
Subcontractor award	The focal firm awards subcontractors at company level through recognition events (e.g., annual Supply Chain Award).	Ireland Belgium Denmark	Some awards are specifically on OSH performance, which encourage subcontractors to continue maintaining their safety standard. However, only a very few subcontractors can be awarded.
Future business	The focal firm incentivises subcontractors at company level by providing future business opportunities.	All cases	If subcontractors want to continue collaborating with the focal firm for future business, they usually have to meet the expectations including the safety standards during the current project.
Supply chain finance	The focal firm incentivises subcontractor companies by prompt payments (e.g., release part of the retention earlier than the contractually agreed date).	Ireland	Supply chain finance is a practical way to incentivise, especially for smaller subcontractors to survive by a stable cashflow. However, the approach was only found in Irish case to date.
Penalties	Focal firm has means to punish their subcontractors to govern the relationship, such as fines and contract termination.	All cases	Subcontractors need to comply with safety-related rules to avoid potential fines, or even the risk of losing the contract.

Formal subcontractor awards

This section describes the formal awards for subcontractors with desirable performance at the organisational level. The cases show a strong emphasis on positive incentives for identifying safety risks and the root causes of incidents. In the Belgian case, management encourages the safety experts (either from client or main contractor) to make positive remarks when they notice good safety practices during their rounds. Teams or companies that are performing well on safety, can get symbolic rewards, or a public recognition from the client's, or the main contractor's safety team. The idea is to hand out rewards in a collective fashion, as the aim is not to individualise the responsibility for safety, but rather to make safety a collective effort that is the responsibility of the whole team.

In the Danish case, the contract annex requires both the main contractor and subcontractors to develop "tools for promoting common ownership for the project and a positive safety culture". To fulfil it both subcontractors and main contractors select a so-called "safety-champion of the month" – one or more employees who have done something extraordinarily for safety or health on the site. They will get various prizes (e.g., a t-shirt or a case of beer after work for the work crew). While contractually mandated, an assessment of what constitutes extraordinary behaviour is by its nature, informal.

Similarly, the Irish main contractor also has recognition awards (non-material) every one or two months on the site, to encourage subcontractors to continue desirable behaviour.

“Collectively, with all the sites about every two months we do a town hall meeting, where we bring everybody...We speak to the guys probably want them to improve what, why we do, what we do in terms of safety, or quality whatever and we kind of highlight what we needed to do better, and then we compliment on what's been done right, first of all, and then we also did is to give a few prizes, a few vouchers for good performances, or whatever as well just for a bit of, a bit of positivity as well.” - Irish case, Main contractor, Senior contractor manager.

Additionally, the Irish main contractor recognises excellence among its supply chain partners via its annual ‘Supply Chain Awards’. Winners of the Supply Chain awards are publicly announced, including for the category of ‘Health, Safety & Wellbeing’ in 2017.

“...once a year, then we have a supply chain awards where we try and reward on the good performers from in different areas and invited them down to our awards from where, we have a night out to get together, and build, it's a good relationship as well. They really liked the recognition of getting the awards as well you know. Because it's like, you know it's a payback for the effort they put in as well.” - Irish case, Main contractor, Regional director.

Beyond the recognition, the subcontractors can and do publicise winning these awards to other possible clients. In other words, being recognised by the Irish main contractor – one of the largest construction firms in Ireland - is then a way to get business from other contractors as well. This can be a rather strong informal incentive.

Red, yellow and green cards

Many construction contractors use a yellow and red card system (see bullet points in the next paragraph), to enforce safety rules (formal contractual governance) on site at individual worker level. The Irish main contractor has taken this a step further and combines the contractually governed red and yellow cards with green cards (in what they call the traffic light system). Safety regulation and the formal contracts specify the required behaviour. Not following the requirements can result in a yellow or red card, which has negative implications for the worker and the subcontractor who employs them. However, green cards are issued for proactive or exceptional behaviour, and getting a green card has positive implications for the worker and the subcontractor. The green card behaviour cannot not be formally defined. Equally, the contract does not specify that awards must be given for a specific behaviour, how many awards will be given and so on.

Box 5: The ‘traffic light system’ in the Irish case

In the Irish construction case, the main contractor works with a reward/punishment system of red, yellow and green cards, termed the ‘traffic light system’. Three possible cards can be distributed as a reaction to behaviour related to OSH:

- **Green Notice:** these are issued by the main contractor when workers’ behaviour exceeds their expectations. Recipients of Green Notices will be considered for reward or recognition when the behaviour is considered proactive or exceptional.
- **Yellow Notice:** these will be issued when behaviour results in a breach of a yellow rule. The rules relate to behaviour that (whilst not posing an immediate serious and imminent risk of serious injury to the individual or others affected by the action/inaction) could if not addressed, lead to an escalation in risk.
- **Red Notices:** these will be issued when poor behaviour results in a breach of a Red Rule. They will also be issued when a 3rd yellow notice is issued to the same individual in a 3-month period. Red rules relate to behaviour where the action or inaction poses a serious and imminent risk of serious injury to the individual or others affected by the action/inaction,

or the behaviour is a clear and obvious breach of a clearly defined and unambiguous rule or requirement.

This form of hybrid governance is mainly used to guide or govern the behaviour of the subcontractors' workers. Workers whose OSH-related behaviour exceeds expectations can receive green notices and will be considered for reward or recognition.

“Well, we do that for individuals on site, so we have an incentive scheme on all of our projects...If our people see a particular person or group of people delivering best practice in OSH and their behaviours. They give them all these green cards and a green card is your entry into the monthly draw. And you have an opportunity to win a 50-euro voucher or 100-euro voucher for the local PPE store, or the local shop, or whatever.” - Irish case, Main contractor, OSH director.

For instance, an operative for one of the Irish subcontractors described getting a green card (voucher). He was working on the tenth floor at the time of data collection. Before he started his own work each day, he blocked off the areas on lower floors where his firm was not working, as a safety control measure to reduce the risk caused by falling objects.

“I've gotten a voucher before, from [the main contractor] for working safely around the edges, making sure everything was barriered off. No one is [injured], there's no incident. Nothing fell down. There's no problem and everyone is happy with the work, and I got the voucher.” - Irish case, Subcontractor 1, Operative.

Green cards or notices are the carrot. On the contrary, when workers breach OSH rules on site, they would be warned by a yellow or red card, or even be suspended without pay (the stick).

“Some contractors like [the main contractor], you have to always wear glasses, harness ... especially if the safety officer is around, if you've been seen doing something, like if you don't have glasses or harnesses on, they just send you home, stand you down.” - Irish case, Subcontractor 1, Operative.

“[The main contractor] has kind of a yellow and red card system. So, if we get the red card from [the main contractor's name]. You just have to cease work with [the main contractor]. There is no work. You know what I mean.” - Irish case, Subcontractor 1, OSH professional.

However, the main contractor does give the worker a second chance if the non-compliance is deemed unintentional. This assessment is informal and another example of the hybrid nature of the traffic light system.

“I think they [the main contractor] give you a few chances, because, let's say, you do forget to get on your glasses, or you were doing something else, and you forget it somewhere. They don't want to kind of penalise people for mistakes, but if it becomes a reoccurring issue, usually the practice I do believe is they take them out of site.” - Irish case, Subcontractor 4, OSH professional.

Although the cards or notices are handed out to individuals, they are part of the subcontractor's ongoing evaluation for OSH performance during the project. Green cards improve the subcontractor's OSH score while red and yellow cards harm their score (see the assessment theme for more details). The subcontractors' managers perceive the green cards as being an effective way to compliment or leverage OSH compliance.

“[The main contractor] give incentives to lads on the ground and that'll be small incentives, the likes of 50-pound voucher for, but that's good, like it's good for the lads on the ground, like it did feel appreciated you know, everyone loves

the pro of appraisal, you know. Just it's a natural thing it's in our DNA.” - Irish case, Subcontractor 3, Contract manager.

Future business – the ultimate relational award

Formal awards may provide an incentive for subcontractors to go beyond meeting the letter of the contract. For the winners, this may be a powerful marketing tool. But because most good contractors will not win these awards, the most prominent relational award or market leverage instrument in all cases is the potential for future work.

As noted in the assessment theme, in almost every case the subcontractors had worked with the main focal contractors many times before. While all of the focal main contractors have systems for assessing potential new subcontractors, their preference is to use those with whom they had previous experience and a relationship. For instance, in the Belgian case (see Subcontractor Assessment theme for more details) the main contractor and subcontractors keep both a blacklist of poor performers and a list of the best subcontractors to work with. Subcontractors with desirable performance will appear on the focal company's preferred list with a greater chance to collaborate with focal company in the future.

Similarly, the Irish main contractor has a stable cashflow, which ensures on-time payment to its suppliers and subcontractors who often have cash flow issues. This is one of the competitive reasons suppliers / subcontractors want to continue collaborating with this focal company. Thus, the informal promise of future business and a long-term business relationship becomes a promising incentive for subcontractors who can meet the main contractor's performance standard.

*” They know people know that, if you do a good job, you know you get more business from us, so you get continued business, so you know that seems to be the sense from our supply chain that you know you deliver on your order, and your rewards, then you keep a good business going with this in general.”
- Irish case, Main contractor, Procurement manager.*

Supply chain finance

Supply chain finance is a collection of tools to manage the flows of money through a supply chain. While these tools can be designed to improve outcomes for all supply chain partners, the tool that buying firms are most likely to use, is extending payment terms to suppliers (e.g., Caniato et al., 2019). Over the past decade, many firms are extending their contractual payment terms by significant amounts (Kovach et al., 2023). For instance, rather than promising to pay in 30 days, a buying firm may extend their terms to 45 or 60 days.

Extending payment terms is effectively a way for client firms to borrow money from their suppliers for free, hence the attraction for client firms. Needless to say, this practice is far less popular with suppliers and there is a great deal of evidence that client firms tend to be most aggressive with extended or late payments to their smaller suppliers (Prose, 2019). Extended or late payment is then a blunt tool that benefits a client at the cost of its suppliers, especially small suppliers who often have cashflow problems.

The Irish construction firm has formal contractual terms for when and how subcontractors will be paid, including terms on how quickly they will pay their bills and on retaining or holding back a final payment until all work packages are complete. Yet, the Irish main contractor is willing to informally (not part of the contract) amend these terms to help subcontractors, often small subcontractors.

First, instead of extending payments as is the trend, they tend to pay promptly. In addition, the procurement manager noted that they are trying to pay faster and will prioritise paying certain subcontractors (typically smaller / materials high percentage of costs) faster than contractually mandated.

“I suppose the main support will be prompt payments that is the [focal firm name] support and then it was claim. And that they paid claim, really that's a result revolves around cash flow. You know, keep the job going, that's good, so I suppose that's the reward.” - Irish case, Subcontractor 3, Contract manager.

Second, the contracts state that the client will hold an amount of retention from the focal main contractor, and then, the focal main contractor holds the retention from all of the subcontractors until the completion

of their relevant work packages. However, when a subcontractor's performance is at or above the standard, the focal main contractor may release part of the retention earlier than the contractually agreed date. The subcontractor gets some of their retained payment back in advance, as an incentive. The Irish main contractor in this case considers OSH performance as part of overall subcontractor performance so this incentive can positively reward subcontractors OSH compliance.

"...we might agree with a subcontractor because we know that they will do their job, or we feel that their job is good enough that won't be a problem, but then, we'll agree, less retention, so we will say 'right, we don't need only 1% retention, because we're happy you do a good job. Like if you have a big job, we could hold 300,000 [euros]. So, we would agree with them, to give them a lot more of that money and hold a small amount... we try to encourage and give lessons learned to the supply chain that they can do a better job." - Irish case, Main contractor, Regional director.

For subcontractors, especially smaller subcontractors, a stable and predictable cashflow is often critical to their survival. Using supply chain finance as a tool to improve subcontractors' cashflow and financial health is then a potentially powerful market leverage instrument. However, these practices require that the focal firm has a robust cashflow. They will be far less important for large subcontractors who likely have the needed financial resources. To date, we only found examples in the Irish case.

Penalties

In all four cases, the focal main contractors have means to punish their subcontractors to govern the relationship. The Estonian focal company has detailed and concrete measures to control compliance with the safety requirements.

"Worst case scenario - the worker is sent off the job and never is allowed to come back. More serious shortcomings could result in a warning or a fine. Personally, I am not in favour of sanctioning through a fine. In fact, in my estimation, it is not good if a person will wear a PPE only because he thinks he is being punished and doesn't understand why it really matters. I am in favour of being able to explain to the person the necessity of these requirements. But yes, we do have a sanctions policy to the point that the contractor cannot continue to work. There have been situations where I have refused to engage a company after procurement because there were too many problems in the past with safety." - Estonian case, Main contractor, Construction manager.

The Estonian subcontractors confirmed this system. For example, subcontractor 2 (site manager) believes that the level of penalty depends on type of the non-compliance and how serious the offence is, as well as whether this was a first time or a repeat offence. Estonian subcontractor 4 confirmed that there is a formal system for punishment but that the application of the rules can vary based on context.

Researcher: "How does the fining process work here? If, for example, a foreman doesn't wear a helmet?"

Interviewee: "The usual thing is that a picture is taken and sent by e-mail to me. Most of the time there still has to be some kind of proof. And then there can be a fine of 300 or 500 euros. It also depends on the situation - where he was etc. Of course, they don't try to fine you at any price. The site managers still have their own job, and they don't always pay that much attention to safety to notice all small details. But the more they are disturbed by the overall picture, the quicker the fine. They also think about the possibility of someone else seeing the infringement. And they have to think about what people think of them as a main contractor."

Estonian case, Subcontractor 4, Owner.

The Danish case similarly presents a wide array of disciplinary measures and procedures to be used if the main-contractor or a subcontractor transgresses or neglects their duties. First, the client can

terminate the work on (part of) a site immediately, if they see something that constitutes an imminent risk. However, they can also take the same action if the main contractor or subcontractors repeatedly have not heeded a warning or an improvement notice. Second, both the client and the main contractor can issue improvement notices and fines to the subcontractors. An improvement notice gives the subcontractor seven days to follow up on the notice with a plan to have the risk mitigated or removed. In interviews with subcontractors, the main-contractor's (client's) staff the notices 'yellow cards', meaning that they are a "free" warning before a fine is possible. The client can issue fines of around 2500 euros to the main contractor if they have not complied after seven days of an improvement notice. While the Irish main contractor does have a great deal of emphasis on supplier awards, they also have contractual means to punish subcontractors as described in 'red, yellow and green card' section.

In the Belgian case, the subcontractors did not have knowledge of a formal system of corrections linked to safety performance. Yet, the focal firm has the contractual means, after repeated problematic behaviour, to expel certain workers or contractors from the site. This does, however, not take place within a formal structure, but is applied by the main contractor after internal discussions and multiple attempts at remediation. If problematic behaviour persists, the issue goes up the hierarchy, and it is the management that eventually decides to expel a worker from the building site. Different contractors, however, do have the freedom to internally establish sanction mechanisms for their employees or subcontractors, linked to safety and health. This is part of a strategy by the building client and the main contractor to minimise having negative incentives for bad safety performance. There seems to be a shared perception that if bad safety outcomes are punished, the result will be lower reporting instead of better safety performance. Therefore, they put minimal emphasis on the potential negative consequences of reporting accidents and near misses. By doing this, the main contractor and the building client attempt to stimulate a shared safety culture (see above) where reporting of safety incidents is stimulated, and favourable conditions for open communication about risks and their possible solutions are created.

Feasibility of financial rewards and penalties

Awards are, in essence, a transfer of reputational resources from the focal main firms to their subcontractors. Supply chain finance, as practiced by the Irish main contractor, transfers financial resources from the buying firm to the subcontractor, which has a positive influence on their cashflow. Most of the other incentives used by the case firms require few financial or other resources.

Awarding individuals or subcontractors for good behaviour tends to cost the focal main contractors little or nothing. However, these awards build trust and relational capital with subcontractors and their workers. In the case of formal awards, like in the Irish case, the recognition may be used by the subcontractor to win additional work from other clients.

Finally, the possibility of future business as an incentive does not transfer any tangible resource immediately, but it helps to assure the subcontractors of their business continuity and the possibility of a long-term collaboration with the focal firm. Equally, the buying firm knows that if they do engage with the subcontractor again, the setup costs will be lower, communication will be easier, and they will be able to share other goals and incentives as well.

Table 15: Feasibility and elements for carrots and sticks

Feasibility	Governance
<p>The use of rewards to stimulate certain safe behaviour constitute an important possibility, whereas sanctions play in most cases a less crucial part of their OSH policies, or they even point out the possibility to harm OSH outcomes. In how far this could interfere with other aspects crucial for OSH on site, such as trust, an open safety culture, or effective communication, will depend on the specific characteristics of the building project.</p>	<p style="text-align: center;">Relational</p> <ul style="list-style-type: none"> ▪ Subcontractor-awards ▪ Yellow, Red and Green cards ▪ Future business <p style="text-align: center;">Contractual</p> <ul style="list-style-type: none"> ▪ Penalties ▪ Financial benefits

4.6 The role of OSH training in construction

Table 16: Summary of training

Market leverage	Description	Cases with examples	Working conditions and OSH impacts
OSH training	Different training activities in the construction site such as introductory safety training and occasional short training based on actual problems and needs.	Denmark Belgium Estonia Ireland	OSH training on-site improves safety behaviour as it provides employees with the necessary knowledge and motivation to improve safety compliance and participation.

As illustrated in the previous sections, the actors believe occupational accidents and injuries can be reduced, prevented, and controlled by providing a positive safety culture. Hence, training and education programmes play a significant role in the enhancement of safety. One of the main leverage practices in construction is to provide employees with OSH training on-site to improve safety compliance and participation. Previous research documents that OSH training has significantly improved employees' knowledge, skills, and attitudes towards OSH implementation (Albert & Hallowell, 2017; Holte & Kjestveit, 2012; Ricci et al., 2016) and safe behaviour. In addition, multifaceted and integrated safety training programmes can improve the level of safety in a construction site where several subcontractors work together.

In this section, we present the findings regarding OSH education through both its relational and its contractual elements. As is the case with the other transversal topics, both informal and formal mechanisms work together in a hybrid form in the educational efforts observed in the four case studies. In addition, many of the formal aspects of the educational efforts described originate in legislation on safety education. These are then brought into practice following contractually stipulated specifications, whereas their on-the-ground effectiveness will to largely depend on relational aspects such as interpersonal relationships, trust, and attitudes towards safety.

Box 6: Types of training

From a theoretical point of view, several approaches can ensure effective training. One useful approach in this context is Bambang et al. (2015), who designed an industry-based learning model for OSH to produce output that has the knowledge, skills, and attitudes in accordance with the competence of a worker in the medium level in Civil Engineering. The model uses three different approaches when it comes to teaching/training methods:

- **Contextual teaching-learning (CTL)** is a learning concept where real-world situations relate to the learning process. The purpose is to give learners knowledge in the form that is realistic (comes from real life) to bring theory to practise.
- **Cooperative learning (CL)** refers to a training method in which learners at various performance levels work together in small groups toward a common goal (usually a scenario-based exercise) and learn from each other. The value of learning is created through positive interdependence, face-to-face promotive interaction, and group processing (Johnson et al., 1990)
- **Competency-based training-learning (CBET)** is a learning approach that emphasises the mastery of knowledge, skill, and attitude necessary for a successful achievement in a job or in a position. It empowers the learners to take account of their experiences during the learning process.

Bambang and colleagues (2015) claim that implementing the mentioned teaching methods together is more effective to improve learning outcomes which have cognitive, affective, or psychomotor

origin than the earlier general approaches such as stage learning theory and social learning theory (Burke et al., 2006).

Training before the start of work

In Estonia, the main contractor organises different training activities at the construction site, including introductory safety training for all subcontractors' workers and occasional training based on actual problems and needs (or from feedback given by workers). The initial OSH training is compulsory but can be completed at the subcontractor's level and is not construction-site specific. However, the main contractor conducts additional safety training for all its subcontractors. In Belgium, a collective labour agreement applicable to the construction sector came into force in April 2022, which makes standard safety training compulsory on all larger building sites. In Ireland, all construction workers are legally bound to hold a valid Safe Pass Registration Card, which indicates they have a basic level of construction safety training. Workers who undertake specific safety critical duties, must also have valid Construction Skills Certification Scheme registration cards (or equivalent). Both Safe Pass and relevant skill certification registration cards can be obtained after receiving training from local services.

In the Estonian example, the training provided by the main contractor consists of general OSH requirements on the construction site, specific requirements for work procedures and emergency actions (in Estonian, Russian and English). Some parts of the training consist of videos about the construction site to give a realistic dimension. The introductory course also includes workers' experience (CBE/T method). Additionally, each worker receives a pocket-size safety booklet with pictures and pictograms (language-free). Safety ID cards are issued for workers after the successful training, which enables access to the construction site. In the future, the subcontractor plans to use short language-free videos to facilitate the uptake of OSH requirements during the training. When training is successfully completed, the worker receives access right to the site. A workers' representative of a subcontractor explained that trainings provided by the main contractor through real-life situations (CTL method):

"The last training was about safety equipment – how to select them and how to use them. After the lecture, the focal company controlled our equipment and gave some recommendations." - Estonian case, Subcontractor 2, Worker representative.

In the Belgian case, team leaders took care to make the link between safety theory and practice by integrating interactive elements in some of their safety trainings.

"It is useless to keep eight workers busy for an hour by watching a movie [on safety]. I give it [the educational sessions] to my boys like that, outside in the sun, next to the crane, everyone together. [...] I select a random volunteer, to do it, to give a demonstration. Just interactive, so that they feel involved in the thing." - Belgian case, Subcontractor 2, Team leader.

One of the Estonian subcontractors underlined the importance of safety training while doing construction work:

"It is important to stay healthy and come home safe. OSH training provided by the main contractor is important for our workers, because it reminds us about safety requirements again and again." - Estonian case, Subcontractor 2, Site manager.

The workers' representative added:

"Safety is taken seriously by the main contractor. They gave us training. They are monitoring safety every day. We received several remarks in our first days, for example that straps must be fastened on the helmet. Now we are doing it also in other construction sites." - Estonian case, Subcontractor 2, Worker representative.

Ireland has a similar approach. In addition to the basic training required by law, subcontractors receive a two-stage induction and orientation, available in several languages. The first stage of the process

involves an online induction, which takes about an hour to complete and is valid for one year. Only workers who have successfully passed the exam at the end of the induction will receive a safety passport to access the construction site. The main contractor enters workers' details into a system for a facial recognition camera at the entrance to the construction site. The second induction phase is an office or project-specific induction, required at the specific site and can be repeated periodically as the project progresses.

In Belgium, compulsory OSH training consists of an educational video, followed by an exam (this can be taken in different languages). Everyone who starts working on the building site, needs to pass this exam before being granted an access badge. In addition, workers who complete the exam successfully, receive a particular sticker to put on their helmet. This serves as an indicator for the safety personnel to identify staff that somehow managed to enter the site without completing the exam, thus facilitating their supervisory tasks.

Denmark has comprehensive training in place. The client has started a so-called "safety academy" that contains various courses ranging from the obligatory four-hours seminar for all personnel before they enter the construction sites. This is mandatory for everyone from management to work-crews.

Training for specific hazards

In Belgium, Estonia and Ireland, workers involved in specific hazardous tasks need to take relevant training before conducting these activities on site. Usually, the workers have completed the training before starting to work on the construction site. One of the subcontractors reported that the main contractor asked and controlled required certifications of specific work, such as fire safety and working in heights.

In Ireland, the workers' training records are documented by their subcontractors' OSH professionals and must be submitted to the main contractor as proof of working competence. Similarly, operators not able to provide the appropriate evidence of competency will not be permitted to use or operate certain equipment. For example, additional training for working at heights is provided by subcontractors for their own workers. Upon completion of the safety training, which usually lasts 30 to 60 minutes, OSH professional will send a written document to the main contractor to report that their workers are ready to begin working in certain areas. Similar training is provided on safely using scissor lifts and spider cranes or how to safely drive electric pallet trucks.

In Belgium, a very similar approach is used. Certain especially hazardous tasks require supplementary training with concomitant certificates. The subcontractors themselves are responsible for assuring sufficient qualifications of their staff. Informally, team leaders supplement the guarantees delivered by educational certificates by closely scrutinising new workers that perform these risky jobs. Due to the international nature of the building site, they are regularly confronted with workers possessing certificates of unclear origin or that have been obtained in different cultural or technical contexts. Team leaders thus have to evaluate workers starting on a risky job, and potentially remove them again, even though they possess the necessary certificates (also see section 0 regarding migrant workers and OSH).

During the work

Our interviews confirmed the use of regular, updated safety training before starting the job. In the Estonian case, in addition to the introductory safety training required by law, workers also receive occasional short trainings on specific topics, such as how to prevent accidents and falls from height, to provide basic first aid, to select, adjust and maintain adequate personal protective equipment (PPE). It is called an 'awareness day', which is organised annually by the main contractor and with invited external experts to give a presentation and to conduct a safety induction for all workers. Subcontractors said that after those events, workers can indicate ideas for further safety training days and recommendations on how to improve the work environment.

"... after the awareness day and safety training the main contractor is collecting the feedback, ideas and recommendations for training and improvement of the work environment and asking us what can be done or organised differently. They would like to continuously improve safety and the working environment here". - Estonian case, Subcontractor 3, Worker representative.

At least some of the companies interviewed in the Belgian case, have a similar approach to Estonia. Every year a 'safety day' is organised, where a specific relevant topic (such as stress at work or fire hazards) is discussed with all workers. Every site manager receives first aid training. Additionally, monthly safety briefings ('toolbox-meetings') are organised for all contractors on site. A safety-related theme is chosen every month (based on safety statistics or particular events) and communicated to all teams on site, where the foremen in turn communicate it to their workers. The 'toolbox-meetings' can be very brief (10 minutes) and as concrete and usable as possible. Such meetings take place in small groups and in an informal atmosphere to promote interaction and facilitate comprehension even for those not fluent in the training language. According to one construction worker of a subcontractor:

"Most people do not know the most important dangers. These toolbox-meetings are useful to keep people warm, to keep people alert. The older you get, the longer you're doing the same job, the more risks you start to take, that's natural." - Belgian case, Subcontractor 2, Construction worker.

In Denmark, as mentioned before, the client company has initiated a 'safety academy', which includes several educational courses in safety, all mandatory, for different groups on the construction site. Everyone who starts working on one of their sites, even as subcontractors on a short assignment, must sit through a mandatory class of four to five hours of safety training. All people in management positions in all contracting companies have their own workshop and seminar to attend if they want to work on one of the company's projects. This includes everything from team leaders of crews to the highest project managers in multinational construction companies. All these activities are mandatory in some form in the Danish work environment regulation, but the client had raised the level above the legislative demands in terms of resources and hours. As explained by an OSH professional from the Danish focal firm:

"Safety academy is our training centre, with courses both internally and externally. It is partly some courses we conduct on the projects that are mandatory. In addition, we also have courses, e.g., the managers are on a safety leadership program. We maintain the knowledge they gain for the courses through meetings across the organisation every two months. It has become more focused on the psychic lately; it goes wider than just on the accidents". - Danish case, Client, OSH professional.

Feasibility of OSH training

In summary, it is possible to identify a number of promising elements that could lead to effective training in construction sites: initial OSH training using different methods; training conducted in various languages (e.g., language efforts); visualisation of training materials, and using short language-free videos to facilitate the uptake of OSH requirements during the training. Other technical tools such as virtual technologies can be used to provide more visualisation, multiuser interactions, and task compatibility.

According to our cases, certain resources are required for safety training on the construction site. First, there must be a willingness to invest in knowledge and skills improvement at all levels. For example, as in the Estonian case, all top managers of the main contractor receive OSH training to be able to conduct audits on construction sites and to train workers in their departments. The main contractor employs a safety manager and well-trained site managers on the construction site, who are responsible for the supervision of compliance with safety rules and regulations. Introduction safety training, safety induction and orientation is provided by the safety manager and the site manager who also do daily walks on the site to ensure safety compliance by observing and giving feedback to workers about safe behaviour. In addition, resources are allocated for external trainers, who are invited to give presentations and safety induction for all workers during 'awareness day'. They can share their high-level knowledge and tips and connect the actual problems and challenges with real-life situations and scenarios.

It is important to keep the training standards at a high level. The qualification of the trainers is also emphasised by some participants.

"...many people have become trainers, and they're just not doing it at high enough standard. So they're changing the kind of the way that training for

health and safety in construction is being implemented and making sure that everybody has the same high standard, making sure that everybody has real training, and because people go to course and they don't remember anything, they don't feel like they were taught anything, and it's so important that people have this training before they go on site.” - Irish case, Subcontractor 1, OSH professional.

Some workers receive mandatory training courses before entering construction sites. However, to ensure training is useful and relevant for workers, the future training courses could also be designed in a more interesting and attractive way.

“If guys are willing to do the training and go. ‘Oh, I think this will be useful’, even if it's only used a couple of times a year. That can only be a good thing”.
- Irish case, Subcontractor 3, Site manager.

Differences in legislation

The legislation regarding OSH training differs considerably between countries. For example, the training related legislation in Ireland differs from other EU countries. Specifically, to refresh training in a timely manner is a legal requirement in Irish construction as opposed to other EU countries' regulation.

“Well, my experience in health and safety, the level of training for workers, in relation to the operation of machinery, the machinery itself, the PPE requirements...And we refresh that training every three years. There is no requirement for that in Europe. Your refresher training is not there....It's a legal requirement to refresh the training every 3 years. It's, not just for manual handling. All trainings [are required to be refreshed]. So, we would have people to work in confined spaces, occupational first aids, they have 2 years to refresh. Safe pass [needs to be refreshed] every 4 years. We would have abrasive wheels [training], again, [which is valid for] three years. Mobile scaffolds, harness training, that's all refreshed between two and four years, has to be done by a competent person, and records have to be maintained.”
- Subcontractor 3, EHS Manager.

In the Belgian case, the requirements for education on safety have increased the last few years – both due to stronger legislation and requirements linked to the VCA certification. Risky functions that did not require any specific certification in the past, are now subject to specific requirements. Although this was generally welcomed, the increased requirements have an inconvenient side to them as expressed by almost all personnel interviewed on site. A team leader of a subcontractor, when asked if he would have any recommendations for improvement:

“For the European Agency: please make European rules, European badges. You could make this education of one day in Belgium, or a few hours for working on height, to an education of two full days. But make sure that it is a thorough and far-reaching education. That it is not only to get your badge, but so that you know what you are doing.” - Belgian case, Subcontractor, Team leader.

Many educational requirements mean many badges and certificates that are often different in each country. Workers asked for simplification, where one would not have to repeat the same education when working abroad, or even on different building sites, but where educational efforts are made uniform within Europe, thus freeing more time for fewer but longer and more substantial educational efforts.

Role of trade unions

The trade unions play different roles in our selected countries. However, they tend to have a relatively low influence on the training activities. The interviews in Belgium indicate a relatively low-key role of unions in the case of safety and health on site. Unions play a role as an important partner on a more distant, policy level, as they helped the public building client to devise a comprehensive approach to safety, health, social dumping, and other related issues. A new collective labour agreement also mandates more safety education in construction. On the level of the building site itself, however, there

were few signs of union activity. When asked, both management and workers on site confirmed the absence of union activity at that time. Workers did not count on the unions for support in any way.

In Estonia, the union density is very low (at around 7%). The typical establishment in the construction sector in Estonia relies on non-unionised low-wage and low-skill labour. Union membership fell sharply in the 1990s and continued to decline later. The reasons suggested for the decline are mainly the perceived links between the unions and the Communist Party during the period when Estonia was part of the Soviet Union, but also the termination of benefits and services which were earlier provided by unions (and had been a key function in the past). Therefore, we can say that Estonian construction workers cannot rely on support of unions.

In Ireland, the role of worker unions is considered less influential on OSH than it was a decade ago. To the question about influence from worker unions, the main contractor - OSH professional reported:

Interviewee: "If you asked me that question 15 or 20 years ago, I'd say yes, what I wouldn't say that today. Okay yeah, I think we've moved past to kind of Union mandate discussion, and it's now become an expectation of employees even if they're not in Union. Now unions don't, don't get me wrong, the unions to help have helped over the years, but they're not as, as, as strong or as..."

Researcher: Not the main driver?

Interviewee: "Yeah, they're not the main driver anymore around safety."

Main contractor, OSH professional.

In contrast, the employer federations such as the Construction Industry Federation (CIF) provides companies with safety training according to the construction regulations in Ireland.

"A lot of training we've done with CIF. The CIF has a huge influence on what we do. The guideline...that kind of shapes what you put into your method statement everything." - Irish case, Subcontractor 4, OSH professional.

Table 17: Feasibility for training

Feasibility	Governance
<p>OSH training should be provided systematically for everyone involved in the construction site which may require resources, but most of all, willingness to invest in knowledge and skills improvement.</p> <p>Effectiveness of OSH training depends on using different methods, languages and technical tools. It is important to keep the training standard in a high level.</p> <p>There is a need to carefully select the training themes, based on actual problems and needs of workers at the construction site. Therefore, the feedback from workers should be collected and analysed.</p>	<p style="text-align: center;">Contractual</p> <p>Initial OSH training on-site is stipulated in legislation and is organised by the main contractor or the Client. Training for specific hazards is usually organised by subcontractors' OSH professionals and submitted to the main contractor as proof of working competence. Occasional short trainings on specific topic may also be offered.</p> <p style="text-align: center;">Relational</p> <p>Key elements are relational: on-the-ground effectiveness of the training depends to a large extent on relational aspects such as interpersonal relationships, trust, attitudes towards safety and so on.</p>

Providing OSH training to workers is a crucial part of improving OSH in the construction sector. Different leverage instruments can help to improve employees' knowledge, skills, and attitudes towards OSH implementation on the construction site. In addition, multifaceted and integrated safety training programmes can improve the level of safety in a construction site where several subcontractors work together. In striving for comprehensive and quality OSH training, companies in the four cases integrated contractual and relational elements into their educational policies and practices. It appeared crucial that education is provided systematically for all workers and top managers in both the main contractor and

all subcontractors. In addition, the effectiveness of OSH training, as a leverage practice, depends on using different methods and languages, technical tools as well as the careful selection of the training themes, based on actual problems and needs of workers at the construction site, what can be developed also from feedback given by workers. Construction requires greater and continuous attention to safety since workers operating in a high-risk environment and, therefore, regular and updated safety training is essential. In several cases, in addition to introduction OSH training, other training activities emerged, such as the “awareness day” or “safety day” (in Estonia and Belgium) or “safety academy” (organised by the main client in Denmark). These activities can significantly improve OSH knowledge, attitudes towards OSH implementation and safety behaviour of construction workers and support them to stay on top of the best practices.

4.7 The role of communication of OSH in construction sites

Table 18: Summary of communication

Market leverage	Description	Cases with examples	Working conditions and OSH impacts
Formal communication of OSH	<p>Communication channels and OSH requirements described and agreed between focal firm and subcontractors.</p> <p>Active and leading role by the main contractor/client. Drive OSH awareness and practices forward and ensure systematic and continuous communication with subcontractors.</p>	<p>Belgium</p> <p>Denmark</p> <p>Estonia</p>	<p>Regular communication enables to shared workplans and to avoid misunderstandings and increase mutual effort to ensure safety and trust.</p> <p>Formal OSH communication facilitates the delivery of comprehensive training and education programs.</p> <p>Clear and formal communication of OSH information help to identify and mitigate hazards.</p> <p>Enhanced risk management in the construction site enables organisations to identify, assess, and manage risks more efficiently. By sharing information on potential hazards, preventive measures, enables proactively address safety concerns.</p> <p>Foster development and maintain of safety culture on the construction site.</p> <p>Demonstrating a commitment to OSH through formal communication can enhance the main contractor/client's reputation as a responsible and ethical company.</p>

Informal communication of OSH	Active and leading role by the main contractor/ construction client.	Belgium	Plays a crucial role in shaping attitudes, behaviours, and practices on construction sites.
	Uses market leverage practices to foster shared safety-related information and awareness of OSH on different levels of construction site.	Denmark	By openly sharing OSH information, workers learn from one another and adopt safer work practices. It overcomes possible different misunderstandings and increase mutual effort to ensure safety and trust among subcontractors.
		Estonia	Peer-to-peer communication between subcontractors' workers can raise awareness about potential hazards, identify safety gaps, and collectively find solutions to improve safety on the construction site.
			When there is open and honest communication, workers feel more comfortable reporting hazards, seeking help, or discussing safety concerns.

Safety communication between different actors in construction sites is key for effective safety management. However, a lack of clear and good safety communication is a widespread problem on construction sites (Albert & Hallowell, 2017; Borys, 2012). It is known from literature (Alsamadani et al., 2013; Cigularov et al., 2010; Naji et al., 2022) that effective safety communication contributes to safety behaviour, for example to better safety compliance (e.g., adequate usage of PPE) or higher safety participation (e.g., motivation and readiness to discuss safety issues with peers or supervisors), but also to effective exchange of safety-related information (about hazards and risks), which has a negative relationship with work-related accidents and injuries. Additionally, research shows that good personal relationships between the key players in a construction project (e.g. site manager, site supervisors, foremen, specialist staff and subcontractors - and between workers) are essential to facilitate effective communication, joint planning, and management of problems (Claro et al., 2003; Loosemore et al., 2020), which is important for health and safety outcomes.

From an information flow perspective, safety communication can go in three directions: upward, parallel and downward (Orlikowski, 2002). Leaders communicate vision and values through informal and formal communication and through this, commonly understood goals are established and mutual understanding to achieve the goals is created (Zohar, 2002). The main contractor can communicate the importance of safety and health through visible behaviour. Subcontractors should quickly understand what the main contractor considers important and adapt their behaviour accordingly. In contrast, through negative behaviour, the main contractor can undermine the safety culture in construction sites. Also, the importance of parallel safety communication cannot be underestimated, e.g., between actors of the same position who share the same values, opinions, and perceptions towards safety. Previous research has shown that parallel safety communication is more likely to promote safety behaviour compared to manager-worker communication (Lingard et al., 2019).

The theme of effective communication on OSH runs through most of the safety policies and practices observed in the four case studies. Effective communication is seen as a major leverage for positive safety outcomes and is promoted and monitored in a variety of ways, and more formal, contractually stipulated aspects go hand in hand with a more relational dimension.

Effective communication in construction is a complex process of exchanging ideas and opinions to ensure that the message is received and understood with clarity and purpose – essentially about getting the right information to the right person at the right time. Communication may take different forms: verbal (face-to-face, over the phone, in online-chat platforms), non-verbal (understanding of non-verbal cues such as body language), written (in many forms) and visual (e.g., safety pictograms).

Media richness theory (Daft & Lengel, 1986) divides communication channels into two main groups: rich communication media and lean communication media. A rich communication medium can tackle multiple tasks simultaneously and provide personalised rapid two-way feedback, while a lean communication medium is the opposite of a rich channel (Daft & Lengel, 1986). The richest

communication channel is face-to-face communication and the leanest communication channels are typically statistical data reports. Not all communication channels are equally suited for different situations. The need depends on uncertainty (i.e., the information received creates a need for more information) or ambiguity (i.e., there is a lack of clear definitions of situations). Introducing such an aspect is particularly important for new communication technologies whose effectiveness depends on the environment around the individual, for example, whether the attitude and use of co-workers expresses the usefulness of the channel (e.g., a mobile app in order to report about incidents).

Communication channels

Throughout the four cases, a diverse array of communication channels is used, directly or indirectly influencing policies and practices around safety and health. The typical communication channels include phone calls, face-to-face talks and emails. In the Irish case, one subcontractor noted that OSH communication via emails from the focal company is not as effective as face-to-face discussions. In the Estonian case, the appropriate channel is picked in compliance with the needs and occasion and several channels are used:

“Communication is usually by email. But also, telephone and direct communication. Direct communication allows for immediate feedback and support. If, for example, work needs to be completed on site later than 5pm, it can be quickly discussed and managed.” - Estonian case, Subcontractor 4, Owner.

All subcontractors confirm the presence of regular face-to-face meetings which are usually attended by managers. Safety issues are also discussed at the meetings, but other, more important issues may be more urgent.

Upward communication seems to work quite effectively in Estonian construction sites. The communication takes place either directly or through the immediate supervisor and usually orally or by phone. The worker's representative of one subcontractor claims:

“If necessary, I will go and talk. The site manager is usually there. Someone is always there when you need them. I can also call my boss.” - Estonian case, Subcontractor 1, Worker representative.

In the Irish case, as required by the focal company, the safety representative is usually the same person as the site manager, who is responsible to report worker's concerns to the focal company. This reduces the number of points of contact and simplifies communication. The site manager of a subcontractor explains:

“It's kind of it's an overlap role, it's the same role as a contract manager, exactly same role, not anything differently you're still a worker representative, you still look after them when they work on the ground and, if any, if they have problems, you highlight the problems to [the main contractor]. You know you let them know.” - Irish case, Subcontractor, Site manager.

Box 7: Communication channels found in the four cases

The examples of communication channels found in the four cases can roughly be divided as follows:

- **Written communication:** safety documents (health and safety policy statements, statements concerning health and safety roles and responsibilities, strategic OSH plan), e-mails about safety activities on-site, reports on occupational accidents and statistics.
- **Rich written communication:** messages and live chat in online-chat platforms (hardly used in construction sites, but actively used between the managers in the main contractor's company).
- **Verbal communication:** face-to-face communication between peers, between manager and workers, between the main contractor and subcontractors or phone calls between manager and workers, between the main contractor and subcontractors.

- **Non-verbal communication:** hand motions such as crossed hands saying the passage is not permitted now or nod for indicating the process is ready, etc.
- **Visual communication:** safety signs and pictograms in the construction sites such as locations of first-aid kits, alerts about tripping and falling hazards, obligations to wear appropriate personal protective equipment (PPE) in designated work areas, posters and screens with safety related visualised messages, and booklets with safety drawings.

Types of communication

The communication structure usually includes formal and informal communication, and both are crucial for maintaining a strong safety culture on construction sites. Open communication and safety discussion provide a common and shared understanding of expected safety behaviour. For example, in the Belgian case, the focal firm emphasises that a positive and open communication style concerning OSH issues helps to create an open atmosphere around OSH. The aim is to support workers' willingness to participate in safety discussions, to report about near-misses and what goes wrong as well as to develop their positive attitude toward safety. The focal firm trained their safety personnel to be able to keep a balance between negative and positive remarks on safety when visiting the site. It was also confirmed by the Estonian case that effective everyday informal communication and open dialogue with the main contractor help to avoid different misunderstandings and increase mutual effort to ensure safety and trust among subcontractors.

Formal communication

In order to ensure effective communication, formal communication channels secure effective communication from the top down, but also allow subcontractors/workers to raise and report concerns. Formal communication with subcontractors is usually described in procedures and organised by safety orders, meetings, recorded remarks, negotiations as well as immediate feedback if needed. According to one Estonian subcontractor, effective communication and open dialogue with the main contractor enables subcontractors to overcome misunderstandings and increase mutual efforts to ensure safety and trust. In addition, communication with focal companies enables the joint planning of work. The subcontractor reported that they meet with the main subcontractor every week in order to discuss timetable and how work has to be conducted. Another subcontractor confirmed that the main contractor constantly and systematically monitors the process of construction work, focusing also on OSH:

"If any problem or a delay occur, the focal company is ready to negotiate and discuss it with us in order to find possible solution together. Safety is also considered, not only deadlines." - Estonian case, Subcontractor 2, Site manager.

In the Belgian case, formal communication is organised around the work plans. Detailed work plans have to be redacted by every organisation executing a certain job, thus repeatedly obliging planners to go through the steps of a certain task in detail. These meetings take place regularly - depending on the intensity of the work - and are held in the presence of at least one representative of every organisation implicated in the specific work. Everyone involved runs through the work together to identify possible points of conflict and to ensure optimal coordination between the myriad of tasks being performed synchronously. A part of this meeting is dedicated to safety so that safety risks can be identified and solutions established. One safety expert also explained that, besides regular meetings solely dedicated to OSH, the safety team in general ensures that sufficient time is allotted to safety during meetings where there are other agenda points, and strives to give safety a prominent place on the agenda (e.g., not as the last agenda point to avoid it getting pushed to a next meeting in case they run out of time, and this is also seen as a signal to all meeting participants and all involved in the project that OSH is a priority). The safety expert further stated that this also applies to meetings involving the CEO of the client company, which once again highlights the importance the client company and the main contractor attach to OSH and the idea that the top management should lead by example.

In the Irish case, communication about orders is very clear and straight-forward: orders are planned in advance and managed through an information system that can be accessed by the main contractor and the subcontractor. On a day-to-day basis, the planned orders may be modified subject to the requirements from the main contractor's client or due to uncertainties that occur, such as a weather-

based delay. These circumstances will be communicated with subcontractors, and the orders can be updated through the established information system.

In the Danish case, the focal company also relies on both written and verbal formal communication but meetings in person are preferred to written communication. Our interviewee mentioned written communication going back and forth. One example is after a smaller non-serious accident.

“First, our construction manager gets a notification. Then they send us a message about what happened. Then it comes out from the "site" afterwards. We typically get two lines of with a description of what has happened. So, within 5 days there must be a report describing the incident in more detail[s].”
- Danish case, Client, OSH professional.

However, if the accident is of a more serious kind, they meet in an investigative group consisting of OSH specialists from HQ, focal company site manager and the OSH professional from the main contractor. This is referred to as the “big model” by the OSH professional from the focal firm.

The focal firm organises a series of meetings to secure the formal follow up on safety. The safety managers from each subcontractor, the focal firm’s site manager and the OSH manager from the main contractor meet weekly for a site-wide safety meeting. At this meeting they discuss safety challenges, PPE requirements or unexpected problems in the current phase of the site’s work. Furthermore, both the main contractor’s OSH professionals and the focal firm’s site managers respectively have their own weekly meetings across all sites where they coordinate messages and get new information from their organisations. Finally, the two project directors meet thrice a week to do safety rounds in various sites, where they are joined by the focal firm’s site manager and the main contractor’s OSH professional at the site in question.

Informal communication

Informal communication help to secure the dialogue between project teams and workers, and Informal safety communication in the construction site can be defined as safety-related information sharing taking place outside of a formalised setting, through channels outside pre-established structures of an organisation (Alsamadani et al., 2013). It is an in-person activity in the workplace that has no agreed agenda and typically takes the form of a creative safety talk about current issues that can be urgent and/or worrying or casual talk about other topics which may shape the behaviour of peers or colleagues. Therefore, it is not just a process of exchanging information and knowledge, but also changes workers’ behaviours and their perceptions of safety. However, most informal communication takes place in the hierarchical structure compared to the horizontal communication, as the focal cases give priority to develop the informal communication with subcontractors and workers through communicating in a friendly and casual way.

For example, in the Belgian case, the safety coordinator focuses on giving positive as well as negative feedback on OSH issues to workers to avoid the perception of being the ‘safety police’. Proximity with the workers and foremen also takes a central place, and the safety coordinator tries to be amongst workers as often as possible, eating or taking breaks with them in an attempt to reduce the distance between them and the safety experts. Remarks from the workers indicate that while they would also prefer a more informal, horizontal way of communicating about safety, this is not yet the case with the majority of the safety experts on the building sites. They often resort to formal and distant communication, which forms a substantial barrier to effectively addressing safety concerns. Multiple interviewees expressed their frustration in how safety experts communicate about safety towards the workers committing a purported error. According to on-site interviews, most safety experts will note a safety issue, take a few pictures of it, and leave without having discussed it with the team or the worker involved. It is only after some time that management of the subcontractor through the main contractor receives the report about the safety issue. It is these superiors that communicate the report about an error, substantiated with pictures, to their workers. This indirect way of communicating leads to much frustration and hampers the development of a collaborative atmosphere around safety. The workers and their team-leaders do not feel heard and are disappointed at not having received the opportunity to explain why they chose a certain approach or discuss this with safety personnel. A foreman from a subcontractor shares his impressions:

“These people, these safety coordinators they do their job [when remarking a safety issue], they have been appointed for it, no problem. But afterwards, come and have a coffee with me so that we can go over the different issues. Is it right, is it wrong, that doesn't matter, but it is no use to receive it after a week in a report. But this is how they do it now.” - Belgian case, Subcontractor 2, Foreman.

This social and hierarchical distance between safety experts and workers constitute a crucial source of underreporting incidents and problems, which hampers efforts to create a more constructive atmosphere around safety.

In both the Estonian and Irish cases, the respondents pointed towards the importance of informal communication at the management level between the subcontractor and the main contractors although they also pointed towards communication with construction workers. For instance, in the Irish case, informal communication plays a vital role especially for the focal company to share information with smaller subcontractors. For example, the focal company's quantity surveyor (QS) experienced that a minor issue could be amplified by the subcontractor if the information is communicated via e-mail because the reader may interpret the information differently leading to unnecessary frictions during the communication process. However, such misunderstanding can be avoided through phone or face-to-face communication. QS of the main shares his thoughts:

“I've kind of learned from past experiences that you know you, you may send an email about something about you're not happy about something and all of a sudden, like that person can read the email complete pick you up wrong like, you can read it wrong and all of a sudden, then he comes back and he's like roaring and shouting at you, and this can carry on, it's like, it wasn't that big of an issue like you know you didn't need, maybe I did that wrong. Maybe I should pick up the phone first kinda way.... [now I] kind of forgot [what it was about], ...it was only like 200 or 300 [euros] or something like that.” - Irish case, Main contractor, QS.

Meanwhile, a relatively small subcontractor also provides an example showing when in-person communication could be more efficient than the use of emails, stated by OSH professional of a subcontractor:

“...it's sometimes it could be the top man, sometimes it's just the lower manager that does cause the likes, to send emails and rather than talk and get lads down and educate them. It's a lot of times.... Walk on ten floors, while across the office and send an email rather than walking two feet across and asking him to use that ladder or not to. I just don't see how that makes sense?” - Irish case, Subcontractor, OSH professional.

Some of the focal case companies work consciously with facilitation of informal communication also in for instance informal practices such as common lunches or barbeque afternoons on-site. Besides what was already reported for the Belgian case, for instance, in Denmark the site managers host a weekly breakfast that illuminates the focus on informal communication.

“Every Friday morning, we make breakfast. Our tunnel work site manager loves to cook, so he makes the breakfast. We invite all our counterparts, the tunnel manger from the contractor, the safety manager, the foremen. We use 20 minutes and talk about everything else than work. It's not about work, it is about us as people. You establish a friendship which makes it so much easier when you have to go out and say, that's not right.” - Danish case, Client, Site manager.

Feasibility of communication of OSH

Effective communication on construction sites acts as one of the main relational governance instruments to improve OSH. Communication has a formal element in that the focal case companies set up channels to ensure that the necessary communication takes place. This includes formal information sharing and decision making, but also a more informal exchange of experiences and opinions. Most communication

takes place in the hierarchical structure. While the importance of horizontal communication must not be understated, it is not well documented in our cases. Not all examples show that communication is effective. By identifying and understanding the different types of communication barriers that exist, measures can be implemented to tackle those and to ensure that messages are conveyed effectively and receive feedback.

The formal communication involves contractual elements such as safety orders, procedures, and recorded remarks. These elements are outlined in contracts between subcontractors and main contractors, ensuring that the appropriate communication channels and responsibilities are well established. Regular meetings and safety briefings are often stipulated in contracts. Contractual agreements ensure that subcontractors and workers can raise concerns, receive information, and discuss safety-related matters.

Informal communication emphasises relational elements and the establishment of positive relationships between workers and safety personnel. Proximity and engagement efforts, such as having joint breaks, contribute to building trust. In-person communication and informal practices help overcome hierarchical barriers and promote open dialogue, allowing workers to express their concerns and opinions, and share feedback. This type of communication fosters a more collaborative and constructive atmosphere around safety. It is also important to acknowledge different communications barriers as mentioned above.

Overall, effective communication in construction projects requires a balance between formal and informal elements. Formal communication channels established through contracts provide structure and accountability, while informal communication practices foster relationships, trust, and the sharing of safety-related information. Both are essential for maintaining a high safety culture in construction sites.

Table 19: Feasibility of communication

Feasibility	Contractual and relational elements
<p>Actors on different levels of the building site should have different and structural ways for both formal and informal communication.</p> <p>Different communication channels need to be implemented to support communication.</p> <p>There is a need to identify possible communication barriers, such as language barriers, psychological and physical barriers to communication.</p>	<p style="text-align: center;">Contractual</p> <p>Regular and clear formal communication (training, awareness days etc) of safety rules, guidelines, agreements and procedures on OSH, which are introduced before the start of work and regularly during the work.</p> <p style="text-align: center;">Relational</p> <p>Key elements are relational: creating an open dialogue and communication on OSH, focusing on both good practices and mistakes- becomes possible on all levels of the building safe construction site.</p> <p>Knowledge sharing using the combination of formal and information communication increases both education and awareness of workers, empowers workers to actively participate in maintaining a safe work environment.</p>

4.8 Conclusion and policy pointers

Through the qualitative study of four exemplary building sites in Denmark, Estonia, Ireland and Belgium, a complex image has emerged, pointing towards a number of good practices, promising policies and avenues for further research in the domain of safety and health in the construction sector. The four case studies all looked at large and complex building projects combining many of the known safety risks typical for the sector, while also providing novel ways for tackling them. By using a number of innovative market leverage practices, different actors across the four case studies managed to put safety and health at the centre of their projects. While the construction sites were situated in four different countries within the European Union, each with their own regulatory framework, cultural constellations and economic realities, and while all four projects involved organisations and workers from a myriad of

different national, cultural and linguistic backgrounds, a number of interesting parallels can be found on the level of their OSH policies and practices.

The OSH-related practices and policies observed throughout the four case studies in the construction sector cannot simply be classified in an unequivocal way as contractual or relational. The ideal type of the hybrid governance practices thus appears most prevalent, and the most suitable for characterising the different actors' tangible activities. In fact, our research suggests that such hybrid approaches are the key to maintaining a balance between top-down and bottom-up approaches, and between providing incentives and handing out penalties, as well as to ensure that all actors and all levels are aligned when it comes to OSH. We documented several examples across all case studies where contractual practices reinforce relational measures and vice versa. To dig deeper into these practices, it is, however, instructive to distinguish their contractual and relational elements, while emphasising their interconnectedness and mutual influences. By doing so, this report balances attention for the hybridity of governance practices evidenced through the empirical part of this research, and a thorough analysis using the conceptual framework.

This study brings together both the cases' specific achievements and the insights shared among multiple cases. Prompted by the interrelatedness of different governance practices and their often hybrid nature and in order to build on the individual case reports, this chapter is organised into transversal thematic clusters. These link together multiple governance practices influencing (or attempting to influence) OSH, following the on-site realities that we empirically observed in each of the selected building projects, and here we summarise its main conclusions, compare the most prominent contractual and relational elements, and link them to suggestions for future policy.

Contractual governance and safety in the construction sector

Contractual elements of the governance practices are crucial to their perceived OSH outcomes. Sufficient attention to safety and health on the building site often finds its basis in the contractual relationships between parties. Clear rules and norms on safety and a clear division of responsibilities between the parties on site constitute two crucial elements.

The construction sector in all four countries shows a strong tendency to formalise commitments to safety and to contractually stipulate required safety practices and policies up until a significant level of detail. We found that for a number of issues such communication and coordination, penalties and rewards (or their absence), educational moments, things to wear, protocols to follow, and languages to speak. In all four cases legislation also has an influence, as many legal safety requirements exist on both national levels and the level of the European Union. In this regard, however, several actors have called for more harmonisation not only to reduce costs but also to improve health and safety in the construction sector. Examples are the need for contractors and workers to get (re)certified according to different sets of rules depending on the country or companies determining to accept workers' certificates issued in other countries without a good understanding of what was actually required to obtain them.

Contractual elements of governance practices run the risk of being 'paper realities only', somewhat detached from the reality on the ground, engendering frustration for their lack of suitability or impact. This is certainly the case when contractual arrangements are demanding in terms of the number of KPIs that contractors must meet, so that in practice no one is sure anymore of what is measured, why, and how this translates into safer behaviours in practice. Yet, they are crucial for the governance practices to succeed. Having formal assurance, backed up by legal and economic consequences in case of non-compliance, often provides much needed safeguards that cannot be simply put aside once price or time pressures take the upper hand. Whereas contractual governance is used to manage the relationships with all (sub)contractors, it seems to be used more loosely when it concerns an existing relationship with previous successful collaborations with a (sub)contractor, versus a new (sub)contractor with whom no such relationship exists and trust must be built.

Together with legislation, contractual OSH obligations can provide strong assurance for the efforts made. For these policies and practices to have an actual positive impact, however, mere compliance to the letter is insufficient. They need to be complemented with the more informal, relational aspects of governance mechanisms, which make all the difference between routine compliance, and effective OSH policies.

On this point, two interesting findings emerge from the cases. First, there clearly is an interplay between the contractual stipulations and the relational approaches used to manage those in buyer-supplier relations. Some clients aim to raise the bar concerning safety and health by imposing on their (sub)contractors ever stricter clauses in the contracts. To make this acceptable for these (sub)contractors, especially when they have longstanding relationships with this client, relational aspects come into play (e.g., open dialogue). The opposite example was also found, in that in some cases the relationships between client and (sub)contractors are so strong, that the contractual arrangements underpinning them became less strict over time.

Second, clients especially those that are public organisations, traditionally tend to rely heavily on contractual governance for various reasons (e.g., accounting for the public procurement rules) and may opt for an approach that provides them with a solid legal basis in case of an issue or incident that causes them to face public scrutiny. These clients, given their size and significance, can lead the way when it comes to safer and healthier work in the construction sector, in their own sector, country and beyond (thinking of the many instances in which organisations and experts referred to examples from other sectors or countries). In the cases examined, public organisations functioning as clients were aware of their leading role, as well as of the need to apply hybrid governance instruments to push forward. One of the public client organisations recently started introducing clauses on issues such as housing that usually fall outside of the scope of such contracts but do affect workers' safety and health indirectly. Public client organisations should thus be aware of the opportunities that the high visibility and scale of their projects brings.

Relational governance and safety in the construction sector

As became evident in the four case studies, a formal commitment to safety by the parties to a contract does not suffice to instil on the building site a genuinely constructive attitude towards OSH. A few elements appear crucial here.

A strong top-down OSH policy with clear commitment of top-management of all the involved parties seems to be a first precondition. Management from the building client and the contractors must be on the same page concerning the importance of OSH in the project, not only on a formal level, but also in their more informal practices and communication during the daily management of the project. The cases indeed show that management can lead by example and should treat OSH as a priority.

This shared concern and awareness on the 'top' must be complemented with more mechanisms paying attention for bottom-up knowledge on and experiences regarding OSH. Ideas, suggestions, worries or objections of construction workers play a key role, requiring mechanisms stimulating a constructive dialogue between safety experts and workers. Eventually, the level of the workers themselves manifests much of the safety improvement and fosters genuine worker engagement, both of which can increase attention for OSH, as well as improve management knowledge of risks, priorities and good practices. In the case studies, we identified several good examples across levels (management, safety team, workers) and organisations (client, main contractor, subcontractors) as well as among workers (buddy system in which junior and senior workers are paired, attention for challenges for non-native speakers, joint breaks to exchange information) - all example contributing to create a safety culture in which open and direct communication take places. While it did not clearly emerge from our cases, trade unions can play a role in facilitating here as well.

A major challenge for OSH in large construction sites is the complexity of interpersonal and interfirm communication and coordination. Next to formalised rules and settings (e.g., fixed regular meetings, coordination moments, universal signs between workers), relational aspects such as trust, good personal relations, open and inclusive communication styles will again be a necessary complement. Communication on safety issues could be enhanced through the creation or intensification of communication channels that bring together actors of different organisations around the subject of safety and health. Actors exercising different functions within the project should be included, so that as many points of view as possible can be considered in advance. In addition to this, multilingual and non-verbal communication remains a clear challenge, with a considerable impact on OSH performance. On this point, the case studies presented here also highlight the importance of providing incentives to companies and workers, besides penalties, which should be communicated widely.

Future research

As it focusses on the role of market leverage mechanisms, this study does not directly look at other factors such as regulation or labour inspections, which of course play a crucial role in improving OSH in the construction sector. Future research could further unwrap the interactions that might exist between different forms of market leverage OSH governance practices and public regulation of safety and health. As in the construction sector, these aspects are thoroughly intertwined, intersecting in virtually every safety policy and practice, a study of just how these different aspects work together, how they stimulate each other, or on the contrary when they put up barriers for effective functioning, could be of value to further understand the mechanisms facilitating improvement of OSH.

The present study chose to employ the framework of dyads, in order to capture the complexity of the supply chains that constitute every construction project. This is largely a practical choice, as unravelling the multiplicity and complexity of construction value chains and gaining access to subcontractors in long subcontracting chains is extremely challenging. As long and opaque supply chains are a pressing – maybe even the most pressing – issue when looking at OSH in the construction sector, finding ways to understand better their dynamics is still an important task. This could be a domain to explore further by research, possibly by using more creative approaches tapping into practices of workplace ethnographies or action research.

While still open to supplement and improvement, this report has identified a number of key areas where market leverage mechanisms could have positive effects on OSH. In the light of this, the following policy pointers put forward suggestions for both companies and policy makers that could help them improve OSH outcomes in large construction projects.

Policy pointers

A balanced and clear division of financial risks between the building client and the main contractor can help to align the financial incentives of both parties. The Irish construction company uses supply chain finance as a means to do this with some smaller and trusted suppliers. This is crucial in softening the usual antagonism between client and contractor and can avoid time pressures on workers, both key elements for a constructive OSH approach. Time and price pressures lead to compromises on OSH even in the most exemplary construction projects. This could be further exacerbated by external factors such as the Covid-19 crisis or the rise in material prices. Avoiding pushing this pressure on to subcontractors and giving more weight to factors other than price in tenders, could lead to safer work environments. To address both concerns, policy could provide adapted framework contracts for building clients and communicate good and problematic contractual practices. In a maximal scenario, policy could restrict certain practices that risk putting undue burdens on suppliers, such as payment delays or piece work, or limit the degrees of subcontracting allowed as is already in place in some countries (among others Spain). More transparency can also be achieved through compulsory reporting of construction sites to the authorities (among others in Denmark and Estonia).

Active engagement in OSH policies by both the main contractor and the building client can lead to more integrated procedures. Instead of OSH being a package of tasks that can be outsourced, it could then become something that is integrated into the functioning of all actors involved in a building project.

This hinges on the qualifications and knowhow within both organisations. Therefore, actors like mandatory safety coordinators becomes ubiquitous in all building projects. Our cases show that they depend on help from their own organisations, as well from the client organisation. There needs to be people in staff positions in both organisations who can make sure that the knowledge from the coordinators is brought to the attention of management in both organisations, and that can help the coordinators with developing and spreading practices and policies on the construction sites.

OSH training constitutes a crucial part of any OSH policy, but the effectiveness depends on a number of factors. Project-wide training could help to reach those workers that are the least visible and often the most vulnerable. Training content should cater to tangible needs or questions that arise on site, and thus incorporate feedback and suggestions of workers themselves. Training methods and languages should also be adapted to the needs on site and consider the diversity in language skills, culture, and educational level of the target groups.

