Jobs and the green transition

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Centre for Climate Change Economics and Policy
E·S·R·C Economic & Social Research Council
The Grantham Foundation for the Protection of the Environment
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‘Green’ growth: potential

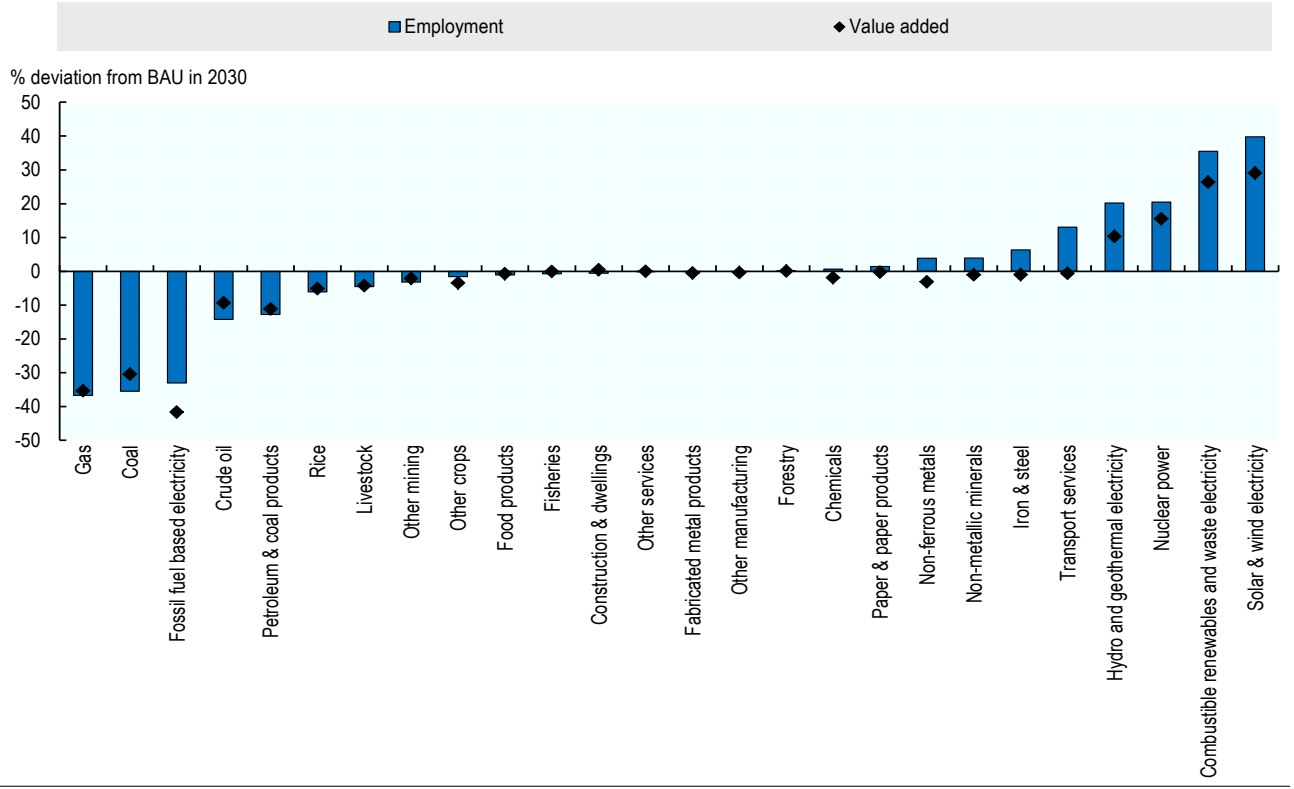
- Fiscal stimulus in the short run: more jobs
- Correction of market failures in the short to medium run e.g. less pollution leading to a healthier, more productive labour force
- Wave of innovation and competition in the medium to long run
- Loosening of the energy resource straightjacket in the long run

Size of impact

- Green jobs around 1.7% of total paid employment in Europe (EC, 2007) on OECD/Eurostat definition of the environmental goods and services industry
- 0.25% of global employed labour force of c. 1.8bn on UNEP ‘green jobs’ definition? Jobs in renewables from 2.3m in 2006 to 20m in 2030? (UNEP, 2008)
- ‘Clean energy economy’ 0.5% of US jobs (Pew, 2009)
- Environment industry responsible for 1.6% of Korean employment directly and indirectly (GGGI, 2011)

