ODYSSEE-MURE

Policy Measures for Industrial Energy Efficiency

Session 3: Energy Efficiency in Industry

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Agenda

1

Policy measures for industrial energy efficiency

- Scoreboard, measures and type of measures
- Link to the MURE facilities (MBs, Policy assessment)

2

Combining bottom-up and top-down

- Insights from the better data project

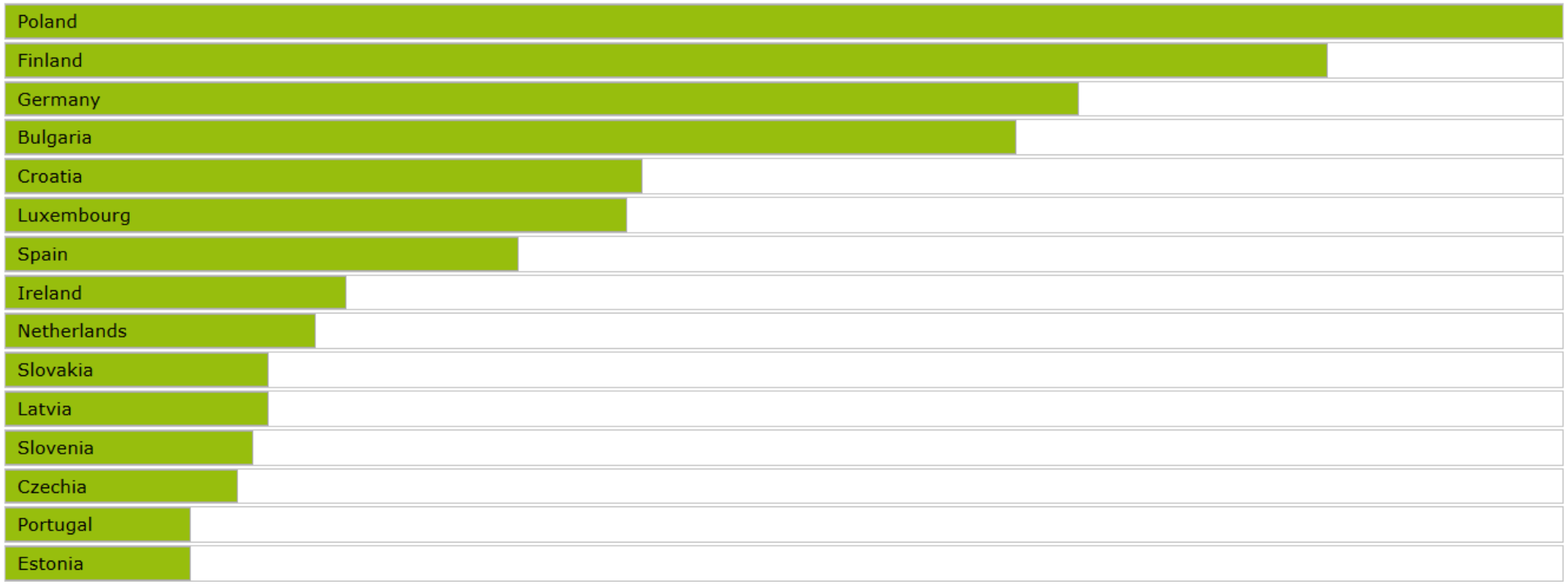
3

Example for a detailed measure evaluation

- EEE (Germany)

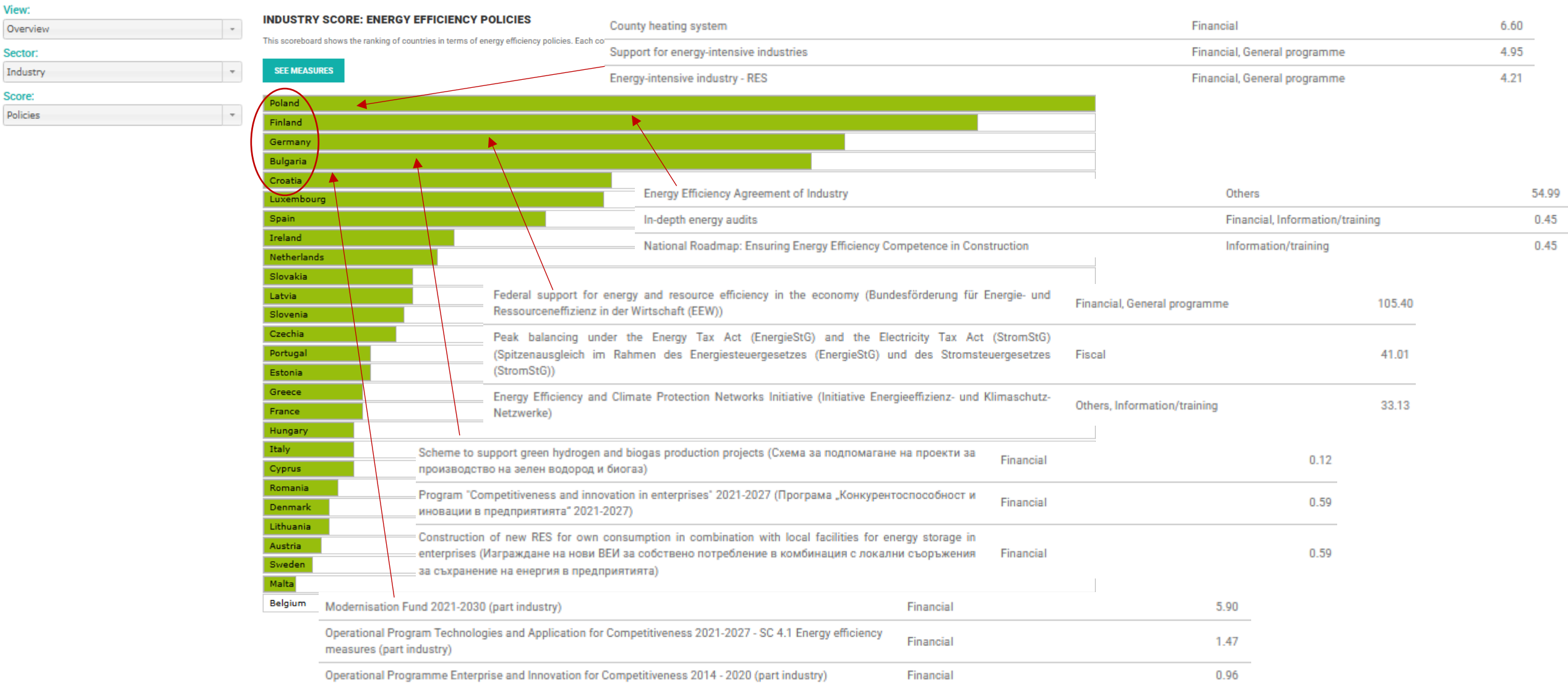
Scoreboard - Ranking

- Industry score: energy efficiency policies – Top 15



- Which measures are behind?

