

Who cares? Who dares?

Providing the skills for an
innovative and sustainable Europe

Background report prepared for the
European Business Summit 2009



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Foreword

Times of crises tend to separate the ambitious from the timid, and the visionaries from the conservatives.

In today’s Europe, where are the active forces of change?

Where are the sources of innovative thinking that may help Europe ‘hit the road running’ when the current crisis has taken its toll, and new leaders start to emerge? Who, in today’s Europe, dares to think positively about the future? Who is listening to them, and providing them with the support, attention and environment they need to gather around them a critical mass of Euro-enthusiasts and Euro-audacious?

**In other words:
who cares?
and who dares?**

For Europe, the XX1st century started with a marked acceleration in the attention devoted by policy makers to the so-called ‘knowledge economy’. This new ambition, incarnated in the so-called ‘Lisbon Strategy’ was just starting to bear fruit when the financial crisis hit. As many European companies are now engaged in a painful revision of their respective strategic objectives and levels of activity for the months and years to come, they stand to lose much more than necessary if they discard the Lisbon objectives, or even put them on hold.

Skills are the critical success factor for competing in the knowledge economy. Without skills, investments in other resources, such as new technologies and infrastructure, collapse. Europe’s supply of skills was already under threat before the financial crisis plagued the region. Now, as governments and businesses scramble to cut costs, skills are under even greater threat. Without prompt and significant action to generate the required skills, much of Europe’s stimulus packages and past investment could be wasted.

Whose responsibility’s is this? What are the priority issues (skills gaps) to be addressed? What should European business and European governments do? How and where can they best combine forces to have a real impact?

**The purpose of the present report
“Who Cares? Who Dares?” is two-fold:**

1. to call the attention of Europe’s government and business leaders to the vital importance of strengthening Europe’s skills; and
2. to recommend a set of practical actions, organized around the theme of a ‘European Skills Pact’ (ESP).

We believe that such a proposal is not only timely, but necessary. If implemented with the right level of commitment and engagement from all stakeholders, it will play a vital role in making turning the current crisis into an agent of positive change, while mitigating its impact on the more vulnerable.

Although the present times are trying times for the cohesion of Europe, Europe’s ideals and vision are resilient. With leadership, focus and vision, Europe can emerge revitalized and stronger from the crisis. Leaders from the private and public sectors can play a central role in keeping Europe’s ideals alive, its ambition relevant, and its principle ‘competitiveness cum inclusion’ a model reference for other parts of the world. More than ever, Europe has the opportunity to show the world what ‘daring and caring’ means, and how it can help all of us make our world a better one.

Executive Summary

Analysis and diagnosis

Europe's skills issue pre-dated the crisis. Over the last ten years, many business leaders stressed that Europe was not producing, attracting or keeping enough scientists, engineers, IT specialists to meet the requirements of its industries. As new concerns started to emerge (e.g. in making Europe's economy more environment friendly), and as data showed a continuous lack of interest from younger generations towards scientific studies, it became obvious that Europe's skills gap was increasing. In-flows of talents from other parts of the world (e.g. Indian engineers and programmers) could only be seen as a temporary remedy to a growing issue. The skills issue was a time bomb planted along the path of Europe's growth.

Now that Europe has entered turbulence areas, the skills problem is acquiring additional visibility and attention. One reason for this is that, as unemployment grows across Europe (with 18 million unemployed in January 2009), the resilience in the number of unfilled job vacancies (4 million at the same date) becomes even more striking. Yet, there may still be insufficient awareness across Europe that decisions by employers could indeed worsen the crisis.

We have ranked and graded countries by their total skills pyramid score and by each of the three types of skills. Compared to 100 other countries, Europe as a whole gets a B grade for literacy and basic skills, a B- for occupational skills, and a C for global knowledge skills. However when compared to each other and to 15 additional countries, weaknesses in the skills pyramids of many European countries become more apparent. Within this sub-sample, we have identified a skills divide in Europe between European countries with weak skills pyramids and those with much stronger skills pyramids.

¹ According to Eurostat, the rate of unemployment for EU27 was 7.4% at the end of 2008 (18 million people); it is projected to reach 9.25% at the end of 2009. This would mean that the number of unemployed individuals in EU27 would be above 22 million at that time.

Two scenarios emerge from our analysis: one by which enterprises rush to diminish their labour force, and one in which public and private forces are combined to maintain and develop Europe's skills pool through the crisis. The first one leads to a significant deterioration of Europe's skills situation (and ability to emerge from the crisis as a competitive economy), while the second one has the opposite effects.

Drawing on data from collaborations between INSEAD eLab and the World Economic Forum, our research shows how global competitiveness and a strong set of skills are strongly correlated. We have developed a Skills Pyramid consisting of three types of skills – literacy and basic skills; occupational skills; and global knowledge-economy skills – to help government and business leaders identify Europe's skills weaknesses, and to address them.



Recommendations for action

eLab's research findings suggest that European leaders should take priority action on each of three major levels:

1. quality of education in maths and science
2. attractiveness of scientific/engineering/technical careers for the younger generations (with special emphasis on gender issues)
3. generation of a talent pool for global knowledge-based competition and innovation.

Europe has started to address those urgent issues, and many initiatives have been launched by European businesses and governments to that end.

However, such initiatives now need to be properly coordinated and combined within an overall coherent and visible package, likely to attract proper attention from policy makers, investors, employers, educators and citizens. This is what a 'European Skills Pact' (ESP) can achieve.

By endorsing such a Pact, Europe's business and government leaders would:

1. recognize the crucial importance of skills as a tool for growth, competitiveness and job creation, and
2. pursue the following overarching goal of preventing skills shortages from reducing the impact of stimulus packages, investment and innovation in Europe.

As an initial illustration of what ESP can achieve, six priority actions should be considered, which business and governments can jointly launch and undertake immediately:

action one

Launch a Europe-wide public-private alliance to ensure the re-skilling of excess labour in times of crisis.

action two

Re-focus the European Structural Funds earmarked for training and re-training in 2007-2013 towards the sectors most likely to contribute to Europe's competitiveness in post-crisis times.

action three

Identify and scale-up successful public-private initiatives and partnership (such as JetNet), aiming at stimulating young people's interest for mathematics, science and careers in engineering, information and communications technologies and protection of the environment.

action four

Enhance and develop high-level business-universities partnerships to generate the 'Global Knowledge Economy' skills which Europe needs to realize the benefits of its Lisbon strategy and be a leader in innovation.

action five

Encourage skills mobility within Europe, as well as between Europe and other parts of the world.

action six

Foster innovative approaches to education, including through e-learning and distance learning.

Skills in Europe: from bad to worse?

Europe's 'skills problem' pre-existed the current crisis. As early as in 2002, European institutions were warning about the upcoming 'skills crunch' in key sectors such as software and computer industries.

What have we learned from previous crises?

BOX 1

Gary Perman, president of Perman Willits & Associates Inc. says that today's economic slowdown is different from others in the past, when talent was readily available. Before,

"if you lost another 15 percent of your surviving talent, you could easily dip into a well-stocked talent pool. Today companies don't even have a talent puddle to draw from."

Quote from "Sent Packing... Are companies laying off too many employees too soon?"

PWL recruiters 23 April 2001 <http://www.pwlrecruiters.com/readarticle.php?ID=12>

National governments in Germany, the Czech Republic and France had also stressed the growing difficulty they were facing to recruit enough engineers. The private sector was doing the same, especially in sectors like ICT (see box 1), energy and manufacturing.

Present circumstances however, make it more acute. Pressures resulting from decreasing demand and restricted access to credit will either make it worse, or help address it with a heightened sense of urgency. This does not go without paradox, since it may be counter-intuitive to focus on the difficulties that business can face in recruiting while unemployment figures keep growing all over Europe. This apparent contradiction does reflect one of the features of the current crisis: while unemployment in Europe is approaching 18 millions, it is estimated that between 4 and 5 million jobs remain unfulfilled across European markets. Skills and mobility are the two factors most likely to address this paradox.

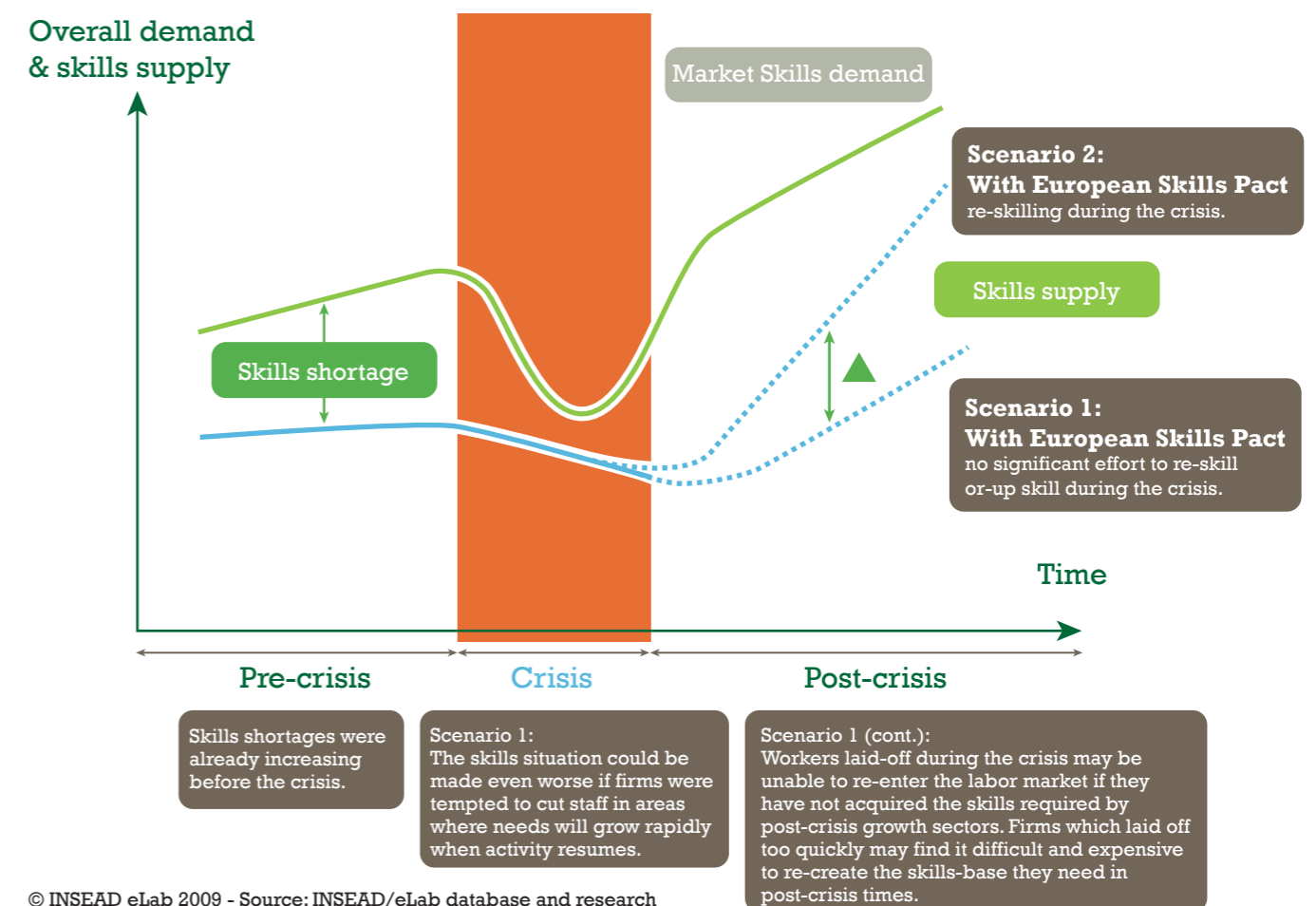
One important issue regarding skills is that they take a long time to build, both by the formal education sector (primary, secondary and tertiary) and by firms (as staffers acquire the internal knowledge related to corporate culture, organization specifics and customer relations for example). Laying off workers in times of reduced demand may hence be a short term decision which will be difficult to reverse when activity picks up. In sectors where the rate of technological innovation is high, laid-off workers may find it difficult to re-enter the labour market after a period of inactivity if they have stopped updating their skills and knowledge on a regular basis; conversely, firms which have been too quick to curtail their staff may find it difficult to re-create the appropriate skills mix to face competition when activity resumes.