Policies could be streamlined or harmonised in order to avoid workers having to unnecessarily repeat the same basic OSH trainings when switching between projects or countries. A European-wide approach could greatly facilitate the mobility of workers through the rationalization and harmonisation of training requirements. It is crucial, however, that these measures are coupled to increasing the allocation of time to trainings that are adapted to concrete situations or can expand in more depth on certain themes. This could lead to an accumulation of workers' safety knowledge throughout their career.

For policy makers:

- Public and other professional building clients can lead the way to a more safe and healthy construction site by playing an active role from tendering, procurement and throughout the construction process.
- Labour inspectors can support the coordination and collaboration at construction sites by not only giving injunctions for the tangible infringements but also by including OSH management and coordination in the injunctions.
- Advisory services can help clients, main contractors and subcontractors develop coordination and collaboration by suggesting collaborative practices and application of coordination tools. Construction safety coordinators play a leading role here, as they are mandatory on all European construction sites where more than one contractor or employer are active and can function as the links between external advisory services and the workers on the site.
- Policies and requirements on safety trainings and certificates for construction workers could be harmonised across the EU, thus avoiding repetition and creating room for more in-depth and specialised training.

For practitioners:

- The active client role shows how important it is to not only ask for OSH management in the tender and include provisions in contract, but also to follow up on a daily basis on the construction site.
- Development of good collaborative social relations is key to safety and health at the construction site. Positive awards and recognition of good practices constitute stronger promoters for safety than sanctions – although the possibility of sanctions is important as a foundation for the positive approach.
- Orchestration of several practices creates synergies: examples can be toolbox meeting, shared rounding, awards, green, yellow, and red cards, training.

5 Agrifood

5.1 Characteristics of the European agri-food industry and sample description

Agricultural production has historically held a relevant role in many EU Member States, such as the ones located in the Mediterranean region as well as in northern and eastern European countries. For instance, the agri-food industry in Spain employs more than 440,000 people and is the country's main manufacturing activity¹⁷. Focusing on the utilised agricultural area in the four countries participating in this study, Estonia has the least agricultural area and Spain has the most. The sector has a large economic impact with the agricultural sector contributing EUR 217.0 billion representing 1.4% of the EU's GDP in 2022¹⁸. According to the same source the agricultural labour input in the EU encompasses 7.8 million full-time workers in 2022.

Despite suffering a high decline due to the Covid-19 crisis, the turnover for the wholesale and retail trade has not stopped growing since 2005. According to Eurostat, the development of the retail trade volume in the EU and third countries generally increased during the last decade, but some differences are noticeable¹⁹. In countries such as Bulgaria, Lithuania, Poland and Romania, the volume doubled or even more, while in some other countries such as Greece, Spain, Italy and Luxembourg, the trade volume showed some decrease since 2005. The retail sector employs about 10 million persons in the EU-28 and is one of the largest service sectors in the European economy” (Dachs, B et al., 2016, p. 141). Additionally, the employment level (even if suffering a high impact due to the covid crisis), has been able to remain stable over the past five years. Greece and Denmark are the two countries that stand out because of their level of specialisation in retailing.

Three out of the four selected focal firms are retailers and will help to understand how the relationship between retailer and producers and farmers can be managed considering working conditions and OSH. Here the main characteristics of the focal firms in the sample:

- The Irish focal firm is a leading food retailer within Europe.
- The Danish focal company is one of leading retailers in the Danish market.
- The Spanish focal company is a business unit of a retail chain in Spain.
- The Estonian focal firm is a well-known producer and wholesaler of fruit and vegetables products in Estonia.

The agri-food supply chain structure and dynamics

The agri-food sector is a complex network made up of extended supply chains, with the idea that for an end customer to eat a meal they will require inputs from farmers (around 11 million farms in the EU), consolidators such as co-operatives, food processors, wholesalers and finally a supermarket or restaurant (Interreg, 2019). This is often referred to as “from farm to fork”. In addition, each of these types of organisations will have their own inputs whether it is products, such as seeds, fertiliser; services, such as external training; and financial resources for farmers, the logistics service providers who move and store foods between processors and super-markets, or the firms who supply packaging or labour to fruit growers. Even something as simple as an apple will have a complex extended supply chain; especially an apple bought in winter from a supermarket in Europe.

But supply chain thinking is a relatively recent phenomena, and many supply chains struggle to deliver value while satisfying their other societal obligations such as protecting workers from harm. This struggle is due to a central challenge of supply chain management. For-profit firms can increase their profits by creating and maintaining information asymmetries; by knowing what other chain members do not know. (e.g., Vosooghizaji et al., 2020). Yet, to coordinate the supply chain to achieve goals beyond the individual organisation's goals such as maximising value to the end customer or protecting all workers

¹⁷ <https://www.investinspain.org/content/icex-invest/en/sectors/agrifood.html>

¹⁸ https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Performance_of_the_agricultural_sector#Value_of_agricultural_output

¹⁹ https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Retail_trade_volume_index_overview#Retail_trade_developments

in the supply chain, requires sharing information between supply chain members (e.g. Johnston et al., 2004). A chain member can then try to maximise their own profits by creating and maintaining information asymmetries within the supply chain – while risking the overall chain's performance, or they can share information across the chain to coordinate supply chain activities and maximise the value provided by the chain – while risking their own profits. Governance mechanisms can play a relevant role in allowing information sharing in the supply chain.

Power dynamics in the agrifood supply chain

Usually, relationships in the focal buying firm-supplier dyad tend to show differences in terms of power (im)balance depending on the size of the suppliers. For instance, in some cases the focal buying firms are located in places where many fruits and vegetables either do not grow at all, or only have a relatively short seasonal availability. Hence, to keep shelves stocked year-round requires supply from other countries and frequently other continents. In addition to being seasonal, fruit and vegetable growing conditions will vary between growing regions on a year-to-year basis. Forming relationships with a single farmer or even cooperative will then be risky if a firm wants to maintain a (mostly) year-round supply of any fruit or vegetable.

In addition, many the farms growing fruit and vegetables are very small and there can be tens of thousands of farmers growing the same crop. This puts price pressure on individual farmers and keeps prices low in markets – which consumers appreciate / expect. However, to supply even the smaller retail networks for the focal companies in our study, requires the production of multiple small farms in other countries, creating significant coordination costs and risks from transport, weather and the like.

Therefore, many food retailers depend on consolidators (cooperatives or more traditional for-profit firms) to supply their fruit and vegetables. The consolidator has the direct relationship with the growers, allowing the focal buying firm to only coordinate a single relationship (and logistical system) with the consolidator. In addition, the consolidators tend to buy in such bulk that they get the lowest prices and have greater geographic reach to avoid stockouts. There are few consolidators with the reach to cover all growing regions for all fruit and vegetables. Therefore, weather related risk is reduced but not eliminated. Plus, while the consolidators' scale is an advantage, it is also a problem for the buying firm, in that the consolidators have a great deal more power than a single farmer or co-operative would. However, exercising power in this manner is detrimental to trust (Terpend & Ashenbaum, 2012) that taking this path will lead to suppliers who are complying due to their dependence on the buyer, doing the bare minimum to comply while harming overall supply chain coordination.

Additionally, the agri-food supply chain faces some challenges such as “sustainability, stringent government regulation, food security, and traceability issues” (Yadav et al., 2022, p. 1). According to the same authors, it may also obligate the managers to look for new alternatives in order to adapt their performance to the market requirements, which, in turn, will also impact in the design of the food logistics network.

Working conditions and OSH in the agri-food sector

The most common indicator reflecting the quality of prevention in a sector is the number of accidents at work. The agri-food activity in the EU has the fourth highest rate of fatal and non-fatal accidents (11,4% of the total). In general, for fatal and non-fatal accidents, the most common type of injuries are wounds and superficial injuries (26.8 % of the total) and dislocations, sprains and strains (24.6 %), concussion and internal injuries (18.6 %) and bone fractures (10.5 %) ²⁰. Concretely, workers in the agriculture sector “have the highest score of posture-related risks and ambient ergonomic risks.” (EU-OSHA, 2023a, p. 44). Most of these accidents may be due to the hard conditions' workers experience: handling heavy loads, repetitive work, heavy machines, noise or vibration or even the use of chemicals such as pesticides. Additionally, there are some other particularities affecting those workers such as heat at work (for more information, see the recent report published by the (EU-OSHA, 2023a). Generally, a safe and healthy work environment and quality of life might be lacking in the agri-food sector, as shown by the suicide rate in the industry. For example, between 2012 and 2017, 559 deaths were caused by suicide in Italy among workers in agriculture, fishery, forestry and hunting (Alicandro et al., 2021). Similarly, in

²⁰ https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents_at_work_statistics&oldid=584085

a 3-year study period about working conditions in farms in France “2,769 men and 997 women died. Suicide accounted for 417 of the men's (15%) and 68 of the women's (6.8%) deaths” (Bossard et al., 2016).

Furthermore, the sector also relies heavily on non-national workforce (from both other EU member states as well as from other third countries). Concretely, Germany, Italy, Spain, France and Poland, employ high numbers of migrant seasonal farm workers ((EPRS, 2021). However, official figures do not reflect the reality since many migrant seasonal workers go un-recorded working in the submerged economy sector. According to the same author, the irregular situation they face together with the temporary nature of the activity, can lead those seasonal workers to “more vulnerable to precarious living and working conditions, even to exploitation and trafficking.” (Ibid, p.6).

Working conditions and OSH are regulated by national legislations. The characteristics of the agri-food sector: hard-working conditions, seasonal and temporary work and the presence of migrants, make OSH a tricky topic for the business actors in the supply chain. National regulation covers the conditions in the individual countries but does in general not reach beyond borders, although advice on OSH exists at the European level (EU-Commission, 2012). However, in our cases we found that by acting at the supply chain level it might be possible to indirectly address such aspects of OSH and working condition by means of better planning, coordination and more stable and predictable returns for producers and farmers.

In what follows, we analyse how contractual and relational governance can facilitate such coordination and information sharing and may impact occupational safety and health and working conditions.

5.2 Contractual governance in agri-food context

Focal firms in our sample use different contractual and relational governance tools to assure stable deliveries and food safety and quality standards. Working conditions and OSH in the supply chain may also benefit from these governance mechanisms in several ways.

Contractual governance in sustainable supply chain management

A buyer-supplier dyadic relationship can be characterised by the adoption of a combination of contractual and relational governance mechanisms (Wacker et al., 2016). Several studies regarding sustainable supply chain development suggest that contractual and relational governance are synergistic in the development of more sustainable performance. However, most of these studies are focused on environmental sustainability. For example, Gimenez and Sierra (2013) show that contractual governance elements, such as supplier assessment (e.g., questionnaires and company visits) and relational governance mechanisms, such as collaboration with suppliers (e.g., providing training, support, or other activities), have a positive and synergistic effect on environmental performance, and that assessment acts as an enabler of collaboration. A recent study also shows that behavioural uncertainty characterising buyer-supplier relationships in the case of implementation of sustainability requirements could lead to changes in both contractual and relational governance, and that negative experiences with relational governance led to higher reliance on contractual governance (Belhaldi et al., 2021). The role of contractual governance is to establish proper arrangement and coordination by preventing opportunistic behaviour and is perceived as a necessary condition in promoting green collaborative initiatives (Kong et al., 2020). Similarly, incorporating social concerns such as human and labour rights in buyer-supplier contracts can enable supply chains to operationalise legal obligations and secure compliance with relevant soft and hard laws (Mitkidis et al., 2019).

Contractual governance and OSH-related concerns

Research on the governance of sustainability of buyer-supplier relationships in agri-food is generally limited and when it comes to working conditions and OSH it is particularly scarce. Research exists about conditions in developing and emerging countries for crops such as coffee and chocolate but the research about conditions related to supply chains in industrialised countries is rare. While the main focus of buyers' governance activities is directed towards food safety and environmental issues, OSH consequences are often considered insufficiently (EU-OSHA, 2023b). However, previous research does provide examples of buyers in the agri-food sector that include OSH-related concerns in their procurement strategies. Examples include the buyers requesting suppliers to adopt public standards

(e.g., SA 8000) (Maalouf & Hoque, 2022; Raynolds, 2012) and private supplier codes of conduct regarding OSH aspects (Asif et al., 2019). In addition to this contractual governance practice, some buyers require their suppliers to fill out questionnaires regarding OSH conditions described in their codes of conduct and perform audits about whether such conditions are actually provided (Asif et al., 2019). This body of research generally shows that buyers implement these governance practices because they are vulnerable to public scandals and the following reputational losses due to supplier misconduct (Mani et al., 2018). In addition, most studies are conducted in developing countries and little is known about to what extent such governance practices are implemented in developed countries to address OSH concerns into suppliers' operations (Asif et al., 2019; Maalouf & Hoque, 2022)

In our results we did not observe an extensive use of contractual governance tools to improve OSH by buying firms. Code of Conducts, meaning agreements between focal organisation and its suppliers, certifications and related-third-party audits constitute the contractual governance mechanism widely applied in the agri-food sector. Many of the most influential standards have incorporated specifications from ILO into their Code of Conducts and standards such as GLOBALG.A.P., which is the main international certification covering food safety, environment, and basic OSH used in the food industry, but the standards mainly focus on food safety or consumer protection.

The contractual governance practices observed do allow for more reliable deliveries and more stable returns for suppliers. This in turn is reflected in better planning of work hours and stable work relationships with their workers. This could indirectly benefit OSH as well. In Table 20 we summarize the contractual governance tools used by focal firms in our sample and their benefits in terms of supply chains outcomes and OSH.

Table 20: Contractual governance in the agri-food sector

Market leverage	Description	SC benefits	Working conditions and OSH benefits
Contractual agreements	Volumes and prices are predefined and agreed in a formal contract.	Stability/Reliable volume/delivery performance.	Stable returns for suppliers (i.e., farmers). Stable employment for workers. Stable working hours/ limited extra-hours for workers and farmers.
	Product quality and delivery requirements.	Food quality and safety. Reliable delivery performance.	To give sufficient notice about delivery/definition of delivery time avoids pressure and allows better working time planning.
	OSH requirements in the focal firm warehouse.	Speed-up loading and unloading activities.	Reduce safety accidents and ergonomics problems.
Other requirements	Code of Conduct, certifications and audits including OSH requirements.	Food quality and safety. Environmental performance.	<ul style="list-style-type: none"> ▪ Diffusion of OSH culture, OSH risk assessment and management system. ▪ Control on the usage of pesticides in certifications.

Contractual governance

The use of contractual agreements for volumes and prices

In principle, contractual agreements should prevent supply chain partners from prioritising their own interests (Jap & Ganesan, 2000). Almost all focal firms in our sample – except for the Spanish focal firm – establish formal contracts with their suppliers and this is a way to protect both parties in the relationships. In the Irish, Estonian and Danish cases, focal firms are located in countries where the fruit and vegetable supply are limited and having a contract is also a way to protect the buyer's interests. Such contracts usually include prices and volumes of the requested products and specification of quality and delivery requirements. They are also accompanied by the request to sign a Code of Conduct (CoC) and to provide certifications, as will be explained in section 0.

In the Estonian case, there is usually a contract between the focal firm and the suppliers. Volumes and prices are predefined and agreed in the contract as explained by a supplier's employee:

“Yes, we have a contract, a specification, and a price list valid for a certain time. We have fair price for fair quality. Are we more expensive than our competitors – yes. Does the focal firm values this – yes, because of our quality. As I was saying, and this is how we work.” - **Estonian case, Supplier 1, Owner.**

Supplier 1 states that there is a formal general contract signed in the start of making business, and this is stored in his computer. Afterwards, there are contracts for each batch. Supplier 1 describes:

“In our business, you better have everything written down – an e-mail is the best option. The procedure goes like this: [focal company] sends a requirement. We need mango puree. Then they need to tell us: we need these and these features. We make them an offer, and then they approve it. Then we go to a contract, signing procedure: they need to sign, I need to sign. I only sign when I get confirmed it by my producer. Then you can start with the selection of the batch. So, in e-mails, everything is written down.” - **Estonian case, Supplier 1, Owner.**

In the Irish case, the focal firm has a legal team to draft the contract and to ensure suppliers sign the contract before the trade as described by the trading manager of the focal firm:

“When you're signing our own brands' contract, we would have terms and conditions. So, every supplier has to sign our terms and conditions, and that would lay out within that what criteria they need to hit, and what is and isn't allowed, as part of our trading relationships.” - **Irish case, Focal firm, Trading manager.**

The Danish focal firm uses a regular contract with farmers stipulating the quantities and delivery specifications usually has a minimum of two years duration, and prices will be negotiated on a yearly basis.

“I would say that it [negotiating the price every year] is in the interest of both parties, at least that is how it will usually be, in the first year you agree on the price, and it just works like a normal contract. Then you have an agreement that you can run it further, so we run the second year, and we run the third year, but then we renegotiate the prices. That is, when he comes in and has to negotiate the price the following year, he knows the quantity, but then we talk prices. It is really relevant right now, where we are almost talking prices from hour to hour. But in general, it is also a good security for the supplier and also for us in reality because we have not agreed on the price, but we have agreed on the quantity, and the supplier can organize himself according to that quantity and go to the bank according to it, he can invest accordingly.” - **Danish case, Focal firm, Procurement Manager.**

Although this agreement in principle also benefits the supplier, it does not change the fact that the retailer typically has the bargaining power and therefore has the upper hand when it comes to the yearly price

negotiations or adjusting the prices ad hoc due to the occurrence of immediate events that could make this necessary.

In the presented examples, contractual agreements regarding price and volumes might be a helpful tool to protect buyer's and supplier's interests as they define the magnitude to which exchange parties are tied in a formal way that provides guarantees and ensures conformity in terms of duties, roles, rights, and contingencies (Dolci, 2017). Such formalised contracts help to do better planning and coordination for more reliable deliveries and to stabilise returns. In this sense, contracts can be an important governance mechanism tool to define production volumes and prices for producers and protect their interests.

A more formalised relationship helps to develop small farmers facilitating them to grow and also establishing more standardised processes benefiting both operational processes and OSH aspects. Even if we did not find direct evidence, a more formalised relationship may potentially benefit working conditions and OSH in term of stable employment and working hours. Indeed, the suppliers in our sample describe that they feel reassured by such contracts when planning their business activities (and so when planning their workforce requirements providing more stability).

Further, based on such contractual agreements, suppliers can also plan investments in new product or new technology, which may be safer and healthier for workers. A family-owned micro farm that grows and processes buckwheat for the Estonian focal firm, has for instance continuously invested in modern machinery and developed the working conditions in the production buildings in order to be ready to process larger orders agreed with the focal firm. It also means more automated processes which present easier working conditions for workers. The owner of the farm states:

"We have all new tractors. Last year we replaced the tractors. We have a new seeder. The combine harvester is only 5 years old. The tools are all okay, except the equipment for the milling room. We want to upgrade it for faster operation and larger orders. Then there will be less manual work too." - Estonian case, Supplier 3, Owner.

The use of contractual agreements for product quality and delivery requirements

In addition to price and volumes, contractual agreements include quality and delivery requirements. Indeed, the main purpose for the agri-food dyads is an exchange, which satisfy both parties' basic needs – the buyer for a product meeting the expected requirements for price and also quality and delivery and the supplier to deliver a product that meets buyer expectations and secure the necessary profit.

In terms of supplier evaluation, selection, and monitoring criteria, quality and delivery requirements from the focal firms are key in all of the analysed cases. In general, quality technical performance of the products and delivery performance are the main priorities when selecting and evaluating a supplier by a focal firm, even if the final decision is based on the price negotiation. The Danish focal firm gives priority to provide clear specifications for quality and packing. The quality manager in the procurement unit explains:

"Then we make a product specification for each. The specification is composed by requirements, quality requirements, packaging requirements and all the requirement for each product and with the pictures of a defect. In order to help the quality control teams in the countries to better understand each defect and to put percentages of allowed percentages for each kind of defect." - Danish case, Focal firm, Procurement manager.

Having formalised procedures to manage quality can help to stabilise operational processes with possible benefits on working conditions and OSH. In addition, defining delivery requirements in contracts allow suppliers to better plan their work thanks to sufficient notice about delivery deadlines. This allows to reduce pressure on day-to-day activities and have a more stable working time. The Danish case provides an example of this practice. For suppliers outside Denmark the delivery time is obviously longer than a few hours, and the retailer therefore gives particular emphasis on the timeline and the cooling chain. The retailer agrees with the supplier about the temperature requirements and makes subsequent audits to secure compliance with the requirements. The retailer tries to make orders with a reasonable timeframe for the supplier as described by a German supplier:

Interviewee: *"a week, ten days in advance. They always adjust that a bit, but then you have a framework that you can work on quite well."*

Researcher: *"Okay, but 8 days in advance isn't that long, is it?"*

Interviewee: *"Well, we're just not used to it any other way. Let me put it this way, in our company, but also in the product group, everything that is ordered on day A and loaded on day C, that's great. Well, we're happy about that, and we can work really well with it. Anything that has a longer lead time is of course even better. But two days in advance are already perfect. So, if an order comes in on Monday, which is then loaded on Wednesday, that wouldn't be until Wednesday evening, so the order comes in on Monday for delivery on Thursday, that's a dream. So, it's usually like this: order today, delivery tomorrow - that's definitely what the German chains do."*

Danish case, Supplier 1, Commercial manager.

OSH requirements from the focal firm

In most of the cases we did not identify specific requirements in terms of working conditions and OSH for the suppliers from the focal firm in contracts, but the focal firms generally requested that suppliers comply with their Code of Conduct (see next section).

However, we found that focal firms often provide specific guidelines regarding OSH practices in the delivery and logistics processes in which both focal firms and suppliers are involved. For example, in the Spanish case, the focal firm requires maintaining a certain height of the pallets at the delivery point to avoid ergonomics problems and musculoskeletal accidents. For instance, according to a Spanish focal firm, they ask their suppliers to use Euro pool boxes to do the composition of the pallet, as explained by the Director of Operations:

"It is very stable; it is completely squared because otherwise each supplier gives you a different type of box. I mean, I don't care if they were these, there are many boxes on the market. [...] The objective is to be able to make a stable mosaic, otherwise it is impossible to prepare the order for the stores [...]. In addition, if the boxes do not pile up well, the falling risks are enormous and then the picking for the pickers is crazy. So, we defined this policy: we work with the same type of box with all suppliers. The pallet in this way is super stable and we avoid risks of falls and other accidents." - **Spanish case, Focal Firm, Director of Operations.**

Additionally, they also require their suppliers to work with pallets not more than 1,80 meters high. In this way, they ensure that the height does not pose any risk to the suppliers and workers when unloading the merchandise.

In the Irish case, the focal firm and most of the suppliers have clear and specific rules about loading and unloading responsibilities in each warehouse to avoid potential health and safety issues for to external employees in their own facilities:

"What we find is like 99% of the time, but nearly universal is like those suppliers don't want our employees on their warehouse stores, you know similarly, that we don't allow those suppliers on our warehouse floor when they are delivered to us... when we've supplier drivers arriving in...they are back into a loading bay to switch off the engine and lock the tab, bring the keys, and then their keys are put into a the location that they have to wait until the load is unloaded, our drivers will be the same, so they'll have to wait until the load is loaded." - **Irish case, Focal firm, Health, safety and facilities manager.**

These requirements are in place and enforced because the loading and unloading activities are performed in the focal firm's warehouse. However, such practices may have a positive impact on worker's health and safety also at the supplier site to reduce accidents and ergonomics problem. At the same time, they facilitate loading and unloading activities with positive impacts on supply chain outcomes.

Certification's requirements and audits from the focal firm

Food handling is regulated by country-specific rules dating back more than 100 years. Such rules have evolved in the years in national and international certifications for the agrifood industry. During this development, working conditions and OSH requirements have been integrated in some of these certifications as well as OSH-specific certifications have been defined. The use of certifications initiates from mainly downstream large retailers and large food processing brands who require farmers and other suppliers to adhere to them.

The system works in principle by buyers requiring suppliers to comply with their Code of Conduct. The supplier should agree to the CoC and can then use certifications to prove compliance to topics in the CoC. If proof of certification is provided by the suppliers, the buyers avoid doing their own audits and leave the supplier to pay for certification and audits. Most standards require the certified company (the supplier) to do internal risk assessment of OSH and self-assessment of working conditions.

Even though certifications and audits are widespread in the agri-food sector as a main pillar to secure legitimacy, very little research points towards positive impacts of certifications and audits – mainly based on management opinions (Spadoni et al., 2014). In general, the research literature is critical towards the ability of social compliance audits to verify the certificates and secure decent working conditions. This is in particular the case for developing countries (Kelly et al., 2019; Lebaron & Lister, 2015), but also for industrialised countries (Bjelle & Sydnnes, 2020; Blewett & O'Keeffe, 2011; Hohnen & Hasle, 2011; Owen et al., 2000).

The focal firms in our sample require different certifications from their suppliers. In some cases, they may conduct additional audits/visits to evaluate suppliers' practices and performance, as summarised in the following table.

Table 21: Certifications requested by focal firms to suppliers and audits

Focal firms	Certifications requested	Use of Code of Conducts	Audits by focal firm
Danish case	<p>GLOBALG.A.P. (Good Agricultural Practices)²¹ covering food safety, environment, and basic OSH.</p> <p>GRASP for suppliers in Southern Europe. In the process of expanding to all suppliers.</p>	<p>CoC for social issues including:</p> <ul style="list-style-type: none"> ▪ The rights of Freedom of Association and Collective Bargaining. ▪ No Discrimination. ▪ Fair Remuneration. ▪ Decent Working Hours. ▪ Occupational Health and Safety. ▪ No Child Labour. ▪ Special Protection for Young Workers. ▪ No Precarious Employment. ▪ No Bonded Labour. ▪ Protection of the Environment. ▪ Ethical Business Behaviour. <p>To be signed or Amfori BSCI certificate for country at risk such as: Romania and Bulgaria Spain, Italy, and Portugal .</p>	<p>Yes, on food safety and quality. A limited OSH impact in case of for instance pesticide handling.</p> <p>OSH audit only in case of large problems. The focal firm has for instance made additional audits of working conditions and OSH of strawberry suppliers in Spain after a public scandal.</p>

²¹ https://www.globalgap.org/uk_en/

Spanish focal firm	National certification in the form of the Integrated production certificate in Spain ²² , which covers food safety, environment, and social aspect.	The focal firm is in the process of defining a CoC including also social issues regarding promoted by the European Commission within the framework of the "From Farm to Fork" ²³ strategy.	Yes (annual or bi-annual), mainly focused on food safety.
Irish Focal firm	Local products/suppliers: national Bord Bia ²⁴ integrated certificate. International suppliers: GLOBALG.A.P. or similar certification.	Apart from the certification required, the focal firm has terms and conditions in the contract which are equivalent to BRCGS standard (British Retail Consortium Global Standard for Food Safety) ²⁵ . Overall, the focal firm CoC focuses more on food safety and environmental sustainability but includes a basic level of OSH requirements.	The focal firm does mainly audit on food quality related issues on tier-1 suppliers located in Ireland. As to OSH, the focal firm heavily relies on third party audits, and reserves the right to audit the farms that originally produce the supplied.
Estonian case	Not compulsory. New suppliers should provide BRCGS, IFS food safety ²⁶ or FSSC 22000 Food Safety Management System certificate ²⁷ .	The focal firm compiled CoC including OSH requirements.	Not compulsory for small suppliers and mainly focused on food safety.

The certifications adopted by the focal firms in the sample mainly focus on food safety and food quality and include OSH requirements as a side aspect. In some cases, such as in the Estonian case, they are not compulsory. In most cases in case of failed audit/certification, the cooperation with the supplier is not terminated but a new improvement notice is given.

These certifications and audits do impact OSH outcomes, for example in the use of pesticides or when they are used as OSH management systems by the suppliers. In general, when focal firms request a certification that includes OSH aspects, suppliers will be more aware of what is a desirable OSH standard as well as good working conditions, helping them to develop a good OSH culture.

In the Danish case, suppliers emphasise that the requirements from certificates and the subsequent audits initiate a systematic risk assessment. Risk assessment is a basic requirement in the national legislation in all the countries among others as consequence of the EU OSH framework directive. In other cases, suppliers use audit requirements from GLOBALG.A.P., for example, to secure compliance with national legislation whereas others focus on the national legislation as the way to secure audit compliance. A Spanish supplier of the Danish focal firm expresses their practice in this manner:

"We have divided the risks in three different groups. One is safety. The other one is hygiene. And the other is ergonomics. For example, for the packing house ergonomics will be abnormal postures. And for the orchard's safety, for example, if you're on a ladder taking the fruit, you can fall from the ladder and things like that. Or one can be temperature, if it's too cold or it's too hot when

²² <https://www.mapa.gob.es/es/agricultura/temas/produccion-integrada/>

²³ Its main goal is "to make food systems fair, healthy and environmentally-friendly". More information can be found at: https://food.ec.europa.eu/horizontal-topics/farm-fork-strategy_en

²⁴ <https://www.bordbia.ie/farmers-growers/get-involved/become-quality-assured/>

²⁵ <https://www.brcgs.com/our-standards/food-safety/>

²⁶ <https://www.ifs-certification.com/index.php/en/standards/4128-ifs-food-standard-en>

²⁷ <https://www.fssc.com/schemes/fssc-22000/>

you're harvesting another one can be like you are in a storm or are not, storm is coming. And ergonomics can be extra force if you carry too much weight in your boxes.” - Danish case, Supplier 5, Operations manager.

Suppliers also indicate that risk assessments have been used for improvements in practice:

“The certification has brought the safety of the companies a long way forward, because otherwise many things would simply be forgotten. And here the most important things are really summarised and if you do reasonably well with QS GAP [German version of GLOBALG.A.P.], then you can actually assume that you take most things to heart and pay attention to them, and if the professional association checks you, you don't really have any problems”. - Danish case, Supplier 2, Quality manager.

A Danish gardener responsible for the GLOBALG.A.P. certificate tells how audits help her to keep track of the responsibilities:

“After all, we know that GLOBALG.A.P., they come every September or October, so we just have to be clear that we keep our safety training, that we have control over our protective equipment. Now you see, I just checked up that those who spray, their certificate runs out in November. I actually didn't know it did. And just like that with first help, after New Year's there is only one who has the proof, so now there are ten that we send off, right. And so, there are a number of things that – without us doing a whole lot – but it benefits us. Because it has started with GLOBALG.A.P. just listing things for us, that's how it is in a company that there is this and that. "Oh yes," I think, "that's right." So, it's a really good reminder.” - Danish case, Supplier 2, OSH responsible.

Feasibility of contractual governance

Despite the potential positive impact of contractual governance on working conditions and OSH, there are some limitations in terms of organisational, technical and legislation feasibility and possible associated risks that may inhibit their applicability and effectiveness in the agri-food sector. Table 22 provides a summary of the main issues to consider in the implementation of contractual governance mechanisms, which we discuss in detail in the following text. In the following sections we present examples of such risks.

Table 22: Feasibility of contractual governance

Market leverage	Description	Feasibility risks	Evidence of risks
Contractual agreements with stable volumes and conditions.	Volumes and prices predefined and agreed in formal contracts.	Power dynamics, such as in case of small suppliers with standard products versus large buyers.	Where? Spanish case, Danish case. What? Agreements are informal and can be reverted (and consequent difficult planning).
	Product quality and delivery requirements.	Price competition.	Where? Spanish case, Estonian case, Danish case. What? In case of quality controls ending with produce being sent back to suppliers without payment, it is difficult to assure

			profit in case of low prices (and consequently decent pay and working conditions).
Other requirements	Certifications and audits including OSH requirements.	Different levels of commitments and strictness in applying certifications and audits.	Where? All cases. What? Third party auditors, buyers and suppliers understand certification requirements in different ways.
		Size of suppliers.	Where? All cases. What? Small suppliers might find it difficult and expensive to get certified (especially when multiple certifications are requested (such as in the Danish case).
		OSH national regulations.	Where? Spanish case and Irish case. Certificates require compliance with national regulation. What? Focal firms often rely on national legislation and do not perform direct audits on suppliers OSH practices.
Several parallel certifications with attached audit requirements	Different buyers require different parallel certifications.	Risk of Bureaucracy and Delegation.	Where? All cases. What? Audits referred to third parties without involvement of focal firms. Code of conduct to shield from public opinion but not actual action by focal firms (such as in the Danish case).

Contractual agreement risks

Some factors may impede the implementation of formal contractual agreements to provide stable working conditions and benefits for OSH to farmers and workers, such as power imbalance in favour of the buyer, due to the presence of a high number of small suppliers with standard products, makes it difficult to establish formal contracts.

Power imbalance risk in the Spanish case

In the case of the Spanish focal firm, formal contracts are not defined so that quantities and prices are defined on a weekly or even daily basis. However, the long-term relationship between the buyer and its suppliers counterbalances the lack of contracts. The Spanish Supplier 1's general manager explains:

"The customers we have are, usually, long-time customers. [...] They usually buy you a certain number of products. But there is no contract that regulates it. There is no agreement that regulates it." - Spanish case, Supplier 1, General manager.

Similarly, according to the Spanish general manager of Supplier 2:

"Here is neither exclusivity nor durability and they can kick us out when they feel like it." - Spanish case, Supplier 2, General manager.

When asked about how they do regulate it, the Spanish general manager of Supplier 2 states that:

"there is no agreement, they stop buying from you and that's it." - Spanish case, Supplier 2, General manager.

However, they have been having a long-term relationship and they do not feel to suffer such risk in the short term.

A relatively more stable and formalised relationship in the Spanish supply chain is in place in the case of second-tier suppliers aggregating in supplier cooperatives or producer organisations. For example, there is formal membership for Supplier B (second tier supplier) to be part of the cooperative of Supplier 1 (focal firm's first tier supplier). This implies that Supplier B had to pay €100 when they joined the cooperative of Supplier 1 and in exchange, they can plan production together to satisfy the focal firm's requests as well as receive training and technical assistance by the cooperative.

Yet, as volumes and prices are not predefined in contracts in Spain, the weight of such operational uncertainty is mainly carried by the suppliers with possible negative impacts on working conditions. For example, to cope with uncertain demands and seasonality most workers in the farms are temporary and migrants. During peak periods the nature of the work itself (long hours standing, continuous bending down, out in the open with sun, rain and other inclement weather conditions) exposes workers to challenging health and safety conditions. In addition, the temporary nature of the job does not allow for continuous training and skill improvement; and cultural and language barriers hamper sharing of best practices.

However, in Spain a new law will require the establishment of formal contracts at different steps of the agri-food supply chain. Another suggestion in the Parliament will require firms, such as supermarkets or large producers, to map and evaluate their supply chains risks at different tiers in terms of human rights protections. These actions can help to set up contractual governance market leverages helping to share and improve the economic (and so social) risks in the agri-food supply chain.

Quality control and delivery requirements may have a negative impact on suppliers when the focal firm applies punishment instruments in cases with a high price competition in the market.

Quality requirements risks in the Spanish case

The Spanish focal firm emphasises the need to have all fruits and vegetable received from the suppliers to adhere to the same quality standards to secure comparable fruits and vegetables from different suppliers in the stores. There are two main types of product quality requirements: clean fruit and vegetables to be ready to be delivered in the stores without additional processing and cleaning; for instance, a second-tier supplier mention how vegetables needs to be treated:

"The plant does not get dirty with sand, because if it is dirty with sand, they don't want it. Well, it must be an impeccable plant." - Spanish case, Supplier B, Farm's owner and worker.

The other type of product quality requirement is about the product quality itself in terms of maturity, size, and colour. A representative of the Spanish focal firm describes how they perform daily quality controls on some randomly selected products:

“When the suppliers deliver the product, we do some controls. In case of fruit for example we check: penetromy [the maturity of the fruit], the sugar level of the fruit... There are a series of guidelines that we have been identified for each reference, that every day, at each reception of the product from the suppliers we do. So, from each pallet that comes to us, what we do is take x number of boxes for each reference as indicated in the guidelines and we check that the product meets those specifications. To ensure that that the quality standards requested to suppliers are met. We do these controls on a daily basis on each delivery.” - Spanish case, Focal Firm, Director of Operations.

Furthermore, the Spanish focal firm also performs additional quality controls on the product status in the warehouse and in the stores:

“We randomly select some orders prepared for the stores to check the status of the product as it might deteriorate after a few hours it has been delivered. We also daily check the status of the product in some stores randomly selected. If the product status has deteriorated, we withdraw the entire batch of product and remove all that product from our warehouses and stores.” - Spanish case, Focal Firm, Director of Operations.

When this happens, the Spanish focal firm sends the products back to the suppliers. This puts a lot of pressure on the suppliers: if their products are not good enough, they are sent back and are not paid. In a context of already stringent prices and limited margins this increases pressures in daily operations exposing farmers and their workers to stress.

Quality requirements risks in the Estonian case

In the Estonian case, quality control is also taken as seriously as in Spain and sometimes can be overwhelming for the smaller suppliers:

“The most negative thing is... or well, I can't say it's negative, but you have to check your product all the time. There's quite a lot of paperwork involved. The analyses that need to be done for that are quite expensive in Estonia. If we send 200 kg of buckwheat to the focal firm, it's worth a couple of hundred euros, but the analyses you must do for that are almost 1,000 euros. Analyses still cost a lot.” - Estonian case, Supplier 3, Owner.

The Estonian focal firm explained quality requirements in this way:

“What is important to us is the quality. In this respect, as I said, certifications are important. Price is also important, but quality comes first. If we don't like the taste of mango, it may be free of charge, but we don't like it. Taste is also very important, because if a product has been in this range for 50 years, the taste must not change. For example, we have a specific variety of cabbage that we use, it's not like bring cabbage - we need a specific variety and quality.” - Estonian case, Focal firm, Supply Manager.

In additional, the focal firm has detailed and concrete measures of quality control which they do especially for every baby-food ingredient. If there are any problems, they explain the situation orally or in a written form:

Feasibility of certification

Regarding certifications, audits and codes of conduct, there are several issues affecting their effective implementation:

1. Differences between the interpretation and commitment of requirements by the focal firm, suppliers and third-party auditors may lead to superficial implementation of certifications.
2. Burden from certifications and the frequent audits for small suppliers might inhibit the implementation of such tools.
3. Certifications and audits are often demanded by local authorities with little involvement of the focal firm and implementation of specific certifications or codes of conduct.

4. Failed audits do not have direct impact in business relationships as they are limited to bureaucratic tools.

Below we present examples of each of the four feasibility risks.

Examples of different interpretations of certifications and audits requirements

Some auditors conduct short audits where they mainly check the self-assessment checklist and other documents and put less effort on the practice in the production facilities such as checking that lodging is provided or do not give reactions to even a very low quality. Other audits are much more extensive. Some suppliers point in particular towards the SMETA²⁸ audits as comprehensive.

Suppliers have similar dispersion in their reactions to certifications and audits. Some suppliers use the certification as an active instrument in their OSH management integrated with the requirements from the national OSH regulation, whereas other suppliers focus on securing that the paperwork is up to date and that the standard in production and fields is just at the level that can pass the audit.

The impact relies to a great extent on the stakeholder's interpretation of the certificate and audit requirements. Buyers play a limited role as they are mostly satisfied with the proof of the certificate and the audit reports, and even with non-conformities they expect them to be solved in the audit feedback process. Auditors play a large role as they make the tangible interpretation of requirement and decide whether something is acceptable or require a reaction. The suppliers are the users and their interpretation of the certificate requirements from the text and as communicated through the auditors lead to the level of working conditions and OSH in practice in their workplaces.

Different interpretations of the code of conduct

Similarly, regarding the use of CoC, interviews with the suppliers show that the individual CoC published by all the retailers and other buyers play a limited role. Some suppliers to the Danish focal firm say that they are not aware of the CoC and others that they know it exists, but they never use it for any practical purpose.

The buyers generally believe that signing the CoC and prove compliance through certificates and audits have a positive effect although they expect the main effect to be on food safety and quality. The buyers issue CoCs as protection towards bad publicity from poor, unsafe, and unhealthy working conditions in the supply chain and accept certificates verified by third party audits to reduce their own cost of monitoring compliance of their CoC. Yet, they do express a realistic doubt about the magnitude of the impact such as in this quote:

"The idea is to help the workers to improve a bit better working conditions as there is a yearly auditor who talks to the supplier who needs to improve every year, and then there are things that can be difficult to catch in an audit such as working hours. It is only possible to look at the records and talk to worker, but regarding building safety and work safety, I am quite sure there is a large impact, because you can actually see them in the factory and you can relatively easy fix them in the factory..... Whether there is the expected effect – you can say both for self-assessments and audits – it depends on who uses it. We have some suppliers who report that they have a huge benefit because they notice things, they otherwise would not have thought of, and then there are the ones who do it because they have to live with the audits." - Danish case, Focal firm, CSR manager.

Small suppliers' certifications burden

Almost all the suppliers report that they are forced to have many parallel certifications, and they therefore use resources for frequent parallel audits. In particular the smaller suppliers express marked audit fatigue:

"Basically, you just have to say that many producers are overwhelmed with the certifications. And that's just a huge burden for them - of course they

²⁸ <https://www.sedex.com/solutions/smeta-audit/>

always pass these audits, but many still have in the back of their mind: "What if I don't pass?" That would be a tragedy for many. But we also have collaborations with different producer organisations that help the producers with the certifications." - Danish case, German Supplier, 2, Quality manager.

The role of Bord Bia and local authorities in the Irish case

In addition, most of the buying firms (who are leaders in sustainability in general) assumed that OSH was taken care of either because the suppliers were certified locally for food safety and the like or other certifications. Otherwise, there seemed to be little knowledge or thought by the focal firms into the well-being of workers in other parts of the supply chain as illustrated by the sustainability manager for the Irish focal firm:

"For health and safety, I'm not sure like you know in the first instance, at a very basic level the supplier should be adhering to the local laws in which they operate within, and health and safety of workers is part of that law that in the area that they operate in will then they should be adhering to that... And so, health and safety, can't speak to specifically, but when you think about our ethical trade policy, which is like our human rights policy, we'd do a risk assessment on the country of origin of products. And the instances of human rights or forced labour or bonded labour events within those countries and then risk assessment on that basis. So that is more so on the human rights side as opposed to health and safety within the sites and suppliers, otherwise I wouldn't be able to speak to how we'd risk assess supply suppliers from a health and safety point of view." - Irish case, Focal Firm, Sustainability manager.

Similar, other members in the supply chain consider that is the national regulation taking care of working conditions and OSH:

"I suppose that's under complete law in the Health and Safety Act. So that's each company under Irish law has to make sure that we have our health and safety plan in place, and that's, that's a regulatory thing... the HSA is the Irish health and safety authority, and they can inspect any workplace at any time to make sure you're in compliance." - Irish case, Supplier 4, Family farm manager.

In the analysed cases focal firms mainly demand audits from the third party providing the certifications and when performed by the focal firm, OSH is not the main priority. In the Spanish case, the third party performs most audits regarding certification aspects. The focal firm also conducts its own audit, mainly with a focus on food safety although some elements of OSH might be included. One of the interviewed suppliers had the experience that the focal firm only took an interest in food safety and related areas.

In the Irish case, the focal firm also reserves the right to audit suppliers, but normally they rely on third party audits especially if the suppliers are overseas.

"We can't do [audits for] all their suppliers, so we would audit them as part of our standard, we would say that all growers must be on Bord Bia or GLOBALG.A.P. approved. And again, that's just to get to some level of I suppose you know that we know that everyone at a certain base level." - Irish case, Focal firm, Quality manager.

"So, there's certain certification that will be a requirement of supply and part of that would be Bord Bia, and we also have BRC. Um. So that's on the Bord Bia and the BRC audit schedule, which is eight... it's twelve to eighteen months depending on, and then [the focal firm] themselves do an audit also every eighteen months. So yeah. So, we have to comply with all of those requirements. So [the focal firm] have their own standard, but it will be linked fairly closely to BRC." - Irish case, Supplier 4, Quality manager.

In any case, the cooperation with a supplier is not stopped in case of a failed audit:

"If someone failed a Bord Bia audit or something that way, again, it becomes an issue, and then we have to have conversations with them, and work through an action plan as to how they get that accreditation back. Or if they cannot get it back, question whether they keep the business, or whether we can move it to someone who does have stronger accreditations. But it's not something that happens often." - Irish case, Focal firm, Trading manager.

Consequences of failed audits in the Danish case

The Danish focal firm conducts audits related to food safety, quality and delivery, but does not look into working conditions and OSH during these audits. When considering third parties, the focus on OSH aspects is limited. As an example, one worker in a German supplier report that the auditor asks specific questions about contracts and salaries but shows little interest in OSH.

However, if a supplier receives a non-conformity from GLOBALG.A.P., the quality manager in the procurement unit of the Danish focal firm will set the supplier on hold, meaning that no new orders can be made. The procurement officer wishing to make an order for the supplier will contact the quality manager to reopen access to order giving, and the quality manager will – if a message from the third party about conformity is not already received – get in touch with the supplier and normally agree about a deadline for correction and then reopen order giving. It almost never happens that the retailer stops cooperation due to non-conformities. A similar procedure takes place with GRASP, just run by the CSR unit:

Researcher: *"Many not passing GRASP?"*

Interviewee: *"No, most of them receive a fully compliant. I think it is because it a relatively easy check-list audit. A few have a few improvements needed, and once in a while we get one with a non-compliant, and then we ask for their corrective action plan and ask how they have planned to pass next time – it is almost impossible to fail – and they receive a fully compliant the next time."*

Danish case, Focal firm, CSR officer.

The Danish focal firm rarely stops the cooperation with the supplier despite a negative audit report or even negative media attention because they believe that with continuation of cooperation, they have a better opportunity to push for improvements:

Researcher: *"Do you have cases where you receive reports, which make you stop the cooperation?"*

Interviewee: *"It almost never happens because we have a philosophy that if we stop cooperation, we have even less possibility to influence than if we don't. It has to be really, really, really bad, but we considered doing so in the case with the strawberries. We initiated additional audits, and we paid visits. It was the conclusions from those visits, which made us continue using the suppliers. We may decide not to continue due to social issues after the two years for a standard contract, if it is really bad, but it only happened once in the six years, I have been here."*

Danish case, Focal firm, CSR officer.

5.3 Relational governance in agri-food context

Relational governance, like contractual governance, is mostly absent in the literature on worker safety in the agri-food sector. However, much like contractual governance, there is developed literature on using relational governance to achieve other sustainability goals in supply chains. Relational governance manifests in the development of the shared behavioural norms of flexibility, solidarity and information sharing (Bonatto, de Resende, et al., 2020; Poppo & Zenger, 2002). Shared norms are created via buyer support for supplier development and training efforts as well as frequent informal communication developing personal relations (Huq et al., 2016; Pagell & Wu, 2009).

The literature describes trust as an important prerequisite for long-term strategic relationships between buyers and suppliers in all sectors, including the agri-food sector. With trust being an important

foundation for other relational governance practices to be implemented in any supply chain, including those in the agri-food sector (Fischer, 2013; Mutonyi et al., 2018).

In our results we did not observe a direct impact or, in other words, an explicit use of relational governance tools to improve working conditions and OSH by buying firms. However, as in the construction sector, we did observe a number of relational governance practices being used to achieve supply chain outcomes. The most important relational governance instruments included long term relations and informal relationship. In addition, we found examples of sustainability training courses for producers to raise awareness and standardise production practices, or in some cases training for brokers on communicating sustainability issues and selecting products with sustainability in mind. Finally, we observed how geographical proximity facilitates informal communications and collaborations thus enhancing trust between the parties in the supply chain. As with the contractual governance mechanisms observed in the agri-food sector, it is possible that these observed relational tools can help to provide more stable working relationships thanks to stronger relationships in the supply chain and thereby help to improve working conditions and OSH. The next table summarises the main findings related to relational governance in the agri-food sector.

Table 23: Relational governance in agri-food sector

Market leverage	Description	Supply Chain benefits	Working conditions and OSH benefits
Duration	Long term.	Better planning/Reliable delivery. Quality standards (by knowing each other expectations and capabilities). New product development (e.g., apple varieties that take several years). Machinery investments (better quality, delivery).	Stable returns for suppliers (i.e., farmers). Stable employment for workers.
Buyer-supplier collaboration	Joint new product development, new packaging and production planning.	Better planning/Delivery performance. New product development performance.	Higher/Stable profits for suppliers (i.e., farmers). Long term relationship/planning. Stable employment/working hours for workers. Investment in machinery/new technology improving working conditions.
Informal buyer-supplier relationship	Person-to-person relationship and informal communication.	Mutual understanding/better planning. Adaption of deliveries to the benefit of both parties.	Better planning/Stable returns for suppliers (i.e., farmers). Stable working hours. Less rush.
Supply Chain Flexibility	Mutual understanding in response to supply disruptions (e.g., accept late delivery, reduce product variety).	Stable delivery performance. Flexibility performance. Risk management.	Reduced pressure/less workload. Stable working hours/limited extra-hours.

Training and technical assistance for small (and second tier) suppliers	Buyer firms provide technical and managerial knowledge and expertise, seeds, machinery, and others.	Better quality performance. Stable delivery performance. Improved environmental performance.	Better planning/Stable returns for suppliers (i.e., farmers). Stable working hours for workers. Control on the usage of pesticides, agrochemicals, etc.
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Long-term buyer-supplier relationship

All cases indicate that focal buying firms in the sample tend to maintain a stable supply chain through long term buyer-supplier relationships. In the Irish case, the focal buying firm does not have a large number of fruit and vegetable suppliers since they often use consolidators. According to the trading manager, they have not set up a new vegetable supplier in their system for about six years, and most current suppliers have been working with them over 20 years. Also, in the case of the Spanish supply chain most buyer-supplier relationships are long term; for example, the relationship between the focal firm and Supplier 1 has approximately 14 years' duration and the relation with Supplier 2 the result of 24 years of commercial relation. Similarly, Estonian suppliers have long-lasting relationships with the focal firm. For instance, the relationship between the focal firm and Supplier 1 has more than eight years' duration. The relationship between Supplier 2 and the focal firm is the result of ten years of business collaboration. The Danish focal firm focuses on making long term contracts to secure future cooperation:

"When I started here in green for these 7-8 years now, and in a lot of the industry also across categories, the standard has been to make one-year contracts. Then there have often been suppliers who have challenged us on it: Uh, couldn't we get two-year-contracts? And we started doing that, and now we're actually working on three-year and sometimes four-year contracts." - Danish case, Focal firm, Procurement manager.

Benefits of long-term relationship on SC and OSH-related aspects

Having a long-term relationship is seen by focal buying firms as a way to counterbalance possible negative effects of power imbalances. Such long-term relationships are often based on a combination of contractual and relational governance tools, which are the basic conditions for stable returns and stable employment.

For example, in the Spanish supply chain, despite the seasonality and uncertainty of the demand, some suppliers try to cope with such uncertainties and to involve their workers in finding ways to increase flexibility by assuring permanent jobs as they have a long-term relationship with the focal firm. For example, Supplier 3 reached an agreement with its workers: The chairman of the worker council at the Supplier 3 explained that:

"[...] during the hours that you [workers] don't work in the winter, we establish working day of 6 hours instead of 8 hours. And these two hours are then compensated by working in the summer when there is more volume and instead of working two additional hours in the summer, it will be one and a half." - Spanish case, Supplier 3, Chairman.

He believes it is advantageous for the company to manage demand variations and also for the workers, who receive the full salary in the winter and have the opportunity to recover these hours during the summer.

In addition, during the summer period when demand is higher, Supplier 3 in the Spanish supply chain needs extra workers and hires workers coming from Colombia and Romania in addition to local workers. Supplier 3 invested in 150 accommodation places in their facilities for the temporary workers to stay during the time that the company requires their work, and the supplier explained that the investment builds on a stable increase in demands from the focal buying firm and a long-term relationship. A collective agreement for the industry of fruit collection, storage, handling, sales of vegetables in the

province where the supplier is located²⁹ requires producers to provide these accommodations for workers employed in the plantations but not necessarily in processing plants.

In the Danish case, the retailer has the strong belief that fair treatment and close social relations pay back in terms of loyalty towards the retailer as a customer and ultimately as illustrated in the citation below that such a relationship spills over to worker wellbeing. The Danish, German and Spanish suppliers confirmed the overall experience of a valuable personal relationship. A Spanish supplier expressed the close relationship in practice.

Interviewee: "I don't know exactly how big I am for the Danish retailer – I have an idea, but I am not sure, but I want to be their preferred customer. Of course, one-time last year for example I was not able to make a delivery for them, but then they said: you are always doing a good job, and we understand that it is not possible to get it right every time. So, they understand how hard it is for us as growers and suppliers. And that is important."

Researcher: "What is different about the Danish retailer compared to other customers, can you say a bit about that?"

Interviewee: "With them I have the impression that we have got the partnership that I am looking for with a customer, more than with many others. They are really close to us. I have the feeling that we are one team, and that is exactly what we are looking for."

Danish case, Spanish supplier 1, Commercial manager.

In addition, long term relationships favour coordination and communication and so better planning for more reliable delivery and quality standards outcomes. In the Irish case, Supplier 4 indicated that they have supplied the focal firm over 20 years, so they totally understand what specifications are expected for the products. They do not even need to communicate with each other frequently to ensure satisfaction and efficient delivery every day:

"We wouldn't communicate with [the focal firm] every day. No, and I think that's a good thing, because they don't have any issues with quality. So, specs you know, we both know what the spec is, and what we need to deliver each day...We've been supplying them (the focal firm) since 1997." - Irish case, Supplier 4, Family Farm Owner.

Such long-term relationship positively impacts on supply chain outcomes such as better planning and coordination. Even if we did not find direct evidence of how this impact on OSH aspects, we suggest that these supply chain outcomes can provide the basis for better work planning and stable work relationships for suppliers' workers.

Buyer-supplier collaboration

Buyers and suppliers usually have an interest in collaborating to achieve joint value creation. Suppliers will decide how to adopt a practice or respond to a market leverage instrument partially based on assessment of the buyer's behaviour as fair or just (Adams, 1965; Narasimhan et al., 2013). In some of our cases, the focal companies have collaborative product development plans and joint planning plans with their small and large suppliers.

In the Irish case, the focal firm guarantees their small suppliers that they will buy the amount of the products on trial even if the new product developed is not successful. The NPD (New Product Development) specialist explains that:

"So, we currently have the red piccolo (tomatoes)...the growers agreed to grow it on a trial basis, you know, and that's again, that's a risk for them, because they're growing variety for us. But we agree upfront that, if you grow

²⁹ Available at: https://bop.diputaciolleida.cat/faces/consultaF/servlets/donarEdicte/?id=2022_26_899

Also available the salary review for 2022 at:

https://bop.diputaciolleida.cat/faces/consultaF/servlets/donarEdicte/?id=2022_69_2694

it for us, we're going to take the volume. And you know that's really important."
- Irish case, Focal Firm, NPD specialist.

In the Estonian case, the focal firm collaborates in new product development with Supplier 4 for the ingredients of the baby-food produced by the focal firm. As a consequence, Supplier 4 has invested in new equipment in order to increase quality and quantities of the products.

The Danish focal company makes shared plans for growing new varieties of products with their larger suppliers. For example, in apple product development, it can be quite long-term agreements about growing new sorts, which may take more than five years to start delivering the apples, but it can also be new sorts of vegetables such as asparagus, broccoli, or a tastier clementine. Such joint product development contributes to security and long-term planning for the supplier. The salesperson at Supplier 2 explains:

"I believe it is an important part – also to move focus away from price, price, price.... for product development, there we often have cooperation with the customer, because we cannot lift the task ourselves. The retailers need to take ownership and say OK this product is exciting we would like to try it."
- Danish case, Supplier 2, Salesperson.

Also in the Spanish case, the focal firm engages in shared planning about product to grow with suppliers, and the same happens between suppliers and sub-suppliers. For example, Supplier 1 explains that they meet once or twice a year with the focal firm to plan the production season jointly about what Supplier 1 has to plant, what worked from last season, and what they do foresee for the coming season, with a consideration on new varieties. Regarding suppliers and sub-suppliers' joint planning, a second-tier supplier explains:

"Even if there is no commercial contract, we try to jointly plan how I have to plant for each product to be sold through Supplier 1 so that, later, there are no other farmers [also cooperative members] who have planted the same quantities of the same product and surpluses are generated." - Spanish case, Supplier B, Farm owner and worker.

Benefits of buyer-supplier collaboration on SC and OSH-related aspects

Buyer-supplier collaboration is enacted in the form of joint product development and planning with both small and large suppliers facilitating coordination and providing higher and more stable profits for suppliers.

Despite not being implemented to directly improve working conditions and OSH, buyer-supplier collaboration can have an indirect impact. For example, in the Estonian case Supplier 4 invested in new equipment in relation to the joint development of a new product with the focal firm that decreases workers' repetitive movements and manual handling of loads.

In addition, stable production volumes help to ensure a minimum level of income for small farmers and also establish more stable employment relationships and working hours. In this sense, in the Irish case, the focal firm tries to forecast the volume they need as accurately as possible so that the up-stream suppliers will have a relatively certain volume to feed in when planning for their delivery:

"You have to make sure that you're giving as solid a forecast you possibly can, because you don't want someone like if I give someone a forecast they're planting based on my forecast. If I'm not going to buy all that volume, they (will be) stuck with it. That is not good for anyone, because they're not going to want to work with me again. They're going to be, it can cause some financial difficulty." - Irish focal firm, trading manager.

Personal relationship and informal communication

This section explains the importance of role-to-role relationships in maintaining long term trust between the buyer and the suppliers. Our findings suggest that both face-to-face meetings and informal communication are crucial for this. A supplier of the Danish focal firm explains the importance of maintaining a personal and trustworthy relationship:

Researcher: *"What is different about the Danish retailer compared to other customers, can you say a bit about that?"*

Interviewee: *"With them I have the impression that we have got the partnership that I am looking for with a customer, more than with many others. They are really close to us. I have the feeling that we are one team, and that is exactly what we are looking for."*

Danish case, Supplier 4, Commercial manager.

The personal relationship may even have an influence on the pricing so that workers can be potentially treated better because of a higher profit margin as explained by the Danish focal firm's procurement manager:

"We had a pea supplier who came to us and said: I damed want to have more for my peas because I want to give my workers more in salary because they do a gruelling work out there, do you want to join? And I was sitting there 'WOW', because I was satisfied with his delivery...but as a human you cannot avoid having sympathy for his opinion. So, I had to take a decision whether to give him 4 cents more per kg peas to him with this sympathetic ambition? So, we chose to do so with the peas, but also because he is a bloody good supplier of peas. But I do not want to plume myself and tell I would have done that in every situation – but right there I did so." - Danish case, Focal firm, procurement manager.

In return, the suppliers would prioritise Danish focal firm's order to repay their fair treatment, as reported.

"Fairness (laugh again). Fairness is to me... I mean that is a matter of how to define fairness, I think. If fairness is an ethical way of working, like treating the people you work with the same way you want to be treated yourself. Well, that is an important point. But we as a supplier, I don't think that is something we can ask for. We receive it, and I am giving more priority to a customer with a fair deal, with a correct price and correct way to do business. When they need help, I will try more for them than for other customers. Not somebody who doesn't give a shit about if I am losing money." - Danish case, Supplier 4, Owner, and commercial manager.

On a day-to-day basis, the focal company and the suppliers share information by communicating via telephone. Typically, the Danish focal company's procurement personnel and their suppliers in multiple countries use telephone to fine tune deliveries almost every day, and it develops their informal personal relations as well.

"Yes, well, I've been on the phone with [Danish procurement officer] quite often, and that's going well. We'll send each other a WhatsApp picture or something, kind of nonsense or something, no... I'll put it this way, in my opinion it's part of being in contact with someone... If it's his birthday or something, I send him a congratulations, I can do something like that with him, he's like that too who fits into the world. And you said that correctly, in Denmark everyone is on first-name terms, and when you talk to them it's a completely different form of communication." - Danish case, Supplier 2, Director.

In the Spanish case, most communications between the retailer and its suppliers are informal. For example, the general manager of Supplier 1 explains that there is continuous informal communication:

[...], "we call each other a lot. Every day they send us the order, then every week they send prices. Then communication is practically daily. Telephone or the commercial we have here, "look, I've got garlic, I've got chard, look, next week we'll start the garlic, we'll start the chard..." there is a lot of daily communication and once a day we receive the order and a once a week we pass prices." - Spain case, Supplier 1, General manager.

This is due to the nature of the product with which they work:

"[...] fruit and vegetables, it is not like, for example, cereal. This is daily. You may have garlic today and not tomorrow. It's an everyday thing. It's not something you can sell in a month or two." - Spain case, Supplier 1, General manager.

This conditions their day-to-day activities (e.g., harvesting) and has an impact on the commercial relationship with the focal firm. Apart from the communication that the focal firm and Supplier 1 have daily regarding supply and demand volumes, they also communicate about events such as the organisation of gastronomic days or any other issues that may arise (e.g., promotions or joint commercial initiatives). Such informal communication takes place also between first tier and second tier suppliers. According to one second tier supplier in the Spanish supply chain, they are in daily contact with Supplier 1 via WhatsApp for routine issues such as the daily orders. If something more important happens, they will make phone calls to each other.

This has also been observed in the Irish case. The focal firm depot manager found it important to meet their suppliers in person, especially in each other's facilities, to have a knowledge of each other's day-to-day operations. Once the buyer and suppliers know more about how it works in both companies, it is easier for them to work together since they have a better understanding of each other's expectations as well as potential difficulties to overcome:

"We met the guy about an issue, an issue (from) both sides. I met them face to face. They came into that room at me. That's the first visit in two and a half years. It's great to see people and knew people, I'm doing a follow-up meeting with them next week. So, I'm going to go to see them, and that will help. So, I understand their business, and we can report back, and like I have over 300 people on site here we can update them... we understand what they do. And now they understand what we do." - Irish focal firm, depot manager.

In the Estonian case, the official communication is mainly done via e-mails, but several suppliers tell that small talk with the Estonian focal firm is not that easy because in Baltic States, the people are not that fond of informal communication, as they prefer to go straight to business. But after the buyer from the focal firm had visited him on-site and they had spent time together, they became friends. The owner also added that is not wise to go too far with the personal relationship (e.g., sending presents), because this can jeopardize the business and may be considered as a form of bribing.

Benefits of personal relationship and informal communication on SC and OSH-related aspects

Personal relationships and informal communications might help in keeping a long-term relationship as well as to develop shared norms and mutual understanding which help support supply chain outcomes such as delivery performance, especially in presence of uncertain demand, and better planning. Our findings support the importance of informal communication as effective in maintaining a stable relationship between focal companies and their suppliers, and role-to-role personal relations play a key role as the most frequent communication interface. Many of our interviewees consider the informal face-to-face meetings (e.g., on site visits) as the most effective means in terms of building trust within the dyad, and daily information sharing can be instantly done by other telecommunication means. In a long-term buyer-supplier relationship, suppliers who collaborate with the focal company are very familiar with their requirements either on supply chain or sustainability, so the suppliers with repeated business from the same retailer can keep their delivery pattern, which decreases adaptations caused by uncertainty. This might indirectly benefit working conditions and OSH by helping to provide more stable employments and working hours as well as less pressure when work is performed.

Supply chain flexibility

A key aspect to maintain a fair and trustworthy relationship is to guarantee a certain level of flexibility in case of suppliers' issues, and this is part of the relational governance tools. For example, the Irish focal company helped their small suppliers by reducing the product categories required when the suppliers are under pressure to deliver to their full capacity due to a shortage of workers.

