Europe's national energy efficiency champion

The European energy efficiency 2023 scoreboard

An eceee & ODYSSEE-MURE joint project

Dr Wolfgang Eichhammer
Fraunhofer ISI

Nils Borg
ECEEE

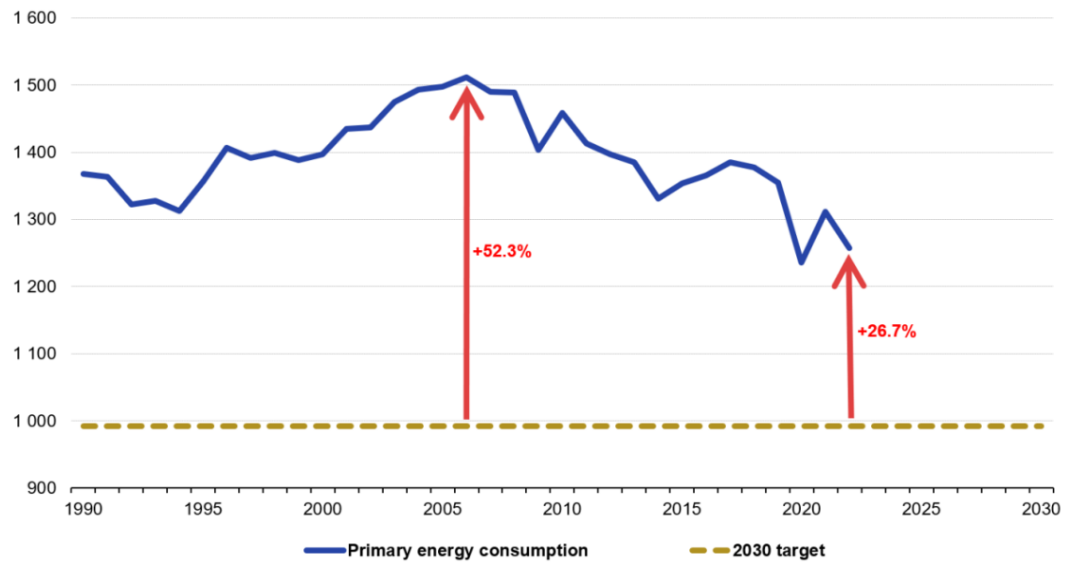
eceee webinar 7 February 2024

The raised European ambition on energy efficiency

- The revised Energy Efficiency Directive (EU/2023/1791), published in the Official Journal on 20 September 2023, **significantly raises the EU's ambition on energy efficiency**.
- It establishes **'energy efficiency first' as a fundamental principle of EU energy policy**, giving it legal-standing for the first time.
- The 2023 revised directive makes it **binding** for EU countries to **collectively** ensure an **additional 11.7% reduction in energy consumption by 2030**, compared to the 2020 reference scenario projections.
  - EU energy consumption by 2030 should not exceed 992.5 million tonnes of oil equivalent (Mtoe) for primary energy and 763 Mtoe for final energy.
- The revised directive **more than doubles the annual energy savings obligation** (Article 8) by 2028.
  - EU countries are required to achieve cumulative end-use energy savings for the entire obligation period (running from 2021 to 2030), equivalent to new annual savings of at least 0,8% of final energy consumption in 2021-2023, at least 1.3% in 2024-2025, 1.5 % in 2026-2027 and 1.9 % in 2028-2030.
- **Supply security issue** (and gas/electricity prices) have (re) awakened interest in energy efficiency

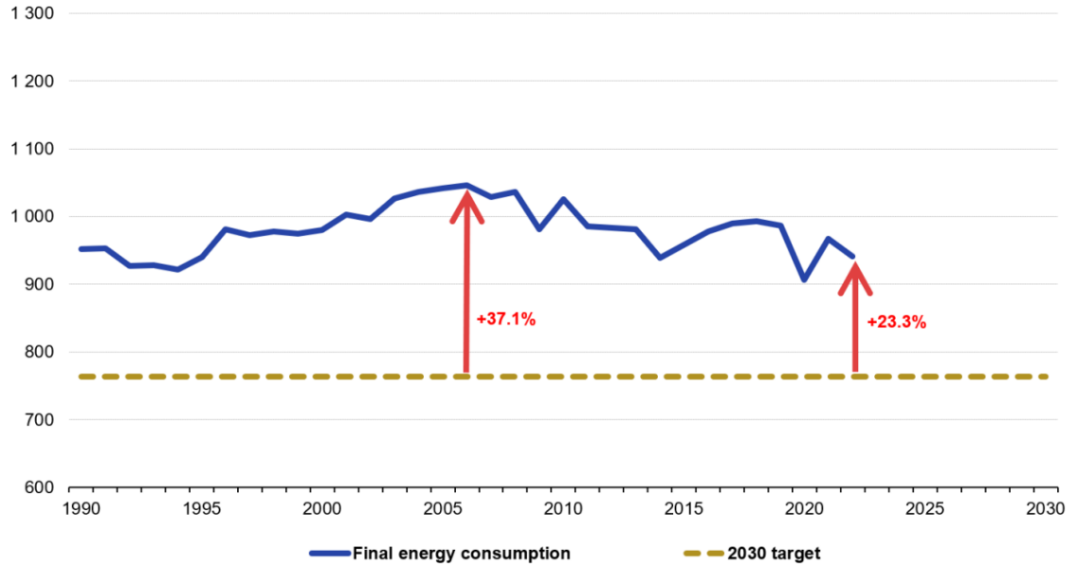
Why this Scoreboard?

Distance to 2030 target for primary energy consumption, EU



Source: Eurostat (online data code: nrg_ind_eff)

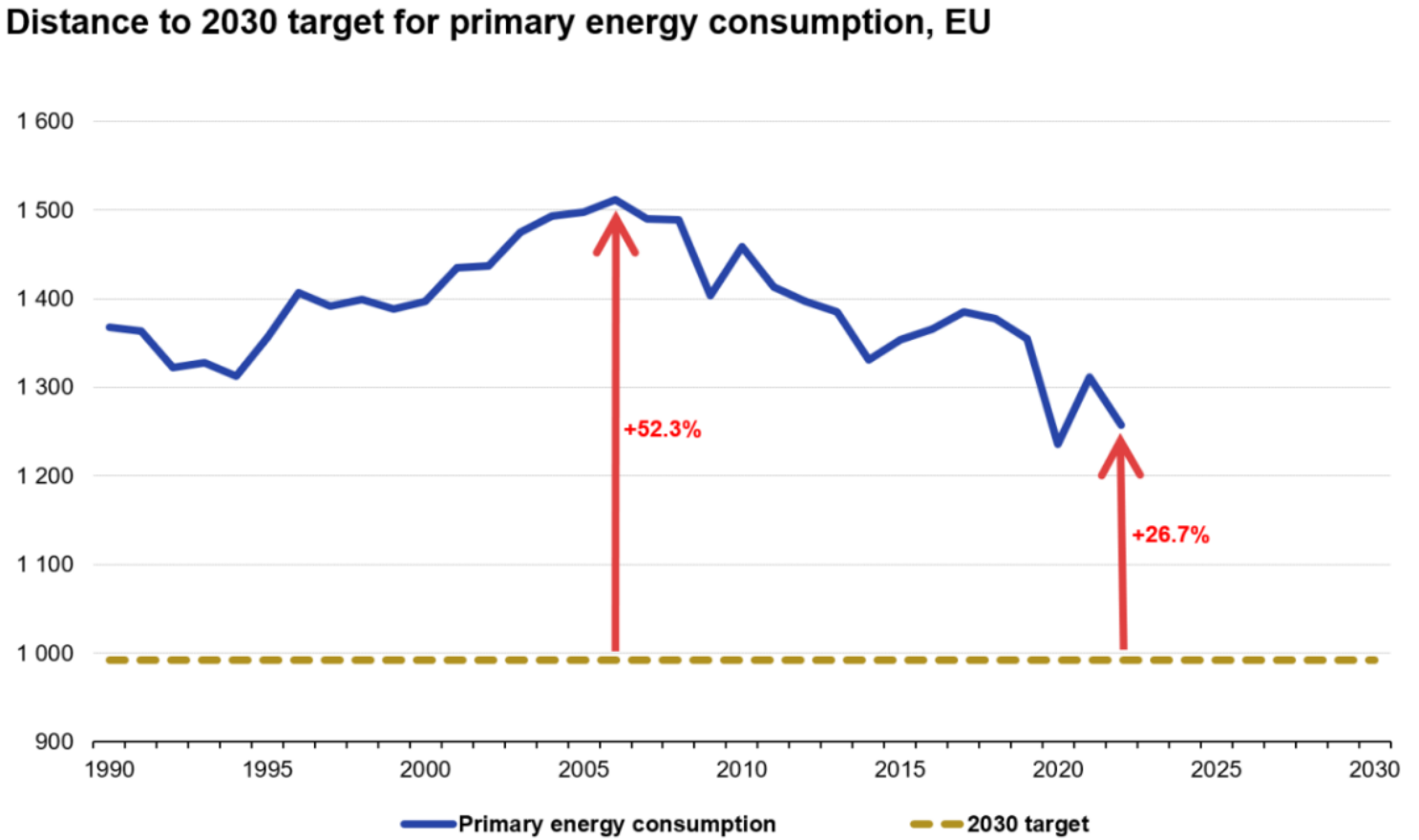
Distance to 2030 target for final energy consumption, EU