From a business and economic point of view, this means the following:

1. Enterprises could actually make the current crisis worse (for themselves and for Europe's economy) by curtailing their staff too quickly and too drastically
2. The re-skilling of Europe's labour force should be a priority during the crisis: without it, the skills shortage which was already increasing before the crisis will constitute a major handicap in post-crisis times, holding back Europe's ability to innovate and compete on global markets.

The elements above lead to the identification of two scenarios, summarized in the following diagram (see figure 1).

FIGURE 1 Skills in Europe: two post-crisis scenarios



The present report attempts to document the previous statements, and to identify possible priority actions by Europe's businesses and governments, in order to prevent self-inflicted aggravation while maximizing Europe's chances to 'hit the road running' once activity resumes at pre-crisis levels.

The skills required by a sustainable Europe

Skills are key to growth, competitiveness and sustainability

European enterprises have long insisted on the difficulties they felt or anticipated about attracting and retaining the right talents. The IT sector has been particularly active in this area, with the creation of an 'e-skills Industry Leadership Board' in 2007 (see box 2). Other sectors had expressed similar concerns about the scarcity of technical skills, including engineers.

However, it would be wrong to consider that the priority attention devoted by enterprises to the availability of appropriate skills stems only from micro-economic concerns. At the macro-economic level, available evidence and research proves that skills are indeed a key determinant of competitiveness and growth.

BOX 2

How Business can Contribute to Fighting Europe's Skill Crunch

The example of the e-Skills Industry Leadership Board (e-Skills ILB)

Founded on 7 June 2007 the e-Skills ILB was set to lead the ICT sector's contribution to the development and implementation of a long term e-skills and digital literacy agenda in Europe. It works in partnership with public authorities across Europe, other industry sectors, SMEs and all relevant stakeholders, building upon the European Commission recommendations and other reference initiatives on e-skills. Members include CEPIS, Cisco Systems, CompTIA, Econet, EITO, ECDL Foundation, EXIN, Global Knowledge Network, HP, INLEA Foundation, Microsoft, Oracle, Prometric, and Siemens Enterprise Communications.

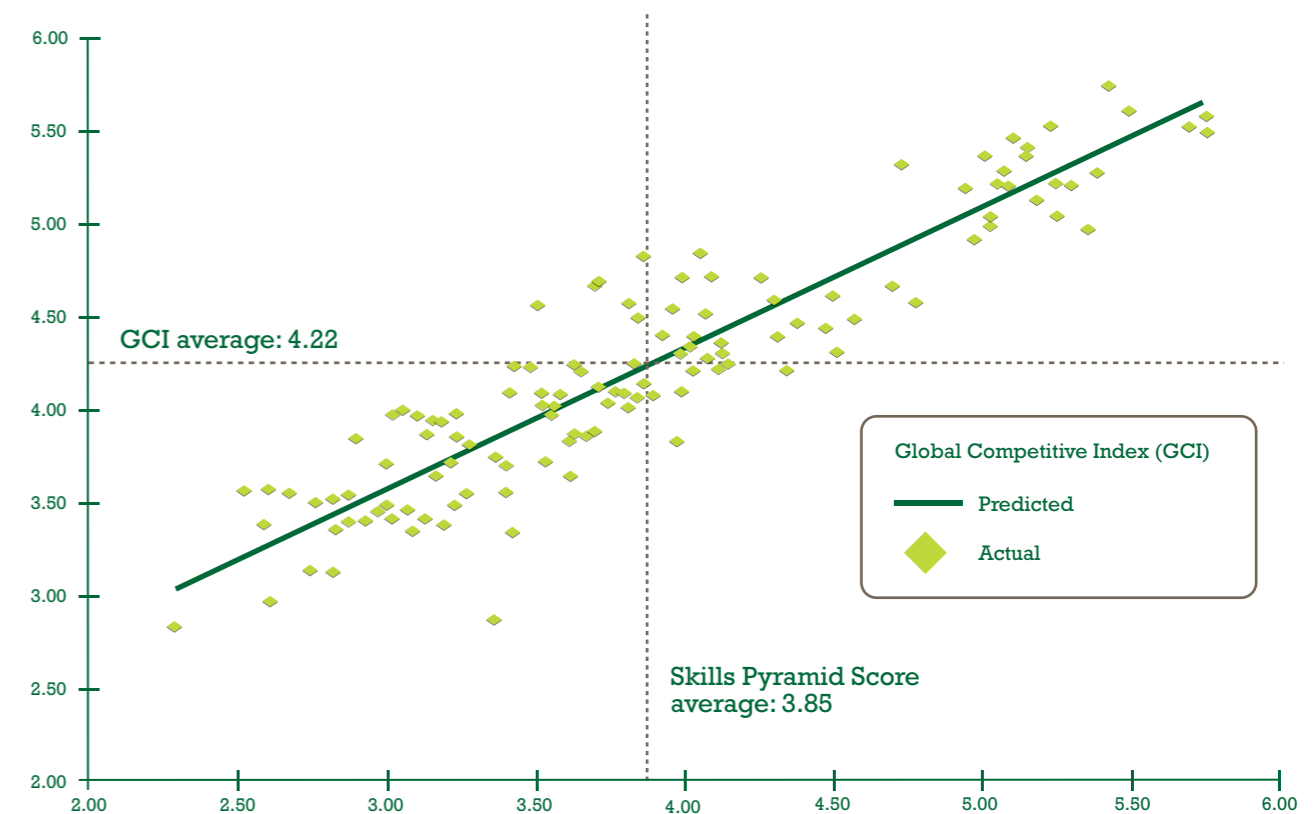
One of the initiatives promoted by e-Skills ILB is that of a "European e-Skills and Career Portal", to set out ICT job profiles, map formal and non-formal ICT training, learning opportunities and certifications to specific job roles, and integrate with existing Member State ICT skills and career portals. This initiative could be an inspiration for other sectors in which Europe suffers from similar skills issues.

<http://www.e-skills-ilb.org>



FIGURE 2 Skills are a key factor of global competitiveness

Eighty-five percent of the variation in the WEF Global Competitiveness Index is accounted for by the Skills Pyramid Score



© INSEAD eLab 2009. - SOURCES: Skills Pyramid: INSEAD eLab; WEF GCI 2008-09: World Economic Forum

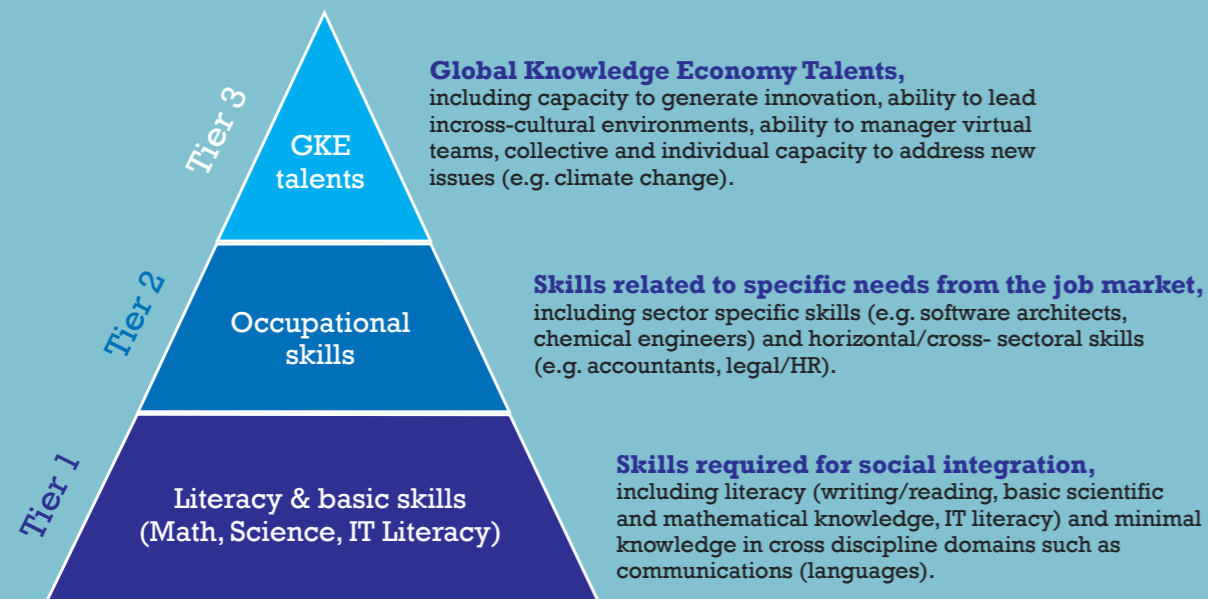
² (Predicted Global Competitiveness Index) = (A Country's Total Skills Pyramid Score)*0.75 + 1.33; R squared: .854 (statistically significant); n=127. See Annex for a more detailed explanation of the methodology and data used, and typologies of actions and countries.