"[If] we keep piling the pressure on to those twenty people who are left, they get overworked. They can get stressed. They can get sick, and all of a sudden you have nobody working there because everybody left the job ... So, we'd

consolidate the range to make sure that maybe the top ten sellers are looked after, and we can be a hundred percent service on those. I will shut down the other lines until they are back in a position to be able to have the capacity to do so again, so that would have helped them in an enormous way.” - Irish case, Focal Firm, Supply chain coordinator.

Also, in the Spanish case suppliers value the focal buying firm understanding when they have some difficulty with deliveries. Supplier 1 is very grateful to have such a client:

”Who knows how to put himself in another's shoes and who understands the particularities and realities of fruit and vegetables.” - Spanish case, Supplier 1, General manager.

Additionally, Supplier 1 also explains how they are especially respectful in the business relationship. The general manager explains that the focal firm consists of “*very good people*”. He explains that, for instance, when there has been a hailstorm, they have been very understanding that the products were destroyed and could not be delivered that week.

The Estonian focal firm has also been a sympathetic client, which has been confirmed by the suppliers. For example, the Supplier 3 explains they manage potential conflicts in an understanding manner. He tells:

”Maybe we have accidentally sent a batch where a few black grains are inside... well, they would inform us if it really doesn't fit. We will send a new batch then. There hasn't been anything like being angry. We have explained and they have understood.” - Estonian case, Supplier 3, Owner.

Benefits of flexibility on supply chain and OSH-related aspects

Supply chain flexibility is a key ‘market leverage instrument’ both to navigate the uncertainty of the last few years and maintain supply chain outcomes and stable deliveries, but we could only find little evidence of how this relational governance mechanism has directly affected OSH at suppliers. However, we advance that this can have an indirect impact on working conditions and OSH through reduced pressures and less workload. Indeed, flexibility in the supply chain can also reduce suppliers’ delivery burden, as indicated in multiple cases, and thus have a positive impact on supplier workers’ health and wellbeing as well as allowing for more stable employment and stable working hours.

Training and technical assistance for small suppliers

In addition to the other relational governance tools, training and technical assistance are used to support and develop small suppliers. Such training can be offered by focal firms as in the example of the Producer School in the Irish supply chain described in Box 24 or by first tier to second tier suppliers. For example, in the Spanish supply chain, where the first-tier supplier is a cooperative and second-tier suppliers are small farms, the cooperative may support the farms providing technical assistance and training in exchange for a membership fee (<100 Euros / year).

In the Estonian case, Supplier 2 is a large Belgian processing company that also provides safety training to their suppliers in Europe and Costa Rica. The main challenge for this supplier is to ensure application of the OSH standards in Europe at the same level in Costa Rica. Supplier 2 tries to balance three key elements – the people, the planet, and the products - through the MIMOSA program, which stands for Minimum Impact, Maximum Output, Sustainable Agriculture:

”We are taking full responsibility and providing required information, when and how to collect harvest, safety training and required machinery to the local farmers in order to ensure that the crop is harvested on time.” - Estonian case, Supplier 2, Senior manager.

”Of course, we work with a lot of small farmers. More than 3000 farmers. We are working across the group, and we have long term relationship and contracts with our farmers. We also provide assistance and know how on agro. So, we also provide seeding. We provide machinery. We provide technical expertise, so we even tell them when they must harvest. So, we have a

separate agro department, we have 60 for example, we have 60 agronomists in our company.” - Estonian case, Supplier 2, Employee.

In the Danish supply chain, first tier suppliers to the Danish focal firm often have smaller suppliers/farmers as second tier suppliers, and the original larger supplier helps in some cases the small farms with achieving a GLOBALG.A.P. and GRASP certificate. The larger suppliers also help their smaller suppliers with internal audits before the external auditors arrive. In Germany, small farms can get support from farmer associations for meeting the certificate requirements for risk assessment.

Box 8: The Producer School in the Irish case

We provide an extended example from the Irish food case, where the focal firm uses relational governance via training - its 'Producer School'- to develop small producers into suppliers³⁰ for over a decade. The example shows how relational governance can be used to develop supplier capabilities as well as shared norms.

The Producer School is one of the key pillars of this effort, and often the one that is most visible to end customers. When a customer enters one of this company's supermarkets they are greeted by the usual array of unbranded fruit and vegetables, isles of processed foods from multinational companies, breakfast cereal and so on. But they are also offered a selection of local food products that are not available anywhere else.

The marketing and messaging component of the Producer School is obvious. But very small local farmers and producers do not fit neatly into the typical retail food supply chain that has been designed to move large volumes of food very efficiently. Equally, very small producers might have an innovative product, but they typically lack any operational, financial, or marketing skills, let alone food safety expertise. The Producer School makes a heavy investment via relational governance so that these delicious ideas from very small producers can end up on shelves without putting customer health and welfare at risk and while being profitable for the focal firm and the producers.

The system works as follows. Producers apply to be part of the school. Typically, they are already selling in small volumes via farmers' markets and the like. Applicants must be Irish based. This generally means Irish grown produce or ingredients, though some leeway is given for products like chocolate which has ingredients that cannot be grown in Ireland. For these products, the value adding (processing) needs to be done in Ireland. In addition, it is expected that the grower / producer has all needed certifications (e.g., Bord Bia Food Processor Standard) from the Irish government for food safety and to be operating as a business. It is then assumed that the producer is in compliance with OSH and other labour regulations. Of the applicants who meet these minimal expectations, a small group (13 in the year of data collection) will be selected to participate in the program.

“We're assuming that if they're coming to us, they will have to have their passive standard in place to come on the program. So that has a standard, you know, from an auditing point of view. It takes some element of the health and safety of the staff, and the set up in the factory, and food safety obviously into account whether they are using people and not paying them enough. We're not. We're not in that area. I suppose we're assuming that, if they come to us that right here on, they were assuming that they're doing the right thing.” - Irish case, Focal Firm, Producer School.

The first step of the programme involves supplier development (training) which is jointly provided by the focal company and two government departments; Bord Bia (the Irish Food board) and the local enterprise office. Supplier development and training efforts have been frequently linked to the development of shared norms in a supply chain and are an important component of building trust (Pagell & Wu, 2009). Because these producers are very small, they typically have limited or no experience in running a business let alone supplying into a major supermarket chain. Training is then expansive and covers marketing, finance, writing a business plan, food safety, operations and dealing with the stores, licensing, health claims, and sustainability. Among those, sustainability support contains basic items in relation to OSH, working conditions or human resource management (e.g., minimum payment rate), but the support provided is not focusing on OSH since the legal

³⁰ The focal firm uses the term producer to refer to the organisations that participate in the Producer School and distribute directly to the individual stores that carry their products. The focal firm reserves the term supplier for organisations whose products are carried across the entire network and hence the supplier distributes into the focal firm's central distribution hubs, not directly to stores. We follow this nomenclature in the example.

standard is already established nation-wide. As part of the training the producers develop a 3-year plan that requires them to forecast sales, think about hiring workers and other business issues.

Finally, the producers who do graduate to be a supplier, get a different relationship with the focal firm than to other larger suppliers. These former producers and the focal firm developed and solidified their relationship over time, which forms the basis for working together to strengthen the supply chain and the communities the supply chain operates in.

Community is further reinforced by the relationships that the producers develop with other producers. Some of this is driven by the focal firm, which introduces new producers to existing members of the Producer School, as well as to organisations that graduated from being a producer to being a supplier. In addition, the producers get to know each other as they interact in training sessions or run into each other supplying stores. The end result is that in addition to the formal relationships built by the focal firm between it and the individual producers, the producers also have a more informal – but much more expansive – network to share ideas, innovations, suggestions, problems, and solutions.

“They're all in contact with each other. They look out for each other's products in the stores ... So, they all have good relationships, and then, if they have products that are complementary. Um, you know they work together, they work together and do things like recipes, that they put up open social media competitions. They come together for competitions at Christmas. They do hampers together. So great relationship between them.” - Irish case, Focal Firm, Producer School.

In other retail food supply chains these networks, especially the peer-to-peer linkages that form between suppliers, have been used to build, transfer and leverage sustainability knowledge across the network (Marques Júnior et al., 2020). The Producer School constitutes a novel form of using supplier development to build the shared norms that underpin relational governance. But the outcomes in the forms of stronger links between the focal firm and its suppliers as well as between suppliers are in line with what occurs in other similar initiatives. Equally, while the focus of the Producer School has been on the sustainability of local Irish communities via local, sustainable food, the relational norms of working together to support the local community – the market leverage instrument prominent in this example – should be transferable to improving OSH outcomes at the producers.

Benefits of training on SC and OSH-related aspects

The literature on sustainable purchasing (Wu & Pagell, 2011) indicates that training should provide the foundations to develop the small suppliers into reliable and efficient suppliers, while also creating shared norms as well as mutual dependence and unique sustainability attributes for these food supply chains. Most of the sustainability attributes observed in the analysed cases were related to the food itself (e.g., local, organic, reduced packaging), and a sustainable long-term buyer-supplier relationship.

In some cases, the buying firms pointed out that they do not try to use relational governance to improve OSH at their suppliers but to improve SC outcomes as quality, delivery and in some cases also environmental performance. Yet, there are good reasons to believe that these behaviours which are currently being used to improve the supplier's food safety, delivery reliability, operational effectiveness, environmental sustainability, and general business knowhow can be used in a similar manner to improve worker safety and the reliability of safety processes in the same supplier operations.

In addition, some of this training can have an indirect impact on working conditions and OSH. In the case of Irish Producer School, the investment from the focal company to support local small suppliers' business can reduce their operational burden, which in turn reduces their workers' workloads and associated pressure. Also, in the case of technical and environmental training of the other cases, it may help OSH by regulating the use of pesticides and agrochemicals.

Feasibility of relational governance

Despite the potential positive impact of relational governance for creating the conditions to provide stable supply chain performance and working conditions, some aspects have to be considered in terms of feasibility, as summarised in the following table. In the next section, we provide specific examples for the different risks.

Table 24: Relational governance feasibility

Market leverage	Description	Feasibility risks	Evidence of risks
Duration	Long term.	Presence of back-up suppliers.	Where? All cases. What? There are several alternative suppliers available used for short term/spot transactions.
Informal buyer-supplier communication	Person-to-person relationship and informal communication.	Geographical proximity.	Where? Danish case. What? The focal firm has an office close to the suppliers in Spain to manage the relationship.
		Use of email, eProcurement.	Where? Estonian case. What? Limited interaction between buyer and supplier.
Supply Chain Flexibility	Mutual understanding in response to supply disruptions (e.g., accept late delivery, reduce product variety).	Imbalanced commitment.	Where? Danish case. What? Some suppliers perceived not having received the same level of flexibility by the focal firm.

Relationship duration risks

In terms of buyer-supplier relationship duration, in all the analysed cases, the focal buying firms also maintain backup suppliers (typically a different consolidator, in the case of the Irish and Estonian focal firms, or the option of producer markets in the case of the Spanish and Danish focal firms) for all produce for which is not possible to set up a long-term relationship.

The use of back-up suppliers in the Irish case

These backups serve two purposes. First, when there is a problem getting something from the main suppliers, the backup consolidator will often have it because they source from farms in different regions

of the world or in the production market someone else might have it. Second, in the case of the Irish supply chain, the focal firm puts out frequent tenders to supply an individual input (e.g., purple cabbage). The frequent tendering means that while each consolidator is supplying a wide range of produce to the focal firm, they know that they have to maintain good service levels and low prices, or they will lose future tenders. The end result is that while the relationships with the small number of consolidators are long term and stable, the bundle of produce from each supplier is always changing and no consolidator is guaranteed to keep any one piece of business.

"The problem is, there's four other guys here who can do a pretty similar job to us, maybe not in every category, but produce is definitely more fragmented and easier to do." - Irish case, Supplier 3, Representative.

Researcher: Previously you mentioned the backup suppliers, would they be based in some rural areas [who] would be the backup, or would they just smaller suppliers?"

Interviewee: "I wouldn't necessarily say it be a smaller supplier. We maybe just have across the range. We might have less products from them...we might have twenty types going to main, the main supplier and ten going to the secondary or the secondary vendor just to keep them in the business with us at the time, then in promotion. So, our main supplier mightn't be able to do the volume. So, we pushed that over to these secondary suppliers and say, 'Look! Can you help out here? Can you give us maybe one hundred extra cases' to normal which they would normally supply. So, we need to maintain both. So, we put business to both suppliers to ensure they're both willing to deal with us in the future." - Irish case, Focal Firm, Supply chain coordinator.

The use of back-up suppliers in the Spanish case

Similarly, the Spanish and Danish retailers use the possibility to have other suppliers or the production market option when demand is uncertain, and the main supplier could not satisfy it as well as a leverage to negotiate prices. Here the General Manager at a Spanish Suppliers' cooperative describes a typical negotiation with a supermarket:

"... they say, "look, Luís [anonymized name], the cabbages we had to pay you at 1.15 [euros], I won't pay you at 1.15, I'll pay you at 95 [cents] because there is someone else who sells them to me cheaper than you". And I say "but I [meaning the locals farmers] planted them for you, we agreed on this price, and now you tell me no." [And the supermarket] "I'm very sorry, but there is someone else who sells them to me cheaper than you." - General Manager, Spanish Supplier.

When talking about the competition from other suppliers with a second-tier supplier in the Spanish supply chain, he explains that they have to deal with competition from other countries:

"it might come from Israel; it might come from Morocco... They sell a lot of products from Morocco and from other countries that I don't know right now... from Holland. It depends on which product comes from one country or comes from another. It depends on the product, but it is spreading more and more and well, what's going on here? That you have a wage, a person who is costing you at the end of the month between payroll, Social Security and everything costs you 1,500€ and in Morocco for 50€ a month they have people, and they don't have insurance, or they don't have anything. Then it is impossible to compete with these people." - Spanish case, Supplier A, Farm owner and worker.

The presence of such suppliers might impact the duration of the relationship with the main suppliers and in general the benefits of long-term relationships, such as stable planning, stable returns, and stable work relationships, are not present in the case of back up suppliers.

Informal buyer-supplier communication risks

The applicability of person-to-person communication and informal communication can be limited in some cases if buyer and supplier are located far away, or when technology is used to exchange communication (e.g., e-mails) or to manage the buyer-supplier relationship (e.g., eProcurement).

The Danish focal firm is often located far from its suppliers. In fact, the Danish focal firm had to set up an office in Spain to get a closer direct contact to suppliers from Southern Europe, and they try to meet in person at the suppliers' premises to maintain their long-term relationships.

“The travel to make a difference is not completed in a week, but I believe I can feel a growing trust between me and my suppliers. They actually believe in my benevolent intentions..... I have a pleasant feeling that they open more towards me than my predecessors. They can feel that we want to have a good and honest and mutually respectful dialogue about trading together. It has been an eye-opener for me that when I visit a supplier, it is a completely different person I meet. They feel at ease, many more casual clothes.....It just tells me how squeezed they feel when they sit for a formal negotiation in our office. Well, yes, I do believe that we it returns for us to treat our suppliers decent and give them peace of mind, show trust, and take an open dialogue with them. Then we get down to the layer of worker wellbeing, but there we only taken the first steps.” - Danish case, Focal firm, Procurement manager.

In addition, one of the Danish focal firm's suppliers reported that the use of eProcurement and eAuction applied by other large retailers hampers the informal relationship between the buyer and the supplier.

Supply chain flexibility risks

In some cases, the suppliers did not find the buyers to be flexible toward them. In the Danish case, the suppliers acted in favour of the buyers by assuring deliveries even under difficult situations; for example, by diverting products to the focal firm rather than to other customers in light of the trustful and long-term relationship that they shared but did not see such favour rewarded. During Spring 2020 the pollination of European apples was compromised due to very low temperatures, which led to a shortage of apple produce all over Europe. In that year, the supplier delivered large amounts of produce to the focal company in Denmark. However, the managing director of the supplier was disappointed that the focal company did not take those extra efforts into account in the following years and required a strict compliance to the required service level in other occasions.

5.4 Conclusion

Contractual and relational governance to counterbalance industry pressures

Agri-food supply chains in general – and specifically the fruit and vegetable supply chain analysed in this study – are typically made up of a few large buying firms (the consolidators and retailers) and many small farmers or producers. The industry has a reputation for these large buying firms putting serious pressure on the small farmers and producers; pressure that will likely lead to cutting corners in terms of OSH aspects and working conditions. And while it is possible to use the same pressure to coerce the same small farmers and producers to achieve goals such as reducing food waste or improving the suppliers' OSH systems and outcomes, coercion tends not to be an effective tool for supply chain management (e.g. Terpend & Ashenbaum, 2012).

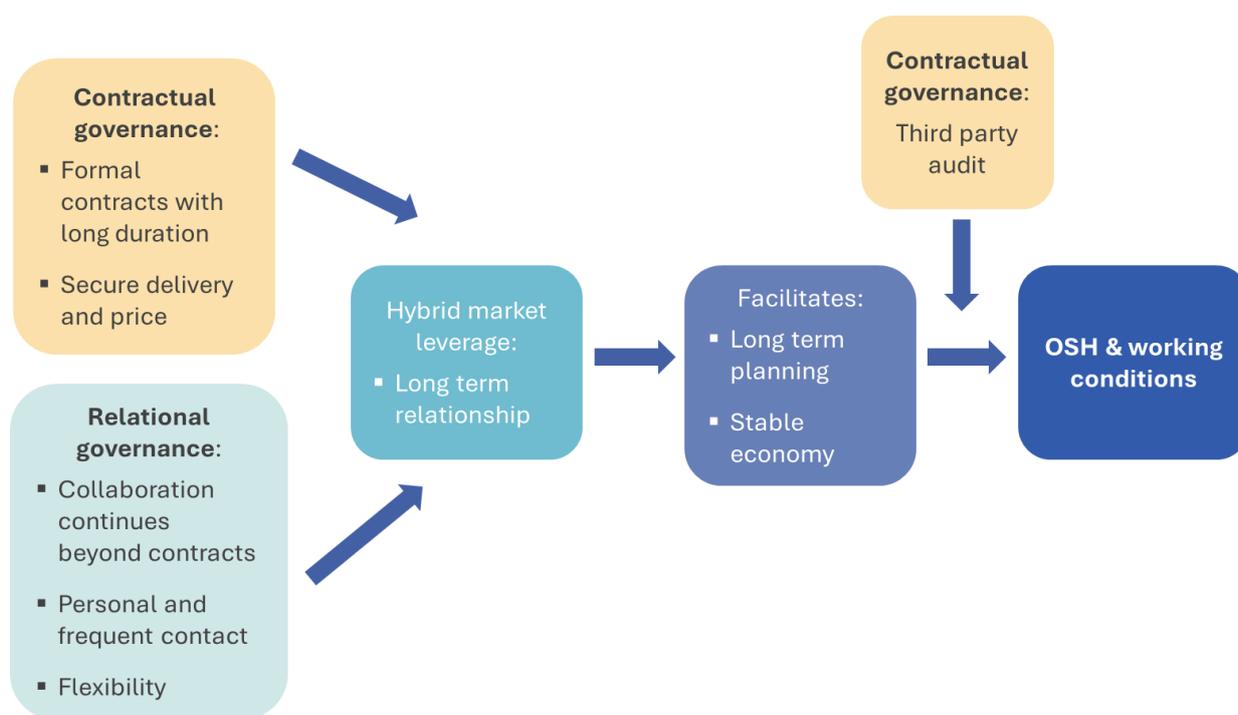
The literature suggests using contractual governance to set the basis for a positive buyer-supplier relationships and relational governance to build trust, which will lead to shared norms, solidarity, and flexibility. In our sample of focal firms with reputations for focusing on sustainability and the well-being of workers in the supply chain, this is what we observed. However, some specificities were identified in the use of relational governance in the case of small suppliers.

Nevertheless, in the analysed cases, contractual and relational governance are not explicitly used to improve working conditions and OSH. Compared to the construction sector, we did not find any direct attempts such as training or other assistance designed specifically for working conditions and OSH. The

possibility for a direct impact comes from the focal firms CoC requirements, which lead the suppliers to acquire certificates including OSH aspects with third party audits to prove compliance. Yet, the main focus of the audits is on food safety, quality, and environment and only to a limited extent on working conditions and OSH, and the follow-up by the focal cases on audit outcomes is limited.

Despite this, our case studies of retailers and food manufacturers with a high sustainability profile use both contractual and relational governance as market leverage to develop a positive buyer-supplier relationship as described in Figure 2.

Figure 2: Market leverage influencing working conditions and OSH in agri-food



Our cases show that contractual and relational governance can be used to improve supply chain outcomes and set up a stable buyer-supplier relationship as well as increase mutual understanding, information sharing, solidarity, and coordination, which may indirectly impact working conditions and OSH in terms of stable employment and working hours which via better planning and stable work relationships. Eventually, we expect that as such market leverages can help to improve supply chain outcomes, they can also be used to improve working conditions and OSH directly, even if we lack specific evidence in the analysed cases. In addition, third party audits have – in spite of limitations – a positive impact on working conditions and OSH.

Controversial role of contractual governance

However, the role of contractual governance can be controversial. The effect of contractual governance can be related to agency theory for which a principal (the buyer) asks the agent (the supplier) for a specific action (Eisenhardt, 1989). Agency theory examines how agents may pursue their own self-interests, potentially leading to agency costs and suboptimal outcomes. Specifically, agency theory is a framework in economics and organisational behaviour that explores the relationship between principals (such as shareholders or owners) and agents (such as managers or employees). It focuses on the inherent conflicts of interest and information asymmetry that arise when agents act on behalf of principals (Jensen & Meckling, 1976).

The action is basically the purchased product with various specifications, including compliance with quality and delivery performance and certificates and CoCs.

The delivery of the requested actions conforming with expectations depends on the interest of the principal to secure that expectations are met. What we found in our cases is that the main interest of the

principal when applying contractual governance, focusses on supply chain outcomes, such as food quality and safety and delivery performance. The extent to which the buyers take an interest in suppliers delivering social compliance when applying contractual governance tools is not explicit. Similarly, the agent needs to have strong interest in complying with the working conditions and OSH requirements. As proof of compliance with working conditions and OSH requirements does not necessarily add value to core delivery but may increase cost, such as in the case of multiple certifications or higher salaries, the supplier interest is not necessarily very strong.

The only example of direct contractual governance tools applied by the focal firms to OSH is to ensure their suppliers comply with the specific OSH requirements for delivery. The retailers force their suppliers to use pallets of specific heights to reduce the workers' risk of getting injured when moving boxes in the focal firm warehouse.

Long-term relationships as market leverage for working conditions and OSH

In the buyer-supplier relationship the main requirements enacted through contractual governance focus on prices and volumes as well as food safety. In this sense having formal contracts in all cases - except the Spanish one in which the contract was not formalised - helped to maintain stable relationships between the buyer and the supplier and – through the stable returns – potentially stable employment and working hours benefiting working conditions and OSH. Such potential positive impact was further fostered by the fact that in all cases, including the Spanish case, the buyer-supplier relationships were long term and lasted far beyond the formal contracts of one year or in some cases contracts of a few years duration.

Relational governance facilitates long-term relationships, such as buyer-supplier collaboration including support to supplier development, informational communication, and flexibility, facilitating mutual understanding, information sharing and solidarity. Indeed, such aspects can affect the supplier's interpretation of the buyer's intentions and behaviour in a positive way. If the supplier perceives the buyer to be fair and benign, the supplier will be more inclined to follow wishes from the buyer and be less likely to engage in opportunistic behaviour. This is normally applied to make the supply chain more effective but may be considered to have effect also on working conditions and OSH.

A key aspect is the power balance in the buyer-supplier relationships. Traditional purchasing theory suggests that in presence of thousands of undifferentiated and (mostly) small farmers who can supply a given commodity (e.g., apples, beets, or carrots), the buying firm has the power to leverage the suppliers to lower prices or speed up delivery (e.g. Kraljic, 1983). Yet, we observed the focal agri-food buying firms that buying organisations often prefer to limit the use of coercive power but instead adopt relational governance mechanisms to foster mutual trust, mutual understanding, and solidarity with their suppliers, both small and large. This approach fosters coordination and information sharing and by so doing improves supply chain outcomes such as delivery and quality performance and at the same time provide more stable returns and profit. This can indirectly influence working conditions and OSH by providing more stable employment and working hours, less stress and pressure at work and potentially fewer accidents. Additionally, in more profitable work environments, suppliers make investments in training and new machinery to improve OSH.

For small suppliers, which many other buying firms in this industry would leverage or coerce into lower prices and potentially cutting corners, relational governance is a tool for supplier development. Developing these small suppliers via training and technical assistance is a means of building trust, solidarity, and shared norms. But rather than being truly collaborative the relationships point mainly one way, because the suppliers have limited capabilities. As these suppliers grow and mature, the relationships can become more collaborative because the suppliers will begin to develop their own unique competencies and knowledge bases. The trust built by supporting the suppliers when they were just starting could then be the foundation of the suppliers being more willing to collaborate with the buying firm, when they develop knowledge and abilities to share.

Relational governance with a focus on long term relationships is a powerful market leverage instrument for developing small suppliers and allowing the buying firms to collaborate with large suppliers (when leveraging on collaboration and flexibility) even while using multiple sources and short contracts for individual tenders. Relational governance was used not only to make sure shelves were stocked on a

daily basis, but to jointly make improvements to the supply chain driven by the buying firm, such as efforts to use more sustainable packaging or to reduce food miles. While we found little evidence of the focal firms directly using relational governance to improve OSH at their suppliers, the reality is that these focal firms, who are leaders in other components of sustainability, have the means to support the possibilities more directly for suppliers to improve working conditions and OSH.

Put differently, the evidence from the cases as well as the well-developed literature base in relational governance both suggest that these focal buying firms could use relational governance to develop a shared norm in managing OSH, in the same way they developed a shared norm in other aspects of being more sustainable. However, working conditions and OSH within the supplier organisations are not sufficiently high on the priority list of the buying firms to take such strong action.

Yet, contractual governance together with relational governance helps to set up a stable and long-term work relationship between buyers and suppliers, as well as mutual understanding, shared norms, and information sharing, facilitating better planning and so indirectly benefiting working conditions and OSH through stable employment and working hours.

The cases in this study all come from fruit and vegetables suppliers in Europe but we expect the hybrid market leverage of long-term relationships are also feasible for other subsectors of the agri-food supply chain with many small suppliers such as meat, dairy and fish industries. The more stable and long-term relationship with mutual trust and obligations will help the small suppliers to maintain a stable economy and long-term planning. Such a situation will eventually make it easier for the suppliers to provide safer and more healthy workplaces.

Other production sectors will probably also benefit from longer term relationships, especially those involving commodities with many small producers where one producer is easy to replace with another.

CoC, certification and audits as market leverage

In general, working conditions and OSH requirements are not explicitly included in the contracts but covered by a requirement to comply with the retailers' and food manufacturers' Code of Conduct (CoC). The focal cases do not have procedures for their own audits of the working conditions and OSH content in the CoC, although they do conduct audits of quality and food safety. They transfer the responsibility to prove compliance to multistakeholder certifications such as GLOBALG.A.P and GRASP. However, the extent to which they were enacted varied a lot. In some cases, such as in the Estonian supply chain, CoC and certification are not compulsory. In addition, in most cases compliance to CoC and certifications do not focus on working conditions and OSH but on food safety and to some extent the environment. Thus, in case of non-compliance with working conditions and OSH, the focal cases explained that they rarely if ever stopped the cooperation with the supplier but would contact the supplier to rectify. However, retailers highly rely on maintaining a positive public image to gain consumers' trust. Consequently, they are quick to respond to media reports highlighting poor working conditions within their supply chain. A notable instance of this is when the Danish focal company took action in response to media coverage exposing poor working conditions and worker harassment at its Spanish strawberry suppliers. In this case, the retailer initiated an audit of the supplier with its own staff and ensured that corrective measures were implemented. However, our data show that retailers do generally not have systematic follow up procedures and do not necessarily notice that there is a non-conformity on working conditions and OSH.

In addition, the focal firm's (the client) request for certification from a supplier is mediated by the auditor, who on behalf of the buyer is expected to secure that the supplier (the agent) delivers on social compliance. The suppliers are hiring and paying the auditor, who therefore has a basic interest in maintaining a good customer relationship as well as an interest in limiting the resources used for each audit to be competitive and secure a certain level of profit. This relationship may weaken the auditor's interest in securing a high level of compliance. This problem may be reinforced by a need for suppliers to have multiple certificates, which requires considerable resources both in terms of money and management time.

Yet, as we have demonstrated in the empirical data, there is a wide dispersion of the impact of certificates and audits on working conditions and OSH. On one end examples from German and Danish suppliers show a quite positive impact, where the suppliers use the audits as a part of their OSH

management. Spain, Ireland, and Estonia constitute the other end of the spectrum where certificates and audits have a very limited impact on working conditions and OSH. In these cases, national OSH regulation and inspections play a much more important role.

Certificates followed by audits have a potential large impact on working conditions and OSH at the suppliers, and the application of certification is growing rapidly. According to ISO, the ISO 45001 standard on OSH management is the fastest growing management standard. However, the use and effect of audits in supply chains is a contested question (Sarfaty, 2021; Vandenbroucke, 2023). For CoC, certification and audits to play a stronger role in market leverage of working conditions and OSH, the downstream buyers (retailers, consolidators, and food manufacturer) need to take a stronger role in the process – just as they do with food safety, quality, and environment. For these priority issues they fulfil their responsibility to maintain a sufficiently high level of the suppliers' production processes by playing a more active role such as their own audits and strict follow-up. It does not happen at the same level for working conditions and OSH partly explained by a relatively weak interest and partly by the internal organisation where procurement takes care of everything but working conditions and OSH. However, our data indicates that recent regulations, such as the different national Due Diligence Laws as well as the planned Due Diligence Directive of the EU³¹, are fostering increased awareness among buyers regarding their responsibilities concerning social outcomes within their supply chains.

Future developments

We selected the three retailers and one food manufacturer with 17 of their suppliers in this study as best cases related to OSH, working conditions and sustainability. This is important for consideration of the general feasibility of our findings.

It is likely that in the agri-food supply chain most retailers and food manufacturers take an even more limited interest and responsibility for working conditions and OSH in their supply chain as well as use the power imbalance to squeeze prices and delivery conditions harder. Thus, market leverage alone cannot be adopted to improve working conditions and OSH to a sufficient level to secure safe and healthy workplaces with human rights compliance. Market leverage needs to be combined with regulation. As the sustainability manager in the Irish retailer explains:

“At a very basic level the supplier should be adhering to the local laws in which they operate within, and health and safety of workers is part of that law that in the area that they operate in, well then they should be adhering to that... if the Irish one (law) was a lot higher, well then, we look to communicate that to that supplier if we have an expectation that they adhere to a slightly higher standard.” - Irish case, Focal firm, Sustainability manager.

He is mainly thinking of national regulation, and all interviewed suppliers in Ireland also referred to national regulation of OSH and the subsequent inspections. Using market leverage is therefore not a substitute for government regulation.

Yet, the national level is not sufficient to regulate cross-border supply chains. The EU and several Member States have, therefore, issued or are in the middle of passing new regulation, which will shift the responsibility to develop working conditions and OSH in the supply chain towards the focal buying firm level. Most of these regulations pivot around the concept of human rights due diligence, which was enshrined in 2011 by the United Nations Guiding Principles on Business and Human Rights (UNGPs). The concept of human rights due diligence refers to a standard practice aimed at identifying, preventing, mitigating, and accounting for how focal firms address human rights in their supply chains (United Nations, 2011). The expectation that focal firms should conduct due diligence is also reflected in the Organization for Economic Co-operation and Development (OECD) Guidelines for Responsible Business Conduct and the International Labour Organization (ILO) Tripartite Declaration. Evidence has shown that voluntary measures based on the UNDP and the OECD guidelines have been insufficient to address these issues and thus, an ever-increasing number of countries have either passed or are considering introducing mandatory human rights due diligence laws. Europe has been one of the most active geographies in this regard with the approval of a first batch of national legislations such as the

³¹ https://commission.europa.eu/business-economy-euro/doing-business-eu/corporate-sustainability-due-diligence_en

UK Modern Slavery Act, Norway Transparency Act, Germany's Supply Chain Due Diligence Act, and the French Devoir de Vigilance Law. There are several other European countries with legislations under discussion, such as Spain, Belgium, the Netherlands, Austria, and Finland. Furthermore, the European Union is also engaged in the process of negotiating and approving the Corporate Sustainability Due Diligence directive, with the European Parliament accepting the Commission's proposal in June 2023, with the Council expected to agree in the beginning of 2024. The Spanish government is working on its own law on supply chain due diligence addressing especially the food industry. Such regulations might incentivize focal buying firms to take direct responsibility for working conditions and OSH in their supply chains and so adopt contractual and relational governance tools that are proved to be effective to foster supply chain performance to include working conditions and OSH development. In this sense, this project can help to show the market leverage tools that could be used for an effective supply chain due diligence process including working conditions and OSH aspects.

Policy pointers

The European Commission supports market leverage tools such as CoC within the framework of the "From Farm to Fork" strategy expanding firms' sustainability commitment along their supply chains and sourcing processes to include social aspects such as working conditions and OSH. However, the strategy and its recommendations are purely voluntary, and we did not find any reference to the strategy in our cases. For a stronger impact some tools should be included in the European Commission regulatory framework to reinforce the credibility and applications of CoC and certifications. In this sense, governments / policy makers may play a 'gate keeper' role in providing credibility to these voluntary standards. Their involvement can encourage transparency in standard setting and ensure that the process is inclusive and fair.

Another aspect of regulations that can benefit the adoption of market leverages such as certification is about the unification of required standards in Europe. Some countries (Spain and Ireland) in our study have integrated production standards, which include all requirements including a limited level of working conditions and OSH to farms and other suppliers. Norway has the most developed example of one standard covering all requirements for farmer including aspects ranging from food safety to OSH³². Development of a European standard for integrated production would be beneficial for working conditions and OSH as well as for the economic performance of the agri-food sector. Fulfilling the requirements from certificates and the national OSH legislation constitute a burden for small farmers and other suppliers and local support systems to help with these processes will be beneficial for the safety and health of the farmers and their workers.

The market leverage practices in agri-food having direct impact on OSH are of a more limited scale compared to construction and they mainly have an indirect effect. It would therefore be important to strengthen the buyer-supplier relations and the working conditions and OSH content more explicitly. Both policy makers and practitioners can help facilitating such a development.

For policy makers:

- Upcoming regulation under the 'EU 'Green Deal on mandatory due diligence practices and reporting on value chain sustainability (Environmental, Social, Governance (ESG)) according to the CSR directive³³ has the potential to be a key instrument for working conditions and OSH in agri-food. However, as with the practice with certificates and audits, there is a risk of developing a paper tiger with little influence on practice. Yet, the integration of the reporting demands may mitigate that risk. However, to avoid that the many small suppliers with limited managerial capacity get constrained in the market competition with larger suppliers tailoring to their specific needs is crucial.
- The possibility could be to integrate due diligence with the existing certificates, as the application of many parallel certificates constitutes a burden for the small suppliers. Integration of the different certificates is therefore a priority. A model could be the Norwegian integrated

³² <https://www.ksl.no/no/om-ksl-2/information-in-english>

³³ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022L2464>

certificate for food safety and OSH³⁴.

For practitioners:

- Buyers give advice and make their own audits of food safety and environment but leave working conditions and OSH to third party certifying agencies. A stronger integration between the procurement units and CSR/social sustainability units in the buyer organisation would signal a stronger priority to working conditions and OSH.
- Formal contracts of a longer duration – preferable several years – are important for suppliers. They can create stable conditions and open possibilities for longer term investments.
- Personal trusting relationships help supplier to plan their production and may facilitate more stable employment. Physical buyer visits to suppliers can help building the personal relations. During visits it would be an advantage to open a dialogue about all topics of interest for both buyer and supplier – including working conditions and OSH.
- Delivery terms are normally determined in the contract – sometimes with fines for violating the terms. Yet, it is important to develop a trusting relationship where both parties are flexible and try to help each other in case of problems such as the supplier having difficulties delivering due to for instance adverse weather conditions.

³⁴ <https://www.ksl.no/no/om-ksl-2/information-in-english>

6 Market leverage instruments across the industries: comparing and contrasting agri-food and construction

When we compare construction to agri-food, the value delivered in each industry is obviously very different. Yet, when looking at how buying firms in both industries use market leverage instruments to get their subcontractors (construction) or suppliers (agri-food) to comply with working conditions and OSH regulation, they appear more similar. First, work in both industries involves similar hazards and risks. Growing and processing food often involves the use of dangerous substances such as fertilisers and pesticides. Similarly, a construction site is typically home to an array of solvents, paints, glue, and cleaning agents; all of which pose risks to workers. Second, while a great deal of the work in both industries can involve demanding manual labour, this is usually complimented by the use heavy machinery. While the presence of heavy machinery may reduce (but far from eliminate) some of the health and safety issues associated with manual labour, the presence of the equipment itself creates a set of risks as well. Unlike a factory setting, a construction site or a farm field are always changing, making it harder to manage or control the interface between workers and equipment. OSH management in these settings is more challenging than it would be in a more static manufacturing or retail setting. Finally, both industries are highly regulated in terms of their end products; food safety and building and fire safety.

Both industries also govern their supply chains using a mixture of contractual and relational governance mechanisms. They both use a variety of market leverage instruments to try and ensure suppliers / subcontractors³⁵ perform as intended both in general and when it comes to complying with working conditions and OSH requirements to perform in a safe and healthy fashion.

Finally, across all cases the most visible market leverage instrument is the potential for future work, which is contingent on previous performance as a supplier / subcontractor. Almost all the studied dyads involve very long relationships and across cases and industries; it is clear that suppliers / subcontractors want to maintain these relationships and the future business they hope for.

Yet, a more careful examination indicates the two industries are more different than alike. They may both use a similar combination of relational and contractual governance in their supply chains but how these tools are used, and their relative importance varies a great deal. These differences are mainly a function of agri-food supply chains being very dispersed while construction chains (at the actual construction site – which is our focus) bring buyers and subcontractors together for relatively long periods of time where they interact on an ongoing basis. In this sense, the physical project environment of construction is relatively unique when compared to most other industries, in that it is unusual to have multiple members of a supply chain working shoulder to shoulder on a day-to-day basis. One important consequence is that construction uses a wider array of direct OSH market leverage practice than agri-food where indirect practices play a larger role.

For both sectors the governance they end up applying, can be termed hybrid governance, as all cases use a wide array of combined contractual and relational element. We maintain the separation in the following text to secure clarity of the discussion.

6.1 Relational Governance

The locational difference has several implications. First, while relational governance is common in all the cases, the web of relationships is much more complex and marked by the vicinity at the construction site. This allows for more frequent informal communication and more influence on suppliers' (OSH) behaviours. In the agri-food cases, relationships are maintained at the managerial level; typically, the purchasing function at the buying firm and an account manager/ marketing/ sales manager at the supplier. Buyers and suppliers have limited visibility into each other's operations – and face to face communication is rare, especially relative to construction. Although there are examples of stronger integration, especially if sustainability is part of the branding, e.g. for sustainable chocolate products.

³⁵ All of the construction dyads were purposefully limited to subcontractors. These dyads did not include suppliers of only construction material. Therefore, while we acknowledge that the material supply chains for construction are more similar to those in agri-food, construction materials suppliers were not the focus of the data collection, and hence not of this chapter.

Construction has a set of managerial relationships, which are especially evident when bidding for work. Office-based managers from the focal firm engage with their counterparts at the subcontractor-level when developing bids, creating contracts, and planning the start of a new project. But they have a second layer of relationships at the construction site itself, where the main contractor's project manager interacts with the site managers for the subcontractors – at a minimum daily and often more frequently. They share a physical space, start the day at the same white board meetings, do site walks together, cross paths in the canteen, and similar activities.

The supply chain literature often discusses the difference between internal integration and external integration (e.g. Pagell, 2004). Integration involves the coordination and collaboration required across entities, units, or people to manage the supply chain. Internal integration is what happens within a company across units such as CSR, purchasing, operations and logistics. External integration involves the same collaboration and coordination, but across organisations (e.g. Flynn et al., 2010). The coordination across the focal firm and its subcontractors on a construction site would definitionally be external integration; trying to coordinate and maintain collaboration across organisations. However, because of being in the same place and having frequent formal and informal engagement, these relationships have characteristics more associated with internal integration; trying to coordinate and maintain collaboration within an organisation. This makes the dynamic in construction unique, and the proximity may reduce the risk of opportunistic behaviour as it can be more difficult to hide from the focal firm.

In addition, because buyers and their subcontractors are working on same site, they have visibility into each other's work. This allows for the main contractor to influence the behaviour of subcontractors in OSH and otherwise, in a variety of direct ways such as toolbox talks, site walks or stopping work when observing a hazard. Similarly, the focal firm in construction can indirectly influence the behaviour of subcontractors or their employees via informal communication or complimenting the work of a supplier's employee. And these conversations can often involve workers and or managers from multiple subcontractors, which allows for faster dissemination of both best practices and norms.

From the perspective of the Lift-OSH project this is a critical difference. This means that the focal firms in construction can use relational governance to have a direct and daily influence on subcontractors (OSH) behaviours while the focal firms in agri-food cannot / do not have the same type of direct relationship or influence with their suppliers or their workers. This means that in construction the focal company's safety culture can have an influence on subcontractors' workers' safety behaviour – this generally does not occur in agri-food.

6.2 Contractual Governance

Contractual governance is common across all of the cases and dyads. But once more, there are differences across the industries with the focal firms in agri-food being much more reliant on certification / third parties when trying to make sure suppliers are likely to follow OSH requirements. In other words, both industries make frequent use of certifications, but the agri-food firms rely on certifications to an extent that the construction firms do not. This is due to the nature of the supply chains.

Focal firms in agri-foods are unlikely to have much visibility into how their suppliers do their work. Supply is often distributed across several small farms, and depending on the type of produce in question, these farms may be in other countries or even on other continents. In fact, most of the agri-food buying firms are highly reliant on farms / growers from outside their home country. In addition, consolidators, co-ops, and the like are common in agri-foods but not in construction. The existence of these consolidators makes sense when buying a perishable, weather dependent product that is produced by many small suppliers who are geographically distributed. This allows the agri-food buying firm to have a single relationship (or small number of relationships) with relatively large consolidators instead of hundreds or thousands of relationships with farmers. However, this adds a link to the supply chain between the focal firms and growers, further reducing visibility to how work is done at the site of production. Yet, some retailers give priority to direct delivery from smaller farms, but with the large number of suppliers influence on OSH does not become easier.

Certifications and codes of conduct are developed especially for settings where there are numerous potential suppliers who are geographically distributed and hence are inherently difficult for buying firms to monitor or control. However, in agri-food the buying firms are reliant on certifications, audits, and the

like, among others to prove to the consumers that they behave as a responsible company. For construction, the certifications tend to be a compliment to the direct relationship the focal firms have with the subcontractors. In other words, the focal firms in construction could and did look at certification as part of a more holistic determination of if this was a 'good' supplier. A lack of certification when they were highly familiar and comfortable with a subcontractor's operations was not a deal killer, and the presence of certification could not make up for prior bad experience with a subcontractor. This is then a second key difference between the industries.

Similarly, the nature of construction work means that once a project is started, changing subcontractors or suppliers is highly unlikely to occur. Changing suppliers can mean a change in the material specifications which tends to be avoided mid-project, while changing sub-contractors (except for unskilled labour subcontractors) in the midst of a work package is likely to delay the entire project and create delays and cost increases both for the main contractor and multiple other sub-contractors. Problems in construction typically need to be solved without changing sub-contractors or suppliers, which makes reverting to contractual terms to resolve issues unlikely. Although disputes about payment for extra work or rework are common, they are often pushed to later arbitration. In agri-food disruptions from events like the weather are expected and it is common to either have back up suppliers for many types of produce or to seek other sources of supply when the main supplier is delayed or disrupted.

These differences play out in the contracts in both industries. The nature of agri-food means that while the relationships are, like construction, long term, they are always under scrutiny because of the potential to get better service and or lower prices from one of the many possible substitute suppliers. Buying firms in agri-food may not change suppliers often, but they can. And this possibility leads to relatively short contracts that are constantly being renewed, although some retailers seek to make longer term contracts. While most relationships in the dyads studied, regardless of industry, were very long term, the agri-food relationships were under more scrutiny and pressure.

The final contractual governance difference between the industries is that construction is more likely to give penalties for poor safety performance, typically poor performance from individual workers. These tend to come in the form of warnings (red and yellow cards) that are administered on the construction site by the focal firm. Other contractual clauses in relationship to penalties are rarely if ever invoked across the sample; this is a common pattern across the two industries.

6.3 Limited transferability between industries

From a high-level perspective, the market leverage instruments look similar- especially when examining the firm-to-firm relationships between managers. But the nature of construction means there is a second, richer layer of relationships that dramatically increases communication, visibility, and personal contact. Hence, the focal firms in construction seek to have an impact on the safety culture of their suppliers. This does not generally occur in agri-food. Equally, the agri-food firms become much more reliant on certifications and audits than the construction firms.

Certifications and codes of conduct may be common, but they are also frequently ineffective (e.g. Lebaron & Lister, 2015). Equally, they set behavioural standards but do not really make it possible to share norms or tacit knowledge in the way that the studied construction companies can via relational governance. Hence, it would be easy to conclude that agri-food would benefit from a development towards the second layer of relationships found in construction.

In practice this seems unlikely given the structure and inherent uncertainty of food supply chains. A Danish retailer is not going to be able to build a relationship with every one of its possible Spanish growers of tomatoes, which involves frequent real time interaction, at an operational level. That said, the agri-food firms could build deeper ties and find ways to share their norms with some suppliers. This was most evident in the Producer School run by the Irish food company where small suppliers had the types of hands-on relationship seen on construction sites. No food company could roll this out for all of their suppliers, but it would seem possible to create something similar in the other agri-food chains for some suppliers, be they small, at risk or otherwise in need of help. Equally, buying firms in agri-food could instead create incentives for the big consolidators and co-ops they do business with, to set up similar initiatives for the farms they deal with directly. Finally, other food supply chains have set up supplier-to-supplier networks that – much like the Producer School - to allow for knowledge exchange among suppliers (Marques et al., 2020). Food supply chains will not be able to truly mimic the deeper

layer of relationships found in construction, but they can engage in actions to improve information flow and linkages between members of the supply chain that could benefit OSH.

Other actions, such as supplier / subcontractor awards are an easy way to recognise suppliers and subcontractors hence it was surprising that these were mostly absent (with the exception of the Irish construction case) in the data. Similarly, while supply chain finance is traditionally used to benefit the buying firm at the expense of suppliers and subcontractors, the cases provided some evidence that buying firms could instead speed up payments and the like to help smaller suppliers and subcontractors maintain good cashflow which should allow them to invest in OSH. This seems like it could be especially useful in agri-foods where cashflow uncertainty has long been a problem for smaller farmers / growers. Similarly, the cases provided some examples of focal construction firms buying materials (e.g., concrete) for suppliers, because the focal firms bought in larger volumes and could get better prices. And cooperative purchasing – where groups of similar smaller buyers place collective orders with suppliers to reduce prices - has a long history in public procurement (see McCue & Prier, 2008). The same logic could be applied to both construction and agri-foods where the buying firms could purchase PPE, training, and the like for multiple small suppliers; thus, lowering costs and making sure everyone had access. Another important action in agri-food is longer term contracts (several years), which small suppliers can use to plan investments and securing bank finance.

In conclusion, the market leverage / governance mechanisms used in both industries show similar high-level patterns of combining a reliance on contractual governance focused on certifications and codes of conduct and relational governance which builds and leverages long-term relationships. In addition, in both industries the availability of penalties and disincentives did not generally lead to their use, while the most common incentive by far is the promise of future work. The case firms were selected because they were leaders in managing their supply chains. Leading supply chain thinking has long emphasised the importance of long-term relationships and relational governance as a means to build and maintain competitive advantage, socially when also trying to improve aspects of sustainability (e.g. Pagell et al., 2010).

However, the nature of the industries means that once one starts to examine practices and outcomes in more detail, they become more different than alike. The construction firms in our data leverage the nature of the construction site to create a second layer of rich, informal relationships between the personal doing the actual building; that is not possible in agri-food. This web of relationships allows for much greater transfer of knowledge and equally if not more importantly for this project, for the buying firms to transfer its safety culture to subcontractors (at least while they work on the project). Agri-food is much more dispersed and the inherent uncertainty in food production business means that in most instances backup suppliers exist and are used. This forces a reliance on certification and tends to create more pressurised, albeit long-term, relationships.

7 Cross-sectoral conclusions

This project set out to answer the following questions about the use of market leverage instruments in European agri-food and construction supply chains:

- 1. Which market leverage governance practices with a potential for influencing working conditions and OSH are applied in the European construction and agri-food sectors?**
 - Identification of market leverage practices related to contractual, relational and hybrid forms of governance.
 - Assessment of the potential and limitations of the practices to influence working conditions and OSH.
- 2. What mechanisms make OSH market leverage governance practices aimed at the supply chain relationship work in the European construction and agri-food sectors?**
 - How do market leverage governance practices influence working conditions and OSH?
 - How do combinations of different governance practices function together?
- 3. What are specific contextual elements in the European construction and agri-food sectors that increase or decrease the effectiveness of OSH market leverage governance practices?**
 - What conditions influence the effectiveness of the market leverage governance practices?

In answering these questions, the project tried to contribute practical and applicable knowledge that European policymakers could draw upon when trying to improve OSH and supply chain regulation. Equally, we hope that the knowledge generated by the project can aid managers within large organisations in the EU to use their own supply chain relationships and networks to increase OSH awareness and health and safety in their supplier organisations.

7.1 Context

We start with the third research question, which addresses what specific contextual elements in the European construction and agri-food sectors increase or decrease the effectiveness of OSH market leverage governance practices. We then conclude the report by answering questions 1 and 2.

Both construction and agri-food can be considered relatively hazardous industries, but construction has a much higher rate of injuries and fatalities,³⁶ although under-reporting with the many migrant workers is probably a particularly large problem in agri-food. Yet, the construction context might be more amenable to change, for individual firms that want to see change, when it comes to OSH. This is because clients and/or main contractors who want to see change have in essence an audience that has to listen to their messages — a so-called captive audience — to make change. The construction site provides a setting where a buying firm looking to make change, can. Not only do they select subcontractors, they also get to set and enforce the rules and culture on site. They also determine the tone and tenor of toolbox talks, white board meetings and other activities. And they can, if they wish, be very hands on with their management.

The relationships at the construction site constitute a second layer of informal relationships. This web exists on all construction sites, and the case companies, which are leaders in construction safety, are all leveraging these networks to improve OSH management and outcomes. This does not of course magically make construction sites safe. But the studied construction firms are able to run a site in a much safer fashion than many of their competitors. On site, this means that the focal firm's (or client's) safety culture becomes the culture of all organisations working at the site. Subcontractors may not always behave in this way working for other main contractors or clients, but many reported their safety culture being influenced by the main contractor, and all knew that if they want future work with this main contractor or client they will need to engage in these specific safety behaviours. This suggests that when such behaviours are not the norm or not occurring on a construction site, a main contractor with a poor

³⁶ See: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Accidents_at_work_statistics#Incidence_rates

safety culture will also share that with the rest of the job site. Main contractors whose current safety record is poor will then need to initiate the change by changing their own culture.

The agri-food supply chain is not structured in the same manner as that of construction and it will be harder for firms that want to see change. Creating networks of informal communication will take more purposeful work and be harder to maintain. The dispersed nature of the growers means that the buying firms often have limited or no direct relationships with their growers. These structural elements are obviously an impediment to change. But an equal impediment to change is that, in general, OSH is not a top priority for the agri-food firms. The construction companies could and did talk at length about safety and the role of workers' safety. In food, OSH often only came up when prompted or as part of a wider discussion on working conditions. And while most construction respondents would acknowledge the industry had safety problems, the typical response in agri-food to queries about OSH was that things must be OK because everyone has certification and their suppliers in Europe all work under strict regulation. In addition, and importantly, the agri-food suppliers do not face a substantial risk of losing the buyer due to poor OSH performance.

In construction, the need for cultural change had been made a priority by all of the studied focal firms. The issue was getting that culture to filter to the rest of the chain and other main contractors. In agri-food, the need for change is — based on our data — still industry-wide because OSH behaviour and outcomes are not yet part of the conversation. But sustainability in the guise of how food is grown, packaged and processed is at the top of the mind for many growers and buyers. And while both construction and agriculture have serious issues to sort out with emissions, pollution and negative social impacts beyond workplace safety, the food companies are generally more advanced in dealing with sustainability related to the environment than those in construction; this is likely because of end customer pressure. In other words, they are leveraging their networks and finding ways to change supplier behaviours in other ways that likely could be used to address worker health and safety. Agri-food does not have the informal networks found in construction, but companies in this sector do have networks working on other sustainability issues that could likely be used to address safety behaviours and outcomes.

The other significant contextual elements to note are that at the time of data collection inflation was such that both industries were part of a wider issue of both price uncertainty and the unavailability of materials (and sometimes workers). Problems with availability meant that flexibility in terms of when things are delivered and sometimes (especially in food) what is delivered had become much more important. Equally, prices were rising so fast that in many cases suppliers or subcontractors could not deliver at agreed upon prices, requiring frequent renegotiating of prices and a willingness to be flexible on terms. Good, long-term relationships and the ability to leverage relational governance were very useful in these settings. Where relational governance works, and it does work in most of the studied dyads, such problems are serious but surmountable.

7.2 Conclusions for policy

Market leverage instruments present difficulties for policymakers wishing to improve OSH compliance and outcomes because these activities are between private firms. Said differently, this research provides policymakers with an understanding of what private firms do to govern their relationships in construction and agri-food, but this knowledge may be difficult to directly apply to future regulation. However, it is important to note that public regulation of OSH based on the EU Framework Directive from 1989 and enforced by the authorities forms the foundation for most of the market leverage practices. Both buyers and suppliers know that they may be inspected by government authorities and that these inspections could result in injunctions and fines, which may be followed by public scrutiny. And many respondents in the case studies point to the importance of regulation. Market leverage can therefore not replace public regulation of working conditions and OSH, if anything the mechanism works the other way round. Strong and active public enforcement of working conditions and OSH regulation supports the application of market leverage practices.

For instance, the knowledge that certification is prevalent across both industries is useful for policy makers. However, regulating certifications would not help to ensure that certified suppliers and subcontractors are more likely to comply with regulation or to actually engage in better OSH management. Instead, policymakers need to understand that these certifications arise as a risk

mitigation tool for buying firms and that even if a lack of certification for a European supplier or subcontractor is a red flag, being certified does not on the other hand ensure good performance. Equally, it was clear that, in general, buying firm managers chose certifications based on familiarity and institutional norms, not based on a careful assessment of what was available and how effective a programme was.

Regulators can then play two roles in certification. First, they can educate themselves on how the various schemes differ, especially as each relates to OSH content. This will allow them to assess the value of certification during inspection and other enforcement activities. Second, regulators can work with standards setting bodies to help steer the content of the certificates moving forward.

However, the ongoing legislative process in the EU with the new directive on non-financial reporting and the related due-diligence regulations is likely to push for even more certification. For small farm suppliers, it would be an advantage to have a unified standard such as the Norwegian holistic certificate for farmers covering both worker OSH and food safety,³⁷ which is developed and managed by sector stakeholders and recognised by the Norwegian labour inspectorate and food safety authorities.

Similarly, policymakers have no role in determining what type of relationship a focal buying firm has with its subcontractors or suppliers. Nor is it likely that policymakers can intervene to create specific types of more or less collaborative relationships. However, the case studies make it clear that relational governance determines how suppliers and subcontractors respond to buying firms and that relational governance (especially in construction) can drive the creation of a shared safety culture. Policymakers can use that knowledge when engaging with specific firms or inspecting individual worksites to understand why certain companies are (not) able to regularly deliver construction projects in a safe manner or to prevent accidents when suppliers deliver to their food warehouses.

Finally, policymakers, by nature, are likely to place more emphasis on the formal contractual component of a relationship than the informal/relational component. This makes sense given the rule-making and enforcing role regulators play in society. However, one of the clearest patterns across all the cases and dyads is not only that buying firms combine contractual and relational governance, but that most of the contractual terms, or sticks/penalties, are left unused. A contract, like regulation, may stipulate what should happen. But most of the time it is the relationship that determines what does happen and who gets future work. Reputational benefits in the form of future work are the largest incentives most suppliers/subcontractors are offered. Understanding that these incentives are based on relational, not contractual, governance is then key to grasping how supply chains operate and why some buying firms are able to incentivise their suppliers/subcontractors to do things that others are not.

Policy pointers

As stated above, it is difficult for policymakers to influence supply chain relations. Yet, the coming rules for due diligence and non-financial reporting imply that the EU gives priority to policies aimed at regulation of the supply chain. In doing so, our study suggests several points, which can be helpful for policymakers.

Small companies

Certification, due diligence and non-financial reporting will be a challenge for small companies. They are already burdened by maintaining parallel certificates and multiple reporting requirements, and they have limited resources both in terms of management capacity and finance for expanding these requirements. While the upcoming due diligence and non-financial reporting requirements primarily target larger companies, small companies may feel their impact indirectly as they will be required to report to their downstream business partners. This will especially be the case if they are active in a country or sector with increased risk, with agriculture being explicitly listed as a high-impact sector. It is therefore pertinent to develop systems fitting to small companies. The form can be different and among the possibilities are the following:

³⁷ See: <https://www.ksl.no/no/om-ksl-2/information-in-english>

- Integrated certificates such as the Norwegian certificate in agri-food: Kvalitetssystem I Landbruk (Quality system in Farming).³⁸
- Occupational health services or other advisory services, which small companies can draw on to provide the documentation needed.
- Producer organisations typically help small primary producers by enhancing their bargaining power and thus reduce transaction costs, but this may also be vital for networking and education by, for example, setting up training courses on safety issues or assisting farmers in understanding certification requirements.

Tendering and procurement

In addition to the coming due diligence regulation, including working conditions and OSH as a systematic element in procurement and tendering is growing. Policymakers and other stakeholders can support this development through the following:

- Integration of working conditions and OSH requirements in procurement by public-sector actors (e.g. 'Vision Zero Fund' created by the ILO to help disseminate knowledge through training and publications. The EU's Action Plan on Public Procurement is another example).
- Development of standards and guidelines for procurement with integrated OSH to be applied on a broader scale also in the private sector and thereby both expand the application and create more equal competition.
- Development of complete and workable criteria for OSH themes in procurement and tendering, including both process and outcome criteria.

Research

A key outcome of the review is on the one hand that there is limited research on market leverage of working conditions and OSH in supply chains, and on the other hand the promising nature from the examples of already applied measures to give OSH a stronger priority in supply chain relations. We expect that this led to better outcomes in some national contexts, particular sectors and also companies with different levels of safety maturity. More research could be done on how market leverage mechanisms play out in different regulatory settings, be they national or sectoral. Due to its qualitative and exploratory nature, this study also could not make strong claims as to the actual effects of market leverage practices on OSH outcomes, or their relative importance in creating safer environments when comparing to regulation, or the role of enforcement by labour inspectorates. For the mere efficient use of market leverage, there is thus a need for policymakers and stakeholders to do the following:

- Support further research on market leverage practices regarding OSH in supply chains, giving particular attention to the interactions with the regulatory environment. Future research could also try to map in which ways market leverage mechanisms impact OSH outcomes, and to what extent they do so. The research should cover both quantitative studies of the effects on working conditions and OSH of market leverage and qualitative case studies of the mechanisms, which can show how the wide variety of instruments and practices work in concrete contexts.
- Furthermore, studies of other sectors would give knowledge, which can help to expand the use of market leverage practices to improve working conditions and OSH.

7.3 Conclusions for managers – what works?

The second research question addresses how market leverage governance practices influence working conditions and OSH and how combinations of different governance practices function together. In answering this and the first question, on what market leverage governance practices with a potential for influencing working conditions and OSH are applied in the two sectors, we provide important insights to managers. We believe that these insights identified in two highly different sectors such as construction and agri-food are likely to have value for other sectors as well.

³⁸ See: <http://www.ksl.no>

Positive gestures and awards

First, the results suggest that managers may underestimate the power of relatively small gestures. Specifically, while things like supplier awards, green cards for workers (to complement red and yellow cards), and speeding up payment terms were relatively rare, they all seemed to play relatively outsized roles. Workers on construction sites with green cards are happy to be recognised for their good work (as opposed to being punished) and seem to quickly grasp why a focal firm's safety culture emphasised what it emphasised. Similarly with the green cards to individual workers, management at the subcontractors view the green cards as recognition for their entire firm. Future work is the main relational reward on offer across all buyers. But suppliers that are formally recognised via awards programmes can turn that award into future work from not only this buyer but others as well. And while these activities are mainly observed in construction, it does not take much imagination to suggest that a large food retailer can give green (or yellow or red) cards to suppliers' employees when they deliver to distribution centres or stores or when visiting growers. As an indirect measure, agri-food small suppliers appreciate a positive approach to their business and the challenges they face in the form of respectful listening and co-cooperativeness to find shared solutions.

While supplier awards are rare in the case study companies, large organisations in other industries have long recognised their best suppliers in this fashion.³⁹ The primary cost of these activities for the buying firm is being aware, something good managers should be doing anyway, and the returns on that awareness seem to be relatively high.

Certificates and audits

Second, the data suggest that managers place a large amount of faith in certifications. This is true across industries, but more prevalent in agriculture, where certification is often the only means used to assess a supplier's management systems and the outcomes of those systems. For buying firms looking to improve OSH management, compliance with OSH regulations and OSH outcomes at their suppliers' workplaces, certifications should be the first — not the last — step. The goal should be that compliance with regulation and providing a safe workplace are order qualifiers, such that no supplier can get business without providing these basics. A lack of certification may indicate serious problems, but being certified is not indicative that good OSH outcomes will occur. In construction, outcomes are assessed more directly in real time on the construction site, which allows construction firms to increase the likelihood that the desired outcomes from having certified suppliers will occur. In agri-food, this type of hands on/real-time engagement is not possible. Instead, we would suggest that buyers in agri-food will need to use a combination of more supplier visits and their own supplier audits (to see how work is done and have more informal engagement with suppliers) and collecting data on actual safety outcomes, be they violations of regulation or accidents. Equally, as the users of the certifications, if the buying firms demand that the certifications better capture safety management and outcomes, they would do so. Certification is a form of self-regulation of questionable effectiveness. But it is within the remit of buying firms to enhance the quality of the data certification and the data their associated audits capture and to better ensure that being certified is indicative of truly meeting minimal expectations for quality management and outcomes. One important element is to integrate social compliance into the procurement units rather than leaving social compliance in separate units with limited power and access to suppliers.

Long-term relationships

Finally, managers are likely aware that what works best when it comes to trying to ensure supplier/subcontractor best practice behaviour is linking doing a good job in the present with more work in the future. The supply chain literature has long recognised the value of long-term stable and collaborative relationships. Long-term relationships make communication easier and problem-solving faster and working with familiar partners is easier than working with new partners (Handfield & Nichols, 1999). While this thinking had not generally been applied to OSH management and outcomes at suppliers, it comes as no surprise that relational governance can work in this realm as well. The takeaway for managers here would then be twofold.

³⁹ See: <https://www.caterpillar.com/en/news/caterpillarNews/2022/caterpillar-recognizes-top-suppliers.html>

First, be as clear as possible as to what the minimal expectations for OSH management and outcomes are with current work to be considered for future work; make the order qualifier levels of performance explicit and be sure they are communicated.

