Green Skills and Environmental Awareness in Vocational Education and Training

Cedefop Workshop Presentation

Annette Cox and Emanuela Carta

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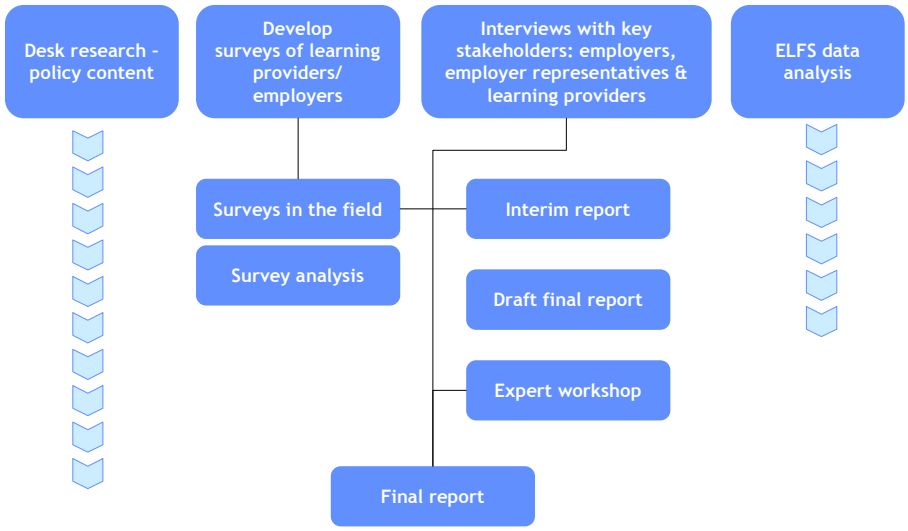
Purpose of the study

- Identify current/future demand for skills/jobs in key occupations – effects of greening economies on skills needs
- Any mismatch between skills needs and learning provision?
- Policy implications – for learning provision, skills policy and wider policy fields
- Dissemination/improvement of awareness of green skills needs

Which occupations and countries?

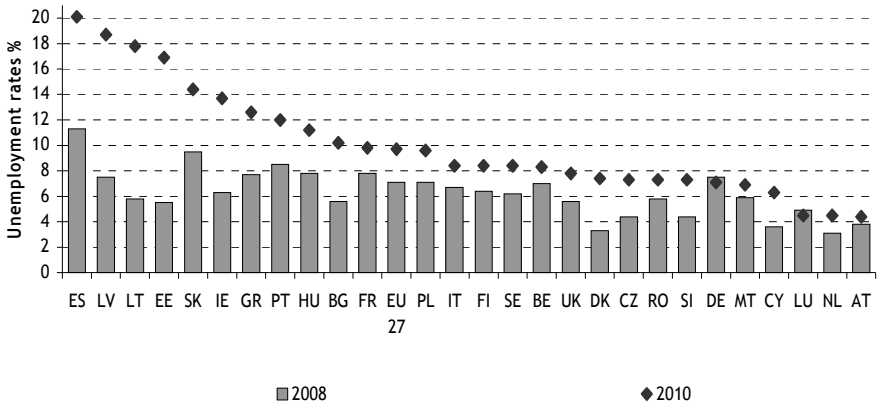
- Green Increased Demand Occupations (GIDO) – insulation workers, electricians
- Green New and Emerging Occupations (GNEO) – nanotechnologist, energy auditor, solar photovoltaic installer
- Green Enhanced Skills Occupations (GESO) – environmental engineer, transport vehicle inspector, sheet metal worker, refuse collector
- Mix of skill levels – environmental engineer and nanotechnologist (H), refuse collector (L), all others (M)
- Countries: UK, NL, FI, DE, GR, HU, SK, IT
- At different stages of economic 'greening', different size, policy stance on green economy, recency of EU accession

Overview of methodology



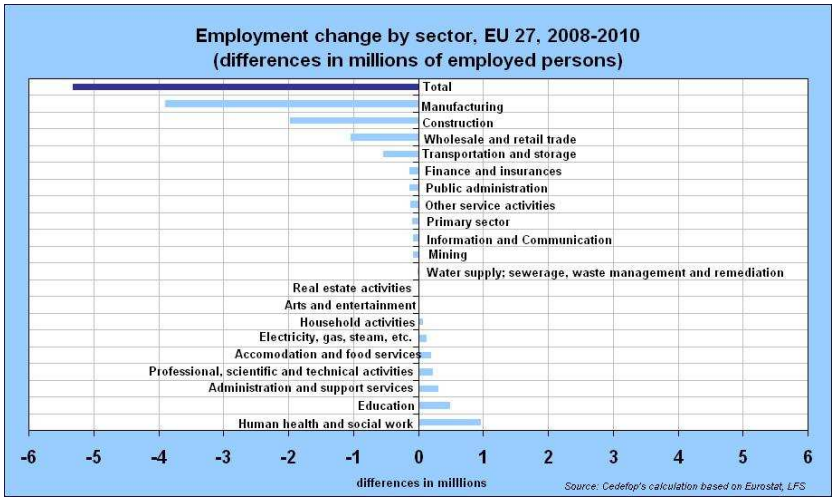
Employment trends in the EU

EU unemployment rates by country



Source: Eurostat European Labour Force Survey

Employment change by sector



Levels of employment in green occupations

Table 4.4: Total employment in each occupation, in 2010, by country (000s), ELFS data

