ODYSSEE-MURE

First physical Meeting of the Project "ODYSSEE-MURE EED" Monitoring the EED-Recast"

Session 3 – Energy efficiency trends in industry

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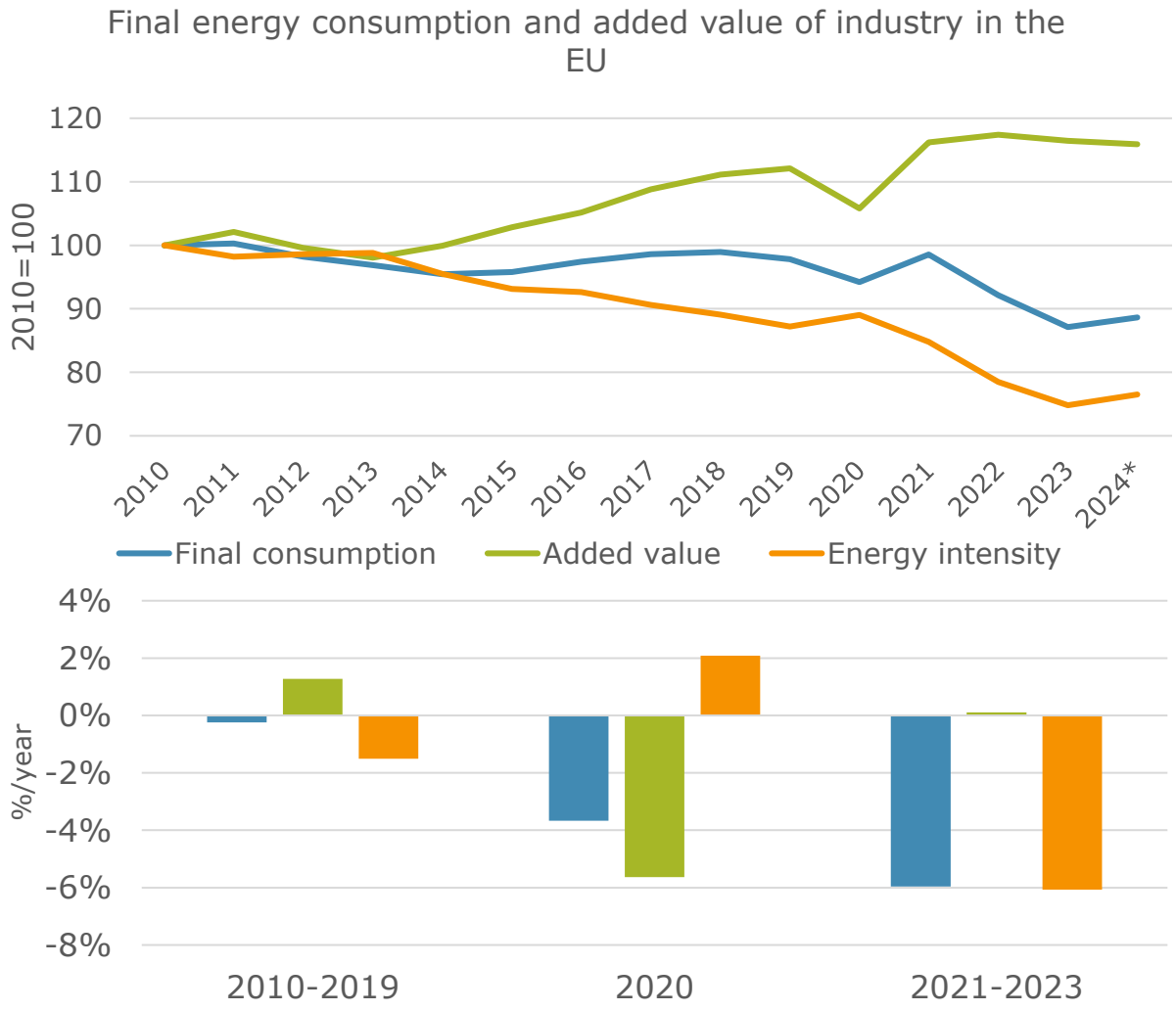
05 November 2025, Chișinău, Moldova

Co-funded by the European Union under project ID 101215674. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

Content

- Energy consumption trends in industry
- Energy efficiency trends in industry
- Drivers of energy consumption variation
- Electrification trends in industry
- CO_2 emissions
- Conclusion

Industry energy consumption, activity and intensity trends



*2024 estimated

Final energy consumption in industry was 11 % lower in 2023 than in **2010, with 2 different periods :**

- **Globally stable until 2021** (except 2020 due to COVID)
- **A sharp reduction in 2022-2023** (-6%/year) linked to important energy price rises (+60% in 2022)

Industrial production globally increased until 2021 and was stable since then.