Second, be clear that the same relational norms that are used to develop new products, bid on new projects and so on can be leveraged to solve working conditions and OSH problems. In other words, suppliers/subcontractors (especially in agri-food where informal communication is less frequent) need to know that safety, like quality, delivery and cost, is an area to work on together.

We recognise that formal rules associated with public procurement may pose a challenge for establishing long-term relationships. However, longer contracts may also positively affect the quality and continuity of a relationship and deliver better social outcomes, and public procurement rules do open a latitude to decide the length of contracts as well as open the way for extension of contracts.

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Annex A: Description of cases

Overview of selected cases.

Table A 1: Agri-food cases

Cases	Country of origin	Number of interviews	Interviewed positions
Agri-Food Case 1 Denmark			
Focal firm – Large retailer	Denmark	5	Two CSR managers, two procurement managers, one quality managers.
Spanish Supplier 1	Spain	3	Technical and commercial manager, worker.
German Supplier 1	German	3	Director, quality manager, farmer.
German Supplier 2	German	4	Commercial, operations and quality managers, worker.
Danish Supplier 1	Denmark	3	Owner, OSH responsible, worker.
Danish Supplier 2	Denmark	3	Owner, OSH responsible, worker.
Agri-Food Case 2 Ireland			
Focal firm – Retailer company	Ireland	11	1 sustainability manager, 1 trading manager, 1 supply chain coordinator, 1 depot manager, 2 staff in NPD, 1 quality manager, 1 health, safety and facility manager, 1 HR manager, 1 retail manager, 1 producer school manager.
Supplier 1	Ireland	1	Managing director.
Supplier 2	Ireland	1	Account manager.
Supplier 3	Ireland	1	Account manager.
Supplier 4	Ireland	1	Owner, quality manager.
Agri-Food Case 3 Estonia			
Focal firm – manufacturing company	Estonia	6	Quality/OSH manager (two different persons as the first one was going on maternity leave when our project started), purchasing and logistics manager, worker representatives (three different persons).
Belgian Supplier 1	Belgium	2	Owner, worker representative.
Belgian Supplier 2	Belgium	2	Senior manager, worker representative.
Estonian Supplier 3	Estonia	3	Two owners/managers, worker representative.

Cases	Country of origin	Number of interviews	Interviewed positions
Estonian Supplier 4	Estonia	2	Owner, worker.
Agri-Food Case 4 Spain			
Focal firm – retailer company	Spain	5	Procurement responsible, Director of People, Member of the Committee on Security and Health at Logistics Activities Area, Director of Operations and Director of prevention of occupational hazards).
Supplier 1	Spain	5	General Manager (1 interview with GM individually and another with some other team members), Responsible of quality / Responsible of administrative tasks (2 different people, 1 interview). Responsible of the Technical Department / Worker at the Technical Department (2 different people, 1 interview). Worker's representatives.
Sub-supplier 1 supplier A	Spain	1	Owner & worker (same person).
Sup-supplier 1 supplier B	Spain	1	Owner & worker (same person).
Supplier 2	Spain	4	General Manager, Responsible of Quality. Worker and Responsible of procurement.
Supplier 3	Spain	3	Worker's representative + Responsible of risk prevention (2 people, 1 interview) Responsible of Risk Prevention + Director of People (2 people, 1 interview) and Commercial director.

Table A 2: Construction cases

Cases	Country of origin	Number of interviews	Interviewed positions
Construction Case 1 Denmark			
Focal company: Building client (The company has existed in its present form since 2007, where it was founded by a group of public institutions as a publicly owned private company)	Denmark	6	OSH director, head of OSH department, OSH consultant 1, OSH consultant 2, Site Coordinator (managing all site managers), Contract manager.
Main contractor	France/Germany	3	OSH Manager (in charge of all OSH consultants and managers), employee representative from work team, consultant in OSH department (former team leader in work team and regular worker from recruitment agency).
Subcontractor 1	Bosnia/Croatia	1	Work leader.
Subcontractor 2	Denmark	1	Safety site manager.
Construction Case 2 Ireland			
Focal case: Main contractor is a family-owned business deliver homes / major road / rail infrastructure projects	Ireland	6	1 OSH director, 1 procurement manager, 1 regional director, 1 senior contract manager, 1 Quantity surveyor, 1 worker representative).
Subcontractor 1	Ireland	3	OSH professional, site manager, worker.
Subcontractor 2	Ireland	2	Site manager, contract manager.
Subcontractor 3	Ireland	3	OSH professional, site manager, contract manager.
Subcontractor 4	Ireland	2	OSH professional, contract manager.

Cases	Country of origin	Number of interviews	Interviewed positions
Construction Case 3 Estonia			
Focal case: Main contractor (a residential development company)	Sweden	5	OSH manager for the whole Corporate Group (located in Sweden), senior manager who is responsible for supply chain/procurement (located in Estonia), working environment and safety manager (located in Estonia), site coordinator and site engineer as worker representatives).
Subcontractor 1	Estonia	2	Senior manager and worker representative.
Subcontractor 2	Estonia	2	Site manager and worker representative.
Subcontractor 3	Estonia	2	Owner and worker representative.
Subcontractor 4	Estonia	2	Owner and worker representative.
Construction Case 4 Belgium			
Building client	Belgium	5	OSH expert (2), head of safety, stakeholder (sector federation), stakeholder (trade union).
Focal company: Main contractor - a construction consortium consisting of leading Belgium contractors	Belgium	6	Production manager on the project for one of the consortium members, tender manager for a sub-project, project manager responsible for a sub-project, head of safety for the whole consortium, safety expert active on site, stakeholder (safety expert not working on site).
Subcontractor 1	Belgium	2	Project leader and worker representative.
Subcontractor 2	Belgium	2	Foreman and worker representative.
Subcontractor 3	Belgium	2	Site supervisor and worker representative.

Annex B: The interview thematic plans

Interview guide for managerial representatives from suppliers

Introduction

- Interview person: Name, education, age, seniority, tasks, and responsibilities.
- Name of interviewing researcher.
- Notes about interview conditions.

Main body

- Company description, its characteristics, including their business contexts, ownership, company structure, number of employees, main customers.
- Business relations, buyer-supplier relationship.
- Supply chain practices:
 - How is the supply chain organised in relation to focal company and suppliers and customers in general.
 - Description of supply chain relation (history, trust building etc) – perspectives of the supplier.
 - Supply chain strategy.

Contractual governance leverage instruments

- Procurement practices by focal company – specifics.
- Tendering and selection criteria.
- Price, quality, and delivery requirement.
- The role of working conditions and OSH.

Certification and audits

- Third-party industry-specific certification (e.g., GLOBALG.A.P. certification in food industry).
- Third party multi-specific certification (e.g., SA 8000, Fair trade).
- Third party external audits on OSH.
- The reasons and motivation for certification.
- The effects of certification and audits.
- Other specific contractual practices important for the relation with the buyer.

What instruments are used and why? (e.g., code of conduct)

- The application of specific leverage instruments.
- The influence of contractual practices on OSH.
- Possibilities and barriers for application.
- Possibilities to strengthen implementation in terms of impact and coverage.
- Insurance influence.

Relational governance leverage instruments

- Relational governance leverage practice:
 - Motivation to develop relational governance and to apply specific practices.
 - Informal communication between focal firm and suppliers.
 - Support to from focal firm (in general and specific for working conditions and OSH).
 - Collaborative activities.
- The role of trust and justice in treatment for supplier.
- The influence of relational governance practices on OSH.
- How are practices applied?
- Mechanism how the instrument is implemented.
- Possibilities and barriers for implementation.
- Integration of the instruments in core business activities.

- Possibilities to strengthen implementation in terms of impact and coverage.

Importance of contractual governance and relational governance instruments selected by focal company

Common practices and challenges of OSH

The main reasons to fulfil of legal obligation in OSH (e.g., request from employees or their representatives; requirements from clients; concern about the reputation, pressure from Labour Inspectorate, performance – related reasons; staff retention; tendering (especially in construction building clients have requirements for OSH), social media attention etc) and common practices that influence supply chain.

- The impact of the practices on OSH outcomes and compliance.
- If and how evaluated/ assessed/ measured?
- Concrete OSH practices.
- Examples of OSH practices influenced by supply chain, what works and why?
- Other general major OSH practices independent of supply chain.
- Examples of OSH challenges and constraints - can these be influenced by supply chain, and how?
- What factors are crucial for the actual OSH practice in the given circumstances?
- Are there regulations from other political domain (environment protection, consumer safety, regulation of business functions) that have an effect on the level of OSH?
- The role of support from authorities and from external service providers.
- Workers' involvement (direct and indirect), workers involvement through unions and collective agreements.
- Is there a link between business vulnerability/capacity (macro) and work environment vulnerability/capacity (OSH)?
- Are there any positive side-effects from other measures, independent from the field of occupational health and safety? What motivates the company to act in case of these measures?
- Shared development and innovation: future trends of developing market leverage instruments.

Interview guide for agri-food procurement representatives

Introduction

- Interview person: Name, education, age, seniority, tasks, and responsibilities.
- Name of interviewing researchers.
- Notes about interview conditions.

Main body

- Could you describe a standard procurement process?
- How would you onboard suppliers?
- Are there any fixed procedures related to price, quality, and delivery specifications?
- Are there specific requirements for the packaging of goods?
- How do you make forecasting and share this with your suppliers?
- How far in advance will you typically give orders?
- Do you have examples where it was necessary to give expedited orders?
- Procedures for late delivery, quality problems
- Any form of penalties?
- Do you react different, depending on the suppliers?
- Examples on problems with suppliers?
- Examples where business relationships were terminated?
- Ways to improve problems?
- Is there a fixed group of suppliers that you work with?
- Do you have direct contact to your suppliers?

- Do you talk with the responsible persons personally / via phone / mail?
- Do you know the responsible people by name?
- What is the typical length of a direct supplier relationship in fruit and vegetables?
- Do suppliers have different relevance to you? (e.g., strategic, commercial, preferred)
- How does this influence the business relationship?
- Can you give a few examples on, how the contact to a very big supplier will be different from a small supplier?
- How do you think the suppliers perceive your business relationship?
- Are processes and distribution of money perceived as fair?
- How do you work with traders and end suppliers / primary producers?
- Do you develop any social relations to them?
- When dealing with traders do you ask them to provide due diligence for their suppliers?
- Does your company work with incentivized contracts for employees in procurement?
- What does it mean for your practice that your company has a code of conduct which supplier must align with?
- Did you ever experience that suppliers/traders refused to engage in a business relationship with you because of the code of conduct / because of OSH requirements?

Interview guide for worker' representatives

Introduction

- Interview person: Name, education, age, seniority, tasks, and responsibilities.
- Name of interviewing researcher.
- Notes about interview conditions.

Main body

- Knowledge about supply chain, OSH.
- The general experience with working conditions and OSH in the workplace.
- Main working conditions and OSH problems.
- Specify the developments of working conditions and OSH during the last years.
- Company efforts to improve conditions.
- What factors are crucial for the actual OSH practice in the given circumstances?
- OSH and its influence on supply chain.
- If possible - examples of OSH practices influenced by supply chain, what works and why?
- Examples of OSH challenges and constraints □ can these be influenced by supply chain, and how?
- Workers' involvement, roles.
- Possibilities to influence working conditions and OSH governance in the supply chain both through direct participation and indirect through unions and collective agreements.
- The level of involvement in implementation of practices.
- The impact of the instrument on OSH outcomes and compliance.
- If and how evaluated/ assessed/ measured?

Interviews with Stakeholders

Introduction

- Interview person: Name, education, age, seniority, tasks, and responsibilities.
- Name of interviewing researcher.
- Notes about interview conditions.

Main body

- General overview of the sector.
- Relationships and collaboration with the focal company or suppliers/contractors.

- Knowledge about existing initiatives, practices, and national programmes to improve OSH in supply chain.
- Identification and examples.
- Evaluation and assessment of the impact.
- Stakeholder's role in enforcement of OSH.
- What are the challenges of OSH related to supply chain?
- Distribution of national chain responsibility.
- (Good) examples.

Relevant contractual and relational governance instruments

If and how regulations influence supply chain and OSH?

- Social reporting through certification and audits.
- Insurance-schemes.
- Societal norms.
- Policy-instruments across supply chains.
- Identification and examples.
- Any improvements needed?
- Challenges.

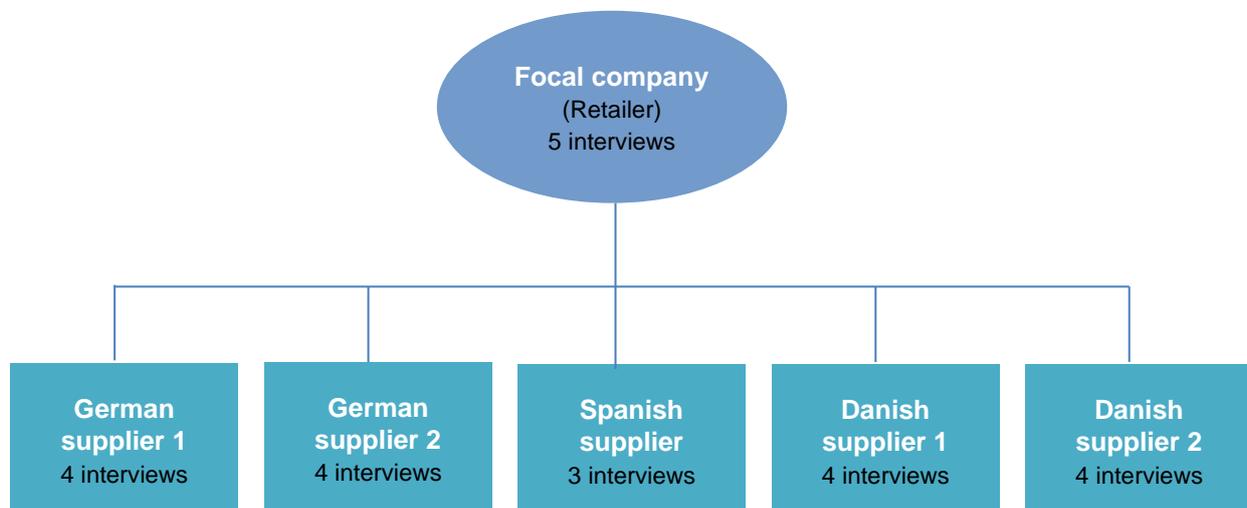
Annex C: Case Reports

Agri-Food Case 1, Denmark

The Focal company is a large Danish retailer that operates a number of subsidiaries ranging from discounters to middle- and high-end chains of supermarkets. The company has a considerable market share and is one of the five leading retailers in Denmark.

The pandemic has shown how vulnerable agrifood supply chains are. The agrifood industry produces perishable goods and is vulnerable to extreme weather events, heat and sun exposure, which are significantly affected by climate change. Consequently, the focal company states that it has increased its efforts to build strong relationships with a smaller number of suppliers that stand out in terms of quality and reliable delivery.

Figure C 1: Relationship between the focal company and its suppliers



The focal company

The focal company has three overall intersections with importance for supply chain management and compliance monitoring:

- 1) The **procurement department** selects suppliers and negotiates business agreements. Most of the daily contact and communication between the focal company and its suppliers is going through the procurement department. However, the procurement department must be able to justify its supplier selection to the controlling department, which monitors the spending. The individual procurement officers are asked to visit their regular suppliers at least every second year, where production facilities are inspected and information is exchanged, such as issues related to food quality and safety (including environmental compliance issues) or delivery specifications. These visits are often times supported by a quality officer who is specialized in fruits and vegetables. However, social compliance and working conditions are usually not addressed during these visits.
- 2) The **logistics division**, which is in charge of the focal companies' warehouses, is in regular contact with the upstream suppliers to guarantee that the received produce lives up to quality and delivery requirements. If these requirements are not met, the logistics division can impose penalty fees on the suppliers.

- 3) The **CSR department** follows up on issues related to environmental and social compliance. On special occasions, such as negative media publicity, CSR consultants also visits suppliers together with the responsible procurement officer to interview the suppliers and evaluate the circumstances.

The challenges related to OSH and working conditions amongst suppliers which the focal company is most aware of, is the exploitation of migrant workers and temporary or seasonal workers. Those workers often lack experience and training and are more exposed to work-related injuries and accidents. Migrant and seasonal workers often times do not have the same knowledge on OSH practices in the workplace, or access to this information due to being illiterate or not speaking the home countries language properly. Furthermore, there has been a number of media articles about the exploitation and harassment of migrant and seasonal workers in the focal companies supply chain in recent years.

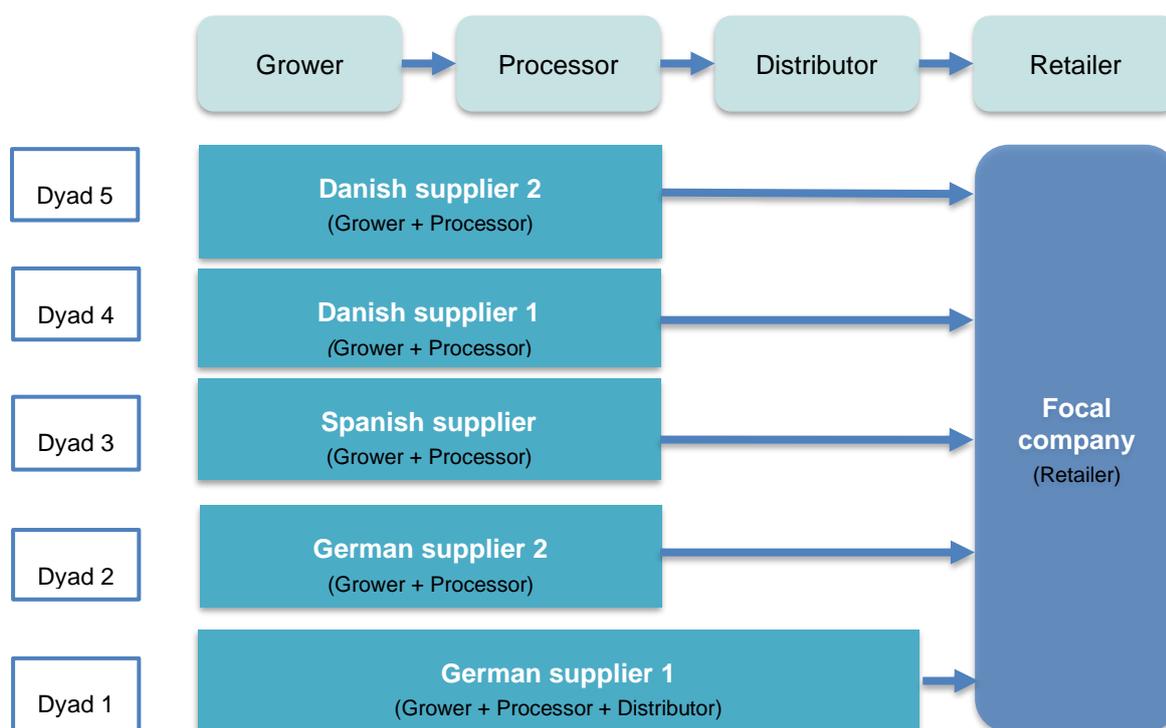
The focal company states about itself, that it is committed to social, environmental and ethical responsibility when sourcing products. It has communicated these commitments in its code of conduct, which is benchmarked against the code of conduct of the multistakeholder initiative BSCI and is reflecting the focal company's support of international conventions and principles, such as the UN Universal Declaration of Human Rights, the UN Convention of the Rights of the Child and the International Labour Organisation Conventions and Recommendations. The focal company aims to fulfil the above-mentioned requirements by adding the code of conduct as an attachment to every contractual business agreement that the focal company reaches with its suppliers. When suppliers sign the business agreement, they must subsequently ensure that the production of products and the procurement of raw materials and services comply with the code of conduct.

The monitoring and tracking of suppliers' compliance with the code of conduct is based on a risk-based approach and suppliers in risk countries are asked to prove compliance with the code of conduct through a third-party certification. The following standards are accepted as proof of compliance:

- Amfori BSCI;
- Social Accountability International (SAI) Member companies (SA8000);
- Ethical Trading Initiative (ETI);
- GlobalG.A.P. Risk Assessment on Social Practice (GlobalG.A.P. GRASP);
- Initiative Clause Social (ICS);
- Sedex Members Ethical Trade Audit (SMETA);
- Sustainability Initiative of South Africa (SIZA);
- Worldwide Responsible Accredited Production (WRAP).

In the fruits and vegetable segment, every supplier must hold a valid GlobalG.A.P. certification, which covers responsible farming practices focused on the primary production level. This entails, that suppliers systematically work with risk assessments for workers health and safety, and address the points identified in the risk assessments in procedures and staff training sessions. Furthermore, producers must have clear guidelines on the usage of hazardous substances including pesticides, provide workers with PPE, and machines and trucks used in the production must be maintained and used in accordance with legal requirements. To obtain the certificate, producers must successfully pass an annual audit performed by a third-party auditor.

Figure C 2: Supply chain and the distribution of roles in the agri-food supply chain



Dyad 1: Focal company – German supplier 1

The German supplier 1 is a family-owned business that has existed for more than 120 years. The supplier and the focal company have had ongoing business relationships for the last 20 years. The supplier delivers apples to the focal company during parts of the year, usually when the focal company cannot source from Denmark or if there is a special occasion that makes it necessary. Even though the supplier has its own logistics division, transportation to Denmark will usually be done by a subcontracted logistics company. Most of the orders are given from the focal company's intermediary trading department. However, also the Danish procurement department orders directly, and even if these two procurement departments are placed at different locations, the supplier considers them as coming from the same company.

The supplier collaborates closely with local apple farmers who are located in the same region, and sources the majority of its apples from these farmers. However, the family also owns a large apple farm, which on paper is an independent company, but in practice collaborates closely with the supplier, amongst others when it comes to compliance with certifications. The focal company pays a lower price than the German retailers, which also is communicated and accepted by the supplier, and the supplier explains, that retailers typically prefer to buy local / regional produce for higher prices.

The supplier usually only receives ad-hoc orders because the focal company does not share any forecasting. The focal company typically makes a tender, in response to which the supplier makes an offer. If other suppliers make a cheaper offer, the German supplier 1 will be notified about this, and if the supplier can match this offer, it will usually be selected. This is often not the case, since there is tough competition, and especially Polish suppliers can compete with much lower prices than German suppliers.

A normal procurement cycle entails that the produce must be delivered about 8 days after the order was received. This is described as extraordinary, as the supplier usually has less time to prepare and deliver

the order. However, in more expedited orders, the buyer in the focal company can also call the supplier directly to order produce. This could for example be the case, when there has been a delivery problem from other suppliers (located in Poland, Italy or France) who are located further away from Denmark than German Supplier 1 and therefore can't deliver on time with such a short notice.

The supplier is asked to comply with the focal company's code of conduct. However, since the supplier is based in Germany, which is a so-called low risk country no third-party audit is required. The focal company also requires the supplier to be GlobalGAP certified, which is a standard concerned with responsible farming practices on primary production level, and which contains several requirements related to worker's health, safety and welfare.

The applied contractual governance practices

Tendering

As mentioned above, the supplier signs a contract that it and its supplier comply with the focal company's code of conduct. However, the focal company does not monitor suppliers' compliance with the code, if the supplier is located in Germany. Every business agreement comes with a Suppliers Guide as an attachment, which specifies issues such as delivery requirements, loading procedure, height and weight of the different parcels, or packaging specifications.

Certification

The focal company requires all its primary production suppliers to be GlobalG.A.P. certified. This is also the case for the apple farm of German supplier 1. The farmer who is taking care of the daily operations collaborates closely with the supplier's quality management to make sure that the documentation of the implementation is in place.

Monitoring and audits

The supplier and its sub-suppliers are regularly audited against a number of standards with impact on social compliance and working conditions, including the German equivalent to GlobalG.A.P. and its social compliance add-on GRASP, IFC and the English equivalent to IFC called IRC.

Additionally to these downstream requirements, retailers (but not the focal company) have started to send questionnaires to the supplier on its own and its suppliers social and environmental compliance. In these cases, the supplier also contacts its suppliers to make sure that compliance requirements are met.

The applied relational governance practices

Joint Planning

The organisations have collaborated for more than 20 years, and thus have a good understanding of how the other party prefers to do business. The supplier has accepted that the focal company only requires its products in selected parts of the year, and the managing director also says that he sees it as an advantage that his organisation is able to deliver fast when needed. This was for example the case three years ago, when the pollination in the European apple industry was compromised due to very low temperatures in spring, which led to a shortage of apple produce all over Europe.

However, such incidents represent an exception rather than the norm, even though it is noticeable, that the managing director of the supplier is disappointed that the focal company did not take those extra efforts into account in the following years, and he assumes that the focal company's controlling department doesn't allow the procurement officer to do so. Procurement and delivery processes have developed over time, which makes it possible that even the occasional order on short notice can be fulfilled without adding to much pressure on the workers in the packaging site.

Trust

The focal companies' procurement officer and the managing director of the supplier know each other on a first name basis and are frequently in contact with each other, typically via phone. However, the relationship is challenged by the very strict price requirements (see the example above, where the controlling department of the supplier is made responsible for not being flexible and "help out"), which may hinder an even more trustful relationship.

Informal communication

Nevertheless, the supplier describes the communication between the parties as much better than the average business relation between buyer and supplier. While most of the other retailers simply operate with internet platforms, which represent the major interface between buyer and supplier, the responsible buyers in the focal company are always accessible via phone or email. The managing director of the supplier describes the relationship as relatively close, and that it always is possible to call the buyer if something urgent happens. The personal contact even entails the occasional sending of birthday wishes or sharing of humoristic pictures on WhatsApp.

Hybrid

Vertical collaboration: On a regular basis, the focal company sends out a survey where it asks the supplier to answer questions about its operations procedures related to food quality and safety. There are however no direct questions related to OSH and working conditions in this survey, but questions about the use of pesticides and fertilizers. Based on the answers, the focal company will send a number of best practice guidelines to its suppliers, which are followed up with on-site visits by a quality manager from the focal company. Due to the covid-pandemic, these visits have not been practiced during the last couple of years.

Horizontal collaboration: The supplier company is member of a regional industry specific cooperative which helps and advises its members, all of which are some fruit producers, on the implementation of social and environmental standards. The cooperative is also helpful with guidance in legal matters, such as the housing of seasonal workers.

Monitoring of requirements and follow up on non-compliances

The focal company monitors requirements related to food quality, use of pesticides and product safety both via on site visits and sample quality controls in the warehouses, when the produce arrives.

The focal company's difference from other clients

Especially German retailers regularly conduct their own audits to assess the supplier's compliance relate to food safety, environmental and social compliance. These audits are conducted unannounced, but the supplier will usually know about the auditor's presence in the area, as there is a very close communication between the different fruit suppliers in area.

Effect of supply chain management practices on OSH and working conditions

The supplier has implemented several certification schemes with relevance for OSH and working conditions, and the interviews indicate that the continued work with these standards supports the ongoing safety routines, be it in the handling of fertilizers and chemicals or the training and onboarding of new workers. Another positive example of the influence of certifications can be found in the packaging site, where the supplier recently renovated its welfare facilities to ensure the workers can eat, warm their food, and store food in a clean and safe environment. According to the quality manager, this was done as a response to the social compliance requirements of a certification scheme.

The focal company prioritizes a close communication with its suppliers and there is a mutual understanding between the two parties which facilitates and supports the collaboration.

As mentioned above the supplier often times supports its own suppliers in the process of getting certified. This entails that members of the supplier's quality management is in contact with other farmers to prepare them for the audit and make sure, that compliance requirements are fulfilled.

Involvement and experience of workers

Workers in the supplier company are involved systematically in activities related to OSH and working conditions, such as regular training activities and internal audits. Workers will typically be interviewed during audits to verify statements from the self-assessment which are related to OSH and working conditions, but also on matters related to food safety or hygiene. Most workers are from eastern Europe and have no strong relation to the unions. In recent years, there has been no indirect involvement through unions and collective agreements.

Dyad 2: Focal company – German supplier 2

German Supplier 2 is an organic apple supplier. It owns about 170 hectare of apple production land itself, distributed on two farms in Germany, which accounts for about 8-11 % of its sale. The rest is sourced from local farmers. From a legal point of view, the two farms are independent producers, but in an operational sense they are closely connected to the supplier company and can draw on the company's expertise and human capabilities, which will be elaborated further. The business relationship between the focal company and the supplier goes back more than 20 years, when the supplier started to become an indirect supplier of the focal company. Back then, the focal company received the produce through a Danish intermediary company. However, about 5-6 years ago the German supplier 2 has become a direct supplier of the focal company. According to the supplier, the direct contact became necessary to guarantee optimal delivery lead times and to discuss topics of relevance for the supplier's business strategy.

The focal company sources organic apples from the supplier during the entire year, with lower numbers during the season where the Danish market still can meet the customer demands. The supplier used to be the focal company's only permanent foreign supplier for organic apples, but French suppliers have entered the competition since they offer new apple sorts that the German supplier 2 does not have. The focal company pays a lower price for the German produce compared to the Danish apples, which also is communicated and accepted by the supplier, and the supplier explains, that retailers typically prefer to buy local / regional produce for higher prices.

OSH and working condition challenges specific to the activities undertaken by supplier

According to the supplier's risk assessment for hazards to workers health and safety, the following conditions are of concern: To prepare the trees and give them the fruit the optimal conditions to grow, workers regularly use chainsaws and woodchippers. To prevent anything from happening, workers receive training in the correct use of these devices and have the required PPE. During harvest, the correct use of ladders is of major importance, and sometimes it is necessary to use sharp knives to cut the apples from the tree. Workers are instructed in the correct use of ladders and knives at least once a year. Only workers with specific training are allowed to use the liquid pesticides and fertilizers, and there is PPE to prevent possible damage to the eye. The chemicals and pesticides are kept in a closed area and there are numerous safety advices around the production facility for substances and machines that are hazardous to workers health and safety.

Supply chain management practices

The focal company is starting a new tendering process every year, where produce requirements such as quality and delivery terms are specified. The German supplier 2 will then prepare a proposal that is compliant with the tender specifications and indicates the supplier's asking price. If the supplier has the lowest price, it will get the order. However, since the two companies have been in a trusting business relationship for years, the supplier will usually be informed about competing proposals where the price

is below the supplier's proposal. This has been the case in recent years, with fierce competition from especially French suppliers. In that case, the focal firm's procurement officer will be in contact with the supplier to further negotiations. However, the supplier's managing director is doubting the focal firm's representatives in that regard, indicating that he believes the responsible procurement officer often withdraws 10% of the lowest bid to see, whether any supplier can match the price. When the companies eventually reach an agreement, the supplier will get an overview of the demanded amount of produce the focal company intends to buy over the coming year, including a weekly estimate. In an average procurement cycle, the supplier will receive the order about 8 days before it must be delivered, with the transportation to the Danish warehouses taking about one working day. Compared to the standard procedure with German retailers, this is described as extraordinary, as the supplier usually only has about a days' notice before the order must leave the supplier's facility.

Requirements with relevance for OSH and working conditions

The supplier is asked to comply with the focal company's code of conduct. However, since the supplier is based in Germany, which is a so-called low risk country, no third-party audit is required. The focal company also requires the producers to be GLOBALG.A.P. certified, which is a standard predominantly concerned with environmental issues and food quality, - safety and -hygiene, but also contains several requirements related to worker's health, safety and welfare. In Germany, QS-GAP is the standard which is benchmarked against GlobalG.A.P.

Description of the applied contractual governance practices

Tendering

As mentioned above, the supplier signs that it and its suppliers comply with the focal company's code of conduct. However, the focal company is not monitoring the supplier's compliance with the code of conduct. The supplier's quality manager indicates that the company holds a social compliance certificate similar to GlobalG.A.P. GRASP which addresses all the typical Code of Conduct issues.

Every business agreement comes with a Suppliers Guide as an attachment, which specifies issues such as delivery requirements, loading procedure, heights and weight of the different parcels, or packaging specifications.

Certification

The focal company requires every primary production supplier to hold a valid certification on responsible farming practices (QS-GAP), including issues related to worker's health, safety and welfare. This is also the case for German Supplier 2. The supplier's quality-manager is responsible for ensuring implementation of the certification requirements in the two production facilities that are connected to the supplier. To do so, the quality manager is in close contact with the responsible farmers to stay updated on developments on the production level or to inform the farmers on new compliance requirements.

The supplier also holds a key role in ensuring sub-suppliers' compliance with the QS-GAP standard. As most of the farmers who deliver their produce to the German Supplier 2 only have very limited human resources, the supplier's quality manager is regularly contacted by farmers to give guidance in matters related to standards and certification. The biggest problem is not the implementation of the requirements, but the documentation of the implementation, as this often can be just as time consuming as the implementation itself. The German Supplier 2 therefore offers a variety of different risk-assessment templates and other supporting tools to help its own suppliers with the certification process. The supplier is also IFS certified due to requirements of German retailers. IFS is a standard for the packaging facility, which predominantly focuses on food-safety, but also has issues on workers' health and welfare facilities.

Overall, the supplier has implemented 12 different standards, which all are required by different retailers. For example, additional to the EU organic label, the company holds four different kinds of organic food

labels which are required by selected retailers, called Bioswiss, Demeter, Naturland and Bioland. Some of these labels also look into social compliance issues, such as the Naturland Sozialstandard. There is no standard aimed at the supplier's packing facility that directly targets matters related to workers health and safety. Standards and certifications which target the packing centre are focused on product safety and hygiene requirements, and only affect workers wellbeing because they also have requirements to welfare facilities and machine safety.

Monitoring and audits

The supplier is annually audited by a third-part certification body to proof compliance with the standard. The company passed the last couple of audits without any remarks. Although the focal company doesn't require the supplier to hold the social compliance add-on of GlobalG.A.P., called GRASP, the supplier holds this add-on as it is necessary to engage in business relationships with most of the German retailers.

Description of the applied relational governance practices

Trust

The two companies have collaborated for more than 20 years, and even if the supplier only recently started to become a direct supplier of the focal company, both have a good understanding of how the other party prefers to do business. The focal companies' procurement officers and the managing director of the supplier know each other on a first name basis and are frequently in contact with each other, typically via phone. However, the relationship has been challenged by recent events, where the supplier's director suspects the focal company's procurement officer to manipulate other suppliers proposals to keep the price down – however, these allegations have not been discussed openly.

The focal companies' procurement officers regularly visit the supplier, although the last visit took place before the covid-19 pandemic. Such visits are valued highly by both parties, and the supplier emphasizes the importance of those on-site visits, as he argues that the representatives of retailers increasingly have an educational background that's not rooted in agri- or horticulture but in economics and business administration. This often times makes communication much harder, and physical on-site visits are helping to reduce misunderstandings and create a foundation for better collaboration and understanding. An example for such misunderstandings would be in price negotiations, where the supplier often must consider a variety of agricultural issues that influence the price such as weather exposure, pests, or plant diseases, while the focal company representatives base their negotiations on the world market or proposals from other suppliers. On-site visits are thus seen as the best way to improve the mutual understanding. From the supplier's point of view, the physical visits are also used to advertise for the company and make them the focal company's preferred supplier.

Monitoring requirements and follow up on non-compliances

The focal company monitors requirements related to food quality, use of pesticides and product safety both via on site visits and sample quality controls in the warehouses, when the produce arrives.

The focal company difference from other clients

The close contact and frequent communication are described as remarkable, and the supplier describes that he assumes this might prevent many conflicts before they can develop into something more serious. However, according to the suppliers' representatives, the focal company does not differ very much from the rest of the European retailers in that they all are described as very strict negotiators. For example, the suppliers' representatives complain about being compared with other suppliers from southern or eastern Europe, who operate under completely different conditions. In the end, so the supplier says, the retailers are much more responsible for creating poor working conditions than they want to admit.

Especially German retailers regularly conduct their own audits to assess the suppliers' compliance relate to food safety, environmental and social compliance. These audits are conducted unannounced, but the supplier will usually know about the auditor's presence in the area, as there is a very close communication between the different fruit suppliers in area.

In general, the collaboration between the focal company and the supplier is described as being good by both parties. However, since many retailers from especially Germany have started to develop their own labels, the supplier reports that many of the smaller sub-suppliers who only have limited human resources feel overburdened by the many different standard requirements and corresponding audits. Even though these only differ in about 10-20 %, each audit means a loss of working time that the producers can spend on their produce.

Effect of supply chain management practices on OSH and working conditions

Contractual governance

The supplier has implemented one certification scheme with relevance for OSH and working conditions in its two primary production locations, and the work with this standard represents the only times during the year where the producers systematically engage with matters related to workers health and safety. According to the suppliers' quality manager, this is also the case for the other primary producers, where the supplier sources apples from. The health and safety requirements posed in the QS-GAP standard are benchmarked against German legislation, and the continuous implementation of the QS-Gap standard means, that the production facilities are well-prepared for national inspections such as the ones that are conducted by the statutory accident insurance institutions (Berufsgenossenschaften). The supplier's quality-manager who is responsible for ensuring implementation of the certification requirements emphasizes that the active engagement with the requirements enables the company to analyse and enhance operations.

Relational governance

The focal company prioritizes a close communication with its suppliers and there is a mutual understanding between the two parties which facilitates and supports the collaboration. This in turn enables the supplier to organise daily operations in a way that ensures that the work can be done without too much time pressure.

As mentioned above the supplier often times supports its own suppliers with the process of getting certified. This entails that members of the supplier's quality management is in contact with other farmers to prepare them for the audit and make sure, that compliance requirements are fulfilled.

Involvement and experience of workers

Workers in the supplier company are involved systematically in activities related to OSH and working conditions, such as regular training activities and internal audits. Workers will typically be interviewed during audits to verify statements from the self-assessment which are related to OSH and working conditions, but also on matters related to food safety or hygiene. Most workers are from eastern Europe and have no strong relation to the unions. In recent years, there has been no indirect involvement through unions and collective agreements

Dyad 3: Focal company – Spanish supplier

The two parties have had ongoing business relationships for the last five years. The supplier delivers citrus fruits (oranges, mandarins and clementines) the entire year, with the highest demands in autumn and winter. About 30 % of the supplier's produce comes from its own production, while the rest is sourced from different Spanish farmers. In total, the company sells about 55 000 tons of produce per year to a variety of international retailers, located in Europe, North America, Asia and Australia.

Since the supplier only is of medium size, it pursues the strategy to be as accommodating as possible towards its customers, to be their preferred supplier. This also applies for the relationship to the focal company. Although the business relationship only has lasted for relatively short time, the supplier already describes the focal company as one of its most important customers.

OSH and working condition challenges specific to the activities undertaken by supplier

In the packing house, the key challenge during the last years has been to prevent the coronavirus disease (Covid-19) from spreading. Furthermore, musculoskeletal disorders are a risk due to the manual work of the workers who typically stand along the workstations to sort the different citrus fruits for many hours. In the fields, workers and farmers are affected by pesticide-related risks, along with MSDs and the risk of skin cancer due to the long outdoor working hours in the sun.

Supply chain management practices

The focal company is starting a new tendering process every year, where product requirements such as quality and delivery terms are specified. The Spanish supplier will then prepare a proposal that is compliant with the tender specifications and indicates the supplier's asking price. If the supplier has the lowest price, it will get the order. If the company is not able to meet the lowest price, there will usually be some kind of settlement with the procurement officers. When the parties eventually reach an agreement, the supplier will get an overview of the demanded amount of produce the focal company intends to buy over the coming year, including a weekly estimate.

In an average procurement cycle, the supplier will receive the order about 8 days before it must be delivered, with the transportation to the Danish warehouses taking about 3-4 working days. Compared to the standard procedure with other retailers, this is described as extraordinary, as the supplier usually only has a few days' notice before the order must leave the supplier's facility.

The supplier must be GlobalG.A.P. certified, which is a standard that entails issues on worker's health and safety.

Description of the applied contractual governance practices

Tendering

As mentioned above, the supplier signs that it and its suppliers comply with the focal company's code of conduct. However, the focal company is not monitoring the supplier's compliance with the code of conduct, and when asked about it, the supplier does not recall the specific requirements outlined in the Code of Conduct. Every business agreement comes with a Suppliers Guide as an attachment, which specifies issues such as delivery requirements, loading procedure, heights and weight of the different parcels, or packaging specifications.

Certification

The focal company requires every primary production supplier to hold a valid certification on responsible farming practices, including issues related to worker's health, safety and welfare. The supplier's technical manager is responsible for ensuring implementation of the certification requirements. To do so, the company has a technical team consisting of five people in total, who, amongst others, are in charge of working with the different certification schemes. As the supplier is located in one of the Southern European countries which the focal Company considers being a high-risk country in relation to its working conditions, the company also needs to have a valid GRASP assessment. However, GlobalG.A.P. + GRASP is also required by most other European retailers. The technical manager elaborates that retailers started to ask for a GRASP assessment about 5-6 years ago, and that he got very annoyed the first time, as he does not consider issues such as forced labour or child labour a problem in his country. However, he does admit that GRASP might be necessary in other European countries, such as France, where he assumes that the apple farmers still take advantage of child work.

Since the company sources about 70% of the produce it sells from other primary producers, the technical team is also assigned with the task to follow up on its suppliers' compliance and certification status. The technical manager admits that it still can be a challenge to convince suppliers to get the required certifications, but that most suppliers have implemented the standards. It does however still happen that new suppliers do not have a valid certification, and in some cases, the technical manager will send someone from his team to these suppliers to prepare them for an audit and make sure they get the certificate. If these farmers are of special interest, the certification costs will also be covered by the supplier.

The supplier is also IFS certified due to requirements of international retailers and manufacturers. IFS is a standard for the packaging facility, which predominantly focuses on food-safety, but also has requirements related to welfare facilities. Furthermore, the supplier holds different kinds of certifications which do not have an influence on workers' health and safety, such as BRC, a certificate on food safety.

The supplier is annually audited by a third-part certification body to proof compliance with GlobalG.A.P. and GRASP. The company passed the last couple of audits without any remarks.

Description of the applied relational contractual governance practices

On site visits

The focal company's procurement officer visits the supplier on an annual basis, sometimes assisted by a quality manager who helps on specific issues such as with processes related to the handling of fruits or the use of fertilizers and pesticides. According to the supplier's representatives, these meetings are contributing to create a foundation which the two parties can use to collaborate during the rest of the year, when the busy nature of business can lead to quite stressful situations.

Trust/Flexibility

The supplier representative emphasises that the most important aspect of creating a good collaboration is to establish a mutual understanding between the parties. According to him, the close communication line between the focal company and the supplier, supported by the physical visits, makes sure that such an understanding can be developed. The fact that the focal company treats the supplier in a proper way and shows flexibility if this is needed by the supplier, also means that the focal company is treated in a special way. This could especially be of importance, when the focal company is in need of a fast trade due to some unexpected circumstances – in these cases, the supplier's sales representative explains, the supplier would do everything possible to assist the focal company, but this would not be the case for any retailer.

Monitoring requirements and follow up on non-compliances

The focal company has a CSR consultant who follows up on the results of the GRASP assessment. There has, however, not been any contact about this, as the supplier did not have any remarks on the last audit reports. There is no direct follow up procedure on GlobalG.A.P. audit reports, but a successful certification is a requirement for any business relations. The focal company monitors requirements related to food quality, use of pesticides and product safety both via on site visits and sample quality controls in the warehouses, when the produce arrives. Non-compliances detected by the quality control in the warehouse will typically lead to a fine of 2.000,- Dkk, and it happens occasionally. In some cases, the supplier's representative will solve the matter with the focal company's procurement officer,

Difference of the focal company differ other clients

The supplier mentions that the close contact and communication is setting the focal company apart from other customers / other retailers it collaborates with. The focal company's approach is described as very social, which is appreciated.

Effect of supply chain management practices on OSH and working conditions

Contractual governance

The technical manager emphasises that most certification requirements related to working conditions and social compliance are on the same level as the Spanish legislation. However, certification audits are conducted annually, and the ongoing activities related to implementation and maintenance of compliance requirements mean that the company constantly re-evaluates its risk assessments and safety routines.

Relational governance

The supplier's sales representative emphasises the importance of retailers being flexible towards the suppliers and understanding the challenges that come with growing fruits outdoors, with issues such as the changing weather exposure and pests always leading to some sort of unpredictability. The focal company is described as a retailer which usually understands the challenges the supplier is facing, and which is able to be constructive and find solutions, when things do not go as planned. This also has a direct impact on workers working conditions, as the focal company usually always is open for finding a way that ensures structured and organised operations where workers only are asked to do a reasonable amount of work. If this is not possible, the focal company also accepts deliveries can take a day longer.

As mentioned above the supplier often times supports its own suppliers in the process of getting certified. This entails that members of the supplier's technical team visit other farmers to prepare them for the audit and make sure, that compliance requirements are fulfilled.

Involvement and experience of workers

Workers in the supplier company are involved systematically in activities related to OSH and working conditions, such as regular training activities and internal audits. Every year there will be a training course concerned with health and safety for all workers, and new workers will be required to go through the same information as well. Workers will typically be interviewed during audits to verify statements from the self-assessment which are related to OSH and working conditions, but also on matters related to food safety or hygiene. Most workers are from eastern Europe and have no strong relation to the unions. In recent years, there has been no indirect involvement through unions and collective agreements

Dyad 4: Focal company – Danish Supplier 1

The Danish Supplier 1 grows a wide variety of vegetables. The perishable nature of many vegetable sorts and the high sensitivity towards weather exposure complicates the operations, and many products cannot be harvested before the supplier knows the exact order. The company has as double-digit number of permanent employees who are engaged with both administrative and blue-collar tasks throughout the year. Additionally, the supplier hires a considerable number of temporary workers through an intermediary entrepreneur. These temporary workers are mostly engaged between week 4 and week 45, where the biggest workload of the vegetable production is, and the workers are both engaged in the packing facility and on the fields. The company collaborates closely with a Danish producer organisation through which all of the company's sales are settled.

The supplier has been collaborating with the focal company since almost 30 years, starting as a supplier who occasionally was contacted to fill shortages in supply. Over time, the collaboration got more and more close, and after a few years the supplier became a completely regular supplier.

The producer organisation also assists the supplier with making sure that requirements related to health and safety and other compliance requirements are implemented.

OSH and working conditions challenges specific to the activities undertaken by supplier

The supplier is currently directing a lot of attention to prevention of repetitive strain injuries, which is seen as the major OSH challenge. The harvest of salad and other low growing vegetables represent very hard and intense working conditions, and the supplier is offering its workers a variety of technical solutions such as exoskeletons and other assistive devices. However, the application of these is only optional, and many workers decide not to use them as they feel inconvenient using them.

Supply chain management practices

Usually, the focal company will start a new tendering process every year in autumn, in which product requirements such as quality and delivery terms are specified. The supplier will then, through the sales consultants of the producer organisation, develop a proposal that is compliant with the tender specifications. However, being a Danish company, the supplier will usually not be able to match the price of foreign competition, and one of the supplier's main leverage arguments is the focus on innovative vegetable sorts. The negotiations can take a long time, and it often happens that the focal company's senior management has to be consulted because no agreement can be made with the focal company's procurement officer who is assigned to the supplier. When an agreement is made, the focal company will indicate the quantity of vegetables that it intends to buy for each week of the coming year. Subsequently, the supplier will start planning its vegetable production for the next year, as both the planting and harvesting must be done specific to the order. A big part of the negotiations is concerned with the specific details related to the order – since many vegetables such as salads are perishable, they must be harvested on the day of the delivery to the retailer's warehouse. To ensure that daily operations of the supplier are reasonably scheduled, a precise forecasting and clear agreements are essential. The supplier typically receives the final order of the focal company one day in advance. The supplier can then plan next day's operations and thus make sure that the exact amount of produce is ready.

The supplier must be GlobalG.A.P. certified, which is a standard that entails issues on worker's health and safety.

Description of the applied contractual governance practices

Tendering

The supplier signs that it and its suppliers comply with the focal company's code of conduct. However, the focal company is not monitoring the supplier's compliance with the code of conduct, and when asked about it, the supplier does not recall the specific requirements outlined in the Code of Conduct. Every business agreement comes with a Suppliers Guide as an attachment, which specifies issues such as delivery requirements, loading procedure, heights and weight of the different parcels, or packaging specifications. As described above, the specific details of orders and deliveries are however also renegotiated.

Certification

The focal company requires every primary production supplier to hold a valid certification on responsible farming practices, including issues related to worker's health, safety and welfare. When asked about the different certification schemes, the operations manager is emphasising that the company – different to other employers where he has been before – strongly encourages everyone to use the standards and certifications as something that “keeps you focused and on your toes”. The supplier's top management is strongly supporting the integration of the standard into the company's core operations, and documentation that are required by GlobalG.A.P such as safety and hygiene procedures linked to specific workstations are used weekly or even daily to onboard and introduce workers to new working tasks. There is a common understanding in the company that the implemented standard must be actively used in operations – as the operations manager puts it: “*otherwise, you might just as well not have them at all*”.

Monitoring and audits

The supplier passed the last GlobalG.A.P. audit without any remarks. The focal company does not conduct any audits.

Description of the applied relational governance practices

Communication

The sales consultant of the producer organisation has daily contact to the focal company on behalf of the supplier and the producer organisation's other members. It is always possible to directly call the focal company representative and ask about specific products, and the two companies are in constant dialogue together. The perishable nature of many vegetables also makes it necessary for the supplier to sell produce unscheduled, and the supplier's representative is often sending pictures to the focal company to ask if they could sell vegetables for a cheaper price.

Trust

The business relation is described as a "really good collaboration" by the supplier's representative. Even though the two parties in some instances have to sit on opposing sides of the table, the supplier's representative elaborates that the two companies most of the time work together to make sure they both can achieve their goals.

Monitoring requirements and follow up on non-compliances

There is no direct follow up procedure on GlobalG.A.P. audit reports, but certification is a requirement for any business relations. The focal company has a quality department that takes tests of the delivered vegetables when they arrive at the warehouses, and non-compliances will often lead to a fine of 2.000,- DKK. However, this does not happen very often.

Difference to from other clients

The supplier is GRASP certified and holds a IFS certificate, as both are required by other buyers. In general, the close communication, flexibility and willingness to find solutions in the hectic and often stressful everyday working life is appreciated by the supplier. The focal company is valued for its flexibility and close communication channels.

Effect of supply chain management practices on OSH and working conditions

Contractual governance

The certification requirements are taken very seriously, and the supplier is actively using them in its daily operations and updating them immediately if new developments require this. This implies a very systematic approach to detecting possible OSH risks and doing something about them, such as the activities related to repetitive work which is identified as the supplier's most serious challenge related to working conditions.

However, other practices do also have an impact on working conditions, such as precise forecasting and good order routines from the focal company, as the perishable nature of many vegetables means that the produce shouldn't be harvested before the supplier knows the exact order. As mentioned above, it is part of the annual negotiations to set a standard time for how long time in advance the order has to come in before the delivery is expected, to guarantee that the supplier has enough time to plan its operations.

Relational governance

As mentioned above, the perishable nature of the produce often makes it necessary for the supplier to harvest vegetables, even though they do not have an order for them. This is where the close

communication and the focal company's willingness to be flexible gets important, as this enables the supplier to organise production processes in a good and sustainable way.

Involvement and experience of workers

Workers in the supplier company are involved systematically in activities related to OSH and working conditions, such as regular training activities or in weekly morning meetings where safety issues are discussed. Every year there will be a training course concerned with health and safety for all workers, and new workers will be required to go through the same information as well. As mentioned above, procedures that are used for GLOBALG.A.P. documentation are actively used in daily operations. There is for instance a description of every work task that also considers issues related to workers safety, and workers are asked to go through these descriptions before starting their work, if the specific workstation is new to them.

Workers will typically be interviewed during audits to verify statements from the self-assessment which are related to OSH and working conditions, but also on matters related to food safety or hygiene.

Many workers are part of the trade unions, and the supplier complies with the requirements established through collective agreements for his sector.

Dyad 5: Focal company – Danish supplier 2

The supplier started out with an organic outdoor horticulture in the beginning of the 1980's and supplied the focal company with all kinds of organic vegetables. After purchasing another production facility that also had greenhouses on the site, it also started production of organic tomatoes and cucumbers, and the focal company soon expressed its desire to purchase more of these if the supplier could increase its production. The two companies agreed on a fixed price for organic produce and set up a fixed contract for five years, which allowed the supplier to get the necessary loan to reorganise its production, moving away from outdoor horticulture entirely.

The supplier's greenhouse vegetable production is limited to about 37 weeks of the year, starting in the end of January, where the cuttings are planted, and ending in October. In 32 of these 37 weeks the produce must be harvested, and in this time the supplier has up to 40 employees, with most of the seasonal workers coming from Lithuania. During the rest of the year, the company only employs a limited number of permanent workers, who are concerned with administrative tasks and the care and preparation of the soil.

The supplier exclusively deals with the focal company, and the business relationship is described as very close and trustful. In more than 35 years of collaboration, the relationship has developed consistently, and the focal company representatives have several times exercised influence on the supplier's operations beyond the ordinary buyer-supplier relationships. An example is, when the focal company's procurement officer in the start of the 2000's asked the supplier's representatives, if the supplier had made sure to employ foreign labour. In these years, competition for labour had increased considerably in Denmark and most primary producers in Denmark were about to hire eastern European workers to meet demands. The supplier then also started to hire workers from Lithuania via an agency that mediated foreign labour.

OSH and working conditions challenges specific to the activities undertaken by supplier

According to the suppliers' risk assessment for hazards to workers health and safety, the following conditions are of concern: During harvest, heavy lifting and repetitive work represent major OSH challenges, as well as the handling of sharp knives to cut vegetables from the plants. The workers use mobile carts with two standing platforms that run on rails between the plant lines and ensure that workers can harvest without overstretching their back. Knives are cleaned regularly, and workers are instructed in the correct use at least once a year. Only workers with specific training are allowed to use the liquid

pesticides and soaps, and there is PPE to prevent possible damage to the eye. The chemicals and pesticides are kept in a closed area and there are numerous safety advices around the production facility for substances and machines that are hazardous to workers health and safety.

Supply chain management practices

The focal company and the suppliers have an agreement that the supplier only supplies the focal company with its produce. In return, the focal company is obliged to buy all tomatoes and cucumbers that the supplier produces. Prices for the tomatoes have been fixed for more than a decade but are still described as reasonable as the supplier is increasing its productivity over the years which can match the inflation. The price for cucumber has however been renegotiated in the last season, as the supplier had recurring problems with pests. The retailer met the suppliers' increased price-demand without any complaints. The supplier harvests daily and produce is sent to the retailers warehouses the same day.

The supplier must be GlobalG.A.P. certified, which is a standard that entails issues on worker's health and safety.

Description of the applied contractual governance practices

Tendering

As mentioned above, the supplier signs that it complies with the focal company's code of conduct. However, the focal company is not monitoring the supplier's compliance with the code of conduct if the supplier is in Denmark, and when asked about it, the supplier does not recall the specific requirements outlined in the Code of Conduct. Every business agreement comes with a Suppliers Guide as an attachment, which specifies issues such as delivery requirements, loading procedure, heights and weight of the different parcels, or packaging specifications. The supplier faces fines if produce is delivered in a way that opposes the specifications of the Suppliers Guide. The supplier has recently had several incidents because the logistics company failed to meet the agreed requirements. For example did the truck driver forget to notify the retailer's warehouse about a delay, which led to an immediate fine of 2000,- DKK (about 270 €) which the supplier had to pay.

Certification

The focal company requires all of its primary producers to have a GlobalG.A.P. certificate. Since the supplier does not have an OSH professional or quality manager concerned with the implementation of the different certification standards, these tasks are overseen by a gardener who is specialized in pest control. The implementation and corresponding documentation are described as very time-consuming and confusing, and the supplier has therefor decided to hire an external consultant who is a registered GlobalG.A.P. trainer. The consultant helps the supplier to get through the self-assessment and is also present for the audit.

Monitoring and audits

Once a year, a GlobalG.A.P. audit is conducted. The last couple of years the supplier completed the certification process without any remarks. The focal company does not conduct its own audits.

Description of the applied relational governance practices

The focal company's procurement officer visits the supplier on an annual basis, sometimes even more often. These visits are described as "very nice" by the supplier representative, who usually brings homemade buns to these meetings, where they discuss important business events both of the past - and upcoming months. Apart from these meetings, the companies' representatives are in contact via mail or phone several times a week, and even though business aspects play the major role in these talks, they have grown to know each other so well that they also talk about personal things with each other from time to time.

The supplier also visits the focal company's headquarter if it is necessary to talk about more strategic issues that requires involvement of the focal company's senior management. This has for example been the case in this year, where the rising prices of gas expedited the supplier's decision to move away from gas-powered heating in the greenhouse to heating pumps. However, before the supplier can initiate such an activity, it still needs to consult the focal company to make sure that the investment is sustainable.

The supplier is very interested in keeping the relationship as good and free of conflict as possible, even if this in some examples might mean an extra financial expense. For example, the supplier must pay the focal company a fee for pesticide analyses, which the focal company's quality management regularly takes when the deliveries arrive in the warehouses. However, the focal company never shares any results from these analyses. This means, that the supplier must pay a substantial amount of money for pesticide analyses themselves, as these analyses are a prerequisite for the GlobalG.A.P. certification. In the last self-assessment the external consultant asked the suppliers representative if they had considered to demand the focal company to share the results of the analyses with them, as the supplier otherwise paid twice for pesticide analyses, and the suppliers response was that they would ask, but if the focal company wasn't willing to share the results, they would rather keep a good relationship and pay for their own results.

While the Suppliers Guide specifies the delivery requirements very and does not provide for any exceptions, the supplier will call the focal company's procurement manager if the warehouse has issued a fine for the wrong reasons. In these cases the focal company will always withdraw the fine. However, this does not occur very often, and most fines can be led back to the logistics company, e.g. a pallet with tomatoes that fell down during the delivery, or a truck that drove to the wrong warehouse.

Monitoring requirements and follow up on non-compliances

There is no direct follow up procedure on GlobalG.A.P. audit reports, but certification is a requirement for any business relations.

Difference from other clients

The supplier has not had any other clients than the focal company in the last 30 years and hence cannot draw on any experiences with other clients.

Effect of supply chain management practices on OSH and working conditions

The implementation and maintenance of the GlobalG.A.P. standard represents the only times during the year where the producers systematically engage with matters related to workers health and safety.

In the last self-assessment, the supplier became aware of several issues that needed to be corrected. For example, the company's forklift had not received scheduled maintenance for two years. Furthermore, the supplier became aware that only two people had received training in first aid, and while the number of trained people was sufficient, the two people would usually arrive on the production facilities between 6-7 a.m. – a time at which many workers already had been working for a few hours. The supplier therefore decided to send ten of its most experienced workers to a first aid course taught in English to make sure there would always be a sufficient number of persons trained in first aid present on the facility.

Involvement and experience of workers

Workers in the supplier company are involved systematically in activities related to OSH and working conditions, such as regular training activities. The workers are asked to be proactive in the handling of safety related matters, and there is a very including culture in the company, where the senior management expects workers to voice their thoughts, either in formal safety meetings that are held regularly or on a more informal level.

Workers will typically be interviewed during audits to verify statements from the self-assessment which are related to OSH and working conditions, but also on matters related to food safety or hygiene.

Most workers are from Lithuania but have been working for the supplier a long time – on average, workers have been with the supplier more than ten years. The supplier pays its wages as negotiated in the collective agreements, and there is a union representative among the workers. Most of the workers are however not members of a trade union.

Agri-Food Case 2, Ireland

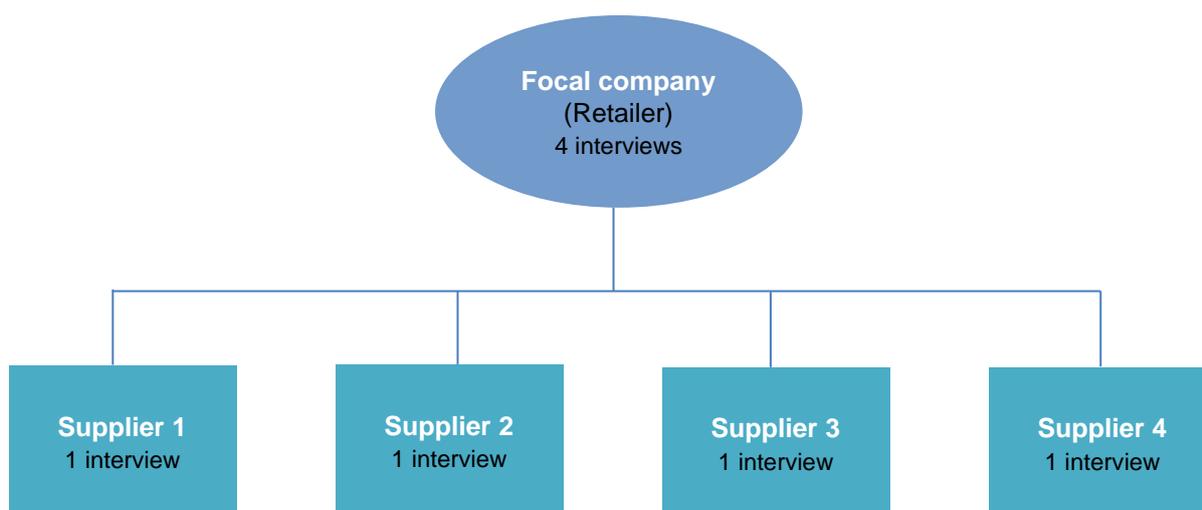
Introduction

The focal company is a family-owned business that is almost 150 years old. It is a leading food wholesaler and retailer in the Republic of Ireland. The research focuses on the company's wholesale distribution business because this entity sources and distributes fruit and vegetables to all of the organization's locations as well as many other food businesses in Ireland.

The focal company's core values are honesty, hard-work, achievement, long-term stable relationships and not being greedy. They are a verified member of Origin Green – Bord Bia's (the Irish Food Board) sustainability certification and launched a sustainability programme to reduce carbon emissions by collaboration with retail partners, suppliers and customers in the local community.

In 2014 the focal company set up the "Producer School"; a food business development programme in conjunction with Local Enterprise Offices, Bord Bia and their own branded supermarkets. The programme supports small local food producers and is a core part of the focal company's sustainability efforts. By providing training on food safety, market research, branding, marketing, finance, sustainability and business development, the programme currently supports about 300, mostly family-run, Irish food and drink producers, by making their products available in their local stores.

Figure C 3: Relationship between the focal firm and its suppliers



The focal company has multiple teams that work closely with each other that are responsible for different aspects of supply chain management. The teams with close interactions with suppliers are:

1. The **trading team** is responsible for tendering and selecting suppliers, considering price, quality, volume, reliability and accreditations. The price and availability of fruit & vegetables fluctuates because of uncontrollable reasons such as weather. Hence, negotiation is frequently needed in spite of the agreed price in a tender. The trading manager shares forecasts with suppliers every three weeks. The trading team will check accreditations of new suppliers together with the quality control team. However, the team has been working with a fixed group of suppliers for over six years, and most fruit & vegetable suppliers are their long-term partners. Ethical sourcing, including the welfare of the workforce, will be considered during the tendering process, relying on certification and audits from third parties.