Moreover, priority areas such as 'green growth' require new skills, which are not yet generated in sufficient numbers by the formal education system. In other words, the required 'skills pipelines' have not yet been built to provide the required changes in business management, production techniques and new usages envisaged.

Skills priorities in Europe

The European model is based on a simultaneous pursuit of competitiveness and inclusion, a continuous strive to dare and to care. In times of crisis, such a model may prove very resilient, if backed by the continuous commitment of Europe's governments, enterprises and population. In its latest incarnation, this model is the central underpinning of the Lisbon Strategy, which spells out Europe's ambition to lead in the knowledge economy.

FIGURE 3 Europe's Skills Pyramid: Definitions



© INSEAD eLab 2009 - Source: INSEAD eSRI database and research

An implicit consequence of this approach is that Europe needs to be able to rely on a three-tiered 'skills pyramid'.

- **Literacy and basic skills:**

The first (base) tier of the Skills Pyramid includes the fundamental skills and knowledge that an individual needs to live in modern European societies. They include not only the traditional literacies (writing and counting) but, increasingly, IT literacy.

- **Occupational skills:**

The second (middle) tier refers to the knowledge and capacities which must be acquired to qualify for specific jobs. Much of such skills can be generated through formal education (e.g. by engineering schools, law schools or universities). However, an increasing part of those skills are acquired 'on the job'.

- **Global knowledge economy talents:**

The third (top) tier includes the more subtle - and less easily quantified - skills required to lead and manage multi-cultural teams, to work in virtual teams, and to address, anticipate and steer change. Those skills are critical for innovation, and addressing new challenges and issues.

BOX 2

Skills vs Challenges

Shell's Energy Scenarios see an increase of 100% in world energy demand by 2050, yet there is also the need to cut CO₂ emissions by 50%. So 2x more energy, 2x less CO₂. Or a factor 4 reduction in CO₂/unit of energy.

“Meeting the world's growing energy need in an environmentally responsible manner is a tremendous challenge.”

“Technology is essential to answering that challenge. Hence our commitment to ensure a healthy Talent Pipeline, where we have to think systemically about input, flow and output. Talent is a precious resource of creativity and innovation. Society should foster this resource and ensure it is directed towards finding solutions for society's most pressing challenges.”

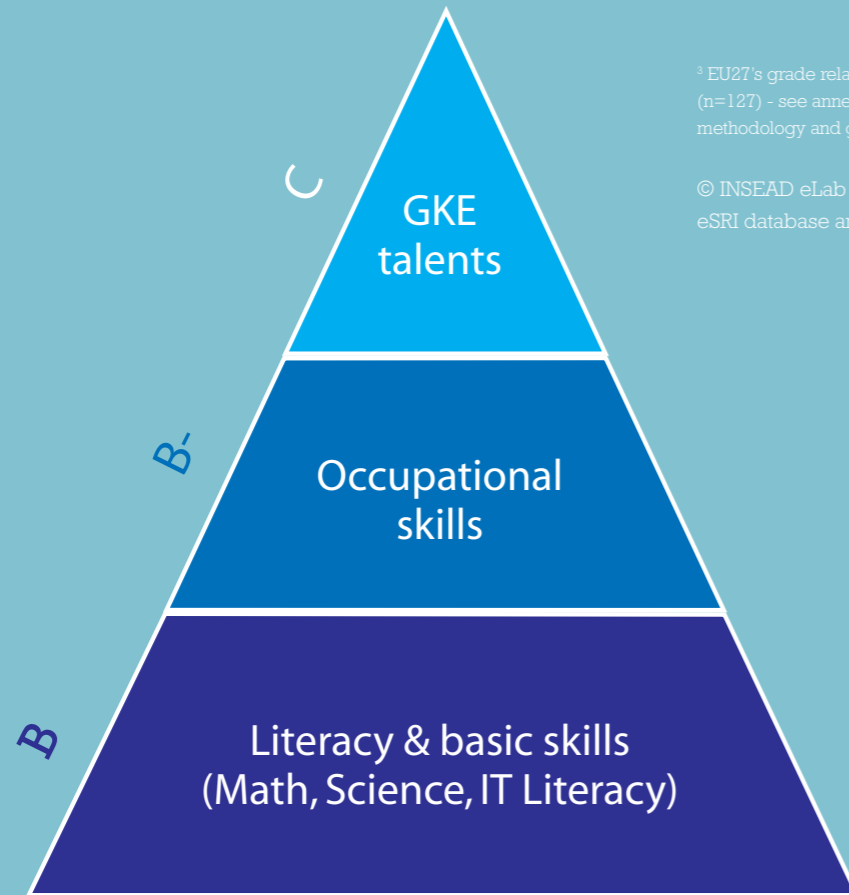
(Hans van der Loo, Head European Union Liaison. Royal Dutch Shell).



Grading the Skills Pyramid

The Skills Pyramid of the European Union

FIGURE 4 Europe's Skills Grades: Must Do Better ³



³ EU27's grade relative to 100 other countries (n=127) - see annex 2 for additional detail on methodology and grading

© INSEAD eLab 2009 - Source: INSEAD eSRI database and research

LITERACY & BASIC SKILLS

- Basic knowledge (especially in maths and science) is a pre-requisite for the development of Europe's capacity to generate enough of the other two (higher) types of skills and talents; it is also in the process of providing such basic knowledge that a taste can be generated across younger generations for the jobs and functions required by a competitive and inclusive knowledge-based European economy.

OCCUPATIONAL SKILLS

- Supply-demand gaps (e.g. for engineers, IT staff) were visible before the crisis. Current difficulties are making such gaps less clear in some sectors. However, if efforts are not made to revitalize

Europe's ability to produce the 'missing skills' (or if companies are too prompt to reduce their staff in critical area), the chances of Europe to get out of the crisis at least as fast as its competitors will be diminished. Market shares could be lost quickly, which will be difficult to conquer back.

GKE TALENTS

- Without enough of those talents, Europe will not be able to reap the benefits from investments (financial, political, social) made in the 'Lisbon approach'; it may lag behind other countries and regions in terms of having the required capacity, agility and dynamism required to be ahead of global competition when activity resumes to normal levels.

The Skills Pyramid of Individual EU countries

Available data show that Europe is far from having the skills it needs to nourish its ambitions. For Europe, each of the three tiers of the skills pyramid presents different challenges: on average, Europe fares higher than its average competitors in literacy and basic skills in math and science (tier one), and occupational skills (tier two).

Europe's tougher skills challenge lies at the level of the third tier (GKE talents); this is an area in which most European countries trail international champions such as South Korea, the United States, Singapore or Japan.

TABLE 1 Europe's handicap in the worldwide race for skills

Country	Score	Rank	Country	Score	Rank	Country	Score	Rank	Country	Score	Rank	Country	Score	Rank
Spain	4.253	26	Hong Kong	4.730	18	Switz.	5.493	4	Finland	5.757	1			
Latvia	4.145	27	Estonia	4.694	19	U.S.A	5.431	5	Denmark	5.755	2			
Malta	4.122	28	Slovenia	4.568	20	Korea	5.389	6	Sweden	5.699	3			
Poland	4.072	29	India	4.509	21	Norway	5.245	7						
Cyprus	4.063	30	Czech Rep.	4.498	22	Singapore	5.234	8						
LUX	4.055	31	Lithuania	4.470	23	Belgium	5.182	9						
Slovakia	4.032	32	Portugal	4.379	24	Canada	5.153	10						
Italy	4.018	33	Hungary	4.342	25	NDL	5.146	11						
Greece	3.988	34				Germany	5.109	12						
Russia	3.987	35				France	5.088	13						
Ukraine	3.890	36				U.K	5.073	14						
Turkey	3.863	37				Austria	5.053	15						
Romania	3.789	38				Ireland	5.024	16						
Brazil	3.710	39				Japan	5.007	17						
China	3.705	40												
Mexico	3.644	41												
Bulgaria	3.559	42												

Eu27 =

Skills Pyramid Grade: F

Skills Pyramid Grade: D

Skills Pyramid Grade: C

Skills Pyramid Grade: B

Skills Pyramid Grade: A

This contrasted picture suggests that whatever skills-related action will be taken at the European level will need to be modulated locally, in order to reflect national differences.