Employment projections

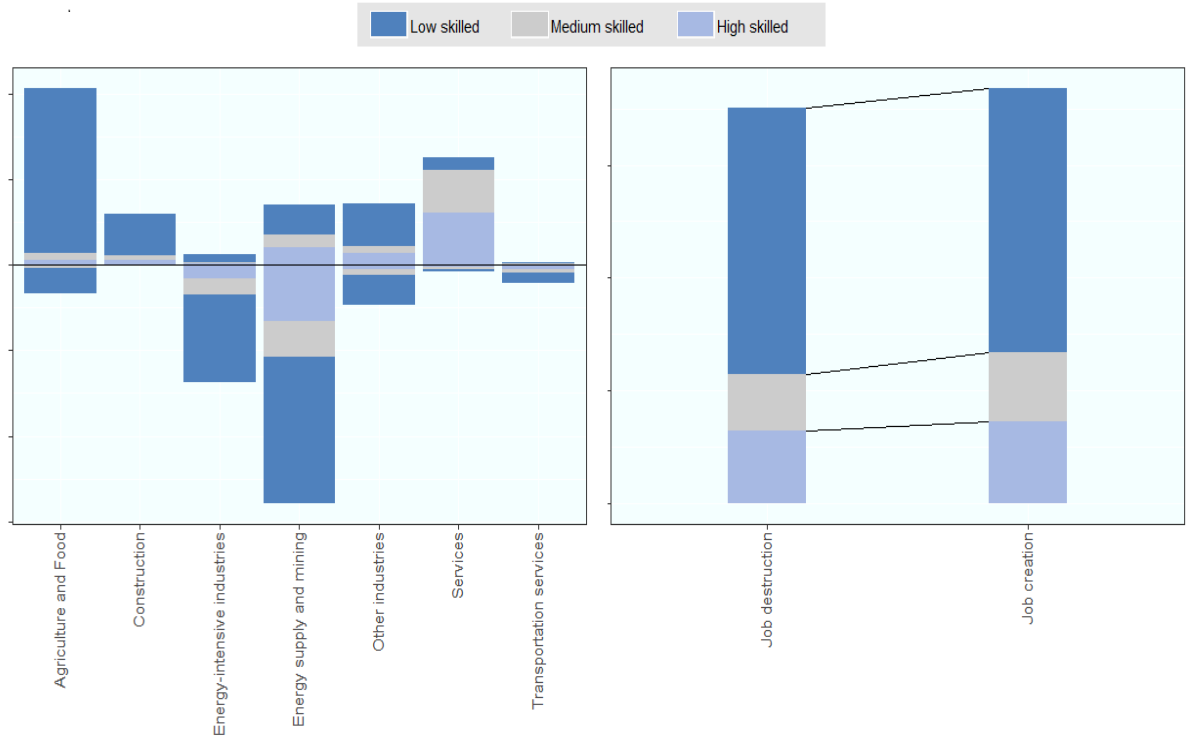
Growth of the green economy and the ideas economy; contraction of carbon-intensive sectors