Source: Eurostat (online data code: nrg_ind_eff)

- **Scoring the achievements and efforts of the EU Member States helps to understand where we have to speed up efforts.**

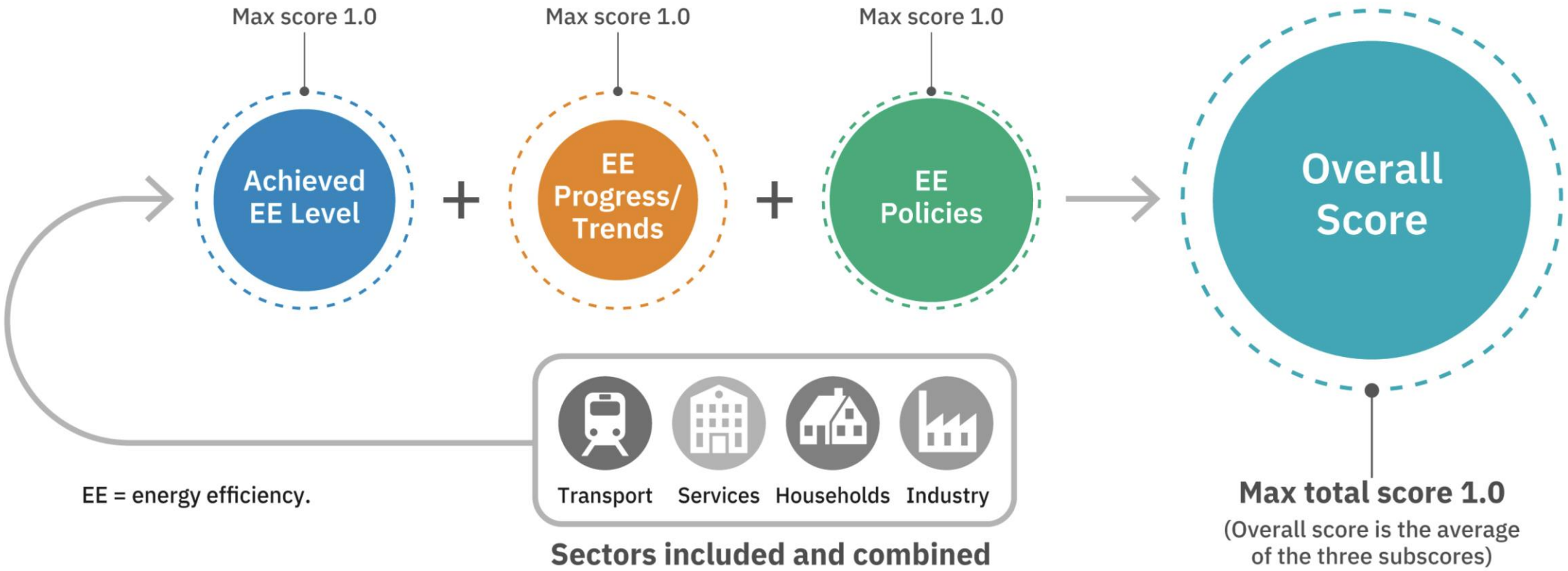
Why this Scoreboard?



What is the eceee & ODYSSEE-MURE energy efficiency scoreboard?

- ***Scores are based on data from (www.odyssee-mure.eu):***
  - the ***ODYSSEE database*** on energy efficiency **indicators**
  - the ***MURE database*** on energy efficiency **policies**.
- A **benchmarking tool** to compare the impacts of energy efficiency policies and developments amongst European countries. It is intended to paint a well-rounded picture of how a country is performing with respect to energy efficiency, relative to its peers in Europe.
- The first energy efficiency scoreboard to account for **quantitative impacts of policies** (output-based scoring).
- It accounts for **several decades of statistical data as well as future impacts of current energy efficiency programmes**.

How does the ODYSSEE-MURE scoring method work?



The score "Level" – assessing today's performance level

The Level Score answers the question "How is my country **currently** performing with respect to energy efficiency?"

Quantitative measure ot a country's performance at the present time, influenced by autonomous developments, energy prices and policies in place. Accounts tor all major sectors ot the economy (Industry, Transport, Households, and Services).

The scoring is based on **adjusted** and mainly **physical indicators** tor energy efficiency (and not on simple energy intensities), such as:

- energy use per m^2 and building type (household, office...)
- share ot public transportation in total land passenger transport
- specific energy consumption tor industrial branches

Note: The "Level" parameter is based on the top-down statistical energy efficiency indicators in the ODYSSEE database

The score "Trend" – a look at progress since 2010

The "Trend" score answers the question
*"How much **progress** has the country achieved in the area of energy efficiency?"*

The Trend score determines progress using the same set ot energy efficiency indicators as selected tor the "Level" score since the year 2010.

Dynamic parameter that takes development and past actions into account.

Note: The "Trend" parameter is based on the top-down statistical energy efficiency indicators in the ODYSSEE database

The "Policy" score – quantifying future savings from today's policies

The Policy Score answers the question
*"What **future impacts** can I expect from **recent policies** enacted in my country?"*

This score forecasts the energy-saving impacts of more recent policies from a given starting year, e.g., 2010, until a target year (e.g., until 2030). It converts policy impacts into a quantitative or semi-quantitative score.

Bottom-up evaluation of policies, based on the energy savings expected to be achieved in each sector compared to the sectoral energy consumption.

Note: Policy impacts are gathered in the MURE Database from quantitative and semi-quantitative measure impact evaluations in a target year, e.g., 2030. Also, the reference year for policies has changed from 2000 to 2010

A deeper view to households

Households: Which country scores best on “Level”?

Lithuania

Netherlands

Finland

Sweden

Denmark

Households: Netherlands gets the best score 2023 on "Level"

Level – Household Sector ranking top 5

Rank	Country	Score
1	Netherlands	1.0
2	Denmark	0.97
3	Finland	0.96
4	Sweden	0.92
5	Lithuania	0.92

Households
Which country scores best on EE “Trend”?

