ODYSSEE-MURE Fit4-55 (2022-2025)
Monitoring the Energy Efficiency Pillar for Climate Neutrality

Second regional meeting, ODYSSEE-MURE, 25-26 September 2024, Rome

Round table on the key points of six policy briefs

Ademe, Enerdata, CRES, IEECP, STEM, ENEA

This project has received funding from the European Union's LIFE programme under grant agreement No. 101075902

Agenda

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Policy briefs on the topic “targets”

1. Energy efficiency tends in transport in EU countries (Enerdata)
2. Overall indicators for Greece and the distance to targets (CRES)
3. Recent trends in energy efficiency in the EU (Enerdata & Fraunhofer)

Policy briefs on the topic “public buildings”

1. The exemplary role of public buildings (IEECP)
2. The role of municipal energy counsellors in Sweden (STEM)
3. Incentive schemes for energy efficiency in buildings (ENEA)

Introduction into the topic targets

Didier Bosseboeuf, Ademe

This project has received funding from the European Union's LIFE programme under grant agreement No. 101075902

Introduction into the topic “targets”

ODYSSEE-MURE

Policy brief

January 2024

Energy efficiency trends in transport in EU countries

Lead authors: *Bruno Lapillonne, Estelle Payan and Zineb Raji (Enerdata)*

Reviewers: *Lena Kappler (Fraunhofer ISI)*

Lower energy efficiency in transport than expected

- Transport lags behind the other sectors in terms of energy efficiency improvements.
- Energy efficiency progress for cars has much deteriorated since 2019, mainly due to behavioral factors (decreasing occupancy rate). Cars absorb around half of transport energy consumption.
- The transition to alternative fuels is hardly visible in consumption but has accelerated since 2020, with a rapid penetration of electric cars.
- Trucks and LDV have better results than cars and represent half of total energy savings in transport, much more than their share of consumption (31%).
- Only very few countries have managed to raise the share of efficient modes of transport (public vs cars for passenger, or rail and water vs trucks). The Covid crisis has much reduced the share of public transport in 2020 and 2021.
  - For freight, a few countries have experienced a shift from road to rail and water: Spain (+3 pts), then Finland and Italy (+1 pt) .
  - For passengers, progression of the share of public transport in 8 countries, especially in Sweden (+5 pts) and Slovakia (+4 pts).
- All these factors explain why consumption and emissions are back, since 2014, to their trend before the financial crisis.

Energy efficiency trends in transport in the EU

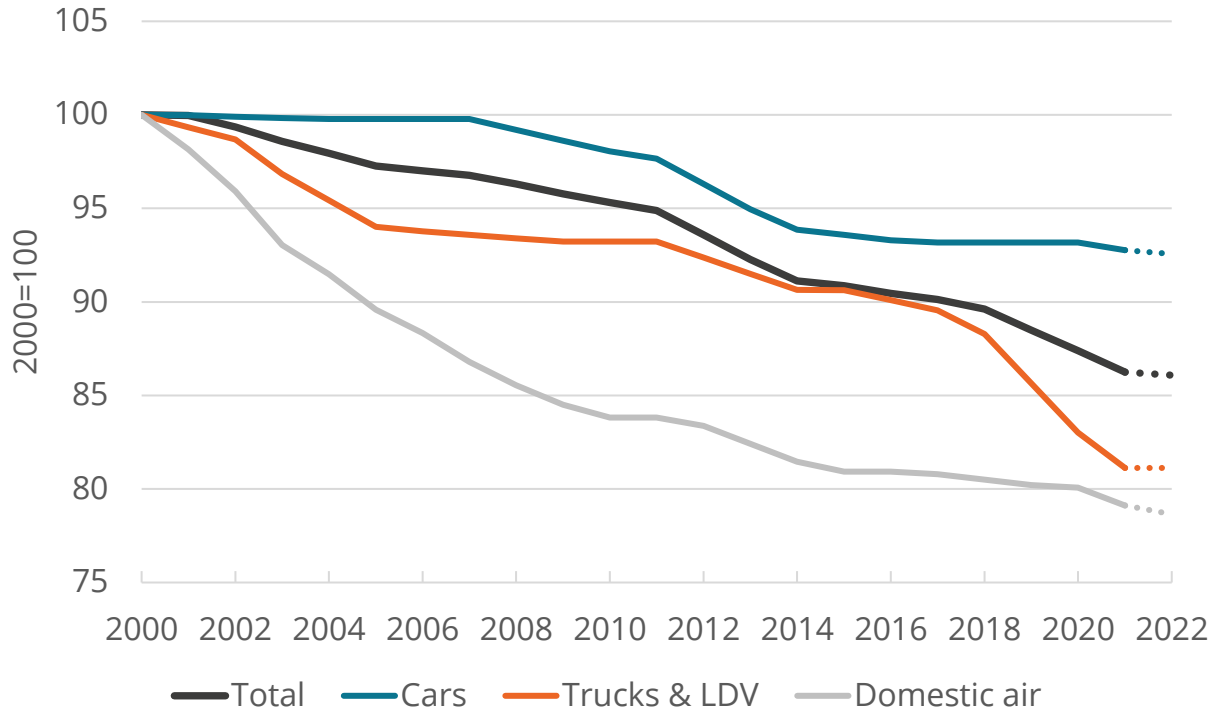
The energy efficiency of transport **improved by 0.7%/year** since 2000 in the EU (i.e. by 13% compared to 2000 level).

Slight progress for cars since 2013.

Energy efficiency progress has been **significant for trucks and light vehicles since 2012**, after no progress between 2008 and 2012 following the financial crisis (less efficient operation of trucks with lower load and empty running).

Greater progress was achieved for domestic air transport.

