Eurofound

European Foundation for the Improvement of Living and Working Conditions

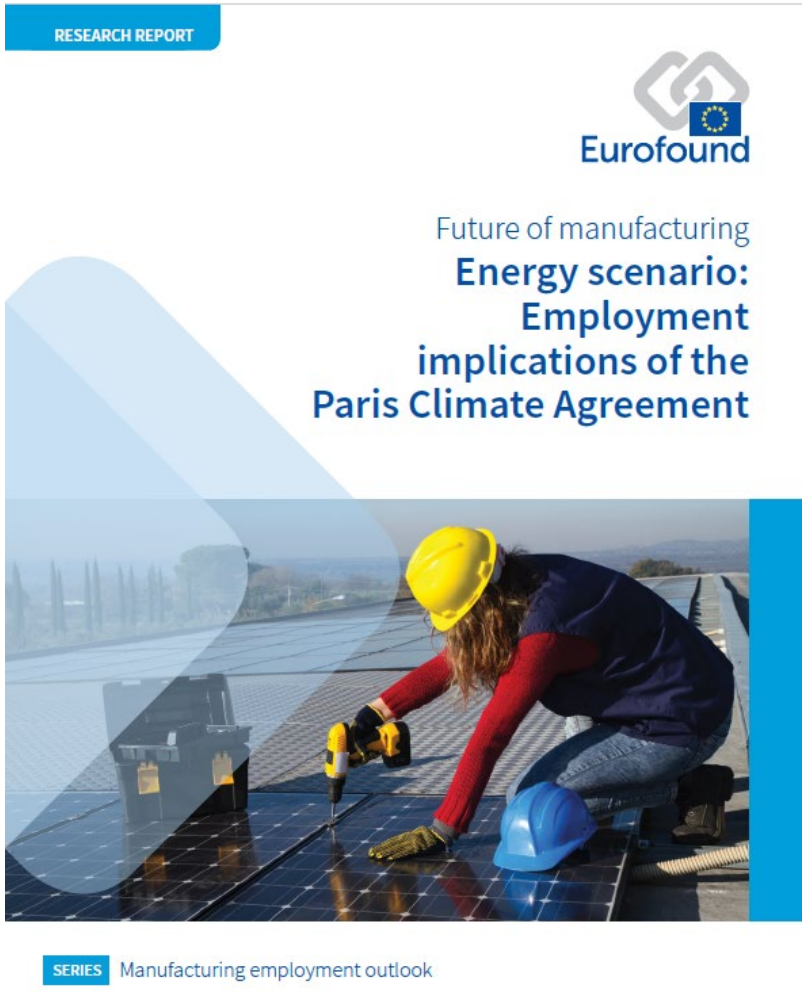
The tripartite EU Agency providing knowledge to assist in the development of better social, employment and work-related policies

Employment impacts of the shift to carbon-neutrality – some forecasts

John Hurley

Future of Work in Climate Change – Challenges and Opportunities, Helsinki 30/11/21

Energy scenario for the future of manufacturing



This report explores the potential employment and economic impacts of an EU transition to a low-carbon economy by 2030 – on the EU, and on other regions of the world. It analyses the impacts across sectors and occupations, with a particular focus on manufacturing.

The analysis is carried out using the E3ME macro-econometric model, which provides information on sectoral impacts, together with the Warwick Labour Market Extension model for occupational analysis. Further analysis of the employment developments in Europe are undertaken using Eurofound's European Jobs Monitor.

Authors: Richard Lewney, Eva Alexandri (Cambridge Econometrics), Donald Storrie (Eurofound) and José-Ignacio Antón Pérez (University of Salamanca)

About E3ME

- Global, macro-econometric model designed to address major economic and economy-environment policy challenges.
- Developed over the last 20 years by Cambridge Econometrics
  - A high level of disaggregation, enabling detailed analysis of sectoral and country-level effects from a wide range of scenarios.
  - Social impacts are important model outcomes. Econometric specification addresses concerns about conventional macroeconomic models, provides a strong empirical basis for analysis.
  - Can fully assess both short and long-term impacts; not limited by many of the restrictive assumptions common to Computable General Equilibrium (CGE) models.
  - Global: integrated treatment of the world's economies, energy systems, emissions and material demands. Covers 59 global regions, with a detailed sectoral disaggregation in each one, and projects forwards annually up to 2050, ie especially well adapted to climate change scenarios.