Croatia

Netherlands

Latvia

Luxembourg

Ireland

Households: Luxembourg has the highest score 2023 on "Trend"

Trend – Household Sector ranking top 5

Rank	Country	Score
1	Luxembourg	1.0
2	Croatia	0.91
3	Netherlands	0.89
4	Latvia	0.87
5	Ireland	0.87

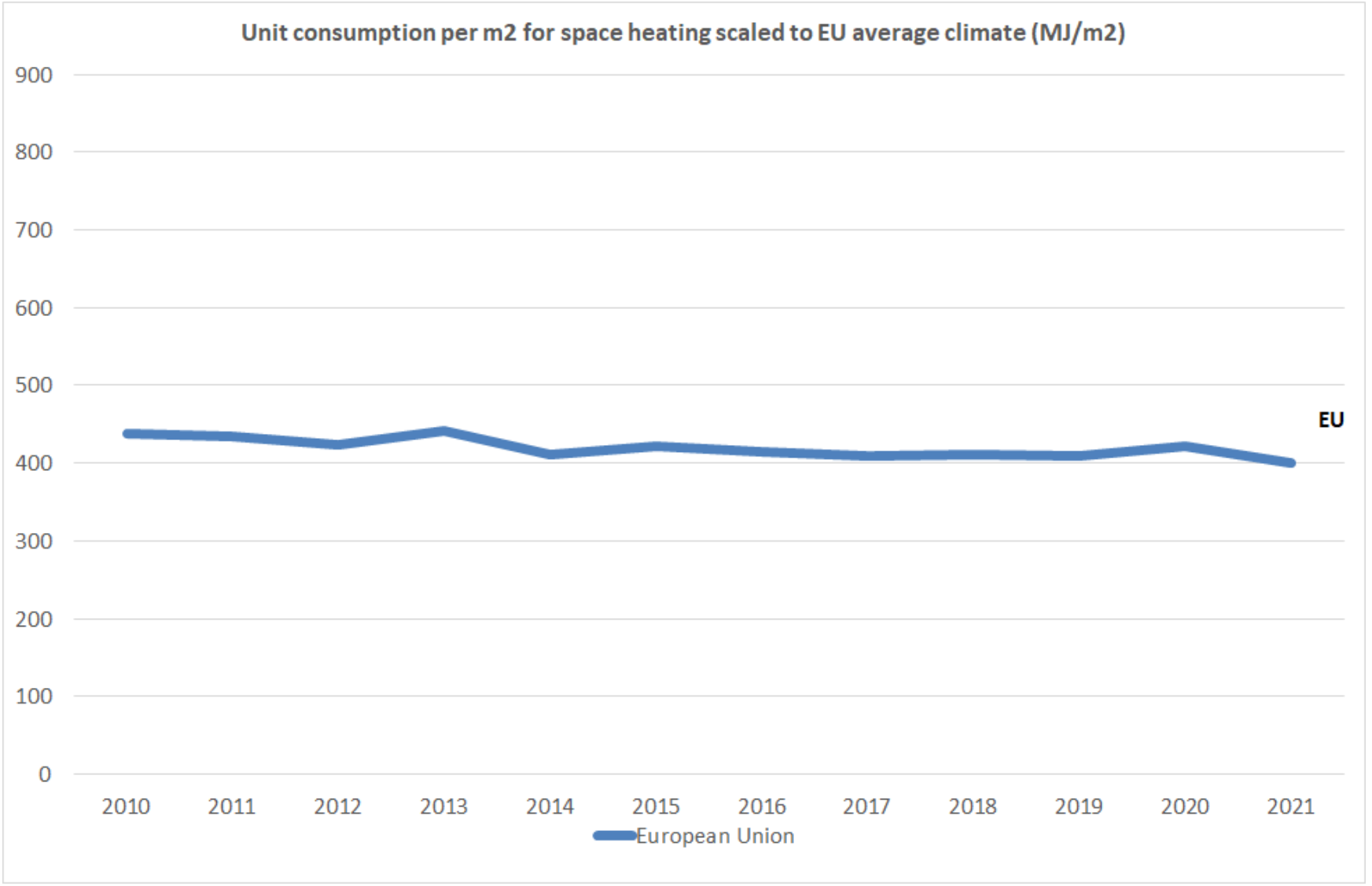
***Note: baseline year changed from 2000 to 2010 in 2023 UPDATE**

Households: List of indicators used to calculate the scores

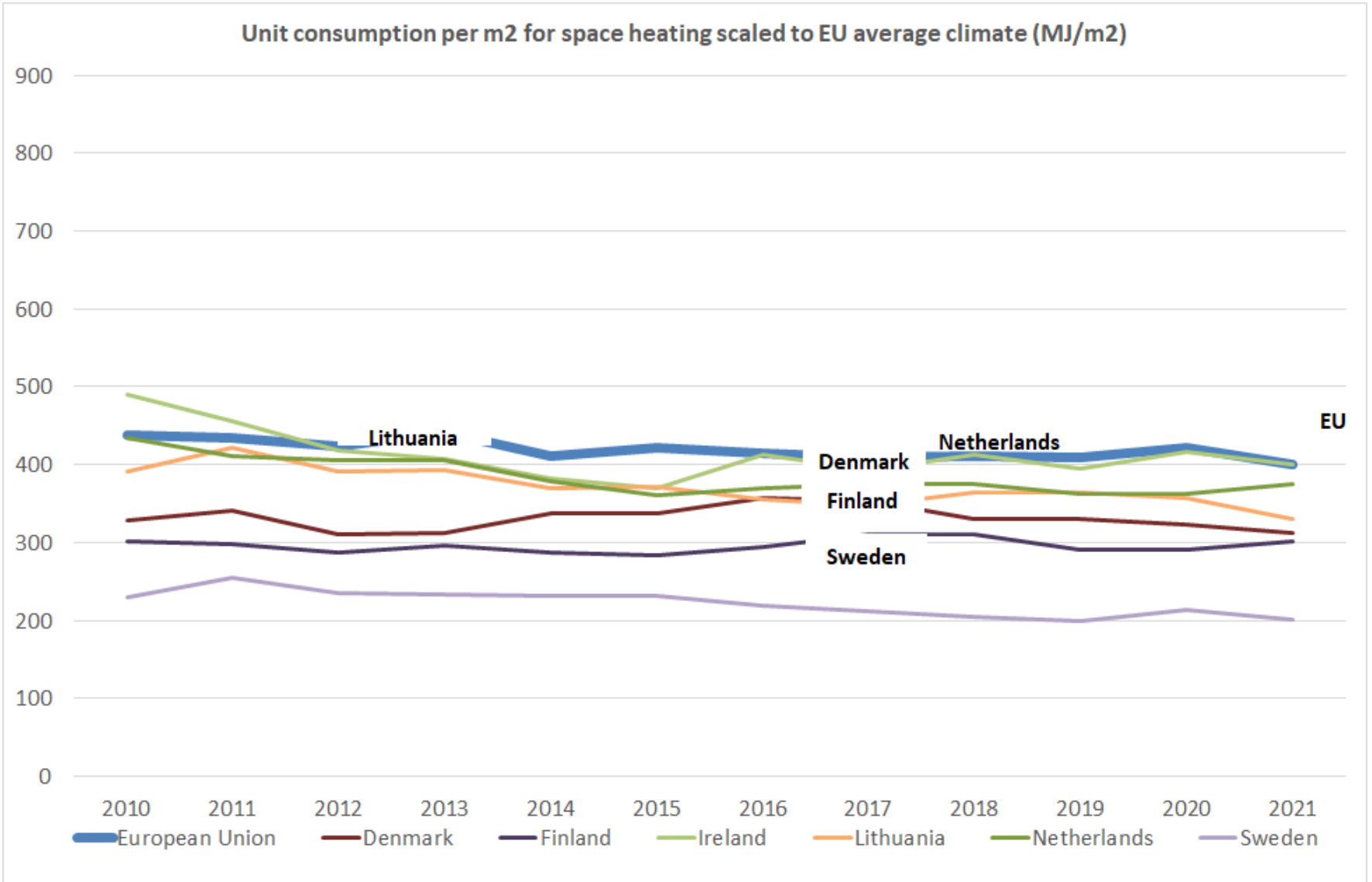
Households

End-use	Indicator	Weighting factor
Heating	Consumption for heating per m^2 scaled to EU climate and equivalent to central heating[3]	Share of heating in total households consumption
Other thermal uses	Consumption per dwelling for cooking and water heating	Share of cooking + ½ of water heating in total households consumption
Appliances	Specific consumption of electricity per dwelling for appliances (including AC) and lighting	Share of appliances (incl. AC) & lighting in households consumption
Solar penetration	% of dwellings with solar water heater	½ share of water heating in households consumption