Energy effiency index by mode of transport in the EU



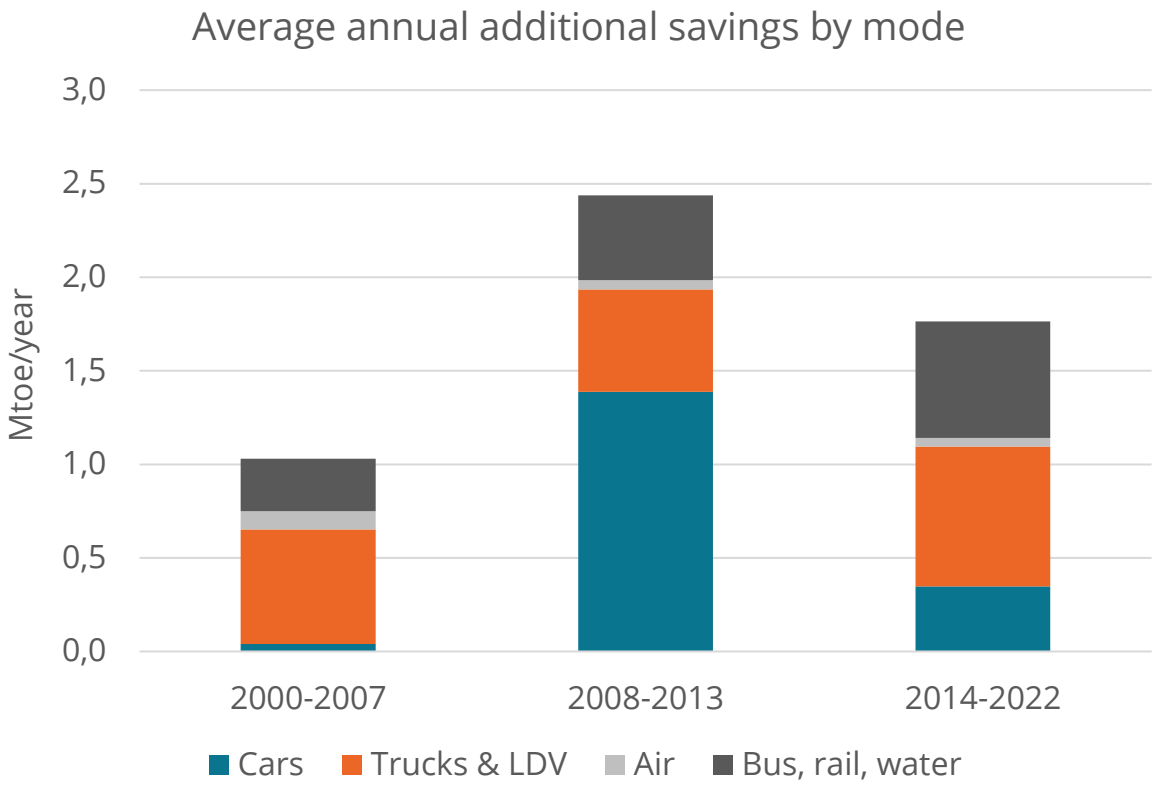
Only most important modes and vehicles are represented.
Sources: ODYSSEE (2000-2021), Enerdata (2022).

Trends in energy savings

Energy efficiency progress has saved **every year** since 2000 an additional volume of around **1.7 Mtoe**. Annual savings have decreased by **40%** since 2014 at EU after a peak at 2.4 Mtoe/year over 2008-2013.

Cumulated since 2000, these savings reached **38 Mtoe** in 2022 (i.e. 13% of transport consumption): without these savings, transport consumption would have been **13% higher**.

Trucks and LDV are over-represented, with 40% of total savings while they represent only a third of transport consumption. Conversely, savings of cars are much lower than their share in consumption (30% vs 50%), which is all the more **surprising as most measures target cars** (as well as LDV).



Sources: ODYSSEE (2010-2021), Enerdata (2022).

Overall indicators for Greece and the distance to targets

Dimitris Mezartasoglou, CRES

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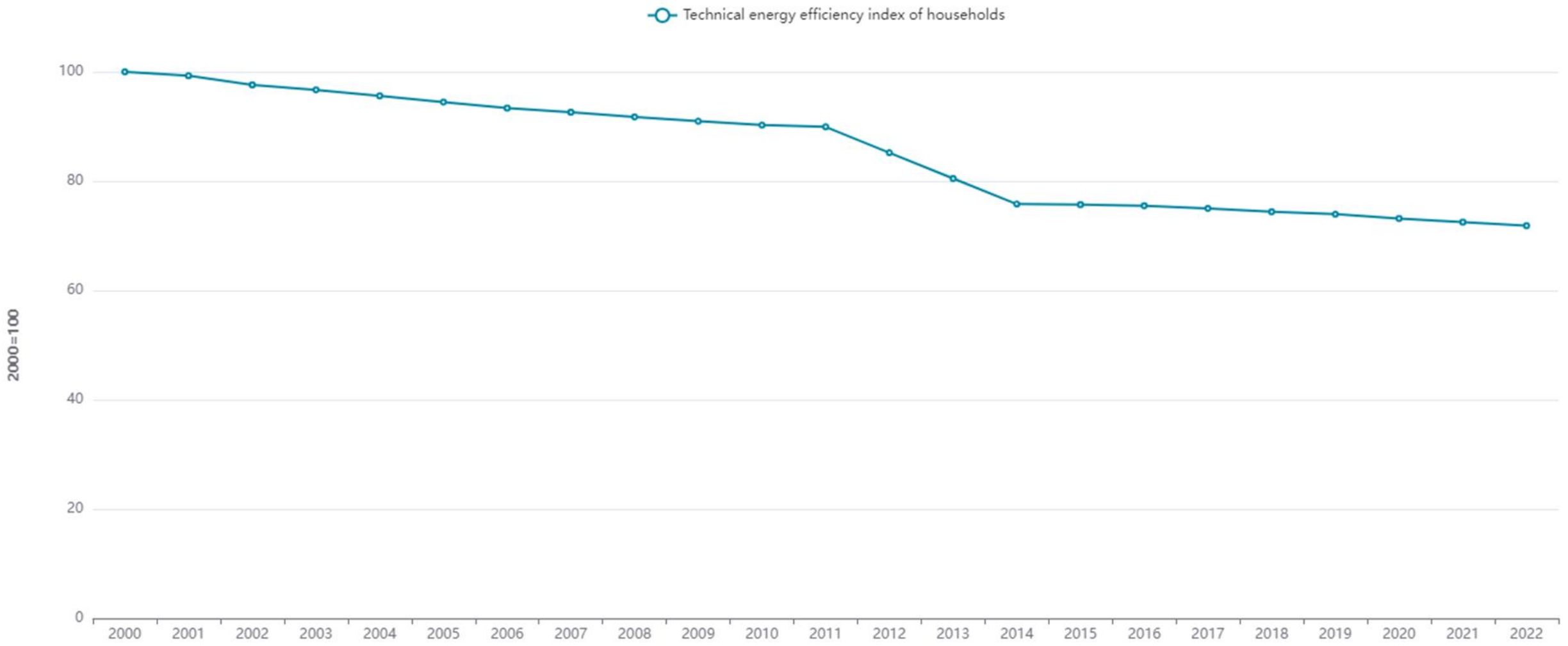
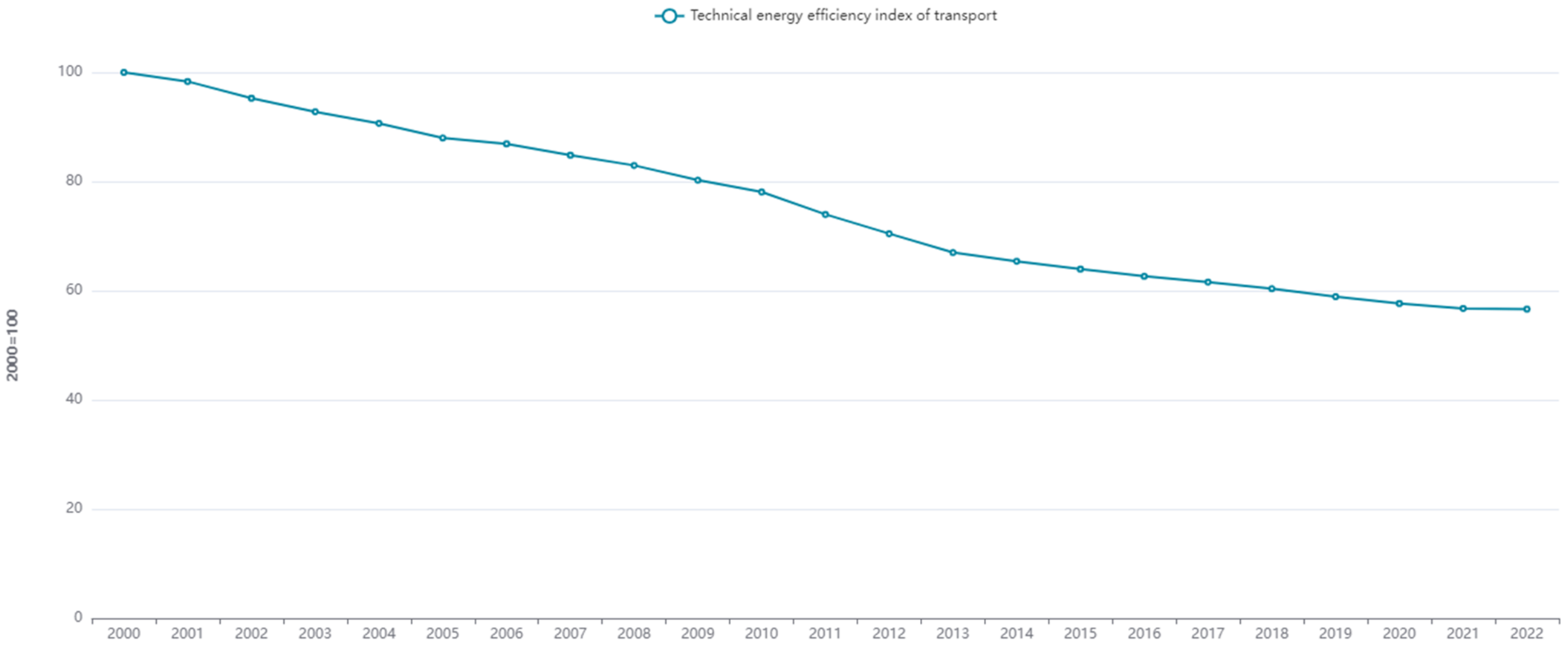
Energy Efficiency Index in Greece's Residential Sector, 2000-2022



