

Insights in a clean energy future for Belgium

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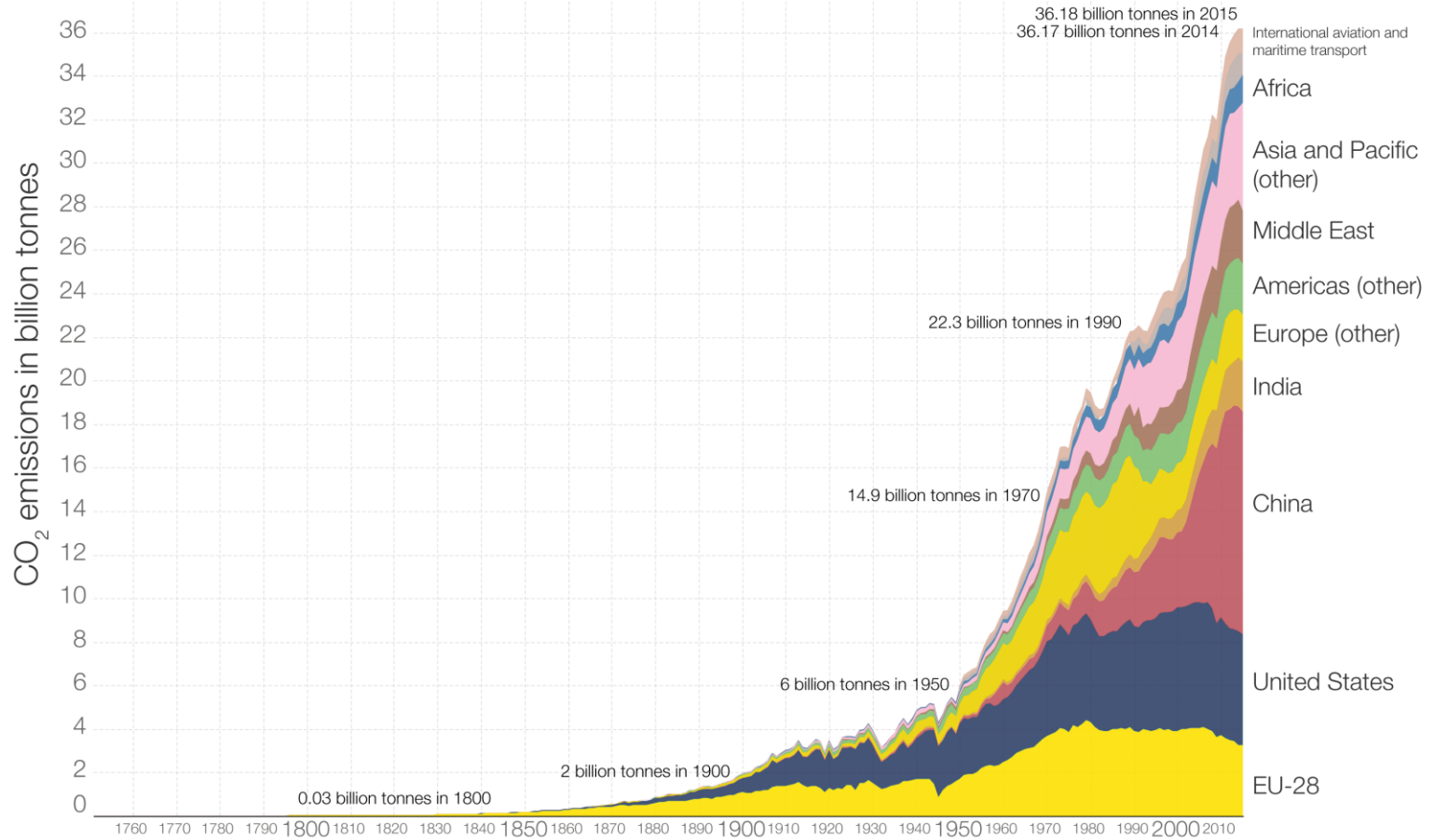


**Febeliec represents
the industrial consumers
of electricity and natural gas
in Belgium**

Global CO₂ emissions by world region, 1751 to 2015

Our World
in Data

Annual carbon dioxide emissions in billion tonnes (Gt).



Data source: Carbon Dioxide Information Analysis Center (CDIAC); aggregation by world region by Our World In Data.
The interactive data visualization is available at OurWorldinData.org. There you find the raw data and more visualizations on this topic.

