

# Focus on Efficiency

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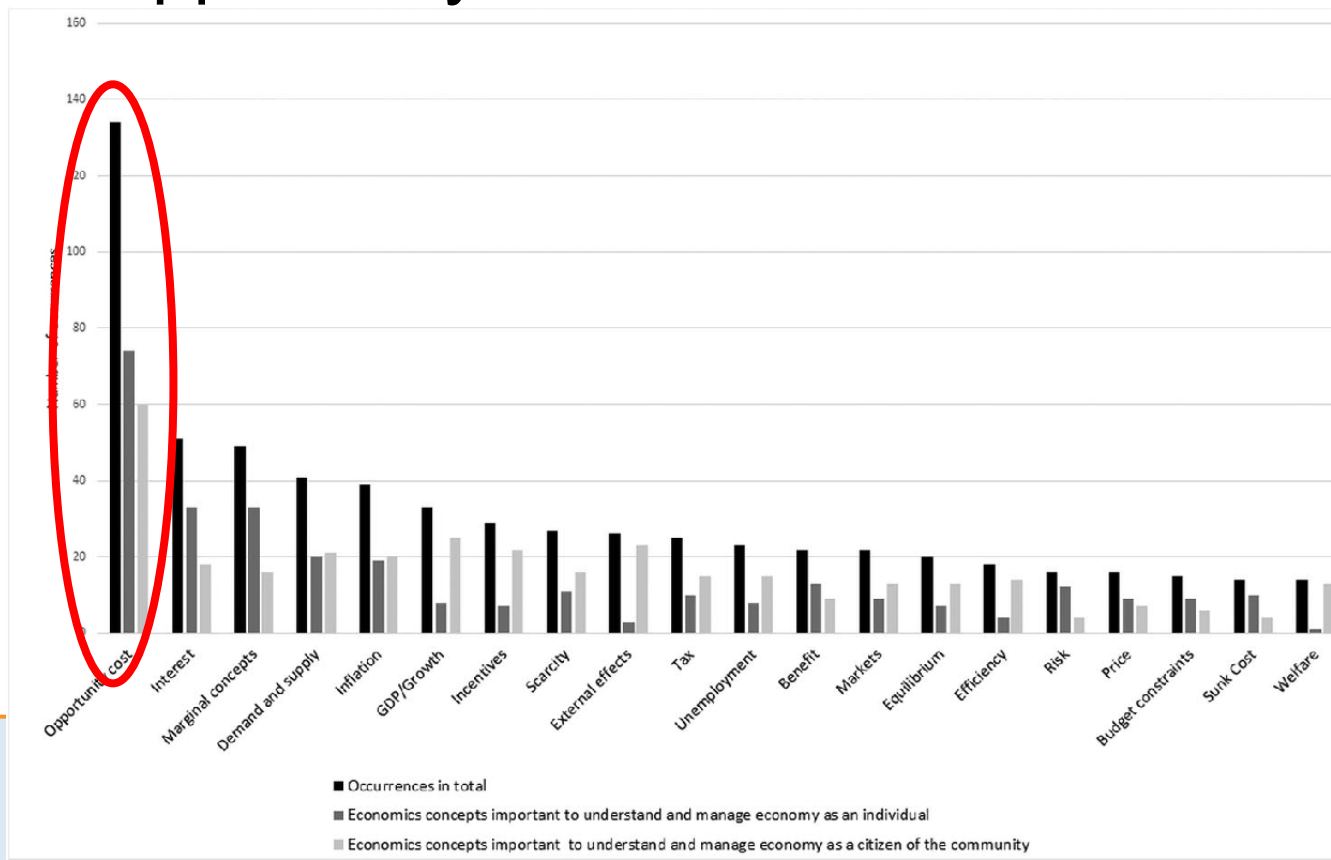
**Febeliec represents  
the industrial consumers  
of electricity and natural gas  
in Belgium**

## Introduction

1. Efficiency: some examples from the past: “How *not* to do it”
2. Competitiveness in energy-intensive industries

What do economists think are important economic concepts to teach?

