

Green job creation in renewable energy and energy efficiency

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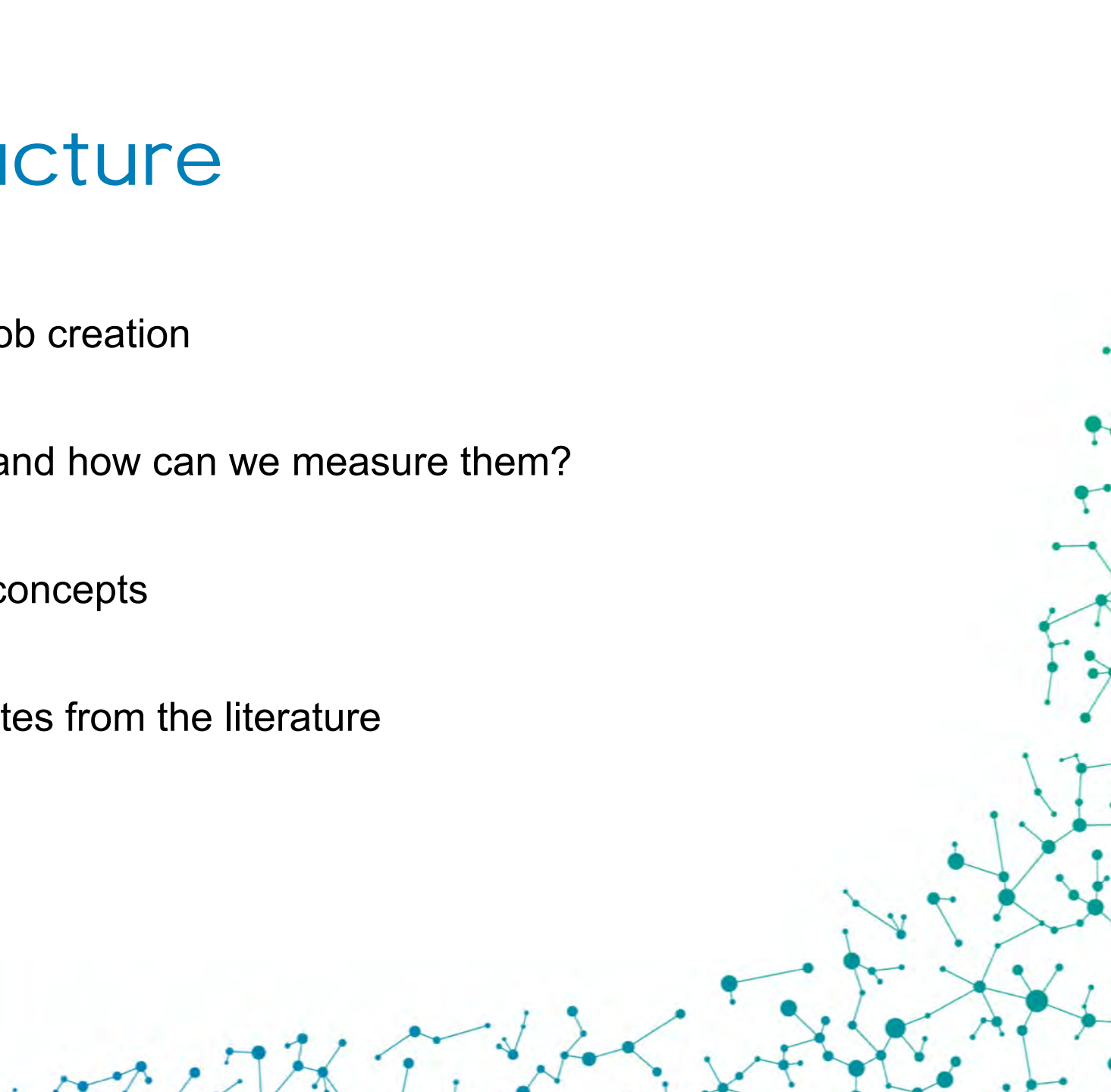
Imperial College London, UK

*The Pathway Towards Decarbonisation
—Message from Scientists Towards
Green Recovery, 13 November 2020*

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Presentation structure

- Context and review of low carbon job creation
- What are low carbon / green jobs, and how can we measure them?
- Macroeconomic perspectives and concepts
- Comparative analysis of job estimates from the literature
- Conclusions



Green jobs - context

Science & Environment

UK can be 'Saudi Arabia of wind power' - PM

By Paul Rincon
Science editor, BBC News website

24 September

Digital & Tech, Energy & Heat, Infrastructure, Top Stories, Transport & Freight

'Retrofit army': Half a million builders and plumbers needed to meet net zero goal

New research published by UK100 suggests around 455,076 jobs could be created or be in demand in the construction and property sectors alone

Britain's gas networks call for Government to unlock £900m green infrastructure investment to help #buildbackbetter

27 MAY 2020

How the coronavirus recovery effort can support a European Green Deal

Published on 07/05/2020, 10:49am

Comment: Making old buildings more energy efficient is an obvious target for public investment to stimulate EU economies after Covid-19 and meet climate goals

BUSINESS NEWS | OCTOBER 30, 2020 / 11:08 AM / UPDATED 9 DAYS AGO

Analysis: Biden's clean-energy 'revolution' faces challenge to match fossil-fuel jobs, pay

Efficiency & Environment, Finance & Markets, Top Stories

More than 27,000 global green jobs lost during May

Across the world, a total of 620,500 clean energy workers have lost their job since the beginning of the coronavirus outbreak

'It'll be around forever': fossil fuel workers switch to new jobs in renewables

Those hoping to future-proof their careers are turning to green industries such as windfarms

Review of low carbon jobs: purpose

- Main research question:

What is the evidence that policy support for investment in renewable energy and energy efficiency leads to net job creation?