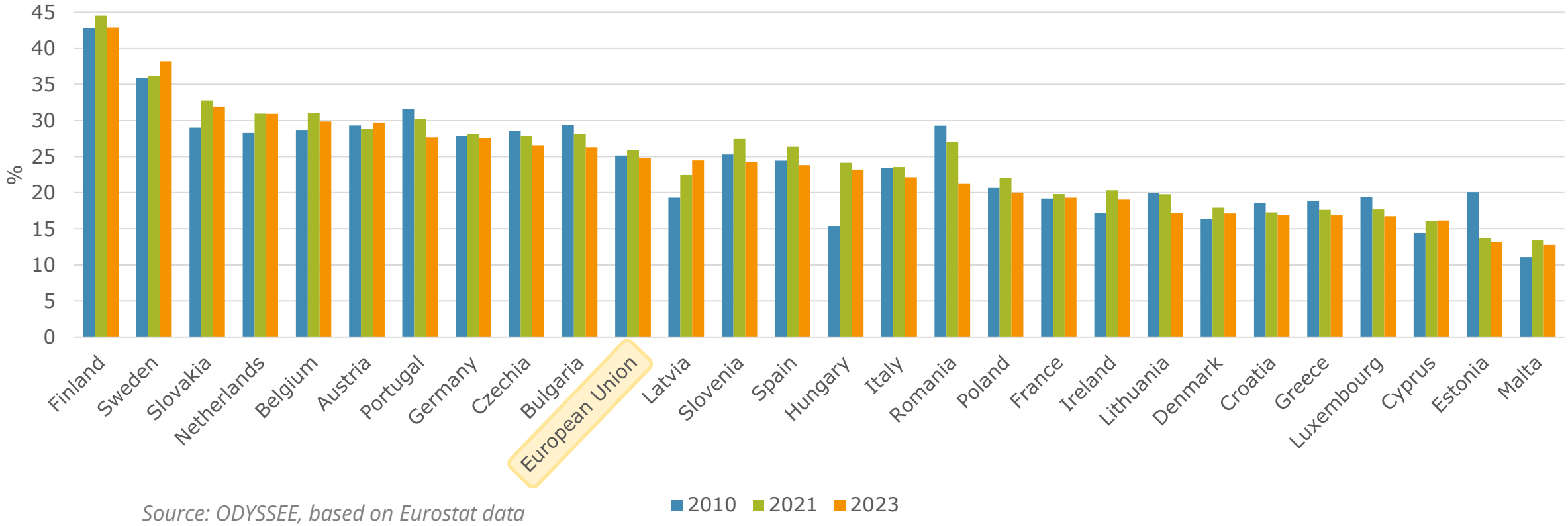
Energy intensity is decreasing, with an acceleration since 2021 (-6%/year over 2021-2023, compared to -2%/year between 2010-2019).

➔ **Decoupling between industrial activity and energy consumption of industry**

Source: ODYSSEE, based on Eurostat data and early estimates by Enerdata

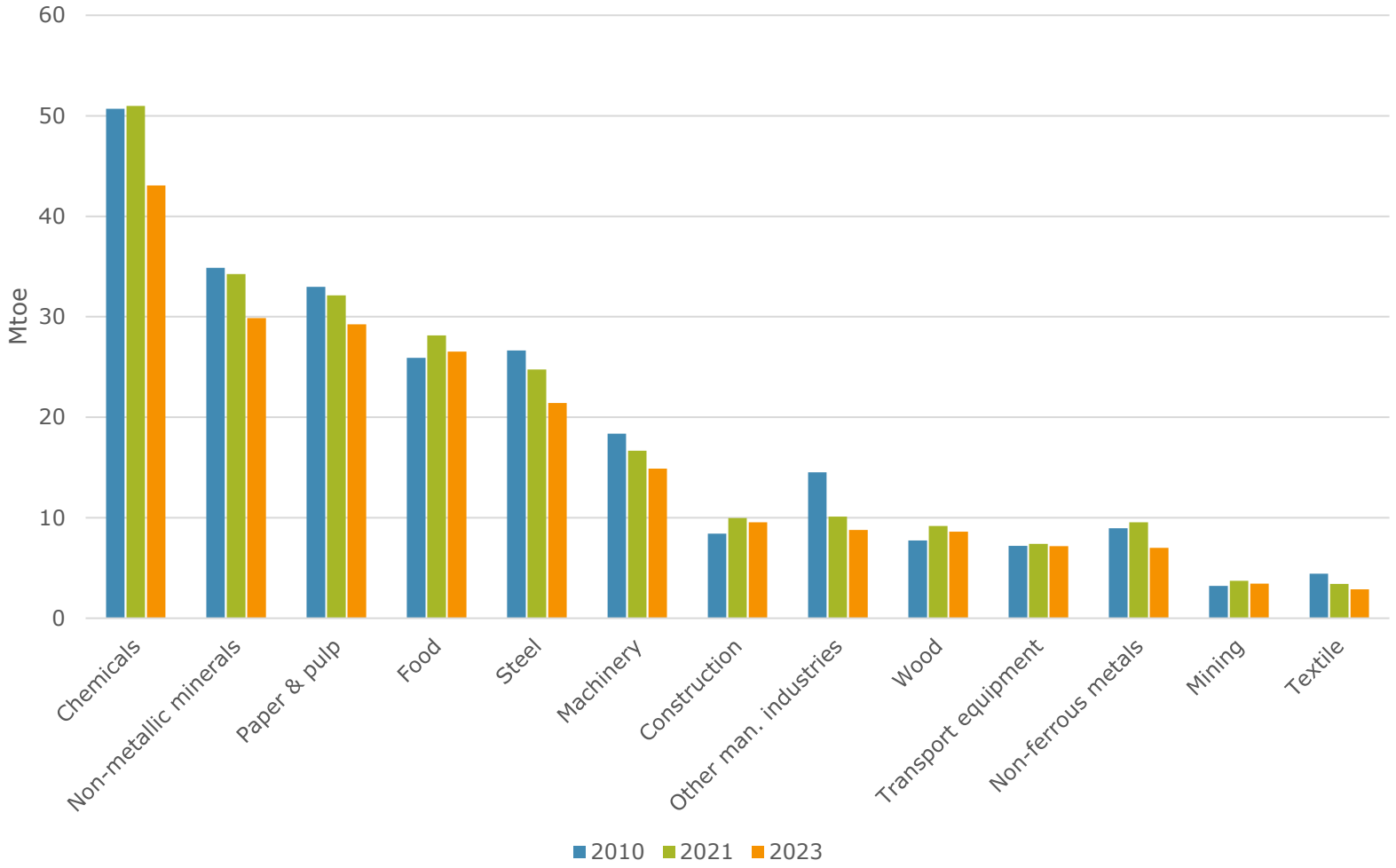
Share of industry in final energy consumption