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Energy Industries • Industry (***) • Transport (***) • Residential & Commercial • Agriculture, Forestry, Fisheries (****) • Other (*****) • Total

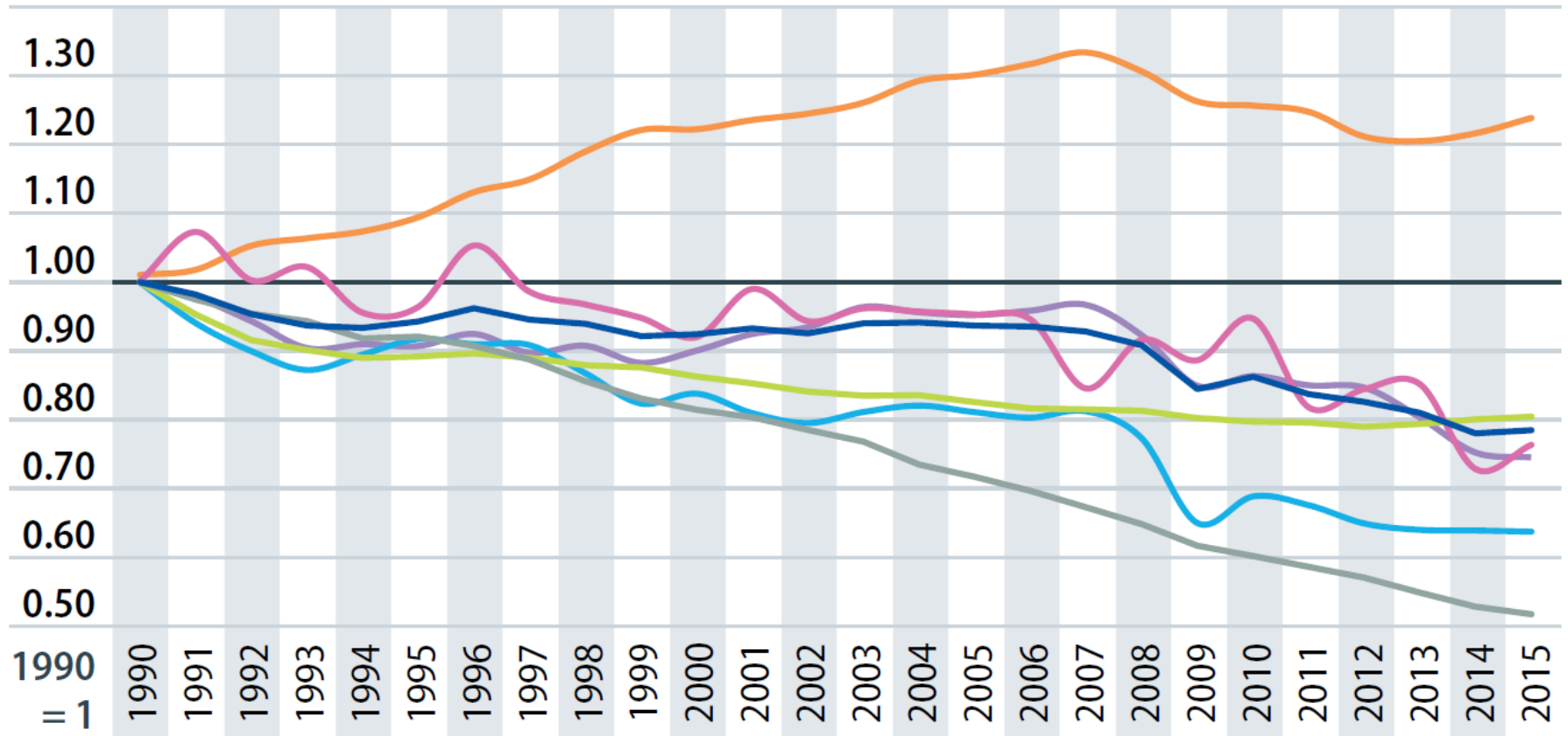
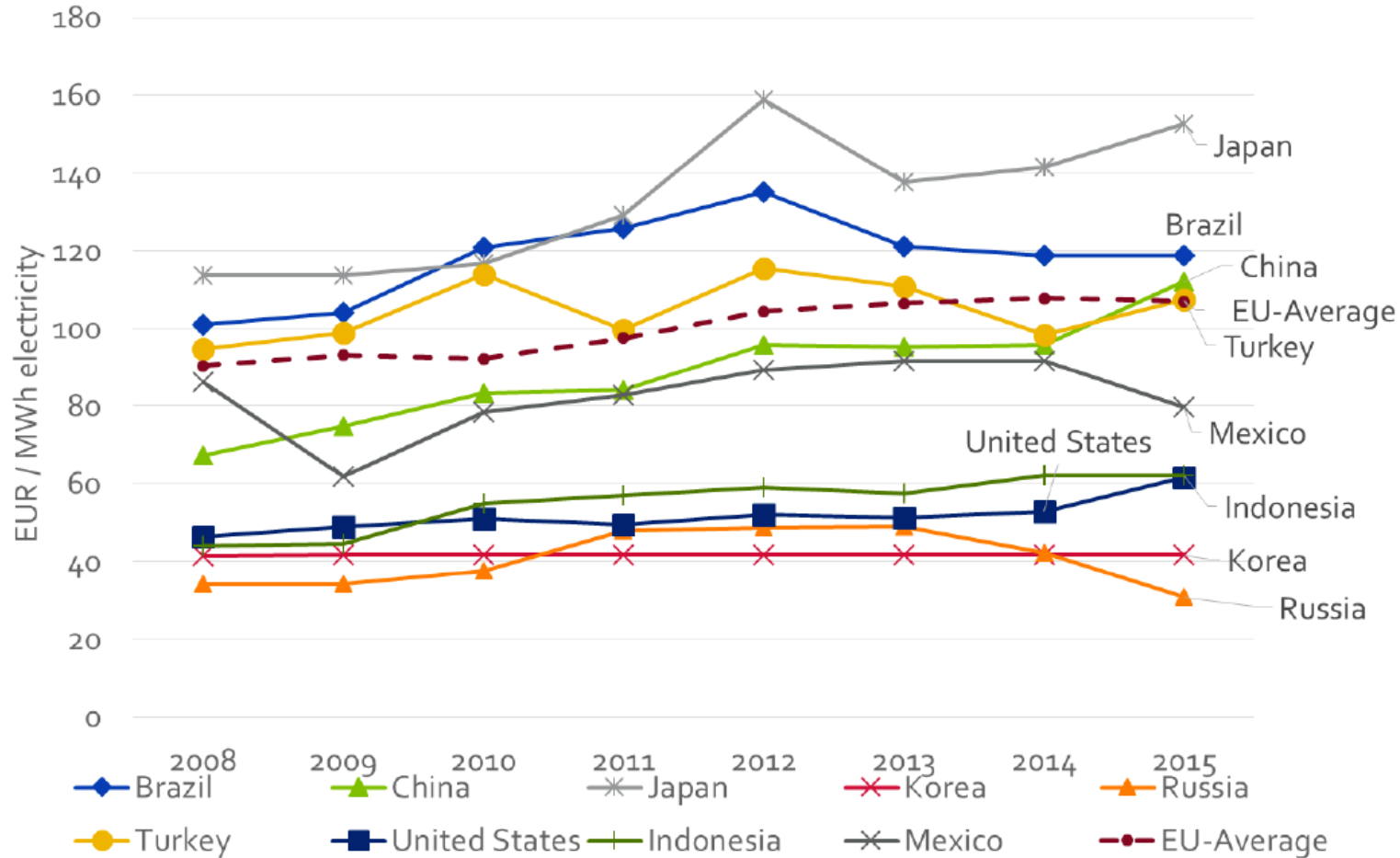