2. The **quality control team** ensures the goods supplied meet the standards required (normally EU standards) and specifications agreed. Deliveries are spot-checked at the depots based on a sampling protocol, and trailers are checked for the correct temperature. Batches that do not meet standards will be rejected and sent back or will be held in a quarantine area until collection is arranged. Suppliers will be sent a report and photographs explaining the reasons for a rejection. Deliveries meeting standards will be accepted and recorded in the system after scan-in. The quality team also has a system for retailers to report issues, the records of which can be exported to send to suppliers if needed.
3. The **depot management team** is responsible for receiving products from the suppliers during slots booked for delivery. Orders are placed at 3pm every day including weekends, with 24 hours lead time. The depot team oversees the picking and assembling of orders for retailers throughout the day. If suppliers miss their delivery slots due to traffic, the depot team can usually accommodate the late delivery. But usually all deliveries are required to be at the depots by 5pm.
4. The **supply chain team** works closely with quality control team to ensure fruit & vegetables are in best possible condition on daily receipt of stock. If the quality control team flags a rejection, the supply chain team will request replacement stock from the supplier and notify the depots. Communication with bigger suppliers (in this case Suppliers 1, 2 & 3) via phone calls or Teams are made on a daily basis to discuss supply gap related issues. Communication with smaller suppliers (supplier 4) will usually be via email. The focal company requires a 98.8% fill rate from suppliers to minimise gaps on shelves in the stores. However, the real inbound rate has been lowered to 96.8% over the past 9 months due to variations in market. To prevent stockouts, the supply chain team may order from other sources, who act as backup suppliers for the similar product category.
5. The **product development team** works collaboratively with suppliers to develop new products or packaging. The team plays a key role in facilitating smaller suppliers' understanding of sustainable packaging as a practice promoted by the focal company to realise the goal of net carbon emissions in 2040. The team interacts with suppliers on a daily basis by online or in-person meetings, either at suppliers' premises or the focal company's. The product development specialists also occasionally meet growers on the farm. The number of face-to-face meetings was reduced after the emergence of COVID-19, and more communication was moved to online since then.

The OSH challenges frequently observed by the focal company are mainly with small suppliers, with a limited number of employees, who grow, process, and pack the products by themselves. The owners and managers of small producers can be placed under pressure when playing multiple roles ranging from grower, picker, salesperson, and even managing director to run the business. This is much less likely at bigger producers or distributors who have specialist teams for each specific area. The stress among small producers was emphasised by more than one participant from the focal company. The focal Producer School, which provides knowledge and skills on branding & marketing, finance, food safety, sustainability, as well as psychological support was a key initiative to address these issues.

The focal company requires suppliers' personnel to comply with health & safety procedures when delivering products to their warehouses or distribution centres. The focal company's contracts with suppliers include an ethical trade policy working towards SEDEX standard for suppliers to adhere to. The focal company reserves the right to audit supplier sites, but they normally rely on third-party certifications and audits to ensure suppliers comply with all standards (including OSH). For suppliers who operate in Great Britain, the focal company requires a valid British Retail Consortium ([BRC](#))

certification⁴⁰ which certifies then firm not a specific product category. For Irish producers, the focal company usually requires Bord Bia ⁴¹accreditation which has OSH embedded as a module. If the products are sourced outside Ireland or Britain, a general GLOBALG.A.P. certification is usually required. Other certifications to a similar standard may also be acceptable. Finally, if the supplier is a manufacturing facility, ISO certification is also required.

The **focal company** is about 150 years old and is a leading food distributor and retailer. Sustainability, underpinned by the 17 UN Sustainable Development Goals, is at the centre of their business strategy. Their sustainability actions are focused on areas such as decarbonisation, plastic reduction through interactions with wider community as well as supply chain partners and developing local food networks.

It is committed to supporting local food suppliers, franchisees and communities, especially smaller Irish food producers. The Producer School is a training programme funded by Local Enterprise Offices in collaboration with Bord Bia, that was launched eight years ago to support and develop small Irish suppliers. Through the programme, producers are provided the training, supports during a pilot program in a limited number of stores, and if successful can develop their business to supply all of the company's retail outlets.

The company relies on relevant certification and third-party audits for ethical sourcing and OSH.

There is a shortage of operational workers in the supply chain department, so the company uses temporary or agency workers due to seasonal impacts on operations. Training is provided for the outsourced workers, as well as a potential longer-term contract with the company.

Supplier 1

It is a family-owned Irish corporation that was founded in the about 49 years ago. The corporate group includes a fruit & vegetable distribution company which both grows its own produce and sources locally and overseas to supply fruit & vegetables to nationwide retailers in Ireland.

It has over 100 employees in its fruit & vegetable distribution company which has been collaborating with the focal company for over a decade. Temporary workers are needed in this business due to seasonal demands.

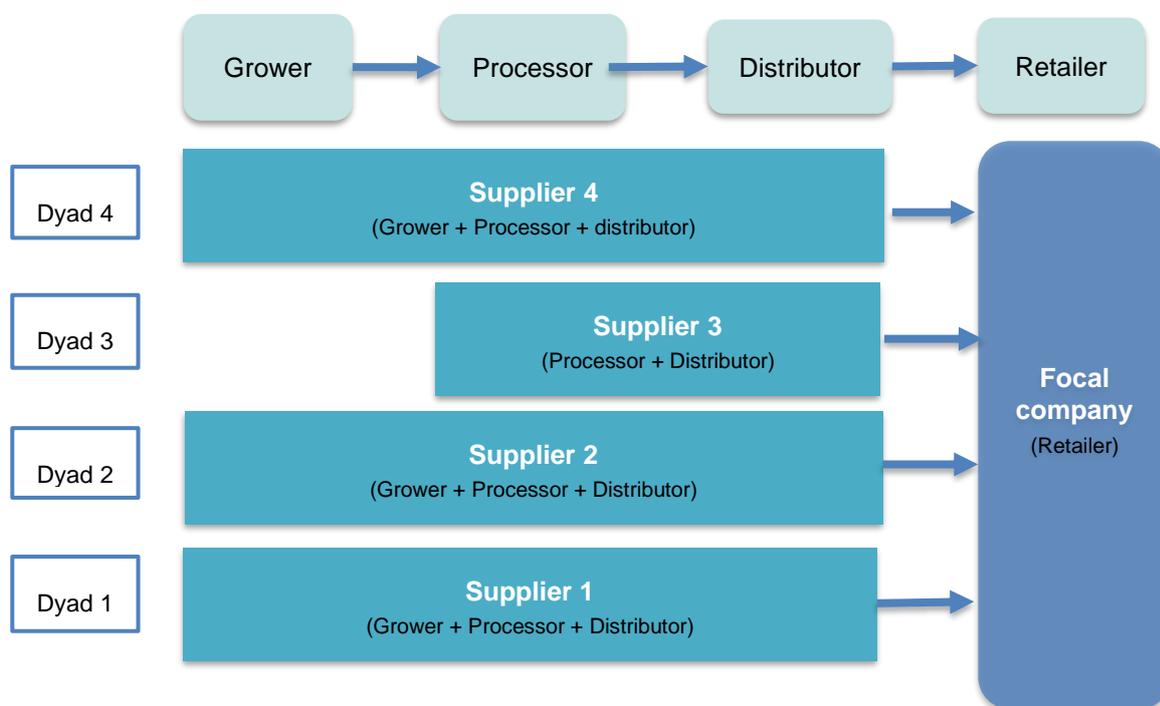
It is not 3rd party certified but claims to comply with BRC (fruits, vegetables and nuts) and Bord Bia SHAS certification (specified categories). Supplier 1 emphasises the importance of growers' wellbeing to ensure farming re-investment, and to retain workers

⁴⁰ BRC Global Standard sets the standard for manufacturing practice including food safety, packaging materials, storage and distribution, consumer products, agents and brokers, retail, gluten free, plant-based and ethical trading.

⁴¹ The running of the Bord Bia programme is funded by the Irish Department of Agriculture, Food and Marine, including a variety of assurance schemes with different evaluation focuses. The one required by the focal company for local fruit and vegetable producers is Bord Bia Sustainable Horticulture Assurance Scheme (SHAS), covering food safety, product quality, traceability, environmental protection, staff welfare, biodiversity, resource efficiency and social sustainability. The audits are performed every 18 months to check whether the farm conform the standard developed according to relevant legislation, industry guidelines and established best practice, free of charge for the producers registered in the scheme. As a result of COVID-19 impact, a blended audit approach is adopted, consisting of a pre-audit survey, pre-audit phone call, pre-audit documentation upload, and a reduced farm walk about 30 minutes. Bord Bia also have spot audits on an annual basis, at less than 1% of total audits conducted ([Bord Bia website](#)).

	<p>in the industry by advocating the company's philosophy that 'sustainability should not cost'.</p>
Supplier 2	<p>It is a family-owned Irish company that was founded around 100 years ago. The company buys from farms both domestically and globally to supply food distributors and retailers.</p> <p>It has over 2000 employees (about 20% agency). They are registered with SEDEX, with both GLOBALG.A.P. and Bord Bia SHAS certifications (berry categories) for fresh produce, and BRC certification. The company has their own team that audits contracted farms both domestically and globally and also uses third party audits; audits include OHS.</p>
Supplier 3	<p>It is a listed multinational agricultural corporation whose roots stretch back over 150 years. In Ireland, Supplier 3 acts as a consolidator that provides the focal company with fruit and vegetables from both Irish farms and other global sources.</p> <p>It has 8,500 employees worldwide. They have registered for SEDEX, and have both BRC (fruits, vegetables and nuts) and Bord Bia SHAS certification (Grower / Produce handling & Packing Tomato). When they source produce from outside Ireland they require the GLOBALG.A.P. standard.</p>
Supplier 4	<p>It is a family business that is located in County Meath, Ireland and was founded over 40 years ago. They supply a single crop and they produce more than 45,000kg of this crop every week. They distribute a range of products including prepacked products that are grown and packed on the firm's farm and the production process operates 24/7.</p> <p>Supplier 4 has about 100 full-time employees The company is accredited by Bord Bia SHAS, BRC and GLOBALG.A.P. for.</p>

Figure C 4: Supply chain and the distribution of roles in the agri-food supply chain



Dyad 1: Focal company – Supplier 1

Supplier 1 acts as both a grower and a consolidator for the focal company. Supplier 1 grows crops on their own farm, but also supplies additional categories by sourcing from other growers or wholesalers.

Supplier 1 had a longstanding partnership with Retailer D, which used to be one of the largest supermarket chains in Ireland until it was acquired by the focal company about 12 years ago. After the acquisition, Supplier 1 started trading with the focal company and built a long-term relationship with this “very important client” by “stick to the contracts, whether it be pricing or quality”, according to the managing director of their fruit & vegetable distribution company.

Supply chain management practices

How does the company give/receive orders?

Supplier 1 receives an order from the focal company, which covers all of the products they provide to the focal company, every day at around 3pm, seven days a week. The order will be delivered to the focal company’s two depots during the subsequent 12 hours, with a 98%~99% fill rate

Which requirements with relevance for OSH and working conditions apply?

Supplier 1 adheres to local OSH regulations in Ireland, with a specific team in the corporate group responsible for their own employees’ health, safety and wellbeing, as well as an Employee Assistance Programme (EAP) available. Supplier 1 has received support from external parties, such as the Department of Agriculture and the Irish Farming Association, in relation to risk assessments on farms and safety training.

The focal company requires Bord Bia SHAS certification, with clauses on OSH and working conditions for workers engaging with the produce on the farm, for categories produced by Supplier 1 locally. As a fruit & vegetable consolidator, Supplier 1 also provides the focal company with imported products from Tier-2 suppliers overseas, utilising international level third party audits such as GLOBALG.A.P.. Signing

the contract with the focal company indicates that Supplier 1 will comply with ethical trade policy by working towards SEDEX level.

Both the focal company and Supplier 1 are mainly “Irish-based”, so they “can't necessarily be on the ground in every single farm ensuring that best practices followed” internationally. As a result, they try and ensure tier 2 suppliers are following best practices (including OHS) by being “part of a standard” or “being audited by their own governmental organisations”. This is the only means in this dyad to oversee the OSH of workers in tier 2 (or beyond) suppliers.

Description of the applied governance practices?

- Contractual

Tendering: The contract specifies terms and conditions clarifying the focal company's expectations for delivery, price, food safety, sustainable packaging and new product development.

Certification: The focal company requires Supplier 1 have valid certifications at the company level (e.g., BRC) and for the product category (e.g., Bord Bia SHAS and GLOBALG.A.P. in general).

Monitoring and audits: The supplier is regularly audited by BRC and Bord Bia to maintain these certifications. The focal company audits the supplier on fresh produce safety quality biennially.

- Relational

Continuity: The focal company does not usually change the supply base. Instead they, maintain long-term relationships with existing suppliers. Despite the contract signed, there is a constant negotiation within this dyad on price and delivery as frequently as needed. Supplier 1 as the intermediary seeks to ensure all parties involved (focal company, Supplier 1 and growers) in the chain are satisfied with their profits. The primary incentive the focal company offers Supplier 1 for good performance is the possibility of future business opportunities.

Information sharing: Both organisations communicate with each other in an open and transparent manner, and believe they have a good relationship based on mutual understanding. Once a month, the focal company comes up with a plan on sustainable packaging, which will be updated with the supplier on a regular basis.

The focal company's structure means multiple individuals at the focal company engage with supplier 1. Hence, Supplier 1's account manager usually communicates with the group by email and follows up with two key individuals by phone calls or even WhatsApp message, in case emails are overlooked. The two companies have regular monthly meetings and usually visit in each other's facilities two to three times a month in person. Online meetings via Zoom or Teams are also adopted, and meetings can occur more frequently if problems occur.

- Hybrid

No explicit hybrid governance practices have been detected.

How does the company monitor requirements and follow up on non-compliance?

Supplier 1 indicated that quality of produce and fill rate are the key indicators monitored by the focal company. According to focal company supply chain and quality teams, if a delivery doesn't meet the criteria when being inspected upon arrival at the depots, a rejection will be issued with a report detailing the reasons. There are no penalties for quality rejection, but the supplier needs to deliver a replacement to reach the fill rate required.

Effect of supply chain management practices

Elements of contractual, relational and hybrid governance practices with impact on OSH outcomes and working conditions

Certification as a contractual governance practice requires Supplier 1 to at least maintain a generally acceptable standard of OSH and working conditions for their employees. And Supplier 1 also uses certifications to try and ensure an acceptable standard of OSH and working conditions at the tier two suppliers they buy from.

Continuity as a relational governance practice assures Supplier 1 the “*opportunity to at least hold on to the business that you have*”, with the potential of alleviating growers’ concerns in the chain.

As the focal company allow the room for price fluctuation after signing the contract, Supplier 1 usually agrees the price with growers prior to negotiating it with the focal company. This practise enables Supplier 1 to return a reasonable profit to the grower base, ensuring sufficient reinvestment in farms and associated working conditions. Once the farmers or growers are assured with stable business and earnings, cutting corners or misconduct such as illegal chemical use to boost crop production should also be reduced.

Dyad 2: Focal company – Supplier 2

Supplier 2 began by supplying fresh produce directly to focal company’s stores about 20 years ago and today delivers to the focal company’s warehouses. As one of Supplier 2’s top 3 clients, the focal company has “*sizable business*” with Supplier 2 and Supplier 2 is the focal company’s sole source in some fruit categories. Supplier 2 provides fruit both under their own brands, as well as the products tagged with the focal company’s brands.

Supply chain management practices:

How does the company give/receive orders?

According to the focal company’s trading team, suppliers would get an order each afternoon at “*three or half three depending on when the system does it*”. The rough volume to be ordered weekly is in the tender, and Supplier 2’s account manager speaks to the focal company on a day-to-day basis. Supplier 2 delivers most of products at night to the focal company’s three warehouses, seven days a week, using their own trucks. Thus, Supplier 2’s workers pick and pack fruit 24 hours a day, seven days a week.

Which requirements with relevance for OSH and working conditions apply?

Supplier 2 has a set of rules and guidelines regarding working conditions and worker welfare that are aligned with OSH regulations. Due to the growing environment for some fruit, pickers usually need to work in poly-tunnels where the temperature is naturally higher than outside. Because of these working conditions, Supplier 2’s pickers are not allowed to pick beyond a certain time or a certain temperature, especially in hot weather. Meanwhile, ongoing safety training is required for operating machinery, forklift driving and manual handling. All workers are insured. Supplier 2 has an in-house OSH team setting out procedures for every aspect on site, which are measured, tracked, and audited. In addition, Supplier 2 provides a subsidised bus fleet and subsidised accommodation since transportation to the workplace is not convenient. To incentivise workers to enhance their picking skills, a performance bonus is available. This bonus is also used to attract new employees.

Description of the applied governance practices?

- Contractual

Tendering: The focal company signed the contract with Supplier 2 who can supply “*the best varieties and the best price and the best quality*” among a group of suppliers. There is a ‘spec sheet’ illustrating the criteria that the focal company expects Supplier 2 to meet for every product.

Certification: In relation to OSH elements, with multiple certifications accredited, the focal company can “*look for whatever they require*” from Supplier 2.

Monitoring and audits: The focal company audits Supplier 2's warehouses and farms at times, which mainly focuses on product specification. The focal company's technical team checks extremely detailed specification for every product down to the size of the fruit. Supplier 2 would have a technical specification for each product and must supply to agreed specifications, such as varieties, dating, and country of origins.

- **Relational**

Continuity: To maintain a long-term relationship with existing suppliers, the focal company do not penalise suppliers for unsatisfactory performance, as “*penalties work both ways*” indicated by Supplier 2 account manager. Meanwhile, the incentive for Supplier 2's good performance is “*a better chance of winning more business*”. Similarly, on a day-to-day basis, Supplier 2 can negotiate with the focal company to obtain a higher price, which usually ends up with an agreement following a challenging conversation.

Information sharing: The two companies share information with each other on a daily basis to discuss the volume needed. The previous sales data stored in Supplier 2 system are available for the focal company, and the focal company will notify Supplier 2 in advance if there will be sales promotions. The packaging manager from the focal company has regular meetings with Supplier 2 as an ongoing collaborative discussion on reducing plastic while not encroaching product quality or sales.

Face-to-face meetings were reduced due to COVID-19, and currently their communication is hybrid using mobile phone, online Teams or face-to-face meetings in focal company's facilities in Cork or elsewhere.

- **Hybrid**

The focal company have regular meetings with Supplier 2 to review quality rejection, fill rate and product specification every Friday at 10am.

How does the company monitor requirements and follow up on non-compliance?

The requirements monitored by the focal company concentrate more on product quality.

The quality controllers in the warehouse randomly spot-check deliveries based on their sampling protocol to ensure requirements are met. As a long-term supply chain partner, Supplier 2 is well-acquainted with the standard required, so intentional non-compliance should no longer be the case. However, quality or fill rate can be affected considerably by uncontrollable factors such as abnormal weather, requiring both companies to work collaboratively to solve problems.

Effect of supply chain management practices

Elements of contractual, relational and hybrid governance practices with impact on OSH outcomes and working conditions

The contractual governance practice - certification entails Supplier 2 to maintain OSH and working conditions to a standard EU level. The long-term partnership enables Supplier 2 to follow an established routine which indirectly reduces pressure on their workers and lowers workplace risk. For example, Supplier 2's account manager is proud to say, “*we're on time all the time, because we do the same routes.*” The drivers following the same route and workers doing the same procedure during delivery will be more experienced and skilful, resulting in a lower risk potentially. Currently, the biggest challenge for Supplier 2 is increased cost input caused by skyrocketing fuel prices and inflation, being “*a grower or not*”. The negotiable price with focal company enables Supplier 2 to gain a higher margin, which could be returned to farmers and hence enhance working conditions and employee welfare.

Dyad 3: Focal company – Supplier 3

Supplier 3 does not grow produce in Ireland and is mainly an intermediary between growers and distributors or retailers. Relative to Supplier 3's global scale, the focal company's market share in Ireland (about 5 million population) seems insignificant. However, for Supplier 3's independent subsidiary in Ireland, the focal company is still a principal customer. Furthermore, Supplier 3 is the focal company's biggest supplier in Ireland. This is then an important relationship for both parties. Supplier 3 supplies a wide variety of fruit and vegetables.

The focal company's depots for fresh produce are pick-to-zero – meaning they empty out every day / carry no inventory. Therefore, Supplier 3 also provides warehousing services to store inventory for the focal company; for a fee. Because the focal company does not *“go straight to every grower in the world”*, Supplier 3's account manager described themselves as *“a big, bad, ugly consolidator”* between growers and the focal company.

Supply chain management practices

How does the company give/receive orders?

Supplier 3 receives an order around 3pm every day, which has already been processed by the workers that morning. Supplier 3's trucks arrive at the focal company depots the next day, at delivery slots booked at 6:00, 8:00, 10:00 and 12:00 every day.

Which requirements with relevance for OSH and working conditions apply?

Supplier 3 complies with the OSH regulations in Ireland, under audits from Bord Bia and the Department of Agriculture. The OSH team responsible for Supplier 3's sites on the island of Ireland performs audits both internally as well as on their growers' farms. Meanwhile, the focal company has an OSH department overseeing employee health & safety, including temporary workers and supplier workers who enter their facilities to complete delivery. There is *“a level of intertwine”* between the OSH teams from the two companies over deliveries, with conversations on topics such as *“how high can we deliver the pallets”*.

Description of the applied governance practices?

- Contractual

Tendering: Tender twice a year, during which the focal company prioritise price, volume and specification, followed by considerations on sustainability and NPD.

Certification: Supplier 3 has BRC certification at the company level and Bord Bia SHAS certification for the required category; as required by the focal company.

Monitoring and audits: The audits from the focal company are basically product-based. Different departments of focal company have all their own KPIs to track.

- Relational

Continuity: Supplier 3 is usually not the one with the lowest price, but the focal company trusts their quality and fill rate. The focal company sometimes encourages local producers with a low supply capacity to directly deal with Supplier 3, which benefits both the producers and Supplier 3.

Information sharing: The focal company shares information, such as a weather forecast that may potentially affect harvesting, with Supplier 3, for the purpose of lowering stockout risk. The focal company updates Supplier 3 about customer feedback on sustainable packaging, as they have a collaborative sustainability agenda that *“filters through every category”*.

- Hybrid

As Supplier 3 has business internationally, the focal company expects cutting-edge NPD from the supplier's marketing experience in other countries.

How does the company monitor requirements and follow up on non-compliances?

Supplier 3 are constantly audited by different parties along the chain. Audits from the focal company are product-based spot-checking, with a focus on specification. If there is any issue spotted, especially food safety issues, by the focal company during auditing, the issue will be traced back to upstream. Packaging has also been built into product specification, so the focal company will also reject the delivery because of product packaging (e.g., using plastic tray does not meet sustainability requirements).

How does the focal company differ from other 'clients' in this area

The company has no additional requirements in comparison to other companies, as they all work mainly towards the European Union guidelines. Global supermarket like Tesco (UK) may have their added layer on food safety, and almost every large supermarket has requirements on sustainability as a strategy.

Effect of supply chain management practices

Elements of contractual, relational and hybrid governance practices with impact on OSH outcomes and working conditions

The focal company requires valid certifications which contain OSH elements, so that Supplier 3's employee welfare and working conditions are ensured to a standard level. The joint responsibility between focal company and Supplier 3 on health & safety during delivery handover can potentially prevent the similar risk raised in the future, such as accidents caused by collapse of pallets.

Dyad 4: Focal company – Supplier 4

Supplier 4 began supplying to the focal company in over 20 years ago, "*doing the same thing every single day*". The focal company is currently their biggest client. Usually, Supplier 4 does not need temporary workers due to seasonality. They have sufficient labour in winter, their peak season, and employees will be on holiday in summer when sales decline, so "*it balances itself*".

Supply chain management practices

How does the company give/receive orders?

Supplier 4 receives an order every day around 3pm to be delivered the next day. The focal company has a transport division, that picks up from Supplier 4's facilities every afternoon. Supplier 4's workers load the produce on the focal company's truck, which will deliver the products to depots.

Which requirements with relevance for OSH and working conditions apply?

As a requirement of the focal company, Supplier 4 has certifications both from BRC (company level) and Bord Bia SHAS with OSH elements built in. In addition to audits from BRC and Bord Bia, the Health and Safety Authority may audit Supplier 4's site on a random basis.

Supplier 4's marketing and quality assurance manager (and daughter of the owner) is also responsible for OSH management in the company. To ensure that OSH regulations are complied with, Supplier 4 uses external health & safety consultants for advice and to review paperwork. Supplier 4's new workers receive an induction on site procedures and safety rules, the content of which is updated annually. Safety training such as manual handling and driving forklift are also provided to employees as required.

Description of the applied governance practices?

- Contractual

Certifications: The focal company requires BRC and Bord Bia SHAS certification from Supplier 4.

Monitoring and audits: As Supplier 4 perceived, both certifications above have a similar standard level, with a key focus on food safety. The focal company audits their facility every 18 months, to a similar standard though with several additional clauses in. In comparison, the HSA audit is less strict.

- Relational

Continuity: The focal company and Supplier 4 *“have commitment to each other”* in their long-term relationship. Supplier 4 has received price supports from the focal company, especially when energy cost went up.

Information sharing: The focal company has a platform, where they communicate with suppliers on topics such as packaging targets and packaging reduction. The updates on sustainability will be communicated to Supplier 4 through this platform or through email.

Jointly, the focal company and Supplier 4 *“looked at efficiencies from all side”*. For example, they work closely on maximising the use of crates and rationalising the delivery route geographically.

- Hybrid

No explicit hybrid governance practices have been detected.

How does the company monitor requirements and follow up on non-compliance?

Supplier 4 pride themselves in that they have *“never let [the focal company] short”*. The focal company also confirmed that their supply is very stable, hence there are rarely any issues. Since *“both know what the spec is”*, Supplier 4 can update specification in the system that the focal company uses for specification monitoring. There would not be much communication needed unless an issue arises.

Effect of supply chain management practices

Elements of contractual, relational and hybrid governance practices with impact on OSH outcomes and working conditions

The contractual governance practice – certification - requires Supplier 4 to maintain OSH and working conditions to a standard level. The relational governance practice – continuity - assures Supplier 4 with long-term, stable business. In addition, price support from the focal company can alleviate pressure on Supplier 4 caused by elevated energy costs and, to some extent, enable re-investment in the farm and associated facilities. Information sharing and collaborative planning decreases unnecessary costs during delivery (e.g., logistics efficiency), which saves money for both parties.

Involvement and experience of workers

The marketing and quality assurance manager as a second-generation owner also works on the farm. She suggested that Teagasc⁴² and Irish Farming Association are helpful for them to improve health & safety awareness. Teagasc is informative by providing safety-related webinars, training materials, and farm walks, while the Irish Farming Association helps workers from farms to network and discuss with each other.

⁴² Teagasc is the Agriculture and Food Development Authority, a semi-state authority in Ireland responsible for research and development, training and advisory services in the agri-food sector.

Agri-Food Case 3, Estonia

Introduction

As a starting point for the research, a brief overview will be provided on the placement of the agrifood sector within the Estonian economy.

The agrifood market in recent years have been characterised by ongoing crises, prices increase and reduced export opportunities. According to the official statistics, agriculture contributed around 2.02% to the GDP of Estonia in 2021. Rising and accelerating inflation, rising food prices and declining consumer purchasing power limited consumption of fresh fruit and vegetables. Disruptions in the functioning of the supply chain were caused by both transport disruptions and the availability of packaging material, as well as shortages of seasonal workers.

Due to cold climate, fruits and vegetables are grown in Estonia in a small scale – the domestic crop is limited to mainly apples and plums, potatoes, carrots, cabbage, pees, and beetroot. In a greenhouse, also cucumbers and tomatoes are grown. In 2022, the total area under vegetables in 2022 is 1741 ha and the total area under fruit and berry orchards (including strawberries) is 4618 ha. Open field vegetables account for 95% of the growing area of vegetable crops, and greenhouse vegetables for 5%.

Keeping in mind that Estonia is a small country, there are ~90 companies active in the fruit and vegetable industry. Most of them (84%) are small enterprises with less than ten workers. There is only one enterprise with more than 100 workers.

The fruit and vegetable sector in Estonia mean seasonal work which therefore uses in a large-scale migrant worker during summertime. For a decade, the workers have mainly arrived from Ukraine. Before 2022, they were both male and female workers, then since 2022, due to Russia-Ukraine war, only female employment has remained.

Working in agriculture is characterised by a higher average number of hours worked per week than normal 40 hours. Working in the evenings/night and at weekends is also common. The smaller the farm, the more hours worked per week due to lack of paid workforce. Farms are often owned by a family and if employment contracts exist at all, then for family members are often not followed in detail. A large part of the work in agriculture is still done manually. Outdoor conditions, tiring and awkward postures, lifting and carrying weights, standing, and walking for long periods and repetitive movements increase the risk of musculoskeletal disorders among farm workers. Psychosocial factors, such as long working hours, isolation, economic insecurity, difficulty in planning activities, administrative demands, lack of control over the situation, also aggravate the situation. When mental stress, fatigue and physical risk factors are combined, accidents are easy to happen.

The project and the main actors involved

To select the companies, interviews with representatives from Labour Inspectorate and Association of Estonian Food Industry have been conducted who suggested the focal company. As a results, the focal company is a well-known producer and wholesaler of fruit and vegetables products in Estonia. The factory began operations in 1946 and is situated in southern part of Estonia. It produces baby-food, soups, dishes for lunch, smoothies, sauces, and jams. Currently, about 180 workers are employed.

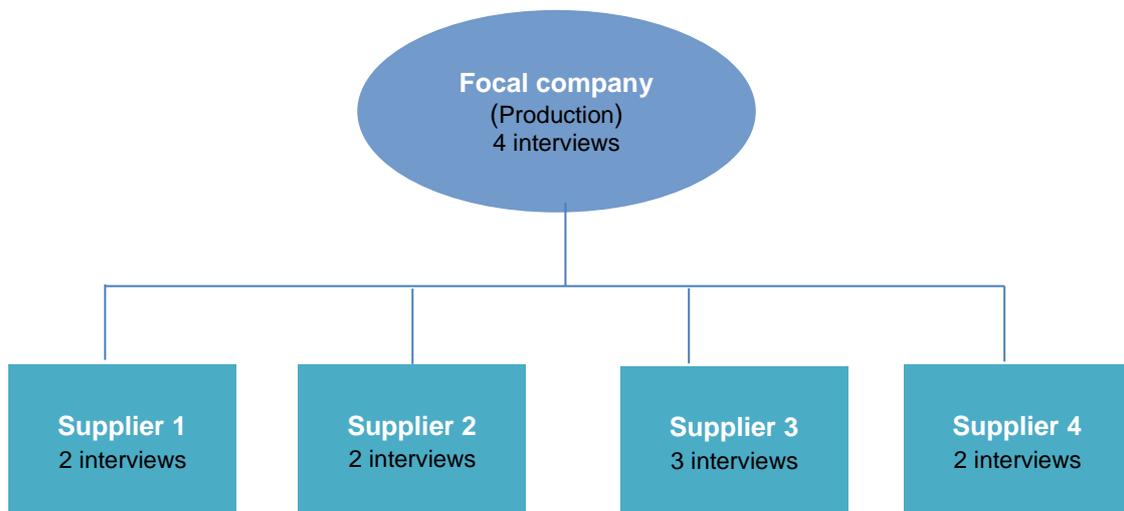
The focal company has received several awards since 2015, for example as the best food producer for children. Raw materials are purchased from Estonian farms and companies as well as from European countries and third countries. The focal company claims that it is committed to ensure that its supply chain and work conditions are safe. Based on data from Labour Inspectorate, the focal company is active in applying different good practices in OSH field, for example prevention of forced posture and repetitive movements programme.

In the organizational structure of the focal firm, there is a person in charge of OSH matters (quality/OSH manager), who is also in charge of quality department. Company also has production, sales department, purchasing and logistics department together with logistics centre, engineering department, marketing, and product development department.

Raw materials are purchased from Estonian farms and companies as well as from European countries and third countries. The focal company states that it is committed to ensure that its supply chain and work conditions are safe.

The case study explores 5 different companies in total: the focal company and its four suppliers (Figure 1).

Figure C 5: Relationship between the focal company and its suppliers



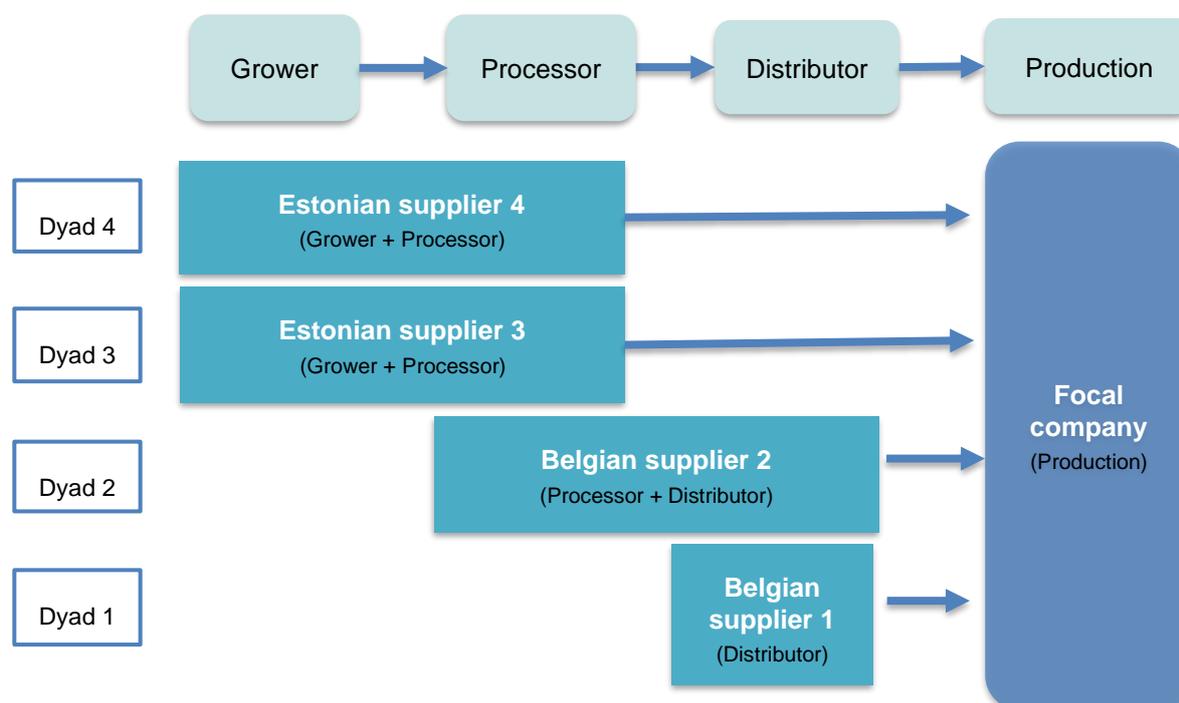
The focal company

The focal company has two organisational units with importance for supply chain management and health and safety:

1. The quality department under which responsibilities also lies OSH. There is no OSH manager, but quality manager is responsible also for workers' health and safety. The department performs quality and safety audits – by sending out questionnaires and screening the suppliers on-site to ensure the compliance with quality and food safety rules. OSH is checked very little, if at all.
2. Purchasing and logistics department, which is responsible for the contracts with suppliers, and also regularly visits the suppliers to make sure co-operation goes smoothly. Usually, before entering a contract, the supplier's farm or production site is visited; additionally, a visit is usually paid during early summer as well as during harvesting of crops.

The focal firm does not require international certification standards to suppliers but applies its own criteria and audits. The Code of Conduct for suppliers is available in focal company's webpage and usually is added to every contract as an annex. It is signed by the supplier.

Figure C 6: Supply chain and the distribution of roles in the agri-food supply chain



Dyad 1: Focal company – Belgium supplier 1

Supplier 1 is an importing and whole-sale company in Belgium which operates in a niche-market (e.g., organic market). It claims that all the products are 100% organic. The company focuses on five products:

banana puree in frozen pellets (for baby-food mainly), canned fruits (white grapes, apples, mango, peach), fruit concentrates, juices and IQF (individually quick frozen) food.

Currently, four workers are employed: owner/business developer, quality assurance, logistics and order administrative, sales and supply chain manager.

The supplier is an intermediate company with many more sub-suppliers, collects products from its producer companies from all over the world (India, Turkey, Peru, Equator etc) and exports to food processors in Europe (e.g., Latvia, Lithuania, Estonia, Sweden, Germany, Belgium, the Netherlands, France, UK etc). It concentrates on stocking, supplier screening, performing analysis of each patch and if requested by the client, also organizing the transport. The client can put orders according to their needs (from week to week, from month-to-month etc). The owner estimates that 30% of company's turnover comes from Belgian customers and remaining 70% from European customers.

The supplier and the focal company have had ongoing business relationships for more than eight years. At first, about 8 years ago, the supplier started to sell apple puree, but nowadays is selling other fruits puree as well as juice concentrates for baby-food resulting the focal company to be one of the biggest clients for the supplier.

The supplier is an organization that acts as an intermediary (distributor) between the growers/processors (mango, peach, apple, white grape juice concentrate) and Estonian manufacturing company who makes baby-food. The first contact with clients is usually made in exhibitions such as Anuga FoodTec, SIAL or BIOFACH. The owner emphasizes that it's very important to be present in those well-known exhibitions to find new clients. The first contact with the focal company was made in an exhibition as well.

OSH and working condition challenges

In terms of baby-food quality, but also OSH and working conditions, the focal firm asked if the supplier has the IFS certification before starting the business. The supplier believes that it's not a requirement, but it makes the business easier because it saves time of giving every detail about the growers to the clients. Owner also mentions that the smaller companies do not ask for GFSI (Global Food Safety Initiative) certificates. Additionally, the owner admits that IFS requires him to do the screening of his producers on his own (there is also a chapter about OSH) – conducting both organic food screening as well as organic baby-food screening before going into business with the growers. However, he mainly relies on producers' own declaration that the good working conditions are guaranteed. According to the owner, it is crucial for him to maintain strong relationships with his producers, which is why he personally visits them on a regular basis. Apart from conducting baby-food screening, he believes that building friendly relationships on-site is of utmost importance. He further emphasizes that if he cannot establish a friendly rapport with the producers, it renders the business meaningless to him.

Supplier has only office workers, so the owner claims there are no big challenges in OSH and working conditions and the focal company has not set any specific requirements concerning OSH. According to the owner, the focal company has visited them, but at that time, was more interested in producers, so a visit to an apple farm nearby (in Belgium) was organized. The supplier had been there before several times as he screens his producers regularly, both European ones and others. By visiting farms and production sites, the supplier influences its producers' activities by asking specific questions about production, giving ideas how to improve and be more efficient and acknowledging the work being done.

He asserts that there is a notable distinction between having a European producer and having a producer in South America. He explains that when working with producers from South America, there is a need to familiarize them with the required procedures. However, he mentions that sometimes, especially small suppliers, prematurely, shipping a container even before he officially places an order with them. However, the bigger producers in South America are aware of European requirements (e.g., social and ethical standards) and do not question their relevance. Therefore, it is easier to cooperate with them as larger companies are professionally better organized and are also able to export. The Supplier 1 also admits that there is a chance that smaller operators selling to bigger operators who can export and sometimes this information is not shared with the supplier.

The applied contractual governance practices

Tendering, contracts

There is a formalized contract between the focal firm and Supplier 1. First, yearly contract is made with clients. Additionally, each order is followed by an offer by the supplier and if the conditions are suitable, the contract will be signed. Before signing the contract, the supplier needs to get confirmation from its grower. After that, the selection of batch will be made. Supplier 1 admits that he doesn't remember if there's anything about OSH in the contract and whether he has ever signed focal company's Code of Conduct which is claimed by the focal company. The owner expresses that having a strong client relationship has reached a point where they no longer read contracts. Instead, they simply store them in a database.

The supplier usually receives the orders through e-mails. The owner of the business emphasizes the importance of maintaining written records, stating that using email is the most effective choice. In e-mail, the focal company tells the features the mango puree must comply with. A contract is made for each order.

Certification

In terms of baby-food quality, but also OSH and working conditions, the focal firm asked if the supplier 1 has the IFS certification before starting the business. The supplier believes that it's not a requirement, but it makes the business easier because it saves time of giving every detail about the growers to

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Supplier 1 says that having IFS certification, means that the business is not very flexible because to start selling a new product takes time. So, if there's a small client who'd like to buy, for example, basil, and receive it next week, it's not possible to have all documents available and ready that quickly. This means that the order must be declined.

The supplier explains that baby-food products have a comprehensive procedure before being able to sell the batch to the focal company – first the sample is sent, the organoleptic tests are done by the focal company; and after that, the certificate of analysis is sent. It may take more than one (1) month before the batch can be sent to the focal company.

Monitoring and audits

According to Supplier 1, the focal company has not conducted any visits to their premises. However, the supplier 1 stated that they make regular visits to all their producers. In addition to conducting baby-food screening, they prioritize fostering friendly relationships on-site. They emphasize that the primary importance lies in cultivating a positive rapport with their producers. They further state that if they are unable to achieve this, conducting business becomes meaningless to them.

The applied relational governance practices

Trust

The focal company's procurement manager and owner of the supplier 1 know each other and are frequently in contact with each other. The owner claims that building a trust via 'small talk' is very important with all partners, especially with his own producers in South America. However, with Estonian focal company there is no such a trust-building via small-talk, because the owner believes, that in Baltic States, the people are not fond of informal communication, but prefer to go straight to business. But after the buyer from focal company had visited him on-site and had spent time together, they became friends. The owner also added that is not wise to go too far with the personal relationship (e.g., sending presents), because this can jeopardize the business and may be considered as bribing.

Informal communication

Official communication is mainly done via e-mails, but Supplier 1 claims that a lot of informal communication is also going on between the orders. He states that he regularly engages in weekly conversations with the individuals working in the banana plant. During these interactions, he inquires about their well-being, discusses news about their country, and learns about their families. As a result, he even knows the parents of the lady working in the banana plant and he believes that such personal connections are highly valued by people and are genuinely appreciated.

Monitoring of requirements and follow up on non-compliances

Supplier company admits that all sorts of things can go wrong as fruits growing is dependent on weather: changing weather can change the specifications of the product, cold weather can cause a delay, crop can go bad. Occasionally there are issues because of that. For example, the most frequent challenge has been to find a batch that complies with customer's specification or taste. For that, the Supplier 1 sends different batch samples in order to find an appropriate one and this often takes time. There is a specific procedure for that: price offer - contracting - sending certificate of analyse (COA) - if COA complies with customer's specifications, then sending a batch sample - if sample is approved, sending baby-food analysis - if all is good, the stock is taken in. Except for the first two steps of the procedure,

there can be a non-compliance. This means, the procedure is repeated until a good batch is found. The supplier confesses that they have been punished once for a delay in delivery which stopped the production and there, they had had to cover this cost by giving a price discount on the contract.

The focal company's difference from other clients

In general, the focal company differs from other clients of Supplier 1, because it buys the products to produce baby-food, and this is highly regulated area. Therefore, the focal company requires more documentation than others; but the supplier also says that there are other companies with even higher demands (e.g., in France).

Effect of supply chain management practices on OSH and working conditions

The focal firm claims that each of its suppliers need to sign their Code of Conduct which also has a chapter about working conditions and OSH (e.g., safe and healthy work environment that complies with all applicable local laws must be guaranteed). Supplier 1 does not remember if he has ever signed it but admits that it might be in his database. Focal company has visited supplier 1 as well as some of its producers in Belgium, and during visits, done the screening. Mainly it's about food safety and quality, but while walking around, working conditions are observed as well. The supplier does additional screening of its producers on its own, e.g., in South America. He admits that he depends on the declarations provided by the partners. While he does conduct inspections during his visits, he clarifies that he is not present with them daily. However, he notes that during his inspections, he has never encountered any hazardous conditions or witnessed violations of social standards.

Supplier 1 has four office workers and claims that the conditions comply the OSH requirements from local OSH Law.

Involvement and experience of workers

In the supplier company, all workers are office workers. There is not 'an idea box', but they have a weekly meeting where anything can be discussed. Some examples on how the workers have been involved or made suggestions, are the following:

- In 2022, Belgium had a heatwave in summer which lasted for one week, and during this week, workers asked to start one (1) hour earlier and finish one (1) hour earlier. Thus, the biggest heat was avoided in the office and the owner was happy to allow flexible working times.
- Recently a worker suggested to have sunscreens on the window, which were installed a few weeks later.
- Some workers complained the acoustic was complicated in the office rooms, so the owner installed carpet to lower the noise levels.

The owner has a friendly relationship with his workers and has one to one meeting with them to ask their opinions about what can be done differently. This encourages the workers' involvement to develop operational activities.

The supplier is a small company and therefore doesn't have any trade union delegates in the company.

Dyad 2: Focal company – Belgium supplier 2

Supplier 2 is a Belgium large processing company, supplying around the world with high quality frozen vegetables, herbs, and fruits. This is a family-owned company. The supplier company has integrated a network of growing areas, freezing units, storage centres, packaging equipment, appropriate logistics, lab for the quality control. Their production, packing and distribution sites are located from north to south and from east to west in Europe's most fertile crop growing regions. The proximity of their factories to their crops is one of their key strengths and ensures that only minutes are lost between harvest and locking in the product's natural goodness in their freezers. The company supplies to all big retail change.

The company has 20 units in 9 countries (e.g., 16 factories in Europe and one in Costa-Rica, which is the largest frozen pineapple facility in the world).

The nowadays' relation between Supplier 2 and the focal company is the result of ten years of business collaboration. The supplier sells only vegetables to the focal company, like carrots, etc. The first contact with the focal company was made in the international exhibition. When asked about the significance of the focal company as a client, supplier 2 responded by stating that every client holds equal importance to them. However, when considering the scale in terms of numbers, there is a notable difference. The focal company, situated in Estonia, cannot be compared to industry giants like Danone or Nestle.

OSH and working condition challenges

In terms of OSH and working conditions, the focal company does not have any special requirements, but have monitored the production facilities of Supplier 2. Supplier 2 describes that the focal company visited them in Belgium, but was mainly interested in production, food safety and quality.

Supplier 2 claimed that their workers are their company's driving force as their knowledge, skills and dedication help company to be successful and market high-quality products across the world. The supplier 2 made an additional statement, highlighting the equal importance of worker's safety alongside food safety. In addition, supplier company emphasized the existence of standards and systems in place to ensure thorough training and effective communication for employees as well as proper safety labelling practices are implemented as well. The supplier 2 emphasized importance of their company motto as "Safe to Work and Safe to Home," underscoring the significance of maintaining safety in both the workplace and employees' personal lives.

According to Supplier 2, the main challenges in the field of OSH is how to ensure the application of the same OSH standards in Europe and in Costa Rica. Supplier 2 reported that they are trying to find balance between three elements - people, the planet and their products and have implemented MIMOSA program, which stands for Minimum Impact, Maximum Output, Sustainable Agriculture. According to supplier 2, their company is taking full responsibility for guiding local farmers on the necessary information regarding harvest collection, safety training, and required machinery. Their objective is to ensure timely harvesting of the crop. Additionally, the worker's representative highlighted another challenge in the occupational safety and health (OSH) field, which pertains to the seasonality factor and the resultant increased workload.

Description of the applied contractual governance practices

Tendering, contracts

It was confirmed by the supplier that there is an official contract between focal company and supplier 2. Supplier 2 confirmed the existence of a contract with a specification, and a price list that remain valid for a specific duration. The supplier emphasized that they maintain a fair price in exchange for fair quality. Although their prices may be higher compared to their competitors, the focal company appreciates this aspect due to the superior quality they provide.

Supplier 2 usually receives the orders through e-mails with very detailed specification.

Certifications

Supplier 2 asserted that their company possess a wide array of certifications and expressed confidence in their certification coverage, assuring that they have obtained every certification imaginable. As the primary player in the market, they emphasized the importance of having all the required certificates, striving to serve as a positive role model for others in the industry. According to Supplier 2, their production sites are certified in accordance with internationally recognized standards (BRC/IFS certification) and comply with strict food safety and HACCP standards. Supplier 2 employs 53

agronomists and more than 100 technicians to ensure that their products correspond to certain specification and to the highest safety and quality standards.

Auditing

Subcontractor 2 confirmed that the focal company conducted a visit to their production facilities, specifically focusing on monitoring production, ensuring food safety, and upholding quality standards.

Description of the applied relational governance practices

Trust

Supplier 2 believes that the relationship between them and the focal company is based on respectful business relationship and trust. Supplier 2 emphasized the presence of a positive and robust connection between their companies, based on mutual trust. The supplier company highlighted that the focal company took the initiative to visit their largest factory located in Belgium, underscoring the strength of their partnership.

An effective communication

Supplier 2 declares that the communication with the focal company is effective. Official communication is mainly done via e-mails. Supplier 2 expressed their belief that direct and informal communication plays a vital role in their business. They emphasized the importance of engaging in casual conversations, as it helps foster trust and establish mutual understanding with people.

Hybrid

The focal company has been visited supplier 2 and asked questions mainly about its operations procedures related to food quality and safety. There are however no direct questions related to OSH and working conditions in this survey, but questions about the use of pesticides and fertilizers.

There is positive relationship between supplier 2 and the focal company.

Monitoring of requirements and follow up on non-compliances

According to Supplier 2, the focal company has detailed criteria and measures of quality control. The focal company has been visited one of the Belgium factories in order to control the compliance over the food safety requirements and quality.

The focal company's difference from other clients

Supplier 2 emphasises and understands high requirement for the supplied product, because the focal company is producing baby-food and all ingredients need to be of high safety and quality. It was also admitted by Supplier 2 that generally, their prices are fixed, product specifications agreed and described in the contract. According to Supplier 2, the focal company differs from other clients of Supplier 2, because it buys the products to produce baby-food, which requires distinct specifications and specialized products. The focal company places significant importance on the product quality, assurance, food safety, and services, as they cater to their specific needs.

Effect of supply chain management practices on OSH and working conditions

The focal company has an official contract with supplier 2. In addition, supplier confirmed that they were informed about all product requirements and specifications.

Supplier 2 confirmed that they possess all the necessary certifications as required. However, there is no available evidence indicating whether the focal company specifically requested any certificates from Supplier 2, or which certificates were requested, if any. Supplier 2 mentioned that focal company did not ask for any specifications, only if there is a specific bioproduct for baby-food production, then they asked about bio-certification to be sure that products are suitable for baby-food production.

Supplier 2 reported that auditing was conducted once by the focal company, but only quality and safety of products were monitored. According to supplier 2, the relationship between supplier 2 and the focal company is based on mutual trust and long-lasting business collaboration. There is regular effective formal and informal communication established between companies.

Involvement and experience of workers

Workers of Supplier 2 are well integrated in the company. They are systematically involved in training courses regarding OSH and working conditions. Workers are indirectly involved in the management of the company through unions. Each factory has union representatives and safety manager, who is responsible for OSH and involving workers in health and safety activities. In terms of OSH aspects, the worker at Supplier 2 confirmed that safety is ensured in all factories in certain extent. Personal protection equipment and safety instructions are provided to all types of job.

Supplier 2 reported that they have regular safety meeting with all factories in MS Teams to share information and good OSH practices. In addition, Supplier 2 organizing safety week for all factories in order to increase safety awareness among workers. It was stated by the supplier 2 that the next safety week will be organized in Austria. The purpose of this event is to invite safety experts who will provide consulting services, present exemplary safety practices, share new studies, and engage in discussions on essential aspects of safety for the benefit of our workers. Also, safety consultants are visiting factories regularly to consult workers and to monitor working conditions.

According to Supplier 2, there is no serious occupational accidents have occurred lately. It was confirmed by workers, that there are currently too many notifications and warning signals upon entering the factory premises. These serve as reminders and necessary precautions to ensure that people adhere to safety rules and guidelines, helping individuals stay aware of what they need to do and pay attention to maintain a safe working environment. In addition, it was stated by supplier 2 that there are some challenges in OSH, because they have different factories, a lot of cultures, many different languages, and different habits. So, the approach must be multilingual and multicultural, what could be challenging.

Dyad 3: Focal company – Estonian supplier 3

Supplier 3 is a family-owned green farm (from 2012) that grows and processes buckwheat for Estonian supermarket chains such as Rimi, Selver and most organic shops. Because the buckwheat is a seasonal product, in addition to raw buckwheat, it also grows sheep (a marginal activity compared to production of raw buckwheat). Supplier 3 grows buckwheat in 200 hectares of land. The company seeds, harvests, cleans, dries, grades, and then packs buckwheat into bags or boxes. Transport to the client, if needed, is organized by the third parties. The processing building is located close-by to the fields of crop and consists of a mill, two containers, grain dryer and packaging area downstairs, and an assembly hall upstairs. The production is mainly operated by the father and the sons.

Supplier 3 sells processing buckwheat (a green product) to focal company to make baby-food. The cooperation between supplier 3 and the focal company has lasted for 2 years, and the first contact was made in BIOFACH trade fair in Germany. In the trade fair, their booths were next to each other and after a fruitful informal talk, the products discussion was initiated by the supplier. It was suggested to use buckwheat either in baby-food or other food products and gave them samples to test.

Supplier 3 claims that focal company is their small size client but hopes to increase the volumes in coming years. Supplier company mainly operates in Estonian market but has intentions to move to international markets as well. The co-operation with one baby-food producer may also help to find other similar clients outside Estonia and go international. They have started to negotiate with a similar producer in Latvia. The Latvian company has already visited the supplier 3 for screening.

Supplier 3 claimed that there is no official structure of company and no official occupations, because they are a family-business. All tasks are done by family members, except the part-time work employed outside of the family who comes to help three times a week with packaging the goods.

OSH and working condition challenges

According to supplier 3, in terms of OSH and working conditions, the focal firm does not have special requirements.

Supplier 3 has all new agricultural machines to grow and process buckwheat – the tractors are from 2021, the harvester is from 2018 – all of them are ergonomic and modern. The only problem is the mill which requires hand labour, but after renewing the mill, it will be able to produce larger quantities and less hand labour (a new optical sizer and a new packing machine), thus also contributing to better working conditions for the family. The supplier company has invested in good working conditions continuously and plans to renovate the mill in 2023.

All farm work is done by two sons, mother, and father; only for packaging, a part-time worker is hired. The worker didn't point out any high risks, except handling weights. The buckwheat bags are between 10 to 40 kg and the boxes between eight to 20 kg. The manager points out the work in outdoor environment where proper clothing is always needed.

According to the supplier 3, workforce is not hard to find – they occasionally get offers from local people to do part-time job, but the family tries to cope on their own with most of the work.

Description of the applied contractual governance practices

Tendering, contracts

There is an official contract between focal company and supplier 3, even when the volumes are quite small.

Supplier 3 receives the order from focal company through e-mails with the information about needed amount and deadline (date as well as time). They prefer e-mail as it is official and a good reminder also for the supplier to make sure the order is dealt with. Supplier 3 stated that they work similarly with other clients.

Certifications

Supplier 3 stated that the focal company have never asked about any certificate. However, the supplier company reported that other clients usually ask only about the 'green-product' certificate or food-safety certificate.

Auditing

Supplier 3 stated that the focal company has not conducted visits to inspect their production sites and working conditions. However, supplier 3 expressed their surprise at this, speculating that the focal company may be content with their batches. Supplier 3 further noted that all analyses conducted thus far have met the requirements and standards in place. However, as Supplier 3 hopes orders in larger volumes both from focal company as well as Latvian baby-food company, they are having plans to renew their mill to safely produce raw buckwheat in larger quantities.

Description of the applied relational contractual governance practices

Trust

The relationship between the focal company and supplier 3 is mainly based on reliability and trust.

Informal and effective communication

There is also some informal communication between focal company and the supplier 3, but not weekly. The supplier 3 (green farm) is a well-known farm in buckwheat growing (there is no other in Estonia), but it is important to maintain the trustful relationship also in personal level, so the owner makes sure the focal company is satisfied with their batches. The communication is mainly done via phone. Meetings are rare as the farm is about 3 hours away from the focal company.

Monitoring of requirements and follow up on non-compliances

According to supplier 3, in terms of monitoring the requirements and follow up of non-compliances, the focal firm has detailed and concrete measures of quality control which they do for every baby-food ingredient. If there are any problems, they write an e-mail to supplier 3 and they explain the situation orally or in a written form. In cases where a significant issue arises, supplier 3 promptly retrieve the batch and provide a replacement. However, it is worth noting according to supplier 3, such situations have not yet occurred. Supplier 3 claimed that their positive relationship with the focal company has enabled them to successfully handle any minor issues that have emerged, guaranteeing seamless resolutions.

Difference of the focal company differ other clients

The focal company makes baby-food which is highly controlled area. The Supplier 3 admits that the paperwork is very demanding and ordering lab tests once a year is costly. However, supplier understands the reasons behind it. As a result of the requirements, supplier 3 have implemented additional analyses on their farm as well. For self-control, they have now acquired the capability to conduct gluten testing, which they apply on a random basis. Their other clients usually ask only about the 'green-product' certificate or food-safety certificate.

Effect of supply chain management practices on OSH and working conditions

Supplier 3 has invested in new and modern machinery and will renew the mill in order to produce larger quantities and thus, will be able to fulfil the focal company's and other clients' growing needs, and at the same time, with higher degree of automation, decrease human labour and its impact to OSH (repetitive movements, awkward postures, long working hours, manual handling of loads etc).

The focal company has a contract with supplier 3 where all requirements and deadlines are described and agreed.

Supplier 3 described that they have a positive and respectful relationship with the focal company and that the communication is effective and easy.

Involvement and experience of workers

Worker's representatives confirmed that the workers outside the family are satisfied with their working conditions. One worker' representative stated that she works part-time, usually first two or three days of a week and says the work is not too demanding and the work pace is suitable. If something is needed, she can ask from any of the family members who are always around. The family members claimed that the highest challenge is to separate work and personal life, and therefore, some conflicts may arise.

All family members are entitled to do any job needed to be done. Most solutions are discussed together.

The only worker is not a part of any unions. In Estonia, Trade Unions are very uncommon (less than 10% of workers are members of Trade Unions). The density fell sharply in the 1990s, and it continued to decline also later. The reasons suggested for the decline are mainly the perceived links between the unions and the Communist Party during the period when Estonia was part of the Soviet Union, but also the termination of benefits and services which were earlier provided by unions (and had been a key function in the past).

Dyad 4: Focal company – Estonian supplier 4

Supplier 4 is an Estonian family-owned farm that has production of dairy products and growing vegetables (mainly potatoes). The Supplier 4 operates in Estonian market. It has its own online shop. At the same time, the larger customers are Estonian supermarket chains such as Rimi, Coop and Selver.

The company has been established in 1989. The production is mainly operated by the father and the son. In total, seven workers are employed by the company. There are five full-time workers and there are also both owners (father and son) working in the farm. Being a family-business, there is no official structure of company.

Supplier 4 collaborates with the focal company for more than five years and delivers mainly pasteurised organic milk and potatoes to the focal company. For the Supplier 4, the focal company is not the biggest client. One of the owners expressed satisfaction with the cooperative relationship they have established with the focal company.

OSH and working conditions challenges

Supplier 4 stated that the focal company does not have special requirements regarding OSH and working conditions. Supplier 4 (both the employer and workers' representatives) acknowledged that the focal company has made visits to their premises. However, they expressed that the focal company did not inquire about OSH or the well-being of the workers. Instead, the focal company's primary focus was solely on the product quality and production aspects.

One of the owners (the son) is in charge of OSH issues. Supplier 4 has invested in a new building with processing equipment and solar panels. The aim of the investment was to modernise the production technology, to improve working conditions, to increase production capacity as well as the quality of the products.

Owner and workers' representatives stated that they have sometimes challenges in terms of increased workload what is related to seasonality. The most intensive work is from spring to autumn because seasonality of vegetables growth.

Description of the applied contractual governance practices

Tendering, contracts

There is a formal contract between the Supplier 4 and the focal company. According to Supplier' 4 owners, only order quantity and quality of the product are specified in the contract.

Supplier 4 usually receives the orders several times per year through e-mails. The Subcontractor 4 is aware of the quality requirements and criteria. The focal company is conducting certain analyses required for baby-food production. In addition, the supplier company is conducting own analyses. Transport is provided by the Supplier 4.

Certification and Auditing

Supplier' 4 representatives did not manage to name any of the certification required by the focal company.

Supplier 4 reported that auditing was conducted twice by the focal company. The owner mentioned that their business has been subject to two monitoring visits by the focal company over the course of five years. However, they have not received any reports or feedback regarding these visits from the focal company. Therefore, it can be said that no impact on OSH is identified through auditing.

Description of the applied relational governance practices

Trust

Supplier 4 highlighted effective collaboration, which began with the delivery of potatoes. Over time, their collaboration expanded to include the supply of pasteurized organic milk. The supplier 4 emphasized the positive nature of their cooperation, reflecting a successful and enduring business alliance.

The relationship between Supplier 4 and the focal company is based on trust, respectful business relationship and positive R&D project in development of new product for Supplier 4, which is the ingredient for the baby-food produced by the focal company.

Informal and effective communication

There is regular informal communication established between Supplier 4 and the focal company. Effective information communication holds great importance especially for the owner (farther). They have previously established connections with multiple individuals from the focal company. Although one person they were well acquainted with left the focal company last year, the focal company maintains a strong reputation and positive collaborative experiences. This is primarily due to the high quality of their products and the provision of transportation services. As a result, the focal company continues to engage in cooperation with their business.

Hybrid

There is positive and supportive relationship between supplier 4 and the focal company. The supplier 4 stated that they developed a new product based on the specific requirements and recommendations provided by the focal company. This strong collaboration demonstrates supplier 4 company's commitment to research and innovation, enabling them to establish themselves as a trusted partner for the focal company.

Monitoring of requirements and follow up on non-compliances

Supplier 4 confirmed that in terms of monitoring the requirements and follow up of non-compliances, the focal company has detailed measures and criteria of quality control which is conducted for every baby-food ingredient. Supplier 4 explained that the control of quality is systematic from the focal company.

No specific monitoring or follow up on non-compliance in OSH have been identified.

Difference of the focal company differ other clients

According to Supplier's 4 opinion, the focal company differs from other clients by producing baby-food which is highly controlled area, the quality and safety of all ingredients must be ensured.

Supplier 4 understands high requirements for the products and is happy to have such client as the focal company. The owner emphasised that their product development process was driven by the specific requirements and recommendations of the focal company. This serves as evidence of their company's research-oriented approach, capacity for innovation, and adaptability, enabling them to promptly implement changes and establish themselves as a reliable and trusted partner. The owner further mentioned that their commitment to research and experimentation is influenced by their father's background as a researcher, motivating them to conduct diverse studies and experiments within their company.

Effect of supply chain management practices on OSH and working conditions

The focal company has a contract with supplier 4 where all requirements regarding quality product are described and agreed, but OSH is not negotiated during the contract signing and therefore, it might have no impact on OSH and working conditions at all. There is no certification scheme identified.

According to supplier 4, both the employer and workers' representatives, the focal company has visited their premises. However, during these visits, the focal company did not inquire about OSH or wellbeing of the workers. Their focus seemed to be solely on the product quality and production aspects.

Long lasted cooperation with the focal company and other partners enables supplier 4 to invest in new equipment to increase quality and quantities of the products. These improvements have also positive impact on OSH, for instance to decrease workers' repetitive movements and manual handling of loads etc. In addition, the new product was developed based on specific required provided by the focal company.

Involvement and experience of workers

Workers reported that they are satisfied with work organisation and working environment in the supplier 4 company. They are paid above average in that area. All equipment and technology are new in the company. Workers of Supplier 4 confirmed that they feel to be actively involved in different operational activities (e.g., work planning, providing recommendations how to improve production) in the company and communicate with owners daily. Both owners have positive relationships with all workers, and they are respectful towards their workers' needs.