Share of industry globally stable around 25% of energy consumption at EU level since 2010 (except in 2020 and 2021)
Increasing share in 9 countries, mainly in smaller EU countries, with higher increase in Hungary (+8 pts)
Decreasing share in 11 countries, mainly in southern and eastern EU countries, with highest decrease in Romania (-8 pts)
Stable share in 7 countries (mainly central and western EU countries)



Source: ODYSSEE, based on Eurostat data

Energy consumption by branch



Source: ODYSSEE, based on Eurostat data

4 branches account for **60% of industry consumption** : **chemicals** (20%), **non-metallic minerals** (14%) , **paper** (14%) and **food** (13%)

High reduction in **non-ferrous metals** (-1.9%/year), **steel** (-1.7%/year) and **machinery** (-1.6%/year)

Increasing energy consumption for **food** (+0.2%/year), and **construction** (+1%/year)

Chemicals and non-metallic minerals explains around **45% of the decrease** in industry energy consumption between 2021 and 2023.

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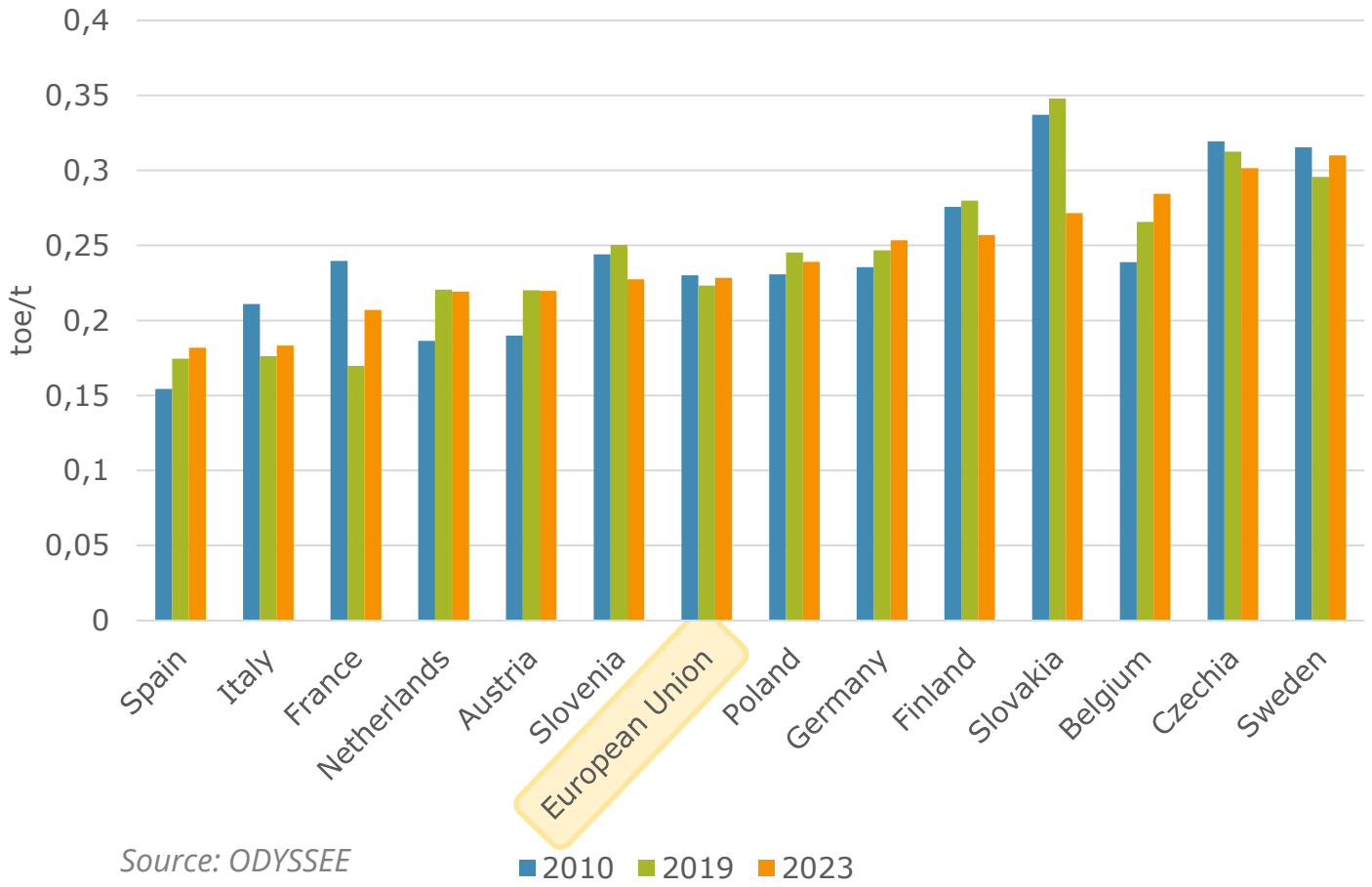
Specific consumption for steel production