Scoreboard - Ranking



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

Fraunhofer ISI

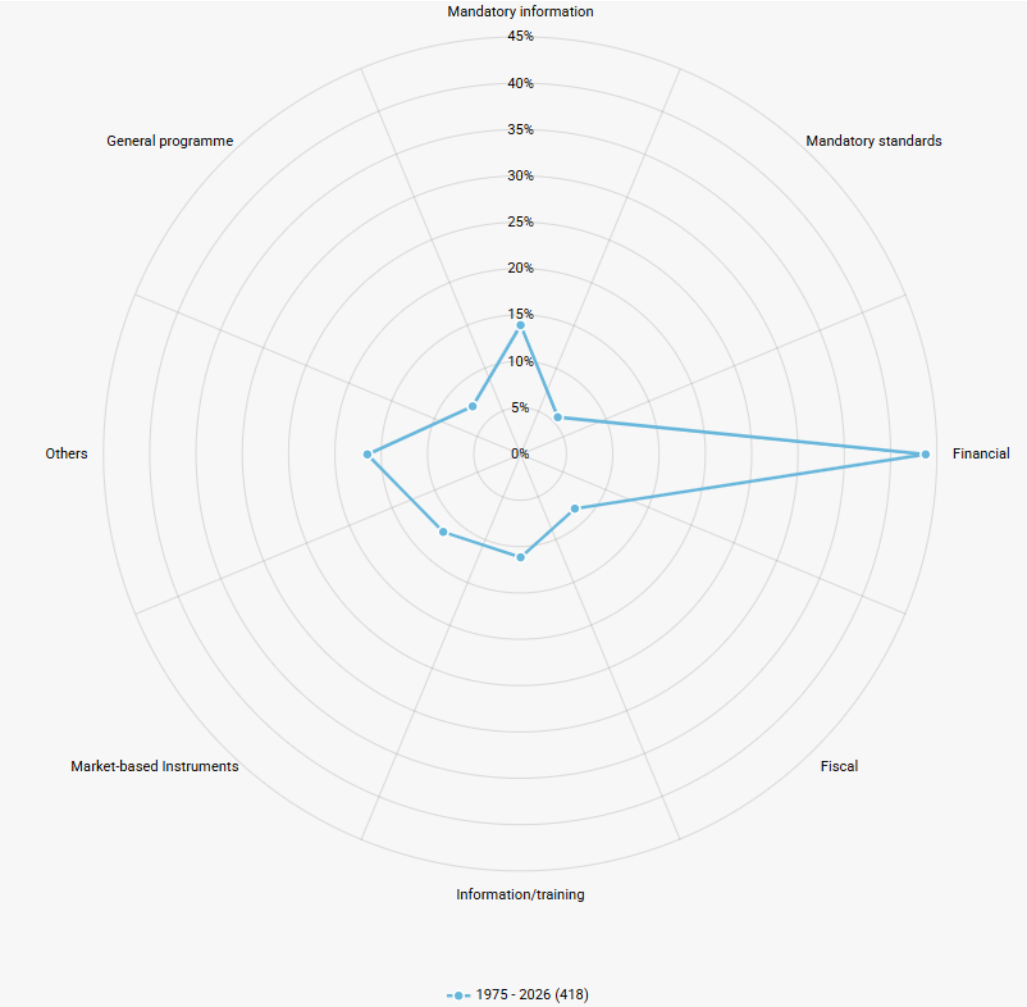
Scoreboard – Measures

- Measures with the highest impact for each country of the top 9

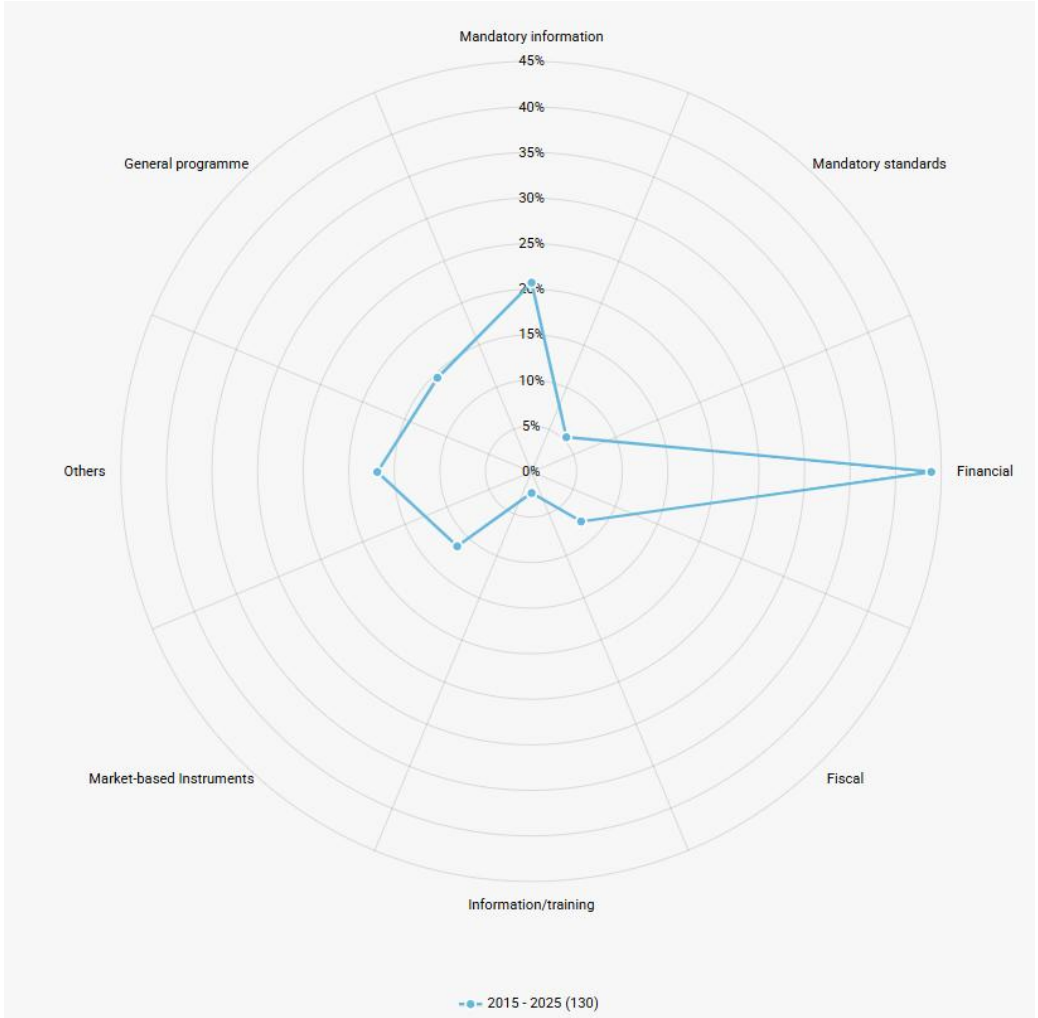
Country	Measure	Type	2030 [PJ]
Poland	ETS (Cogeneration for Energy and Industry)	Market based	151,2
Finland	Energy Efficiency Agreement of Industry	Negotiated/voluntary agreement	54,9
Germany	Federal support for energy and resource efficiency in the economy (EEE)	Funding programme	105,4
Bulgaria	2 different funding measures	Financial	HI
Croatia	Measures to increase energy efficiency by improving processes and process units		1,98
Luxembourg	Voluntary agreement between the Government and the FEDIL.	Voluntary agreement	HI
Spain	7 different funding measures	Financial	HI
Ireland	Support Scheme for Renewable Heat, EEOS	Financial, Agreement	Cross-cutting
Netherlands	National CO2 tax Accelerated Climate-related Investments in Industry Sustainable Industry Infrastructure Program	Fiscal Financial General	HI

The EE policy mix in industry

The overall policy mix in industry



The policy mix in the last 10 years (only ongoing measures)



Source: https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/radarGraph

Targeted end-uses

- Targeted end uses across all ongoing measures in MURE
  - 250 ongoing measures in total, 94 with impact evaluation, for Art. 7/8: 80 (47)

End-use	Number of measures (with impact evaluation)
All end-uses (unspecified)	194 (75)
All electric end-uses (unspecified)	16 (5)
All fuel related end uses (unspecified)	23 (7)
Process heat and electricity generation	23 (5)
Space heating	6 (1)
Process cooling	4 (0)
Electric motors and drivers	6 (2)
Lighting	5 (2)
ICT	2 (1)
Electric motors and drives, electric processes	6 (2)

Deep dive – Multiple Benefits Facility

- What are the multiple benefits of savings targeting the different end uses?
  - Multiple benefits facility → link to the MICATool

What are the multiple benefits with regard to 100 PJ energy savings on EU level in 2030 for....

... process specific improvements?

... cross-cutting technologies?

... space heating and cooling?