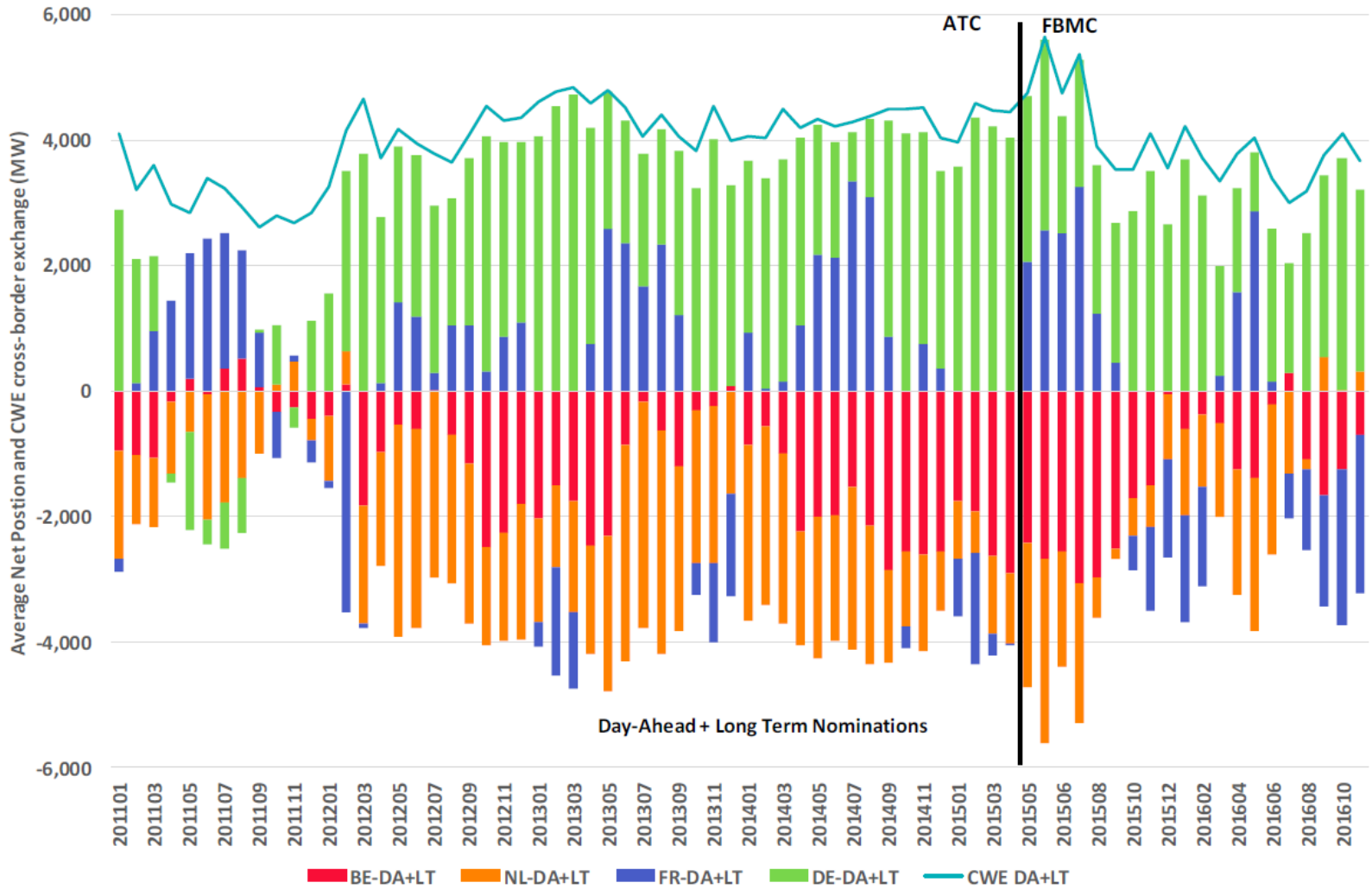
Figure 8: Average industry electricity prices in the EU and major trading partners