Energy Efficiency Index in Greece's Transport Sector, 2000-2022



Energy Efficiency Index in Greece's Industrial Sector, 2000-2022

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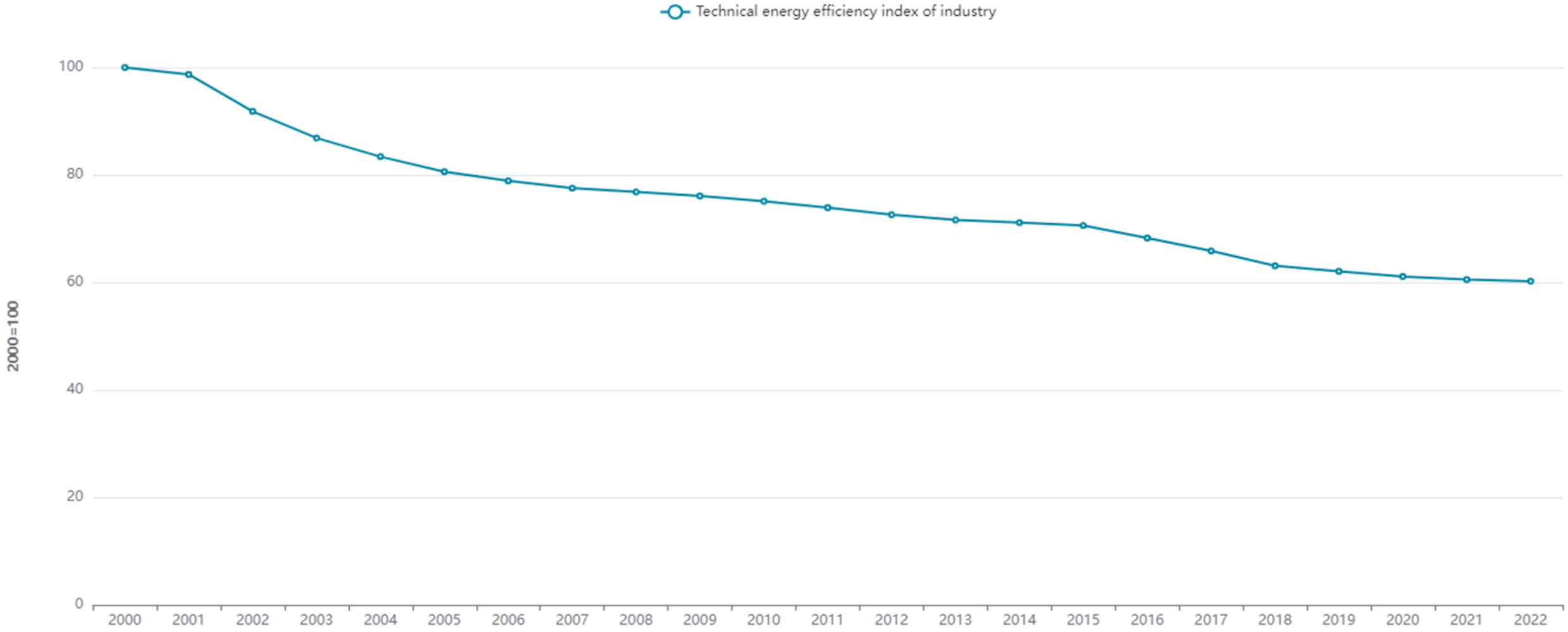