Source: OECD Employment Outlook 2012

Job gains and losses

Ambitious green policies likely to create and destroy similar job types



Source: OECD Report to the G7 Environment Ministers, June 2017

Potential for job creation varies widely

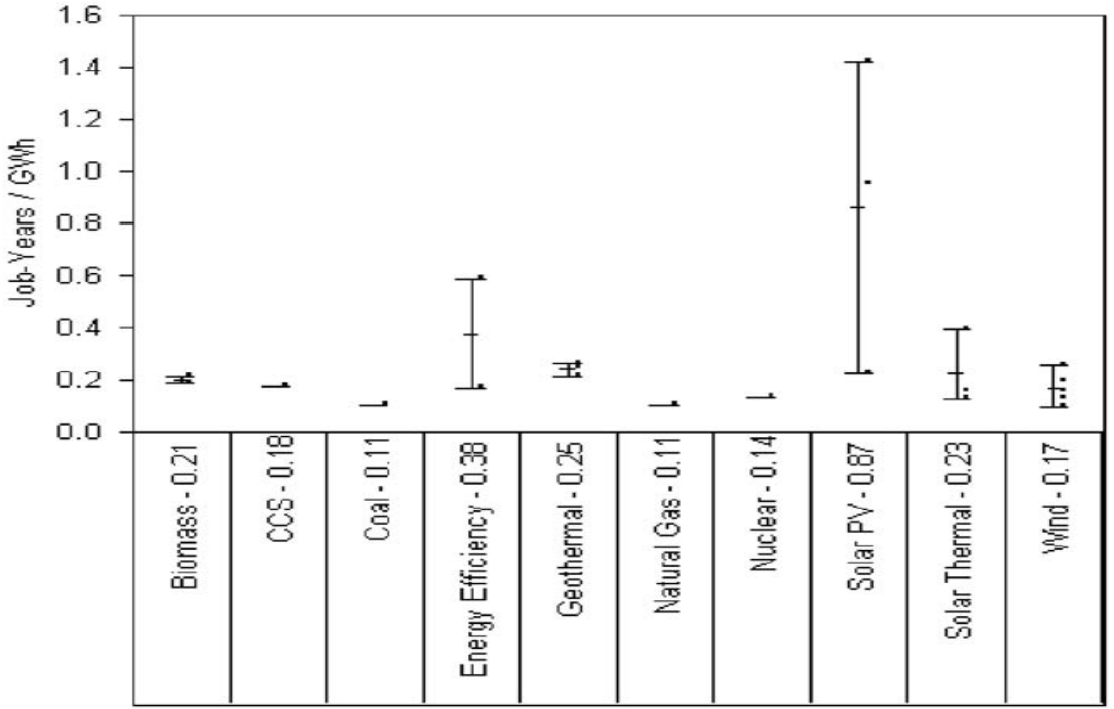
Korean green fiscal stimulus

Spending item	Total Employment Increase	Total Planned Spending (US$ m)	Employment Increase/US$ Bn Added Expenditure
Mass transit	138,000	7,005	19700
Energy conservation	170,000	5,840	29100
Vehicles and clean energy	14,300	1,490	9600
Env friendly living space	10,800	350	30900
River restoration	200,000	10,500	19000
Forest restoration	134,000	1,750	76600
Water resource management	16,000	685	23400
Resource recycling	16,000	675	23700
Green information	3,000	270	11100
Total	703,000	28,600	24600

Source: Barbier (2009).

Green power more labour-intensive?

Energy efficiency measures, solar PV more labour intensive; coal and natural gas the least labour intensive



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Source: Wei et al (2010): 'Putting renewables and energy efficiency to work'

Great uncertainty

Models differ on the job creation potential of green technologies: example of wind power in India