Source: Brazilian Ministry of Mining and Energy, Chinese Price Monitoring Centre, NDRC, Indonesian State Electricity Company, Russian Federal State Statistics Service; EIA data for Turkey, S Korea, Japan, USA and Mexico.

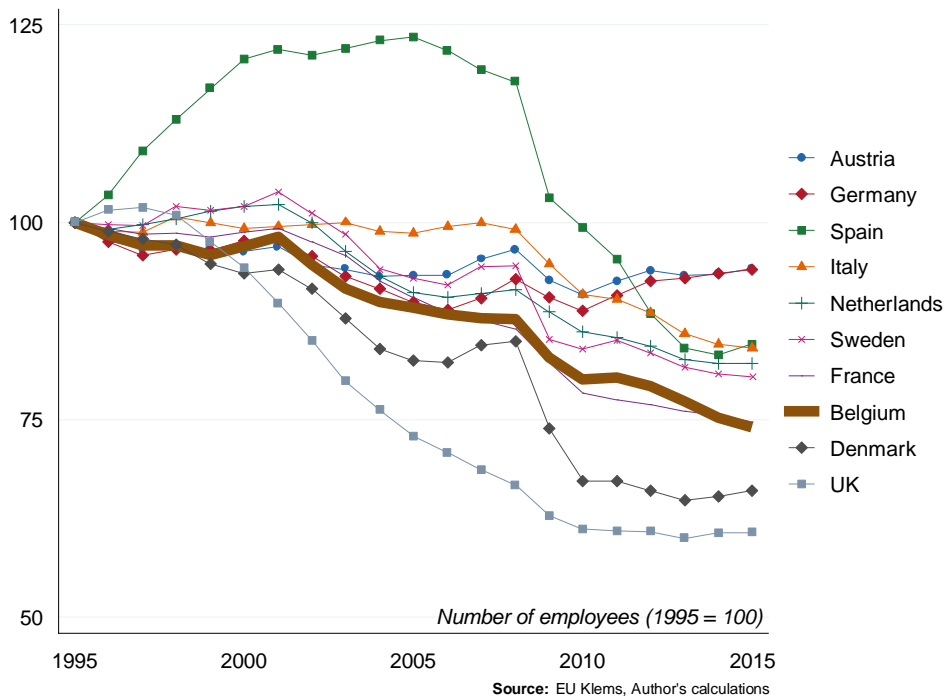
Comparison of scenarios in 2030

Scenario Power sector	2016	Central	10% Import restriction	Fuel price high	Fuel price low	Nuclear extension 2 GW
Capacities (GW)	19,9	25,8	27,2	27,7	25,3	25,8
RES total	6,1	19,1	18,2	23,5	17,4	18,9
solar PV	3,0	7,9	7,0	12,1	6,2	8,3
wind onshore	1,5	8,6	8,6	8,6	8,6	8,6
wind offshore	0,7	2,2	2,2	2,5	2,2	1,6
nuclear	5,9	0	0	0	0	2,0
fossil	7,9	6,7	9,0	4,1	7,9	4,9
net import	6,5	6,5	6,5	7,5	6,5	6,5
Production Belgium (TWh)	78,3	71,0	79,1	55,7	78,0	72,2
RES	11,0	35,8	34,9	40,9	34,2	34,2
nuclear	43,0	0	0	0	0	15,0
fossil	24,3	35,1	44,2	14,8	43,9	23,2
net import	6,3	15,6	6,2	28,4	7,9	14,4
Additional costs electricity (to 2016) (billion Euro)	/	4,38	4,39	4,60	3,02	3,68
CO ₂ emissions (Mton)	15,4	19,3	22,5	11,6	22,9	14,7



Belgium is losing manufacturing jobs faster than most other European countries ...