Greece's 2030 Energy Efficiency Target and Current Status

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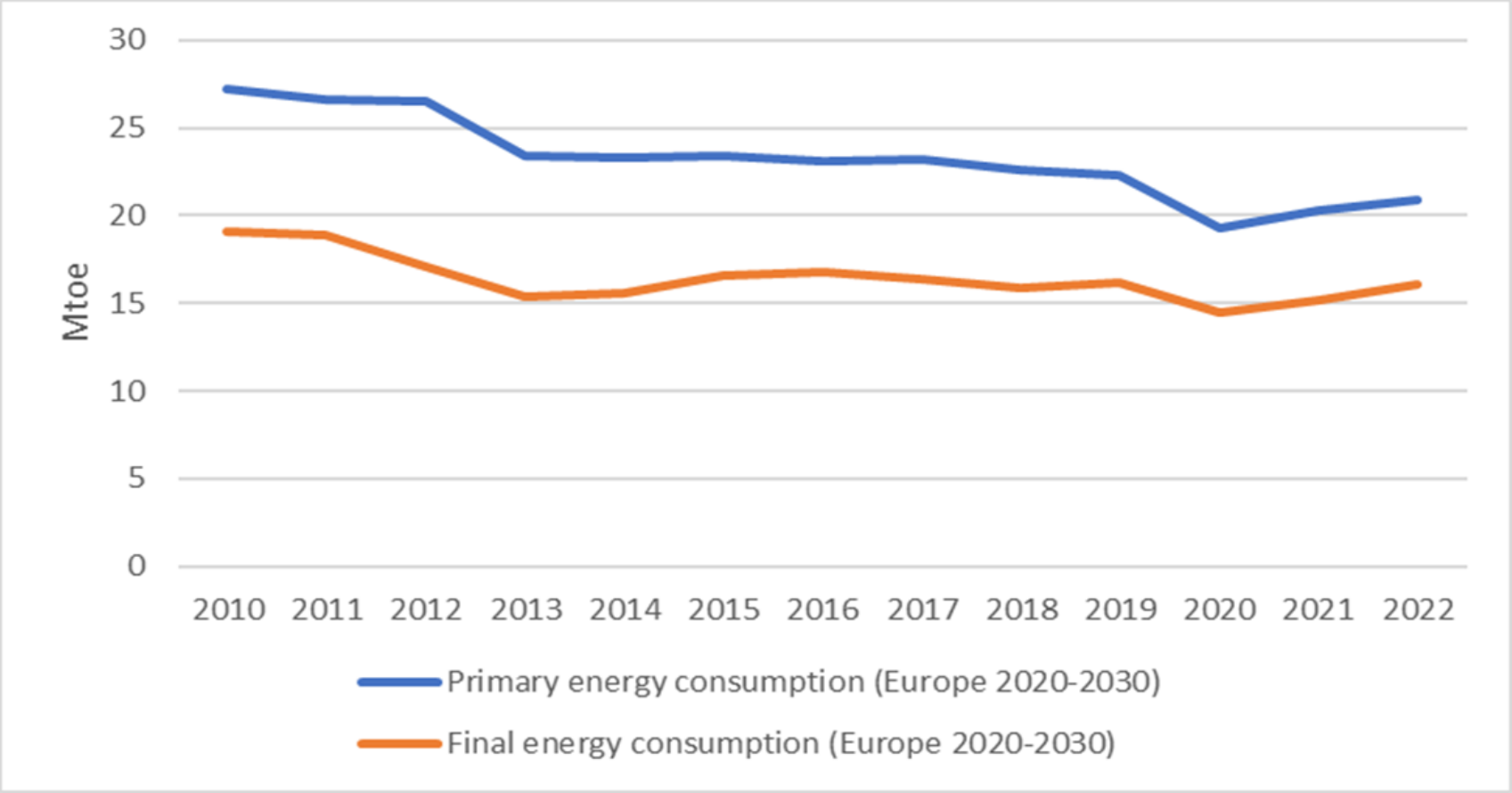

Mtoe	2020 status	2022 status	2030 targets
Primary energy consumption	19,2	20,9	17,6
Final energy consumption	14,4	16,1	15,2

Progress to Energy Efficiency Targets in Greece

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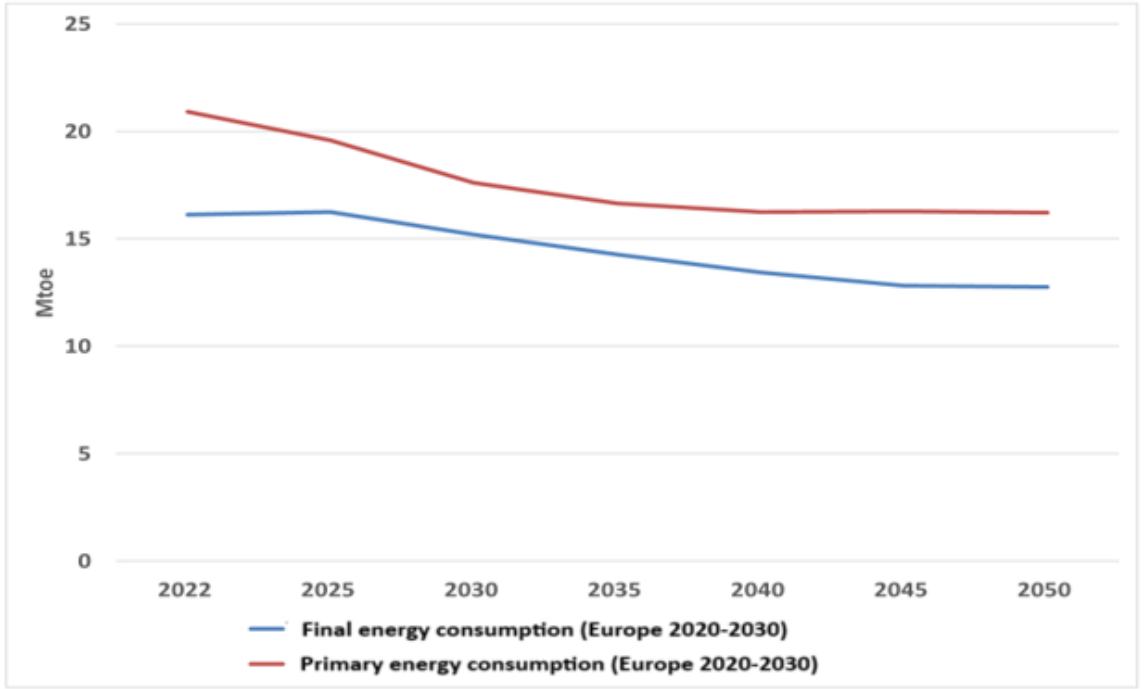
Mtoe	Statistical data			Projections			
	2015	2020	2022	2030	2035	2040	2050
Energy Efficiency: PEC	23.4	19.2	20.9	17.6	16.5	15.9	16.3
Energy Efficiency: FEC	16.6	14.4	16.1	15.2	14.1	13.4	12.2