➔ Number 1: opportunity costs



Opportunity cost: “the loss of potential gain from other alternatives when one alternative is chosen”

*Example:*

- Alternative A: awareness campaign of 10 M€ for traffic safety, leading to 1 fewer death
- Alternative B: investing in safer infrastructure for 10 M€, leading to 10 fewer deaths

⇒ If you chose alternative A, you save 1 life AND (implicitly) kill 10

⇒ “Acting for the good cause” does not make you immune for the need for efficiency, on the contrary

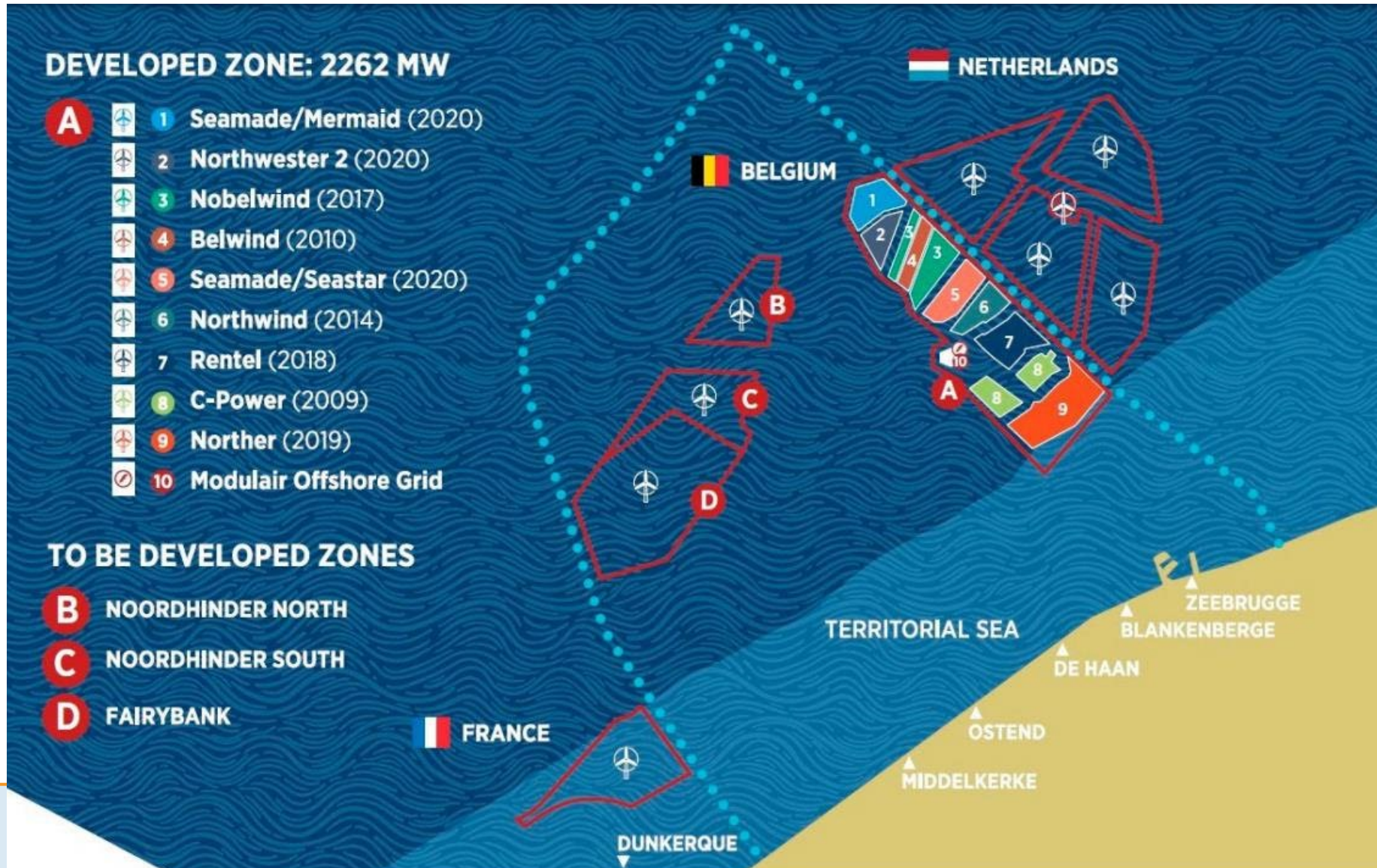
1. **Efficiency: some examples from the past: “How *not* to do it”**
2. Competitiveness in energy-intensive industries

## Three examples of inefficient energy policy in Belgium

- a. Offshore wind subsidies
- b. Energy island for connecting offshore wind
- c. Capacity Remuneration Mechanism