Relative evolution of manufacturing employment (1995=100)

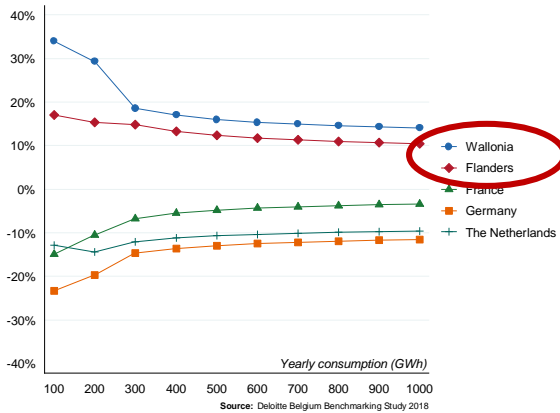


Comments

- Over the years, employment in the manufacturing industry has declined considerably
- Jobs have predominantly been shifted to the services industry
- In general, the hourly wages in the services industry are significantly lower compared to wages in the manufacturing industry
- In discussions on competitiveness of Belgian industry there has been much attention on the role of labour costs, but...

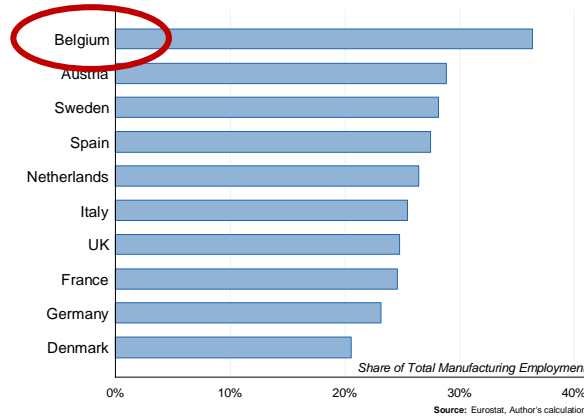
... and the role of electricity prices is seldom quantified

Belgium has higher electricity prices,



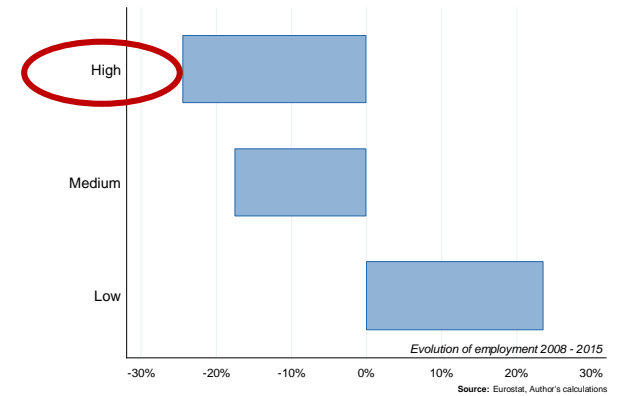
Electricity prices Belgium vs. neighbouring countries

a higher share of employment in sectors with high electricity intensity,



Employment Share at High Energy Intensive Sectors

and loses most jobs at sectors with high electricity intensity

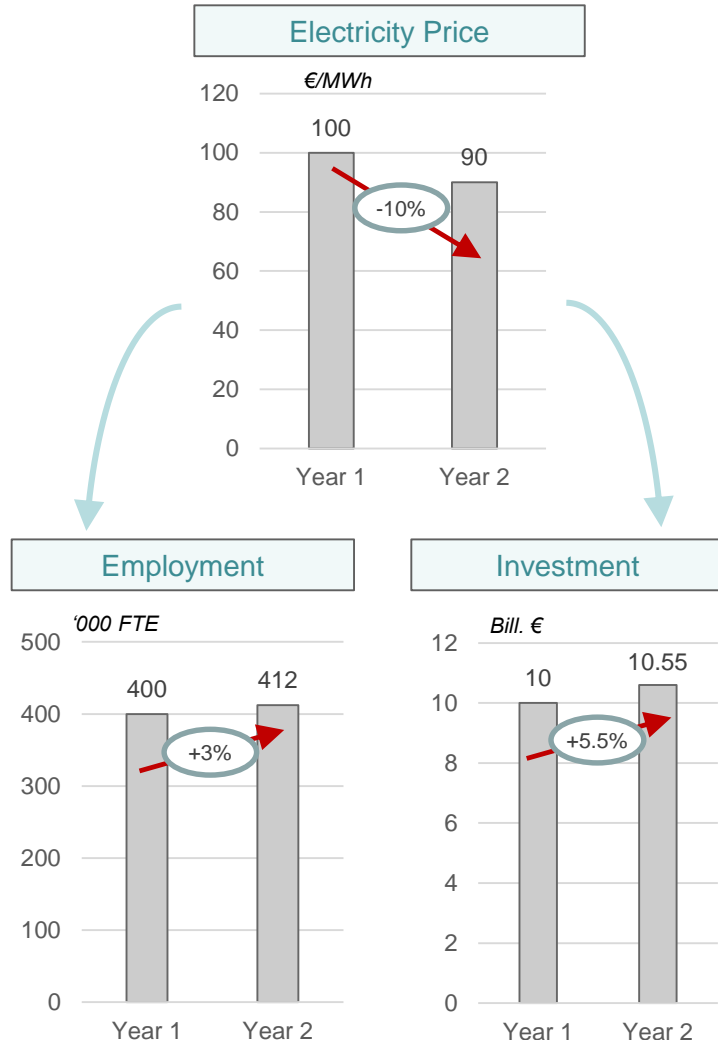


Evolution of Belgian Manufacturing employment in function of electricity intensity



