

**Skills for the low carbon
economy:
Empirical findings from
country and industry case
studies**



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Green Jobs Initiative



- ILO
- UNEP
- International Organization of Employers
- International Trade Union Confederation

GREEN JOBS REPORT 2008:

“Efforts to tackle climate change could result in the creation of millions of new “green jobs” in the coming decades”

Research Questions

What are the skills constraints to realising the job potential in the transformation to lower-carbon economies?

How are countries overcoming these constraints?

Are skills policies integrated in environmental policies?

Research project funded by the EC:

- Case studies of 21 countries (Cedefop)
- Review of skills anticipation methodologies
- Case studies construction & renewable energy (EC)



ILO-Cedefop study: Skills for green jobs

Country coverage

60% of world population

59 % of global GDP

64 % of global CO2 emissions



Case studies of 4 Drivers of change

- Physical change in the natural environment
- Policies or regulation
- Change in technologies and innovation
- Change in markets for green industries and consumer habits

with special focus on policy-induced changes in stimulus packages



Countries sustain a “virtuous circle” linking education, skills, decent work by...

1. Ensuring the broad availability of quality education
2. Matching supply to current demand for skills: Efficient transitions
3. Helping workers and enterprises adjust to change: Fair transitions
4. Sustaining a dynamic development process: Use skills as a driver of change
5. Expanding accessibility of quality training: Promote social inclusion

HOWEVER... The potential benefits of training are not realised without job-rich growth



OUTCOME STATEMENT: Skills development improves employability of workers, productivity of enterprises and the inclusiveness of economic growth

Dynamic development process:

Prepare for future jobs

Integrate skills into *national and sector* development strategies

Include skills in responses to *global* drivers of change:

- technology
- trade
- **climate change**

In deciding on this strategy and implementation measures, exercise social dialogue



Green structural change

- Green structural change affects jobs (job creation, substitution, elimination)
- Good news: New jobs created will offset those lost
- Bad news: Those who will get green jobs are not necessarily those who will have lost their jobs
- For socially responsible restructuring the danger of temporary or permanent job losses has to be recognized!



Skills and occupational changes

- Quantitative and qualitative changes
- Degree of skill change determines if occupations change or new ones emerge
- Skills change in established occupations by far outnumbers new ones
- Emerging occupations more often require higher level qualifications
- Skill change is happening across occupational groups and all levels of qualification
- Generic and core skills are equally important



Findings on changing and emerging occupations

Degree of skill change	Occupational change	Typical skills response	Examples
None	None or only quantitative	None or increased training in existing occupation	Bus driver in alternative-energy buses; forester
Low	Changing occupation	On-the-job learning or short training courses	Welder in wind turbine production; Organic farmer
Medium	Changing or emerging occupation	Short courses or longer continuous training	Energy consultant in building; car mechanic for electric cars
High	Emerging occupation	Initial training, university degree or longer continuous training	Solar energy technician; eco-designer; bio-fuels technician

Gender issues

- Women under-represented in science & technology studies everywhere
- Technology divide evident in jobs – can be overcome through targeted interventions
- Women over-represented in low-end recycling, waste collection
- Men over-represented in high-emissions industries – hit hard by restructuring

Skills shortages already pose a major barrier to transitions to green economies and green job creation