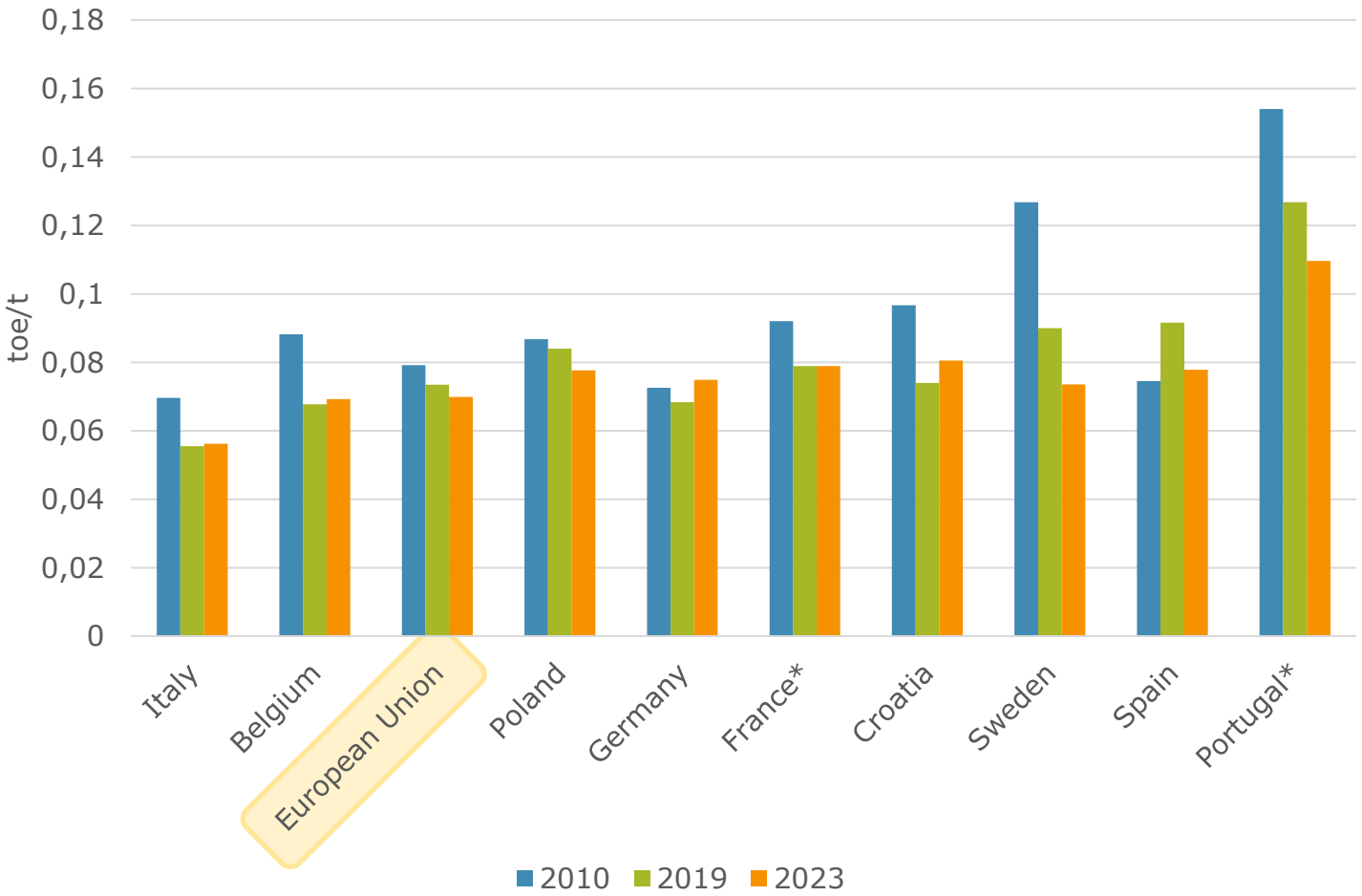
Source: ODYSSEE

Very slight decrease of EU specific consumption per ton of steel **between 2010 and 2023** (-0.7%) → small **decrease until 2019** (-3%), **almost counterbalanced** since then (+2.3%).

From 2010 to 2019, specific consumption per ton of steel **increased in 9 EU countries**, **decreased in 5 EU countries** and has been **roughly stable in 4 EU countries**.