- New systematic review started, updating on findings of previous UKERC review (Blyth et al. 2014)

Progress to date:

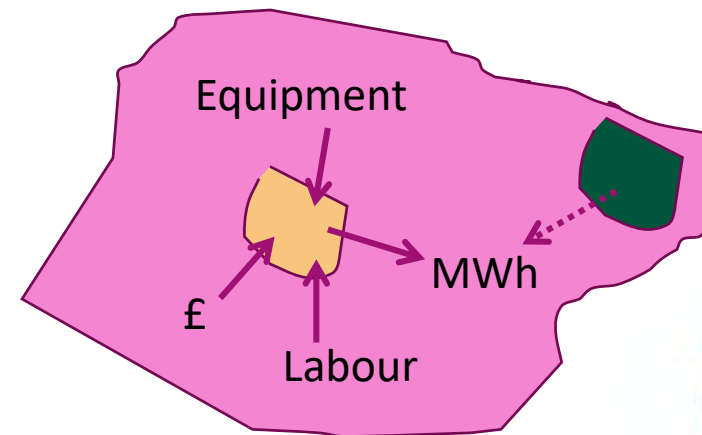
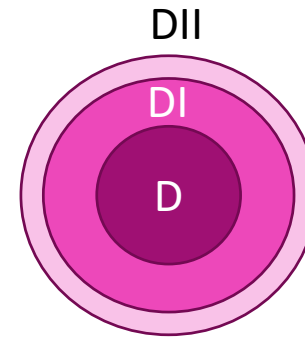
- Collation of relevant international estimates on gross low carbon jobs
- Carried out initial scoping review of recent literature on low carbon job creation and policy / investment support
- Full systematic review planned

What are green jobs?

- The definition of 'green jobs' can be controversial. Jobs within some sectors may be clearly thought of as 'green' (e.g. renewable energy), others (e.g. waste management or nuclear power) may be more contentious.
- Our focus is the employment impact of 'green policies'. Any job created or destroyed as a result of a green policy counts towards this arithmetic, irrespective of its inherent 'greenness'.
- We focus on a particular subset of green policies, namely support for renewable energy (RE) and energy efficiency (EE).
- Estimated that at least 11 million people are employed in renewable energy worldwide: most of these jobs concentrated in China, EU, Brazil, US and India (IRENA, 2019).

Types of green jobs

- Job types
 - Direct, indirect, induced
 - Short vs. long-term
 - Manufacturing, construction & installation, O&M
 - Supply chain / wider economy
- Net vs. gross jobs (accounting boundary)
 - Equipment manufacturing inside boundary?
 - Displaced jobs in product markets
 - Impacts on labour market
 - Impacts on household expenditure



Calculating net jobs



Mostly Input-Output analysis, some direct job surveys, some CGE / other approaches
(Blyth et al., 2014)