1 Ignoring multiple impacts undermines the cost-effectiveness of energy efficiency solutions

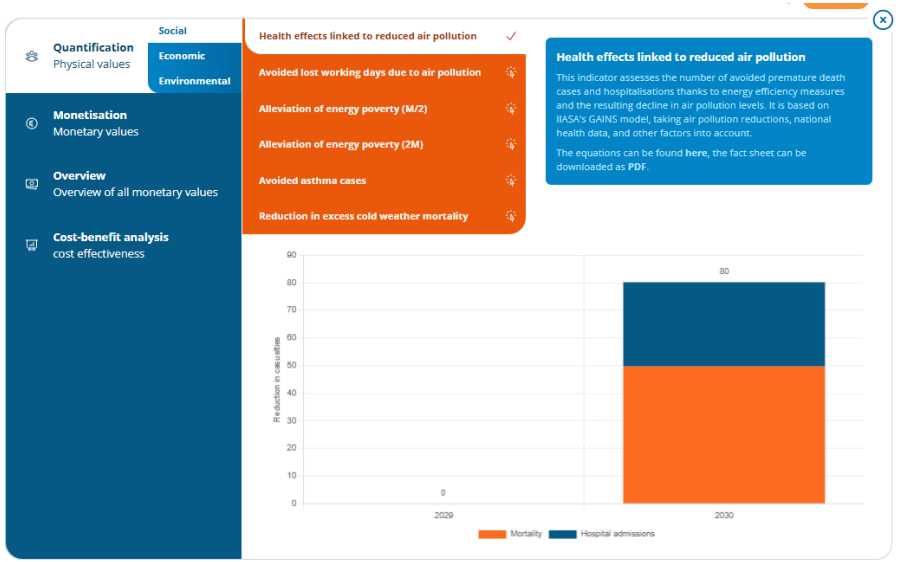
2 The EE1st principle calls for a fair comparison of energy supply and energy efficiency in energy related decisions

3 Assessment of multiple impacts, shifting the economic balance in favour of energy efficiency

Deep dive – Multiple Benefits Facility

- Example process specific savings – social MBs

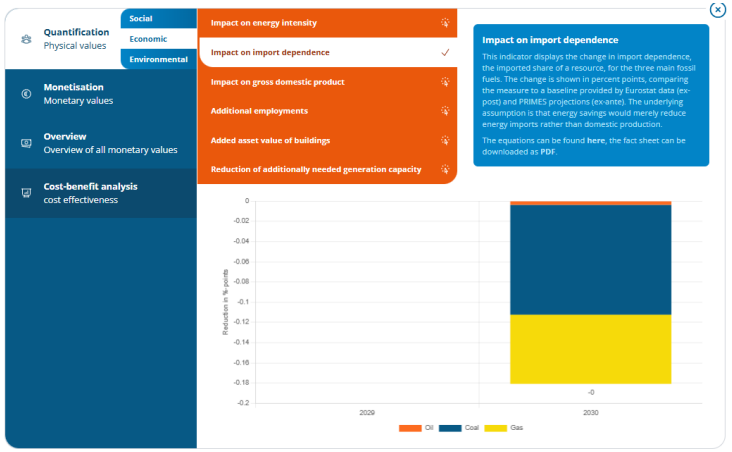
Indicator/ MB	Quantification
Health effects linked to air pollution	- Mortality: 50 - Hospitalisation: 30
Avoided lost working days	12 800



Deep dive – Multiple Benefits Facility

- Example process specific savings – economic MBs

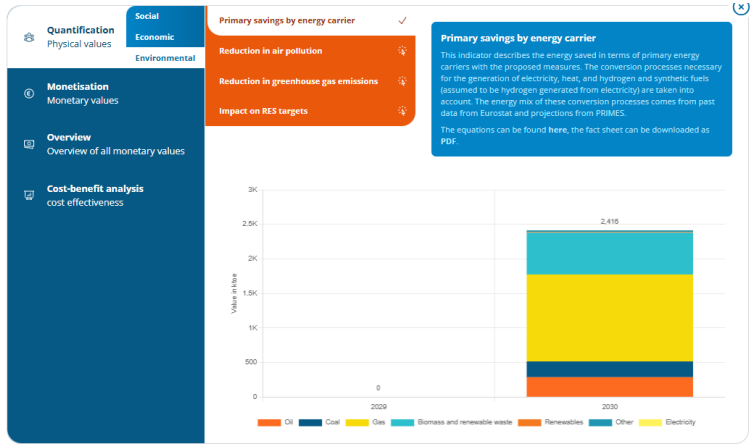
Indicator/ MB	Quantification
Impact on energy intensity	-0.16 ktoe/M€
Reduction of import dependence	-0.18 %points
Impact on GDP	3.2 Billion €
Additional employments	58 000 additional full time employment years



Deep dive – Multiple Benefits Facility

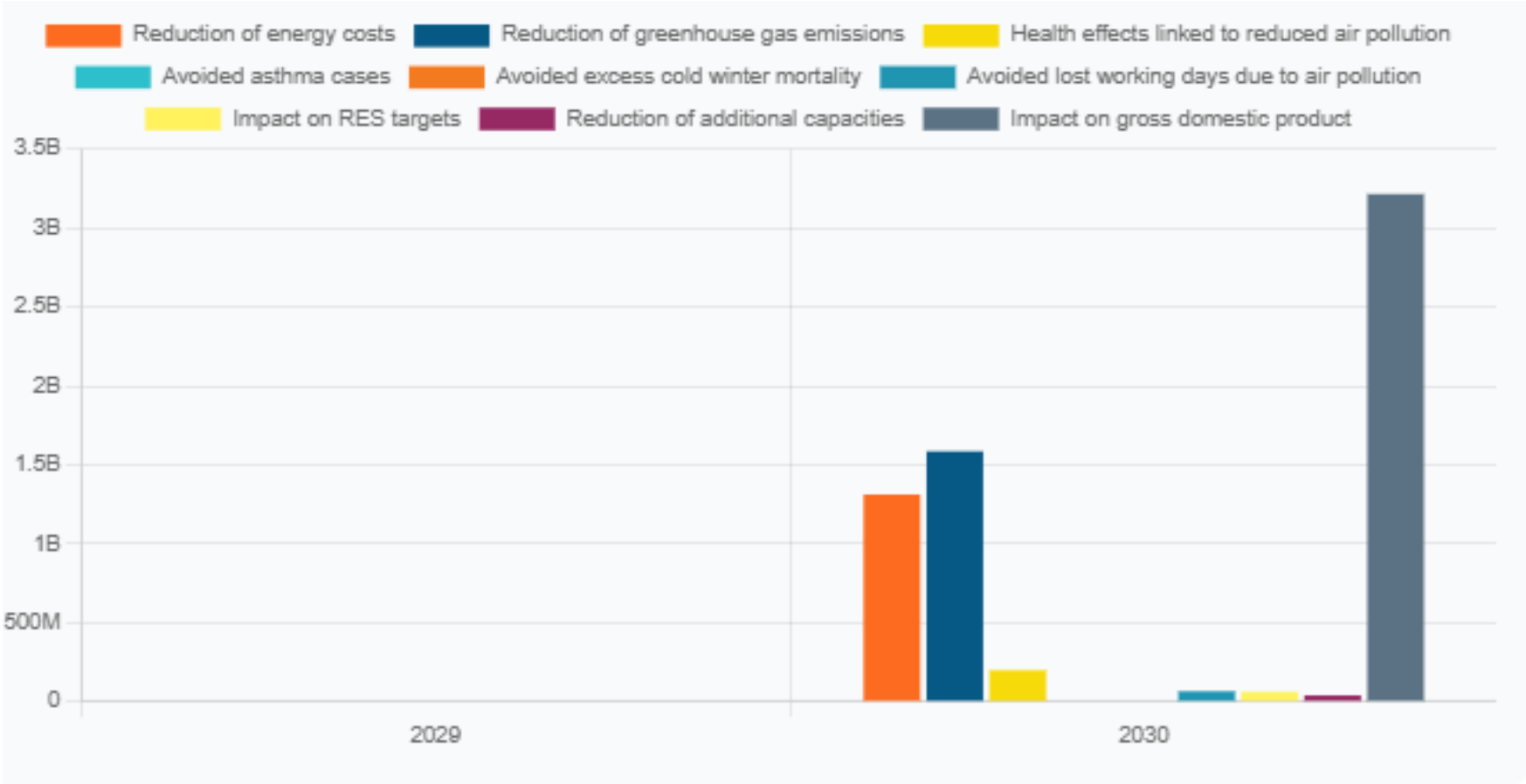
- Example process specific savings – environmental MBs