Since 2019, energy efficiency in steel production improved in around **half of EU countries**, while the other half seen an increasing specific consumption per ton of steel.

Specific consumption for cement production



Source: ODYSSEE

* For France and Portugal, data for 2023 is estimated

Decrease at EU level of specific consumption per ton of cement between 2010 and 2023 (-1%/year).

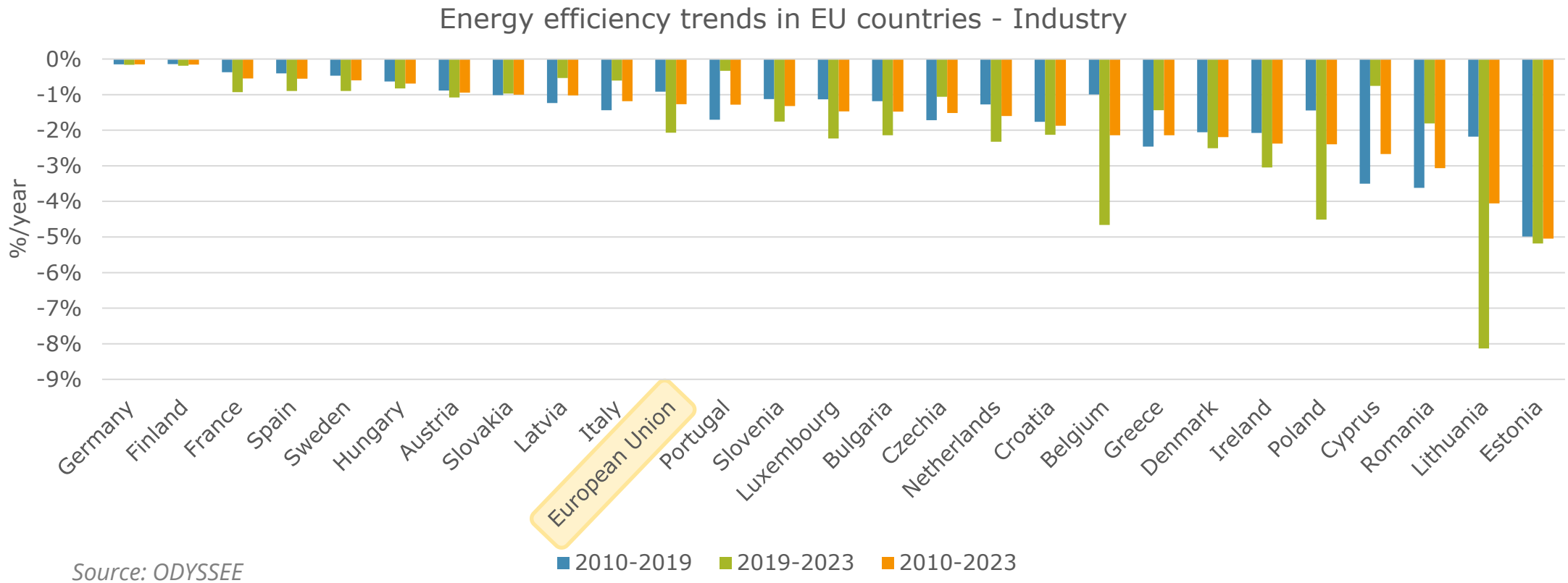
Between 2010 and 2019, specific consumption **decreased in most EU countries**, except those strongly affected by the economic crisis (e.g. Spain).

Since 2019, it **improved in most countries**, except in some where it remains **almost stable** (France, Italy, Belgium, Germany and Croatia).

Energy efficiency trends in the EU industry: acceleration since 2019

Acceleration of energy efficiency at EU level since 2019 (2.1%/year in 2019-2023 compared to 0.9%/year in 2010-2019)