Occupation	FI	NL	UK	HU	SK	Average
Nanotechnology Engineering (part ISCO code)	2.9	8.1	7.8	3.9	2.4	5.0
Environmental Engineer (part ISCO code)	8.8	96.3	202	14.6	2.6	64.9
SPV Installer/Designers (part ISCO code)	13.4	17.2	3.2	16.8	11.4	12.4
Insulation worker	3.1	2.5	n.a	2.5	3.2	2.3
Electrician	12.4	55.4	267	34.8	19.3	77.8
Sheet Metal Worker	6.7	8.8	57	3.1	1.8	15.5
Energy Auditor/Transport vehicle system inspector*** (part ISCO code)	2.1	6.5	75.6	31.5	16.0	26.3
Refuse and Recyclable Material Collector	0.8	9.5	38.7	2.2	8.6	12.0

Source: Eurostat European Labour Force Survey, own calculations

Jobs trends

- ELFS
  - Job growth: insulation workers (FI, NL, SK, HU) and electrician (FI, NL, UK)
  - Declining trends: environmental engineers (NL, SK, HU), SPV installers (all), transport inspectors/energy auditors (FI, UK, HU), sheet metal workers (FI, NL, SK, HU)
- National experts
  - Job growth: nanotechnology engineers, environmental engineers, energy auditors SPV installers, SPV installers and transport inspectors
  - Declining trends: sheet metal workers, electricians, insulation workers

Workers characteristics - Gender

- High proportion of males across all occupations
- Higher proportion of males in mature sectors and in constructions: insulation/sheet metal workers, electricians, SPV installers
- New technologies and 'green topics' attract more women: nanotechnology and environmental engineers have higher incidence of female workers

Workers characteristics - Age

- ELFS
  - high share of workers 15-24 in insulation workers, sheet metal workers, electricians, refuse collectors (not confirmed by national as considered unattractive for young people)
  - high share of workers 55-65 in nanotechnology engineers, SPV installers, environmental engineers (probably due to higher levels of education and work experience)
- Age trends are mostly confirmed by national experts, however there are some some differences due to national features and age definition

Workers' characteristics - level of education

- Levels of qualification:
  - High: nanotechnologies, environmental engineers
  - Medium: SPV installers, insulation workers, electricians, sheet metal workers, transport vehicle inspectors, energy auditors
  - Low: refuse collectors
- Level of qualifications may vary across countries

Recruitment methods

- Recruitment methods vary according to employers' skill needs
  - the more highly skilled the occupations the stronger the links with educational institutes (eg nanotechnology/environmental engineers, sheet metal workers)
  - great variety medium/low skills (schools, employers networks, associations, career services etc.)
  - the greater the skill shortages the more diversified the recruitment methods
- Important variations across countries:
  - DE,UK, NL: formal routes, well-developed links with specific universities or research institutes
  - UK: formal routes, headhunting mainly in niche occupations is common practice
  - IT: informal networks, word-of-mouth, sometimes educational institutes

Reported skills shortages by country and occupation

	Nano-tech engin	Enviro engin	Energy Aud	Trans vhcle emiss insp	Solar photo Voltaic inst	Electri-cians	Insul-ation wrkrs	Sheet metal wrkrs	Refuse coll
Italy									
Greece	+		*						
Finland				+		+	+	+	
Netherlands		+	+		+			++	+
UK			*			+	+	+	
Slovak Republic									
Germany	++	++		+		+	+	+	
Hungary		*							*

+ = skills shortage, ++ = significant skills shortages, * = oversupply of workers

Some explanations for current skills needs

- Many interviewees report no skills shortages due to ongoing effects of financial crisis/recession, especially construction/manufacturing
- Specialisation of skills needed in higher skilled occupations a cause of shortages
- Some concern about long-term recruitment into 'skilled trades/craft occupations' eg insulation workers, sheet metal workers, electricians due to difficulty in attracting young people to these occupations
- Skills needs – not articulated/conceptualised uniformly across countries (eg IT)
- Common response to skills shortages is train existing staff, not recruit

Current skills needs - skills gaps

- Sheet metal workers reported to have skills gaps across widest range of countries (HU, UK, IT, FI) – consistent with GESO status
- UK has widest range of skills gaps
- Nanotech – some generic skills in communication and commercialisation…
- Most widely reported skills needs for most occupations are practical/technical… but some sales/consumer advice skills needs
- Skills gaps linked to lack of standardised training/qualification provision – eg insulation worker and SPV installer
- Differences in level of exposure to changing skills needs as a result of 'greening' economies – least effect on vehicle emissions inspectors and refuse collectors