Source: Greece's NECP, August 2024

Fraunhofer ISI

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Policy brief

July 2024

Recent trends in energy efficiency in the EU

Lead authors: *Bruno Lapillonne, Estelle Payan (Enerdata), Wolfgang Eichhammer (Fraunhofer ISI)*

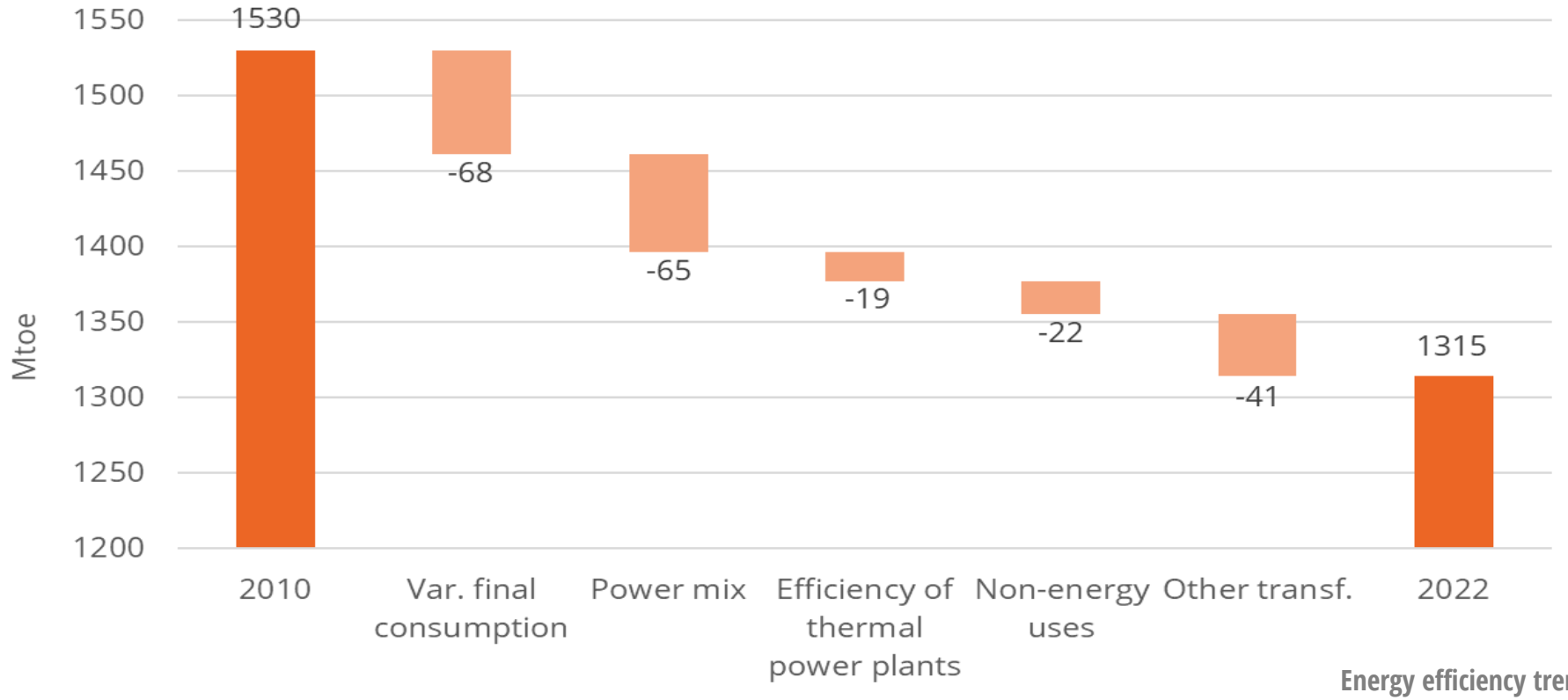
Reviewer: *Minas Iatridis (CRES)*

Increasing decoupling between final and primary consumption trends

Between 2010 and 2022, **total energy supply decreased much more than final consumption**: -215 Mtoe compared to -68 Mtoe at EU level. Almost **60%** of this difference come from changes in the power sector:

- A **higher share of renewables** (+17 pts) reduced total supply by 65 Mtoe.
- An **improved efficiency of thermal generation** (+2.6 pts), with a shift from coal to gas , reduced it further by 19 Mtoe.

Variation in total energy supply at EU level (2010-2022)