Types of model used

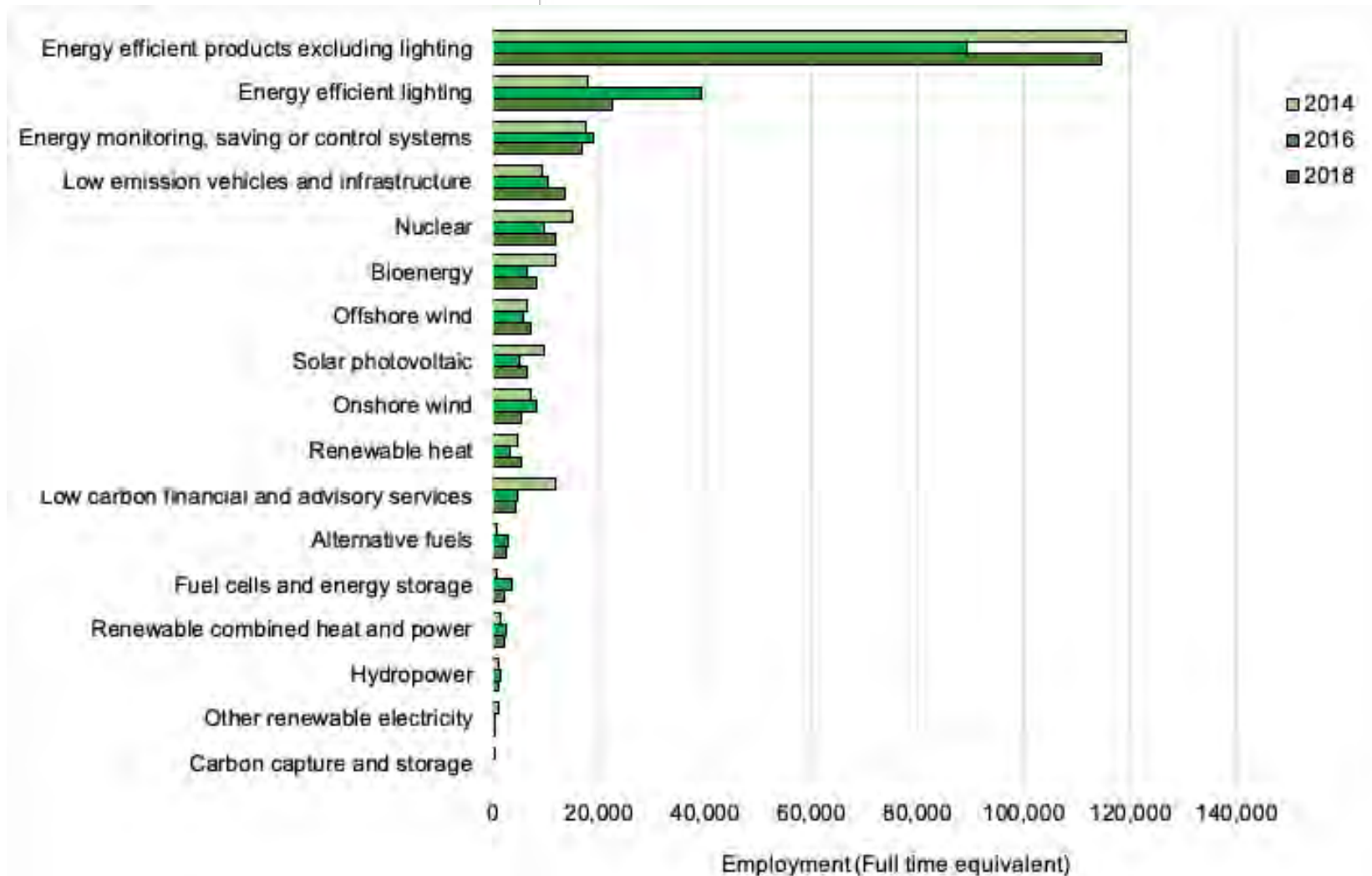
- Surveys / statistical – job counting in sectors
- Input-Output
 - Social accounting matrix
- Computable General Equilibrium
- Macroeconometric



Macro-economic perspectives

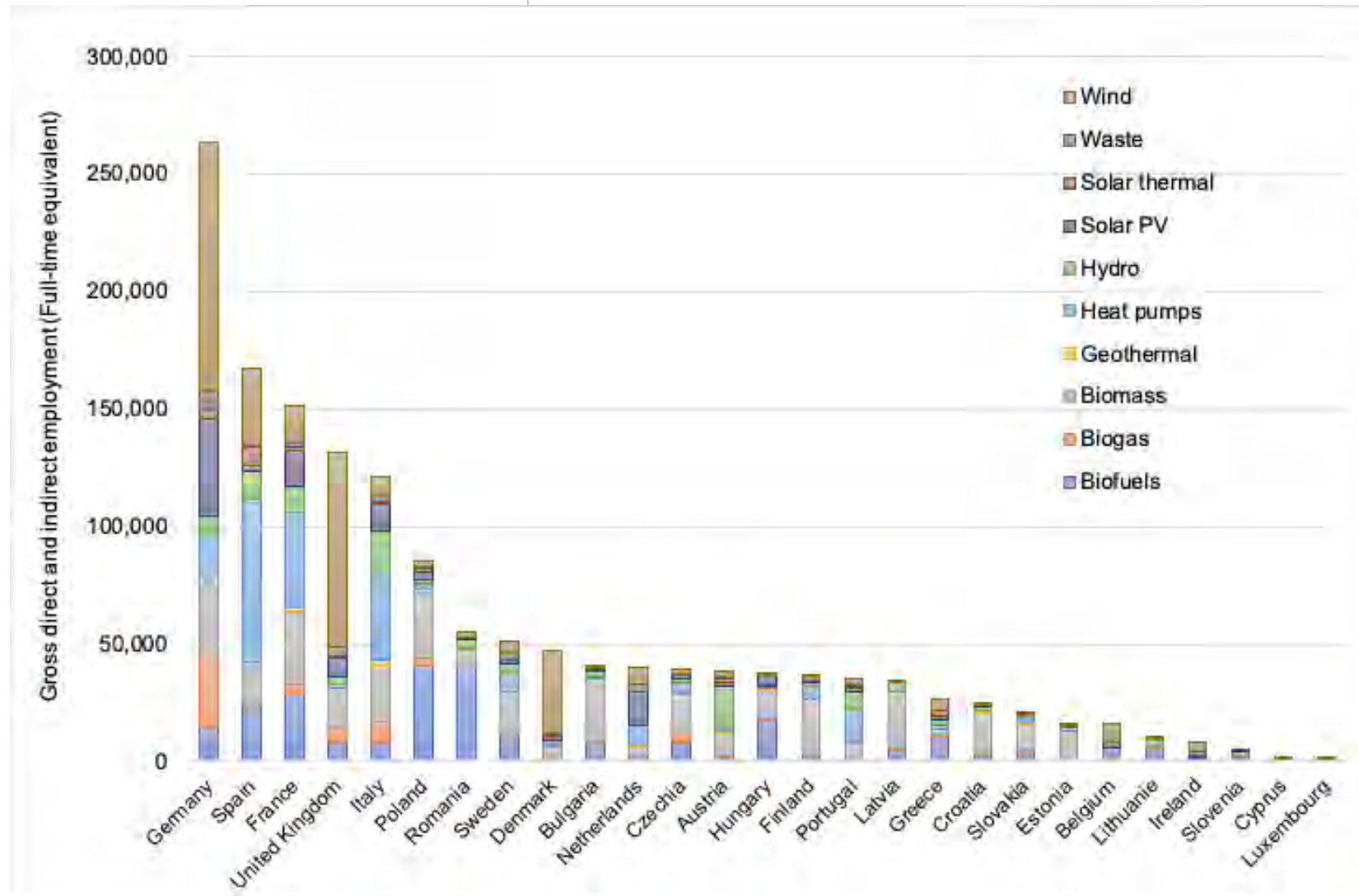
- 'Natural' rate of unemployment in equilibrium
- Deviations from equilibrium
 - Output (aggregate demand) gap
 - Role of fiscal and monetary stimulus
 - Multipliers, interest rates and crowding out
 - Business cycles, long-term growth and technology development