Indicator/ MB	Quantification
Primary savings by energy carrier	2400 ktoe
Reduction in air pollution	10 kt
GHG reduction	4700 kt CO2
Impact on RES targets	0.03%points



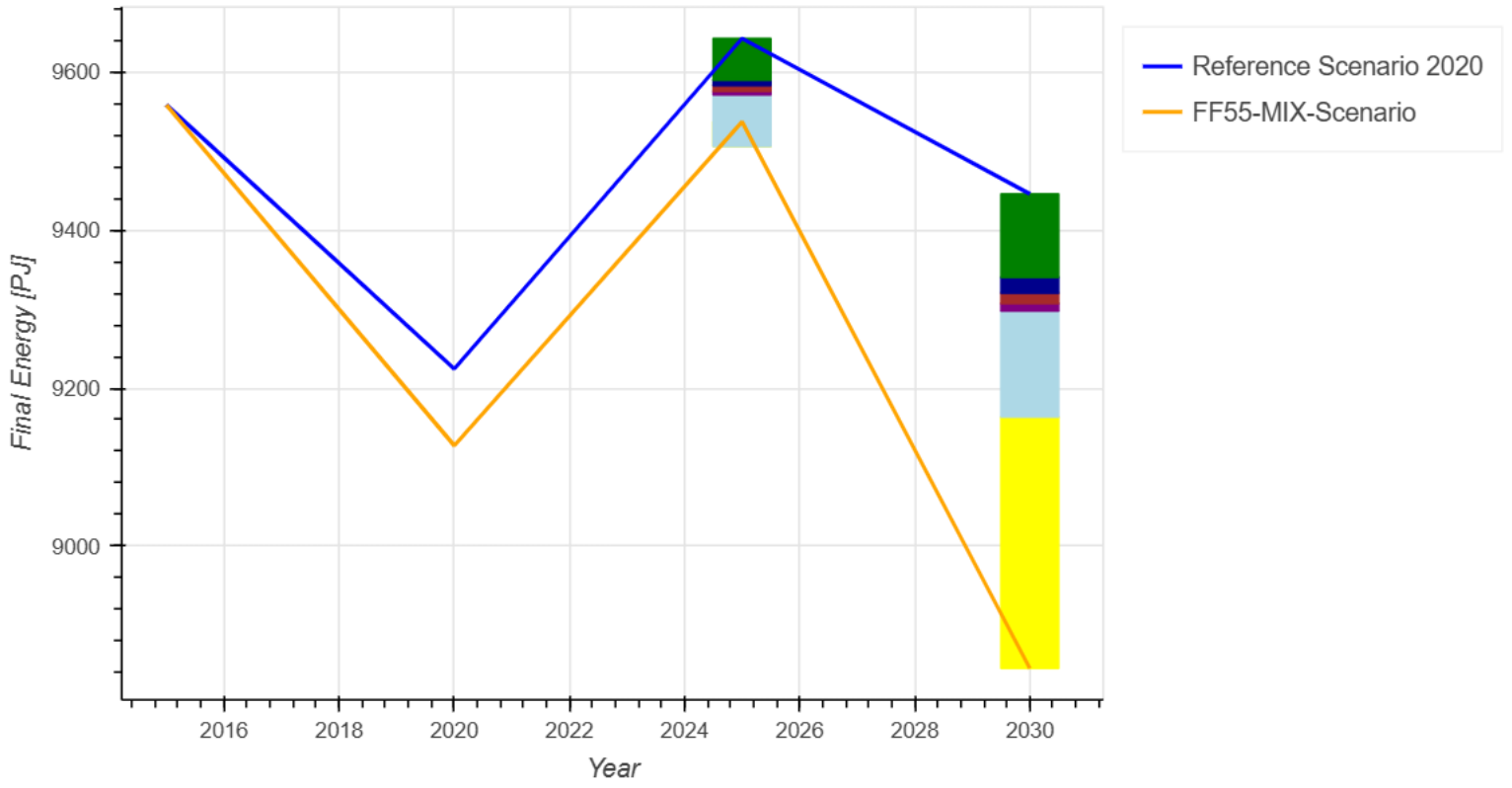
Deep dive – Multiple Benefits Facility

- Example process specific savings – monetisation



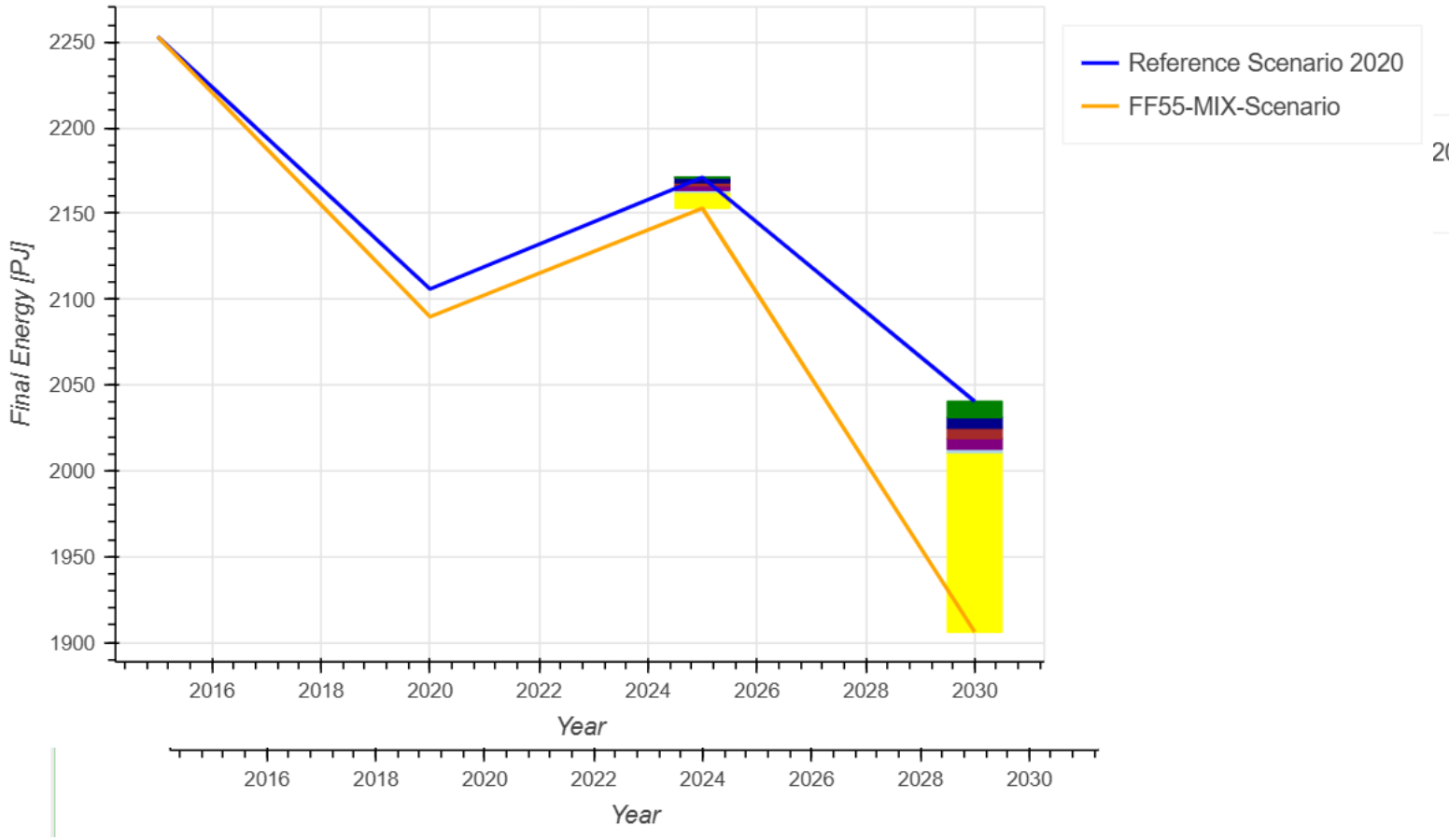
Analysis of policy measures for industrial energy efficiency with the policy assessment module