Sample policies envisaged in scenario

- Target: 2 degree target – IPCC 2014, fifth report

- Carbon emission price at lower end of range indicated in IPCC 2014 – applied via carbon tax or cap-and-trade mechanism
- Feed in tariffs + direct subsidies for renewable energy + additional investment in flexible generation capacity (mainly gas) given renewable intermittency
- Public measures funding energy efficiency (funded from above revenues), as per IEA World Energy Investment report greening scenario (IEA, 2016)
- Biofuel mandate on aviation – 18%
- Road transport policy – higher fuel taxes, phase out of older least fuel efficient vehicles, public transport mass electrification starting 2020
- …

Implications for employment

Table 1: Regional summary table, 2030, percentage difference from baseline

	Global (%)	United States (%)	China (%)	India (%)	EU28 (%)
GDP	0.1	−3.4	4.7	0.6	1.1
CO_2	−34.7	−45.5	−26.5	−53.2	−20.3
Employment	0.5	−1.6	2.3	0.1	0.5
Investment	1.0	−2.5	3.2	1.1	1.7
Consumption	0.4	−2.0	11.2	−1.1	0.7

Source: *FOME energy scenario projections*

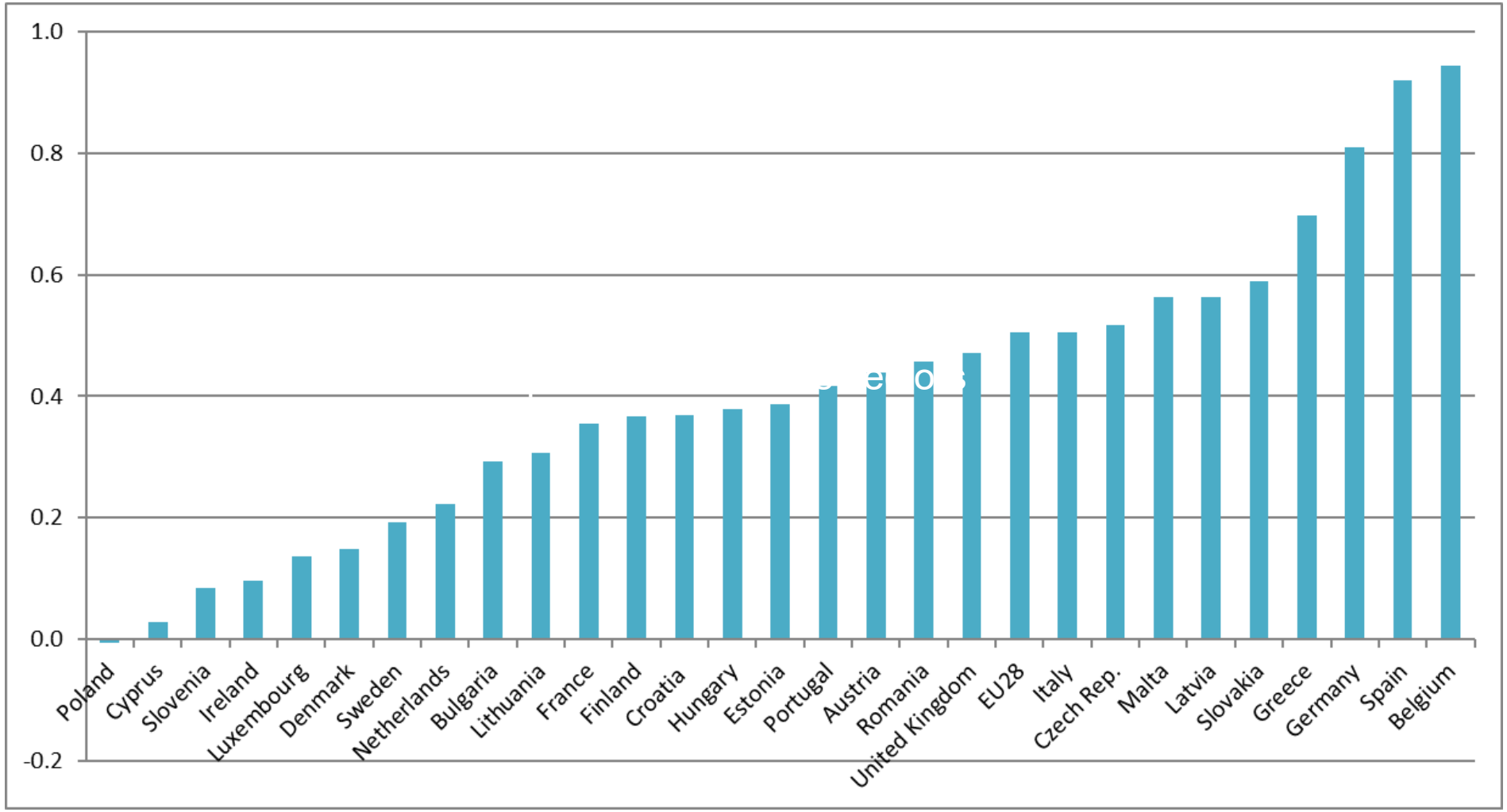
Impact varies across sectors

Table 2: EU28 sector employment, 2030, percentage difference from baseline

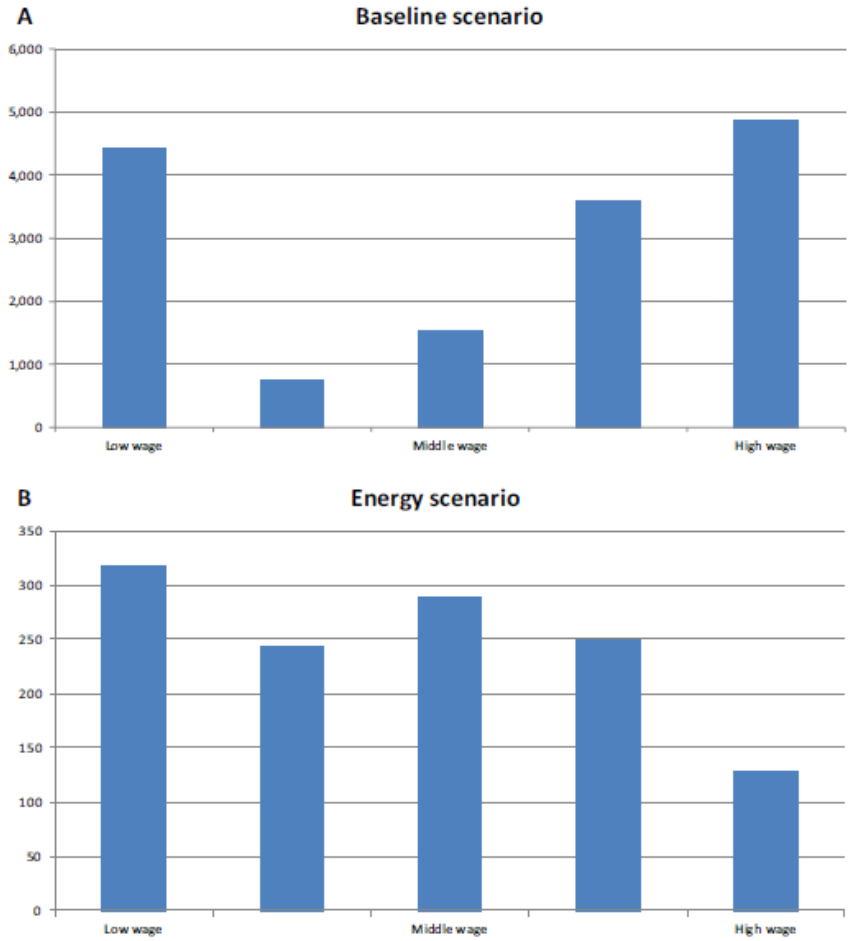
	2030 (%)
Agriculture	0.5
Mining	−16.6
Manufacturing	0.7
Utilities	−2.4
Construction	1.1
Distribution, retail and hotels and catering	0.6
Transport and communications	0.5
Business services	0.7
Non-business services	0.3