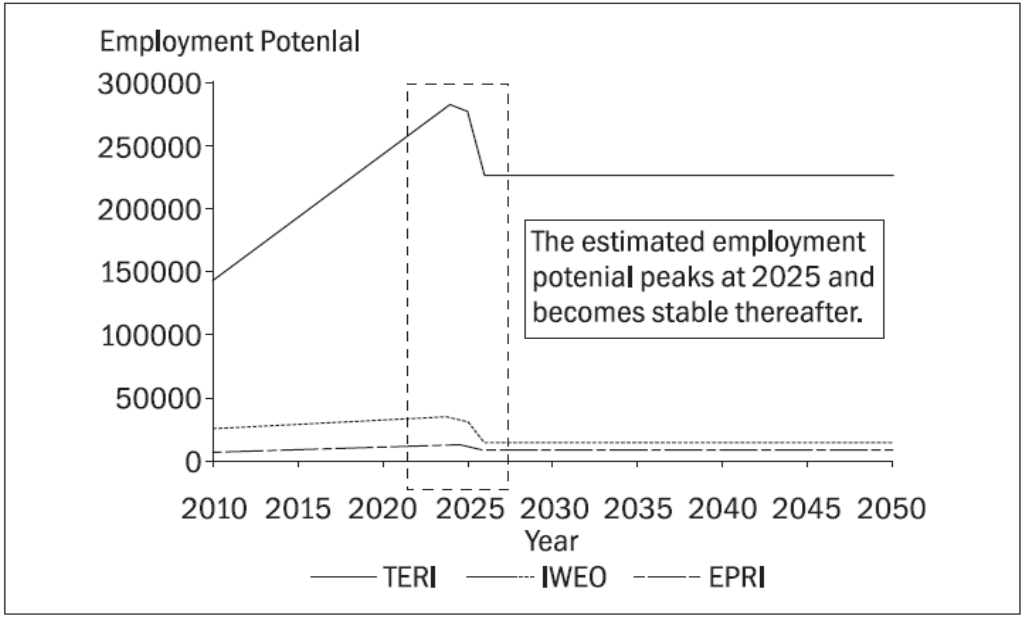


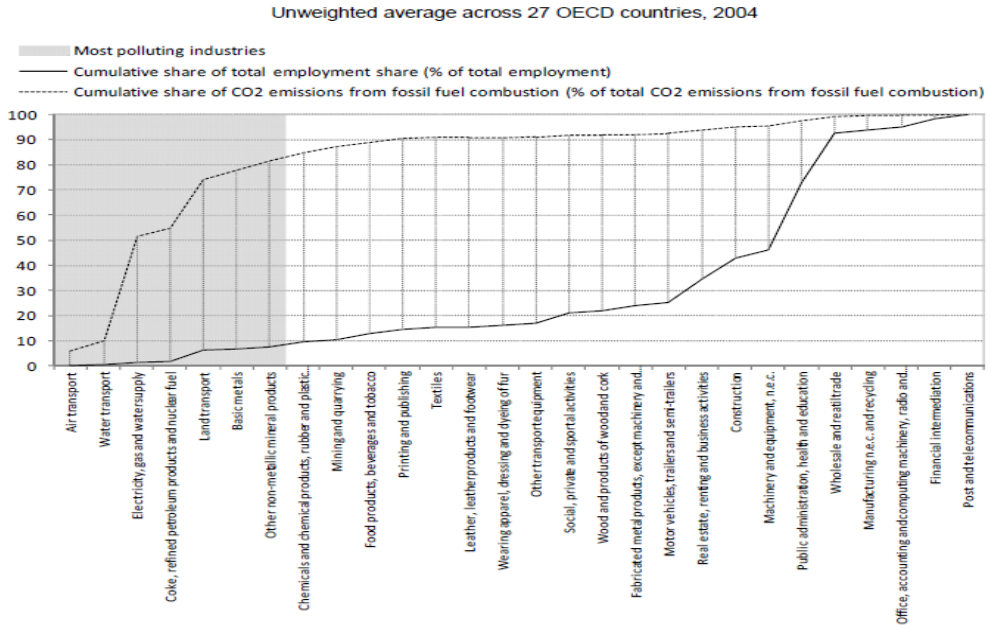
Figure 1 Employment Potential for High Growth Scenario

Source: TERI (2010)

The problem of emissions-intensive industries

Seven industries account for over 80% of pollution in the OECD – but they account for less than 10% of employment:

- Air transport
- Water transport
- Electricity, gas and water supply
- Coke, refined petroleum products and nuclear fuel
- Land transport
- Basic metals
- Other non-metallic mineral products



a) Most polluting industries: Air transport; Water transport; Electricity, gas and water supply; Coke, refined petroleum products and nuclear fuel; Land transport; Basic metals; Other non-metallic mineral products.

b) Sectors are ranked by increasing ratio of CO2 emissions to value added.

Source: EU-LFS, GTAP database, KLEMS database

More skilled jobs?

- Pollin, Heintz and Garrett-Peltier (2009):
  - Green energy investment: 47.5% ‘low-credentialed’ jobs;
  - Fossil fuel investment: 41.5% ‘low-credentialed’ jobs.
- Consoli et al. (2015):
  - Green jobs use high-level abstract skills significantly more than non-green jobs;
  - Green occupations exhibit higher levels of education, work experience and on-the-job training.

Net versus gross job creation

- Importance of economy-wide adjustment to the green policies applied:
  - Macro level constraints on employment growth
  - Spending on low-carbon public infrastructure
  - Support for green industries: investment, output and R&D
  - Carbon pricing
- Switch from resource-based consumption (agriculture, energy, manufacturing) towards knowledge-based consumption (services)

Conclusions

- **Transition to green growth**
  - Necessary
  - Feasible
  - Attractive
  - Potential benefits for employment
    - More labour demand
    - Healthier, more productive workforce

Conclusions

- **BUT:**
  - Not by itself a solution for labour market problems
  - ‘Green jobs’ difficult to define
  - Scope for creation of ‘green jobs’ and replacement of ‘brown jobs’ depends on good complementary policies being put in place: ***industrial strategy***
  - Importance of thinking through consequences for cost of living and income distribution

Some reading suggestions

- OECD (2017): Employment implications of green growth: Linking jobs, growth, and green policies. Paris.
- UNEP/ILO/IOE/ITUC (2008): Green jobs: Towards decent work in a sustainable, low-carbon world. Geneva.
- Bowen, A., and K. Kuralbayeva (2015): Looking for green jobs: The impact of green growth on employment. GRI/GGGI, London.
- Scott, M. (2014): Climate change: Implications for employment. ETUI, Brussels.
- GGGI/UNIDO (2015): Global green growth: Clean energy industrial investments and expanding job opportunities. Seoul and Vienna.

Opportunities in the ‘green race’

- **Innovation and comparative advantage**
  - Countries:
    - The manufacturing sectors of Japan and to a lesser extent Germany seem best positioned to take advantage of the green shake-up
    - Italy’s manufacturing sector has the worst statistics and could fall behind in the green race
    - There are also question marks (based on our 2005–07 snapshot) about China
    - In the UK, green innovation is concentrated, perhaps strategically, in the energy intensive industries

Source: Fankhauser et al (2013): ‘Who will win the green race? In search of environmental competitiveness and innovation’

Opportunities in the ‘green race’

- **Innovation and comparative advantage**
  - Sectors:
    - The green economy is much broader than the few flagship sectors (e.g. clean energy and clean cars) on which the debate tends to focus
    - There are areas of green entrepreneurship and innovation across the manufacturing sector, including in areas such as machinery and consumer goods and on important issues like resource efficiency and waste management

Source: Fankhauser et al (2013): ‘Who will win the green race? In search of environmental competitiveness and innovation’