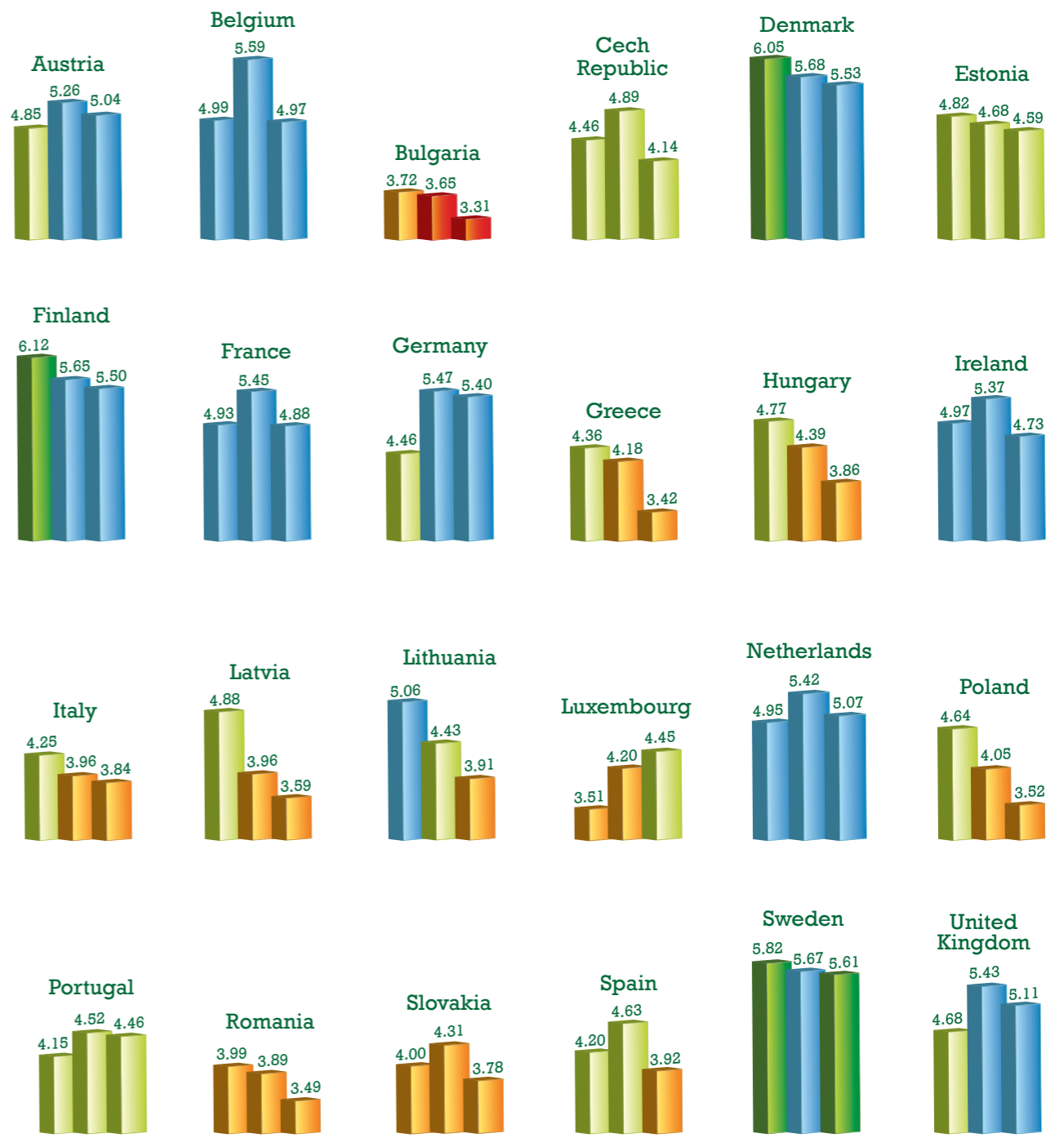
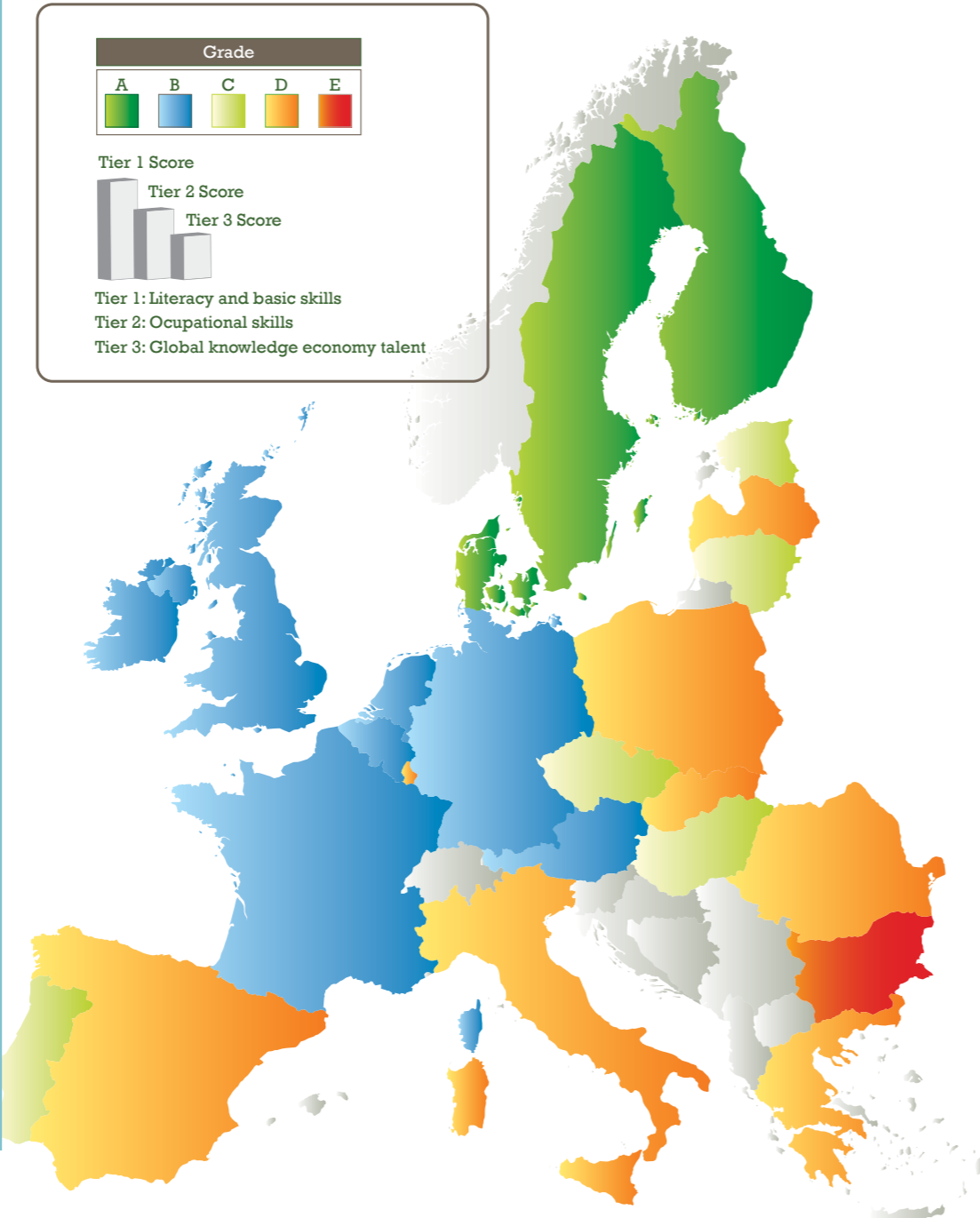
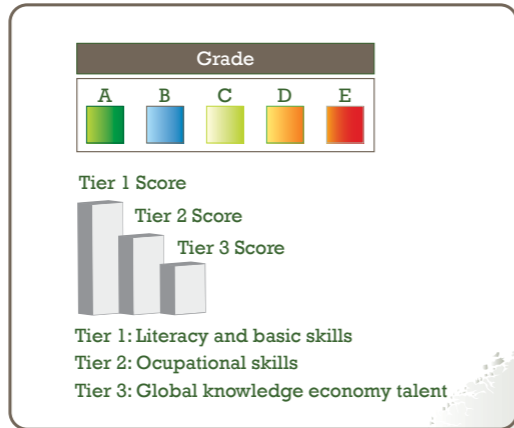
The picture of skills varies widely from one European member country to another

As table 1 (page 13) and figure 5 show, there is a distinct 'skills divide' in Europe, where Southern and Eastern European countries exhibit the most striking weaknesses in tier-one skills (2 or 3 examples), tier-two skills (idem) and GKE talents (idem).

⁴ Annex 2 describes the methodology used in this section. It also provides more detail about the data collected, and additional indications on how individual European countries fare vis-à-vis various types of skills.

Europe's Skill Challenge: Uneven but Widespread

FIGURE 5



Can Europe generate, acquire and keep the skills that its ambitions require?

Skills demand and supply in Europe: bottlenecks and promises

To address in a meaningful fashion the pressing issues identified above, one must consider the components, limits and constraints of the current European market for skills, and how they are likely to change through the crisis and beyond.

Essentially, Europe's skills issue is not one of quality (of people) nor of quantity (of graduates and trained individuals), but rather one of matching (between what education systems produce and what industry and society need) and of fluidity (ability of the skills pool to undergo continuous change in its geographical and sectoral distribution, and to adapt to new challenges and concerns).



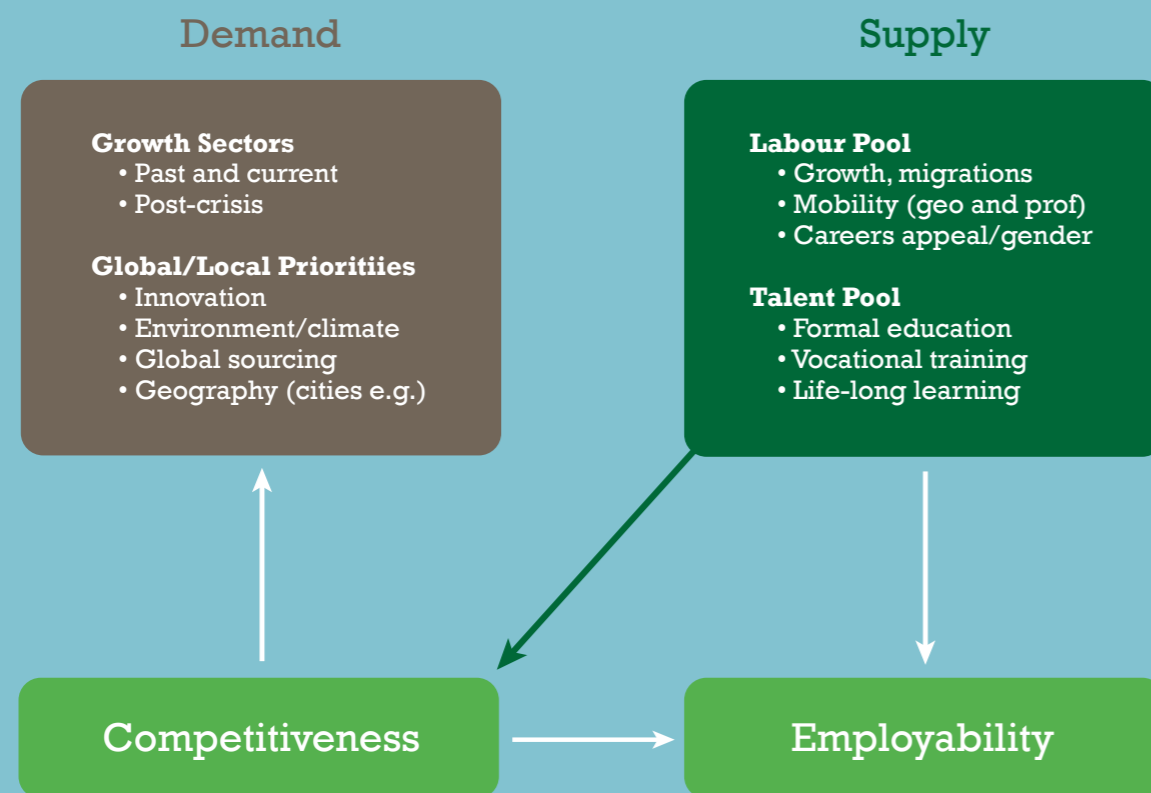
On the demand side of European's skills markets, the main elements to be taken into account include:

- Growth sectors are the ones most likely to contribute to Europe's current and future competitiveness; skills demands from those sectors should be considered as priority; Europe's Lisbon strategy has identified ICT and other knowledge-intensive activities as part of such growth sectors.
- Long-standing and emerging global and local priorities will also play a significant role in the evolution and composition of skills demand in Europe. For example, Europe's need to be more innovative emphasizes demand for 'Global Knowledge Economy Skills' as described in the third tier of our Skills Pyramid. Similarly, growing concerns about making production, distribution and consumption processes more environment-friendly increases demand for new skills in green energy and manufacturing for example.
- Additional trends relating to global sourcing (and global competition for talent), or to demography (e.g. continuous or interrupted migrations from rural to urban areas) will also influence demand for specific skills (e.g. in mobile consulting, urban management, e-government).

On the supply side, the following components need to be considered:

- Europe's labour pool will continue to be largely determined by demographic long-term trends (net birth rates) but also legal and regulatory frameworks regarding immigration (e.g. Blue Card).
- Other determinants of labour and skills supply will stem from the propensity of European citizens to be more or less mobile (geographically and professionally) inside and outside Europe; the attractiveness of specific study and career streams for the younger generations (e.g. for scientific studies) will be a critical factor is Europe's ability to produce the skills it needs; in this context, particular attention will need to be granted to gender issues.
- On the talent pool side, the ability of the formal education sector (schools, universities) to adapt its curricula and methods to generate the required skills will be compounded (or compensated) by Europe's ability to keep its talent pool up-to-date through vocational training, and life-long learning.

FIGURE 6 Skills For Growth



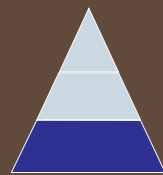
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Better understanding Europe's needs for each type of skills

When one examines in greater detail available data on each of the three tiers of the skills pyramid, specific issues emerge for each of them. For Europe as a whole, they have to do with:

1. Quality of math and science education
2. Lack of scientists and engineers. Lack of appeal of scientific/technical careers for the young generations
3. Lack of European-grown GKE talents, translating in particular in the absence of a European 'innovation ecology'.

Those issues are the object of the next three sections.



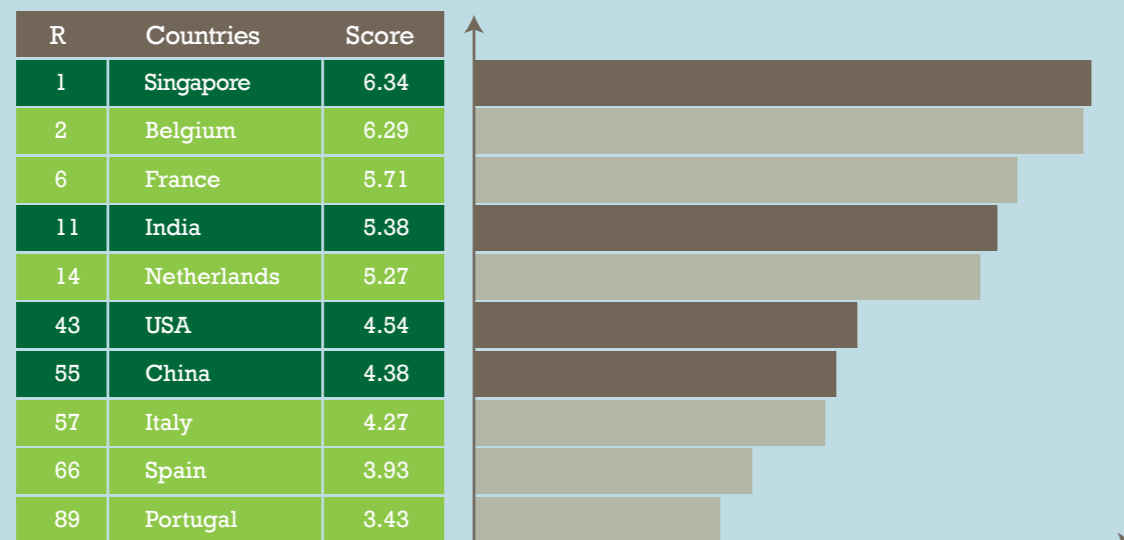
Literacy and basic skills

The quality of basic education in mathematics and sciences has long been recognized as key in generating higher-level skills, especially for those most needed in Europe (engineers e.g.). In this area, data available (see Figure 7) show again a rather contrasted picture: some European countries are at the top of the charts (close to long-standing champion Singapore), while others trail. The first category includes Belgium and France. The second hosts large European economies such as those of Italy, Spain, and Portugal.

If Europe wants to be able to solve its growing skills gap in certain professions (ICT programmers, analysts and architects, engineers, environment specialists for example) a stronger involvement of the younger generations (especially female) in scientific studies is required at the early stages of education. Yet, available studies show that such involvement is diminishing, especially among girls. This is a challenge which Europe should continue to address as a priority.

FIGURE 7

Quality of maths and science education A few highlights from www.insead.edu/elab/skills



© INSEAD eLab 2009 - Source: INSEAD eSRI database and research

⁵ In particular the remarkable set of studies undertaken by the ROSE program (Relevance Of Science Education) with the support of the Research Council of Norway, The Ministry of Education in Norway, The University of Oslo and the Norwegian Centre for Science Education (<http://www.ils.uio.no/english/rose>).



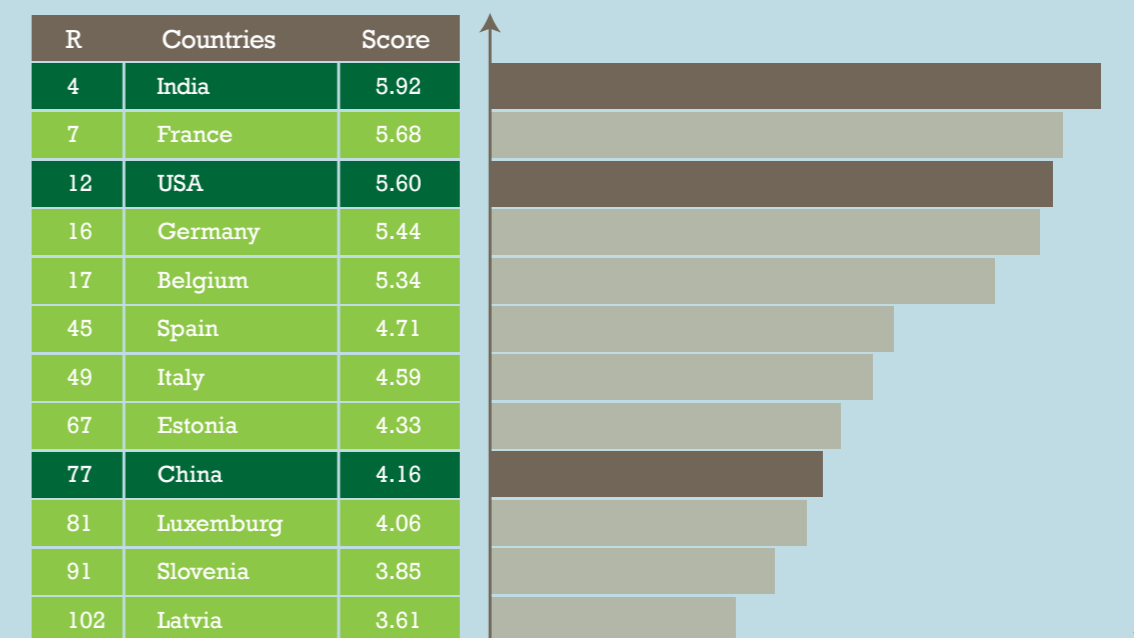
Occupational skills

At the level of the second tier of the skills pyramid, Europe faces a number of challenges. Many of those are more or less acute across European national economies. However, all EU members share a common deficit for scientists and engineers. If France and Germany remain roughly on par with economies such as India or the United States, they still exhibit a lack of human resources in specific sectors such as chemistry or energy. For other EU members (including countries with smaller populations – and hence a greater dependence on foreign-trained engineers), the issue spreads to practically all sectors of the economy.

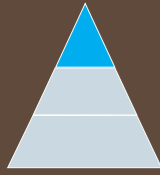
To address such issues, efforts need to be made at all relevant levels of Europe's education systems: formal (schools and universities), vocational and in all channels of life-long learning. Modernizing curricula and learning methods will require increased cooperation between the demand side (enterprises) and the supply side (educators) across Europe. Up-scaling and disseminating successful experiences such as Jet-Net (Box 5, page 24) should be a leading priority in this effort.