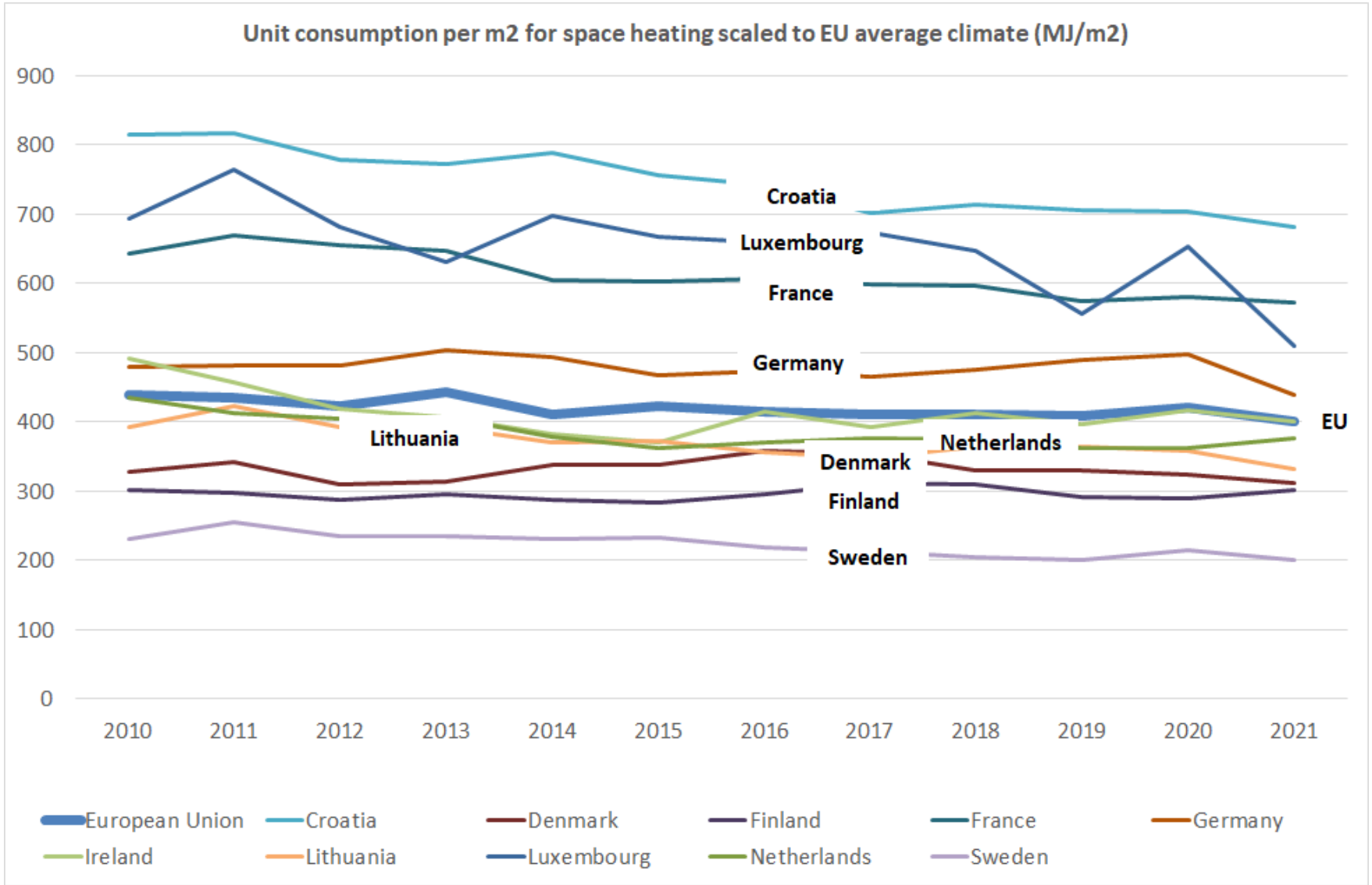
Trends/Levels: Space heating households (since 2010)



Trends/Levels: Space heating households (since 2010)



Trends/Levels: Space heating households (since 2010)



Households: The "Policy" score – quantifying future savings from today's policies

The Policy Score answers the question
*"What **future impacts** can I expect from **recent policies** enacted in my country?"*

This score forecasts the energy-saving impacts of more recent policies from a given starting year, e.g., 2010, until a target year (e.g., until 2030). It converts policy impacts into a quantitative or semi-quantitative score.

Bottom-up evaluation of policies, based on the energy savings expected to be achieved in each sector compared to the sectoral energy consumption.

Note: Policy impacts are gathered in the MURE Database from quantitative and semi-quantitative measure impact evaluations in the target year 2030. The reference year for policies has been set to 2010 onwards.

Households:
Which country scores best on "Policy"?

France

Germany

Luxembourg

Romania

Poland

Household sector: Germany gets the best score 2023 on „Policy“

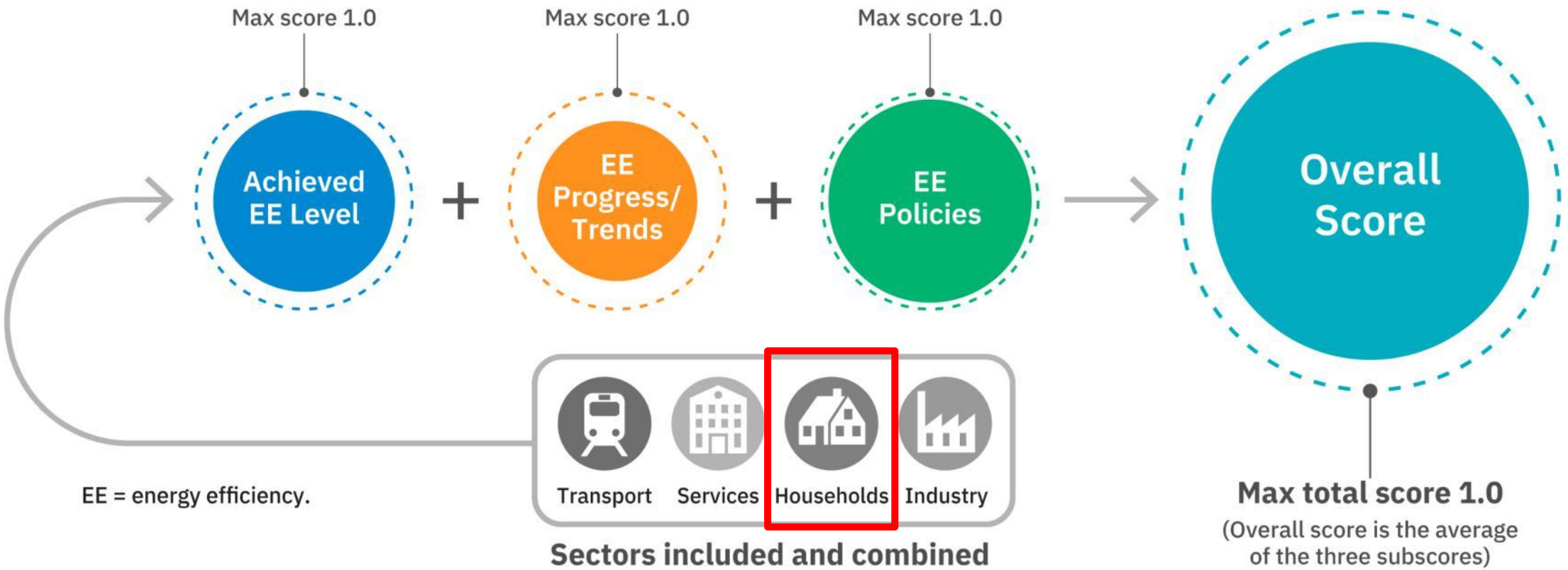
Policy – Household Sector ranking top 5

Rank	Country	Score
1	Germany	1.0
2	Romania	0.72
3	Luxembourg	0.69
4	Poland	0.67
5	France	0.63

Households: The "Policy" score – examples of Household Energy Efficiency policies

- **Germany:** Tax incentives for energy efficient building refurbishment (Steuerliche Förderung der energetischen Gebäudesanierung). The tax incentive is limited to individual measures in owner-occupied apartments and residential buildings. The subsidy is provided in the form of a deduction from tax liability over a period of three years. 20% of the investment costs are deductible. The maximum subsidy amount is EUR 40,000.Start 2020 (expected impact in 2030: 52 PJ)
- **Poland:**
  * Thermo-modernization tax relief (expected impact in 2030: 24 PJ)
  * Agreements with municipalities: The municipalities issue a call for applications in their area among the residents - the final beneficiaries. These are individuals, owners of flats in multi-family houses, tenants of flats owned by the municipality and housing communities with 3-7 flats. (expected impact in 2030: 18 PJ)
- **France:**
  ***** Mandatory standards for buildings (expected impact 2030 in households: 118 + 8,8 PJ)
  * Subsidy for thermal renovation of private dwellings (MaPrimeRénov') (expected impact in 2030 in households: 9 PJ)

Household Sector: Combined Score



Household Sector:
European Energy Efficiency Scoreboard 2023

Who is doing best in 2023?