Workers are not part of any unions and do not have collective agreement.

Future trends

Some future trends have been identified regarding the improvement of OSH conditions by means of leverage instruments in the Estonian agri-food supply chain:

- Certification schemes, which at the moment are more concentrated on quality and food safety and less for OSH, may have a higher value for OSH in the future, especially in regards with ESG activities in all over Europe.
- Code of Conduct may have an impact on OSH while agreed, signed between producers, suppliers, growers and implemented into practice (with relevant metrics to measure its impact).

Illustrative citations from the cases:

Focal company	<p><i>“What is important to us is the quality. In this respect, as I said, certifications are important. Price is also important, but quality comes first. If we don't like the taste of mango, it may be free of charge, but we don't like it. Taste is also very important, because if a product has been in this range for 50 years, the taste must not change. For example, we have a specific variety of cabbage that we use, it's not like bring cabbage - we need a specific variety and quality.”- Supply Manager, about quality requirements.</i></p> <p><i>“We'll do a final summary of the audit and come up with the result, on a 100-point system. If the buyer gets too few points, theoretically we should not continue working with them. We have a threshold somewhere. But we haven't had the experience so far of having to terminate supplier's contract after an audit. We have had the case that after the audit we rather see that there is a danger point and we have turned our attention to it and wait to see when and how the supplier will improve.” - Supply manager, about auditing.</i></p>
Supplier 1	<p><i>“The people from banana plant... I have a weekly conversation with them, I ask how they are doing, some news about their country, some things about their families...therefore, I also know the mother and father of the lady that works in banana plant. People appreciate that.” – Owner, about the importance of building a trust via 'small talk'.</i></p>

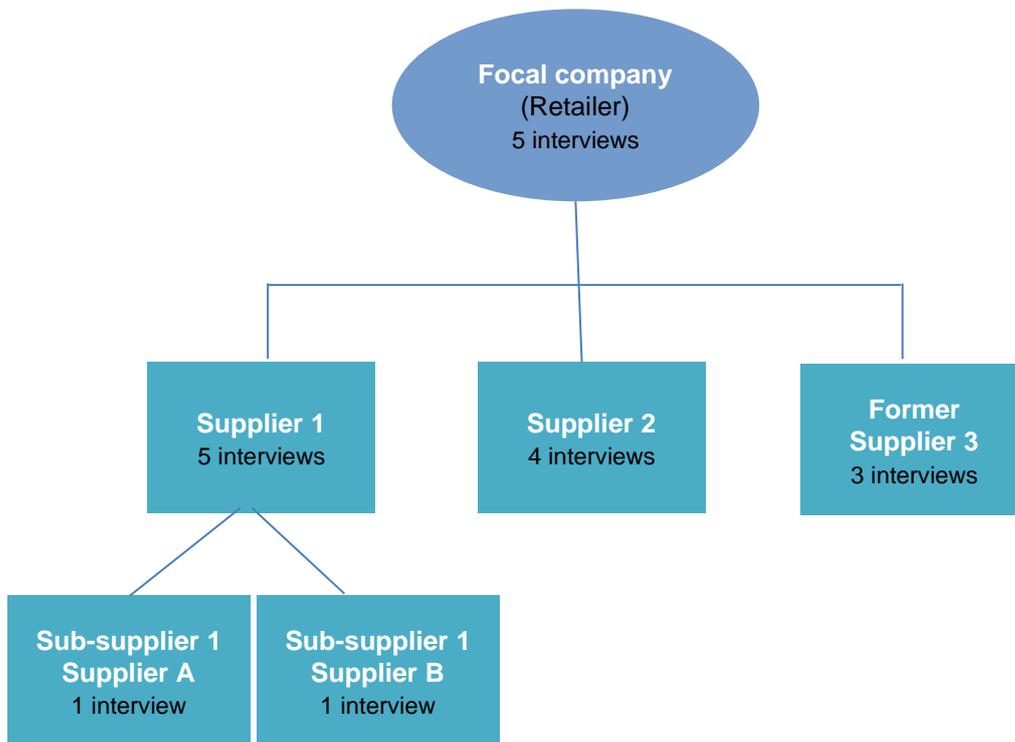
	<p><i>“The most important is to develop with our producers a friendly relationship. If I am not able to do this, it doesn’t make sense for me to do the business.”- Owner , about building friendly relations on-site.</i></p>
Supplier 2	<p><i>“At present, there is too many notifications and warning signals when you are entering the factory, that must ensure that people are followed safety rules. This supposed to remind you what you need to do and what to pay attention.”- Worker, about OSH requirements.</i></p> <p><i>“I think that direct and informal communication is crucial for our business. People like small talks and this is important to create trust and common understandings.” - Sale manager, about the communication between supplier 2 and focal company.</i></p> <p><i>“Worker’s safety is as important as food safety. We have standards and systems, which ensure that people are trained well, informed well. We use proper safety labelling. Our moto is Safe to Work and Safe to Home.” - Sale manager, about their commitment to safety.</i></p> <p><i>“Name any certification and I am sure, we have them. We are the main player in the market and therefore, we have all certificates what are needed, we need to be a good example for others.” - Sale manager, about certification scheme.</i></p>
Supplier 3	<p><i>“If really something is wrong, we take the batch back and send a new one. So far, it hasn’t happened. We are in good relations and small problems have always been sorted out.”- Owner, about good relationship with focal company.</i></p> <p><i>“The most negative thing is... or well, I can't say it's negative, but you have to check your product all the time. There's quite a lot of paperwork involved. The analyses that need to be done for that are quite expensive in Estonia. If we send 200 kg of buckwheat to the focal firm, it's worth a couple of hundred euros, but the analyses you must do for that are almost 1,000 euros. Analyses still cost a lot.”- Owner, about the quality control.</i></p>
Supplier 4	<p><i>“We have developed our product based on the focal company’s need and recommendations and I think this demonstrates that we are research-based, innovative and agile company which can make changes quickly and be trusted partner. My farther is a researcher, that’s why we are also conducting different studies and experiments here.” – Owner, about cooperation with the focal company and development of new products for the focal company.</i></p> <p><i>“I used to know several people from the focal company. Unfortunately, one person that I knew very well, left the focal company last year. However, since we have good reputation and positive experience of collaboration with them [the focal company], because the quality of our products is high, and we offer transport, they cooperate with us.” – Owner, about importance of information communication.</i></p>

Agri-Food Case 4, Spain

The focal company is the business unit of a Spanish retail group of consumer goods (including food) and services.

In the field work, we conducted a total of 19 interviews.

Figure C 7: Relationship between the focal company and its suppliers



The focal company

The retail group commitment for sustainable sourcing is developed at the business unit level through a high commitment in local sourcing and establishing long term relationships with local distributors and farmers, which are mainly cooperatives.

The focal firm does not require international certification standards to suppliers but applies its own criteria and audits and require the “Integrated Production” certification (in most cases) applicable at the National level. In addition, they are in the process to develop a code of conduct in line with the “Farm to Fork” EU initiative. Specifically, for the medium and large producers, they apply more strict conditions such as:

- Technical information about the products.
- Audits (focused on the quality of the products as well as the conditions in their facilities).
- Environmental aspects (phytosanitary and water treatment).
- Requesting the “Integrated Production” certification (in most cases).

The “Integrated Production” certification is valid for quality and environmental aspects which also includes OSH aspects. This certification refers to the harvested products (not the processed ones) and includes technical guidelines for specific crops production. A key aspect of the “Integrated Production” is that plantations are monitored for proper pest control and are advised by a technical engineer or

agricultural engineer who will determine the alternative methods to chemical control that should be applied. The aim of the certification is to increase the adoption of biological methods for pest control.

This certification is achieved by an initial inspection by a third party auditor on 100% of the production regarding:

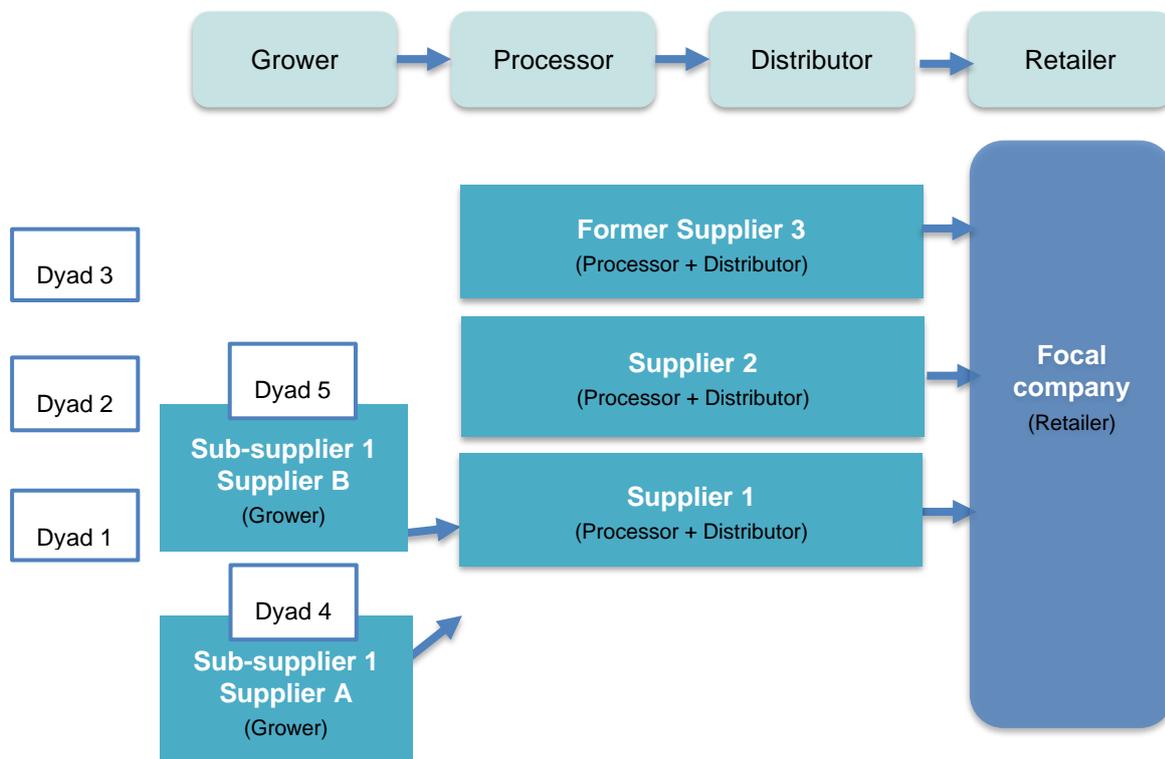
- Limit, crop use and crop rotation.
- Soil analysis: water and leaf analysis.
- Occupational Risk Prevention Plan (PRL).
- Waste management of packaging.
- Condition of facilities.

The logo of the certification is on the harvested product but not on the processed products derived from it, except for oil and processed nuts for which technical standards based on the Integrated Production guidelines have been defined. This is important to note as the final consumer might not be aware of such certification, but it might be very important from the production perspective as it requires specific production techniques and investments.

These sustainable sourcing requirements are managed directly by the regional procurement department dealing with local and national suppliers.

In addition, at the focal firm there is a person in charge of OSH matters for all the retail stores in the region depending on the headquarter of the retail group. However this person is not in charge of management suppliers and their working conditions.

Figure C 8: Supply chain and the distribution of roles in the agri-food supply chain



Dyad 1: Focal company – Supplier 1

Supplier 1 is a cooperative that acts as an intermediary between its members (the farmers) which are devoted to the production of vegetables (mainly turnip, parsnip, carrot, cabbage, celery, tomato, spring onion and onion).

The relationship between the focal firm and Supplier 1 has a long tradition of approximately 14 years of duration. Nowadays, the relevance in quantitative terms of the focal firm volumes for Supplier 1 is around 20% of their turnover.

The applied contractual governance practices

Contractual agreements

There is no formalized contract between the focal firm and Supplier 1, however there is a long-term relationship between the focal firm and Supplier 1. As the Supplier 1's general manager explains: *"The customers we have are, usually, long-time customers. [...] They usually buy you a certain number of products. But there is no contract that regulates it. There is no agreement that regulates it"*. However, now this will change as the new Spanish law requires formal contracts to be enacted.

Certifications

Supplier 1 has the Integrated Production certification as requested by most Spanish retailers. Even though the focal firm has not asked them for that, they have both ISO 22000 certification. In addition, Supplier 1 used to have the GLOBALG.A.P. certification (which includes some OSH aspects). However, they didn't renew it since *"logistically, it was crazy"*: they just had one product (one type of tomato) certified with GLOBALG.A.P. and it was pretty difficult to maintain it because of space problems in the warehouse. They finally decided not to renew the certification.

Monitoring and audits

In addition, the focal firm applies their own audits. Supplier 1 explains that they have received some visits from the focal firm to perform audits. In the audits carried by either the focal firm or a representative of the retailer group, they have audited mainly food quality and safety aspects and some issues related to occupational health and safety. Concretely, they have been audited especially regarding workplace prevention plans, training of workers in good handling practices and delivery of PPE for each workplace.

Monitoring of requirements and follow up on non-compliances

The focal firm has detailed and concrete measures to monitoring and follow up non-compliance regarding food quality and environmental aspects (but not specific for OSH aspects). When Supplier 1's products are delivered at the focal firm's warehouse, the operations department at the focal firm carries out controls on penetrotomy and degrees brix. Following a series of guidelines that they have identified for each product reference, every day, in each reception of products, they apply those guidelines. It implies that, from each pallet they receive, they randomly choose a certain number of boxes and they check that the product meets those specifications. Those criteria are designed to ensure that the quality requested by the focal firm is provided on a daily basis. Furthermore, the focal firm performs a second round of quality controls once the orders are prepared for being delivered to the stores. Also, in this case they randomly select a set of prepared orders and check them again. According to the director of operations they do it because once the product is in their facilities, it may suffer some kind of deterioration. If the product is withdrawn at some point, they inform Supplier 1, explaining the reasons why the quality control has not been passed, sending them photos through e-mail and the next day they return it to Supplier 1.

The applied relational governance practices

Buyer-supplier relationship duration

The relationship between the focal firm and Supplier 1 is mainly based on trust generated over the several years of the relationship.

Buyer-supplier collaboration/Joint Planning:

Once or twice a year Supplier 1 and the focal firm plan the production season jointly about what Supplier 1 has to plant, what worked from last season, and what do they foresee for the coming season.

Even though they have some kind of forecasting regarding the vegetable's production, there is no commercial contract that obliges them to subsequently purchase the vegetables produced.

Informal communication

Communication with the focal firm usually takes place on an informal level. As pointed out by the general manager, continuous communication is due to the nature of the product with which they work: *"[...] fruit and vegetables, it is not like, for example, cereal. This is daily. You may have garlic today and not tomorrow. It's an everyday thing. It's not something you can sell in a month or two"*. This conditions their day-to-day activities (e.g., harvesting) and, consequently, has an impact on the commercial relationship with the focal firm.

Apart from the communication that the focal firm and Supplier 1 have daily regarding supply and demand volumes, they also communicate to each other for or any other issues that may arise (e.g., promotions or joint commercial initiatives).

Hybrid governance

Once or twice a year Supplier 1 and the focal firm plan the production season jointly about what Supplier 1 has to plant, what worked from last season, and what do they foresee for the coming season.

Even though they have some kind of forecasting regarding the vegetable's production, there is no commercial contract that obliges them to subsequently purchase the vegetables produced.

The focal company's difference from other buyers

According to Supplier's 1 general manager, the focal company differs from other buyers in one main point: its clear commitment to local production and producers as requested by the final customers (consumers) and in line with the CSR commitment of the retail group of which the focal firm is part of.

Additionally, they also explain how they are especially respectful in the business relationship. The general manager explains that the focal firm is composed by *"very good people"*. He explains that, for instance, when there has been a hailstorm, they have been very understanding that the products were destroyed and couldn't be served that week.

Effect of supply chain management practices on OSH and working conditions

Supply chain governance benefits

Overall, we did not observe a direct impact of supply chain governance practice on OSH and working conditions. The only practice including OSH aspects to some extent are certifications. However, the long term and understanding relationship between the focal firm and Supplier 1 allows a better planning of activities for the farmers and the workers.

Regulation context

At Supplier 1 no serious accidents have occurred ever. Supplier 1 complies with all the legal requirements present in Spain and they also act above what the law requires, and they do it because

they want to, not because explicitly requested by the focal firm. In terms of OSH aspects, the workers at Supplier 1 are provided with Individual Protection Equipment (IPE), for instance: boots, vests for the cold, fleece jacket, reefer and globes among others as requested by law.

In terms of working conditions, in Spain the common agreement that regulates the Labor relations is the "Status of workers" together with the collective agreement that applies in each case (usually at a sectorial level). Supplier 1 regulates working conditions according to the Mercabarna's collective agreement. However, they also have some extra conditions agreed between the unions and the company. For instance, the company pays the hours worked on Saturdays as if they were overtime, when actually they are not required by law because many of the workers have a contract stipulated that their working day is between Monday and Saturday. Also, they are very emphatic with maternity/paternity, and, for instance, they allow to have special working hours for them. Besides, Supplier 1 also enabled a space (apart from the dining room) on the outside of its facilities so that workers can feel more comfortable and be outdoors. They call it the "*chill out*" and they can eat and relax there.

Involvement and experience of workers

Workers of Supplier 1 are well integrated in the company. They are systematically involved in training courses regarding OSH and working conditions. They are provided with training once they start working in the company and, again, they also receive more training once they are involved in the company. Training courses include themes such as: food handling, how to use electric pallet trucks, prevention of occupational hazards and good practices among others.

The union representatives, the general manager and in general, Supplier 1 are respectful toward their workers and understanding toward their requests. The union representatives act as a liaison between management and workers. Recently, they also installed a mailbox so that anyone in the company can write their complaints/suggestions and leave them in the mailbox for the union representatives to receive.

Workers are daily encouraged by the quality director to comply with safety rules and asks the workers to inform him when any difficulty related to OSH arises (for instance when the knives are not sharp enough to work properly, and, in general, when something may generate a risk to their occupational safety and health).

Dyad 2: Focal company – Supplier 2

Supplier 2 is an organization that acts as an intermediary between the producer companies dedicated to the production of vegetables (turnip, parsnip, carrot, cabbage, celery, tomato, artichokes, and peppers are its main products) spread throughout Spain.

The nowadays' relation between Supplier 2 and the focal firm is the result of 24 years of commercial relation. The collaboration between the founders of the focal firm and Supplier 2's general manager started in February 1998. The relationship is based on reciprocal trust.

Nowadays, the relevance in quantitative terms of the focal firm for the Supplier 2, implies the 8% of their turnover.

OSH and working condition challenges specific to the activities undertaken by supplier

Supplier 2 usually receives the orders daily through e-mails. They receive a "no-reply" e-mail from the focal firm to order the vegetables (the price is not indicated there but is agreed in advanced). The focal company sends the orders every day at around 13:30h. From the Suppliers 2's side: "*the harvest is collected in the field [from the farmers/producer companies] the same day, it arrives here and from here*"

the picking is prepared and it goes there [meaning the focal firm]". In total, 24 hours pass from the time that vegetables are collected in the field until the moment when they arrive at the focal firm's facilities.

Supplier 2 faces some challenges in regard to OSH and working conditions. Automation in the warehouse is one of the main challenges. Ideally, they would like to increase the level of automation while retaining the same quantity of workers. From one side, automation allows to prevent from injuries due to physical exertion at work. On the other side, one worker explained that the use of electric pallet trucks might represent a challenge due to the risks of accidents it might generate in interaction with the other elements in the warehouse (people, other pallet trucks, stackers...).

According to one worker, another challenge in terms of working conditions is related to seasonality. Due to the increased workload during winter, they cannot stop working during the Christmas period and this might increase their stress level creating potential OSH risks.

Description of the applied contractual governance practices

Contractual agreements

There is no formalized contract between the focal firm and Supplier 2. As per the general manager, here is neither exclusivity nor durability and they can kick them out when they feel like it. When asked about how they do regulate it, the general manager of Supplier 2 states that: *"there is no agreement, they stop buying from you and that's it."* However, they have been having a long-term relationship and they do not feel to suffer such risk in the short term. However, this might change as a new law in Spanish requires formal contracts to be defined.

Certifications

Supplier 2 has the Integrated Production certification and the IFS certification, focused on product quality and safety, which allows to avoid audits from their clients, even though this is not a certification dealing with OSH and working conditions. They also have the GLOBALG.A.P. certification (which includes some OSH aspects). However, they don't sell vegetables under this seal, but they decided to get certified to be able to identify improvement points internally, without implying that they use it commercially.

Monitoring and audits

In terms of OSH and working conditions, the focal firm does not have special requirements. Supplier 2 explains that since they have been in the relationship with the focal firm, they received an audit from the focal firm (contracted to an external company). According to the general manager, *"they [the focal firm] audited us, but they didn't ask us for anything about workers. The audit was about the production plant, product and quality"*.

Description of the applied relational governance practices

The focal firm and Supplier 2 communicate mainly via email to exchange orders or to communicate when some product references have to be removed from the market (for instance, when the artichoke season ends, Supplier 2 informs the focal firm about it). In additional, the general manager indicates that they communicate verbally if there is a problem.

The focal firm seems to be more understanding compared to other companies, making Supplier 2 not feel additional pressure to the already complicated operation of the fruit and vegetable cooperative sector. This business idiosyncrasy could be benefiting, in turn, to alleviate the pressure that workers in Supplier 2 perceive and well as Supplier 2 Suppliers (e.g., farmers) with positive impacts on working conditions and OSH aspects.

Effect of supply chain management practices on OSH and working conditions

Supply chain governance benefits

As explained above, there are not specific OSH or working conditions requirements from the focal firm for suppliers. Even though, their members (the farmers) are certified with Integrated Production certification, which includes some concrete points in OSH terms. However, the long term and understanding relationship between the focal firm and Supplier 1 allows a better planning of activities for the farmers and the workers.

Regulation context

Supplier 2 complies with all the legal requirements present in Spain and they also act above what the law requires and they do it because they want to, not because explicitly requested by the focal firm.

Involvement and experience of workers

The general manager carries out a familiar and close leadership that encourages the worker's involvement in the development of operational activities. The director of quality also plays a role in this point through sponsoring OSH practices and better working conditions among workers.

Workers are indirectly involved in the management of the company through unions. They have union elections every 4 years. Nowadays, they don't have a worker's representative because the person who did it left the company. In October they will have union elections aiming to renew the union representatives.

Dyad 3: Focal company – Former Supplier 3

Former Supplier 3 is a cooperative that acts as an intermediary between the members of the cooperative (the farmers) which are devoted to the production of stone (nectarine, peach, flat peach, flat nectarine and apricot) and seed fruit (golden apple, granny smith apple, story apple, conference pear, blanquilla pear and limonera pear) territory. They sell around 90% of their production to other European countries.

The nowadays' relation between Supplier 3 and the focal firm is over. They used to sell fruit to the focal firm until 2015, when the relationship finished.

Although there is currently no commercial relationship between the two companies, we have included this company to show the importance of the type of buyers (national versus international) and the size of the suppliers (small versus large). In this case, since most of Supplier 3's buyers are European (from outside Spain), the demands in terms of certifications are much higher. In addition, the higher volumes of these supplier compared to the others allow to achieve more certifications and standardized production processes. However, as the management of large suppliers was moved to a different department in the organization (compared to the small suppliers) the relationship between the focal firm and Supplier 3 was interrupted as it was mostly based on relational governance practices.

Description of the applied contractual governance practices

Contractual agreements

As former supplier of the focal firm, Supplier 3 did not have a formal contract with the buyer but informal agreements.

Certifications

Supplier 3 complies with all the legal requirements present in Spain and they also act above what the law requires, and they do it because most of their buyers outside Spain require certain certifications (for instance, the head of human resources explained how she couldn't imagine selling products to United Kingdom without SMETA certification). Because of this reason, they have various certifications. According to Supplier 3, those are the following ones and they described them as follows:

Food quality and Food safety certifications:

- ISO 9001: it is the basis of the quality management system. It focuses on all the quality management elements that the company must have to have an effective system that allows it to manage and improve the quality of its products or services.
- IFS Food: It is a safety system focused on food and promoted by the association of distributors in Germany, France, and Italy. The standard is specifically designed for the food industry and food safety standards.
- BRC Food Safety: It is a worldwide standard for food safety. It was created with the dual purpose of ensuring compliance suppliers and provide retailers with a tool with which to ensure the quality and safety of the food products they market.

Environmental sustainability certification:

- ISO 14001: it establishes an environmental management system cash. Among others, it allows companies to demonstrate their commitment to the environment through the management of environmental risks associated with the activity carried out.

Food quality and safety and environmental certifications:

- GLOBALG.A.P.: already explained in Dyad 1.

Social sustainability certifications:

- SGE21: It is the first European standard that allows to implement, audit and certify an ethical and socially responsible management system. Regarding OSH issues, it focuses on ensuring that the human rights of workers are respected, promoting equal opportunities, the work life balance and safety at work.
- GLOBALG.A.P. GRASP: it is an additional and voluntary module developed by GLOBALG.A.P. to evaluate social practices on the farm, addressing specific issues relating to the health, safety and welfare of workers. It is also a tool that helps producers to demonstrate its compliance with labor legislation, both international as national.
- SMETA: developed by SEDEX, it is s an ethical and social audit that is used widely for supply chain risk control which evaluates compliance with principles of social responsibility in all processes of the organization.

Food quality and safety, environmental and social certifications:

- Integrated Production: already explained in the focal company's point.

The focal firm just required the Integrated Production certification as for the other suppliers in the sample but Supplier 3 benefited from other certifications requested by other buyers.

Description of the applied relational contractual governance practices

The informal relationship between the focal firm and Supplier 3 has been interrupted due to the change in the management of large suppliers by the focal firm. Thus, the long term and trustful relationship developed in the years by the focal firm and Supplier was stopped.

Effect of supply chain management practices on OSH and working conditions

Supply chain governance benefits

Food production practices are quite standardized thanks to the higher production volumes of Supplier 3 and the different certifications standards implemented. This might overall benefits OSH and working conditions are operations in this large supplier are more controlled by third party certifications and several international buyers.

Involvement and experience of workers

Usually, all the suggestions of the workers are channelled through the worker council. According to the chairman of the works council, some of the workers go directly to the human resources department, but some others prefer to refer to him: *“they can find me at the sink, washing my hands and we make a 10-second comment and I take care of the issue... with me they might perceive more comfort and closeness”*.

Workers are indirectly involved in the management of the company through unions. Internally they have a worker council composed by a chairman, a secretary and eight members. Decisions are democratically taken among the members of the council. If needed for certain decisions, they can also convene an assembly with all workers. In addition, if workers have any question or doubt about permissions and medical absences or other work-related matters, the council solves them.

During the summer period when demand is higher, Supplier 3 needs extra workforce and hires workers coming from Colombia and Rumania in addition to local workers. In their facilities, they have 150 accommodation places for these temporary workers to stay there for the time that the company requires their work. This worker accommodation in the case of workers employed in the plantations but not in processing plants as in the case of Supplier 3 (Collective agreement for the industry of fruit collection, storage, handling, sales of vegetables in the place where they operate). However, Supplier 3 decided to offer such service because they already built the facilities some years ago with the help of a public subsidy they received from the government.

The union representatives in the company are at the disposal of these workers for any need that may arise.

Dyad 4: Focal company – Sub-Supplier 1 – Supplier A

Supplier 1's Supplier A is a family farm that produces vegetables (endive, carrot, cabbage, zucchini, bean, celery and trocadero lettuce). In the farm, there are 4 or 5 full-time workers (depending on the season) and there are also both owners (father and son) working there (the father will retire in two years). They sell their products to two different cooperatives located in the same region: Supplier 1 to which they provide products certified with Integrated Production certification; and another cooperative to which they provide vegetables certified with GLOBALG.A.P., LEAF or GRASP since those then will be destined for the European market.

Supplier A and Supplier 1 have a long-term relation that started when the today's owner was a child and his grandfather started the commercial relation with them. He explains how working with them is the best alternative they have. As he puts it: *“We have no choice here, but to take them [the vegetables] to the cooperative. What do you have left? A wholesale market? We have an hour's drive, there are already companies that do this job, but in the end you know all the farmers, you talk to everyone... In the wholesale market, you have to buy the box [a special one that they impose], then they deduct the commission, the hours you lose from work to go there, in the end, the prices... are the same or even worse”*.

OSH and working conditions challenges specific to the activities undertaken by supplier

Supplier A (as well as most of the farmers) faces some challenges regarding OSH and working conditions in the picking vegetables as it is not possible to implement automation due to the small size of the farm. In the owner's words: *“here it is impossible. It's impossible here. This is all manual”*. He also states: *“In the field, everything is planted in the ground. There are no miracles”*.

Thus, he points out how the fact of being crouched all day as well as the effects of weather conditions (such as rain, which requires them to put on a raincoat and boots, to do tasks inside the greenhouse tunnels or even to stop working that day) is something that they have to deal with.

Description of the applied contractual governance practices

Contractual agreements

There is no formalized contract between Supplier 1 and Supplier A regarding their commercial relationship. However, there is formal membership and Supplier A had to pay of 100€ when they joined the cooperative of Supplier 1. Additionally, Supplier A has to pay a quota to use the technical services offered by the Supplier 1.

Certifications

Supplier A has certifications also regarding OSH aspects as requested by Supplier 1 and other buyers that cascades the requests of supermarkets to the farmers.

Regarding Supplier 1 requirements, as mentioned above, Supplier A is certified with “Integrated Production” and they are thus also audited in some concrete OSH aspects.

In general, regarding certifications, the owner of Supplier A explains that the motivation to get certified is to economically survive.

Monitoring and audits

Supplier 1 mainly focuses on monitoring requirements and compliance related to product quality. Orders received by the Supplier 1 are inspected by the workers at the warehouse and if there are some nonconformities, the farmer is notified, and the products are given back to them.

Description of the applied relational governance practices

Communication

Communication takes place on a very informal level. There are two main aspects on which they communicate: one is the order management and the other one is the field management. From Supplier 1, the technical team daily controls when it is the proper moment to either cut or pick all the vegetables planted by Supplier A and communicate it to them.

Monitoring requirements and follow up on non-compliances

Supplier 1 mainly focuses on monitoring requirements and compliance related to product quality. Orders received by the Supplier 1 are inspected by the workers at the warehouse and if there are some nonconformities, the farmer is notified, and the products are given back to them.

Difference to from other clients

Supplier 1 act as intermediary between the farmers -such as Supplier A- that are member of the cooperative, and the supermarkets. Supplier A positively evaluates the efforts of Supplier 1 in the negotiation with the supermarkets. However, given the bargaining power of the supermarket, Supplier 1 is often forced to accept the prices that supermarkets propose or set and pass them to Supplier A and the other cooperative members.

Effect of supply chain management practices on OSH and working conditions

Supply chain governance benefits

Supplier A has certifications including OSH aspects as requested by Supplier 1 and other buyers that cascades the requests of supermarkets to the farmers.

Regarding Supplier 1 requirements, as mentioned above, Supplier A is certified with “Integrated Production” and they are thus also audited in some concrete OSH aspects.

In general, with regard to certifications, the owner of Supplier A says that the motivation to get certified is to economically survive.

Involvement and experience of workers

The working conditions at the field are hard. As the owner explains: *“This is vocational. Whoever comes here to get rich, has to forget it. And whoever doesn't want to work, too. Here you have to hang out, you have to hang out either you like it or you don't. Because you would be disabused, because here, here there are no hours. The workers finish at 6:00 in the afternoon, but I'm still here at 8:30 in the evening.”*

When something is wrong or needs to be improved, the workers talk to the owner and they solve the problem.

Supplier A does not have any type of union representation as they are not required by law.

Dyad 5: Focal company – Sub-Supplier 1 – Supplier B

Supplier 1's Supplier B is a family farm that produces vegetables (tomato, cucumber, parsley, and spinach among others). There are 8 people working on the farm (4 people from the family and 4 full-time workers). They sell their products to two different types of costumers. The first one is supermarkets (and they are in charge of processing the vegetables and distributing to their supermarkets) and the other type of costumer are merchants that owns fruit and vegetable stands in village markets who go directly to the farm to buy the products.

Overall, all the vegetables they sell is distributed in the National market and they are just certified with the “Integrated Production” standard.

The relation between Supplier B and Supplier 1 started five years ago. Some representatives of Supplier 1 showed up one day at the Supplier B's facilities to propose them to cultivate parsley for them because in the area where Supplier 1's other suppliers are located parsley does not yield well. The conditions of the land are not adequate and that makes it impossible for them to have a product of quality. They agreed to do a test to see if it would work and it did. As time went by, they became members of the cooperative by Supplier 1's request. Nowadays, they also sell them tomato and cucumber.

The main difference between being just a supplier or a member of Supplier 1 cooperative is that in this latter case, Supplier 1 and Supplier B plan jointly the production of Supplier B for those products sold through Supplier 1.

OSH and working conditions challenges specific to the activities undertaken by supplier

Supplier B (as well as most of the farmers) faces some challenges regarding OSH and working conditions. One of the main challenges is the salary the workers receive. However, he explains how it is unfeasible to increase wages due to the costs the company faces. The costs are very high compared to the prices farmers are paid by their buyers. He also explains how the product cost have tripled in the last two years (electricity and petrol especially).

Another challenge that arose in the conversation was automation for harvesting vegetables in the fields. It would significantly improve the musculoskeletal health of the workers. Nevertheless, it seems pretty difficult to implement it since, as he explains, the orographic issues do not allow it (the terrain is not flat and that makes it very difficult to being able to use such a tool with uneven ground).

Description of the applied contractual governance practices

Contractual agreements

In regard to the commercial relationship, there is no formalized contract between the Supplier 1 and Supplier B. However, Supplier B is member of Supplier 1 cooperative and had to pay a fee of 100€ once when they joined the cooperative. As for Supplier A, extra assessment/Technical services are paid separated (around 40€ per month).

Supplier B is in charge of transporting the goods to the Supplier 1's warehouse daily except for the days when something happens with the production (for instance, when the interview took place, the owner explained that they had a virus affecting the parsley crops and because of that he was planning not to go every day as he did not have enough good product).

Monitoring and audits

Random inspections (by law)

A year and a half ago, they received a random inspection (not instigated by a complaint) by the police and they were asked about issues related with work and immigration. They did not receive any type of sanction because everything was in order.

Monitoring requirements and follow up on non-compliances

As for Supplier A, Supplier 1 monitors requirements and non-compliances regarding quality for Supplier B. Orders received by Supplier 1 are inspected by the workers at the warehouse. If the merchandise does not pass the visual quality control, either it is returned to Supplier B or the purchase price will be reduced according to what had been agreed.

Description of the applied relational governance practices

Informal communication

Supplier B usually receives the orders from Supplier 1 daily through WhatsApp. Additionally, they are also communicating through phone calls or by e-mail if the matter requires it.

Training/assistance

In addition, Supplier 1 participates in some aspects related to OSH issues for Supplier B. For instance, Supplier 1 brings them all the posters and emergency measures that would take place in in case of phytosanitary leakage.

Difference from other buyers

If we compare the buyers that Supplier B has, the main difference is that Supplier 1 buys higher volumes. Logistically, they also differ in the fact that, for Supplier 1 is Supplier B who carries the products to their facilities.

Effect of supply chain management practices on OSH and working conditions

Supply chain governance benefits

Overall, we did not observe a direct impact of supply chain governance practice on OSH and working conditions. The only practice including OSH aspects to some extent are certifications. However, the same benefits experience by Suppliers 1 from the long term and understanding relationship between the focal firm and Supplier 1 are transmitted to Supplier 1's B and allows a better planning of activities for the farmers and the workers.

Involvement and experience of workers

Workers in Supplier 1's B are involved systematically in activities related to OSH and working conditions, such as regular training activities. The workers are asked to be proactive in the handling of safety related matters, and there is a very including culture in the company, where the senior management expects workers to voice their thoughts, either in formal safety meetings that are held regularly or on a more informal level.

Most workers are from Africa but have been working for the supplier a long time – on average, workers have been with the supplier more than ten years. The supplier pays its wages as negotiated in the collective agreements.

The working conditions at the field are pretty hard. As the owner puts it: "*It's hard work and it's not worth it*" [...] "*This is a very tiring job, physically and the schedules*". Additionally, he explains that economically it does not worth it neither.

When something is wrong or needs to be improved, the workers talk to the owner and they solve the problem.

Supplier B doesn't have any type of union representation as they are not required by law.

Construction Case 1, Denmark

Introduction

The construction industry employs roughly 6 percent of the entire EU-workforce, and accounts for around 10 percent of the GDP of the entire European union. The construction sector is an umbrella term that encompasses everything from larger infrastructural projects such as railways, bridges, and tunnels ('civil engineering'); and small domestic renovation projects. The main actors in the sector are obviously the companies that plan, develop, and build structures or buildings, however there are other actors such as manufacturing companies, engineers, and consultants as well as a myriad of various companies doing all kind of supporting work coming from other sectors. In fact, the sector has a so-called multiplier effect: for each person working in the construction sector, there are two further persons working in other sectors, according to The European Construction Federation (FIEC). Therefore, the sector is of major importance to the European economy and labour market. To further emphasise this point, almost all companies and public organizations will at one point or another, be a client in a construction project. Whether it is a small renovation of the office of an SME, or a huge infrastructural mega-project, the client role is itself an important part of the supply chain in a construction project. Therefore, an important part of the relationships that can improve and secure a better working environment in the sector. In this study we seek to illuminate how a building client can act as a catalyst of OSH-activities in a Danish mega-project.

In Denmark the construction sector employed 203.366 people all in all, which corresponds to around 6.5 percent of the country's workforce⁴³, and is the country's sixth most productive sector⁴⁴. After having recovered from the economic crisis of 2008 and the following recession, the Danish housing sector has experienced an extraordinarily high productivity in 2019, 2020 and 2021. However, there are signs that the housing sector economy is slowing down in the coming years, and the construction sector trade organisation predicts that the housing construction is going to lose some 8.000 jobs over the coming years⁴⁵. The infrastructural construction economy is however predicted to continue the increase in jobs and productivity over the coming years.

The construction sector in Denmark is the most accident-prone sector on the Danish labour market having a relative ratio (RR) of 319 accidents per 10.000 employees, whereas the average RR for the entire labour market is half that number – 151. Furthermore, the construction sector has almost twice as many initiated insurance cases regarding injuries at work (RR=122) against the entire Danish labour market (RR=66). When we look at the types of accidents 'falls and slips' is the largest cause of injuries in the sector, accounting for 32 percent, while 'acute physical overload', 'contact with sharp or pointy objects' and 'getting hit objects or persons' each account for around 20 percent. When it comes to occupational health risks in the sector, muscular-skeletal diseases is by far the most prevailing category, constituting more than a third of the reported occupational diseases. On somewhat distant second and third places are 'hearing and ear related diseases' and respiratory diseases respectively caused by noise and by dust and other airborne particles.

Methodology

The data for this case and the four dyads contained within it, were collected between April and October 2022 by consultants and researchers from the Danish consultancy company Team Working Life LLC. The aim of the study was to uncover the how OSH were managed, and especially what instruments or policies were used to do it, in a large Danish infrastructural project (hereafter The Project), by *the client*,

⁴³ 11-10-2022 *Danmarks Statistik*, @ www.statistikbanken.dk/NABB10

⁴⁴ 11-10-2022 *Danmarks Statistik*, @ www.statistikbanken.dk/NABP10

⁴⁵ DI Analyse 2022, Bygge og Anlægsprognose forår 2022

the main contractor and the two subcontractors respectively. To uncover these so-called *leverage instruments*, we collected the following data.

- Internal and external company documents (See a list below).
- On-site visits: To focal company and to the main contractor.
- Semi-structured interviews: With key actors in focal company, main contractor and sub-contractors (See more below).

Table C 1: Documents

Description of documents from Client
Basis document of OSH with requirements for main contractor's responsibility and planning:
a. In terms of overall regulation and control of OSH on all sites.
b. In terms of mitigation and control of concrete risks on all sites.
Document about agreed changes to the original OSH requirements in the tender. Specifically about coordination between Client and MAIN CONTRACTOR.
Occupational Health and Safety Clause.
Requirements for Monthly Reporting from MAIN CONTRACTOR to Client.
Safety vision from Client.
Letter about participation in Safety orientation from Client to MAIN CONTRACTOR.
Offered safety training courses.
Clients' OSH strategy to board.
Document from tender material about how OSH used to evaluate offers.
Demands about OSH information from MAIN CONTRACTOR in Tender.
Demands about OSH information on SC's in tender.

Table C 2: Interviews overview

Organisation	Interviews
Client	Introductory group interviews: <ul style="list-style-type: none"> ▪ OSH director, head of OSH department and OSH consultant Solo interviews: <ul style="list-style-type: none"> ▪ OSH Director ▪ OSH consultant ▪ Site Coordinator (managing all site managers) ▪ Contract manager

Solo interviews:	
MAIN CONTRACTOR	<ul style="list-style-type: none"> ▪ OSH Manager (in charge of all OSH consultants and managers in MAIN CONTRACTOR). ▪ Employee representative from work team. ▪ Consultant in OSH department (former team leader in work team and regular worker from recruitment agency).
SC1	Team leader and coordinator.
SC2	Safety manager on site.

Due to the busy schedule of the subcontractors, and more importantly that they are working on tight contracts regarding pay and deadlines, it was very hard to get interviews with subcontractors on the project. We therefore only managed to get two subcontractor cases, and therefore only three dyads from the Danish construction sector. Likewise, it was not possible to get employee-representative interviews with the two subcontractors we did manage to make agreements with. In the case of Subcontractor 1 because none of the employees spoke English or Danish, only the team leader who we interviewed. And in the case of Subcontractor 2 because they themselves subcontracted the mounting ventilators to various local electrician firms. Subcontractor 2 only did oversight and supervision of the products. And even though we tried, it was not possible to get access to any of the electrician firms. So alas we only interviewed the safety manager for Subcontractor. However, we did interview two employee representatives from the main contractor. One safety representative and one who had experience both as a regular workman in a crew, and as a team leader in the project.

Case: Overall description – Market-based leverage practices in the supply chain of a Danish infrastructure project

The four dyads from the Danish construction sector all relate to the same project in one of the largest Danish cities. The client here is a public-private company, which is to say that it is structured and operated as a private company, but the ownership is split evenly between the Danish government and several municipalities that are all to benefit from the construction.

The client company have commissioned similar projects in the past, and a lot of their staff as well as their contractors have previously been involved with one or more of their construction projects. The current project was commissioned by the company in 2015, and three main contractors were chosen in 2017 after a round of tendering based on an invitation designed by the company. The three main contractors are each responsible for a part of the project. Main contractor 1 (hereafter MAIN CONTRACTOR1) is responsible for the civil works of the project. A part of MAIN CONTRACTOR1's contract is also all architectural finishes, which means e.g. tiles, carpentry and masonry on all publicly accessible spaces. Main contractors 2 and 3 have the main responsibility for [two other phases of the project]. Each MAIN CONTRACTOR are then responsible for tendering and hiring sub-contractors to their needs in their part of the project. Our case focuses on MAIN CONTRACTOR1 and the supply chain of sub-contractors they employ on the civil works part of the project.

We selected this project after consulting multiple actors and experts in and around the Danish industry. The Client has reputation for being invested in the safety and health on their projects and has in recent years undertaken a large change management process to evolve into a “professionally competent construction client” as the director of OHS formulates it. This means that they among other things employs professional construction consultants in different specialist functions related to different phases and parts of a construction process. Included in here is also several OSH specialists. Furthermore, the Client hired a board of OSH experts from universities and other institutions to counsel them independently and to inspire the professionals in the Clients OSH function. All of this meant that it was

quite an interesting case for us to investigate, since clients in construction projects are not normally so 'hands on' in their OSH activities, and relies more on contractual governance alone, and leaves the OSH efforts to the main contractor and employs hired consultants or OSH specialists outside of their own organisation. As such we found that the case could show both opportunities but also challenges to employ market-based leverage instruments in construction supply chains.

The companies in the dyads

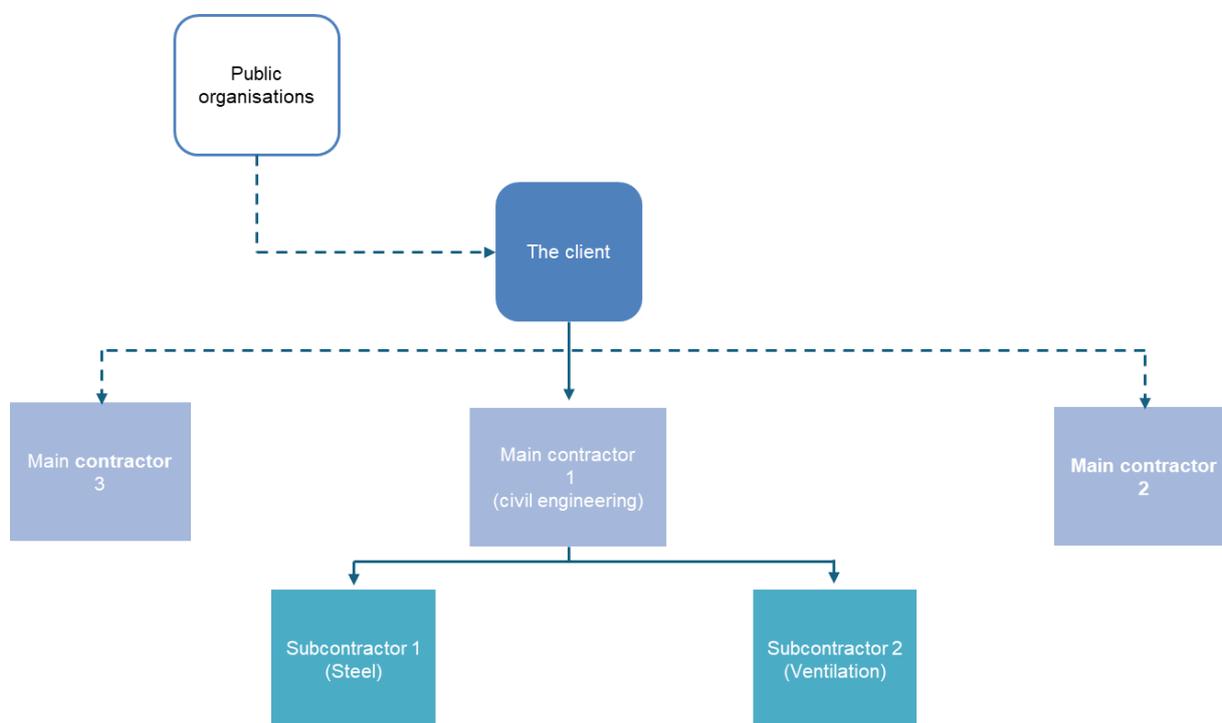
The focal company: The Client is a Danish company, that builds and operates in Denmark. The company has existed in its present form since 2007, where it was founded by a group of public institutions as a publicly owned private company. It is led by a group of four managing directors, each with the responsibility for an area of the company's operations. They have a board of directors with members appointed by the public institutions who owns the company. The Client employs around 300 employees. Their headquarter is in one of the largest cities in Denmark, and houses most of their employees (except the site managers who all are located on of the construction sites). The client is rather conscious about OSH and publishes an annual CSR-report every year with numbers and descriptions of their CSR-efforts, hereunder also OSH. In this there are public numbers on work-related accidents on their construction sites (including from contractors and subcontractors). Furthermore, the Client have two equally prioritised CSR focus areas for every year: One related to climate and one related to OSH. In their annual CSR reporting they report on the degree to which they have been fulfilled. The Client has since their founding in 2007 managed the construction of two large projects that are now complete, two currently active projects, and they have two additional projects planned which are currently going through the initial planning phases, but ground have not been broken on either of them. The Project we are focusing on has a budget around 10 bn Danish kroner (1.34 bn eur).

Main contractor: MAIN CONTRACTOR is a joint venture between two of the world's top ten construction companies (both located in the European Union). Initially a third large construction company was involved as a partner in the joint venture but dropped out before they were awarded the tender. The two partners in the joint venture each bring a field of expertise that is crucial for the project, which is why they were awarded the tender in the first place. One is a leading company in terms of digging, drilling, and constructing underground parts of a transportation network, where the other is leading on architectural finishes of all publicly available spaces. They are, as mentioned above, the main contractor in terms of civil works, which is basically constructing everything in the transportation system, except the actual vehicles and the system that operates them. They employ around 250 persons (small variations occur monthly, as per the Danish CVR registry).

Subcontractor 1: S1 is a Bosnian-Herzegovinian company doing steelworks in general, but more specifically they are the specialists in mounting steel to concrete structures. They do work all over Europe and have around 50 employees in their Danish branch (with Bosnian or Croatian workers) and this branch is exclusively working on the Project. They have been a subcontractor on former construction projects by both the Client and the mother companies of the MAIN CONTRACTOR.

Subcontractor 2: S2 is a Danish company specialising in indoor ventilation and air quality in large structures. They have around 250 employees in Denmark. They produce and deliver the ventilation system on their site in Denmark, and then hire local electricians to install and connect the systems on the construction sites. The firm employ two managers at the Project to supervise the installation, and safety procedures of their subcontractors.

Figure C 9: Visualization of the supply chain. Blue boxes represent 'active' nodes in our case, white boxes represent passive (not a part of our case)



Dyad 1: 'Client' and 'Main contractor'

The two companies do not have a long history of cooperation. Because of the magnitude of the project and the public nature of ownership over Client, the role of main contractor was awarded MAIN CONTRACTOR after a tender and based on their bid. Furthermore, MAIN CONTRACTOR is a joint venture between independent entities, that has been created specifically for this project. However, MAIN CONTRACTOR's OSH manager did have a close working relationship with Client, as he/she also worked as OSH manager on a previous Client project, but for another MAIN CONTRACTOR. However, this meant that he was familiar with a lot of the OSH risks and their solutions. However, he did not have personal relationships with many of the OSH staff in HQ of Client, as they were hired in, at the very end of the previous project.

MAIN CONTRACTOR is the main contractor for the civil works part of the project. That means that they are in charge for the civil works part of the project. MAIN CONTRACTOR must manage the construction workers coming in (most hired through intermediaries such agencies specialised in hiring construction workers in various European countries) and give exact orders as to where and when to do what in all of the major processes such as earth removal, digging, and constructing structures in concrete. Some tasks require specialist knowledge and competences that MAIN CONTRACTOR does not have. In this case they hire subcontractors that can both design, plan and execute the construction of smaller parts such as ventilation or sprinklers.

In the beginning of the project, MAIN CONTRACTOR managed '*the design phase*'. In this phase they had to finish the design outline presented in their bid, involving Client and third parties of experts and authorities. Then of course follows '*the construction phase*', which again was broken down into sub-phases. Finally, they must participate in a final phase called '*trial operations phase*' together with Client and the other two main contractors. In the contract Client and MAIN CONTRACTOR agrees upon a detailed time-schedule with deadlines for all phases and sub-phases.

OSH challenges specific to the activities undertaken by supplier

Accidents and unforeseen events are by far the biggest concern in the kinds of job types present on construction sites. Fall from heights is a major risk since the structures build have potential falls of more than 50 meters, the same goes for getting hit by falling objects. Since the construction sites are often characterized by uneven surfaces, regular slips are also a prevailing risk. If we turn to health risks, dust-particles are a danger to the health of employers working in the project. The same goes for organic solvents and chemicals, that are found in the ground the building sites because of old pollution from earlier periods of industrialization in the area. MSDs are a major cause of concern.

Forms of communication between the parties in the dyad

Regarding the interactions between Client and MAIN CONTRACTOR, most parts of the project have been addressed in the tender documents and the following contract. The primary communication link between Client and MAIN CONTRACTOR is through the site managers. They work directly for Client but have offices on the construction sites (1 site = 1 site manager from Client). The site managers are all supposed to have both competences and discretion to supervise and aid the main contractors' OSH efforts and activities. The site manager participates in weekly safety walks with local OSH managers from contractors and employee representatives.

Furthermore, there is also a weekly safety walk with participation from the project directors from both the client company and the main contractor, where they are pointing out any mistakes or omissions of ie. mandatory PPE-equipment, fences and correct scaffolding or any other safety concern they encounter on the walk. In this activity Project exceeds the legal requirements, which is only a safety walks every 14 days. In this way they seek to demonstrate managerial commitment to safety, and that this commitment goes beyond the safety 'silo' in the companies but extends to the functions and managers of the construction project itself. The idea is to signal to subcontractors, that they are evaluated on this, exactly as with any other KPIs.

The client company has also initiated a so-called 'safety training school'. This describes several various educational courses in safety, all mandatory for different groups on the construction site. That means that everyone who starts working on one of their sites, even as subcontractors on a short assignment, must sit through a mandatory class of four to five hours of safety training. All people in management positions in all contracting companies also have their own workshop and seminar to attend if they want to work on one of the company's projects. This includes everything from team leaders of crews to the highest project managers in multinational construction companies. All of these activities are mandatory in some form in the Danish work environment regulation, but all of them have been increased in Client's activities in terms of resources, and in terms of hours.

Finally, the professionalization of the OSH staff function at the Client's HQ, has ensured that they have professional capacity to investigate accidents at the sites. All OSH managers are trained in the tripod-methodology of accident analysis. All main contractors and subcontractors are contractually bound, to inform HQ of any accident within a short time span. Then Client's OSH managers must decide whether they will insert themselves directly in the process and form an investigation group with the OSH coordinators and managers from the contractors, or whether the root cause analysis is simple and that their direct participation is not necessary, in which case Client will monitor the investigative work rather closely.

Finally, the site managers arrange various informal gatherings for employees and managers of the contracting firms on their sites. One example is a football tournament and barbecue for all employees, while another is a weekly breakfast for all managers present at the site. This, according to Client's site manager coordinator (with the overall responsibility for coordination of site manager's activities in Client), creates a level of trust that makes their job easier, and thus makes employees and managers in contracting firms more likely to heed their advice without resistance or passivity.

Requirements with OSH relevance

There is a extensive number of OSH requirements mentioned in the 'basis' documents, that was part of the contract that Client signed with MAIN CONTRACTOR. There are too many specific requirements to list here, however they are structured in the following way:

1. Overall requirements for OSH related to structure, organisation, and communication.
2. Specific requirements related to specific OSH risks and challenges.

Based on those two documents MAIN CONTRACTOR was required to finalise an OSH plan that laid out the operationalisation of the requirements mentioned above. This plan had to include concrete plans to actions, documentations and communication.

Below you'll find table C3 with all overall requirements and leverage instruments to the MAIN CONTRACTOR categorized as either contractual, relational or hybrid, based on the definitions from our study protocol.

Table C 3: Overall requirements and leverage instruments to the MAIN CONTRACTOR

Contractual	Relational	Hybrid
<p>MAIN CONTRACTOR must adhere to the following standards:</p> <ul style="list-style-type: none"> ▪ Danish WEA act and underlying executive orders. ▪ DS/OHSAS18001:2008 (later replaced by ISO45001). ▪ ILO Convention no. 155 and no. 167 (on OSH and OSH in construction respectively). 	<p>MAIN CONTRACTOR must strive towards the following overall objectives in their OSH system:</p> <ul style="list-style-type: none"> ▪ A proactive safety culture. ▪ Continuous improvement of health and safety performance. ▪ Commitment from senior management. ▪ Open dialogue and a high level of information exchange across the entire project. 	<p>MAIN CONTRACTOR must strive towards the following overall objectives in their OSH system:</p> <ul style="list-style-type: none"> ▪ Avoidance of harmful and hazardous materials and working methods. ▪ No fatalities and serious injuries and incidents. ▪ Minimisation of work-related sick leave. ▪ OHS considerations included in decision making processes.
<p>There are four overall KPI's from the start of the project, that MAIN CONTRACTOR must report in monthly reports to Client from each site. The KPI's include all sites and both MAIN CONTRACTOR and subcontractors.</p> <p>The KPI's are:</p> <ol style="list-style-type: none"> 1. A percentage of workplaces are green, out of the total number of all sites. Green defines 	<p>It is described in the documents that MAIN CONTRACTOR must organize various campaigns and rewards to encourage the employees to be "proactive and visible". These include a "safety champion" award, that is awarded in all work crews and subcontractors to an employee every month. The winner gets a t shirt, or a</p>	<p>MAIN CONTRACTOR has to appoint an OSH organisation manager across the whole project from the very start. This person has to manage all subcontractors in both design and the construction phases.</p>

<p>workplaces that passes internal safety walks without any problems a measure inspired by a template developed by WEA).</p> <p>2. Percentage of attendants in safety meetings in relation to the total no. of invitees.</p> <p>3. Percentage of safety walks with participation of the project managers from MAIN CONTRACTOR and SC in relation to number of total safety walks on the site. This KPI was later removed because it discouraged proactive project managers.</p> <p>4. WEA visits with no requests or improvement notices in relation to total no. of wea visits.</p>	<p>case of beers to share with the colleagues after work.</p> <p>Furthermore, posters and brochures are displayed rather prominently at the construction site and the offices of MAIN CONTRACTOR, encouraging good safety practices, and displaying slogans such as “work safely, home safely”.</p>	
<p>Following documents should be presented when requested by the client:</p> <ul style="list-style-type: none"> ▪ OHS-related activities and scheduled actions. ▪ List of specific OHS-conditions to be aware of in future operation and maintenance. ▪ Minutes of meetings and check-lists. 	<p>The OSH manager from MAIN CONTRACTOR have to participate in a quarterly reference group consisting of the representatives from the social parties in DK, the WEA, Client to discuss improvements and OSH visions.</p>	<p>Must have a policy on health promotion focused on sleep, exercise, smoking, food.</p>
<p>MAIN CONTRACTOR has to document all methods, construction materials, all potentially dangerous work operations and how MAIN CONTRACTOR will mitigate or remove these from the work in a document to Client, to confirm that they are in accordance with legal demands.</p>	<p>MAIN CONTRACTOR must follow these principles when it comes to communication:</p> <ul style="list-style-type: none"> ▪ Ensure effective communication about OSH internally and externally to Client and SC’s. ▪ Ensure all staff on site have at least one translator to their own language, either in the form of a professional 	<ul style="list-style-type: none"> ▪ MAIN CONTRACTOR must appoint qualified staff such as an OSH manager and a number of OSH coordinators managing all the sites. These people must have passed a legally mandatory course in DK for safety coordinators, and the manager must have at least 5 years of experience in the business. Client has to approve the OSH manager. ▪ All subcontractors must appoint a so-called OSH resource person, which must be approved by Client

	<p>translator or a colleague who speaks English.</p> <ul style="list-style-type: none"> ▪ All hardhats must be clearly marked with flags, to show what languages the person speaks. ▪ All key OSH information must be translated into all languages on the construction sites (at times there has been more than 40 languages simultaneously). 	<p>the week before the SC starts on the project. The resource person should likewise pass the mandatory course.</p>
	<p>MAIN CONTRACTOR must focus on the temporary accommodation for all foreign workers. MAIN CONTRACTOR has a duty to arrange or fund social activities at these accommodations.</p>	
<p>The OSH system of the MAIN CONTRACTOR and the SC's has to be audited by Client regularly.</p>		
<p>MAIN CONTRACTOR has to ensure weekly safety walk with participation of site manager from Client and employee representatives.</p>		

Client's rights and intervention procedures

There are numerous sanctions and procedure Client can take if MAIN CONTRACTOR conduct their business in an unsafe manner.

First of all, they can always terminate the work at a site or a part of the site immediately, if they see something that constitutes an acute risk. However, they can also do this, if MAIN CONTRACTOR (or SCs) repeatedly has not heeded a warning or an improvement notice. They are, however, not very fond of using this tool, as it costs a lot, in time, money and resources.

If they deem it necessary, and a risk has not been mitigated after warnings and improvement notices, Client has a third party come in an mitigate or remove the danger at the expense of the contractor, this has, to our knowledge, not been used yet on the project.

If a SC repeatedly causes risks, or refuses to mitigate one, Client can demand that the SC is terminated from the project.

There is also the possibility to issue an improvement notice, to the contractors. This gives them seven days to follow up on the notice with a plan to have the risk mitigated or removed. And if the plan is approved, continue to follow the plan for mitigation or removal. Both in MAIN CONTRACTOR and Client these are referred to as a 'yellow card', meaning that they are a "free" warning before the fine is possible.

Fines, which the Client can issue to MAIN CONTRACTOR, is around 2500 euros per fine. These are used if MAIN CONTRACTOR has not followed through after seven days of an improvement notice. The money is withheld from the payment to MAIN CONTRACTOR until the problem is fixed, and will, after an approval from Client, be paid without interests.

Main contractor's perception of the OSH instruments

Even though Client management and OSH professionals maintains that the whole system is conceived, operated and monitored from Client, MAIN CONTRACTOR maintain that a lot of the actual expertise and the actual content of all the activities and systems are stemming from MAIN CONTRACTORs safety expertise. *"Well, when I came, they [client] were inspired. They had a vision. And there is some in the contract about this stuff, but it is very broad. But it was entirely up to us [Main Contractor] what type of package we put together. And we put together a very comprehensive package"*

Even though the approach from Client contains both 'carrots, sermons and sticks' when it comes to encouragement, MAIN CONTRACTOR have both a project director and an OSH manager who mostly favours stricter disciplinary measures when it comes to reinforcing OSH at their sites. This also means that the main contractors OSHJ team does not particularly think the more cooperative parts of the system and neither for the educational aspects of the Clients requirements by MAIN CONTRACTORs OSH manager works well He [the OSH manager for the Main Contractor] call the 'softer' approach: *"the Danish you know...kumbaya way of doing things"* (Kumbaya is a reference to a song, often associated with an approach to management and pedagogy centered on cooperation and not discipline). However, it seems when talking to both employees that the introductory course at least influenced the safety awareness in the workers of the MAIN CONTRACTOR.

The MAIN CONTRACTOR's approach to safety is very focused on the human factor – on human error. This is an experience the OSH manager has from earlier projects he has managed, but it is also the way that safety is managed in the main contractor. Thereby he is also implying that he does not believe in all of the Client's visions and thoughts on the project.

Effect of supply chain practices

All around the Client representatives and MAIN CONTRACTOR managers and employees are rather pleased with the efforts and results. All the evidence also points to this, as well as the statements from interviewees.

The MAIN CONTRACTOR recognises that it is because of Clients new visions and strategies, that they have such a good and thorough (according to them) system in place. It goes beyond what one would normally expect as the standard in such projects. This is further confirmed by various SCs in interviews, that the level and awareness on this project is higher than can be expected.

Safety is prioritized over efficiency. Even though time is of an essence in construction projects, there are nothing that suggest to us, that safety is compromised intentionally by chance-taking or pressure to finish tasks quicker. At least not from either Client or from MAIN CONTRACTOR. This again is also confirmed by interviews with employee representatives (and SCs).

Involvement of workers

There is nothing to suggest that worker involvement is out of the ordinary on this project. On the contrary, the safety management is rather top-down and managed through sticks and carrots. Of course, there are involvement of representatives, but they primarily seem to function as a form of bridge between

the employees and the OSH coordinators. They report if anything is mentioned by colleagues, and they bring back any news or changes in procedure from meetings with coordinators and OSH managers. They also participate in safety walks. However, we do not hear any evidence pointing to any safety initiatives or ideas stemming from the employees' side.