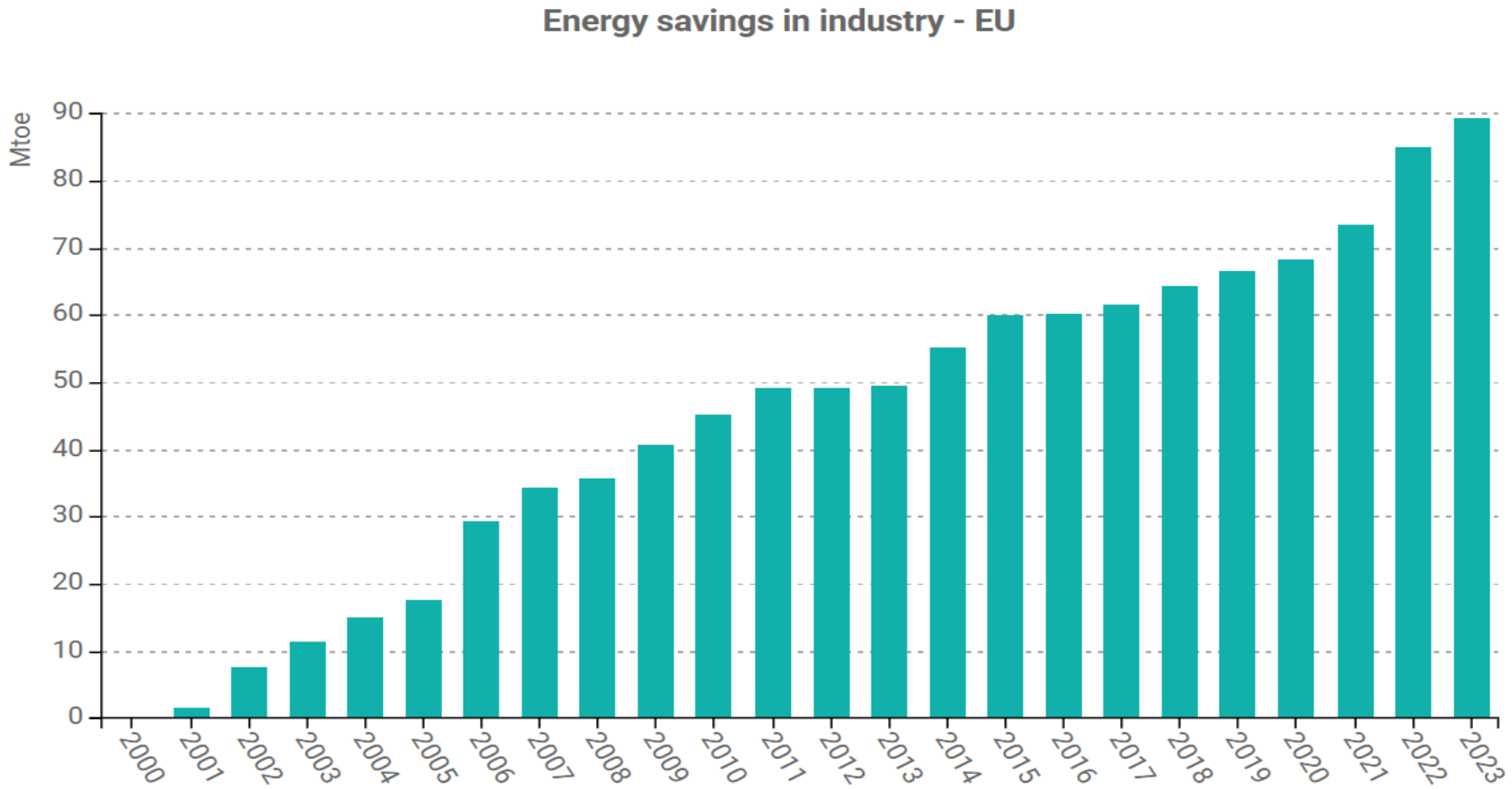
Acceleration since 2019 in 18 EU Member States and **slowdown in 7 MS**, all in south and east Europe. Only Germany and Slovakia have a stable energy efficiency trend for the whole period.



Source: ODYSSEE

Energy savings in industry

Regular increase of energy savings in industry since 2000 at EU level, with an acceleration after 2021: without energy savings the consumption **would have been 90 Mtoe higher** (i.e. 42% higher) .



Source: ODYSSEE, based on Eurostat data

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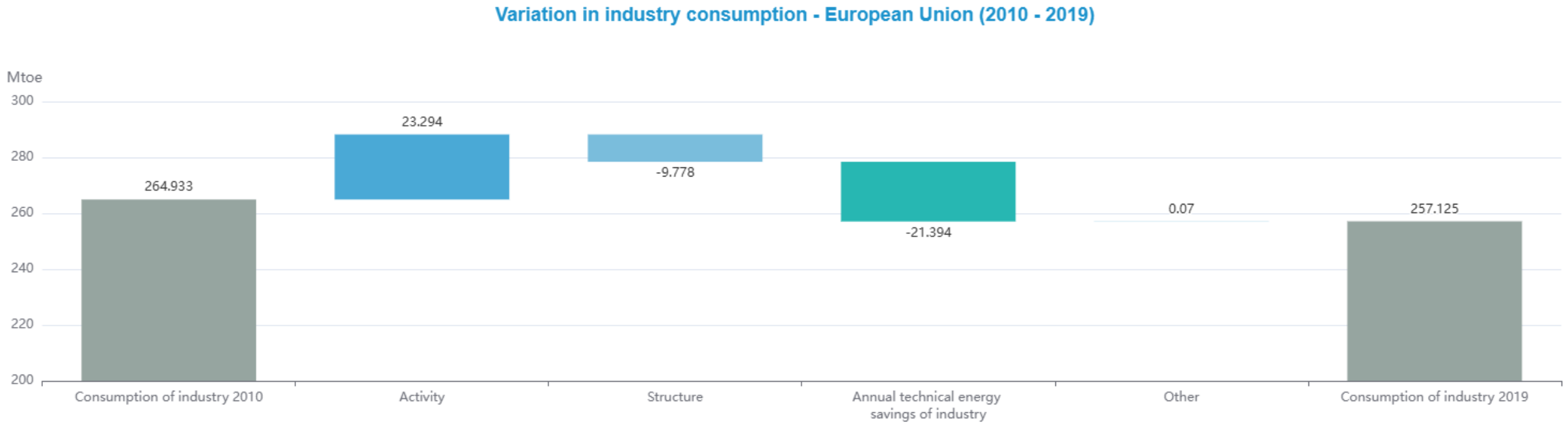
Drivers of energy consumption variation in industry (2010-2019)