France

Germany

Latvia

Luxembourg

Netherlands

Households: Luxembourg is Europe's 2023 energy efficiency champion

Overall Score – Household Sector ranking top 5

Rank	Country	Score
1	Luxembourg	0.83
2	Germany	0.80
3	Netherlands	0.72
4	France	0.66
5	Latvia	0.62

A glimpse on transport

Transport: Luxembourg is Europe's 2023 energy efficiency champion

Overall Score – Transport Sector ranking top 5

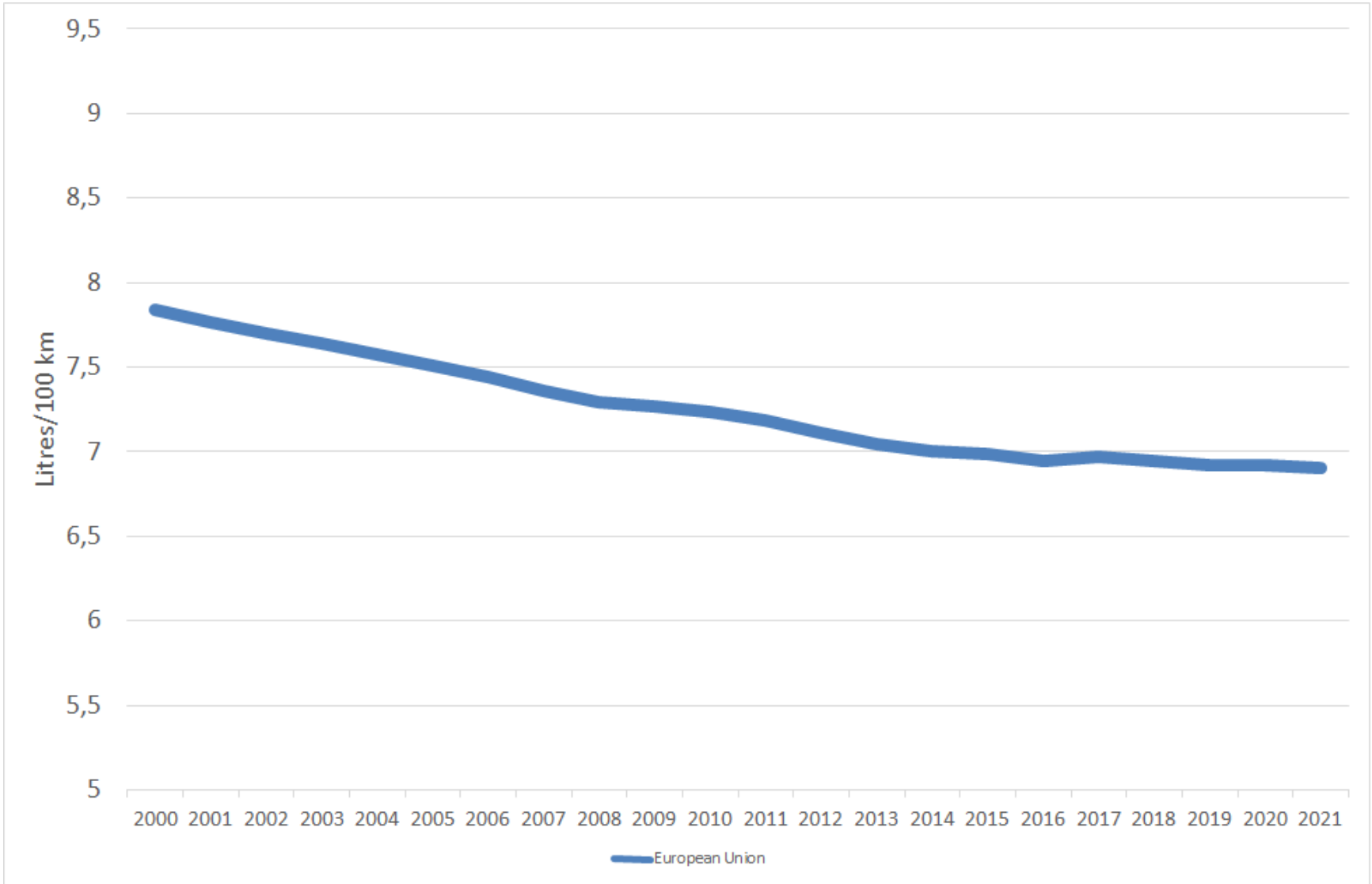
Rank	Country	Score
1	Luxembourg	0.84
2	France	0.64
3	Latvia	0.56
4	Spain	0.56
5	Greece	0.55

Example of how transport scores for level and trend are composed

Transport

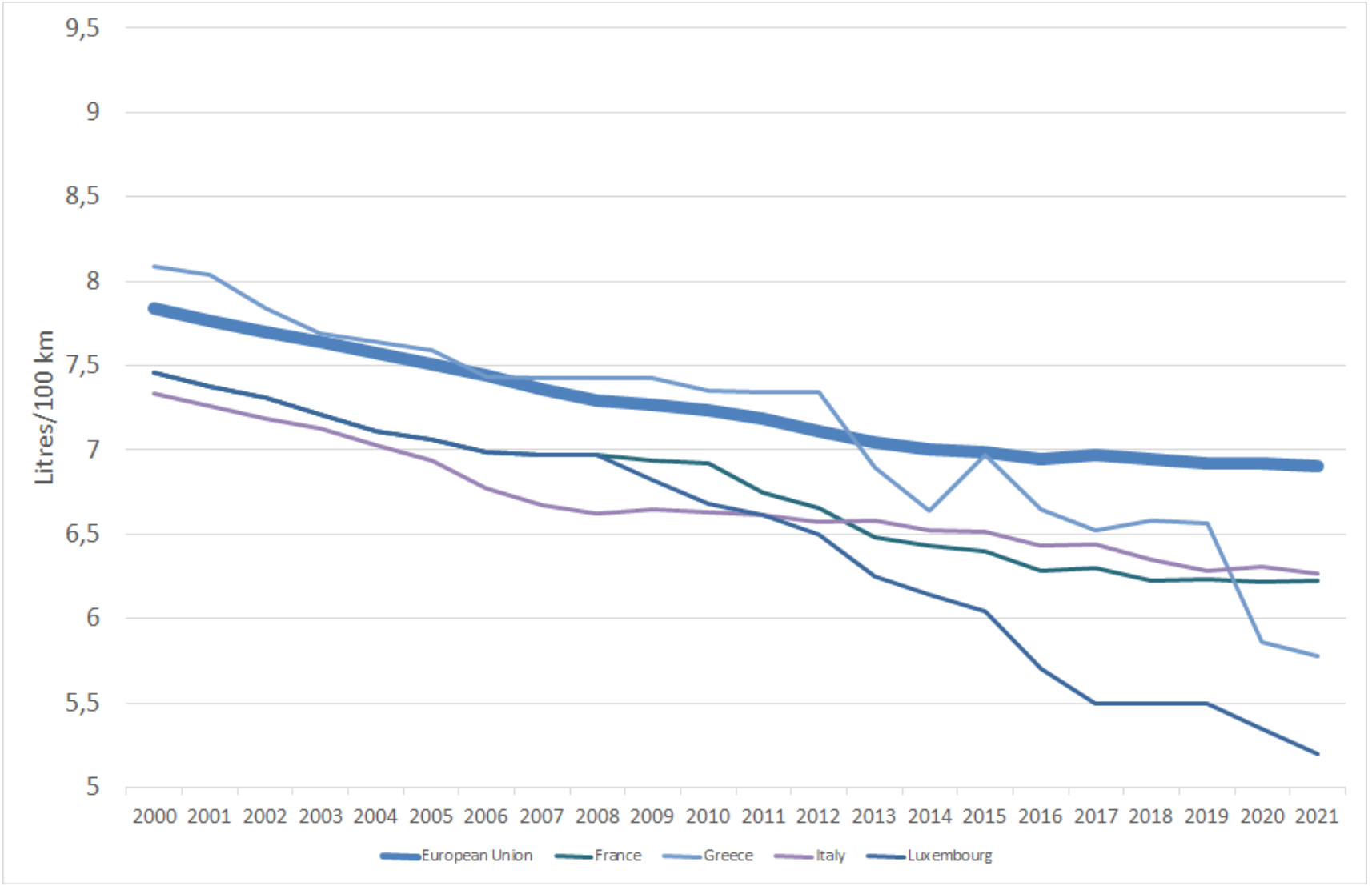
Modes	Indicator	Weighting factor
Cars	Specific consumption (goe/pkm)	Share of cars in total transport consumption
Trucks and light vehicles	Specific consumption (goe/tkm)	Share of trucks and light vehicles in total transport consumption
Air	Specific consumption (koe/pass)	Share of air in total transport consumption
Modal split: -Passengers	% of traffic by public mode	Share of buses and rail passengers in total transport consumption
-Goods	% of traffic by rail and water	Share of water and rail freight consumption in total transport