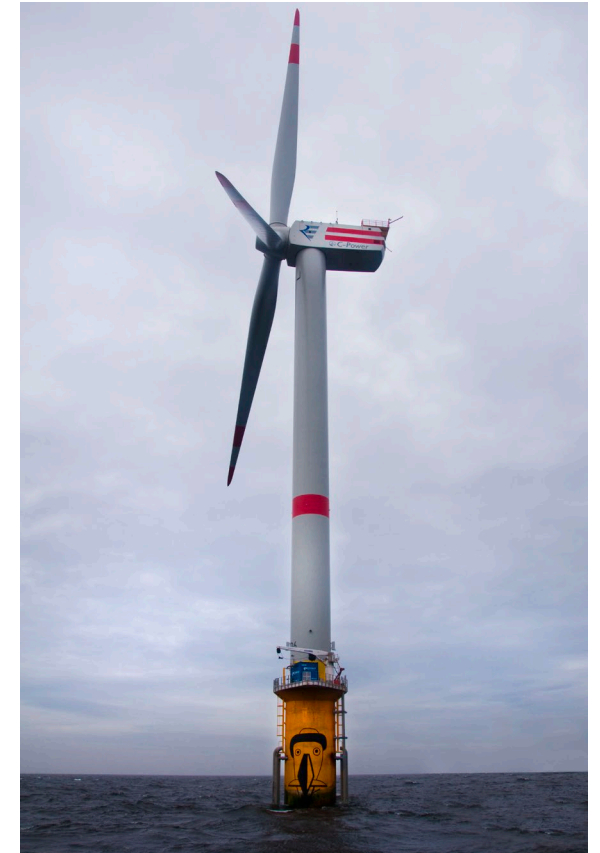


# 1. Efficiency: some examples how not to do it



## 1. Offshore wind subsidies in Belgium

- “Belgium as pioneer in offshore wind”
- No tendering for first 2,2 GW of offshore wind
- Tailor-made subsidies, after discussion with Minister of Energy
- 2016: tendering in NL => big cost decrease for Borssele I+II (Dong/Ørsted)
- Influenced Belgian subsidies... with some delay



Wind turbine from C-Power  
(first offshore wind park in BE)



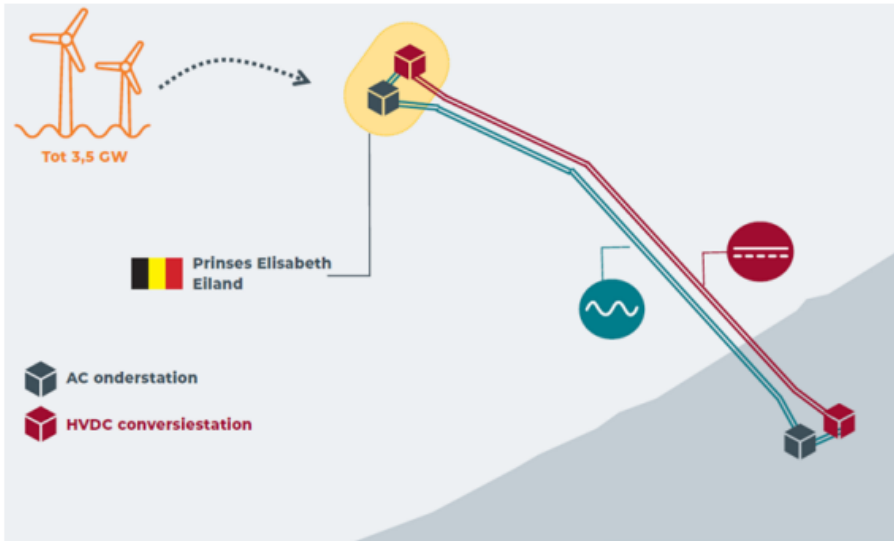
## 1. Offshore wind subsidies

	wind park	date	MW	fixed feed-in	LCOE	duration	average subsidy (€/MWh)
Belgium	C-Power	2009	326	107 €/MWh for first 216 MW, then 90 €/MWh		20	101,3
	Belwind	2010	171				107
	Northwind	2014	216				107
	Nobelwind	2017	165				107
	Rentel	2018	309		129,8 €/MWh	19	85,2
	Norther	2019	370		124 €/MWh		90,9
	Northwester 2	2020	219	487	79 €/MWh	17	81,6
	Mermaid	2020					70,6
	Seastar	2020					74,9
NL	Borssele I+II	2021	700		72,2 €/MWh	16	
	Borssele III+IV	2021	700		54,5 €/MWh	16	