Future skills needs - job volumes

- Energy auditors, electricians, sheet metal workers and insulation workers show predicted increases in demand across widest range of countries (mainly GIDO and GNEO occupations)
- Germany, UK and Finland predict most substantial job increases across widest range of occupations
- Transport inspectors – possible decline in UK and Germany
- Refuse collectors – mostly stable demand for low skilled workers
- Uncertainty about economy, regulation and energy costs made predictions difficult especially in Southern EU/Mediterranean countries (IT, GR, HU)

Future skills needs - skills types (I)

- Most occupations predicted to experience changes in types/level of skills across most countries
- Some GESO occupations experiencing change (sheet metal and environmental engineers) but some effects also on GIDO occupations (eg electricians)
- Nanotechnologist – management of health and safety risks, working with new materials/particles, communication/sales/commercialisation
- Environmental engineer – diverse needs mainly technical skills where occupation less established (HU, SK, GR) and generic skills in marketing, customer service, commercial awareness (GR, UK, FI)

Future skills needs - skills types (II)

- Energy auditors – measurement techniques (SK, GR, UK, NL), principles of building (UK, DE), marketing (FI, UK)
- SPV installers – systems development (DE, SK, HU, IT)
- Sheet metal workers – new production processes and use of new materials, plus some generic skills in IT and communication (UK, HU, SK, NL, FI)
- Less change in skills required
  - refuse collectors (generic and IT skills),
  - vehicle inspectors (regulation - SK, UK, NL, FI and electric vehicles – NL, FI, UK),
  - insulation workers (use of polymers IT, regulation and judgement GR, thermal imaging – DE, awareness of RES – HU),
  - electricians (application of existing skills to RES – UK, NL, DE)

Overview of on- and off-the-job training in the last four weeks (% of workers receiving training)

	Finland	Netherlands	UK	Hungary	Slovakia
Nanotechnologist	25	15	26	13	8
Environmental engineer	27	18	24	6	8
Energy auditors/ transport inspectors	26	14	30	2	2
SPV installers	19	20	20	0.7	0.8
Electrician	23	26	21	1	2
Insulation worker	4	4	n/a	0	2
Sheet metal worker	10	21	10	0.5	0
Refuse collectors	0	9	16	2	0
All other workers	28	25	22	3	3

Source: Eurostat European Labour Force Survey: IES' own analysis

Content and format of training for different occupations

- Nanotechnology – continued HE contact following postgraduate qualification
- Environmental engineers – highly diverse and mix of on/off-the-job
- Sheet metal workers – technical skills, influenced by regulation and standards setting (NL, DE and IT)
- SPV installers – training often on the job and could be intensive (GR) but ambiguous status of occupation inhibiting development of provision (HU, NL)
- Vehicle inspectors – regular refresher courses to meet regulation in all countries, variation in funding eg UK paid for by consumer, part funded by workers in NL
- Electricians – off the job regulatory updates and specific courses eg especially on RES (UK, GR)
- Insulation workers – varies depending on regulation, mix of internal training (IT, GR), company certified training (FI, NL), regulation driven training (UK, DE)
- Refuse collectors – minimal, internal and mostly focussed on health and safety

Gaps in training provision

- Often found in GNEO occupations
- Nanotechnology - cessation of funding and high costs of training can threaten take up of training provision especially in SMEs (IT, UK)
- Energy auditors – lack of provision (NL) and broader focus on construction knowledge needed (NL, UK)
- Variable quality of provision for SPV installers (NL and UK) and lack of provision (FI)
- Electricians – need to update provision to meet employer needs and help employers navigate it (NL and UK)
- Insulation workers - lack of training provision (FI, NL, UK, GR)

Current challenges and future training needs - learning providers' views

- Main challenges for learning providers:
  - very different job content across employers
  - difficult to know what green skills are wanted by employers which is a particular problem for HU, GR, SK, IT
  - current demand for green skills is low
  - content of qualifications not changing fast enough
- Future demand for training: over half of learning providers anticipate strong growth in demand from workers and employers
  - training will be needed primarily for existing workers (CVET)
  - skills needs confined to a few key areas, but over 1/3 of learning providers uncertain what these will be

Some policy recommendations?

- Consistent direct/indirect regulatory support needed to develop green economies
- More/better information/advice/guidance to consumers on benefits of investment in energy efficient equipment, products and services and careful targeting of subsidies
- Mainstream green economic development across employment and skills policies
- Promotion of 'green' careers through IAG
- Strengthen skills needs forecasting
- Fragmented learning provision for insulation workers (FI, NL, UK, GR) and SPV installers – DE, NL, UK or absent (SK, HU) – needs addressing
- Develop coherence through standardisation and collaboration between employers, training provider/qualification provider to address ongoing employer concerns about lack of practical skills for some occupations

... thank you

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