Transport - where many/all countries are weak: cars



EU27

Transport - where many/all countries are weak: cars



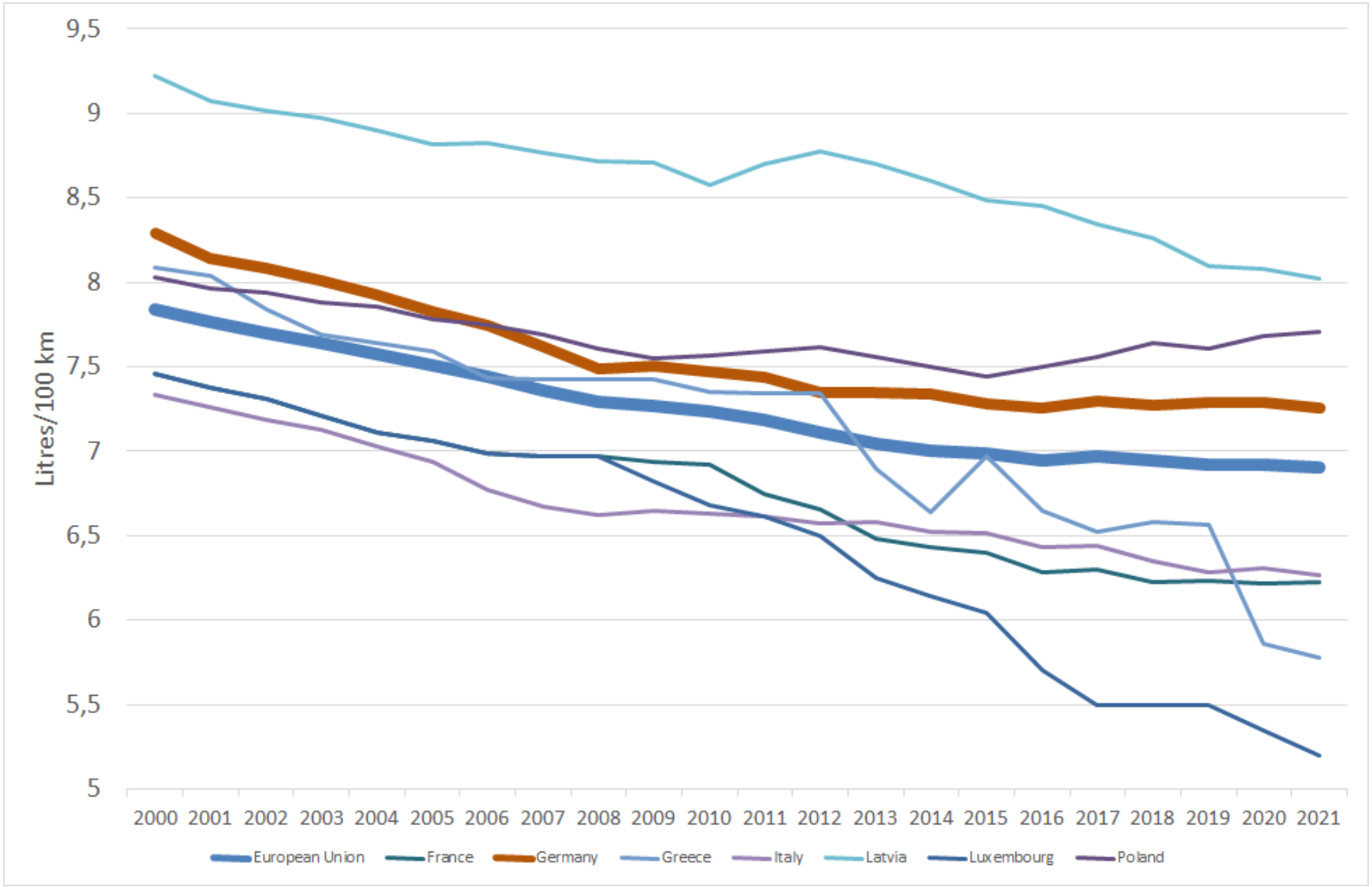
EU27

Italy
France

Greece

Luxembourg

Transport - where many/all countries are weak: cars



Latvia

Poland

Germany

EU27

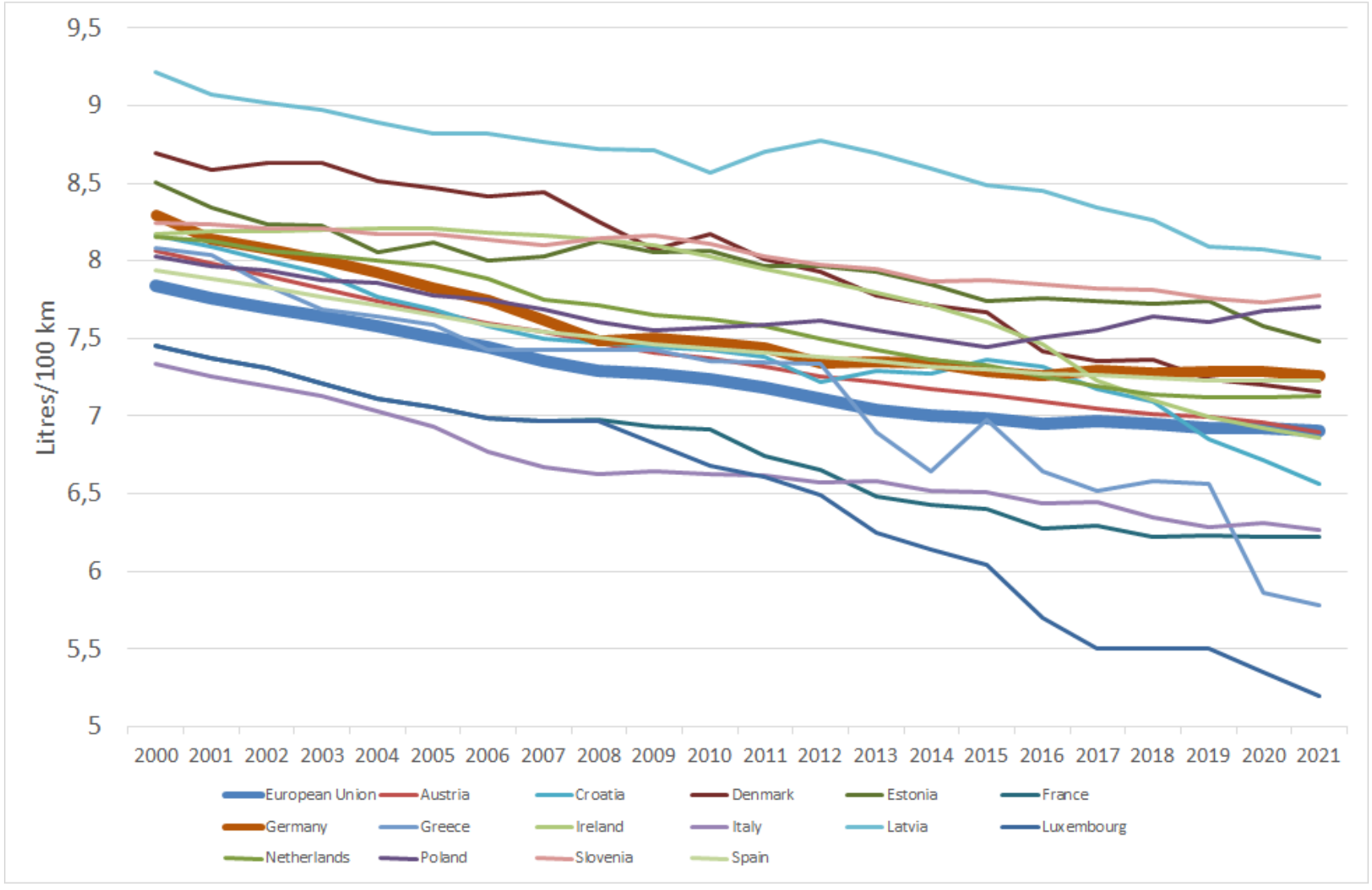
Italy