(source: Belgian Court of Audit)

## 1. Efficiency: some examples how not to do it

## 2. Energy island for connecting up to 3,5 GW offshore wind



*The HVAC infrastructure includes 330 km of 220-kV HVAC cables, split into two contracts each covering 165 km. These cables, six in total, will bring an initial part of the electricity generated by the wind farms in the Princess Elisabeth Zone from the island to the coast.*

## 1. Efficiency: some examples how not to do it

### 2. Energy island for connecting up to 3,5 GW offshore wind

- “Belgium pioneer in building energy islands”
- Initial cost estimate (2021): 2,2 billion euro
- First cost upgrade (2023): 3,6 – 3,8 billion euro
- Second cost upgrade... lots of rumours... no transparency given by Elia

Advice of Belgian **energy regulator** (2021): unable to analyze or verify the conclusions made by Elia, due to lack of quantitative data

Belgian **Court of Audit** (2023): decision by Belgian government taken without a proper cost-benefit analysis (CBA) / regulator should be able to impose a CBA to the TSO

## 1. Efficiency: some examples how not to do it

### 2. Energy island for connecting up to 3,5 GW offshore wind

#### → TenneT:

- A new standardized 2 GW offshore platform and a new cable system with a higher transmission capacity
- Connecting 22 GW via 11 platforms by 2031
- Total cost: 23 billion euro => +/-1 bn€/GW



\*TenneT press release on 30 March 2023

## 1. Efficiency: some examples how not to do it

### 2. Energy island for connecting up to 3,5 GW offshore wind

- In a competitive environment: cost overruns can get you bankrupt / fired
- TSOs are regulated monopolies → no competitive pressure
- Even worse: TSOs are paid relative to their Regulated Asset Base (RAB)
  - more, and more expensive assets → more revenue
  - cost overruns make a TSO richer, instead of going bankrupt

→ these cost overruns are paid by consumers/taxpayers (no choice, they must pay), while TSO-management and shareholders earn more, instead of getting fired or going bankrupt



### 3. Capacity Remuneration Mechanism (CRM) for Belgium

- Complete nuclear phase-out by 2025 (6 GW)
- CRM based on Elia's adequacy study (2021):
  - Estimated avoided curtailment with CRM: 3.300 MWh/year
  - VoLL = 17.700 €/MWh
    - => benefit of avoiding curtailment through CRM = 60 M€/year
  - Estimated cost of CRM = 500 M€/year

### 3. Capacity Remuneration Mechanism (CRM) for Belgium

- November 2021: result of first auction: 2 new 800 MW CCGTs won the bid => Elia: “this is sufficient for adequacy”
- 1 new CCGT fails to get a permit
- February 2022: Russia invades Ukraine
  - ➔ government extends the lifetime of 2 GW nuclear power
- March-April 2022: government decides to contract a second CCGT of 800 MW

### 3. Capacity Remuneration Mechanism (CRM) for Belgium

Where's the logic?

November 2021: 1600 MW additional capacity was considered sufficient for adequacy

March-April 2022: 2800 MW of capacity is not sufficient and so a need to contract an additional 800 MW CCGT

These additional costs will be paid by consumers/taxpayers (no choice, they must pay)