The unions are involved, in so far as they have meetings with management. Both in MAIN CONTRACTOR alone, but also in the reference group which we mentioned in an earlier section. However, we do not hear that they play a significant role in any safety planning or initiatives on site.

Dyad 2: Main contractor and steel company (Subcontractor 1)

As in case 1, the companies in this dyad, did not have a long-established formal subcontractor relationship. That would again be impossible, due to the temporary character of MAIN CONTRACTOR as a company. However, SC1 did do projects with the founders of the project. Also, the OSH manager knew them from other projects. We are told that SC1 is regarded as one of the market leaders in connect steel structures and concrete structures, and therefore were chosen to do the procedures at Project by MAIN CONTRACTOR. They also worked with the Client on an earlier project.

OSH challenges specific to the activities undertaken by supplier

Besides the risks of falling from heights, concrete dust particles, and polluted earth, there are in this dyad the specific risks related to welding.

Supply chain management practices

In this dyad the following communication forms exist between SC1 and MAIN CONTRACTOR:

- They can receive notices from either MAIN CONTRACTOR or Client if anyone from either of the companies sees a SC1 employee doing something unsafe.
 - The notices have normally just a verbal form, where one of the OSH managers from MAIN CONTRACTOR or the site manager from Client says to the team leader or to the employees directly *“hey, you guys should put on your visors”*.
 - If it is a more complex problem, or if the verbal notification no effect, they can get a written improvement notice (described in Dyad1).
- Weekly safety walks with the OSH managers from MAIN CONTRACTOR, the site manager from Client, team leader from SC1 and the other subcontractors' managers.
- Project directors' safety walk. The project directors comes through all workplaces on their safety walks, and
- SC1 use the MAIN CONTRACTOR's OSH professionals as a safety resource and comes to them with all kinds of questions. *“They will always answer. It is never like [makes dismissive hand sign] go away! That is not my problem! Even when he [the OSH professional] is ninety percent sure, he will call WEA [work environment authorities] and ask to be sure.”*
- Every month the MAIN CONTRACTOR and the SC names one employee “safety hero of the month” which can be in the form of a sweatshirt or a case of beer for the entire crew.
- Also, the safety academy is a channel of communication, because all SC employees must attend the introductory course as well.
- Finally, there are posters and screens with safety related messages all over the building site.

Requirements with OSH relevance

Besides the requirements mentioned in Dyad1, that all is mandatory for subcontractors as well, there are some additional that are only for subcontractors.

- There must be a safety component of every Toolbox meeting (morning meeting on a workplace).

- Every new subcontractor must be approved by Client before they are hired. Therefore, SC's must fill out a questionnaire. The MAIN CONTRACTOR can't employ them until Client has approved of the responses. The questionnaires contain questions on following subjects:
 - Membership of Danish employer organisation or adopter agreement (agreement on collective agreement adaptation even though no membership of employer's association).
 - Collective bargains for employees.
 - SC's involvement in industrial arbitration cases in the last five years.
 - Any verdicts or fines from WEA in last 5 years.
 - All accidents with more than one day absence in the last two years.
 - System for registration of near-misses.
 - Code of conduct.
 - Anti-bribery.

Intervention procedures

Fines, which the MAIN CONTRACTOR can issue to SC's, is around 2500 euros per fine. These are used if SC has not followed through after seven days of an improvement notice. The money is withheld from the payment to MAIN CONTRACTOR until the problem is fixed, and will, after an approval from Client, be paid without interests.

In the end repeated transgressions or refusals to mitigate risks or improve on given notices, mean that the SC are terminated.

Individual employees from subcontractors can be banned from site by MAIN CONTRACTOR or by Client.

SC1's perception of the OSH instruments

All-round positive. Contrary to MAIN CONTRACTOR's OSH manager, who especially rated the disciplinary measures as efficient in relation to SCs, SC1 actually mentions that it is the relational and friendly tone that is especially effective when it comes to making sure that employees are following the rules. The friendly tone makes sure that the employees are not complaining when they get an order to put the visor on, or to make sure that the fence is correct. This goes a long way to make most of the situations cooperative instead of conflictual.

SC1 is also praising the messages of safety that is present on the site. Both in terms of the safety academy introductory course, and the messaging on posters and screens. SC1 OSH manager says the latter are "*adding fuel to the fire*" – the fire being the former.

SC1 OSH manager says that it is a high standard of OSH on Project than most other building sites. Not just in other countries, but also in other construction projects in Denmark that he has knowledge of.

Effect of supply chain practices

Based on the abovementioned perception and what both SC1 and MAIN CONTRACTOR is saying in interviews, the evidence points to that the total orchestration of leverage instruments from top to bottom has some effect on the safety performance.

Involvement of workers

The workers are involved in the daily toolbox meetings, and there is always an OSH representative from the workgroups present when there is the weekly safety walk. However, there is not a lot of trade unionism and actions by the AMO representative without the management. The OSH manager thinks that this is caused by everyone living together in the employee accommodation provided by Client and meets every day for toolbox meetings. So in that sense it is more of a family-dynamic between local SC

management and the employees, more than a conflictual situation, where there is a stronger emphasis on employee autonomy and participation in the decisions.

Dyad 3: Main contractor and ventilation company (Subcontractor 2)

As in case 2, the companies in this dyad, did not have a long-established formal subcontractor relationship, because of the temporary character of MAIN CONTRACTOR as a company. Also, the OSH manager knew them from the last Client project that he also worked on.

OSH challenges specific to the activities undertaken by supplier

Besides the risks of falling from heights, concrete dust particles, and polluted earth. Furthermore, heavy materials from the component of the ventilators are also a major issue. They need lifting equipment.

Supply chain management practices

- Forms of communication between the parties in the dyad
 - Same as in case 2.
- Requirements with OSH relevance
 - Same as in case 2.
- Intervention procedures
 - Same as in case 2.

SC1's perception of the OSH instruments

SC2 is overall happy with the relationship with the MAIN CONTRACTOR and with Client regarding OSH. They only use templates and tools from MAIN CONTRACTOR and Client in terms of OSH (risk assessment tools etc.). Even though they, as a bigger project manufacturing company, have their own templates etc. developed.

SC2 also says that all procedures and templates were already decided before the project. Everything was in the project contract with MAIN CONTRACTOR before they started.

However, he also talks about how to handle when new installation subcontractors are coming in. SC2 will control the future work area together with an OSH professional from MAIN CONTRACTOR. Then they control access to the area, where to place PPE and lifting equipment and so forth. If it is larger team coming in, they have a meeting beforehand.

SC2 describes most meetings and relations as *"okay, but everyone is looking out for their own interest"*. Thereby it is implied that relational forms of government is not as important in this dyad, as in Dyad 2.

Effect of supply chain practices

Based on the abovementioned perception and what both SC2 and MAIN CONTRACTOR reporting in interviews, the evidence points to that the total orchestration of leverage instruments from top to bottom has some effect on the safety performance. When asked the SC2 OSH manager answers that MAIN CONTRACTOR always put safety on top of priorities, over time or money.

Involvement of workers

None as SC2 does not have any blue-collar workers on site. Only subcontractors who mostly are very small independent electricians or companies with one or two employees.

Construction, Case 2, Ireland

Introduction – the focal company

The focal company selected is an Irish family-owned business that was established over 100 years ago. Currently they have over 1,700 employees in Ireland. In addition to working in Ireland, the focal company also delivers projects across Europe. The company is delivering a combination of commercial, residential, and major infrastructure projects, with a focus on the development of modern Ireland.

The focal company values supply chain partnerships, as subcontractors play an important role in assisting with delivering high-quality for the end client. Various practices have been implemented by the focal company to maintain sustainable collaborations with subcontractors. For example, the focal company has an annual supply chain awards event to recognise supply chain partners for their excellence and contribution in many areas including OHS.

Next, we introduce the focal company's supply chain management practices in two phases, before and after signing the contract with suppliers /subcontractors. OSH is not independently considered in the tendering process, but once the construction phase begins, OSH compliance will be scored as an integral part to evaluate subcontractors' overall performance. The focal company uses the ISO 45001 standard for OSH management internally, and subcontractors must comply with the standard.

Before Singing the Contract

The focal company tends to establish a long-term partnership with subcontractors, using the same subcontractors on multiple projects. For prospective suppliers / subcontractors, a prequalification survey is distributed to collect information such as the company's profile, product / service quality, previous safety performance including accidents, certifications, training, and insurance. The evaluation of product / service quality is usually assisted by a quality surveyor. For equipment or materials suppliers the survey questions about quality standards of the products include OSH elements, such as ethical sourcing. For subcontractors who would be responsible for a work package with a clearly defined scope, specific questions about OSH related certifications are not in the survey. However, companies with such certifications would be more likely to be selected. The OSH related certifications commonly used in Irish construction sector are:

- ISO 45001: a widely shared OSH standard – the replacement of previous OHSAS 18001 ⁴⁶.
- ISO 9001: a certification scheme mainly concerning quality management, but also integrating OSH considerations ⁴⁷.
- Safe-T-cert: a safety management system accreditation scheme based on the International Labour Office Guidelines on Occupational Safety and Health Management Systems, recognised in the Republic of Ireland by the Government Construction Contracts Committee ⁴⁸.

Additionally, subcontractors are asked whether they are registered to any trade or professional bodies. For example, companies registered with the Construction Industry Register Ireland (CIRI) are regarded as competent and capable to deliver projects in multiple aspects including OSH. Members must continually meet the standards, including basic safety standards, to renew the registration annually ⁴⁹.

The prequalification survey also asks how subcontractors meet training requirements at all levels. In Ireland, all construction workers are legally bound to hold a valid Safe Pass Registration Card which indicates they have a basic level of construction safety training. Workers who undertake specified safety critical duties must also have valid Construction Skills Certification Scheme registration cards, or the

⁴⁶ <https://www.nqa.com/en-si/certification/sectors/construction>

⁴⁷ <https://www.nqa.com/en-si/certification/sectors/construction>

⁴⁸ <https://safe-t-cert.ie/>

⁴⁹ <https://www.ciri.ie/>

equivalent. Both Safe Pass and relevant skill certification registration cards can be obtained after receiving training from local the SOLAS ⁵⁰ services. Meanwhile, managers on construction projects in Ireland are required to receive specific training in regard to their roles, such as the Institution of Occupational Safety and Health Managing Safety in Construction Course ⁵¹, and CIF Site Supervisor Safety Programme ⁵².

The prequalification survey is used as a reference to assess company competence even though past performance may not be representative in certain cases. For example, the focal company's OSH director indicated that suppliers / subcontractors would not be excluded purely because they had records of serious accidents. If the suppliers / subcontractors had learned from their past accidents or near-misses, they were deemed as more experienced in the field which may gain the opportunity to be selected. After assessing the overall delivery capacity, a series of documents, including OSH guides, are provided by the focal company to communicate expectations with subcontractors. The focal company will only sign a contract with suppliers who can / agree to meet the given standards. These standards are then the minimal expectation to be a supplier / subcontractor for the focal company; tenders are won by the subcontractor who meets these expectations and has the best price.

After Contract

Supply chain practices

Giving / Receiving Orders

Orders are planned in advance and managed through an information system which can be accessed by both the focal company and the subcontractor. On a day-to-day basis, the planned orders may be modified subject to the requirements from the focal company's client or due to uncertainties that occur; such as a weather-based delay. These circumstances will be communicated with subcontractors, and the orders can be updated through the information system.

When the construction phase begins, a daily whiteboard meeting involving managers of all subcontractors will be held on site by the focal company to brief everyone in person (also applied during the pandemic) on the day's planned work. Upon completion / partial completion of a work package, the focal company's quality surveyor will examine the deliverables on site from multiple aspects. If deliverables do not meet the agreed standards, further actions from subcontractors will be required in the given period before being accepted. Currently, multiple software packages which can be integrated into one dashboard to show the whole picture, are being used by the focal company to manage project delivery. The focal company is planning to replace the current systems with a single integrated software solution to manage the project from procurement to final delivery.

Overall Supply Chain Performance Monitoring

Key performance indicators (KPIs) for subcontractors to fulfil are tracked in the focal company's online system to supervise multiple aspects of performance. The fulfilment of KPIs is scored for each subcontractor in a quantitative approach according to a set of established standards, and those with low scores are warned of the risk of losing current and potential future work as a subcontractor with the focal company. Thus, once the suppliers / subcontractors have worked with the focal company, a detailed performance record of is stored in the database to be referenced in the future procurement process. The aspects that are evaluated include:

- Pre-contract service;
- Performance of the service;

⁵⁰ SOLAS (An tSeirbhís Oideachais Leanúnaigh agus Scileanna, lit. 'Further Education and Skills Service') is a state agency in Ireland, established in 2013 under the Further Education and Training Act as an agency of the Department of Further and Higher Education, Research, Innovation and Science.

⁵¹ <https://www.cmse.ie/iosh-safety-health-and-environment-for-construction-site-managers-course-programme/>

⁵² <https://ciftraining.ie/product/site-supervisor-safety-training/>

- Adequate resources;
- Quality;
- Strong site management;
- Design input/Innovation ideas;
- Problem solving;
- Health and Safety;
- Skills Base;
- Environmental; and
- Commercial.

The weight given to each aspect varies and the algorithm to calculate scores is adjusted on the basis of annual review.

OSH Practices

The focal company has an accredited ISO 45001 OSH management system. This system is structured by 30 series, each covering a specific element of OSH. Depending on the nature of the OSH theme / domain, a varying number of procedures, forms and guidance notes are provided. The focal company's OSH Policy Statement which specifies the OSH requirements and expectations is available in the supply chain system. Subcontractors are required to familiarise themselves with the OSH Policy Statement, as a precursor document to the OSH Policy, before starting work at any job site. The procedures detail specific requirements and assign responsibilities for role and duty holders. To support procedures, a range of forms in a variety of formats can be completed by hand or electronically. The focal company acknowledges that they require a 'heavy' amount paperwork for the suppliers / subcontractors to complete. But the system provides clear guidance as to which forms are applicable to the work package to be delivered. Guidance documents are also available to support procedures and forms, providing information on how to interpret and comply with the requirements. In addition, each subcontractor's supervisor who leads the work package is required to attend a Pre-Start OSH Meeting, as a part of the early planning process.

Risk Assessment

Subcontractors are required to submit a risk assessment and a method statement for each activity, using the templates provided by the focal company. The paperwork is required to be submitted at least 14 days before work commences, for approval by the focal company. If tasks are longer or repetitive, the paperwork only has to be completed on weekly intervals.

Training

In addition to the basic training required by the legislation, subcontractors' workers are mandated to receive a two-stage induction and orientation, which is available in various languages. The first stage of the process involves an online induction which takes approximately an hour to complete and is valid for one year. Only workers who successfully passed the examination at the end of the induction, can gain a safety pass to access to the construction site. The workers' information would be imported to the system, which is controlled by a facial recognition camera on the site entrance. The system was outsourced by a third-party solution provider, which is responsible for protecting the workers' data from both contractor and subcontractors. The second stage of induction is an office or project specific orientation, which is required at the specific location and may be repeated periodically as the project progresses.

Workers involving in specific hazardous tasks are required to take relevant training before conducting these activities on site. The workers' training records are documented by their subcontractors' OSH professionals and must be submitted to the focal company as proof of working competence. Similarly, operators not able to provide the appropriate evidence of competency will not be permitted to use or operate certain equipment.

PPE

The focal company has the minimum PPE requirements (safety helmet, glasses; gloves; Hi-Vis clothing; and safety boots) for all workers on site. The subcontractors are required to provide their own workers with PPE that complies with the focal company's standard. Additional PPE may also be required for specific activities as determined by a risk assessment.

Permits

A variety of permits are utilised to control risks. To enter work areas with a significant risk, subcontractors are required to apply for a permit from the focal company in advance. Subcontractors must have the correct permit approved 48 hours prior to when the work is due to commence.

Audits / Inspections

Subcontractors are expected to perform audits regularly and submit a report to the focal company for feedback. If necessary, subcontractors are required to take actions within the specified time for risk control. The number of audits varies depending on scale of the subcontractor's work package (e.g., number of workers on site). A weekly audit is generally the minimum that is required to be performed by each subcontractor's OSH officer. In addition, the focal company has inspection mechanisms which includes OSH team's frequent site walks and director engagement tours. The focal company expects support from subcontractors in these activities.

OSH Behavioural Code

To monitor safety compliance, the focal company's OHS team based on site will frequently walk around and check if subcontractors' workers are complying with safety practices. The focal company rewards positive OSH behaviours and deters unacceptable behaviours through an escalating scale of sanction:

- Green Notices are issued when behaviour exceeds expectations. Recipients of green notices will be considered for reward or recognition when the behaviour is considered proactive or exceptional.
- Yellow Notices are issued when behaviour results in a breach of rules in relation to behaviours not posing an immediate serious and imminent risk of serious injury to the individual or others affected by the action/inaction.
- Red Notices are issued where the action or inaction poses a serious and imminent risk of serious injury to the individual or others affected by the action/inaction, or the behaviour is a clear and obvious breach of a clearly defined and unambiguous rule or requirement. They will also be issued when a third Yellow Notice is issued to the same individual within three months.

Workers who consistently comply with safety requirements would have chance to win a 50-euro voucher as an incentive provided by the focal company, while workers who are consistently violating the rules will be banned from working for three days.

Working condition maintenance

If a subcontractor does not maintain housekeeping to the agreed standard, a 'clean up notice' will be issued by the focal company. If the further actions are not taken within the given timeframe, the focal company will clean the area on behalf of the subcontractor. However, the subcontractor will be charged the for the cost of cleaning up.

OSH Performance Monitoring

When a worker is found to have violated safety rules, the subcontractor is given a warning with a yellow notice, or a red card, depending on the severity of the violation. On the contrary, if a worker's behaviour contributes to a positive safety climate on site, a green notice would be issued to the subcontractor. The number of the notices would be converted to scores to be deducted or added when evaluating the

subcontractor's OSH performance. A subcontractor's OSH performance is evaluated using a Likert scale developed by the focal company, including the following aspects:

- Risk assessments and method statements;
- The time taken on delivery completion and quality;
- Attendance at health and safety meetings and whiteboard meetings;
- Compliance with Personal Protective Equipment (PPE) use and site rules;
- Compliance with working at height rules;
- Condition of work area;
- Toolbox talks;
- Control of permits; and
- Green, yellow and red cards.

Accident Reporting

Subcontractors are required to report any safety events that occur, including incidents, accidents or near-misses, to the online platform within 30 minutes. The area where the event occurred will be closed by the focal company and all the subcontractors working in that area have to pause their work until the issues are resolved. If the safety issues were not caused by the subcontractor, the subcontractor's workers would be paid during the safety check period. Similarly, the relevant indicators would be recorded in the focal company's system, including working hours, inductions, toolbox talks, lost time accidents, medical treatments, and HSA reportable events. The records will be considered during the next tender which has an influence on the subcontractor's opportunity to collaborate with the focal company in the future. To note, the number of accidents reported is not an indicator for evaluating subcontractors' OSH Performance either at organisational or individual level. Hence, the measures to deter undesirable behaviours should not directly lead to underreporting.

OSH Engagement

Subcontractors' proposals for changing or derogating certain OSH approaches are welcomed by the focal company for the purpose of customizing procedures to the specific project and improving efficiency. The focal company has a formal change management and derogation procedure. In addition, subcontractors are encouraged to attend the focal company's monthly health & safety committees' meetings.

Subcontractors' workers are encouraged to report safety concerns or advice on improving OSH, either through safety representatives on site, or through scanning a QR code on site to report anonymously.

The **focal company** is one of the largest Irish main / general contractors. The focal company has a well-recognised OSH reputation nationally and has won numerous awards. To meet sustainable development goals in the long term, such as reducing their carbon footprint and caring for the environment, the focal company has been actively engaging with the community and exploring innovative sustainable designs using digital technology.

The values of the focal company which are considered as core to maintaining a sustainable business are care, integrity and excellence. The company seeks to build a long-term relationship with a fixed group of supply chain partners to pursue mutual benefits.

The focal company holds an annual 'supply chain awards' including an award category called 'health, safety & wellbeing award' to incentivise suppliers / sub-contractors with outstanding performance.

Certifications: ISO 14001; ISO 45001; ISO 50001; and ISO 9001.

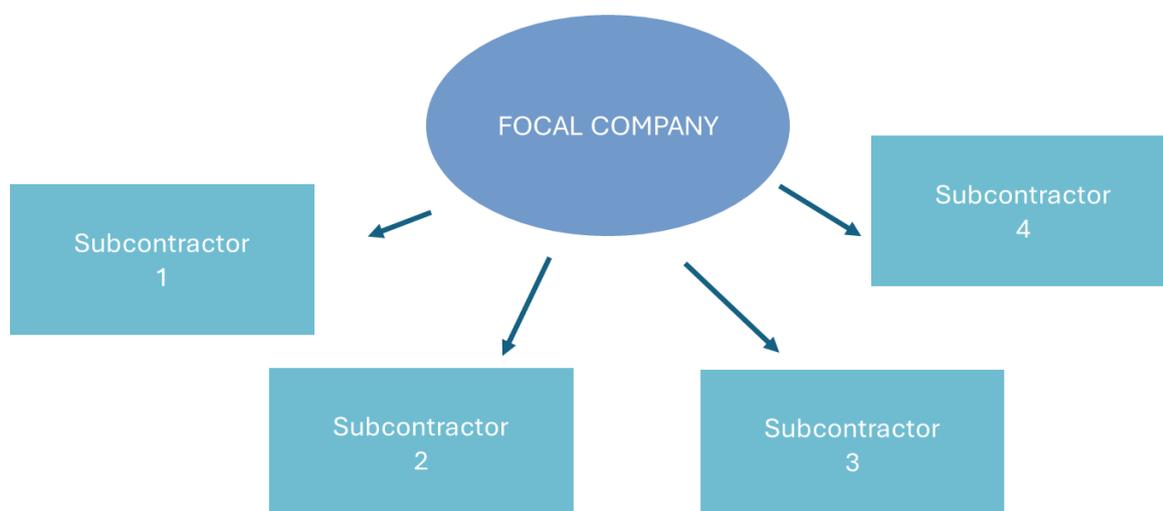
<p>Subcontractor 1</p>	<p>It was founded in the last twenty years and specialises in formwork solutions for reinforced concrete frame requirements. The subcontractor has previously collaborated with the focal company on other projects. The company has less than 100 employees, and employs staff from anywhere in the world, as well as their own subcontractors. This selected project is one of the biggest that subcontractor 1 has been involved in (based on information provided by their site manager). Currently, the company is responsible for formwork service on site, with a risk from working at height.</p> <p>Certifications: Not found.</p>
<p>Subcontractor 2</p>	<p>It was founded in over 40 years ago and provides services in the design, engineering, manufacturing, installation and maintenance of architectural systems. The company currently has business in both Ireland and UK, with over 500 employees. In recent years, Subcontractor 2 has won multiple awards and has become one of the biggest architectural systems companies in Ireland.</p> <p>As a long-term supply chain partner, Subcontractor 2 also provided these services to a previous office complex project with the focal company.</p> <p>Certifications: ISO 14001; ISO 45001; and ISO 9001.</p>
<p>Subcontractor 3</p>	<p>It was established over 50 years ago and has about 100 employees. The company provides services in relation to design, construction, installation and maintenance of mechanical or electrical system in Ireland, UK and mainland Europe.</p> <p>Supplier 3 has registered for CIRI. The company ranked in top 20 mechanical and electrical contractors in Ireland, and has recently won an Irish Construction Excellence Award.</p> <p>Subcontractor 3 provides electrical service for the selected project. The company has also played the same role in a previous office complex project in collaboration with the focal company.</p> <p>Certifications: ISO 14001; ISO 45001; ISO 9001; and Safe-T-Cert.</p>
<p>Subcontractor 4</p>	<p>It is a privately owned company established in the last 20 years and specialises in delivering mechanical and electrical engineering services. The company directly employs about 100 people.</p> <p>Subcontractor 4 is a CIRI registered company. Currently, the company is working with two or three equally sized main contractors, and the focal company is one of them. Subcontractor 4 provides mechanical service in the selected project.</p> <p>Certifications: ISO 14001; ISO 45001; ISO 9001; and Safe-T-Cert.</p>

The Four Dyads

All four subcontractors have collaborated with the focal company for over five years on multiple projects. Some of the respondents from subcontractor companies indicated that even before they worked for their current employer, they had already had experience working with the selected focal company during their previous employment. These are then all long-term relationships.

The focal company rented an office building close to the construction site, with facilities such as toilets, canteens and meeting rooms available for employees, including subcontractors' workers. The focal company claims that their employee assistance programmes are also accessible for subcontractor workers. The relationship between the focal company and the four selected subcontractors is presented as Figure 1.

Figure C 10: The relationship between the focal company and the subcontractors



Main challenges related to OSH and working conditions

The challenges arising from the international macro-environment that directly or indirectly affect OSH and working conditions are the shortage of experienced workers and the unstable price of construction materials. Both have been aggravated by COVID-19 and the Russo-Ukrainian war.

The economic and financial crisis in 2008 left many construction workers unemployed, which led to people leaving the industry through retraining or outward migration. Additionally, a large number of experienced construction workers returned to their home countries (e.g., East Europe) due to COVID-19. The end result is that while demand has returned to pre-2008 levels the available workforce is smaller. This has been reported as a challenge by both the focal company and the suppliers investigated.

In addition, the industry has not fully recovered from the significant logistics disruption caused by the global COVID-19 lockdown, which still affects the availability of construction materials. This has been exacerbated by material price due to inflation boosted by Russo-Ukrainian war. These uncertainties have inevitably affected construction contractors' forecasting, procurement and general decision making. The focal company controls the price and availability of materials by early procurement, which however, leads to increasing the cost of storing material that arrive before they are needed on site.

On a day-to-day basis at the specific project, communication barriers when dealing with subcontractors were mentioned as a challenge by the focal company. For example, English may not be the first language of subcontractors' workers on site. Furthermore, international workers who come from a country with a lower OSH standard may also have a lower level of safety awareness. In addition, the construction site is located in the business district of Dublin city centre, on a street with a tram line. The tram line influences when and how materials can be delivered on site and increases the potential risks associated with logistics. Finally, the risk of objects falling from height was also considered by the focal company to avoid collateral damage.

Dyad 1: Focal company – Subcontractor 1

Subcontractor 1 has collaborated with the focal company for six years. Subcontractor 1 delivers formwork which provides a temporary structure (shell) to support freshly poured concrete, allowing it to cure until it can fully support itself. The focal company provides materials such as concrete and rebar, and Subcontractor 1 is responsible for providing the rest of the materials, tools and workers for the elected project.

They employ a proportion of the international workers whose first language is not English. Most of Subcontractor 1's workers on this project worked from 7:30 to 16:30 on weekdays and usually half day on Saturday and were paid on a weekly basis. During the research period, Subcontractor 1's workers were mainly working on the tenth or eleventh floors of the building.

Supply chain management practices:

How does the company give/receive orders?

The overall order has been placed in advance through the information system, which can be accessed by both the focal company and the subcontractor. On a day-to-day basis, the focal company holds a whiteboard meeting that Subcontractor 1's managers must attend to discuss the work tasks happening on site on that particular day. If deliverables are delayed for several days without affecting the overall project's progress, the focal company usually understands Subcontractor 1's difficulties and accepts the updated delivery date. Late delivery is also accepted with no penalty because of uncontrollable reasons, such as bad weather or a lack of materials.

Which requirements with relevance for OSH and working conditions apply?

Before work commences, subcontractors are required to submit their risk assessment documents to the focal company for approval. Subcontractors' workers must receive the relevant training, induction and orientation. On site, the subcontractor's managerial role must attend the whiteboard meeting, and the subcontractor's workers are required to comply with the OSH Behavioural Code, including wearing PPEs properly. The subcontractor's OSH professional is required to perform audits on site at least once a week.

Subcontractor 1 is required to follow the above without exception.

How does the company monitor requirements and follow up on non-compliances?

Subcontractor 1's OSH professional is required to perform risk assessments on site on a weekly basis. The assessment report together with the method statement will be submitted to focal company for review. The subcontractor's workers can only start the task if the focal company approves the documents. Otherwise, revisions or actions are required for further risk control. The subcontractor is rated by the focal company on a monthly basis according to key aspects exemplified in the 'OSH Performance Monitoring' section. A conversation will be held with the subcontractor to discover why they have consistently received a low score on any aspect.

If any of Subcontractor 1's worker forgets to wear their PPE, the focal company will notify the subcontractor's OSH professional. According to Subcontractor 1's OSH professional, the focal company is very strict with PPE for the subcontractor's workers but may not be equally strict with other workers when enforcing the rule.

Description of the applied governance practices

- Contractual

Tendering: Subcontractor 1 is required to complete a pre-qualification questionnaire during the tendering process to prove the company's capability in multiple aspects (e.g., financial status, management system and quality certification). After signing the contract, the subcontractor is required

to agree with the standards expected by focal company, including quality, OSH management, and environmental management standards.

Pre-Start OSH Meeting: Subcontractor 1's supervisor leading the work package is required to attend meetings before starting the work on site, as a part of the early planning process.

Whiteboard meeting: Subcontractor 1's on site manager is required to attend daily activity briefings on site, and then briefs the tasks including relevant OSH requirements to their own workers.

Risk Assessment: Subcontractor 1 must submit a risk assessment and a method statement for each activity, and gain approval from the focal company before work commences. This procedure is also required for any sort of variance on the project.

Training: Apart from the mandatory training, induction and orientation, Subcontractor 1's workers must receive additional training for working at heights. This is provided by their own company. Upon completion of the safety training, which usually lasts from 30 to 60 minutes, Subcontractor 1's OSH professional will send a written document to the focal company to report that their workers are ready to begin working in certain areas.

PPEs: In addition to minimum PPE requirements, Subcontractor 1's workers who work at height must use harnesses to prevent themselves from falling.

Permits: Subcontractor 1 is required to apply for a permit to enter high-risk work areas at least 24 hours in advance. Workers will not be allowed to enter the area until the permit is approved by the focal company.

Audits: The subcontractor's OSH professional is required to perform audits on site at least once a week. The report will be submitted to the focal company for feedback. If further work is needed, Subcontractor 1 must take action within the specified time. The focal company's personnel also audit Subcontractor 1 on site, both randomly and regularly.

Monitoring: The overall performance of Subcontractor 1, including OSH performance is monitored by the focal company. Subcontractor 1 will be scored according to predetermined criteria in a monthly basis. The record will be stored in the system for future reference.

- Relational

Continuity: The focal company has previously collaborated with Subcontractor 1 on other projects. Subcontractor 1's site manager believes that having a good relationship with the focal company can increase the subcontractor's chance to get more projects in the future. However, the subcontractor's OSH professional perceived that the focal company selected his company as a subcontractor mainly because of a low price. The focal company purchases materials such as concrete and rebar for the subcontractor, so they do not need to worry about the associated cash flow issues.

Information sharing: OSH and general performance information is shared with Subcontractor 1 through regular meetings and real time communication. The communication channels include phone calls, face-to-face talks and emails. Subcontractor 1's OSH professional noted that OSH communication via loads of emails from the focal company were not as effective as face-to-face discussions.

In terms of OSH management, the focal company frequently reviews Subcontractor 1's paperwork. The comments, if any, will be provided to the subcontractor to improve their performances. However, Subcontractor 1's operator told us that the focal company also respected if the subcontractor's workers propose a safer approach to complete the task.

- Hybrid

The focal company's behavioural code rewards positive OSH behaviours and deters unacceptable behaviours through an escalating scale of sanctions (the green, yellow and red cards). Green cards are a behavioural notice that is used to recognise positive behaviour and yellow and red cards are behavioural notices that are used to deter unsafe behaviour among Subcontractor 1's workers. The positive recognition is not part of the contracts, while the sanctions are.

Effect of supply chain management practices

Contractual governance practices mean that Subcontractor 1's OSH management system is maintained at a same standard as the focal company. Hence, Subcontractor 1 has to align with ISO 45001 when working with the focal company in spite of the company's own standard. Constant monitoring of subcontractor's workers' safety compliance contributes to developing desirable OSH habits. According to interviewees from Subcontractor 1, workers new to the company whose previous employers did not have a high OSH standard may retain their risky working habits when arriving on site. These risky working behaviours could potentially be reduced when working with the focal company.

Relational governance practices can empower the subcontractor to proactively engage in OSH improvement. Due to different areas of specialisation, the focal company may not be clear about every single detail in Subcontractor 1's professional area. Subcontractor 1's site manager indicated that the focal company was always easy to communicate with if he or his workers have different ideas about work methods. The focal company purchases materials such as concrete and rebar for the subcontractor, so they do not need to worry about the associated cash flow issues. This can alleviate the subcontractor's financial pressures and guarantee Subcontractor 1's employee welfare.

Hybrid governance practice, in the form of the behavioural code's incentives and sanctions, can motivate subcontractor workers' safety compliance by cultivating their safety behaviours, but may also put workers under pressure. An example was given by the operator, who had experienced a near-miss incident working on the current project, caused by poor quality materials which broke and then dropped from the edge of 10th floor to a work area below. The area beneath was restricted and only one worker who was not in the area when the event took place had access. However, if that worker had been there, they could have suffered severe and perhaps fatal injuries. The area was closed immediately after the incident, and all work stopped until the workplace was safe. The worker was worried that he might be blamed by the focal company because the falling material was directly caused by his work, though he knew the issue was the quality of materials provided by another supplier. The details were still under investigation when collecting data.

Involvement and experience of workers

- Worker experience with OSH and working conditions

Subcontractor 1's workers are encouraged to be involved in improving OSH and working conditions together with the focal company by reporting safety concerns or suggestions. If the subcontractor's workers have any issues or requirements, they usually report through their own site manager. If the issues are not urgent, the site manager will report to the focal company during whiteboard meetings. If urgent, the site manager will contact the focal company immediately. According to the site manager, the focal company usually provides the best possible working to satisfy their workers' requirements to.

- Are workers directly involved in the application of leverage practices?

Subcontractor 1's workers are directly involved in the application of leverage practices. For example, the focal company's behavioural code rewards positive OSH behaviours and deters unacceptable behaviours through an escalating scale of sanctions. As a result, the Subcontractor 1 operator felt recognised when he was awarded a 50-euro voucher because of positive OSH behaviour.

- Are workers indirectly involved through unions and collective agreements?

Subcontractor 1's workers are not usually involved in unions or collective agreements.

Dyad 2: Focal company – Subcontractor 2

Subcontractor 2 is responsible for the architectural systems work on the selected project, using their own tools and materials, involving their own subcontractors. Some materials are manufactured in Subcontractor 2's factory before being delivered to the construction site for installation. Hence, the Subcontractor 2's contract manager considers their company "probably more independent" in the relationship with the focal firm.

Subcontractor 2 has played the same role in previous projects with the focal company. Compared to the other subcontractors who participated in this study, Subcontractor 2 is a larger company. The interviewees from the subcontractor did not know exactly how many years their company had been collaborating with the focal company, but certainly for "a long time".

Supply chain management practices

How does the company give/receive orders?

The overall order has been placed in advance through the information system, which can be accessed by both the focal company and the subcontractor. Subcontractor 2's site manager mentioned "It's all agreed upon before the job ever starts". Subcontractor 2 has an agreed program schedule with the focal company and the team is "trying to follow as best as possible". The progress can be tracked and visualised using the software system in a simple way. On a day-to-day basis, the focal company holds a whiteboard meeting that Subcontractor 2's managers must attend to discuss the work tasks happening on site on that particular day. Whether a late delivery would be penalised is dependent on the contract, as suggested by the Subcontractor 2's contract manager. However, the focal company may also ask Subcontractor 2 to do them "a favour" to complete a delivery sooner than planned, not in an obliged way.

Which requirements with relevance for OSH and working conditions apply?

Before work commences, subcontractors are required to submit their risk assessment documents to the focal company for approval. Subcontractors' workers must receive the relevant training, induction and orientation. On site, the subcontractor's managerial role must attend the whiteboard meeting, and the subcontractor's workers are required to comply with the OSH Behavioural Code, including wearing PPEs properly. The subcontractor's OSH professional is required to perform audits on site at least once a week.

Subcontractor 2 is required to follow the above without exception.

Description of the applied governance practices?

- Contractual

Tendering: Subcontractor 2 is required to complete a pre-qualification questionnaire during the tendering process to prove the company's capability in multiple aspects (e.g., financial status, management system and quality certification). After signing the contract, the subcontractor is required to agree with the standards expected by focal company, including quality, OSH management, and environmental management standards.

Pre-Start OSH Meeting: Subcontractor 2's supervisor leading the work package is required to attend meetings before starting the work on site, as a part of the early planning process.

Whiteboard meeting: Subcontractor 2's on site manager is required to attend daily activity briefings on site, and then briefs the tasks including relevant OSH requirements to their own workers. He described that all envisaged hazards and risks must be communicated during the whiteboard meeting before any activity starts, be it "too much water in an area, or too much dust or too much activity working overhead".

Risk Assessment: Subcontractor 2 issues a risk analysis for their own works on site. However, the focal company requires an added risk assessment and method statement. Subcontractor 2's contract manager produces the documents to gain approval from the focal company, and Subcontractor 2's site manager makes sure that all their workers read and sign the documents before work commences.

Training: Apart from the mandatory training, induction and orientation, Subcontractor 2's workers must receive additional training such as working at height, safely using scissor lifts, and safely using spider crane. This is provided by their own company. Upon completion of the safety training, Subcontractor 2's OSH professional will send a written document to the focal company to report that their workers are ready to begin working in certain areas.

Permits: Subcontractor 2 is required to apply for a permit to enter high-risk work areas at least 24 hours in advance. Workers will not be allowed to enter the area until the permit is approved by the focal company.

PPEs: In addition to minimum PPE requirements, Subcontractor 2's workers who work at the slab edge / height also use harnesses and rescue lifelines, which are provided by their own company.

Audits: The Subcontractor 2's OSH professional performs audits on site once a week. The report will be submitted to the focal company for feedback as required. If further work is needed, Subcontractor 2 must take action within the specified time. The focal company's personnel also audit Subcontractor 2 on site, both randomly and regularly.

Monitoring: The overall performance of Subcontractor 2, including OSH performance is monitored by the focal company. Subcontractor 2 will be scored according to predetermined criteria in a monthly basis. The record will be stored in the system for future reference.

- Relational

Continuity: The focal company has been collaborating with Subcontractor 2 for a long time prior to the current project. Subcontractor 2's contract manager thinks his company has a good relationship with the focal company so far, but "when things start to go wrong then relationships kind of get tested".

Information sharing: OSH and general performance information is shared with Subcontractor 2 through regular meetings and real time communication. The communication channels include phone calls, face-to-face talks and emails. Subcontractor 2's contract manager considers the formality of the communication with the focal company as a mixture, because while "everything is documented" formally, there is more casual communication on site.

Subcontractor 2 may not stick to their agreed delivery plan with the focal company because of other suppliers' late delivery, or other subcontractors' occupation of the same working area. To alleviate the situation, Subcontractor 2's site manager is responsible for flagging to the focal company possible problems with access to certain areas on site in advance. Together with the focal company, Subcontractor 2 sometimes decides to start their work earlier than planned if preparation work (e.g., manufacturing) has been ready.

- Hybrid

The focal company's behavioural code rewards positive OSH behaviours and deters unacceptable behaviours through an escalating scale of sanctions (the green, yellow and red cards). "For the majority

of guys out there, they do comply with safety regulations”, as Subcontractor 2’s contract manager observed, but “there’s always one or two bad apples”.

How does the company monitor requirements and follow up on non-compliances?

Subcontractor 2 is required to perform a risk assessment on site on a weekly basis. The assessment report together with the method statement is submitted to focal company for review. Subcontractor 2’s workers can only start a task if the focal company approves the documents. Otherwise, revisions or actions are required for further risk control. The overall performance of Subcontractor 2, including OSH performance is monitored by the focal company. Subcontractor 2 will be scored according to predetermined criteria in a monthly basis. The record will be stored in the system for future reference.

Effect of supply chain management practices

Elements of contractual, relational and hybrid governance practices with impact on OSH outcomes and working conditions

Contractual governance practices ensure Subcontractor 2’s OSH management is maintained at a same level as the focal company. In this dyad, both companies have ISO 45001 certification. Hence, the requirements from the focal company reinforce Subcontractor 2’s OSH management system.

Relational governance practices can empower the subcontractor to proactively engage in OSH improvement. Due to different areas of specialisation, the focal company may not be clear about every single detail in Subcontractor 2’s professional area. Subcontractor 2’s site manager gave an example about how to resolve this issue by communication. Once, he received a phone call from the focal company’s supervisor questioning Subcontractor 2’s actions on setting up the fall arresting equipment. The reality was that the focal company’s supervisor did not observe the first several steps in action, resulting in questioning Subcontractor 2’s compliance. The misunderstanding was easily resolved by communication, and Subcontractor 2’s site manager felt assured that the focal company was indeed supervising in a responsible way.

Hybrid governance practice, in the form of the behavioural code’s incentives and sanctions, can motivate subcontractor workers’ safety compliance by cultivating their safety behaviours.

Involvement and experience of workers

- Worker experience with OSH and working conditions

Subcontractor 2 has their own office unit in the office building rented by the focal company next to the construction site. The contract manager suggested that the focal company provided good facilities to Subcontractor 2’s workers, though the focal company’s own workers are ‘obviously’ treated better in comparison. If Subcontractor 2’s workers have any issues or requirements, they usually report them to their own site manager. Subcontractor 2’s site manager, noted that the focal company usually already knows about the issue when he reports it, and usually just minor issues.

Are workers directly involved in the application of leverage practices?

Subcontractor 2 workers are directly involved in the application of leverage practices. As indicated, Subcontractor 2’s workers can report to their site manager, “*if one of the guys spotted something that was very dangerous*”. The site manager would then let the focal company know and take relevant measures.

Are workers indirectly involved through unions and collective agreements?

Subcontractor 2 workers are not usually involved through unions or collective agreements.

Dyad 3: Focal company – Subcontractor 3

Subcontractor 3 provides electrical service for the project. Over the last six to seven years, Subcontractor 3 has been working with the focal company using the “same team, same design” in various projects, according to Subcontractor 3 contract manager. This is then a long-term relationship.

Supply chain management practices

How does the company give/receive orders?

The overall order has been placed in advance through the information system, which can be accessed by both the focal company and the subcontractor. On a day-to-day basis, the focal company holds a whiteboard meeting that Subcontractor 3's managers must attend to discuss the work tasks happening on site on that particular day. Subcontractor 3 also has their own subcontractors and suppliers. If Subcontractor 3 raises a purchase order, the specification must be approved by the focal company beforehand.

Which requirements with relevance for OSH and working conditions apply?

Before work commences, subcontractors are required to submit their risk assessment documents to the focal company for approval. Subcontractors' workers must receive the relevant training, induction and orientation. On site, the subcontractor's managerial role must attend the whiteboard meeting, and the subcontractor's workers are required to comply with the OSH Behavioural Code, including wearing PPEs properly. The subcontractor's OSH professional is required to perform audits on site at least once a week.

Subcontractor 3 is required to follow the above without exception.

Description of the applied governance practices?

- Contractual

Tendering: Subcontractor 3 is required to complete a pre-qualification questionnaire during the tendering process to prove the company's capability in multiple aspects (e.g., financial status, management system and quality certification). After signing the contract, the subcontractor is required to agree with the standards expected by focal company, including quality, OSH management, and environmental management standards.

Pre-Start OSH Meeting: Subcontractor 3's supervisor leading the work package is required to attend meetings before starting the work on site, as a part of the early planning process.

Whiteboard meeting: Subcontractor 3's on site manager is required to attend daily activity briefings on site, and then briefs the tasks including relevant OSH requirements to their own workers.

Risk Assessment: Subcontractor 3 must submit a risk assessment and a method statement for each activity, and gain approval from the focal company before work commences. This procedure is also required for any sort of variance on the project.

Training: Apart from the mandatory training, induction and orientation, Subcontractor 3's supervisors are required to received training courses for driving electric pallet trucks. The focal company provides the training, but Subcontractor 3 has to pay for it.

Permits: Subcontractor 3 is required to apply for a permit to enter high-risk work areas at least 24 hours in advance. Workers will not be allowed to enter the area until the permit is approved by the focal company.

PPEs: The standard PPE is required for Subcontractor 3's workers on site. Additional PPE is required for specific tasks.

Audits: The focal company audit Subcontractor 3 on site usually every two weeks. The subcontractor's safety officers have their own safety walks on site each week. Each time after Subcontractor 3's own audit, a copy of the report will be sent to the focal company for feedback.

Monitoring: The overall performance of Subcontractor 3, including OSH performance is monitored by the focal company. Subcontractor 3 will be scored according to predetermined criteria in a monthly basis. The record will be stored in the system for future reference.

- Relational

Continuity: The focal company has previously collaborated with Subcontractor 3 on other projects. According to Subcontractor 3's contract manager, his company has been continuously "going from one project to the next" with the focal company.

Information sharing: OSH and general performance information is shared with Subcontractor 3 through regular meetings and real time communication. The communication channels include phone calls, face-to-face talks and emails.

- Hybrid

The focal company's behavioural code rewards positive OSH behaviours and deters unacceptable behaviours through an escalating scale of sanctions (the green, yellow and red cards).

How does the company monitor requirements and follow up on non-compliances?

Subcontractor 3's OSH professional is required to perform risk assessments on site on a weekly basis. The assessment report together with the method statement will be submitted to focal company for review. The subcontractor's workers can only start the task if the focal company approves the documents. Otherwise, revisions or actions are required for further risk control. The subcontractor is rated by the focal company on a monthly basis according to an established algorithm in the system. A conversation will be held with the subcontractor to discover why they have consistently received a low score on any aspect.

According to Subcontractor 3's contract manager, "the quality is always at the forefront on the job". Subcontractor 3 is required to provide a quality form for the focal company to check whether deliverables meet the agreed specifications. If not, the focal company will require further actions. The quality checklist is live and constantly updated and upgraded by Subcontractor 3 to keep it in a high standard as possible.

Effect of supply chain management practices

Elements of contractual, relational and hybrid governance practices with impact on OSH outcomes and working conditions

Contractual governance practices ensure Subcontractor 3's OSH management is maintained at a same level as the focal company. In this dyad, both companies have ISO 45001 certification. Hence, the requirements from the focal company reinforce Subcontractor 3's OSH management system.

Relational governance practices can empower the subcontractor to proactively engage in OSH improvement.

Hybrid governance practice, in the form of the behavioural code's incentives and sanctions, can motivate subcontractor workers' safety compliance by cultivating their safety behaviours.

Involvement and experience of workers

Worker experience with OSH and working conditions

Subcontractor 3 has toolbox talks with workers about staff welfare nearly every week. At the end of each talk, workers will be asked "is everything okay", or "is there anything I can do for you". Subcontractor 3's

contract manager or site manager will then reflect their workers' questions to the focal company. Based on Subcontractor 3's contract manager's experience, no matter in which project or contract, the focal company "normally would have everything fairly spot on".

Are workers directly involved in the application of leverage practices?

Subcontractor 3 workers are directly involved in the application of leverage practices. For example, when talking about behavioural code required by the focal company, Subcontractor 3's contract manager believes "it's good for the lads on the ground". Because "sometimes you have to be a bit hard, but most time you have to be encouraging the people at work for you".

Are workers indirectly involved through unions and collective agreements?

According to the data collected to date, Subcontractor 3's workers are not usually involved through unions or collective agreements.

Dyad 4: Focal company – Subcontractor 4

Subcontractor 4 provides mechanical service for the project. According to Subcontractor 4's contract manager, his company and the focal company have been "speaking for years to do this job". Besides this project, Subcontractor 4 has previously collaborated with the focal company on other projects. Currently, the company is working with two or three similar sized main contractors, and the focal company is one of them.

Supply chain management practices:

How does the company give/receive orders?

The overall order has been placed in advance through the information system, which can be accessed by both the focal company and the subcontractor. On a day-to-day basis, the focal company holds a whiteboard meeting that Subcontractor 4's managers must attend to discuss the work tasks happening on site on that particular day.

Which requirements with relevance for OSH and working conditions apply?

Before work commences, subcontractors are required to submit their risk assessment documents to the focal company for approval. Subcontractors' workers must receive the relevant training, induction and orientation. On site, the subcontractor's managerial role must attend the whiteboard meeting, and the subcontractor's workers are required to comply with the OSH Behavioural Code, including wearing PPEs properly. The subcontractor's OSH professional is required to perform audits on site at least once a week.

Subcontractor 4 is required to follow the above without exception.

Description of the applied governance practices?

Tendering: Subcontractor 4 is required to complete a pre-qualification questionnaire during the tendering process to prove the company's capability in multiple aspects (e.g., financial status, management system and quality certification). After signing the contract, the subcontractor is required to agree with the standards expected by focal company, including quality, OSH management, and environmental management standards. Subcontractor 4 emphasises the company turnover would be the key to determining whether it can be selected by the focal company.

Pre-Start OSH Meeting: Subcontractor 4's supervisor leading the work package is required to attend meetings before starting the work on site, as a part of the early planning process.

Whiteboard meeting: Subcontractor 4's on site manager is required to attend daily activity briefings on site, and then briefs the tasks including relevant OSH requirements to their own workers.

Risk Assessment: Subcontractor 4 must submit a risk assessment and a method statement for each activity, and gain approval from the focal company before work commences. This procedure is also required for any sort of variance on the project.

Training: Apart from the mandatory training, induction and orientation for Subcontractor 4's workers, the focal company also requires Subcontractor 4 to make sure their own subcontractors are trained to a certain level.

Permits: Subcontractor 4 is required to apply for a permit to enter high-risk work areas at least 24 hours in advance. Workers will not be allowed to enter the area until the permit is approved by the focal company.

PPEs: In addition to minimum PPE requirements, additional PPE is required for specific tasks.

Audits: The subcontractor's OSH professional is required to perform audits on site at least once a week. The report will be submitted to the focal company for feedback. If further work is needed, Subcontractor 4 must take action within the specified time. The focal company's personnel also audit Subcontractor 4 on site, both randomly and regularly.

Monitoring: The overall performance of Subcontractor 4, including OSH performance is monitored by the focal company. Subcontractor 4 will be scored according to predetermined criteria in a monthly basis. The record will be stored in the system for future reference.

- Relational

Continuity: The focal company has previously collaborated with Subcontractor 4 on other projects. According to the Subcontractor 4 contract manager, his company has been continuously "going from one project to the next" with the focal company.

Information sharing: OSH and general performance information is shared with Subcontractor 4 through regular meetings and real time communication. The communication channels include phone calls, face-to-face talks and emails.

- Hybrid

The focal company's behavioural code rewards positive OSH behaviours and deters unacceptable behaviours through an escalating scale of sanctions.

Specialist PPE: According to Subcontractor 4's professional, the focal company provides prescription safety glasses with specs, so workers with hypermetropia or myopia do not need to wear more than one pair of glasses or purchase these themselves. The PPE is required but the contract does not require the focal company to provide it.

How does the company monitor requirements and follow up on non-compliances?

Subcontractor 4's OSH professional is required to perform risk assessments on site on a weekly basis. The assessment report together with the method statement will be submitted to focal company for review to "make sure it complies with their standards, and what they believe is happening on site as well, and then they either accept it or they come back comments and we update it again." Subcontractor 4 found this procedure helpful, because the focal company "they know the job completely".

The subcontractor is rated by the focal company on a monthly basis according to an established algorithm in the system. A conversation will be held with the subcontractor to discover why they have consistently received a low score on any aspect.

Effect of supply chain management practices

Elements of contractual, relational and hybrid governance practices with impact on OSH outcomes and working conditions:

Contractual governance practices ensure Subcontractor 4's OSH management is maintained at a same level as the focal company. In this dyad, both companies have ISO 45001 certification. Hence, the requirements from the focal company reinforce Subcontractor 4's OSH management system.

Relational governance practices, such as improvement on safety glasses, can improve workers' comfort level when using PPE, and thus motivate the safety compliance.

Hybrid governance practice, in the form of the behavioural code's incentives and sanctions, can motivate subcontractor workers' safety compliance by cultivating their safety behaviours, but may also put workers under pressure. According to Subcontractor 4's OSH professional, if any workers do not follow the OSH guidelines, they will be "off during the day, don't get paid".

Involvement and experience of workers

Worker experience with OSH and working conditions

During COVID-19, when wearing a mask was mandatory on site, workers did not need to wear glasses. Now that the mask is no longer mandatory, "there's a reluctance to go back to wearing glasses", as observed by Subcontractor 4 OSH professional.

Are workers directly involved in the application of leverage practices?

Subcontractor 4 workers are directly involved in the application of leverage practices. Aligned with focal company's expectation, Subcontractor 4 OSH professional said: "We always ask them to [report], no matter how small the answer is, we need to be aware of it, so that we can make things safer". She thinks the focal company "do recognise when people are doing things correctly, and they get that recognition", and "every little thing is reported" by Subcontractor 4 workers, as a positive reflection on focal company's OSH practices.

Are workers indirectly involved through unions and collective agreements?

According to the data collected to date, Subcontractor 4's workers are not usually involved through unions or collective agreements.

Future trends & key takeaways

The focal company has been incorporating new technology to fulfil their longer term OHS goals. For example, they are utilising more robotics on site to replace the manual lifting of heavy objects. This should reduce strains and the like. However, new OSH hazards are likely to arise from this automation. Hence, they will need to consistently update their scientific safety training by following the plan-do-check-action cycle.

The key take-away from the case is that a buying firm can ask for more in a market exchange if they are also willing to give more. In this case the focal firm knows that they are asking for more in terms of safety; more documentation and risk assessment prior to starting work and higher expectations for how work is done and incidents are reported on site. In return, they focus on building and maintaining long-term relationships with subcontractors. The primary return on this investment for a subcontractor is future work. However, the buying firm also does things during the project, be it is paying early to ensure a subcontractors cashflow, green cards for workers (and by extension their employer) who are exemplars in safety, and the supplier awards. To say all of this differently, the focal firm's safety standards alone might be viewed as an additional contractual governance burden by subcontractors, but this burden is offset by the relational governance efforts.

Construction, Case 3, Estonia

Introduction

As a starting point for the research, the position of the construction sector within the Estonian economy will be sketched briefly.

According to the data from Statistics Estonia, the construction industry in Estonia grew by an estimated 6% in real terms in 2021, following an expansion of 3.6% in 2020, driven by government investment into the development of transport infrastructure, residential, and utilities construction projects. Estonian construction companies mainly operate in the domestic market. Therefore, the general economic development of the country affects the progress of the construction sector. The Estonian construction sector has a positive outlook in the long-term, as it is expected to expand by 4% in real terms in 2022. The policy and investment initiatives taken by the government in the infrastructure and housing markets are expected to drive growth in the construction sector. Investment in energy efficiency measures in apartment buildings, the digitalisation of the economy and EU backed projects are expected to dominate the sector's growth.

In terms of employment, there were 90,122 persons employed in the Estonian broad construction sector in 2021. Despite the COVID-19 pandemic, the residential construction sector was resilient in 2020. Demand for housing has increased in Estonia. The challenges lie in difficulties in terms of labour and skills shortages. Bottleneck vacancies in construction persist, representing a barrier to the sector's growth. The sector employs migrant workers (in the Estonian case mainly Ukrainian, Latvian, and Polish workers), who may be more vulnerable to various types of exploitation and subject to problematic safety situations.

It has to be noted, that construction sector has a low employee membership coverage of trade union. In contrast to the situation in Nordic countries and in other member states, trade unions in Estonia have played only a marginal role in OSH arrangements and dialogue on OSH at workplace level, reflecting the general absence of social dialogue at enterprise level. Thus, trade unions can be said to play only a minimal (if any) role in OSH prevention.

The project and the main actors involved

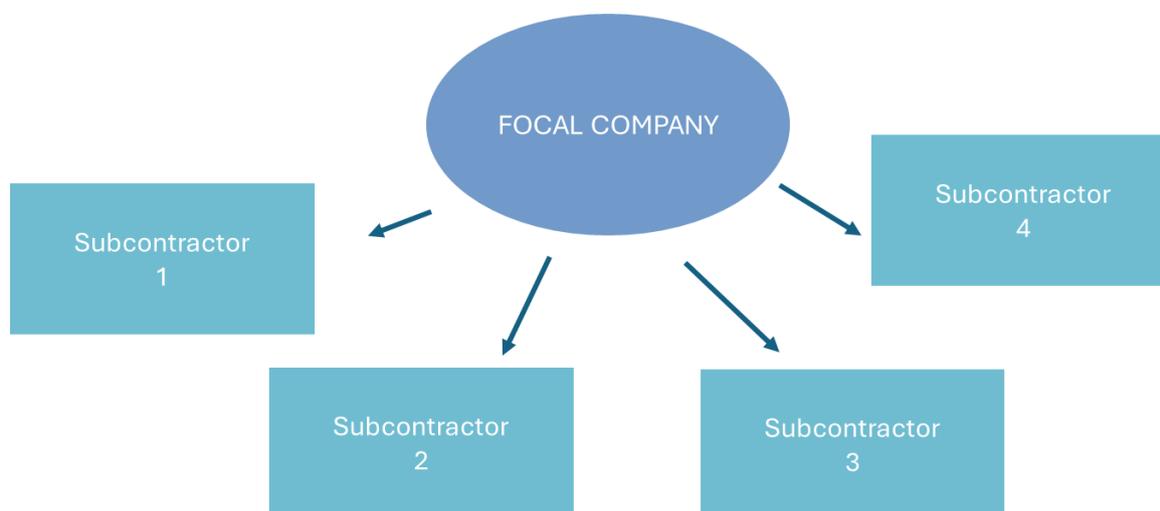
The client/main contractor is a residential developer who leads housing projects from the start till the end, without doing construction work itself. The construction work is outsourced. The current project contains 5 residential buildings with 184 apartments (buildings with 5...8 floors). The project started in 2021 and the buildings are being built stage by stage: in the summer of 2022, one building is completed, two are in the construction process and two in the planning process. The project is planned to be completed by November 2023. As the buildings are in different stages (from foundations until finishing), there are about 12 subcontractors engaged with construction works, and daily about 60 construction workers from different subcontracting companies are on-site. The construction site is situated in the western part of the capital of Estonia, Tallinn, and is surrounded by barriers and monitored by cameras. The entry is controlled: only people with permission cards can enter the site. There are module shelters for office workers and construction workers for breaks and lunches available. All workers who enter the site for the first time are being trained in OSH by the focal company in Estonian, Russian or English (the duration and topics of OSH training depend on work performed and former experiences in construction sites).

This construction project was selected as a case study because of the excellent reputation of the client. The focal company has demonstrated its high commitment to OSH and has been awarded as the best working environment in 2017 among SMEs by National Labour Inspectorate. Additionally, it owns a Golden Mark for Responsible Employer from 2021 for sustainable development and contributing to society, the environment, and customer and stakeholder relationships as well as to the well-being of

their employees. The company has also declared science-based targets in climate objectives to reduce the company's ecological footprint: from 2023, it will use only green energy (solar, wind and hydro energy) in all its construction projects in Estonia.

The case study explores 5 different companies in total: the focal company and its four subcontractors who are involved in construction for different building activities (Figure 1).

Figure C 11: The relationship between the focal company and the subcontractors



The focal company

The focal company has clear criteria for subcontractors, materials, and quality of provided services as well as univocal procurement practices. The procurement process takes place via an innovative software solution where an internal database has been created and the system for selecting possible subcontractors has been developed. Each procurement is being sent for possible contractors through the database. All subcontractors can participate in procurement; however, preference will be given to subcontractors with a proven track record and positive experience of working together. During the procurement, following activities and processes are being assessed:

- procurement communication practices,
- quality of construction work,
- workflow in construction site,
- communication during guarantee period,
- workplace health and safety (e.g., number of occupational accidents, monitoring of incidents).

Each monitored activity has clear criteria for assessment and the best possible company is being selected. However, the price and quality of construction work are the main criteria, followed by other criteria. Currently, the focal company is developing procurement practices using software, which include OSH and work quality: construction work procedures, materials, provided services; flow of work, meeting the deadlines; price, quality of communication with focal company in each stage of the project, especially after work is completed (e.g. during the guarantee period). The main challenge reported by the focal company is intention to improve assessment of subcontractors regarding OSH.

Once the contract is being signed, the specific OSH requirements are included for the execution of works on the construction sites, which are slightly stricter than required by the national legislation. In addition, the sub-contractor must be ready to pay extra for health and safety, for example, if a helmet with a chinstrap should be used instead of an ordinary helmet which may be an additional cost for the subcontractor.

Some of the subcontractors have a long-term relationship and have collaborated for many years with the client, thus, have higher trust. The contracts are being signed between the subcontractor and the client; and the close daily cooperation and communication with subcontractors takes place on-site.

The focal company declares that they aimed to Zero Harm vision: preventative measures (such as user-friendly incidents registration system, regular trainings of subcontractors, daily check-ups etc.) are created to ensure that no injuries or illnesses are caused by their workplaces in previous years. However, in 2022, the company is taking the next step, putting greater focus on organisational culture, leadership, and prioritising preventive efforts, and creating a philosophy 'what we can actively create for everyone, everywhere and every day' instead of concentrating on 'what we can avoid'. The core value for the company is a 'safe, healthy and secure workplace' which includes detailed goals, activities, and indicators for follow-up. In the context of the construction site, OSH indicators are an important part of the performance management system. OSH is centrally driven but aims for taking more ownership locally – each business unit (e.g., in Estonia, Sweden or Germany) takes responsibility and is involved actively in designing central as well as local preventive activities.

Through demands on and control of its suppliers and subcontractors, the company declares that it directly has a positive effect on human rights and working conditions. The focal company states that it is aware of risks and hazards that could negatively impact the health and safety of its own staff or the staff of the subcontractors. Based on this knowledge, possible topics for OSH trainings and Awareness Day are selected. Contractors are invited to take part in safety inspections and routinely report risks, incidents, and accidents.

According to Annual and Sustainability Report 2021, over the last year, the company witnessed major disruptions to global supply chains, as well as shortages and rising prices of input goods. The company meets the risk of shortages of input goods by actively working to optimise orders and flows to their work sites through both strategic sourcing centrally for their markets and close dialogue with local suppliers.

Dyad 1: The subcontractor 1

The subcontractor 1 is performing roof work. It was established in 2012. The company employs 5 construction workers. The company acts as a subcontractor in larger construction projects, mainly in Estonia (earlier it has been operating also in Sweden). Generally, four employees are working at the same time on the construction site. The main tasks conducted by the subcontractor are heat insulation, roofing, and flaring.

There is a long-term relationship between the focal company and the subcontractor. The subcontractor is engaged through the official procurement process established by the focal company. The subcontractor has confirmed fairness of selection process and described that it receives orders through an official specific procurement system for construction companies (software solution). The subcontractor 1 is aware of the selection procedures and selection criteria, which involve the price, the quality of provided services (quality of construction work), previous experience (e.g. procurement communication practices, work flow in construction site, communication during guarantee period, OSH) and how trustworthy the partner is.

OSH and working condition challenges

The focal company has established clear monitoring activities in the construction sites which have an effect along the supply-chain. They conduct daily check-ups (construction site rounds) with a business impact analysis (BIA audit app) and observe work of all subcontractors currently on site. The entry to the construction site is allowed only to workers with personal badge. Additionally, there is a random check in the gate to observe safety compliance daily. Working environment and safety manager visits the construction site on a weekly basis and is available for counselling for the subcontractors. OSH audits by an external construction OSH expert (invited by the focal company) are carried out and

documented once a month. Besides that, a senior on-site manager, who has received adequate safety training and developed relevant skills, is obligated to perform an OSH conformity assessment once a month as well. Yearly, the OSH audit is conducted by one of the company's top managers who have also previously trained for OSH.