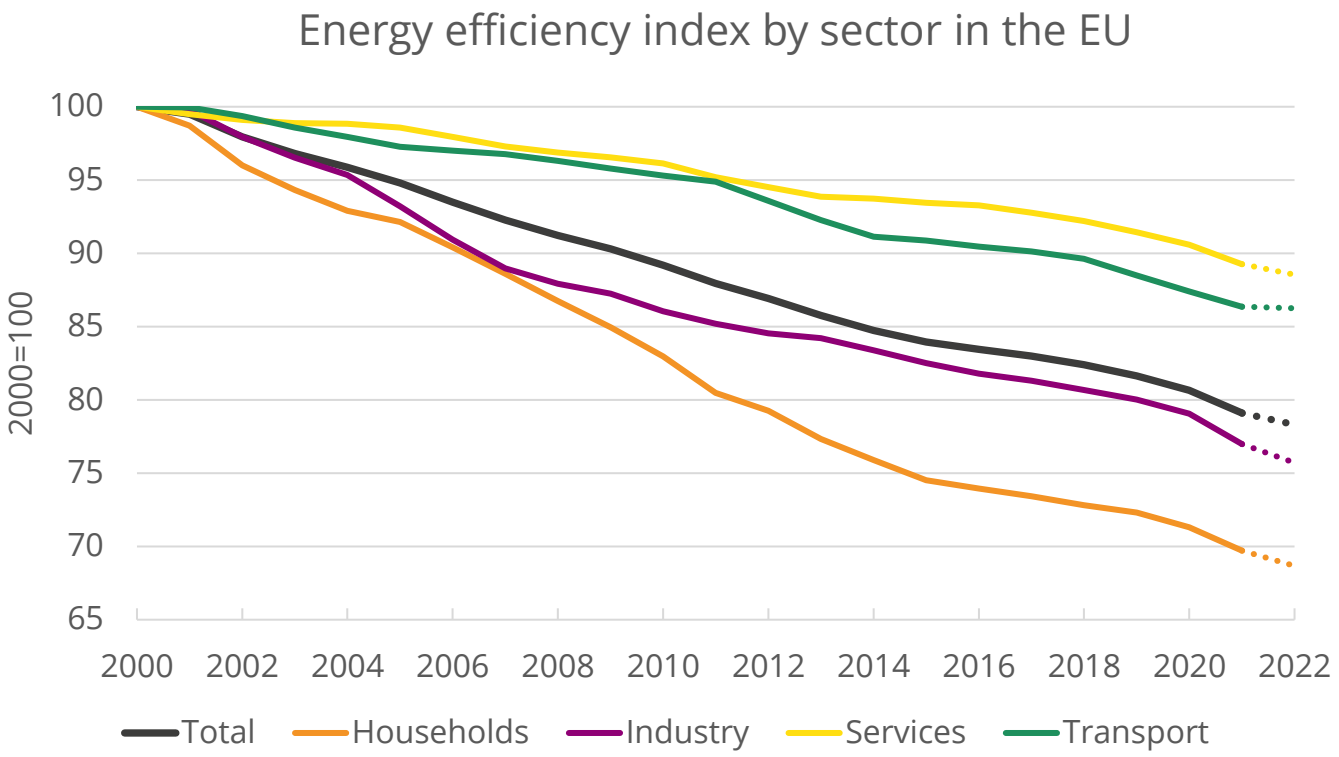


Energy efficiency **progress** of final consumers has accelerated since 2019

Energy efficiency of final consumers has improved by **1.1%/year** since 2000 in the EU (i.e. by 22%). These improvements have accelerated **since 2019** (**1.4%/year**), after a slow progression over 2014-2019.

Largest improvements for **households** (31%, 1.7%/year), followed by **industry** (24%, 1.3%/year).

Transport and services are lagging behind with **0.7%/year** and **0.6%/year** improvement, respectively.

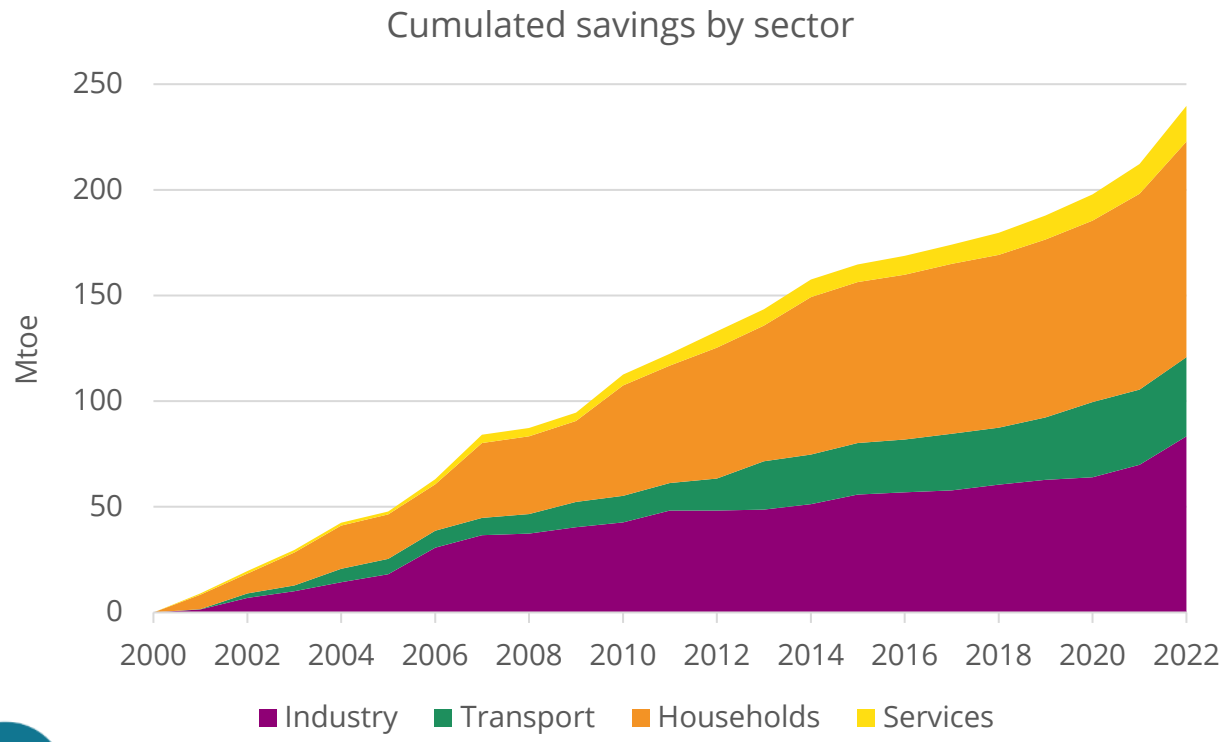


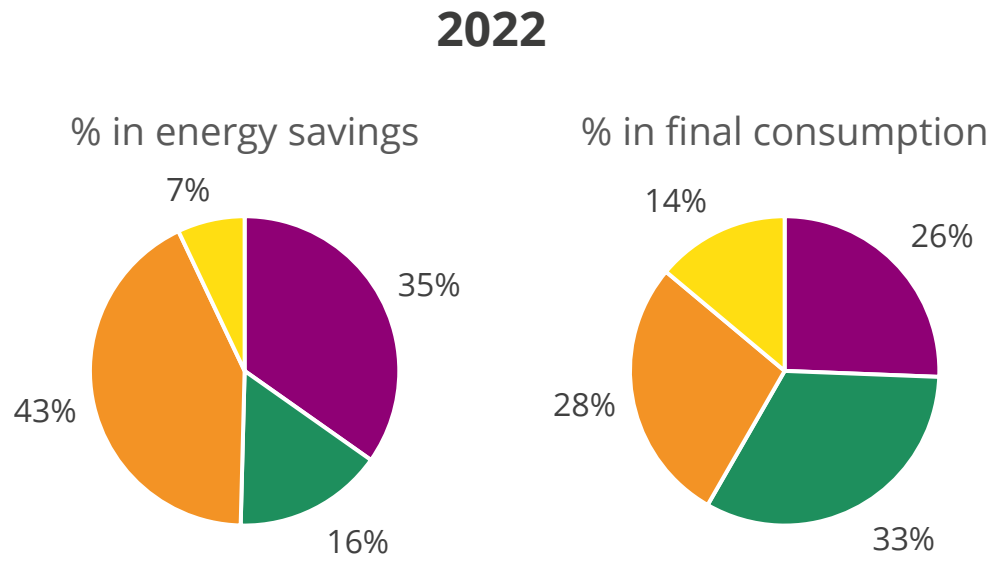
Source: ODYSSEE, ODEX indicators *https://www.indicators.odyssee-mure.eu/energy-saving.html*

Energy savings reached 240 Mtoe in the EU in 2022

Without these savings, final consumption would have been **27% higher**.

Together, **industry** and **households** accounted for **77%** of these savings while representing 53% of final consumption. Transport and services lag behind as they only accounted for 16% and 7% of savings, respectively, shares twice lower than their shares in final consumption .