1. Efficiency: some examples how not to do it

## **2. Competitiveness in energy-intensive industries**

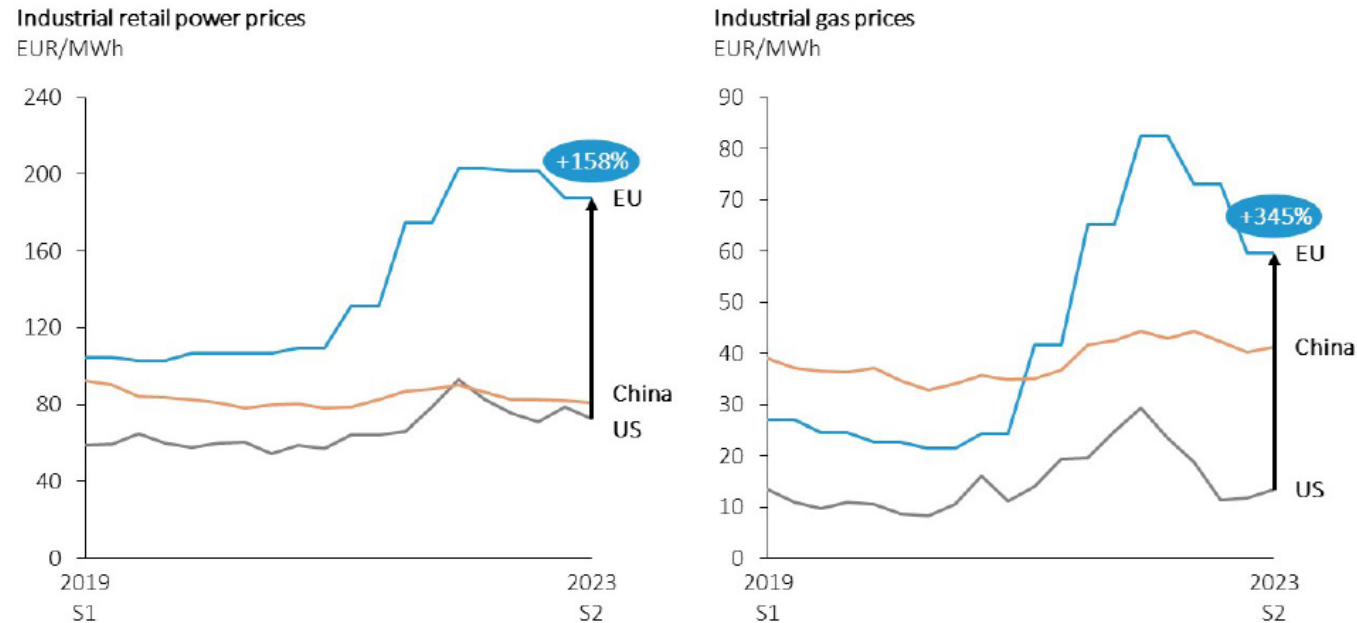
- Draghi report
- How to reach net-zero: Elia's BluePrint study

### Draghi report

European (energy-intensive) industries operate in a global competitive environment

but are facing much higher energy prices

FIGURE 1  
Gas and retail price gap for industry



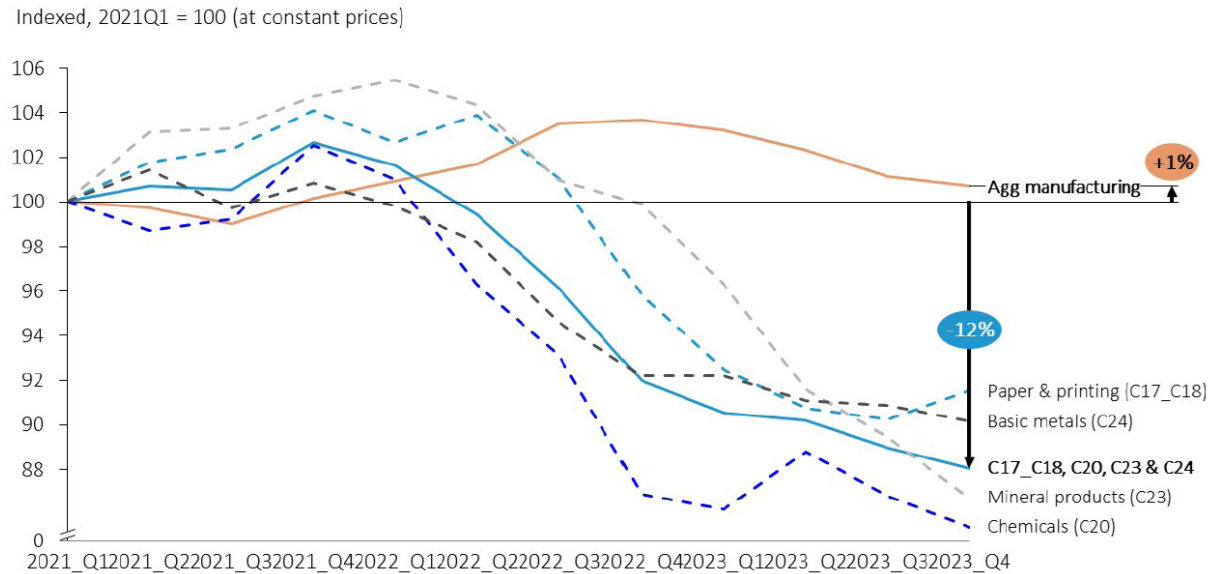
Source: European Commission, 2024. Based on Eurostat (EU), EIA (US) and CEIC (China), 2024.