The focal company has an effective near-misses registration system with quick solutions in the BIA system. Concealment of incidents is not allowed on site and every incident must be reported to the focal company and to the system called BIA. The way notification is forwarded, depends on the event, usually either by phone or email (together with photos and explanatory notes), sometimes also orally. If the representative of focal company notices something, the subcontractor is notified about the incident immediately; and is included in developing of solutions together with the focal company. Finally, there is an Awareness Day organised by the focal company in the construction site, which concentrates on OSH specific problem e.g., working at heights, working with dangerous substances, quality of personal protective equipment, where all workers on-site must participate (the every-day construction work is suspended for that day) and get practical knowledge about these special issues on OSH. This was confirmed by Subcontractor 1.

The applied contractual governance practices

Tendering

Sustainable tendering and purchasing practices have been developed and implemented in the focal company, which includes questionnaires, safety and quality standards, supplier/subcontractors' assessments system which include safety capabilities, competencies, track record, accident and incident statistics, communication during and after the project. Clear agreements, specific practices, processes, or materials required or prohibited in the contract have been established. Subcontractor 1 reported that code of conduct of the focal company exists, but they have not been asked to sign it and to follow it. They recalled that they have seen it somewhere but couldn't remember when they signed it.

Subcontractor 1 stated that clear OSH practice requirements have been developed by the focal company and introduced to Subcontractor' 1 worker through safety training and provided training materials in Estonian and if needed, also in Russian. This was confirmed also by workers' representative.

Auditing

Regular monitoring (daily, weekly etc - safety rounds, checklists) has been implemented by the focal company, also by external construction OSH Experts and Third parties. According to Subcontractor 1, regular auditing is conducted in the construction site. In addition, Safety ID cards is issued for workers after the training which enables the access to the construction site. Subcontractor 1 reported that the focal company asked and controlled required certifications of specific work, such as fire safety and working in heights.

The applied relational governance practices

Trust

Subcontractor 1 believes that the previous experiences and positive long-term cooperation with the focal company are essential aspects for selection them as subcontractor again, what demonstrates reliability and leading to trust. Interviewed representatives from Subcontractor 1 claimed that they have positive and supportive relationships with focal company, which help them to achieve common understanding and reasonable solutions for OSH.

In addition, Subcontractor 1 stated that an effective communication and open dialogue with focal company enables to overcome possible different misunderstandings and increase mutual effort to ensure safety and trust.

Hybrid

Supportive and positive working environment and joint planning: According to Subcontractor 1, there is positive and supportive working environment established in the construction site. In addition, the everyday communication with focal company enables to communicate openly, to plan work jointly. Subcontractor 1 reported that they meet with the focal company every week to discuss timetable and how work has to be conducted.

Monitoring of requirements and follow up on non-compliances

Subcontractor 1 explained that the focal company has reserved funds for specific work environment related delays or problems have been planned. Subcontractor 1 confirmed that focal company monitors constantly and systematically the process of construction work, focusing on OSH. If any problem or a delay occur, the focal company is ready to negotiate and discuss it with the subcontractors to find possible solutions together. The subcontractor 1 emphasised that the focal company is working closely with them and is openly discussing all problems and challenges in order to overcome them and ensure that all deadlines will be met, everybody gets paid on time.

The focal company's difference from other clients

According to Subcontractor 1, it is possible to state that the focal company differs from other clients because it pays more attention to OSH, sets higher safety standard than OSH Law requires and deals with OSH issues constantly and systematically. In addition, the focal company carefully plans deadlines and work organisation on the construction site in close cooperation with a subcontractor to discuss possible challenges and problems and to find solutions together as well as to develop and maintain safety culture and monitor requirements and follow up on non-compliances. Subcontractor 1 reported several advantages of working for the focal company in comparison with other clients such as timely payment, well organised work on the site, high safety standards with clear guidelines and safety training, followed by the strict control and, if needed, punishment.

Effect of supply chain management practices on OSH and working conditions

Subcontractor 1 and the focal company have an official contract to do the work in the construction site. According to Subcontractor 1 the contract with detailed descriptions of tasks and clear guidelines help him to organise the work. He finds that regular monitoring and auditing are both important for developing and ensuring safety culture in the construction site. Checking on subcontractors' workers' work makes them to pay more attention to safety.

According to Subcontractor 1, there are open dialogue and supportive environment established on the construction site by the focal company. Subcontractor 1 feels that they have positive and respectful relationship with the focal company. Subcontractor 1 described that it is easy to communicate with focal company, because the representatives from the focal company are daily in the construction site. It was also mentioned that the focal company has developed an easy and effective near-misses registration and solutions system, which allows to observe and note near-misses in the construction site.

Subcontractor 1 emphasises there are many activities conducted by the focal company help to ensure safety and good working conditions in the construction site. Subcontractor 1 perceived trust towards the focal company. The workers feel that it has always been safe to work in the focal company's construction site. In manager's opinion people trust each other and negotiations about deadlines and challenges with the representatives from the focal company are always possible.

Involvement and experience of workers

Workers in subcontractors' company are involved in some OSH activities, such as regular OSH training, Awareness Day, and after those events, workers can give some ideas and recommendations how to improve working environment.

The workers' involvement and participation are ensured through direct communication on site. Subcontractor 1 confirmed that they are counselled about safety if needed, and at the same time, the proposals to develop safety activities can be given.

Workers are not part of any unions and do not have collective agreement. The typical establishment in construction sector relies on non-unionised low-wage and low-skill labour. Union density is very low in Estonia (at around 7%). It fell sharply in the 1990s, and it continued to decline also later. The reasons suggested for the decline are mainly the perceived links between the unions and the Communist Party during the period when Estonia was part of the Soviet Union, but also the termination of benefits and services which were earlier provided by unions (and had been a key function in the past).

Dyad 2: Focal company – Subcontractor 2

The Subcontractor 2 is specialised in provision of complex renovation service to the apartment buildings by general contracting as well as the insulation and plastering of the facades of apartment buildings and commercial buildings. The work performed for the focal company is insulation of facades. The company was established in 2009 and currently employs 30 workers who are mainly Russian and Ukrainian speaking. Generally, eight or nine employees are working at the same time on the construction site. The collaboration with focal company has been lasted for more than four years.

The Subcontractor 2 was engaged through the official procurement process established by the focal company. The Subcontractor 2 confirmed that the process of selection subcontractors was easy, effective, and fair. The Subcontractor 2 has been working for the focal company during 2011-2015. After that, there was a break in the collaboration, because of several reasons such as having other clients, other sites and cheaper price offered by their competitors.

OSH and working condition challenges

Subcontractor 2 emphasised importance of reminding safety requirements again and again in order to stay healthy and go home safe. In Subcontractor's 2 opinion, safety is taken seriously by the focal company, and they are monitoring it every day. Subcontractor 2 noted that his company received several remarks in their first days on-site, for example that straps must be fastened on the helmet. Now they are doing it also in other construction sites. Subcontractor' 2 site manager gave comments how they are minimizing the OSH risks: for example, since scaffold installing work is highly hazardous and time consuming, they do not install the scaffolding themselves anymore, but are hiring specialists (subcontractors) do it for them.

Site manager mentioned that they have mainly Russian speaking workers and the focal company organised safety training for all of them in Russian language.

When it comes to migrant workers, the Subcontractor 2 claimed that he is able to see differences in workers' perception towards work and safety among local Russian-speaking workers and Ukrainians (migrant workers). He explained that workers from Ukraine make more effort and would like to work longer hours and, even ready to work on weekends. He also stated that Ukrainians' safety behaviour is better, and they are doing their work exactly how is agreed, following all safety requirements.

Description of the applied contractual governance practices

Contracts

It was confirmed that there is an official contract between focal company and Subcontractor 2. The conditions of the contract are always negotiated and discussed before the start of work. Subcontractor 2 explained that it is known exactly when they have to start the work in the construction site and which materials are required, because this is specified in detail in the contract. There is also safety obligation identified in the contract.

Certifications

Subcontractor 2 representatives claimed that the focal company asked for specific certifications from them that are required to the work they do, because the workers are working in height and therefore, the subcontractor is responsible for all training, certification, and personal protective equipment. In addition, focal company provides the initial safety training on-site and after that, safety ID card is issued to workers to have access to the construction site.

Auditing

Subcontractor 2 confirmed that the focal company conducts regular monitoring over the compliance with safety requirements in the construction site. Representatives from Subcontractor 2 described that auditing is conducted regularly by the focal company in addition to the controls which are conducted by the local Labour Inspectorate.

Description of the applied relational governance practices

Trust

Subcontractor 2 believes that the relationship between them and the focal company is based on respectful business relationship, trust, and how the work quality is ensured. In addition, Subcontractor 2 confirmed that they are working with their own suppliers based on the same principles: Subcontractor 2 stated that the most important criteria for them in selection suppliers are price, quality of the product/material and delivery time. He claimed that, generally they do not have any problems with materials and suppliers.

An effective communication

Subcontractor 2 emphasised an effective communication with the focal company via email, phone, and direct communication. Subcontractor 2 reported that the focal company is in the construction site daily, which allows them to communicate with each other directly.

Hybrid

There is positive relationship between Subcontractor 2 and the focal company. In addition, the open dialogue and effective communication have been established on the construction site, which enables to communicate regularly, to plan jointly work and to arrange any changes in the timetable if there is a need.

Monitoring of requirements and follow up on non-compliances

Subcontractor 2 confirmed that the focal company has detailed and concrete measures to control the compliance over the safety requirements and conducting monitoring on daily basis. In addition, the Subcontractor 2 is aware of penalties which can be applied when non-compliances are identified by focal company. He knew that the level of penalty depends on type of the non-compliance and how serious the offence was as well as whether there was for the first time or a repeat offence. However, he had not heard of a cooperation agreement being terminated in this construction site due to a non-compliance and breach of safety requirements.

The focal company's difference from other clients

Subcontractor 2 reported that the focal company differs from other clients regarding the way how the work is organised and planned in the construction site and respectful attitudes towards all subcontractors. The worker stated that the current construction site is well organised and safe – there are good daily living and working conditions; the construction site is well and logically designed, all things are in their right places and the site is free of distractions. In Subcontractor's 2 opinion, it leads to better safety and behaviour.

Subcontractor 2 seems to be proud of being again selected after 7 years of break in cooperation. At the same time, all representatives of Subcontractor 2 are satisfied with working conditions and work design in the construction site. In Subcontractor's 2 opinion, the requirements and regular monitoring of work and safety enable the focal company to ensure an effective work organisation high safety level.

Effect of supply chain management practices on OSH and working conditions

The focal company has an official contract with Subcontractor 2. In addition, Subcontractor 2 confirmed that they were informed about all requirements, including OSH.

Subcontractor 2 confirmed that the focal company controls certifications required for the façade work. Additionally, there is the certification scheme established by the focal company regarding safety card, what is issued after relevant training and enables worker access to the construction site.

Subcontractor 2 described the monitoring and auditing process, what is conducted regularly in the construction site: the focal company's representatives are regularly checking how safely the work is conducted.

According to Subcontractor 2, an effective formal and informal communication, open dialogue, and close cooperation are established in the construction site by the focal company, enable to conduct work on time and safely. Subcontractor 2 confirms that the focal company pays much attention to OSH, informs subcontractors about hazards, and has established effective safety measures. However, there is no clear and explicit information that the Subcontractor 2 reports all incidents and near misses to the focal company as required.

Subcontractor 2 emphasised the importance of safe working conditions for their company. According to Subcontractor 2, there are no occupational accidents occurred in their company. At the same time, the manager reported about some incidents such as small cuts and the workers are trained to give first aid. To the question of whether such incidents were reported to the focal company, the manager could not explicitly answer.

Involvement and experience of workers

Workers of Subcontractor 2 are informed about OSH activities and participate in OSH training organised by the focal company. Workers' representative explained that all trainings provided but the focal company are mainly about safety. For example, the last training he remembered was about safety equipment – how to select them and how to use them. After the lecture, the focal company controlled our equipment and gave some recommendations. In addition, workers confirmed that the focal company is collecting workers' suggestions how to improve daily living and working environment in the construction site.

The workers' involvement and participation are ensured through workers' representative elected among workers. However, since all workers are Russian speaking and some workers are from Ukraine, the mechanism if and how workers involved in the application of leverage practices is unclear.

Workers are not part of any unions and do not have collective agreement.

Dyad 3: Focal company – Subcontractor 3

The Subcontractor 3 is performing ventilation work. The company was established in 1997. The subcontractor has cooperated with the current client for 2 years. In total, nine employees are employed by the company. Generally, two employees are working at the same time on the construction site. The main tasks conducted by the Subcontractor 3 are supply, design, installation and maintenance of air conditioners, ventilation systems, air cleaners and humidifiers. The collaboration with focal company has lasted for more than two years.

The Subcontractor 3 is engaged through the official procurement process established by the focal company. The Subcontractor 3 confirmed that the process of selection subcontractors was fair, and the communication is effective, using all communication channels (email, phone). The Subcontractor 3 was aware of the good image of focal company, planning project and selection criteria.

OSH and working condition challenges

Subcontractor 3 faces some challenges to meet all OSH requirements of the focal company, especially safety awareness of workers and proper personal protective equipment. Both, employer, and workers' representative stated that the focal company has taken total responsibility over OSH and providing safety training for all workers. The focal company has established controlling and monitoring activities over the compliance with safety requirements in the construction sites.

Description of the applied contractual governance practices

Contracts

There is an official contract between focal company and Subcontractor 3. The conditions of the contract are generally negotiated before the start of work. Subcontractor 3 reported that working in focal company's construction site, delays are rare, but if they occur, then they are longer than one week. This gives subcontractors possibility to optimise and better plan the work. All Subcontractor's 3 representatives confirmed that the focal company has clear agreements and specific practices discussed with them, which also include safety requirements and OSH practices. Focal company provides safety materials, booklets and organises safety training for all workers on the construction site.

Certifications

Subcontractor' 3 representatives claimed that the focal company did not ask for any specific certifications from them. General manager claimed that it is important to be a trusted partner and all necessary documents and certifications must be available. In addition, Subcontractor 3 stated that he has trained his workers for a long time, because it is hard to find good specialists in this area.

Subcontractor' 3 workers' representative said that the focal company provide the safety ID card to worker after OSH training, what gives workers access the work sites.

Auditing

The focal company conducts regular monitoring over the compliance with safety requirements on the construction site. Subcontractor 3 explained that they have focal company's representative visiting construction site daily and that they have been also controlled by the National Labour Inspectorate lately.

Description of the applied relational contractual governance practices

Trust

The relationship between the focal company and Subcontractor 3 is mainly based on reliability and positive experiences from previous cooperation.

Informal and effective communication

Subcontractor 3 emphasised respectful attitude of the focal company and an effective communication when interacting with partners. It was confirmed by Subcontractor 3 that the focal company's representatives are on the site every day, what enables to talk and discuss issues with them directly.

Subcontractor 3 reported that the focal company is organising different safety trainings and emphasised that after the safety training the focal company is collecting the feedback, ideas, and recommendations for improvement of the working environment and asking workers what can be done and/or organised differently. Subcontractor 3 emphasized that the focal company continuously improves safety and working environment in the site. One example could be an installation of the temporary technical elevator

to 8-storey house in order to minimise the manual workload and carrying of tools, what was proposed by workers and was still under the development by the focal company. However, this temporary technical elevator has been installed by the focal company in previous construction sites and, therefore, the Subcontractor 3 together with other subcontractors are expected the same for the current site.

Hybrid

There is positive and supportive relationship between Subcontractor 3 and the focal company mainly due to long-lasting effective collaboration. In addition, the open dialogue and everyday communication developed on the construction site, enables to communicate openly, to plan jointly work and solve problems regarding operations and work organisation on site.

Monitoring of requirements and follow up on non-compliances

The focal company conducts regular check-ups. Subcontractor' 3 workers' representative claimed that if workers ignore safety rules, for example, do not put on personal protective equipment for a moment, then this will be noticed by the focal company and punishment would be implemented immediately. At the same time, Subcontractor 3 worker's representative could not bring any examples of such situations and described the way how focal company follow up on non-compliance.

Subcontractor 3 (owner) reported that they see the focal company's representatives on the site every day, observing how the work is conducted and monitoring safety requirements. He claimed that if the focal company's representatives see non-compliances, they talk to the subcontractor and make remarks and warnings and then penalties could be applied.

Difference of the focal company differ other clients

According to the results from interviews, the focal company differs from other clients of Subcontractor 3 in two main points. The first one is the organisation of the work in the construction site. Subcontractor 3 stated during the interview, that the work is organised well and in a systematic way. In addition, the subcontractors are paid on time and regularly. The second point relates to OSH. It was also reported that the OSH issues are more important for the focal company than for the other main contractors. He added that the whole team (e.g. site manager, project manager, safety engineer) is professional and ready to cooperate with all partners. It was stated by the Subcontractor's 3 workers' representative and confirmed by the owner, that in other sites safety is more formal and exists mainly on paper or when monitoring is conducted. Workers' representative claims that safety training and proper personal protective equipment are compulsory in this construction site. However, workers' representative stated, that no occupational hazards exist, especially if the guidance are followed.

Subcontractor 3 seems to be satisfied with working conditions and all requirements on the site. Owner is satisfied with focal company' representatives and how work is planned and organised in the construction site. Both Subcontractor's 3 representatives confirmed that the high level of safety is ensured by the focal company due to organizing safety training and practicing regular monitoring activities. Subcontractor 3 confirmed that the focal company works closely with them in order to reasonably organise work on the construction site. He said that many accidents are happening if people must hurry. To avoid that, there is a logical and rational timetable established in the construction site. The subcontractors meet with the focal company every week in order to discuss the timetable. The deadlines can be negotiated.

Effect of supply chain management practices on OSH and working conditions

The focal company has a contract with Subcontractor 3 where all requirements regarding ventilation work, quality, OSH, deadlines, and process are described and agreed.

There is the certification scheme established by the focal company regarding safety ID card, what provides workers access to the construction site.

Subcontractor 3 reported that auditing is conducted regularly by the focal company and sometimes by the external construction safety expert.

There is open dialogue and supportive environment are established on the construction site by the focal company. Subcontractor 3 described that they have a positive and respectful relationship with the focal company. In addition, the communication is easy.

Subcontractor 3 workers' representative has participated in all safety training and awareness days, organised by the focal company. He also mentioned that it is possible to give the feedback and suggestions how to improve working conditions. As a result, no incidents and occupational accidents occurred for the last two years. Subcontractor 3 (owner) concluded that all workers are well trained and the same safety practices are also followed in other construction sites. Subcontractor 3 workers' representative added that in the beginning it was unusual for him to pay so much attention to safety and, for example, to helmet and how to wear it properly, but afterwards he accepted it, adapted, and is now used to all safety requirements on-site.

Involvement and experience of workers

Worker's representatives confirmed that they are systematically involved in OSH activities, e.g., Awareness Day and OSH training, provided by the focal company. Training is provided in the topics as follows: safety equipment and safeguards, fire safety, effective personal protective equipment, prevention of occupational hazards, for instance safe working at height, etc. Workers' opinion and suggestions how to improve working environment have been asked constantly after each training.

The workers' involvement and participation are ensured through direct daily communication on site and weekly counselling provided on site-by-site manager.

Workers are not part of any unions and do not have collective agreement.

Dyad 4: Focal company – Subcontractor 4

Subcontractor 4 is specialised in load-bearing structures (bricklaying, assembly work and monolith work). The company was established in 2009 and currently has about 30 paid construction workers (mostly Estonians) and additionally about 100 workers through subcontractors, mainly migrant workers. In the current construction site, there are a little over 20 workers on daily basis (some of them being subcontractors of Subcontractor 4). Subcontractor 4 has cooperated with the current client since 2017. The first subcontracting work was offered in Northern part of Tallinn when site manager of focal company was sending out the orders, the Subcontractor 4 applied and won the procurement in load-bearing structures was Subcontractor 4. The Subcontractor 4 cannot remember the process of selection well, but he believes a positive previous co-operation was the main reason to be selected for the work again. All communication is done by e-mails and phone and by regular meetings in the construction site.

OSH and working conditions challenges

Subcontractor' 4 workers' representative has some knowledge about occupational hazards, but maybe not always perceives them important, especially noise and wearing hearing protection. They are aware of falling risk while working at heights or in ladders and perceive this as the most important risk which should be tackled. The workers' representative also mentioned hand injury risk while doing cutting work and perceived lifting work quite hazardous as it may result head injury of someone if the hanging details unexpectedly fall down.

Description of the applied contractual governance practices

Contracts

There is an official contract between Subcontractor 4 and focal company. Subcontractor 4 claims that the contract lasts for about 4-5 months and the next contract for the next building, is negotiated after

that. Subcontractor 4 has contracts also with his own subcontractors, and some of them have done successful subcontracting work already for 7 years. He has found them through his own personal circle; he claims there's no 'portal of finding subcontractors' in Estonia. Obligation to follow safety rules in construction sites is clearly written in the contract.

Auditing

Subcontractor 4 is aware of auditing which takes place in the construction sites. He mentions both people from Sweden as well as local employees from focal company screen the construction sites and monitor over the compliance with safety requirements regularly.

Additionally, construction sites are visited by labour inspectors who pays a visit without a former notice. The subcontractor 4 believes that focal company's construction sites have no issues with the Labour Inspectorate as they are very strict with all the rules; if something is ignored, they would take a photo and share this among the whole group and it brings problems to subcontractors.

Description of the applied relational governance practices

The relationship between the focal company and Subcontractor 4 is based on trust, and positive previous cooperation. Subcontractor 4 explains that in Estonia, the companies are young and safety is learnt usually from its own experiences, with time the reliability is gained.

Hybrid

There is positive and supportive relationship between Subcontractor 4 and the focal company. The Subcontractor 4 states that conflicts which may escalate are consciously avoided. He finds that it doesn't create a good and suitable working environment. Subcontractor 4 has a similar view to safety as focal company and is ready to have an open dialogue when needed. He acknowledges focal company's initiative to deal with safety before everything else.

Monitoring of requirements and follow up on non-compliances

Subcontractor 4 confirms that focal company monitors the safety requirements on daily basis. Mainly it's done by site managers, but he has also noticed OSH manager on site regularly. It is also confirmed by the workers' representative who mentions that there is always someone around who is talking about safety.

Subcontractor 4 is aware of penalties which are applied when non-compliances are noticed by the focal company. He admits that he has also paid them (a photo about violation and the amount of penalty has been sent to his e-mail), and they are not 'a small amount of money', mainly due to safety violations by his own subcontractors. At the same time, he understands why it is practiced by the focal company. He states that 'grass ignorance' cannot be tolerated in constructions sites and that's what the focal company fights against. He believes that money is the best motivator in these cases. He tries to be a good example for his subcontractors also by showing a good example (especially by his own workers who are natively Estonians), but he admits, that it takes time to develop good safety culture, especially among migrant workers as he doesn't always know how migrant workers are thinking while doing their regular routines. They come from Ukraine, from Tadzhiikistan etc – and their working culture, as well as safety culture, develops also with time.

Subcontractor 4 adds that sometimes, instead of penalty, the focal company asks to compensate the adequate safety equipment which was lacking by subcontractors' and brings it on-site itself.

Difference of the focal company differ other clients

Subcontractor 4 claims that the focal company stands out from other similar companies in Estonian construction market. One reason is the Scandinavian background, which in Subcontractor 4 opinion, reflects on high safety culture and strict safety rules which may not be the case for all others. Several

years ago, he had been working in a Danish construction company and stated that in Denmark, the first thing is human life and health and only after that, there is a talk about money. Subcontractor 4 explains that about 10 years ago, when he started to work in Estonian construction sites with his workers, it was quite unusual to think about safety while doing work on the 1st floor. But having an experience from a Scandinavian company, he wanted to show the good example, and as a site manager, he used the personal protective equipment himself also on the 1st floor.

In Subcontractor's 4 opinion, also screening the constructions sites and making sure even smaller issues are being dealt with, is also very important for the focal company. He explains that even small incidents are noticed – which usually are overlooked in Estonian construction sites led by other main contractors – and discussed with subcontractors to prevent accidents to happen.

Effect of supply chain management practices on OSH and working conditions

The focal company has a detailed contract with Subcontractor 4 which has requirements also about OSH and therefore, affects OSH outcomes as Subcontractor 4 tries to avoid the penalties which will be applied when OSH requirements are not followed by his workers or his subcontractors.

Subcontractor 4 finds auditing an important role for developing and maintaining good safety culture in the construction site as it gives immediate feedback of safe behaviour and habits.

In Subcontractor' 4 opinion, open communication about safety is an important factor, especially talking openly also about incidents and near-misses. This shows that safety is dealt in a proactive way. He confirms that focal company openly discusses safety issues which other main contractors may not perceive important and this way, affects subcontractor's attitudes towards safety.

Subcontractor 4 emphasises that he has an experience from working in a Scandinavian construction company himself and therefore, is aware of a high safety culture which Scandinavian group brings to construction site. He believes that he has given a good example for his own workers which is amplified by the focal company's activities.

Involvement and experience of workers

The workers' representative did not bring up any challenges while communicating with his manager or with others in the construction site. He confirmed getting safety training before starting to work in the construction site and mentioned he has every safety equipment that he needs. He has not suggested any requests concerning safety activities.

The workers' involvement and participation may be not that obvious, as most of the workers are migrant workers (who may not communicate in Estonian).

Workers are not part of any unions and do not have collective agreement.

Future trends

Some future trends have been identified regarding the improvement of OSH conditions by means of leverage instruments in the Estonian construction supply chain:

- Code of Conduct may have an impact on OSH while agreed, signed between main contractor and subcontractors/suppliers, and implemented into practice (with relevant metrics to measure its impact).
- Clear procurement criteria regarding OSH for selection subcontractors/suppliers may proactively influence safety performance of subcontractors working in the same construction site.
- More visualised training methods should be used, with the interaction about safety-related issues can be automated (with AI management elements). One of the subcontractors believes,

that in a small scale, automatization can be used in load-bearing construction work. He claims that wall-laying robots already exist. He also sees the future trend to move towards construction with prefabricated walls as it's cheaper option.

- Impact of Covid-19 and Russian-Ukrainian war have caused supply problems of materials and products which may put high time and work organisation pressure on subcontractors. Two years of Covid-19 gave a lesson on how to manage work during pandemics in order to minimise health risks (clear requirements for all subcontractors).

Illustrative citations from the cases:

Focal company	<i>“We look at OSH in the whole value change. Starting from buying the land - what risks do we add while working on this particular site? We want to discuss OSH risks from the very start.” - OSH manager (located in Sweden).</i>
Subcontractor 1	<i>“We trust each other and know what and how we need to do our work.” - Senior manager – about the relational aspects.</i>
Subcontractor 2	<i>“In addition, direct communication enables to receive an immediate feedback and support. If you need to stay in the site longer than 5 pm to finish the job, this can also be discussed and managed quickly.” - Site manager – about the communication between the subcontractors and the main contractor.</i>
Subcontractor 3	<i>“We are so well trained here, that we continue to follow the same safety practice also in other construction sites.” - Owner – about OSH trainings in the construction site.</i>
Subcontractor 4	<p><i>“They are very strict with all the rules; if we ignore something, they would take a photo and share this among the whole group and it brings problems to us.” - Owner – about the safety violations.</i></p> <p><i>“I know what I’m talking about – in Denmark, the first thing is human life and health and only after that, we can talk about money-” - Owner – about the Scandinavian background, which in Subcontractor 4 opinion, reflects on high safety culture and strict safety rules which may not be the case for all others who do not have such a background.</i></p>

Construction, Case 4, Belgium

Introduction

As a starting point for the research, the position of the construction sector within the Belgian economy, and the types of company active in it, will be sketched briefly. The construction sector directly and indirectly accounts for around 14% of the added value in Belgium. It is the largest in the Flemish region, where 60% of all construction enterprises are registered. Construction can be considered an “SME sector” (Confederatie Bouw, 2016, p. 21). Constituting 98,7% of all construction firms, SMEs with less than 50 employees make up the quasi-totality of the companies active in the sector. 77% of all construction enterprises has less than 6 employees (FVB-FFC, 2011, p. 12).

When considering the legislative framework, the royal decree on temporary and mobile building sites (KB tijdelijke en mobiele bouwplaatsen) from 2001, (a part of) the Belgian transposition of the council directive 92/57/EEG, should be mentioned. This legislation regulates the function of the safety coordinator in construction projects, amongst other safety related issues. An often-mentioned frustration with the legislation is, notwithstanding several updates, its advanced age, and its sequential logic of having clearly delineated planning and realisation stages in a construction project.

In 2021, the construction sector was the deadliest sector in the country in terms of registered deadly accidents on the job, and also had particularly high numbers of non-fatal accidents, compared to other sectors in the country (FEDRIS, 2021). The FEDRIS statistics (of the federal government) only include Belgian workers, so all construction workers working for non-Belgian subcontractors, or independent workers registered abroad, are not included in these numbers. There is thus reason to believe that the total number of accidents in the Belgian construction sector is significantly higher (Constructiv, 2018, p. 19). Smaller construction companies are more likely to see workers have accidents than larger companies. Most accidents are categorized as either a shock with a motionless object (like a fall) or contact with an object that wounds (like a sharp object), with falling being the most common accident. OSH challenges in the Belgian sector are similar to those in other European countries, being the ever-increasing complexity of sub-contracting supply chains, the exploitation of migrant labour and the weakening of national labour inspections (Constructiv, 2018; Jorens et al., 2012). Union membership in Belgium is amongst one of the highest in the world (ETUI, 2016). No numbers specific to the construction sector were found, but as many workers are not registered with a Belgian employer, lower de-facto union coverage is to be expected.

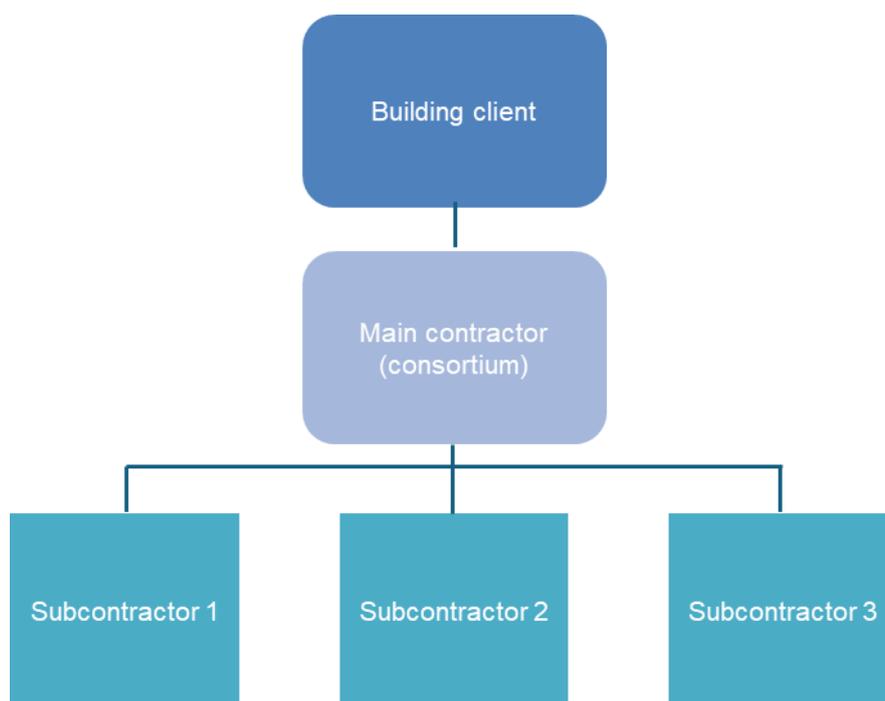
The project and the main actors involved

For the Belgian construction case it has been decided to select a large and complex infrastructure project. What made this project especially interesting for this research, is that the building client (the public authorities) is particularly concerned about health and safety during the construction process. This is driven not only by a general orientation of the public authorities towards the public good, but also because the public opinion is closely scrutinising the construction project.

The focal company is a consortium of construction companies. These construction companies have never worked together in this constellation but are familiar with each other through previous interactions in the sector. From the start, visions on OSH have not always been aligned within the consortium, and negotiations are ongoing on the exact orientation of health and safety policies. The building client is a public authority. The client has multiple employees working exclusively on health and safety, which try to supplement the efforts of the main contractor and subcontractors in the matter. Subcontractor 1 is specialised in specific tasks for large construction projects and is linked to one of the companies in the main contracting consortium. Due to their specific and rare expertise, they participate in large building projects across the globe (mostly Europe and the Middle East). Subcontractor 2 is also specialised in certain specific tasks, which they perform in different countries around Europe, almost always as a subcontractor. They are a subcontractor of the main contractor, but at the same time they are a daughter

company of one of the companies involved in the main contracting consortium (a different one than subcontractors 1 and 3). They stress however that they are engaged independently of the mother company, and they function as a completely independent subcontractor. Subcontractor 3 is again specialised in a different set of tasks. As is the case with the other subcontractors, subcontractor 3 is a subsidiary of one of the companies that are part of the main contracting consortium. Although subcontractor 3 has a legal link with the main contractor, a tender procedure was used to grant the specific tasks it is engaged in presently on the construction site.

Figure C 12: Relationship between the building client, the focal company and the three subcontractors



The focal company

It is on the level of the focal company (the main contractor) that strategy is decided upon, also concerning the health and safety approach. The main contracting consortium writes out tenders for the different parts of the project, and the different tasks to be completed in each of them. Concerning subcontractors, the contract with the building client stipulates that sub-subcontracting can only go on for a limited number of steps, as avoiding long subcontracting chains will already be a crucial gain for the safety on site. The consortium functioning as the main contractor has appointed a safety coordinator overseeing the whole project. This person's approach reflects in many ways the approach of the building client, and from the start of the project good relations were entertained between the safety coordinator and the safety team of the building client. This safety coordinator functions as head of the safety department which comprises a number of safety experts. The safety coordinator reports directly to the director of the consortium and takes a prominent place in a number of councils and regular meetings, where the safety aspects are also discussed.

Although the basis of the safety approach was decided upon when the project was granted, it is the task of the safety coordinator to render this more concrete and come up with concrete actions and policies. The safety coordinator is backed in this by contractual obligations that apply to the main contractor, and to all subcontractors. As safety and health was a central concern of the building client, the contractually stipulated safety measures are manifold, and the section of the building contract about safety is very elaborate. However, the actual challenge only commences after the signing of the contracts, as it is crucial to involve the subcontractors from the very start of the works in the particular approach to safety

and health. At the same time the safety coordinator has a particular vision on how to approach safety, something that also needs to be introduced into the different companies involved in the consortium. Different habits and safety cultures have to be navigated, and integrated somehow in a larger uniform approach to safety that spans the whole building site.

Practically, the centre of the safety policy are the work plans, which serve as preparation for the different phases of construction. An emphasis is put on the preparatory phase of every part of the construction project. By consistently implicating all relevant safety personnel in the composition and discussion of the work plan, safety implications of all processes are discussed in a detailed manner, outside of the specialized circle of the safety personnel. All this is framed within the broader logic of making safety a concern that is shared across all functions in the construction process.

On the ground, the safety coordinator chose consciously for a far-reaching relational approach. A positive relationship with workers was one of the main concerns. By focussing on giving positive as well as negative feedback on OSH issues to workers, the perception of being a 'safety police' is avoided as much as possible. Only as a last resort will more 'hard' measures be taken, such as exclusion from the building site, or a fine for the responsible contractor. Proximity with the workers also takes a central place, and the safety coordinator tries to be amongst workers as often as possible, eating or taking breaks with them in an attempt to reduce the distance between them and the safety experts. The focus lies on establishing longer term relationships with the site managers and the foremen. Linked to this is the general aversion to approach safety and health by orienting towards certain key performance indicators. This would distort the collection of safety data as contractors strive to protect their reputation and would greatly hamper an open communicative environment.

The safety coordinator also communicates with the purchasing department, as it is important to address some safety concerns from this early stage. For example, contracts containing piece-rate work will be discouraged as much as possible, as this pressures workers to pay less attention to safety and health concerns. Also in the choice of delivering prefabricated sections, the safety coordinator will sometimes intervene, for example when units prove to be too risky to unload or to transport across the building site. In the procurement of labour, the safety coordinator tries as much as possible to advocate for hiring groups of workers with a certain linguistic homogeneity, as communication within and across teams is crucial to safety on the site.

Dyad 1: Focal company – building client

Here the relationship between the main contractor and the building client will be discussed. Understanding this relation will be crucial to understanding the broader dynamics relating to OSH on the building site studied. The building client plays a key role in safeguarding safety standards in the project, not only through contractual clauses obliging the main contractor to attain certain goals and implement certain practices, but also by actively monitoring OSH on site, thus supplementing safety efforts of the main contractor and its subcontractors. The client has in place a safety manager, supported by safety experts. In addition to this a number of safety inspectors go daily to the building site to monitor safety and health behaviour. The contractor was engaged through a tendering procedure. Although the consortium was created specifically for the tender, the building client already had experience working with most of the contractors composing the consortium.

According to the building client, most important challenges for OSH and working conditions in the project are the same as in the sector in general. A shortage of labour power drives firms to work with more subcontractors, almost always international. The multiplicity of nationalities and languages on site requires an elaborate communication strategy to get across the safety regulations, and collect possible complaints. Keeping oversight of the complex networks of sub-contracting, and getting all sub-contractors and their workers informed on the essential safety procedures, is also a considerable

challenge. The goal of creating a common safety culture is rendered increasingly difficult by the quick succession of short-term contracts for subcontractors further down the supply chain.

Requirements concerning safety and health were included in detail in the initial tendering procedure, and the important lines concerning OSH were thus already determined in advance. Further discussions on safety are held in a variety of meetings, where the building client can voice concerns towards the main contracting consortium on a number of topics. As a goal for the project the building contractor committed itself to contributing to an improvement in the building sector's safety. It wants to do this by 1) setting up structures across the building site that allow for the exchange of knowledge and good practices; 2) by investing in HSE education for their employees; 3) by doing frequent visits on site not only by HSE experts of the building client, but also by the contractors, involving management; 4) by using an application to collect and centralize data on OSH. These goals, and the choices made to realise them, translate into a list of more concrete governance practices. This will be guarded by the safety employees, that will be active on site, working for the building client.

The applied contractual governance practices

It is important to remark that the governance of OSH practices normally falls on the main contractor and the subcontractors, with the safety coordinator as the central figure. The building client aims not to take over this central role, but rather attempts to offer guidance and supplementary capacity where possible, and surveillance and verification where needed.

A number of important demands and safeguards relating to OSH, supplementing or clarifying legal provisions, have been written into the contracts with the main contracting consortium. Many of these were inspired by past experiences on other building sites, on which the building client builds explicitly. A general contractual innovation is the use of a specific contract type, where the possible added costs are divided more equally between the building client and the contractor. Other contractual elements touching upon health and safety are:

- The contract signed between the client and the main contracting consortium has an annex exclusively dedicated to safety and health (in addition to the legally mandated safety plan). It stipulates who has to be in the OSH team of the main contractor, which (safety) education level, ... They demand a specific safety team that works only on this site.
- All incidents (not only the serious accidents, which they are legally obliged to report) have to be reported to the client.
- In contracts with subcontractors, the building site code (*verfreglement*) has to be signed, along with a declaration of intention to follow it.
- VCA certification is obligatory for all companies working on site, or if not possible at least for all workers working on site. This has been contractually determined from the start of the work and is verified by a registration system using badges for registering all workers present on site at a particular moment. Exceptions can be made ad-hoc. As an alternative ISO 45 is also accepted.
- The contractor is obligated to make detailed work plans for every phase in the building process. Here safety is discussed as well, and safety personnel of the client is present to ask specific questions.

The applied relational governance practices

The building client, and the team working on safety and health, give special attention to the relational side of their OSH governance practices. They explicitly avoid working with strict targets or KPI's when it comes to safety, as they consider it key to create an environment where an open communication on what goes wrong/what can be done better is created. Having concrete contractually enforced OSH goals would only prompt contractors to obscure certain problems, leading to worse de-facto OSH outcomes. In what follows a list of the most important practices will be provided:

- Emphasis is put on a positive communication style concerning OSH issues. Safety personnel are instructed and educated to take care not to focus only on what goes wrong. The idea is that by creating an open atmosphere around OSH, workers will be able to say/admit when something goes wrong without the fear of being punished, thus bringing more issues to light. Safety personnel tries to do this by keeping a balance between negative and positive remarks on safety when visiting the site. Using contractual means to enforce behaviour is seen as counterproductive, and a last resort.
- Basic means of communicating (signs with pictograms). This is used as a minimal way to communicate the most essential safety instructions, displayed on a large panel at the entrance of the building site in simple pictograms.
- Daily on-site visits by safety experts, thus supplementing the efforts of the main contractor. During visits the aim is to find, correct (through conversation), and document safety issues, at the same time as good safety practices are stimulated and documented. Issues are discussed with the workers involved, and when needed brought to a higher level (*werfleiding*) to find solutions.
- The building client uses a central system for information gathering (through an app), in which all data gathered by their own safety personnel is stored, synthesised, and shared with both their own management and the main contractor. The main contractor also uses the same system, further facilitating information gathering, and transparency on the nature and prevalence of OSH issues.
- When accidents happen, the client follows up on the aftermath. Where are the injured workers going? Are they receiving care in their home country? This is done by asking the involved contractors and remains rather informal.

Hybrid

Safety briefings ('toolbox-meetings') are held monthly. A safety-related theme is chosen every month (based on safety statistics or particular events), and communicated to all teams on site, where the foremen in their turn communicate it to their workers. This can be very brief (10 minutes).

Monitoring of requirements and follow up on non-compliances

The central information gathering system allows to follow in real time the safety remarks made by personnel on the ground, what they consist of and when they were resolved. Statistics on safety generated by this program are used to communicate to senior management on safety issues and can also be used to identify recurring issues with certain contractors. Usually issues are resolved through informal means, and no form of (contractual) enforcement or punishment takes place. If certain contractors persist in their problematic behaviour, the building client cannot directly act upon it, as they have no contractual relationship with the subcontractors. In extreme cases it can give a negative advise to the main contractor, who then usually removes the problematic contractor from the site.

Safety meetings are organised every week, where the statistics on safety are discussed, along with particular cases, or particular problems, if needed. The meeting usually takes place between the safety coordinator and the safety manager of the client. In addition to this there is the weekly coordination meeting, with the safety manager of the client, the safety coordinator, the main contractor and all site managers (*werfleiders*). This focusses on the interaction of safety risks between works performed by different contractors.

The focal company's difference from other clients

The main contractor is very professional, as it is composed of a number of large construction companies. This means that much expertise is concentrated in the consortium, also on safety and health.

Effect of supply chain management practices on OSH and working conditions

Subcontractors of the consortium differ enormously in nature and size. Some subcontractors, who are not yet familiar with the elaborate OSH approach on the building site, react reticently at first. As the client sees it as its mission to improve OSH performance across the sector, it willingly goes into discussions with these subcontractors. If resistance persists, ultimately, they are backed by contractual clauses obliging subcontractors to follow safety procedures.

As the safety requirements were written in the tender, the main contractor was conscious about these, and calculated it into its budget. It was thoroughly discussed during contract negotiations.

Involvement and experience of workers

The building client does not have workers who are involved in the actual construction work. They do have a number of employees who are specialized in safety and health, and who have a significant influence on how OSH on the different building sites is managed and most of all verified.

When it comes to OSH, the client does not attach much value to the supply chain structure of subcontracting and interacts with all contractors and workers on site. When a safety issue is identified the safety expert tries to determine a solution in conversation with the worker. Experts recognise that as many different tasks are performed on site, workers often come up with the best solutions to a safety problem, as they know best their *metier*.

Unions are involved, but on the site studied they have up until now been rather absent. For the moment there was no union representative especially assigned to the building site, and they have to come from further away. A new collective labour agreement will enter into force and could make regular education obligatory. This would be positive, but on the site studied this is already the case.

Dyad 2: Focal company – Subcontractor 1

The subcontractor is specialised in certain techniques, making it one of the few contractors that can perform similar tasks on a large scale. Due to their specific and rare expertise, they participate in large building projects across the globe (mostly Europe and the Middle East). This means they have to be able to function in construction sites with widely differing regulations as to safety and health, as well as to deal with cultural differences in construction sectors in different countries.

As the contractor is part of one of the construction companies in the consortium, they were not engaged through a tendering procedure, but were directly taken on board to perform the specific tasks of their specialisation. Although they function as an independent company, they have to ultimately follow orders coming from the company group they are part of. The company cooperates both in projects that are co-realised by members of the group, and in projects led by partners from outside the larger group structure. The works they are performing for the focal company (consortium) take up a significant part of the subcontractors' manpower, and represent a very important share of its income, projected multiple years in the future.

OSH and working condition challenges specific to the activities undertaken by subcontractor

By the nature of the work done by subcontractor 1, several severe risks are brought about by their operations. An important part of the works involves digging -and working in the proximity of- large and very deep pits, sometimes filled with water. They also use large cranes to lift large objects into these pits. This creates the double danger of people falling or drowning in the excavated pits, and people being hit by large cranes or the objects they are moving. All this results in the situation where small injuries are very rare, but when an accident does happen, it normally has very grave -often deadly- consequences. The most important challenge in terms of safety and health is thus the maintenance of focus. As accidents happen only very rarely, workers tend to forget the level of danger their environment

presents to them. When the focus on safety gets less important, an ideal situation for heavy accidents is created.

A second major challenge to safety and health is the coordination with the other (sub-) contractors. The activities that are specific to subcontractor 1 require the coordination with a series of subcontractors that are responsible for e.g. the delivery of concrete, the evacuation of excavated soil, the construction of components such as welded mesh, etc. All of them have to be aware not only of the risks connected to their specific tasks, but also to the risks posed by the work done by subcontractor 1 (notably the building pits and the moving cranes and components). Keeping oversight in this coming and going of subcontractors, each aiding with a part of the building process performed by subcontractor 1, requires an intensive feat of communication and coordination.

In this specific building site a third challenge for safety is added, namely the location. The building site has in its very close proximity multiple roads that are extensively used, housing, and industrial infrastructure. This means that many people ('civilians') are close to the building site, and often tend to approach it further out of necessity, curiosity, or even trespass. This poses extra dangers, as establishing sufficient distance for the safety of bystanders can be a challenge.

Supply chain management practices

All safety and health requirements are communicated and discussed even before the contract is signed. The safety plan is included in the contract, and subcontractor 1 is also required to pass these requirements on to its own subcontractors. Although there can be a discussion around how to perform better on safety, and how to improve certain approaches or techniques, a negotiation on safety standards is out of the question.

On the building site safety is an integral part of all work planning, and so all actors involved should be aware of what everyone else on the site is doing. This ensures coordination between the different contractors and allows for exchanges on safety and health issues in every step of the building process.

Requirements with relevance for OSH and working conditions

The requirements on safety and health on site are not different from the requirements on other large construction sites. They include the wearing of the necessary personal protective equipment – at all times a helmet, safety shoes and a fluorescent vest- and the using of specific safety equipment when doing particular dangerous tasks, such as a safety belt for working on heights, goggles when working with specific substances, an inflatable vest when working in the proximity of deep water, etc. These requirements are valid for everyone present on the construction site and are communicated to all workers before they start working on the project.

Another usual requirement is the giving of monthly educative toolboxes on safety and health. These can focus on a diverse array of topics linked to safety and are often based on particular events that happened on the construction site, e.g. a toolbox on working in hot weather when there is a heatwave, or a toolbox on working in the proximity of certain machines, when they are present on the site.

Description of the applied contractual governance practices

- VCA certificates are obtained for all employees of subcontractor 1, and all the employees of the subsequent subcontractors. In addition to this the company has also obtained VCA certification for the petrochemical sector and two ISO standards, one of them being the ISO 9001. While these certificates mostly have a business value, as they allow the company to be competitive with other companies in tenders, the educational activities that come with these certifications are also considered valuable for awareness raising.
- Formal rules on safety are communicated even before the conclusion of the contract, and subcontractor 1 follows the safety plan as instructed by the main contractor.

- Safety controls are performed on different levels. Safety checks are being done regularly on the building site by safety experts of the building client, the main contractor, the general safety coordinator and the safety experts of subcontractor 1. These checks on four different levels work mainly through e-mails, where a safety inspector who perceives a safety issue will normally take a few pictures of it and subsequently return to his/her desk in order to file a report. This report is then sent to the building client and the main contractor, as well as to the involved subcontractors. It is then the task of the main contractor to communicate to the subcontractor, and it is the subcontractor who will communicate it to the workers involved.

Description of the applied relational governance practices

- According to subcontractor 1, the most central aspect of their safety policy is communication. The project leader walks around on the building site and talks to the workers very regularly, interrogating them about the works they are performing: What are they doing exactly? Why are they doing it? Why are they using a specific technique? Why are they assigning certain people to certain places/functions, etc. This helps to keep the workers on their guard and dissuades them from executing certain tasks without prior reflection on a series of parameters. The same thing is done with the subcontractors. Due to the specialised nature of the work they always use the same subcontractors, which facilitates communication and trust.
- Regular meetings with the staff of both the main contractor, the other subcontractors and the subcontractors of subcontractor 1 make sure that approaches on safety and health are coordinated. This ensures everyone is aware of the works undertaken by the other companies and groups present. Any possible interferences or safety risks due to interactions of different building tasks are thus identified beforehand, and specific plans are made to ensure maximum safety for everyone involved.
- Within the company they use the educational moments mandated by all the different certificates and badges, to go further than what is minimally required. Preferably the workers are separated into small groups to maximize their participation.

Hybrid

According to subcontractor 1, no clear system of punishments or fines exists concerning safety or health infractions. The person involved did not have knowledge of such measures, and being in a leading position, this led to the supposition that such rules do not exist on site. When infractions have been made and reported, they were discussed, and then the matter was dropped. If safety issues persist, the companies involved will voluntarily choose to remove certain personnel from the building site.

Monitoring of requirements and follow up on non-compliances

Safety inspectors both of the building client and of the main contractor are making rounds on the building site daily and communicate eventual issues to the involved parties.

The focal company's difference from other clients

According to subcontractor 1, on the level of safety and health there are no significant differences with other large building sites they are working on. Only the -in their opinion excessive- presence of safety experts is a notable salient feature of this construction site's safety policy.

Effect of supply chain management practices on OSH and working conditions

Much frustration exists with the system of sending around reports and pictures of unsafe situations, mostly with workers from the different subcontractors. Instead of being told about safety issues well after they occurred, through a message indirectly passed on to them and devoid of the context at the time, they would prefer to have had at the moment itself the opportunity to discuss the issue with a safety expert. This would allow for finding quicker solutions but would also give workers the space to defend the approach chosen in the specific context.

Involvement and experience of workers

The workers on site generally perceive their situation as safe, and do not make a distinction between their work on this site, and their previous (or parallel) work on other construction sites. Frustrations exist about the perceived theoretical nature of many a safety rule, and they feel that their practical experience and daily needs are not sufficiently taken into account. Sometimes safety rules go against what they know to be the most safe in a specific situation, and this obliges them to operate in a somewhat hidden way when doing certain procedures they know the safety experts will disapprove of.

They notice more 'safety people' are walking around on the site, but they consider this to be a formal change, contributing nothing to increased safety, and getting in their way. Some workers perceived more intense safety controls on the building site, but noticed also that they do this so that management up high can 'pull open their umbrella' when something goes wrong. Some saw it as management putting on a show, multiplying safety rules and inspections, making it overly burdensome and complicated.

Other issues that workers consider of a daily importance to health and safety are ignored by the safety experts, they feel. Workers complain about the dirty and sloppy work site, about the absence of clean sanitary installations, of the absence of running water in some places or moments. In the experience of workers, unions are completely absent from the building site. They are perceived as distant actors who are unfamiliar with the context on the ground, and who's interests do not necessarily align with those of the construction workers.

Dyad 3: Focal company – Subcontractor 2

Subcontractor 2 is also specialised in certain tasks, which they perform in different countries around Europe, almost always as a subcontractor. They are a subcontractor of the main contractor, but at the same time they are a daughter company of one of the companies involved in the main contracting consortium (a different one than subcontractors 1 and 3). As they also know, and have worked before with the other companies composing the consortium, the communication runs smoothly on the whole construction site. They stress however that they are engaged independently of the mother company, and they function as a completely independent subcontractor.

The project is important for subcontractor 2 both in time and resources that it takes up, as in revenue that it brings into the company. The company is structured in a way that it can handle large projects as this, but also needs them. They were chosen for this project due to their expertise, capacity to participate in large scale projects, and their excellent track record on both quality and safety, something that is known to all the companies composing the main contracting consortium.

OSH and working condition challenges specific to the activities undertaken by supplier

Several risks are particularly salient when considering the type of work performed by subcontractor 2, risks that are to a certain extent similar to the risks mentioned by subcontractor 1. The pits that are being dug out are usually submerged in water, and so there is a drowning hazard if someone happens to fall in them. As the construction site is limited for the moment to a relatively small terrain, many people and subcontractors are walking around and performing work in a limited space, creating an additional risk that someone is uninformed about the location of the pits dug out.

Supply chain management practices

The main contractor takes care of the coordination between the different subcontractors active on the building site. Through this facilitated coordination, which happens to a large extent during preparatory meetings where both the safety aspects and the practical aspects are discussed, good contacts are established between the different contractors active on the site. The requirements of the focal company are not perceived as very stringent by subcontractor 2. The work they were engaged for has to be done, but if difficulties pop up due to coordination with other subcontractors active on site, the pressure is not

put onto subcontractor 2. Their focus lies on finishing their assignment in a qualitative way, and they will not be rushed into delivering a lower quality or making compromises on safety and health.

To tackle the specific risks that subcontractor 2 encounters, some basic safety equipment is used, notably swimming vests and safety buoys attached to long ropes. Also again extensive communication prior to the execution of certain building tasks is crucial in preventing dangerous situations from arising between contractors' interfering activities. Next to this, everyone is required to wear at all times the basic protection gear, being a safety helmet, safety shoes, and a fluorescent vest.

Description of the applied contractual governance practices

- The company makes use of a number of certificates concerning safety and health. Their materials are certified every three months after a complete safety check.
- Educational moments, often including watching an educational video on safety and health, are provided in certain moments. Notably when workers first enter the building site, they have to watch an educational video and afterwards complete a written test on it before they receive a badge that allows them access to the site. Everyone who has completed the necessary education also gets a specific sticker on their helm, so that when safety inspectors go around the site, they can verify if everyone fulfils the requirements on safety education.

Description of the applied relational contractual governance practices

Hybrid

On the building site safety experts circulate regularly, and inspect the doings of everyone working, as well as how a job is left after it is finished or temporarily halted. It is a regular practice for safety experts to take pictures of a safety infraction when they find one. They will subsequently send it to the main contractor, who will communicate about it with the subcontractor involved. This is perceived as a negative practice, as it leaves little room for discussion about the situation, or about the ideas to improve it. At the same time some safety experts do talk to the people involved when they see a violation of safety regulations. In this case there can be made room for more constructive conversations around the possible solutions, or the interpretation of certain acts as dangerous or not.

Difference of the focal company differ other clients

The focal company seems to be more active when it comes to safety and health procedures, but it is not clear if this engagement already has strong consequences in practice.

Effect of supply chain management practices on OSH and working conditions

In general the subcontractor is supportive of the increased attention for safety and health, but also seems to have its reservations when it comes to the actual impact of the measures, and the extra effort that it will take to be implicated in these elaborated OSH policies.

Involvement and experience of workers

In general, workers perceive safety as a natural thing. Everyone wants to go home after work, and those who have experienced serious accidents in their team carry it with them for the rest of their lives. The big danger is laxity, the tendency to forget that you are dealing with dangerous situations, because the situation becomes routine. Safety is also promoted by their own firm, and workers are not yet noticing anything of the safety procedures promoted by the building client.

According to multiple construction workers, workers hide practices from safety personnel when safety rules are impossible or difficult to reconcile with procedures necessary to do a decent job. Experienced workers can take more risks and will make their own assessment of a risky situation in moments when things have to get done. Also, sometimes compromises have to be made between speed and safety, and when schedules get tight and the pressure rises, people naturally start cutting corners on safety.

Safety personnel doing inspections is perceived as always remarking the negative aspects, and when they are around, workers feel surveyed, making them uneasy and leading to frustrations. They take pictures and then they disappear, and rarely communicate with the workers themselves. The pictures are sent around in emails, and workers hear about it only indirectly, when everyone has forgotten about the context, and workers cannot explain or defend their choices. Near misses are nearly never reported, as the safety experts are perceived as making a big fuss about small things. Reporting a near miss can thus lead to a lot of problems, and workers are not motivated to speak about it to safety personnel.

Hygiene on the building site, toilets that are clean and systems to keep them clean, are health measures that would be important to invest in more.

According to the workers unions are not (yet) present in the building project, and workers do not seem to count on them, neither on collective agreements.

Dyad 4: Focal company – Subcontractor 3

As is the case with the other subcontractors, subcontractor 3 is a subsidiary of one of the building companies that are part of the main contracting consortium. Although subcontractor 3 has a legal link with the main contractor, a tender procedure was used to grant the specific tasks it is engaged in presently on the construction site.

OSH and working conditions challenges specific to the activities undertaken by supplier

Due to the specificities of the work performed by subcontractor 3, care has to be taken to prevent contact with harmful substances. Special masks have to be worn by the personnel while performing certain tasks, and every week samples of the urine of the entire building team have to be sent to a laboratory, to make sure levels of certain substances in the body are not rising to problematic levels.

In addition to this, work of subcontractor 3 implies working at a significant altitude, or working on scaffolding, which entails the risk of accidents by falling, or by dropping certain objects on workers active below. For this specific safety procedures, and specific safety gear is used, namely climbing harnesses.

Finally general protective gear needs to be worn on site, namely a safety helmet, safety shoes, hearing protection, gloves and goggles. Except for the goggles and the hearing protection, these personal protective materials have to be brought by the contractors and subcontractors themselves.

Supply chain management practices

Communication about building tasks usually happens in building site meetings where the works to be done are discussed with all contractors present on site. Here a focus is both on the practical execution and coordination of tasks as on the safety and health aspects of this. Every day there is communication between subcontractor 3 and the other contractors that are doing work close by, communication lines that for now are fairly efficient. The main contractor coordinates and facilitates this, and this also goes for the safety and health aspects, on which it is particularly strict. The building client they only hear indirectly through remarks of their safety experts, and only on very rare occasions.

The usual requirements apply, being the wearing of the basic safety gear at all times on the building site, supplemented by the necessary safety gear appropriate for specific tasks, such as working on high places. On the building site especially strict rules apply on certain aspects of safety and health. The introduction of new material, or new techniques, requires extensive approval procedures making sure everything is safe, and everyone knows how to use it before any equipment can be put to use.

An example given was the conception and introduction by subcontractor 3 of a special device to solve a specific problem related to working in high places. In other building sites this would not have been a problem, but on this building site a procedure for safety approval taking more than two weeks had to

precede the use of device. The safety aspects of the device were verified, and the safety coordinator drew up a manual for its safe use.

Description of the applied contractual governance practices

- Subcontractor 3 has obtained a series of certificates, to guarantee safe working in all of its different tasks. The necessary certificates have been obtained for those working in altitude, those doing welding jobs, those driving forklifts, etc. These certificates are obtained through educational programmes, which are always externally organized. Subcontractors of the company are expected to obtain their own certificates.
- Before they could enter the construction site and start their work, all employees of subcontractor 3 have to receive a short education in the form of a safety toolbox. This included watching a movie and afterwards passing a test.
- It was very clear in advance which personal protective equipment was required on site, and for which jobs extra equipment had to be applied. This has been communicated beforehand through the safety plan, which is attached to the contract signed after the tender procedure was successfully brought to an end.

Description of the applied relational governance practices

The site manager is present daily and can survey also what happens on the subject of safety and health. The foreman interviewed also indicated that they use informal ways of making sure the workers of their subcontractors receive a decent treatment. By chatting with them they can find out more details about their living situation and verify the quality of living conditions.

Hybrid

Every day there are controls by safety experts from different levels. Both safety experts from the main contractor and safety experts from the building client make their rounds of the construction site on a daily basis. This creates more space for subcontractor 3 to not also perform daily safety checks, as the struct level of safety is assumed to be safeguarded by these intensive checks.

Within the company every year a safety day is organised, where they talk about a specific relevant topic (such as stress at work, fire hazards, etc.) on safety with all employees. It is also company policy that every site manager receives a first aid training.

Effect of supply chain management practices on OSH and working conditions

Subcontractor 3 looks upon the safety policies on the building site with calm resignation. While the specific attention on safety and health can only be applauded, certain complex and time-consuming procedures can be difficult to navigate, and might create frustrating situations. As safety plans were communicated beforehand, the company knew this from the start, and thus undergoes these rules willingly, calculating in time for their conscientious execution.

Involvement and experience of workers

As work pressure can sometimes be high, this is an important factor that drives workers to take shortcuts and make compromises on safety and health. Even though it doesn't happen every day, it is very common, and on every building site it is like that. The organisation on site is also still a little chaotic, and a cleaner and better organised building site would be a significant improvement for those who have to work there daily.

Workers do not feel they are directly involved in the application of these leverage practices. When safety concerns arise all too often people talk about the workers involved, instead of with them. Also, here it has been stated that the unions do not play any role of significance, and they are not really present on the site.

Future trends

On all levels, from management to construction workers, mention was made of some sub-sectors, and countries serving as an example for OSH. Notably the Netherlands were mentioned regularly, as a country where both regulation and awareness around OSH are of a higher quality and the safety culture is quite different from that in Belgium. Inspections are more substantial, and contractors are stricter on following safety rules, and punishing infringements. The petrochemical sector, and the sector of Off-shore platforms, were also mentioned multiple times as having very strict safety rules, which could in the future be partially adapted to the Belgian construction sector.

Illustrative citations from the cases:

Focal company	<i>“It only gets through to people when you expel someone from the building site. If you can’t do that, things will get out of control.”- Management of the focal company, on enforcement of safety rules as an important signal.</i>
Supplier / subcontractor	<i>“When you get a report, and then you give a fine on it, well next time you won’t get a report any more. It comes from both sides. It’s not our intention to be the boogieman.” - Safety expert of the building client, on the need to create an open OSH environment.</i>
Supplier / subcontractor	<i>“An ‘almost-accident’ is almost never reported. If you do report the safety people will blow it out of proportion and use it to try and change the way we work.” - Worker of subcontractor, on communication between workers and safety personnel.</i>
Supplier / subcontractor	<i>“In Belgium it’s a joke. Here it suffices to show a badge, and it’s done. In the Netherlands it takes ten times as long, but it’s better, it’s much more thorough!” - Project leader of subcontractor, on the differences in safety approach between Belgium and the Netherlands.</i>

The European Agency for Safety and Health at Work (EU-OSHA) contributes to making Europe a safer, healthier and more productive place to work. The Agency researches, develops, and distributes reliable, balanced, and impartial safety and health information and organises pan-European awareness raising campaigns. Set up by the European Union in 1994 and based in Bilbao, Spain, the Agency brings together representatives from the European Commission, Member State governments, employers' and workers' organisations, as well as leading experts in each of the EU Member States and beyond.

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