Low Carbon and Renewable Energy Economy gross employment estimates in UK



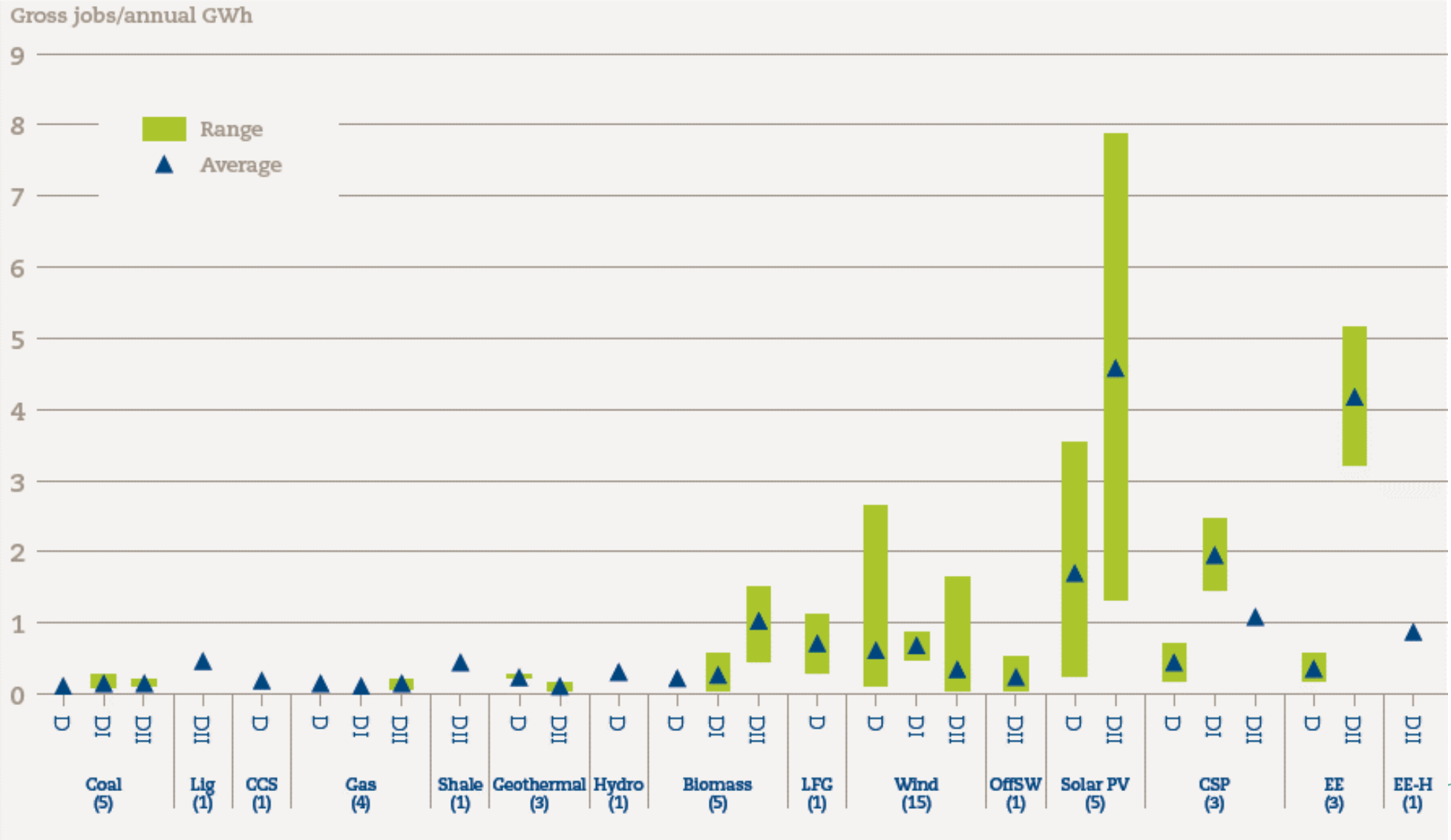
Source: Office for National Statistics (2020)