FIGURE 8

Availability of scientists and engineers A few highlights from www.insead.edu/elab/skills



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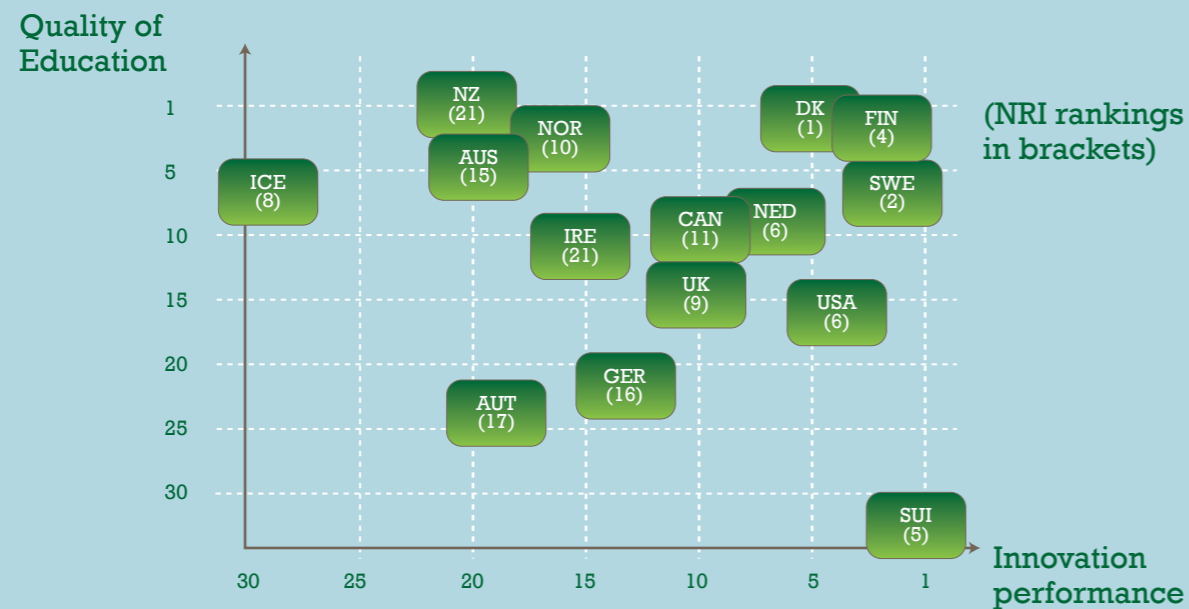
Europe's can legitimately ambition to lead the world in knowledge-intensive activities. Its success in designing and implementing complex large-scale cooperation projects in aeronautics (Airbus) or space (ISS) show that Europe can use its cultural diversity and economic complementarities as an asset in global knowledge-based competition.

However, Europe is still under-equipped in terms of managers and leaders of innovation. The number of individuals able to manage teams across linguistic, cultural and geographical borders is still less than what Europe need to fully benefit from its other factor endowments. Capacities to manage change, think innovatively about products, processes and usages are still scarce across Europe's companies and public entities. This is what eLab's research shows, and why Europe only receives a 'C' grade for its performance for the third tier of the skills pyramid.

Action at that level will be more complex than for the other two tiers, because it requires less changes in teaching and learning structures than changes in mindsets. This is underlined by the lack of correlation between the ability of an economy to innovate fact and the quality of its education system (see figure 9).

FIGURE 9

Innovation and education in the world's top 15 knowledge economies



© INSEAD eLab 2009 - Source: INSEAD eSRI database and research, World Bank KAM database

For Europe, this means that business and government leaders share a common responsibility to build the 'innovation eco-system' which Europe will need to emerge from the crisis as a world leader in key knowledge-intensive sectors. Efforts to acquire critical mass in key areas (e.g. software, environment-friendly production processes and technologies) will require concentration of available resources in a selected number of activities and locations. In this context, the importance of recent proposals for Special Innovation Zones in Europe (SIZE) should receive priority attention.

How to Drive Innovation in Europe

Funding, yes, but mostly less red tape.

In today's crisis there is an opportunity for change. It would be a crime to waste that chance.

With the global economy in turmoil, a new administration in Washington and new leadership coming to Brussels this year, the rules for economic policy are being rewritten. Much of the thinking so far has been short-term, reacting to the immediate financial crisis or industrial dislocation. Saving jobs is essential, but so is creating new jobs. We urge that, while debating the various rescue plans, our political leaders also give thought to the longer-term question of how, in this global knowledge economy, we create and distribute value, and how we can sustain economic growth. (...)

Support funding: Early-stage venture capital is chronically scarce in Europe -- about a third as great, as a percentage of GDP, as in the U.S. Now the financial crisis threatens even that small amount. It's time to scale up on a European stage, some of the successful schemes for public/private partnership in seed and growth financing that have been pioneered across Europe.

Support innovation companies: Technology start-ups in Europe face a cocktail of costs that can kill them at birth. First are the lab or engineering expenses for their new products and services. But second is the burden of social charges, taxation and red tape that many European countries impose on all businesses. European governments need to lighten this burden for our young, innovative companies. (...)

Invest in education: Europe spends too little on higher education -- about half as much, as a percentage of GDP, as the U.S. and Japan. Just as there is now talk of spending money on physical infrastructures such as roads and railways to maintain economic activity, we should look closely at our intellectual infrastructure: our universities.

Focus on excellence: Research grants in most European countries are spread wide and thin to please everybody. Likewise, more than 2,000 industry "clusters" in Europe are nurtured by conflicting and competing regional, national and European programs. This egalitarian approach, using education and research as tools for regional development, must stop. (...)

Celebrate entrepreneurs. Many Europeans are risk-averse. (...) Europe must put more effort into trumpeting the successes of its innovators. (...)

There is much more to be done. Europe needs to encourage not hamper, innovation. And money counts. The U.S. stimulus plan will likely include funding for such innovative activities as e-health systems, educational networks and energy research. EU leaders also have a stimulus plan. If a sizable portion of that money and effort goes toward long-term, sustainable innovation, it could endow Europe with a bright future.

Wall Street Journal Europe, 12 Feb 2009 (excerpts) F. Brown, Dean of INSEAD and J.P. Courtois, president of Microsoft International, are members of the Science Business Innovation Board.

An agenda for Europe's active forces

Some of the most important lessons from past crises have been learned the hard way. Government and business leaders know how much can be lost when decisions are guided by self-centred concerns and made in isolation.

They also know that cost-cutting and diminished ambitions by themselves will not solve the crisis, and that they can even make it deeper and longer if they are not accompanied by strong investment strategies and stimulus packages, and a common will to keep trade routes open.

In times of limited resources however, such decisions and strategies may face short-term political and social opposition. It is hence vitally necessary that the resources mobilized be

focused on carefully selected areas, i.e. the most likely to contribute to growth, competitiveness and employment. Europe was fortunate to identify such areas before the crisis: the amount of European Structural Funds (2007-2013) earmarked for infrastructure (including information and telecommunications) and skills building will be significant⁶. If combined with the right national stimulus packages, and a similar engagement from the side of European businesses, such resources could be a huge contribution to fighting the crisis worldwide, and to enhance Europe's competitiveness in post-crisis times.

Yet, available data indicate that much of the impact expected from such massive investment could be lost unless the 'skills roadblock' is addressed.

Calling for a European Skills Pact (ESP)

Under the overarching goal of 'preventing skills shortages from reducing the impact of stimulus packages, investment and innovation in Europe', European business and government leaders have a unique opportunity to recognize the fundamental importance of skills as a tool for growth, competitiveness and job creation, by agreeing to form a European Skills Pact, based on a set of priorities, objectives, and actions.

1. Provide skills for competitiveness and employability across Europe
2. Inspire young generations to engage in building Europe's future growth
3. Enhance Europe's capacity to build skills in future growth areas
4. Promote innovation, openness, agility and mobility as tools to fight the crisis.

⁶ More growth and jobs for all regions and cities of the European Union – this message will be at the heart of cohesion policy and its instruments between 2007 and 2013. During that period, the greatest investment ever made by the EU through cohesion instruments will be worth € 308 billion (in 2004 prices) to support regional growth agendas and to stimulate job creation. 82% of the total amount will be concentrated on the "Convergence" objective, under which the poorest Member States and regions are eligible. In the remaining regions, about 16% of the Structural Funds will be concentrated to support innovation, sustainable development, better accessibility and training projects.

http://ec.europa.eu/regional_policy/sources/docoffic/official/regulation/newreg10713_en.htm



Building skills through the crisis

The Dutch example: *bijzondere werktijdverkorting* ("particular regulation for shorter work")

Launched on December 1st, 2008, this disposition has been designed for enterprises anticipating at least 20% less work in a period from 2 to 24 weeks. By the end of January 2009, some 350 Dutch companies had benefitted from this facility.

A company can request from the government the amount of money necessary to keep employee's compensation at their previous level, in spite of the reduction on the duration of their work week. However, the request will only be accepted if the employer demonstrates clearly how training or "training in another job" is being organised. In case this information is not supplied, the request will be rejected.

Additional details about this recent governmental disposition can be found at http://home.szw.nl/index.cfm?fuseaction=app.document&link_id=156934

An initial set of six actions, which business and governments can jointly launch and undertake now would be the following:

1 action one

Develop a European-wide alliance between private and public sectors to ensure the re-skilling of excess labour in times of crisis.

The approach taken by the Dutch government is an example to be adapted and generalized: public funds should be made available to companies who are ready to invest in the re-skilling (or up-skilling) of their workforce. Typically, this would mean that if an enterprise considers curtailing its labour force by x% (either through lay-offs or reduction of the work-week for example) it would receive the financial support needed to keep its full labour force on board (with no reduction in pay) provided that it commit to using the x% of working time for re-skilling or up-skilling of the corresponding workers. Such a disposition would constitute the backbone of the proposed European Skills Pact (ESP). Once a common framework (template) has been agreed and endorsed at European level, national governments would retain the possibility to gear it to specific skills (e.g. e-skills, or technical, environmental, health, education skills) they would consider as particularly relevant for the current or post-crisis needs of their respective economies. Priority however should remain to allowing enterprises to keep their current workforce while equipping them with higher skills.

Public-Private Partnerships for innovation and education

“Public-private partnerships on science education such as Jet-Net in the Netherlands is to be cited as an example of ‘best practice’.” (EU Commissioner G. Verheugen, 2006).

Jet-Net – Youth and Technology Network Netherlands

- is a joint venture between Dutch companies and pre-college schools in the Netherlands. Jet-Net companies help schools enhance the appeal of their science curriculum by using a great variety of activities and also allow students to gain a better understanding of their future career prospects in industry and technology.