- On the EU level:
- Including Art. 7/8 and semi-quantitative savings
- Gap in 2030: 318 PJ (400 PJ with excluded semi-quantitative savings)



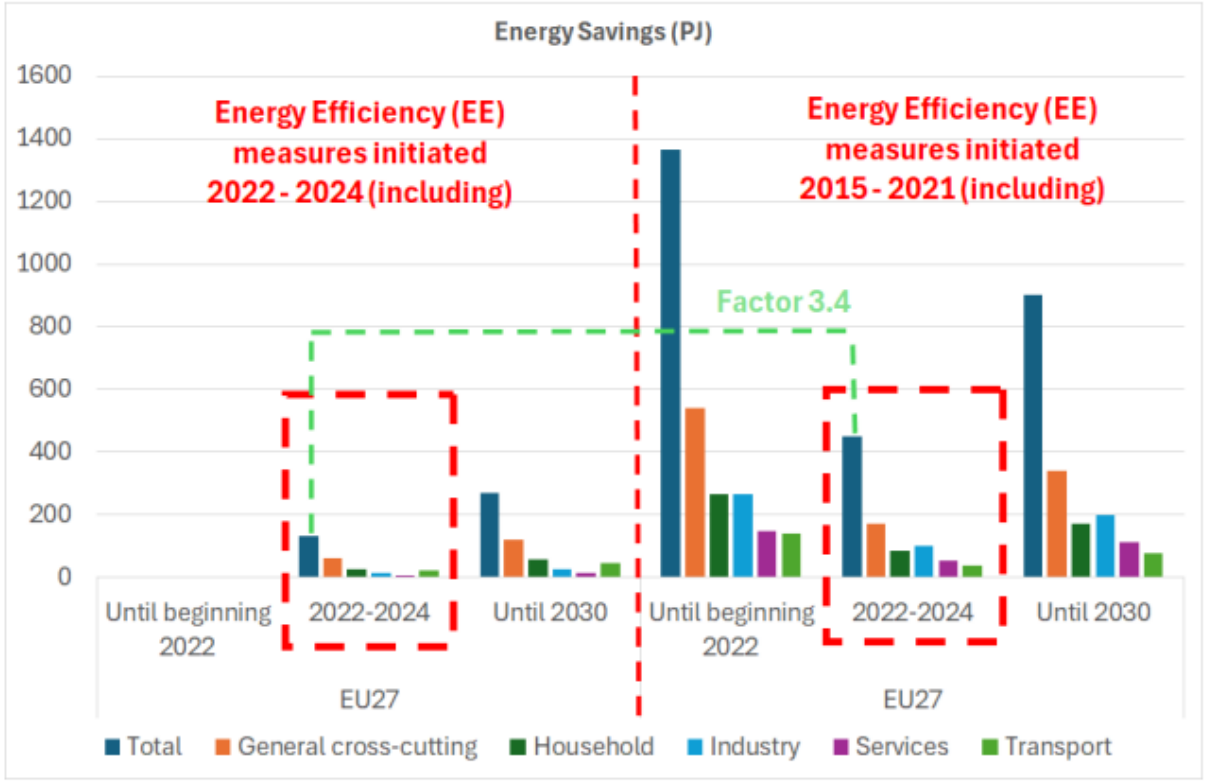
Analysis of policy measures for industrial energy efficiency with the policy assessment module

- For DE:
- Including Art. 7/8 and semi-quantitative savings
- No gap in 2030, without Art. 7/8:
  Gap of 104 PJ



Combining bottom-up and top-down

- Insights from the project “Better data for energy efficiency: short-term estimates of energy efficiency progress”
  - Fraunhofer ISI and Enerdata for DG ENER
- Aim: impact of energy efficiency during the last three years
  - Sectoral short-term estimates on EU and national level
  - Decomposition of the resulting top-down energy consumption
  - Bottom-up energy savings of energy efficiency measures based MURE and expert interviews
  - Combination and comparison of the results
  - Analysis of the “short-term” vs. “long-term” energy efficiency impacts



Better data for energy efficiency - Publications Office of the EU

Combining bottom-up and top-down

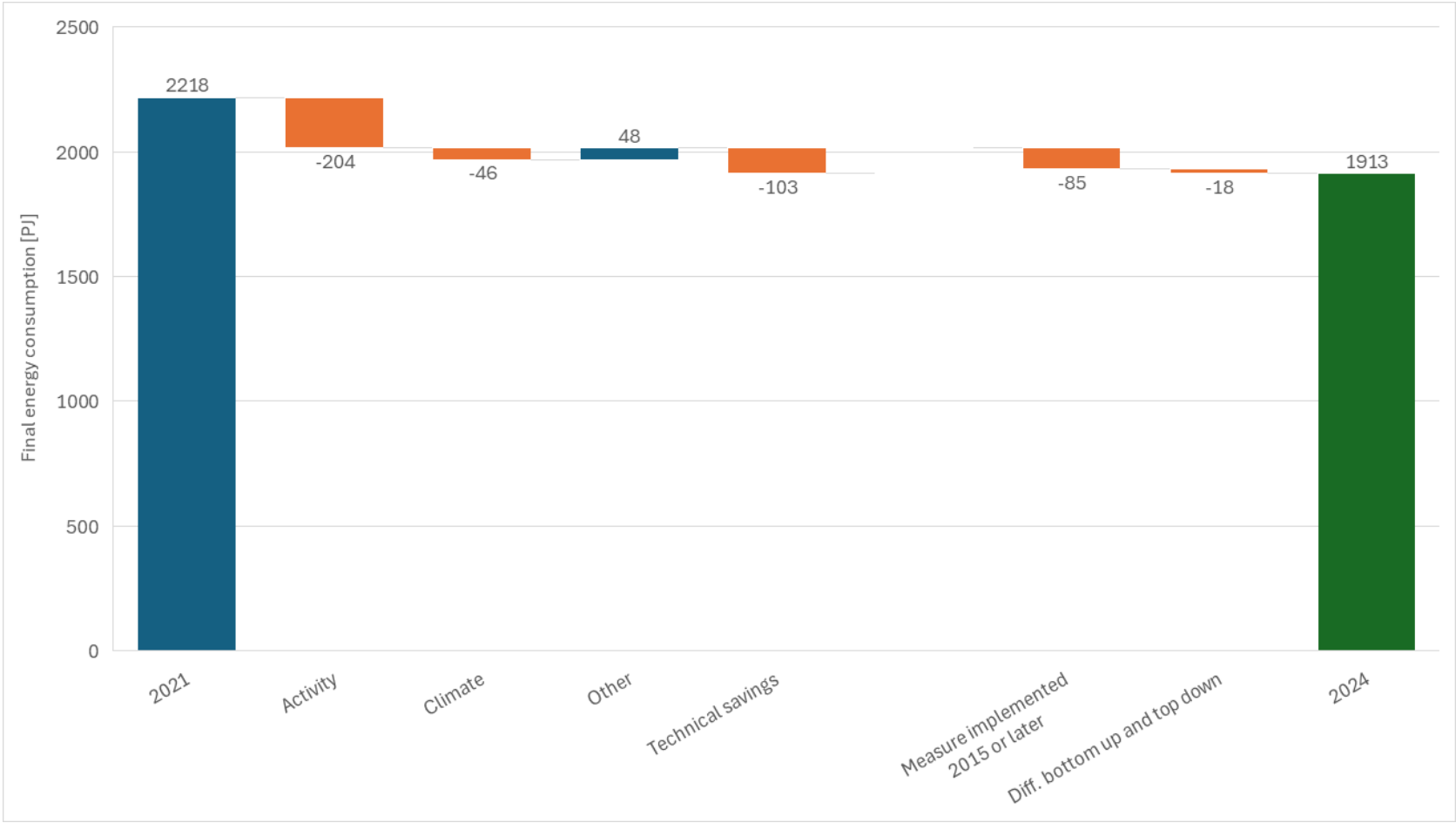
- Comparison top-down vs. bottom-up (EU level)