Gross direct and indirect employment estimates: renewable energy in EU 28, 2018

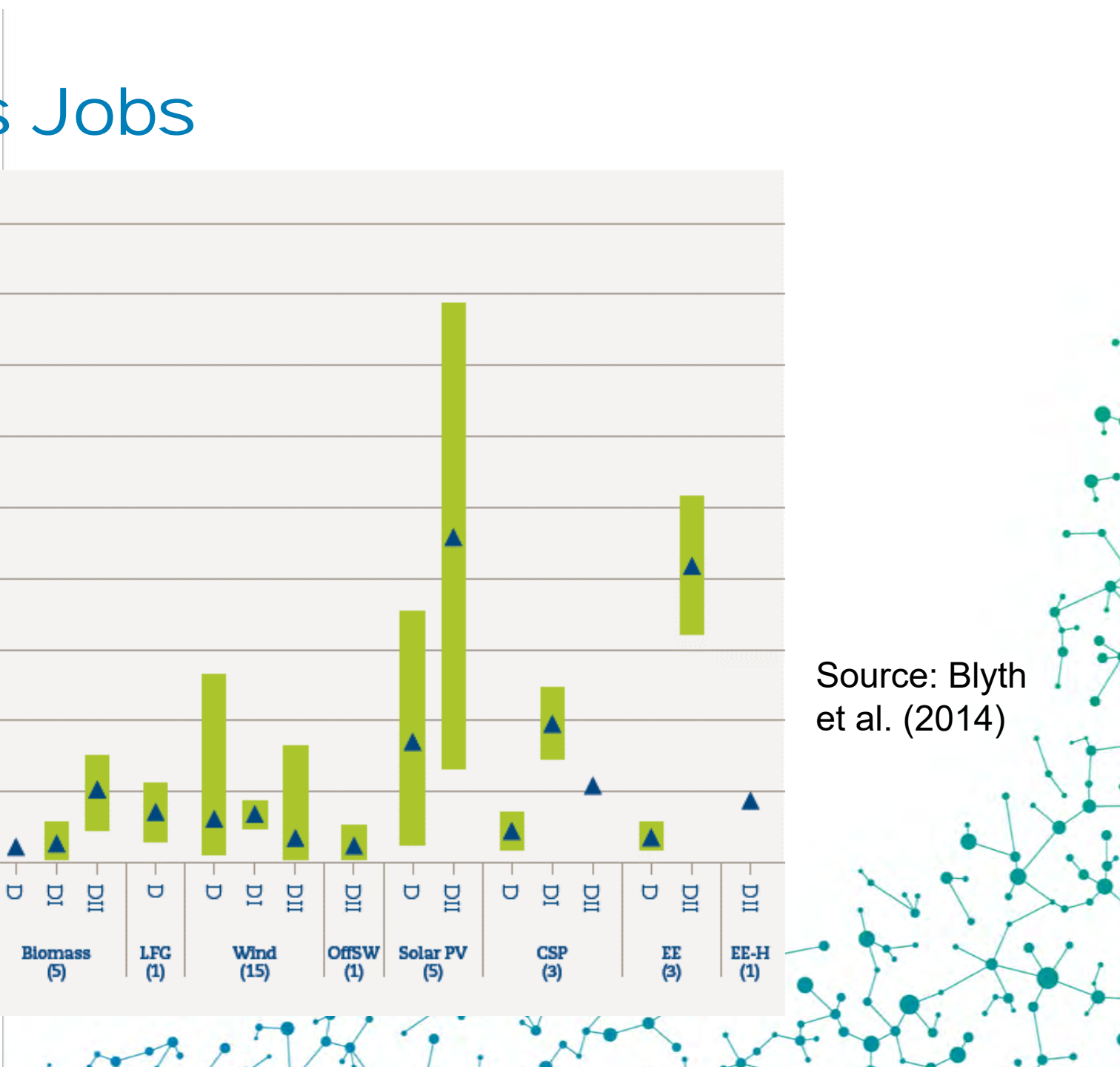


Source:
EurObserv'ER
(2020)