Source: *FOME energy scenario projections*

Employment impact across countries, % diff from baseline

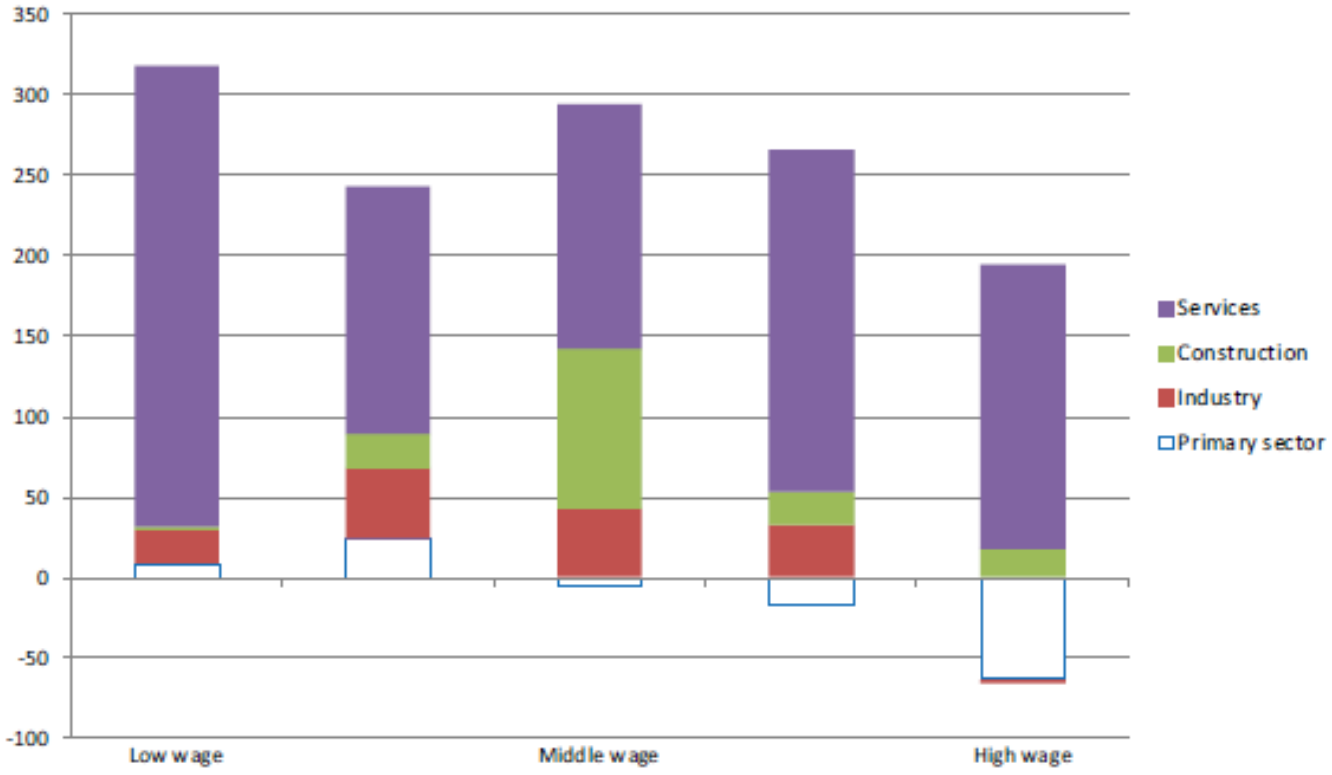


Projected job wage profile in the baseline and energy scenarios, 2015-30 (ths)



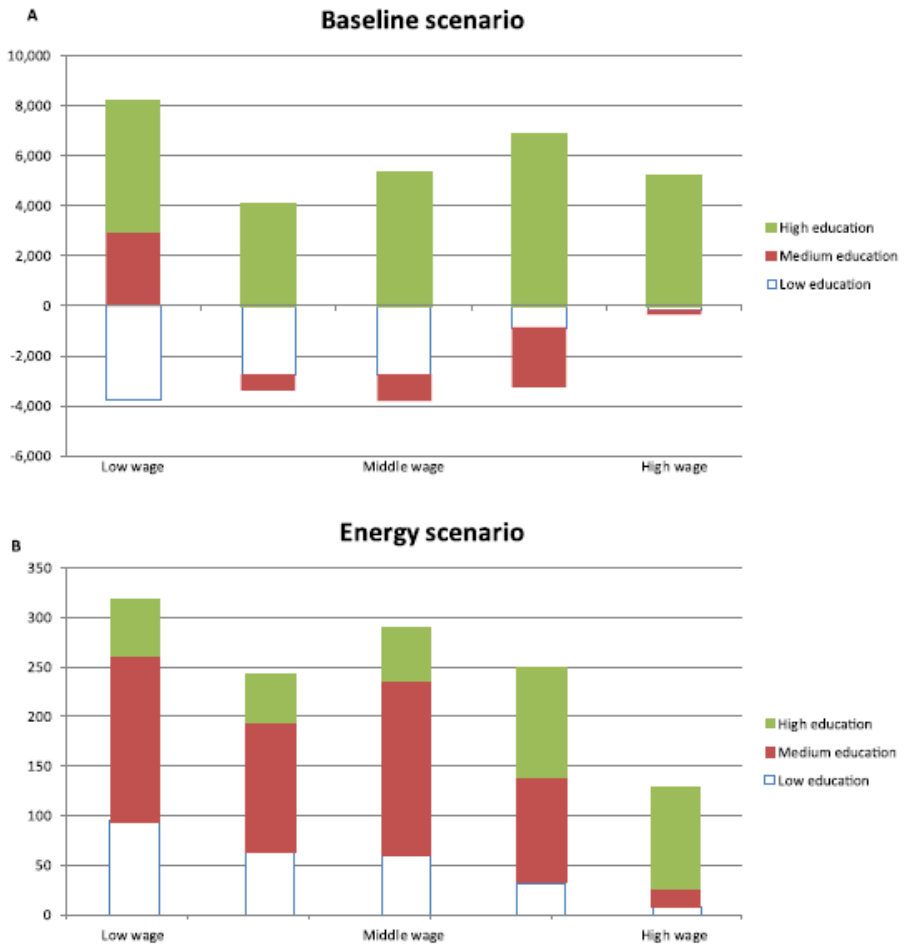
Source: *FOME energy scenario projections and the European Jobs Monitor*