EU (energy savings in PJ)	**Bottom-up energy efficiency savings 2015-21** (sum of all new annual savings - measures starting 2015 or later)	**Top-down energy efficiency savings 2015-21** (Sum of the technical savings from the decomposition analysis)	**Bottom-up energy efficiency savings 2022-24** (sum of all new annual savings - measures starting 2022 or later)	**Top-down energy efficiency savings 2022-24** (Sum of the technical savings from the decomposition analysis)	
Residential	412	714	177	463	
Industry	400	851	171	441	
Services	239	717	103	301	
Cross-cutting	-	n.a.	-	n.a.	
Total*	1051	2282	451	1205	
EU (other/residual effects in PJ)	**Top-down other effects 2015-21** (Sum of the other/residual savings from the decomposition analysis)	**Top-down other effects 2022-24** (Sum of the other/residual savings from the decomposition analysis)	**EU** (price effects in PJ)	**Top-down price effects/savings 2015-21**	**Top-down price effects/savings 2022-24**
Residential	366	451	**Residential -short term**	-1	35
Industry	346	281	**Industry - short term**	2	67
Services	134	669	**Industry - long term**	193	311
Total	846	1401			

Better data for energy efficiency - Publications Office of the EU

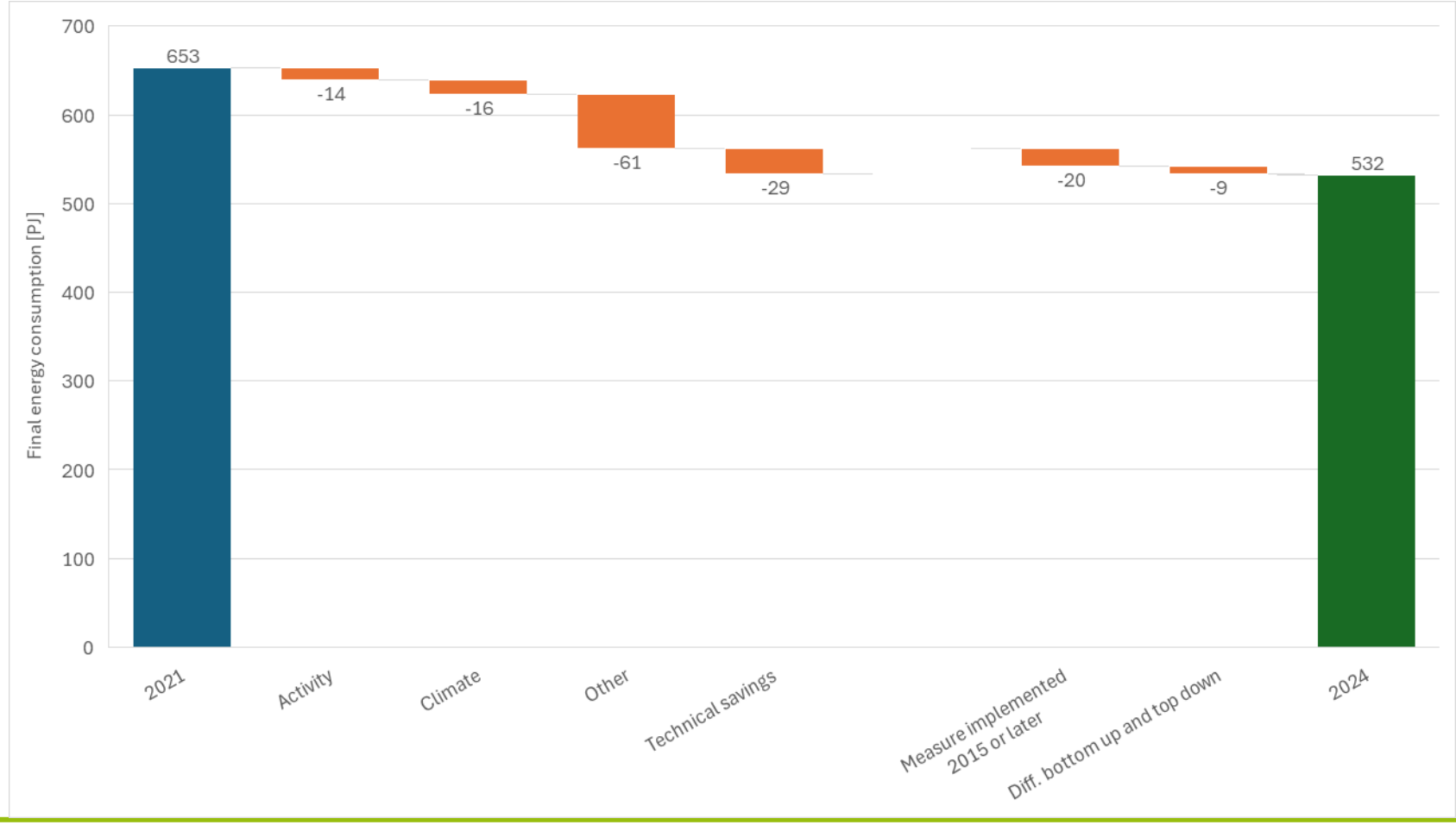
Combining bottom-up and top-down

- **Comparison top-down vs. bottom-up (Germany)**
  - Industry 2021-2024
  - Top-down price effects/ savings
    short-term: -14 PJ
    long-term: -62 PJ