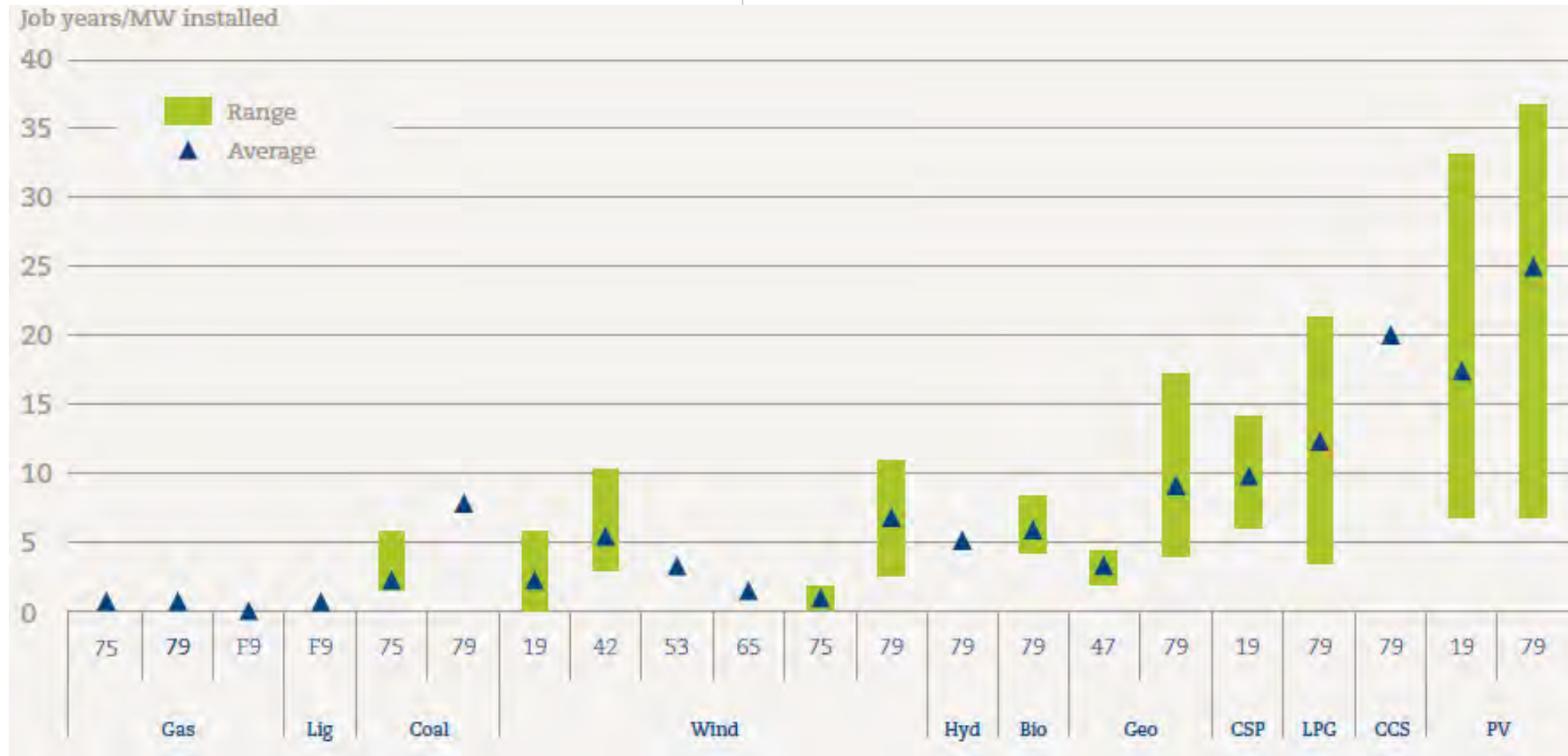
Evidence on Gross Jobs



Source: Blyth et al. (2014)