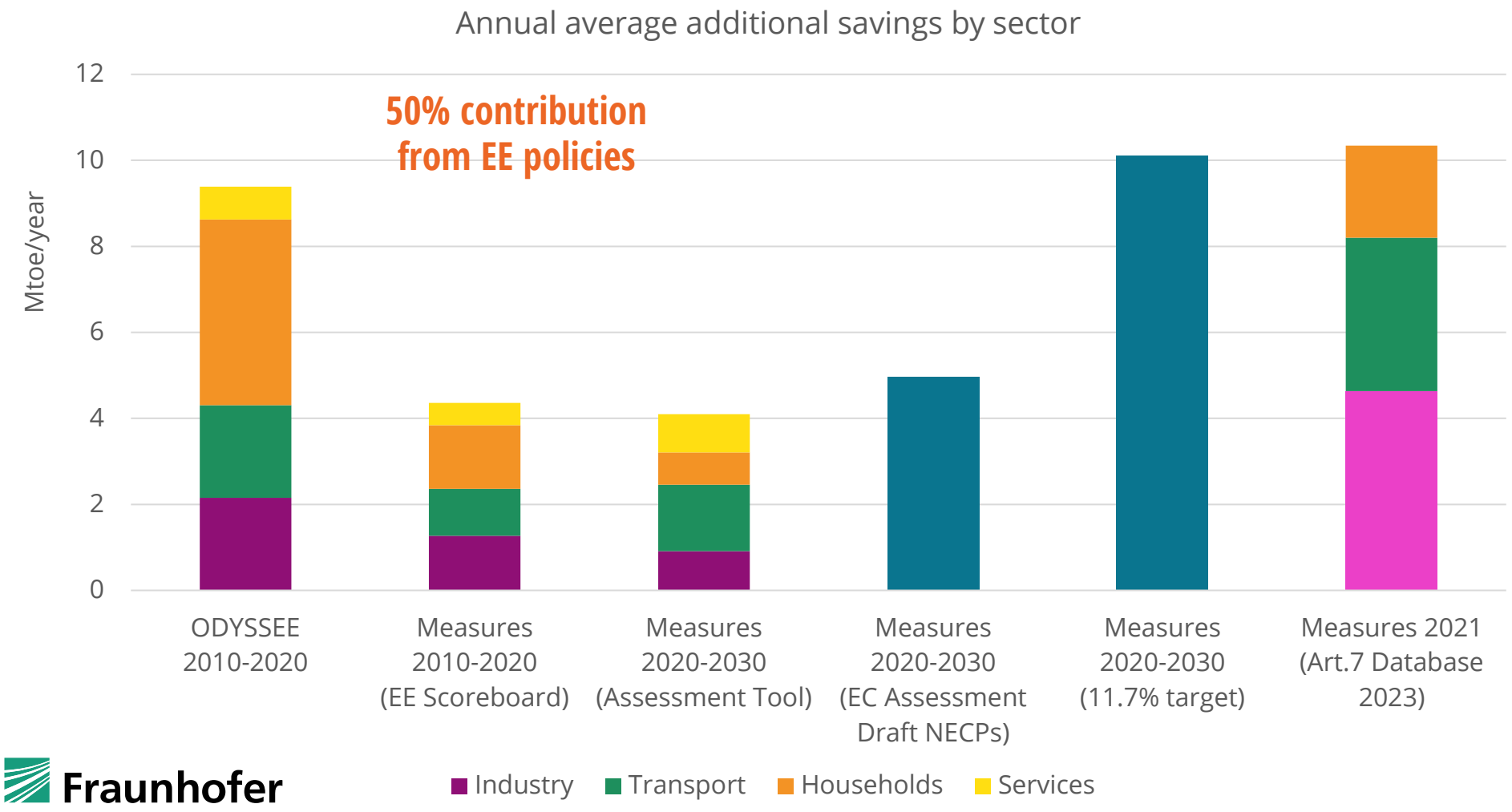




Source: ODYSSEE

Energy efficiency policies accounted for half of savings since 2010

- Over the period 2010-2020, EE policies have saved 4.4 Mtoe/year (50% of top-down savings).
- The Policy Assessment Tool shows savings of 4.1 Mtoe/year by 2030, which is close to the EU Commision' s analysis of Draft NECPs (~ 5 Mtoe/year) .
- Art. 7/8 savings for 2021 indicates a substantial increase in measure impacts (in line TD savings).



Introduction into the public buildings

Jean-Sébastien Broc, IEECP

This project has received funding from the European Union's LIFE programme under grant agreement No. 101075902

Introduction into the topic “public buildings / public sector”

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New EED → new/reinforced provisions on public sector

- ➢ Higher ambition
- ➢ Stronger role to showcase the benefits from energy efficiency improvements

Experience available

- ✓ Plans and monitoring of central government buildings (e.g. PREPAC in Italy)
- ✓ Various support schemes for public buildings (e.g. Conto Termico in Italy)
- ✓ Providing free neutral energy advice (e.g. Sweden’s municipal energy counsellors)

Challenges

- Budget restrictions vs. large investments needed
- Covering all publicly-owned buildings
- Reduction in overall energy consumption (not limited to buildings)
- Exemplary role to boost EE markets beyond the public sector

The exemplary role of public buildings

Jean-Sébastien Broc, IEECP

This project has received funding from the European Union's LIFE programme under grant agreement No. 101075902

The exemplary role of public buildings (1) (IEECP)

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Key changes in the EU policy framework

- EED Art.5: **-1.9%/year in public sector's final energy consumption** (vs. 2021)
- EED Art.6: **renovation obligation extended to ALL publicly-owned buildings** (vs. central gov. buildings = about 10% of public buildings) + objective to achieve nearly zero emission buildings
- EPBD Art.3 (+Annex II): **National Building Renovation Plans** (cf. inventory + measures)
- EPBD Art.7: From 2028 new buildings owned by public bodies are **zero-emission buildings**
- EPBD Art.9: **MEPS for non-residential buildings** (including public buildings) + national **trajectory for the progressive renovation of the residential building stock** (including social housing)
- EPBD Art.10 : Existing public buildings to install solar energy, on the largest public buildings (2.000 m²) from December 2027 from December 2027, progressively reducing the threshold (250 m²) until December 2030

The exemplary role of public buildings (2) (IEECP)

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Good practices

- Monitoring and energy management

  Croatia: **energy management information system**

  Ireland: **monitoring & reporting**

- Agreements or obligations

  Finland: **Energy Efficiency Agreement for Municipalities**

  Netherlands: **MEPS for offices**

- Dedicated body or national roadmap

  Slovenia: **Project Office for Energy Renovation of Public Buildings**

  Netherlands: **Roadmaps to decarbonized public buildings**

  + PURE-NET (European network of public real estate bodies)

- Multiple sources of funding

  Latvia: **municipal development programmes** (ERDF 2014-2020)

  Spain: **PIREP** (Programme to Promote the Rehabilitation of Public Buildings of Local Entities ; part of Recovery Plan)

The exemplary role of public buildings (3) (IEECP)

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Other / further topics

- **Support to local authorities**: in MURE, 20 measures specifically focused on municipal buildings (in total, at least 58 measures with municipal buildings in the scope)
- **New buildings**: added value to demonstrate feasibility (e.g. Brussels' Exemplary Buildings programme)
- **Energy Performance Contracting, ESCo models / PPP**: difficulties to scale up / possible to develop internal contracting or use dedicated financing body (e.g. Salix Finance LTD in GB)
- **Sufficiency measures**: indoor temperature (SER-GR4550 ; SER-FR1539 ; SER-IT1669), optimization of area per employee (SER-FI1519), or lighting off at night (SER-FR1548)

- Other types of good practices?
- Key issues to be addressed in the next project?