France

Greece

Luxembourg

Transport - where many/all countries are weak: cars



Latvia

Poland

Germany

EU27

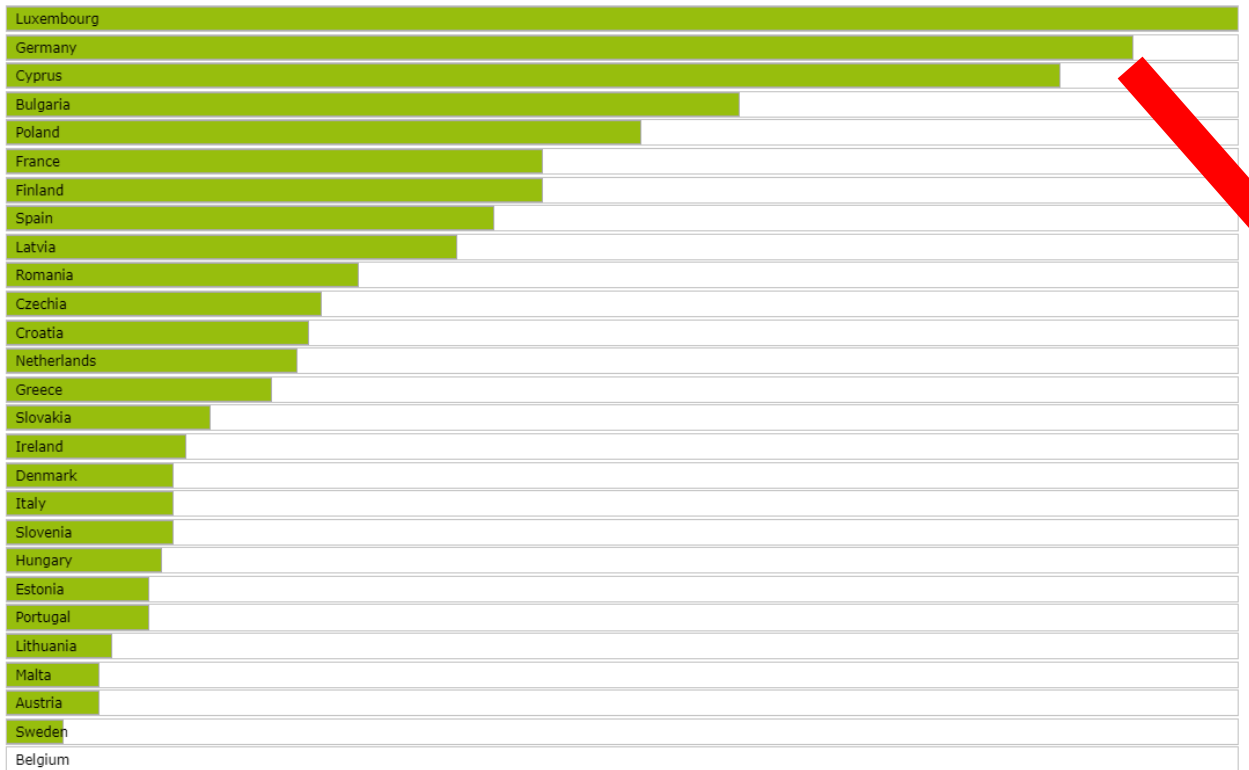
Italy

France

Greece

Luxembourg

The “Policy” score – examples of high impact policies



e.g.

Energy Efficiency Obligation Scheme (revision) : 7.8 PJ

CO2 tax : 15.8 PJ

e.g.