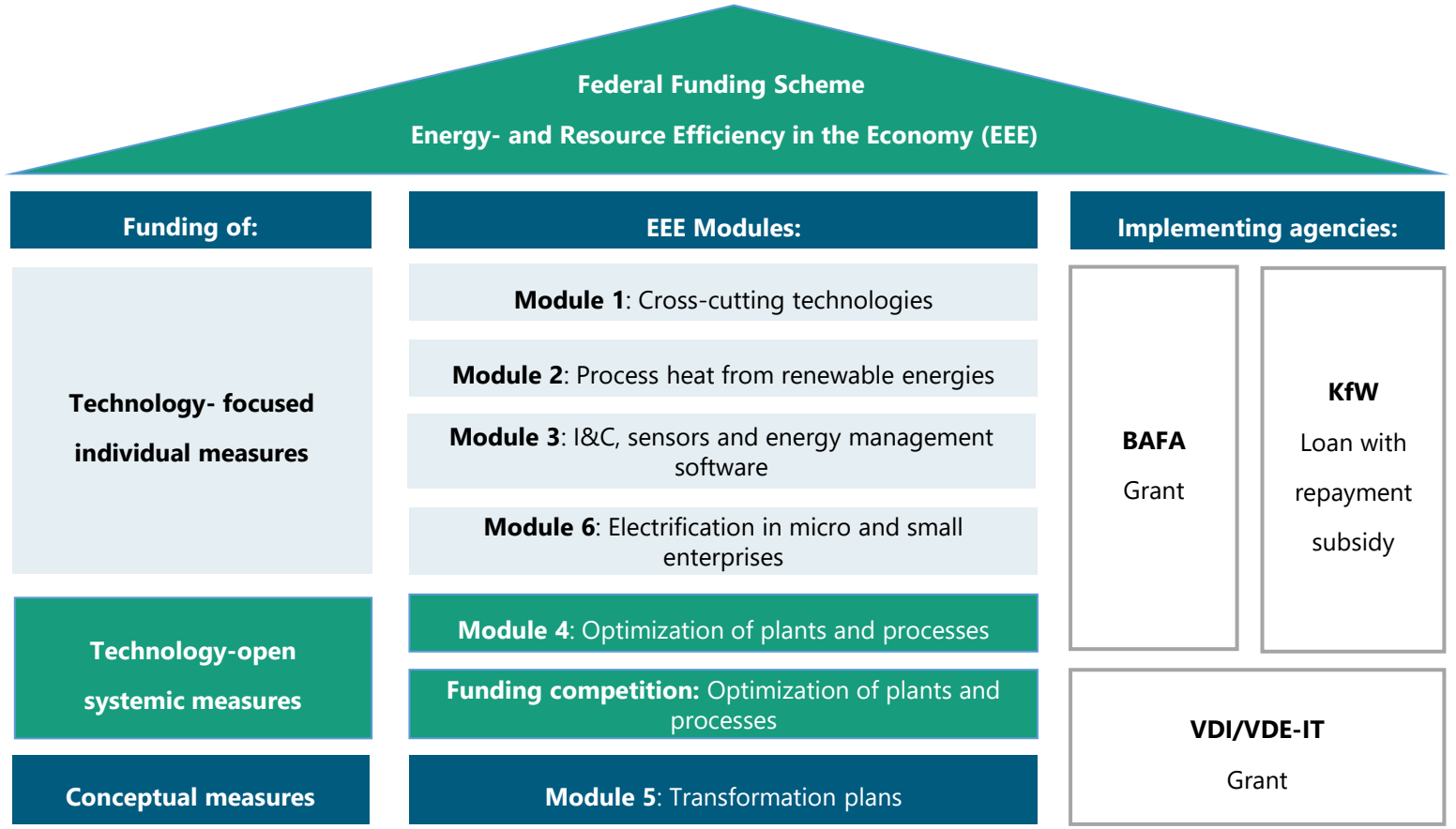


Combining bottom-up and top-down

- **Comparison top-down vs. bottom-up (Poland)**
  - Industry 2021-2024
  - Top-down price effects/ savings
    short-term: -7 PJ
    long-term: -6 PJ



The EEE - Example of a detailed measure evaluation



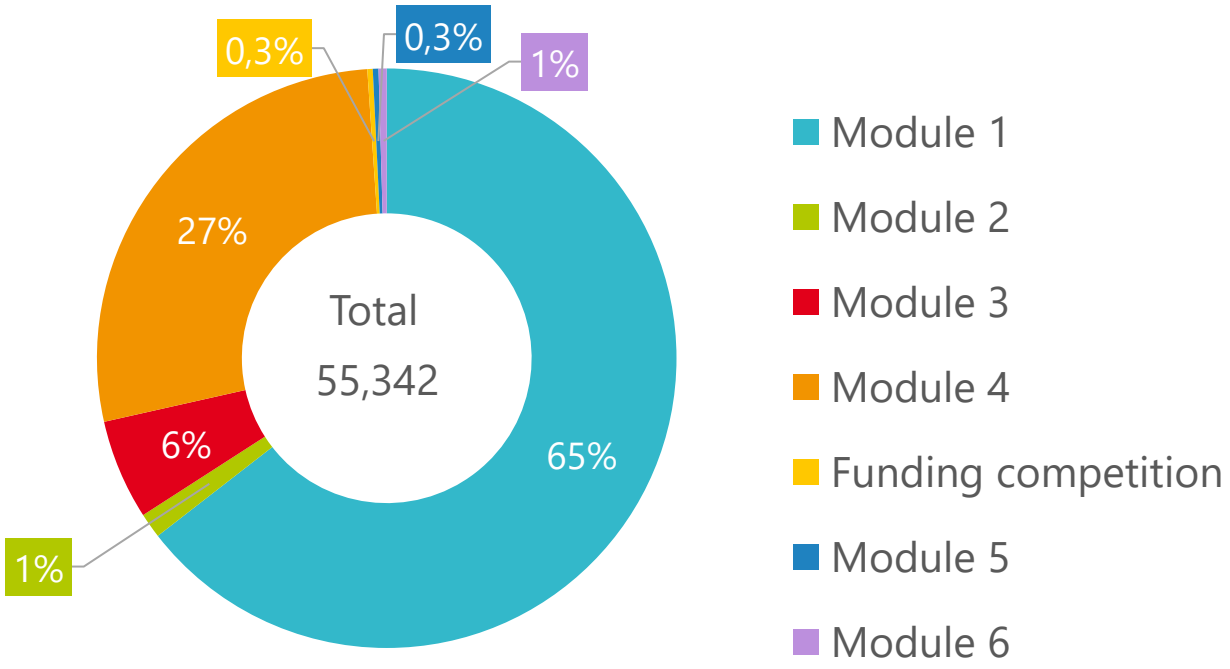
- Companies of all sectors and sizes, municipal utilities and energy service providers that want to invest in efficient and sustainable technologies and processes can access support with the EEE

Source: Based on BMWK (https://energiewechsel.de/KAENEF/Redaktion/DE/Dossier/eew-energie-und-ressourceneffizienz-in-der-wirtschaft.html)

The EEE – Evaluation results 2019-2023

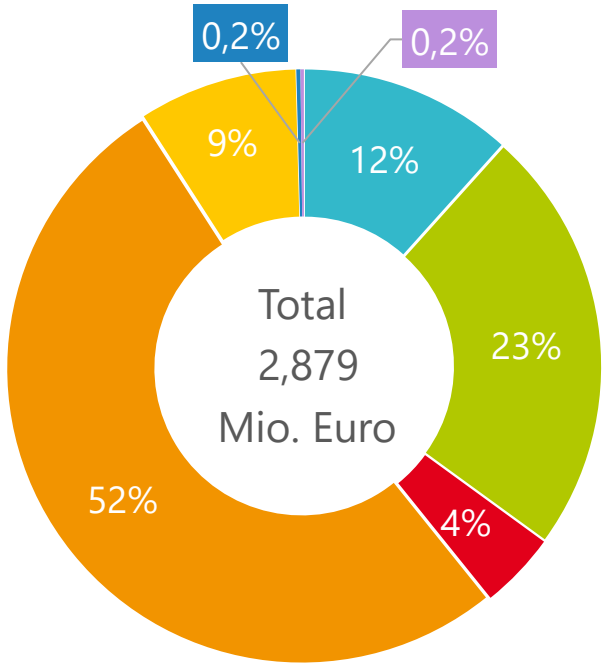
- Detailed evaluation by Fraunhofer ISI, Prognos, University Stuttgart and Öko Institute