Slow decrease in industry energy consumption of EU between 2010 and 2019 (-8 Mtoe, -3%) explained by :

- A **positive activity effect** (+23 Mtoe) → increase of industrial activity,
- Counterbalanced by **energy savings** (21 Mtoe) and **structural effects** (10 Mtoe)

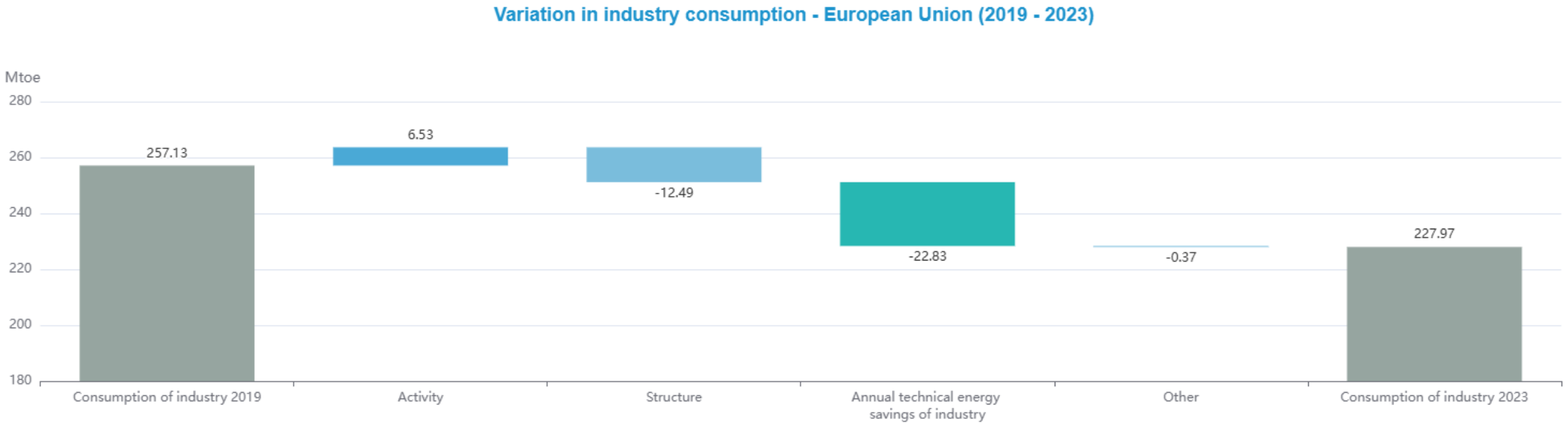


Source: ODYSSEE Decomposition tool, https://www.indicators.odyssee-mure.eu/decomposition.html

Drivers of energy consumption variation in industry (2019-2023)

Important decrease in industry energy consumption of EU between 2019 and 2023 (-29 Mtoe, -11%), i.e. 3.7 times the 2010-2019 reduction. Explained by :

- A **positive activity effect** (+6.5 Mtoe) → increase of industrial activity, despite COVID and high energy prices ;
- Largely counterbalanced by **structure effects** (-12.5 Mtoe) → less energy-intensive industries
- **Important energy savings** (23 Mtoe) and, to a certain extent other effects (-0.4 Mtoe).



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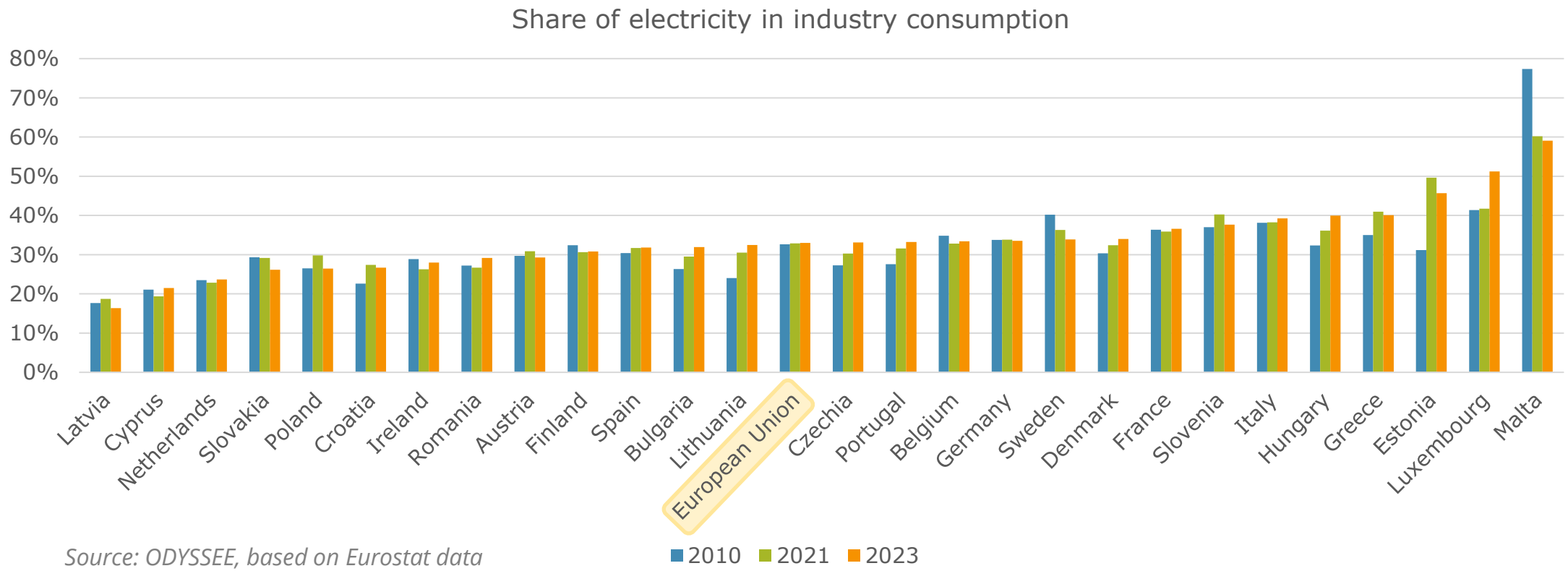
Electrification trends in industry since 2010