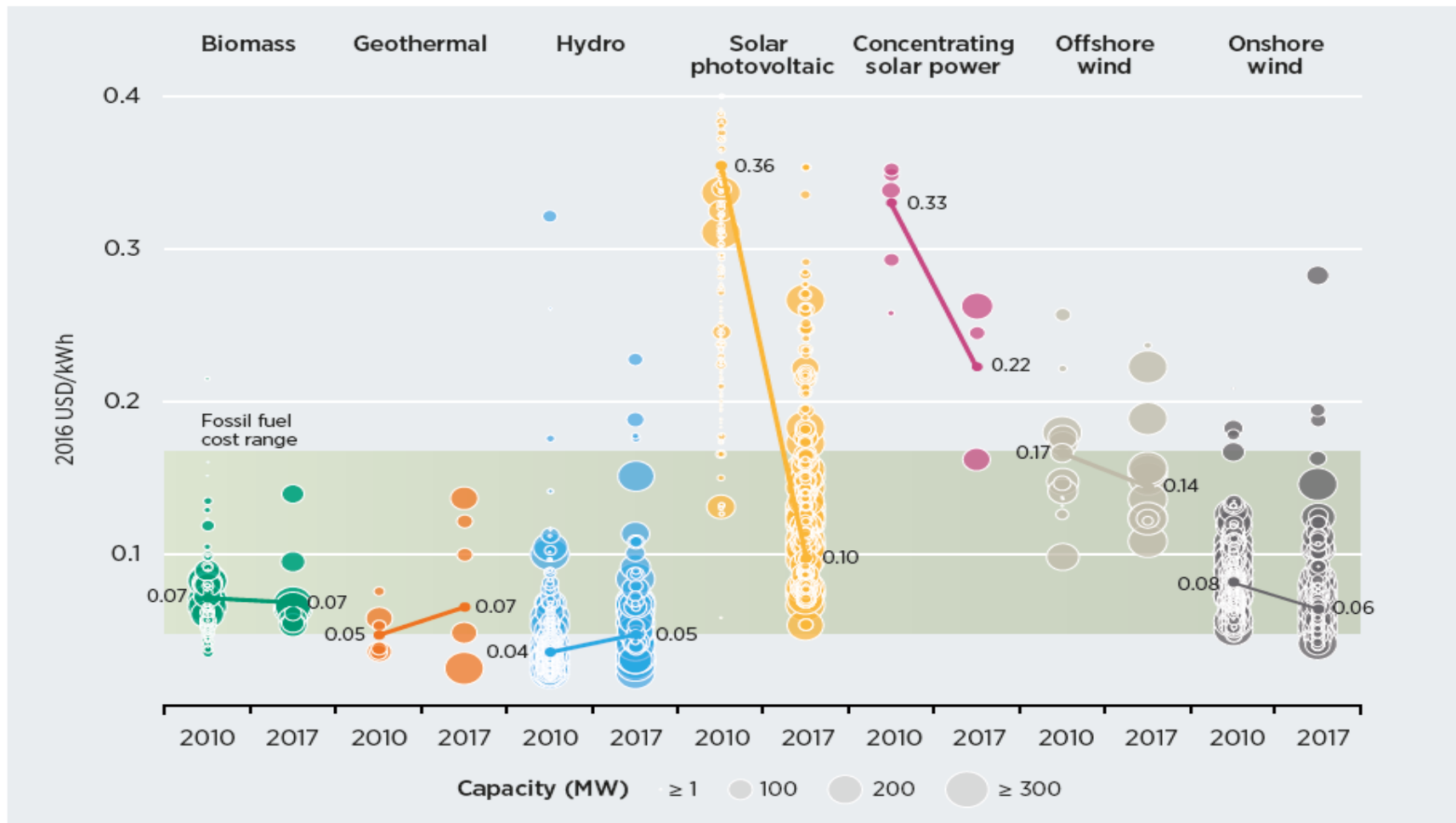
Objective of the study: Is there a link between manufacturing jobs/investment and the price of electricity?