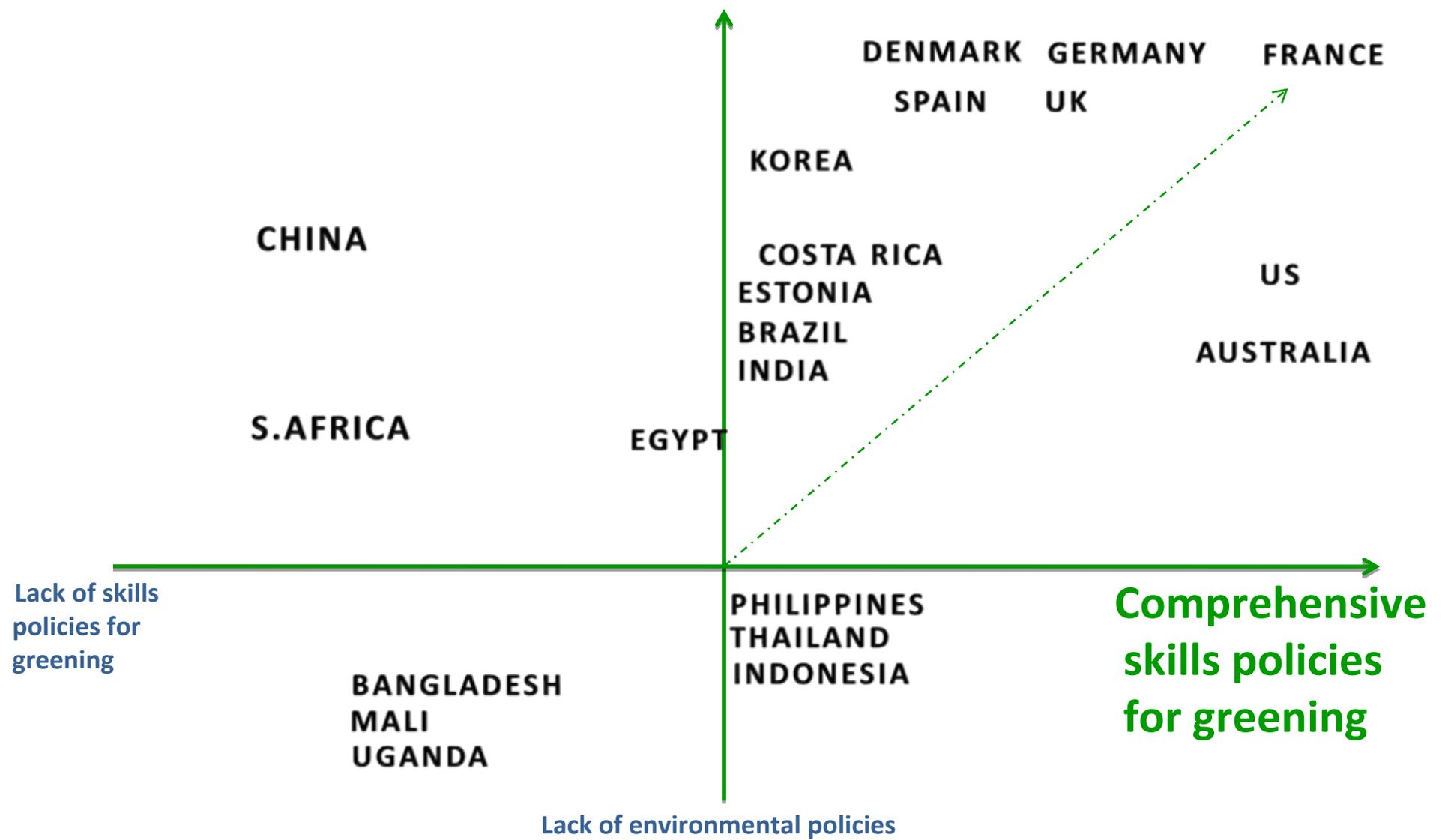
- In certain sectors and occupations
- Particularly core skills
- Multi-skilling requirements

Why are there shortages?

- Underestimated growth of some sectors, such as for green technologies
- General lack of scientists and engineers
- National skill structure which does not meet skills demand
- Low reputation of sectors – failure to attract trainees