# Draghi report

## European (energy-intensive) industry is suffering

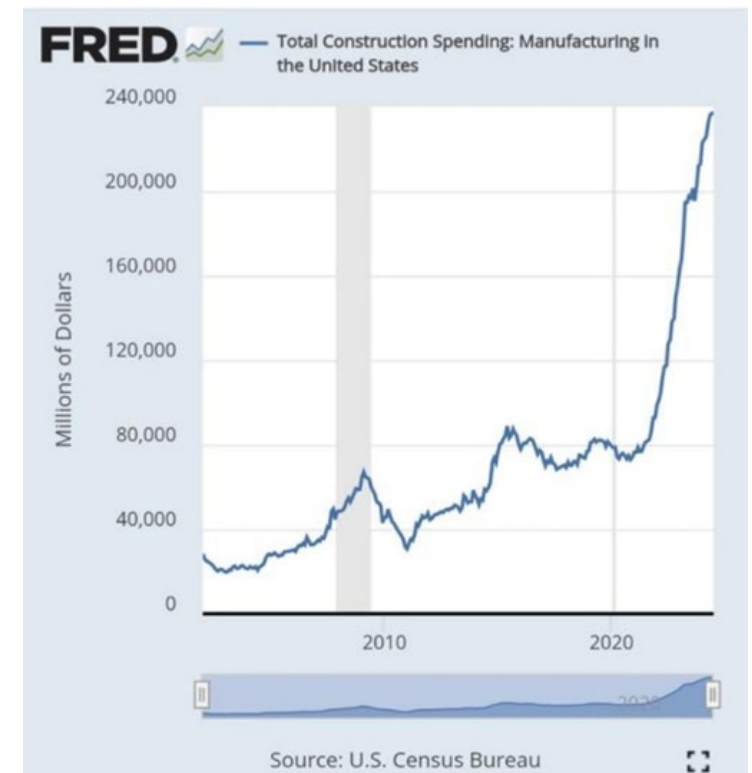
FIGURE 5  
EU production in energy-intensive industries



Source: European Commission, 2024. Based on Eurostat, 2024.