A 10% decrease of electricity prices could trigger 12,000 jobs and €550M investment



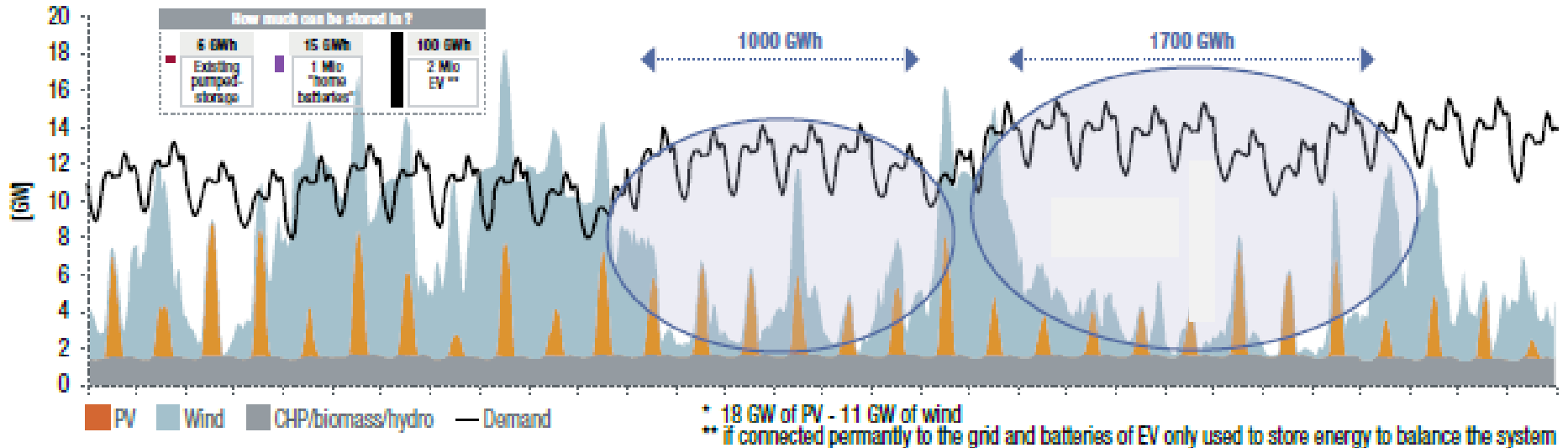
- We have assembled a dataset with employment, investment, electricity intensity and prices for 24 manufacturing sectors, in 10 EU countries for the period 2008 – 2015
- We find that a -10% decrease in electricity prices leads to a +3% increase in employment and +6% increase in investment
- For the Belgian manufacturing industry this corresponds with ~12,000 jobs and ~€550M investment
- This is likely to be an underestimation as indirect job creation is not taken into account and Belgium's electricity intensity is higher than the average European

Figure ES.1 Global levelised cost of electricity from utility-scale renewable power generation technologies, 2010-2017



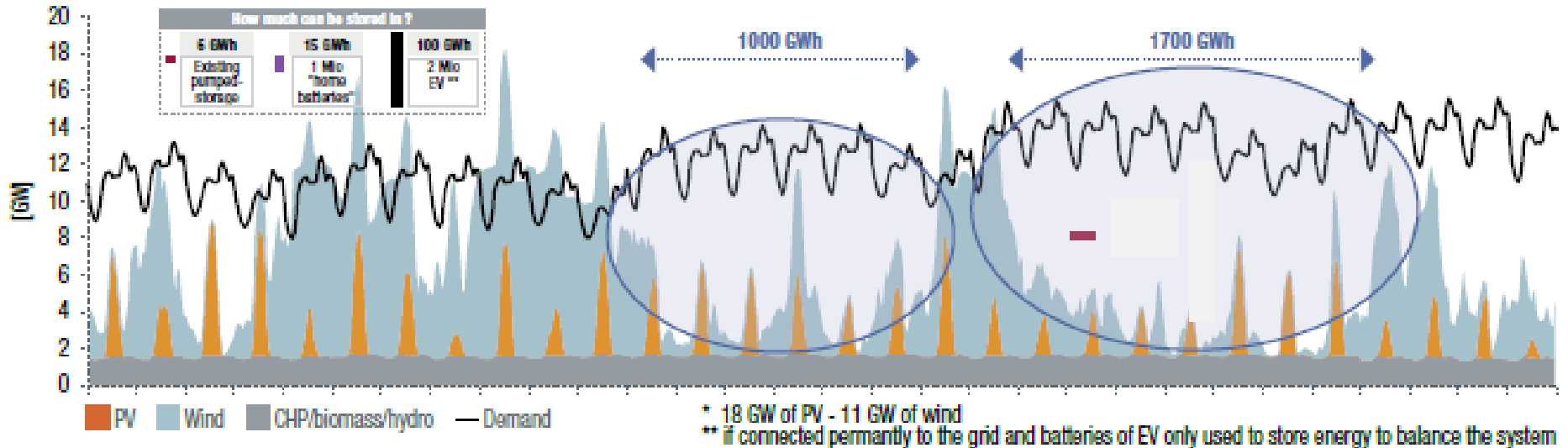
Source: IRENA Renewable Cost Database.