The Energy- and Climate Counsellors of Sweden

Lead authors: *Rurik Holmberg (Swedish Energy Agency), Janina Hirsch (Swedish Energy Agency)*

Reviewers: Jean-Sébastien Broc (IEECP)

This project has received funding from the European Union's LIFE programme under grant agreement No. 101075902

The role of municipal energy counsellors in Sweden (STEM)

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Background

- Municipal energy- and climate counsellors have for almost three decades been providing households, organisations and SMEs with neutral energy advice (for example energy efficiency, heating and insulation)
- There are counsellors in almost every municipality, and they are financed by the Swedish Energy Agency
- Municipalities generally get support based on population, so bigger municipalities can have several counsellors while smaller municipalities may share a counsellor
- The network cover all of Sweden – which is a large territory with different conditions both in climate and demography
    - Local conditions are important!

The role of municipal energy counsellors in Sweden (STEM)

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Challenges

- The system was implemented before the demand for measuring actions for energy efficiency
    - No built-in mechanism for measuring kWh saved
    - The energy efficiency that advisors contribute to is not quantified
- The demand for advice increased sharply during the energy price crisis – from 15 800 appointments during 2021 to 25 500 during jan-oct 2022
    - Indicates that they continue to play an important role in the eyes of the general public
- The system have been evaluated several times
    - Conclusion: The counsellors contribute to concrete energy efficiency measures to an unknown extent
    - In a 2022 survey more than 90% of advice-seekers said that they got the answer to their question and a similar share said that they received important information for their decision-making
    - More than 60% of the responders said that the advice led to actual measures on their side

The role of municipal energy counsellors in Sweden (STEM)

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Summary and future perspectives

- The counsellors have an important role
- It has been requested that the energy- and climate counsellor's reporting should better align with EED by quantifying the results of their activity
  - It would require that the counsellor follow up meetings to guarantee that measures were taken
  - It should also be noted that it is impossible to say if measures were taken due to the energy counsellors advise or due to other reasons
  - It should once again be noted that counsellors do not only work with energy efficiency measures
- We know that the counsellors played a crucial role in the roll-out of heating pumps in Sweden
- The counsellors are important to counter-weight commercial interests

Incentive schemes for energy efficiency in buildings

Alessandro Fiorini, ENEA

This project has received funding from the European Union's LIFE programme under grant agreement No. 101075902

Incentive schemes for energy efficiency in buildings (ENEA)

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Key points: state of play

- **A large share of the Italian building stock is old and energy inefficient**:
  - EPC of buildings built within 1946-1975: 78% in classes E, F and G
  - Residential buildings built before 1980: 73% private owners, 55% social housing
- **Overall, public buildings are not a "virtuous" exception in terms of energy performance (2022 data)**:
  - EPC class residential/non-residential: E (16%|19%), F(28%|14%), G(31%|16%)
  - Most of non-residential buildings: schools, offices, commercial activities
- **Progress (EED2 targets art. 5, NECP – June 2023): renovated surface**
  - 2021 (million sqm): actual 3.22 vs. target 3.6 (average 2014-2021: 2.4, target 2030: 6.4)
  - Estimated impact of the EED3: approximately 300 million sqm

Incentive schemes for energy efficiency in buildings (ENEA)

ODYSSEE-MURE

Key points: tools (1/2)

White certificates	• **Type**: Obligation scheme. Granted by the GSE Gestore Servizi Energetici (GSE) and transferred by the Gestore dei Mercati Energetici (GME), for each unit of energy saved, expressed in toe • **Interventions**: High-efficiency co-generation; generation of energy savings beyond the lifetime; interventions regulated by the Ministerial Decree (MD, Ministry of the Economic Development, Ministry of Regional Affairs) n.106 of 20 May 2015. • **Public sector**: For lighting and transport. Accessible directly (whether the requirements hold) or through the intermediation of distribution companies or ESCOs.
Thermal account	• **Type**: Incentive granted by GSE. Introduced by Minsterial Decree (MD) 28/12/2012. • **Interventions**: small-scale EE and RES projects (insultation, heating devices, lighting systems, insulation, solar thermal, etc.). Support from 40% to 65% of the actual expenditure, according to the type of intervention • **Public sector**: exepnditures for EPC and energy audits are fully covered

Incentive schemes for energy efficiency in buildings (ENEA)

ODYSSEE-MURE

Key points: tools (2/2)

National Fund for Energy Efficiency	• **Type**: Revolving fund, in 2 parts: 1. granting of guarantees on single financing operations (30% of resources); 2. lending of discounted rate credit (70% of resources). Introduced by the Law-Decree 102/2014, ruled by MD 22/12/2017 and 05/04/2019. Incentives can be cumulated under the de minimis conditions. Call for proposal opened on 20/05/2019, managed by Invitalia S.p.a. NRRP dedicates sub-reform 1.1c, under Reform 1.1/M2C3.1 to reinforce the measure. • **Interventions**: Incentivises EE projects in private companies (+ESCOs) and public entities (energy consumption reduction in industrial processes; construction and extension of district heating networks; energy retrofitting of public infrastructures, including lighting); energy retrofitting of buildings • **Public sector**: Eligible
Kyoto Fund	• **Type**: Revolving fund. Introduced by the Budget Law 2007 (Law n.296 of 7 December 2006), in operation since 2012. Initial budget: EUR 600 million, (over 3 cycles). Managed by Cassa Depositi e Prestiti (CDP): low-interest preferential loans (currently at 0.25%). • **Interventions**: Energy and water efficiency projects in buildings designated for education and training activities, sport and healthcare services. • **Public sector**: Reforms: increase of the budget, partly from the REPowerEU funds, up to EUR 800 million, design of a mixed financial mechanism accessible by all Public Administrations.