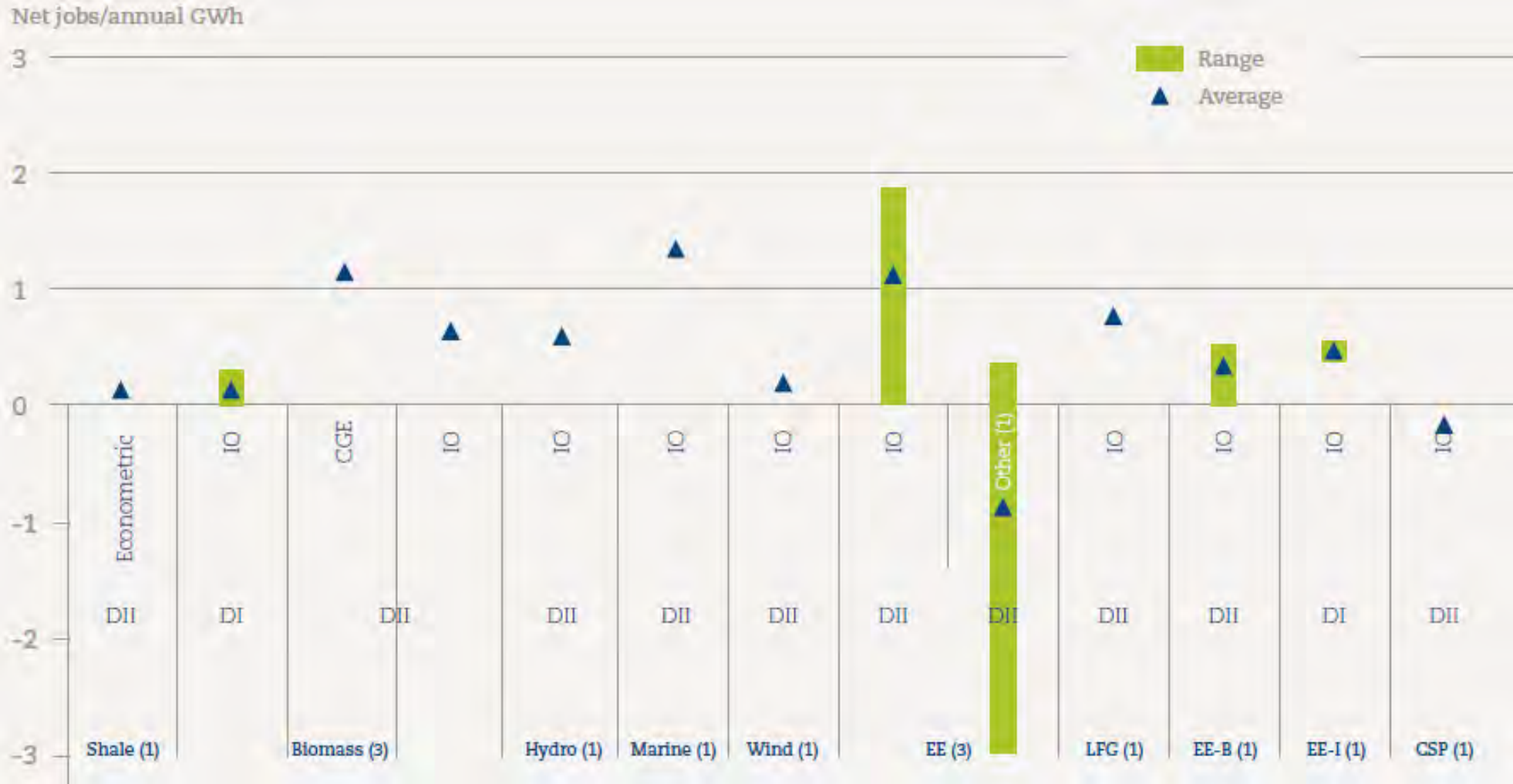


Short-term direct jobs during construction phase Comparing Fossil vs. Renewables

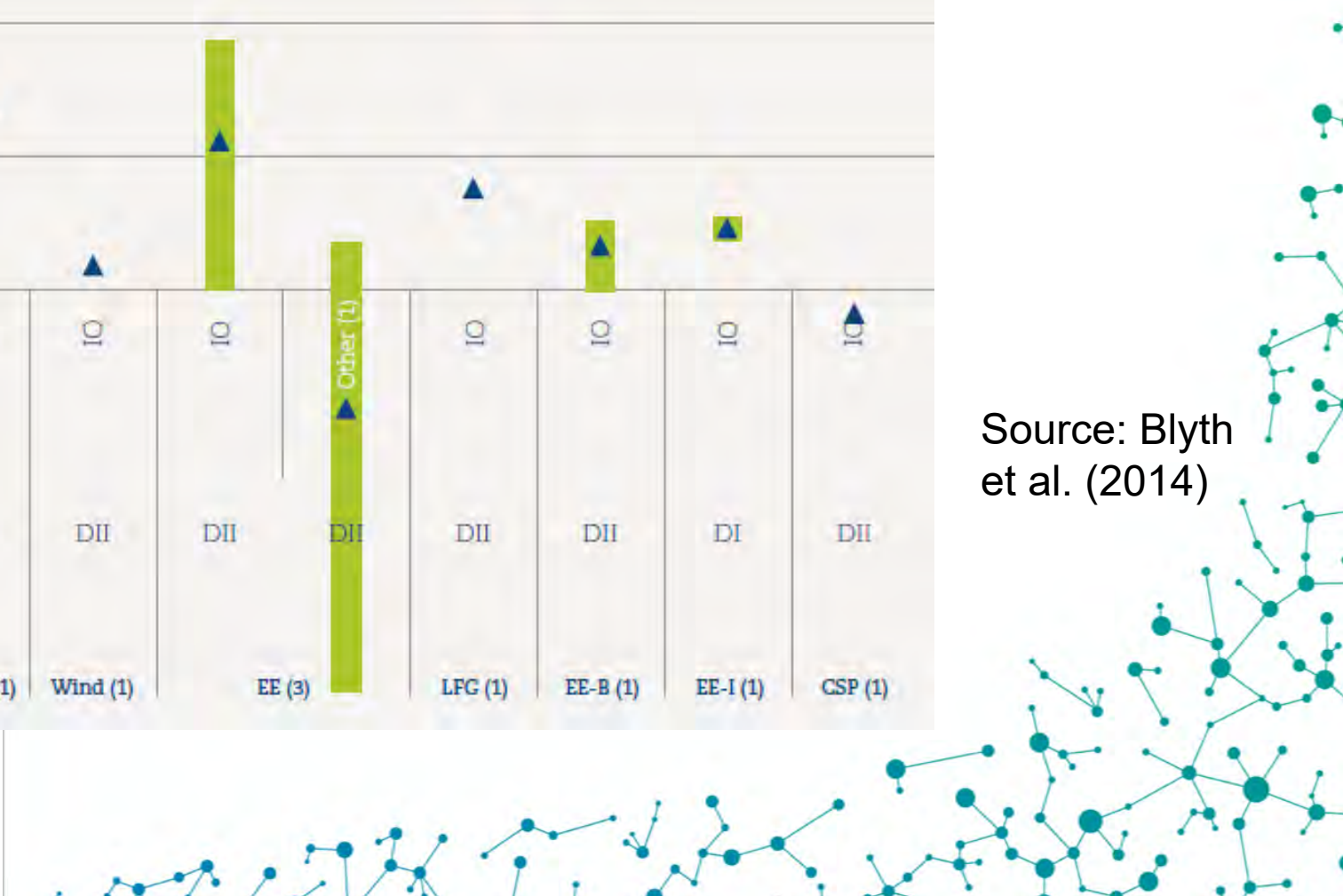


Source: Blyth et al. (2014)