STORAGE NEEDED TO COPE WITH LONG PERIOD WITH LOW RES INFEEED - 'FLEX+' SCENARIO (FIG. 84)



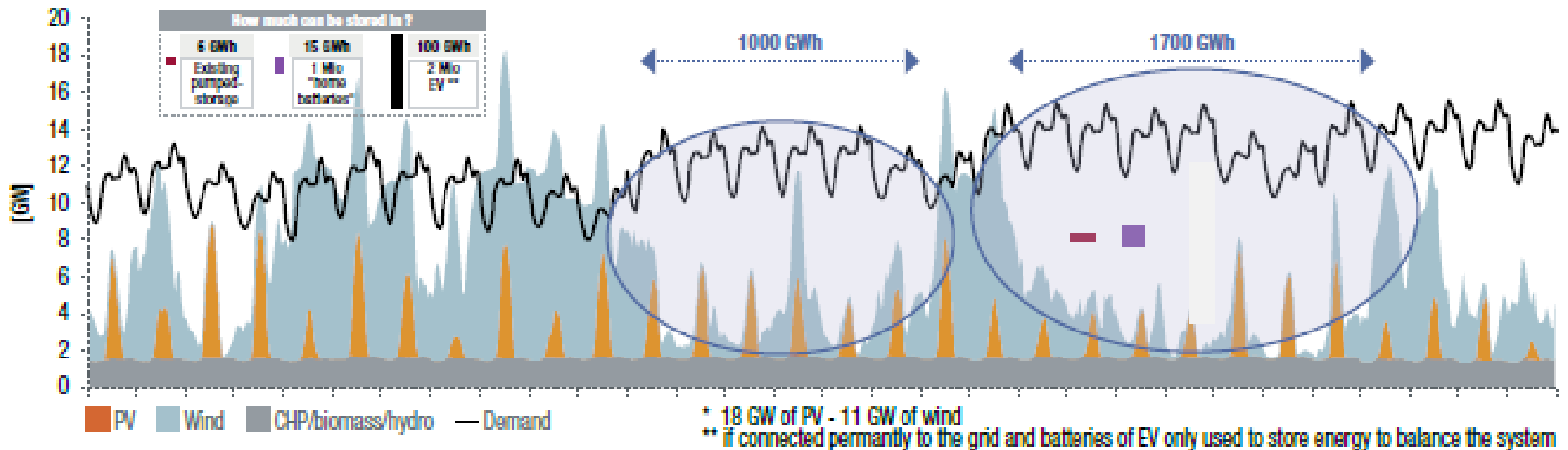
Elia : ELECTRICITY SCENARIOS FOR BELGIUM TOWARDS 2050

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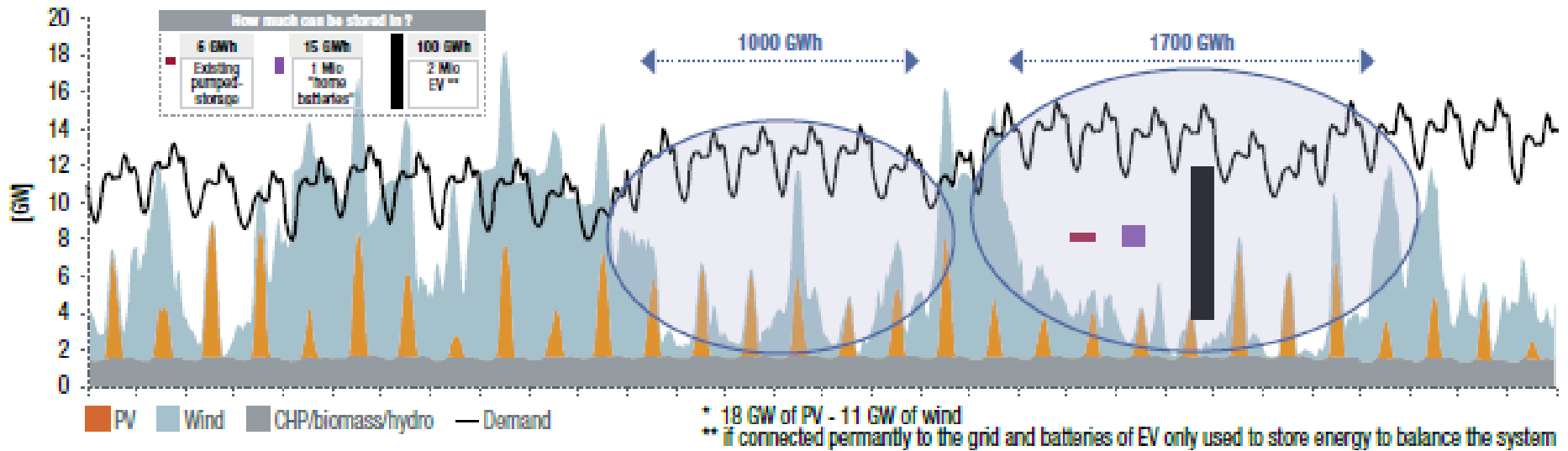
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