Fuel Emissions Trading Act - BEHG (Brennstoffemissionshandelsgesetz): 145 PJ

Federal Funding for Energy and Resource Efficiency" (EEW) : 105 PJ

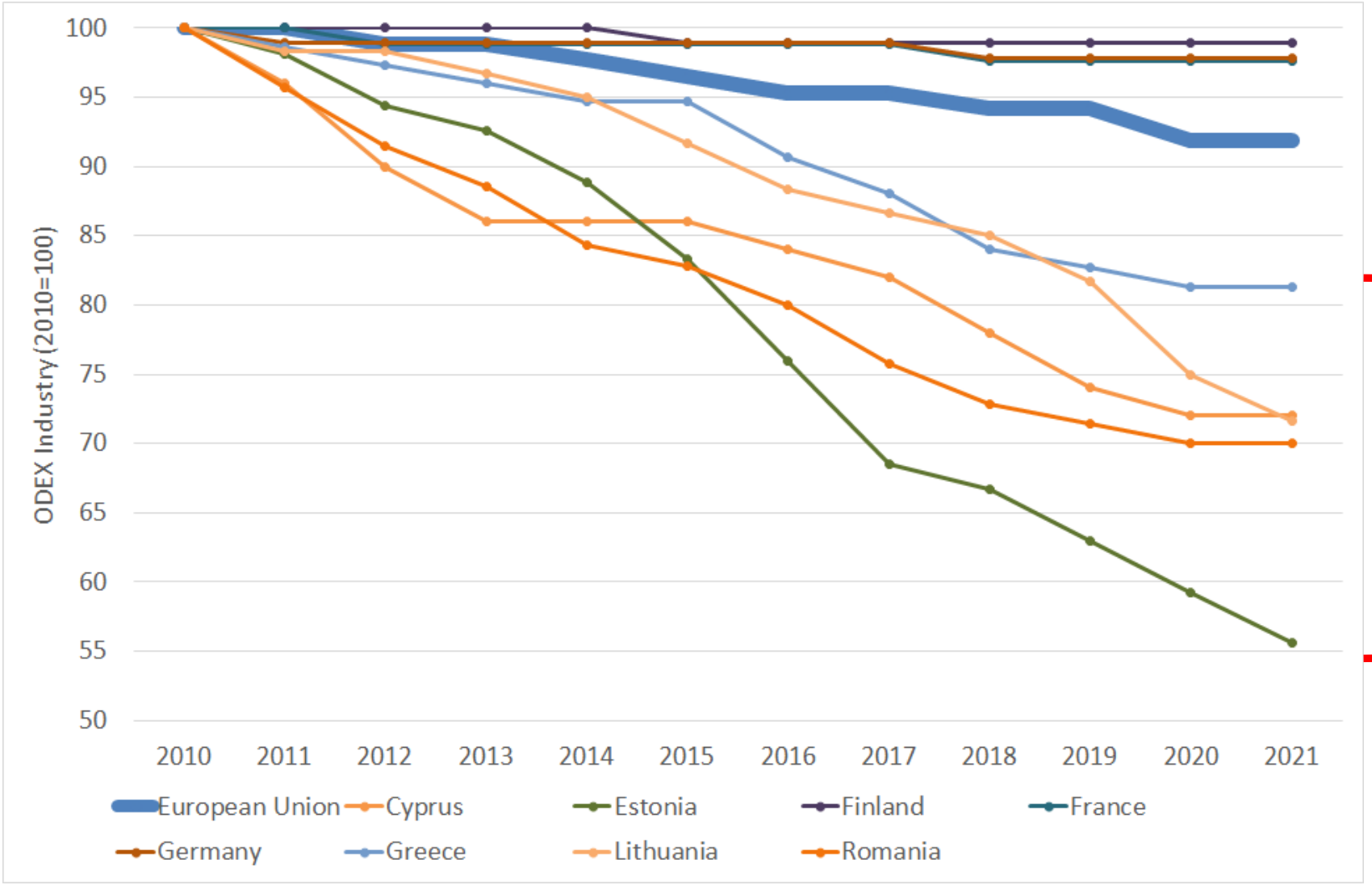
A glimpse to industry

Industry: Estonia is Europe's 2023 energy efficiency champion

Overall Score – Industry Sector ranking top 5

Rank	Country	Score
1	Estonia	0.63
2	Cyprus	0.58
	Germany	0.58
4	Ireland	0.49
5	Romania	0.47

Trends: ODEX Industry (since 2010)

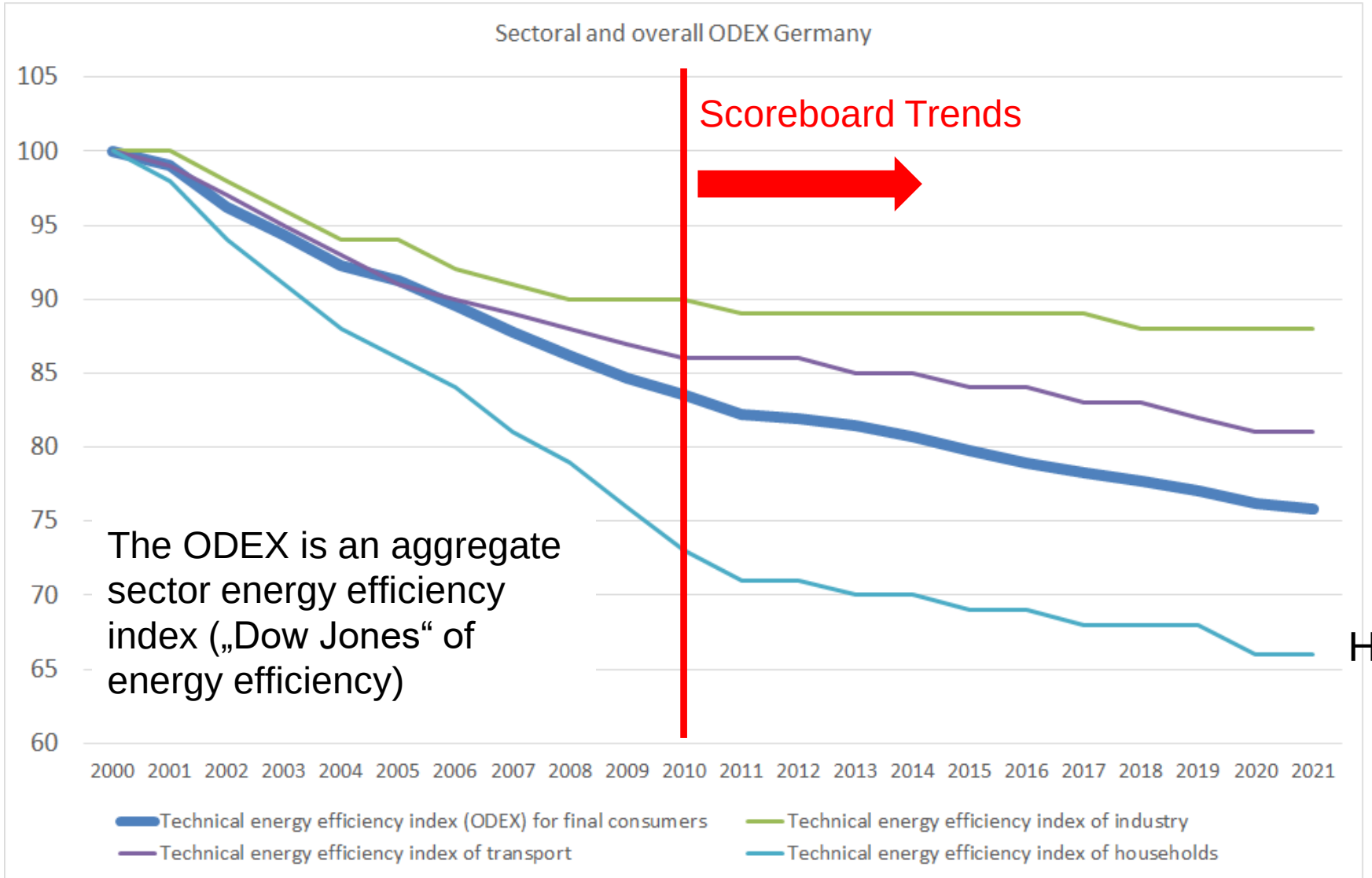


Slowest progress

EU27

Top 5

Where Germany is weak...ODEX Industry Germany



Industry

Transport

Overall

Households

Overall Champion Energy Efficiency Scoreboard 2023

Luxembourg is Europe's 2023 energy efficiency champion

Best top Overall Score – ranking top 5

Rank	Country	Score
1	Luxembourg	0.86
2	Germany	0.68
3	France	0.63
4	Latvia	0.61
5	Denmark	0.60

Luxembourg – detailed scoring – 2023 UPDATE

Aggregate score of many sectors and three scoring categories

	Level	Trend	Policy	Combined
Overall	**0.57**	**1**	**1**	**0.86**
Industry	0.39	0.20	0.40	0.33
Transport	0.76	1	0.79	0.85
Households	0.80	1	0.69	0.83
Services	0.00	0.42	1	0.47

Overall Champion Energy Efficiency Scoreboard 2023 (Summary on Levels/Trends/Policies)

OVERVIEW - SUMMARY

Overall

Level	Trend	Policies	Combined
1: Denmark	1: Luxembourg	1: Luxembourg	1: Luxembourg
2: Lithuania	2: Estonia	2: Germany	2: Germany
3: Slovenia	3: Ireland	3: Cyprus	3: France

Discussion of results

- **Policies scores are a promises to the future: they represent expected savings by 2030 (including nevertheless policies since 2010)**
- **Achieved policy impacts are included in the present levels (2021) and the trends (from 2010 to 2021)**
- **Trends (since 2010) are more advantageous for „Eastern and Southern“ Member States, given less good starting positions (levels) but ambitious energy efficiency policies over the past**
- **Scores in the middle of the scoreboard are sometimes close together, making it more difficult to clearly distinguish ranks. However, the scoreboard clearly shows where a country is weaker in efforts.**
- **No country, even the best, is excellent in all sectors and all 3 components. There is still a lot of scope to improve Energy Efficiency**

This presentation and infographic on the energy efficiency scoreboard was developed by Borg & Co and eceee as part of the ODYSSEE-MURE project.

Graphic design: Björkman & Mitche!!

More information

https://www.odyssee-mure.eu/data-tools/scoring-efficiency-countries.html

european council for an energy efficient economy

Co-funded by the CET LIFE programme of the European Union