Evidence on Net Jobs



Source: Blyth et al. (2014)

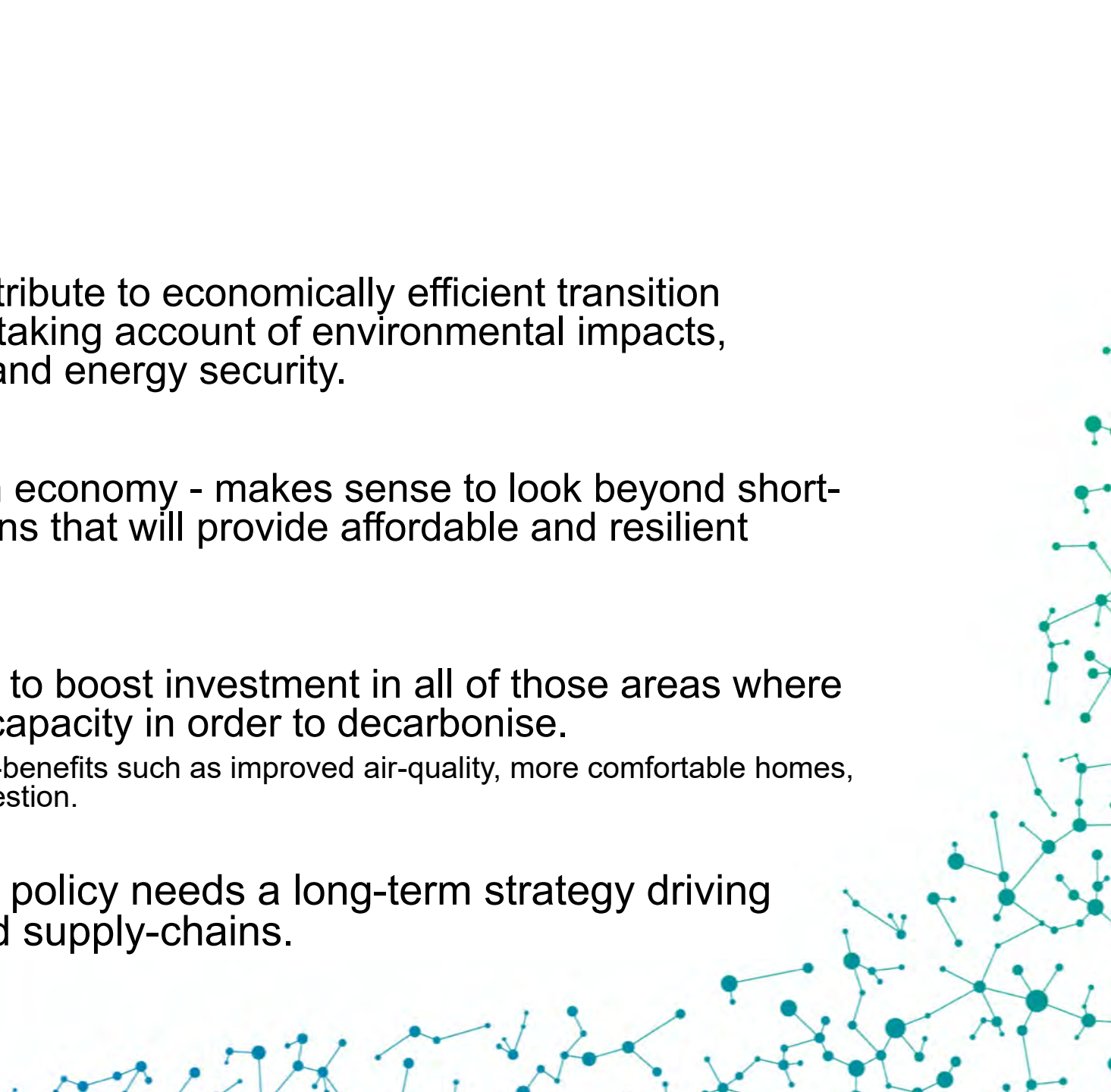


Conclusions 1

- RE and EE are generally more labour-intensive than fossil-fired generation, both in terms of short-term construction phase jobs, and average plant lifetime jobs.
- If investment in new power generation is needed, RE and EE can contribute to short-term job creation so long as economy is experiencing an output gap (e.g. during and shortly after recessions, post-COVID economic recovery).
- Wider economic effects important – e.g. if a low-cost, high carbon fuel or energy system is substituted for a more expensive low carbon alternative then overall economic output and employment would be expected to fall.
- In terms of overall economic efficiency, leading renewable energy technologies such as wind and solar PV look more favourable than before due to rapid cost reductions.

Conclusions 2

- In long-term, investment should contribute to economically efficient transition towards a country's strategic goals, taking account of environmental impacts, technology development pathways and energy security.
- UK ambitions to create a low carbon economy - makes sense to look beyond short-term job creation and consider options that will provide affordable and resilient energy services.
- Strong economic case can be made to boost investment in all of those areas where we need to build infrastructure and capacity in order to decarbonise.
 - This is particularly true where there are co-benefits such as improved air-quality, more comfortable homes, resilient energy supplies, or reduced congestion.
- Renewables and energy efficiency policy needs a long-term strategy driving technology development, skills and supply-chains.





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