The idea behind Jet-Net

Inspiration and motivation for science and technology are the driving factors of Jet-Net. Many future engineers and research professionals are needed to strengthen scientific, technological and economic innovation in the Netherlands. Shortages in these disciplines are already imminent – as they are in most Western countries. Jet-Net aims at substantially curbing this trend.

A complementary role in education

Jet-Net companies organize a wide variety of programmes for students attending higher-general secondary (havo) and pre-university (vwo) education schools. They include special lectures, classroom projects, helping students choose subject combinations, offering career-orientation information sessions, giving tours of their facilities and coaching students during projects connected with subject combinations.

The companies also organize regional kick-off meetings and teachers' workshops, occasionally within the framework of visits to their premises. In addition to programmes between individual companies and schools, Jet-Net also develops general programmes which are particularly geared to help students make better choices in respect of their future studies and careers. An example is the annual Jet-Net Career Day which offers students the opportunity to discuss their future prospects with young engineers and research staff in a wide variety of disciplines. Every effort is made to fit the educational activities logically and meaningfully into the students' curriculum. Naturally, this occurs in close cooperation with the schools.

2 action two

Re-orient the European Structural Funds earmarked for training and re-training in 2007-2013 towards the sectors most likely to contribute to Europe's competitiveness in post-crisis times.

A significant part of the expected impact of ESF's investments in infrastructure and production capacities is at risk of being lost if such physical investments are not matched by the corresponding increase in European skills. This effort should be directed in priority to the countries receiving the largest amount of Regional Development Funds and Cohesion Funds.

3 action three

Scale-up successful public-private initiatives and partnership (such as JetNet), aiming at stimulating young people's interest for mathematics, science and careers in engineering, ICTs and protection of the environment.

Successful initiatives of this kind should receive higher visibility among governments and the education sector across Europe. Best practices should be collected and shared among national education systems (primary, elementary and secondary schools in particular). Public and private support should be generated to ensure the scaling-up and dissemination of such recognized best practices.

4 action four

Enhance and develop high-level business-universities partnerships to generate the 'Global Knowledge Economy' skills which Europe needs to realize the benefits of its Lisbon strategy and be a leader in innovation.

Across Europe, large companies have successfully developed multi-level partnership with universities and high-level education institutions, in particular to ensure a regular updating of the skills and knowledge of their respective leadership teams. Such experience should now be broadened and scaled up. Times of crisis will require higher volumes of skills in change management, inter-cultural leadership, and innovative thinking. Corresponding training (or re-training) programmes should be developed to benefit a larger population of European enterprises, with special focus on SMEs, since they are both the largest European employer, and the most vulnerable to the crisis. Large companies could play a significant role in such an effort by adopting one or several 'nephew-SMEs' (e.g. among their clients or subcontractors) and sponsoring their re-skilling efforts, in particular in knowledge-intensive activities. The existence of 'innovation clusters' should be fully used in this context, since they typically bring together universities and SMEs.

Brussels to fund 'Erasmus' for SMEs

Entrepreneurs will be paid up to €1,100 per month to move to other EU countries to learn from experienced business owners as part of a pilot project designed to encourage young business owners to make more use of the internal market. The scheme is part of the Small Business Act which was unveiled in July 2008 and will help 870 entrepreneurs spend between one and six months in another EU member state in 2010. Funding for expenses varies according to the cost of living in member states, but entrepreneurs keen to benefit from the scheme will be expected to raise additional funds and demonstrate that they have a viable business plan. <http://www.erasmus-entrepreneurs.eu/>

5 action five

Encourage skills mobility within Europe and between Europe and other parts of the world.

Initiatives such as Europe's Blue Card, and 'Erasmus for business' can play a significant role in stimulating cross-fertilization among ideas and mindsets. National and European-wide initiatives to encourage cross-European mobility can also diminish the resilient gap between unemployed labour and unfilled job vacancies, by 'greasing the gears' of Europe's labour markets. They must also be encouraged as a way to keep European minds open, and to fight tendencies which could lead to a repetition of the protectionist errors of the past. Such initiatives should hence receive additional visibility and funding, both from the public and private sectors.

6 action six

Foster innovative approaches to education, including through e-learning and distance learning.

To solve its current growing skills problem, Europe needs to re-design its education systems along the principle of life-long learning. No job, present or future, is immune to the fact that we do not live anymore in a world where one would study and learn for twenty years, and then apply that knowledge for the rest of one's life. The pace of technological innovation and the continuous emergence of new challenges (e.g. environmental protection) require a constant updating of professional skills. This requires new approaches to education and training, in order to allow learning to take place any time any where. Fostering the development of e-learning and distance learning is hence a priority for Europe. In this area also, successful experiences should be identified, and generalized. The launching of a major European Initiative for Flexible Learning in 2010-2011 could boost such an effort; it could include a competition for the most innovative program in flexible learning, either by an education institution or by an enterprise, or government entity.

FIGURE 10

The European Skills Pact (ESP) Edifice

Overarching goal: to prevent skills shortages from reducing the impact of stimulus packages, investment and innovation.
European business and governments, recognizing the crucial importance of skills as a tool for growth, competitiveness and job creation, agree to form a European Skills Pact, based on four sections.

Priorities	Provides skills for competitiveness & employability across Europe	Inspire young generations to engage in building Europe's future growth	Enhance Europe's capacity to build skills in future growth areas	Promote innovation, openness, agility and mobility as tools to fight the crisis
Objectives	Encourage business to retain staff while preparing for post - crisis times	Stimulate interest for maths and science and IT-related education	Modernize curricula(e.g. vis-à-vis 'green growth'), and foster long-life learning	Business and governments to keep borders open for trade, people and ideas
Actions	Develop European template for PPPs responsible for the re-skilling of excess labor in times of crisis	Scale-up successful PPP initiatives (e.g. Jetnet), enable innovative educators	Scale-up business - universities partnerships Foster e-learning	Scale-up initiatives such as Blue Card, Erasmus for business. Promote 'Special Innovation Zones'

Annex 1:

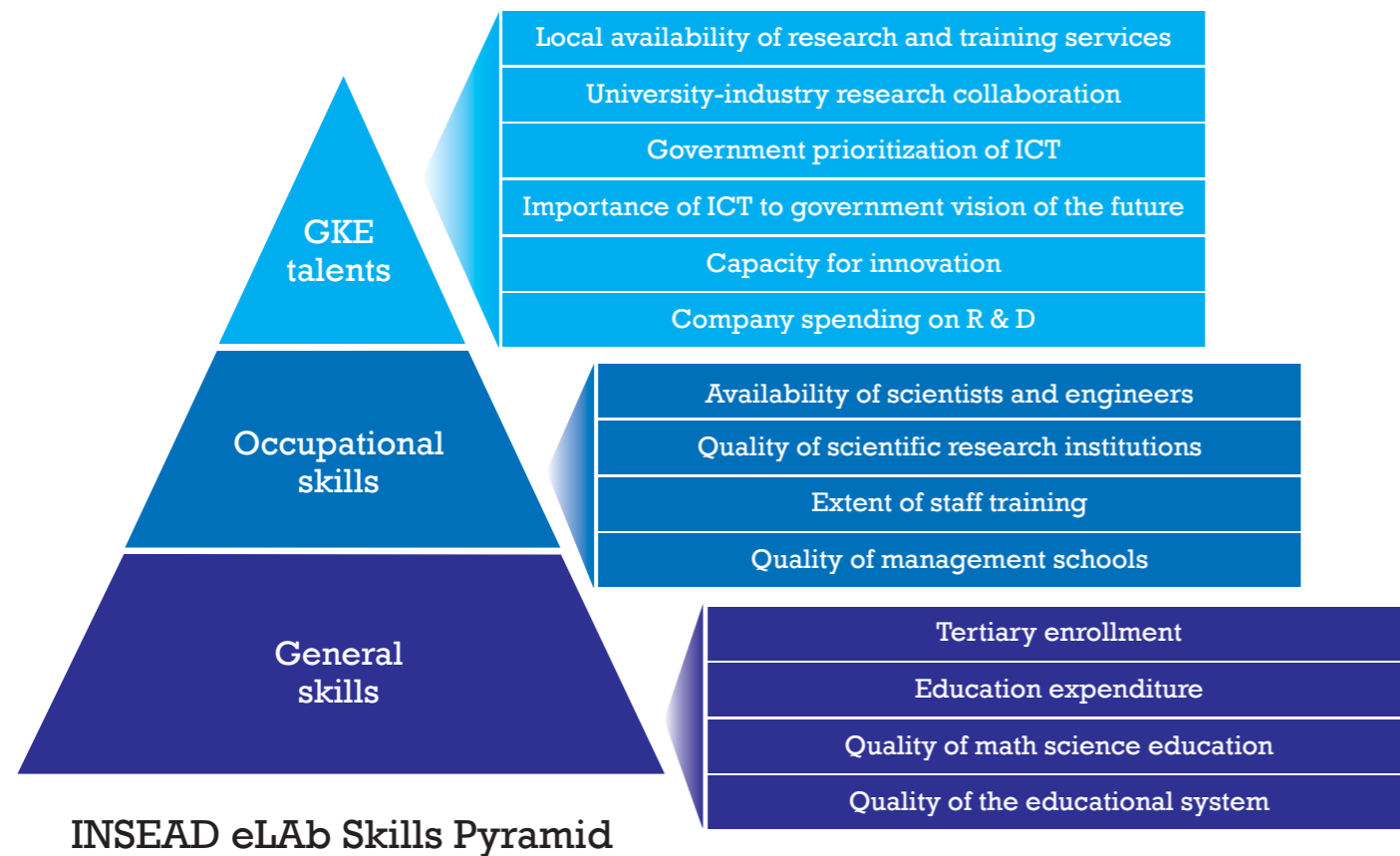
Methodology used for computing

The INSEAD eLab Skills Pyramid (Figure A1-1) depicts a country's supply of skills by taking into account three types of skills (also referred to as "tiers"). It is based on a selection of data related to education, R&D spending and the overall ecosystem of innovation and knowledge management.



FIGURE A1-1

The framework used by eLab to build its Skills Pyramid



The INSEAD eLab Skills Pyramid is derived from INSEAD research on Network Readiness Index and Global Information Technology Report (conducted in collaboration with the World Economic Forum).