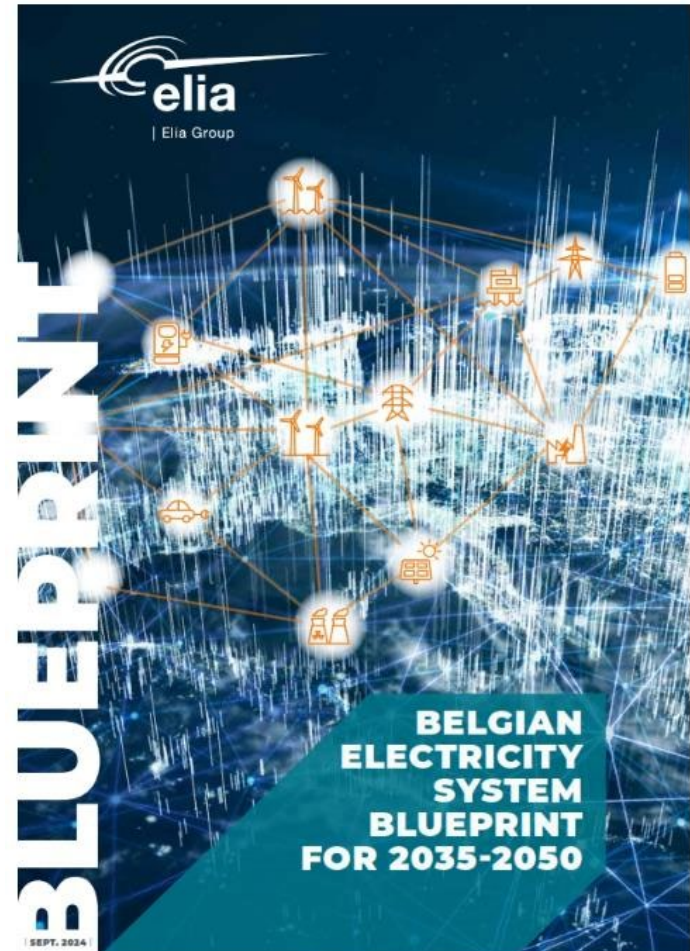
### Draghi report

- Keep critical sectors in EU
- More ETS revenue to energy-intensive industries
- Less naïve about trade with China
- Critical remarks about CBAM
- Strong US industrial policy with IRA
- Focus on CO<sub>2</sub> reduction, not on the color of it



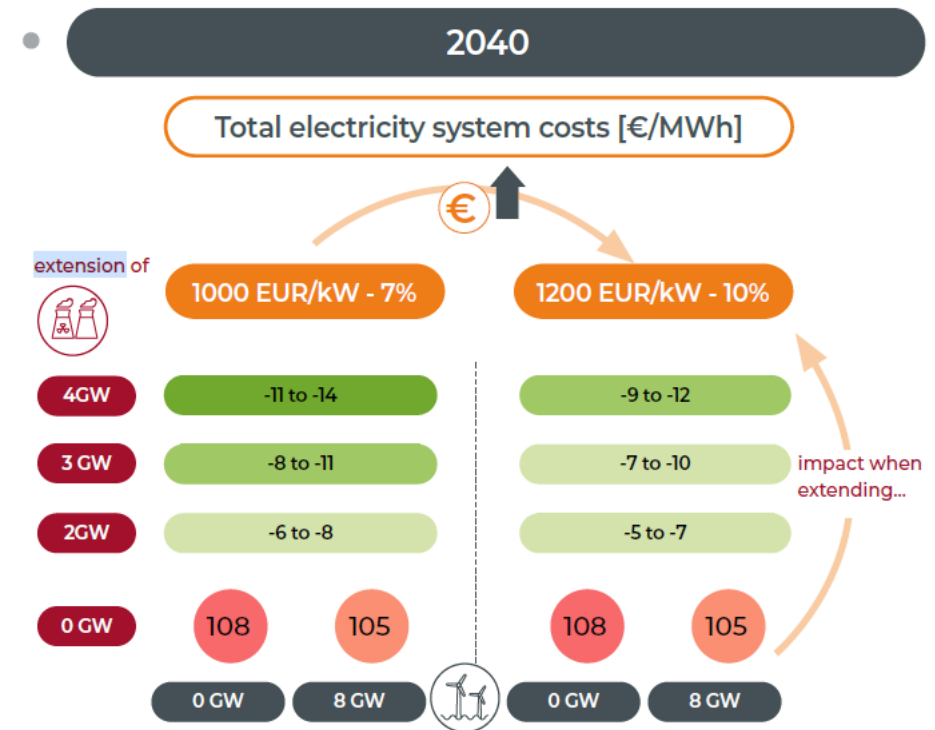
### Elia's BluePrint study: how to reach net-zero (2036-2050)

- Well-documented
- Electricity TSO => be vigilant for capex-bias!
- Less taboo's: simulating lifetime extension of *more* existing nuclear for a *longer* period



### Elia's BluePrint: how to reach net-zero (2036-2050)

- In all scenarios: massive increase of PV and "local" wind
- But extra capacity is still needed
- By far the most efficient extra capacity: extending more nuclear for a longer time: payback in less than 2 years!



### Nuclear renaissance?

- NL: nuclear in Borssele: lifetime extension of 60 years (until 2033)
- US: Three Mile Island, Palisades (80 years): restart
- Nuclear Energy Summit in Brussels (2024)

*“And there is the issue of lifetime extensions for existing nuclear plants, provided of course their safe operation. Given the urgency of the climate challenge, countries need to consider their options carefully before they forego a readily available source of low-emission electricity. **Extending the safe operation of today's nuclear fleet is one of the cheapest ways to secure clean power at scale: It can help pave a cost-effective path to net zero.**” (speech by Ursula von der Leyen)*



Combien va coûter  
la transition énergétique ?  
“Bloody expensive”, répond Engie

Source: La Libre Belgique

We don't know whether an **efficient** energy transition will be affordable  
We do know an **inefficient** energy transition will not be affordable

**Focus on efficiency**