Findings on Environmental and Skills policy coordination

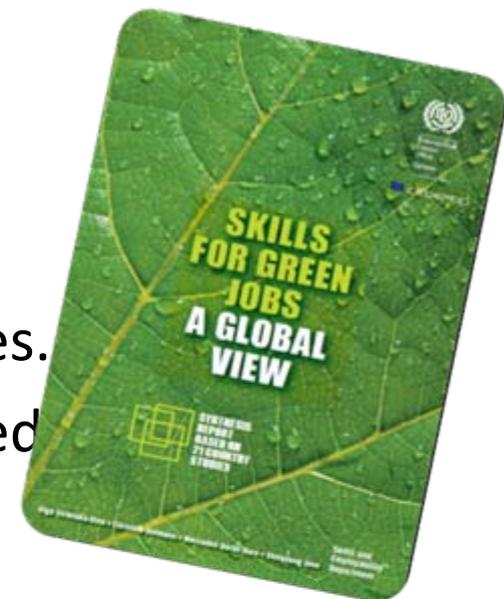
Sound environmental policies



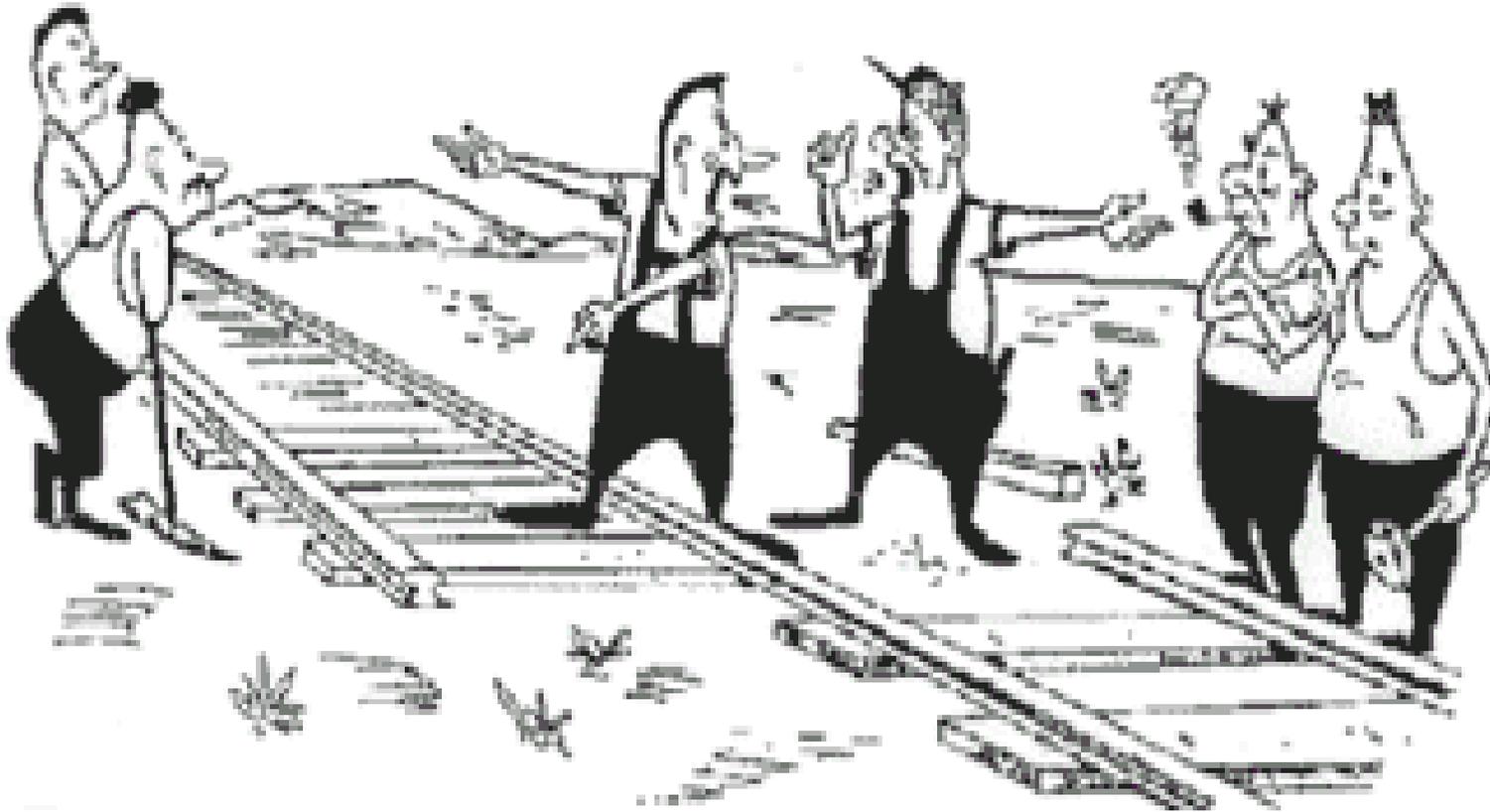


- Green jobs dynamic and extensive – so difficult to measure
- Labour Market Information systems cannot track “green” jobs because are included in many classifications
- Tripartism in identification of qualifications’ content and of competences needs is crucial
- More coordination needed
- Industry level analysis and establishment of relevant institutional mechanisms for social dialogue appear both useful and feasible.