Projected job wage profile in the energy scenario, by sector, 2015-30 (ths)



Source: *FOME energy scenario projections and the European Jobs Monitor*

Projected job wage profile in the baseline and energy scenario, by skill level, 2015-30 (ths)



Source: *FOME energy scenario projections and the European Jobs Monitor*

Modelling assumptions

- The model assumes no labour market frictions.
  - The faster the change, the more likely it is that there may be frictions that leave some workers unemployed and some demands for new skills unmet, preventing the full potential benefits from being realised.
- The appreciable investment required assumes that there are no barriers in accessing the finance necessary for this transition.
- It is assumed that countries that currently have a lead in certain sectors are able to maintain it when switching to new technologies (e.g. the main manufacturers of conventional cars and trucks become the main manufacturers of electric vehicles and their components).

Summary conclusions

- Policy to combat climate change generates small positive economic benefits for EU – compared to baseline 2030 scenario.
- But negative effects in affected sectors – extractive/mining and utilities - stronger than positive effects in other sectors
- Employment growth stronger in low and mid-paid jobs compared to baseline – low-paid services employment growth and mid-paid construction / manufacturing growth

Follow up project in 2022

- Objective: update earlier analysis of the employment effects of the EU meeting the Paris Climate agreement targets (Eurofound 2019) in line with accelerated carbon-neutrality targets ("Fit-for-55") envisaged in the European Carbon Law (55% reduction in GHG emission compared to 1990 baseline, v 40% envisaged in Paris).

- Methodology: combined analysis of macro-econometric model outputs and European Jobs Monitor data.

- Research questions: against a baseline, 'business as usual' scenario, what employment effects can be anticipated by policy changes necessary for EU to reach its revised carbon-neutrality targets for 2030? What will be the likely quantitative employment impacts by sector and occupation? What implications is this likely to have for aggregate job quality? (upgrading, polarisation..)

Thank you for your attention

Supplementary slides

Transition to a climate neutral economy

- *Views and positions of social partners*

- *Examples of social dialogue and collective agreements addressing undesirable consequences*

Views and positions of social partners

- Competitiveness
- Investment in new tech: e.g. to capture CO2
- Creation of more and better jobs => antidote for exclusion and inequalities
- Avoid energy prices spike
- Multi-stakeholder social dialogue on climate action

- Ensure just transition for the workforce
- Fair contribution of large polluters
- Reconversion and requalification
- Financial compensations
- Compensatory measures for low income
- Ensure human right of displaced people (migration)

Examples of social dialogue and collective agreements

- **EU Automotive Industry** - Joint statement by IndustriAll, and employer organisations - Ceemet, ACEA, CLEPA, CECRA, and ETRMA: ‘a bold industrial recovery plan’ to ‘support transition towards a carbon-neutral future’
- Agreements **Coal Sector** (DE and PL)
- Agreements **Electricity sector** (ES and IT)
- **Multinational company** agreements:
  - Italian-based **oil and gas** company
  - Spanish-based **wind turbine** manufacturer