Very small electrification of industry at EU level since 2010 (32.6% in 2010, 33.0% in 2023).

Important differences in electrification of industry across countries (from 16% in Latvia to 59% in Malta in 2023).

Electrification of industry in 13 countries, with higher increase in Estonia (+14 points). **Stability of electricity share in 8 countries** and **decrease of electricity share in 6 countries**, of which Malta (-18 points) and Sweden (-6 points)



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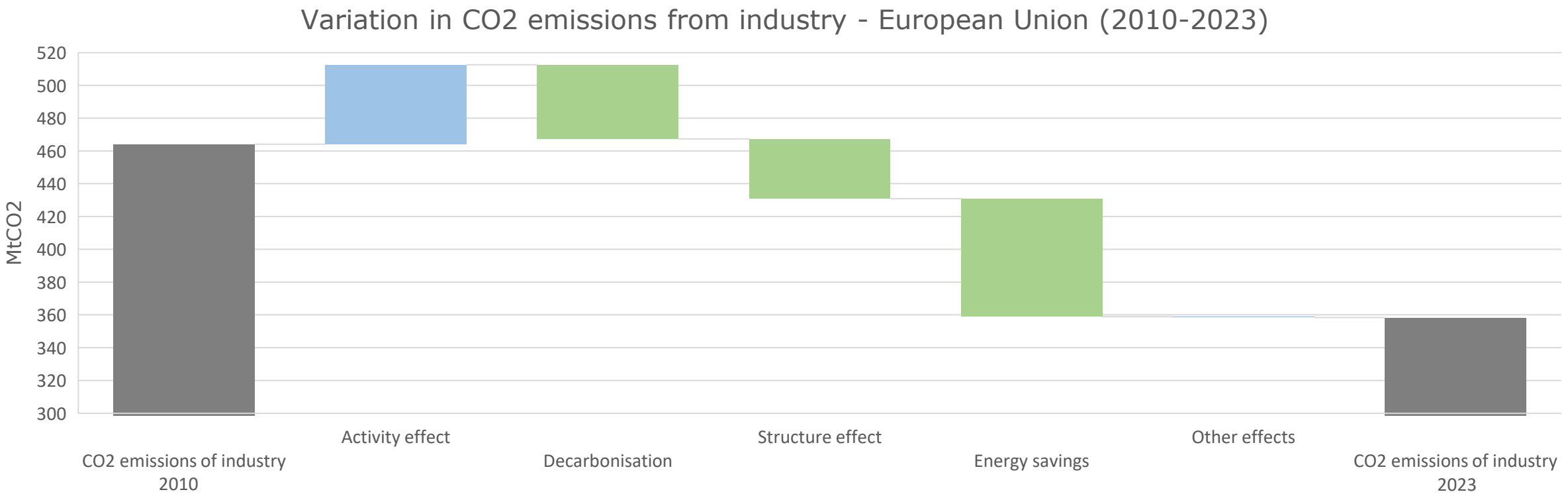
Drivers of CO_2 emissions variation in industry (2010-2023)

CO2 emissions of EU industry **decreased by 105 MtCO2 between 2010 and 2023** (i.e. 23%), despite an increase in activity that would have increased **CO_2 emissions by 49 $MtCO_2$** . This large decrease is explained by **three main factors**, namely **energy savings** (-72 $MtCO_2$), **decarbonisation** (-45 $MtCO_2$) and **structure effects** (-36 $MtCO_2$).



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Conclusion

- Energy consumption of industry was **globally stable** from 2010 to 2019 and has been **decreasing** at a strong pace since then.
- **Chemicals and non-metallic minerals** branches explains half of the energy consumption reduction of industry since 2021.
- Energy efficiency of industry is **accelerating at EU level since 2019** (2,1%/year, compared to 0.9%/year over 2010-2019). This acceleration is also visible for 18 EU Member States.
- Since 2019, **energy savings** explain **2/3** of the sharp reduction of energy consumption in industry, and, 1/3 is linked to **structural effects towards lower energy intensive branches.**
- The electrification of industry is **slow at EU level** (+0.4 points since 2010), but with **significant differences across EU Member States.**
- The reduction of CO_2 emissions of industry is mainly explained by **energy savings, decarbonisation and structural effects.**

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Thank you!

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