- Mobilise the entire training system – basic skills, initial training, re-training needed.
- Mobilise employers, workers and government in identification of skill needs and training outcomes.
- Target training initiatives to groups disadvantaged in the labour market.
- Meet the needs of developing countries: hit hardest by climate change.
- See skills as driver in their own right – skills can influence development pathways.
- **Skills** and **Environment** Policies need to be informed, coherent and coordinated.



Coordination is critical for success



To tackle the gaps between...

... basic education, vocational training, the job market, and lifelong learning

... skills providers and employers

... skills development and industrial, investment, trade, technology and **environmental policies**

Early identification of skill needs for the low-carbon economy

- ILO and European Commission Joint management agreement
- Component 1 – Comparative analysis of methods of identification of skill needs on the labour market in transition to the low carbon economy
- Component 2 – Study of occupational and skill needs in two green sectors:

Green building



Renewable energy



Findings on anticipating skill changes

- Looked at macro; sector; occupation; skills levels
- No single correct approach: context, research questions, resources
- Input-Output & Social Accounting Matrices advantages:
 - Transparent – to explain to policy-makers
 - Modest amount of work for value
- General equilibrium models
 - More complicated to do & to use
 - But handles more complex questions, supply constraints
- Skills – if skill content is changing; then combine qualitative & quantitative methods
 - Need to ask employers and workers
 - Social dialogue & surveys

Findings on skills for renewable energy

- Example of need for a Just Transition – displacement in fossil fuels
- **Responsive education and training institutions** will have to start up (and sometimes scale back) courses much more quickly than they are accustomed to doing
- High demand in technician and engineering occupations.
- But also potential for large job growth in biomass production and in construction/installation
- Need for **industry-recognised standards and content** on major renewable energy professional and skilled occupations that can be quickly integrated into education and training provision
- Nature of **project-based work** is a challenge for sustaining training and for local job creation
- Role for **tripartite approaches** in maximising jobs and skills gain from projects through well timed training initiatives

Findings on skills for green building

- **Policy choice and design** have a major impact on green building activity and skills demand. Regulations and costs are driving change.
- **Dynamic relationship between green building practice and skills**
 - Change in green building practice opens up skills gap unless it is anticipated and there is a coordinated response
 - Investing in skills and capabilities ahead of demand can pull green building practices forward
- **Training needs:**
 - Retrofitting across a range of occupations
 - New knowledge for architects
 - Shortages in teachers, trainers
 - Some areas have low general skills levels in construction, installation and maintenance occupations
- Green building projects can go badly wrong where skills are deficient: risk safety hazards to workers and building users, low performance standards, cost increases for re-working
- Large numbers of **good examples of interventions to meet skill needs**, across all occupational clusters, show importance of social dialogue

In conclusion...

- The change is happening
- The ***pace of change*** depends on: degree of environmental degradation, policy and legislation, technology diffusion, market prices and consumer demand
- ***Success depends*** on: policy coherence, targeted measures, local initiatives, collaboration of various actors and levels
- **Vocational education and training** is catching up less efficiently than higher education
- Integrating training in environmental policies is both ***efficient*** (avoids skills gaps, smooths the transition) and ***equitable*** (re-skilling, sharing the gains, realising the job potential)



To learn more...



Country reports and
the EU synthesis report at:

[http://www.ilo.org/skills/what/projects/lang--
en/WCMS_115959/index.htm](http://www.ilo.org/skills/what/projects/lang--en/WCMS_115959/index.htm)

the Global report will be available in the coming
weeks.