The source for most variables is the World Economic Forum Executive Survey. The exceptions are tertiary enrolment and education expenditure, which come from, respectively, UNESCO, Institute for Statistics (June 2007), and The World Bank, World Development Indicators Online Database (December 2007).

For more detailed definitions of each variable, please consult the Global Information Technology Report at www.insead.edu/elab

We calculated the INSEAD eLab Skills Pyramid score based on the average of the fourteen variables representing three types of skills.

A country's rank is based on its Skills Pyramid or Tier score relative to the sample (n=42). A country's grade is based on its Skills Pyramid score relative to the mean and standard deviation of the sample (n=42) – e.g., if a country's Skills Pyramid score is within the mean plus or minus half the standard deviation, it receives a "C," if a country has a score that is within a standard deviation greater than the upper boundary of "C," then it receives a "B."

The sample means and standard deviations were the following:

Tier 1 mean = 4.545 (st. dev.= 0.727);

Tier 2 mean = 4.776 (st. dev. = 0.693);

Tier 3 mean = 4.459 (st. dev. = 0.750);

Total Score mean = 4.594 (st. dev. = 0.650).

Annex 2:

Skills Pyramid research results: scores, rankings and grades

Skills Pyramid Score ranking and grading of European Union countries and 15 other countries (n=42)

TABLE A2-1

RANKING	COUNTRY	SCORE	GRADE	RANKING	COUNTRY	SCORE	GRADE
1	Finland	5.76	A	26	Spain	4.25	D
2	Denmark	5.76	A	27	Latvia	4.15	D
3	Sweden	5.70	A	28	Malta	4.12	D
4	Switzerland	5.49	B	29	Poland	4.07	D
5	United States	5.43	B	30	Cyprus	4.06	D
6	Korea	5.39	B	31	Luxembourg	4.06	D
7	Norway	5.24	B	32	Slovakia	4.03	D
8	Singapore	5.23	B	33	Italy	4.02	D
9	Belgium	5.18	B	34	Greece	3.99	D
10	Canada	5.15	B	35	Russia	3.99	D
11	Netherlands	5.15	B	36	Ukraine	3.89	D
12	Germany	5.11	B	37	Turkey	3.86	D
13	France	5.09	B	38	Romania	3.79	D
14	United Kingdom	5.07	B	39	Brazil	3.71	D
15	Austria	5.05	B	40	China	3.71	D
16	Ireland	5.02	B	41	Mexico	3.64	D
17	Japan	5.01	B	42	Bulgaria	3.56	F
18	Hong Kong SAR	4.73	C				
19	Estonia	4.69	C				
-	EU 27	4.59	C				
20	Slovenia	4.57	C				
21	India	4.51	C				
22	Czech Republic	4.50	C				
23	Lithuania	4.47	C				
24	Portugal	4.38	C				
25	Hungary	4.34	C				

TABLE A2-2

COUNTRY	TIER 1			TIER 2			TIER 3			TOTAL SCORE
	SCORE	RANK	GRADE	SCORE	RANK	GRADE	SCORE	RANK	GRADE	
Austria	4.854	16	C	5.265	17	B	5.039	12	B	5.05
Belgium	4.986	11	B	5.593	6	B	4.969	13	B	5.18
Brazil	2.861	42	F	4.256	29	D	4.012	27	D	3.71
Bulgaria	3.722	37	D	3.646	42	F	3.310	42	F	3.56
Canada	5.043	8	B	5.545	7	B	4.870	16	B	5.15
China	3.002	41	F	3.892	39	D	4.221	24	C	3.71
Cyprus	4.534	22	C	4.128	33	D	3.525	36	D	4.06
Czech Republic	4.455	25	C	4.894	20	C	4.143	25	C	4.50
Denmark	6.055	2	A	5.678	3	B	5.533	2	B	5.76
Estonia	4.821	17	C	4.676	21	C	4.586	19	C	4.69
EU27	4.68	-	-	4.72	-	-	4.37	-	-	4.59
Finland	6.120	1	A	5.649	5	B	5.502	5	B	5.76
France	4.929	14	B	5.455	10	B	4.881	15	B	5.09
Germany	4.461	24	C	5.466	9	B	5.401	9	B	5.11
Greece	4.363	28	C	4.176	32	D	3.425	40	D	3.99
Hong Kong SAR	4.397	27	C	4.959	19	C	4.834	17	B	4.73
Hungary	4.773	18	C	4.392	25	D	3.861	30	D	4.34
India	3.787	36	D	5.299	16	B	4.440	22	C	4.51
Ireland	4.972	12	B	5.369	14	B	4.730	18	C	5.02
Italy	4.255	30	C	3.962	37	D	3.836	31	D	4.02
Japan	4.296	29	C	5.311	15	B	5.414	8	B	5.01
Korea	5.196	5	B	5.446	11	B	5.525	4	B	5.39
Latvia	4.880	15	C	3.965	36	D	3.590	35	D	4.15
Lithuania	5.064	7	B	4.433	24	C	3.912	29	D	4.47
Luxembourg	3.508	38	D	4.203	30	D	4.454	21	C	4.06
Malta	4.142	33	C	4.180	31	D	4.045	26	D	4.12
Mexico	3.252	40	F	3.952	38	D	3.726	34	D	3.64
Netherlands	4.948	13	B	5.416	13	B	5.073	11	B	5.15
Norway	5.514	4	B	5.254	18	B	4.967	14	B	5.24
Poland	4.641	21	C	4.055	34	D	3.520	37	D	4.07
Portugal	4.154	32	C	4.518	23	C	4.463	20	C	4.38
Romania	3.993	35	D	3.888	40	D	3.486	39	D	3.79
Russia	4.398	26	C	4.048	35	D	3.515	38	D	3.99
Singapore	4.737	19	C	5.527	8	B	5.439	7	B	5.23
Slovakia	4.003	34	D	4.308	27	D	3.784	33	D	4.03
Slovenia	4.989	10	B	4.328	26	D	4.387	23	C	4.57
Spain	4.202	31	C	4.635	22	C	3.922	28	D	4.25
Sweden	5.821	3	A	5.665	4	B	5.612	1	A	5.70
Switzerland	5.020	9	B	5.931	1	A	5.529	3	B	5.49
Turkey	3.485	39	D	4.289	28	D	3.816	32	D	3.86
Ukraine	4.500	23	C	3.793	41	D	3.378	41	D	3.89
United Kingdom	4.680	20	C	5.427	12	B	5.113	10	B	5.07
United States	5.077	6	B	5.725	2	B	5.491	6	B	5.43

Skills Pyramid Scores (including tier scores) of European Union countries and 15 other countries (n=42)

References

Brown, F. and Courtois, J.P. (2009) "How to Drive Innovation in Europe", Wall Street Journal Europe, 12 February.

Euractiv.com (2006) "Education in science key to innovation, says Verheugen" (Published 17 March 2006) <http://www.euractiv.com/en/innovation/education-science-key-innovation-verheugen/article-153496>.

International Labour Office, (2009), Global Employment Trends, January 2009, ILO, Geneva.

Jenkins, E.W. (2006) The Student Voice and School Science Education, Studies in Science Education, 42, 49-88.

Jenkins, E.W. and Pell R.G. (2006) "Me and the Environmental Challenges": A survey of English secondary school students' attitudes towards the environment. International Journal of Science Education 28(7), 765-780.

Lavonen, J., Gedrovics, J., Byman, R., Meisalo, V., Juuti, K. & Uitto, A. (2008) Students' motivational orientations and career choice in science and technology: A survey in Finland and Latvia. Journal of Baltic Science Education 7(2) 86-103.

Matthews, P. (2007). The Relevance of Science Education in Ireland. Dublin: Royal Irish Academy.

Perucca, B. (2008), L'occident face à la crise des vocations scientifiques, Le Monde, 27 Novembre 2008, p. 4.

Rifkin, J. (1995), The end of work, Tarcher-Putnam, New-York.

Schreiner, C. & Sjøberg, S. (2007). Science education and youth's identity construction - two incompatible projects? In D. Corrigan, Dillon, J. & Gunstone, R. (Eds.), The Re-emergence of Values in the Science Curriculum. Rotterdam: Sense Publishers.

Sjøberg, S. & Schreiner, C. (2007). Perceptions and images of science and science education. M. Claessens (Ed.) Communicating European Research 2005. Dordrecht: Springer.

Trumper, R. (2006). Factors Affecting Junior High School Students' Interest in Physics. Journal of Science Education and Technology, 15(1), 47-58.

Related websites

JetNet initiative (NL) www.jet-net.nl

The ROSE Project (Relevance Of Science and Education) www.ils.uio.no/english/rose

ILO Labor Statistics, laborsta.ilo.org

European Shell Eco-marathon: www.shell.com/eco-marathon



About INSEAD eLab

eLab is INSEAD's centre of excellence for thought leadership, community outreach and value creation in the knowledge economy.

Since eLab was created in 1999, its goal has been to provide thought leadership to INSEAD, business leaders and senior policy makers on all aspects of building effective knowledge economies and enabling knowledge-based organizations.

eLab conducts research in areas such as:

- ICT-enabled innovation – both at a country- and organizational-level;
- Skills for competing in the knowledge economy ("eSkills");
- Leadership in ICT-savvy organizations; and
- Uses of new ICTs.

eLab's team of researchers uses both qualitative and quantitative methods (e.g., surveys, case studies, statistical modelling and analysis) for data collection and analysis. They also draw on eLab's network of leaders from academia, business, and public policy, to ensure research findings are relevant and useful to key decision makers.

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For more information, visit www.insead.edu/elab

The photographs in this document were taken at various JetNet events (please see Box 5, page 24, for more information).

Cover of report, CD-ROM wallet, CD_ROM booklet, CD-ROM, and page 8: Jet-Net Career Day2 by DigiDaan

Page 5: Jet-Net Girlsday1 by Ernst Bode

Page 11: Jet-Net Career Day1 by DigiDaan

p. 17: Jet-Net Career Day5 by Jos Lammers

p. 19: Jet-Net Career Day6 by DigiDaan

p. 23: Jet-Net Philips e-paper by Jet-Net

p. 27: Jet-Net in lab of DSM by Jet-Net

p. 31: Jet-Net Career Day4 by Jos Lammers