Approvals 2019-2023



- of which 74% SMEs
- 67,955 Application

Funding volume 2019-2023

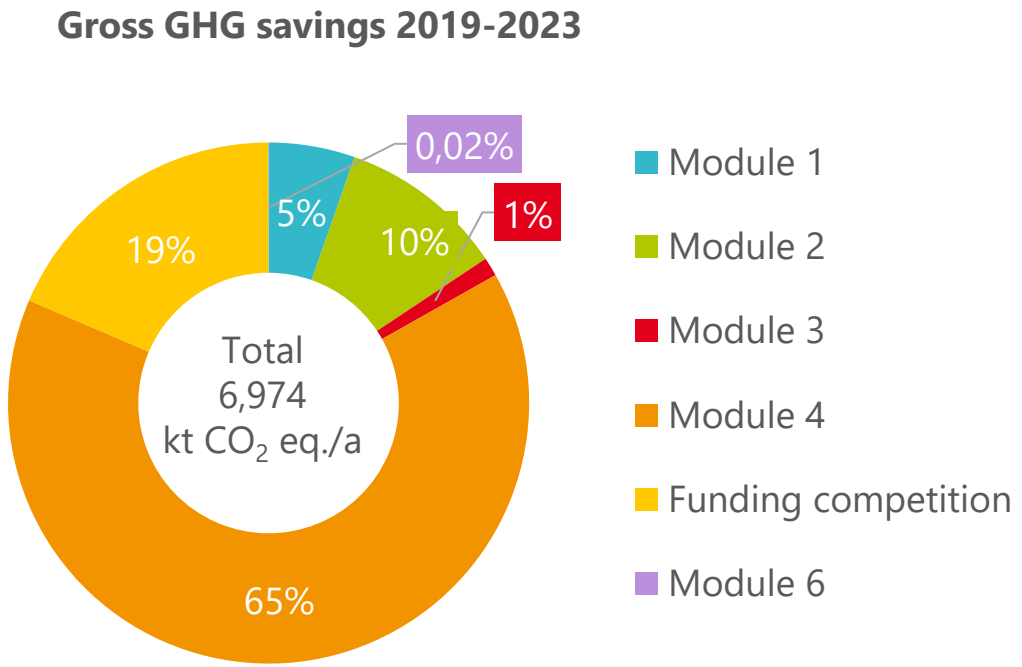


- of which 51% SMEs

Neusel et al. (2024): Jahresbericht 2023. Online available (German): https://www.bundeswirtschaftsministerium.de/Redaktion/DE/Evaluationen/Foerdermassnahmen/250130-evaluation-eew-abschlussbericht.pdf?__blob=publicationFile&v=10

The EEE – Evaluation results 2019-2023

- GHG savings



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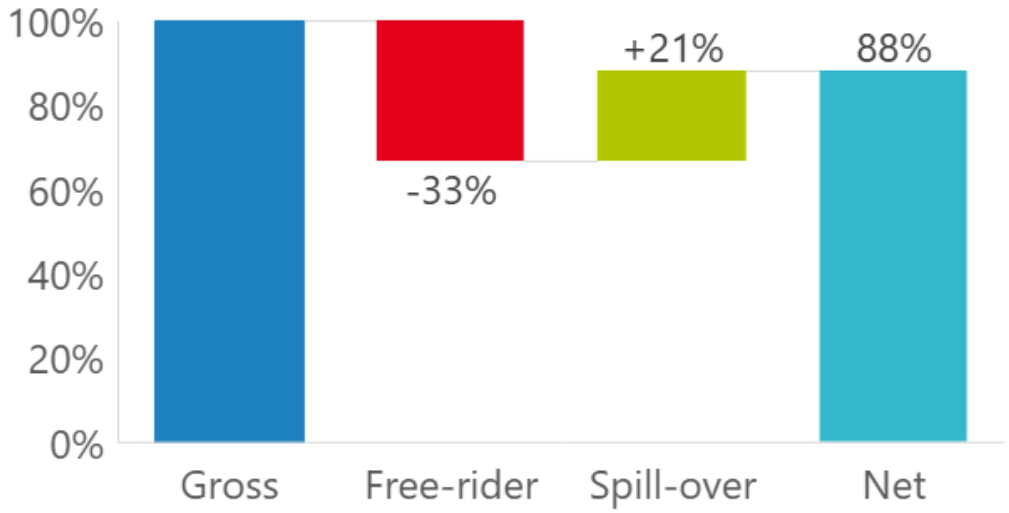
The EEE – Evaluation results 2019-2023

- From gross to net savings

Effects	Description
Gross impact	
- Free-rider and substitution effects	Effects due to the deadweight loss of subsidies and early replacement
+ Spill-over effect	Effects through spill-over (transfer) to third parties and other areas
= Net effect	Effect after adjustment for effects



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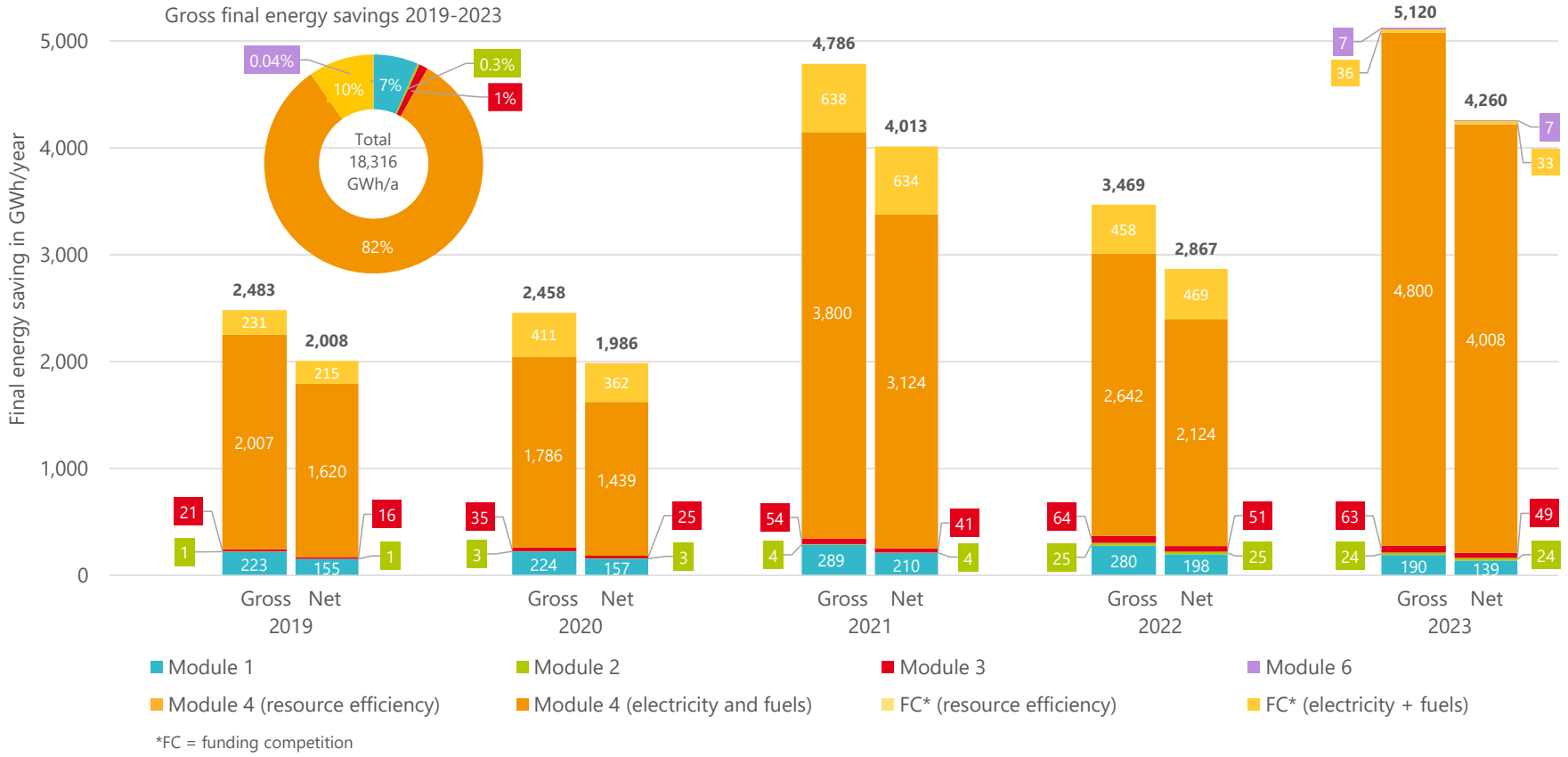
The EEE – Evaluation results 2019-2023

- Gross final energy savings 2019-2023



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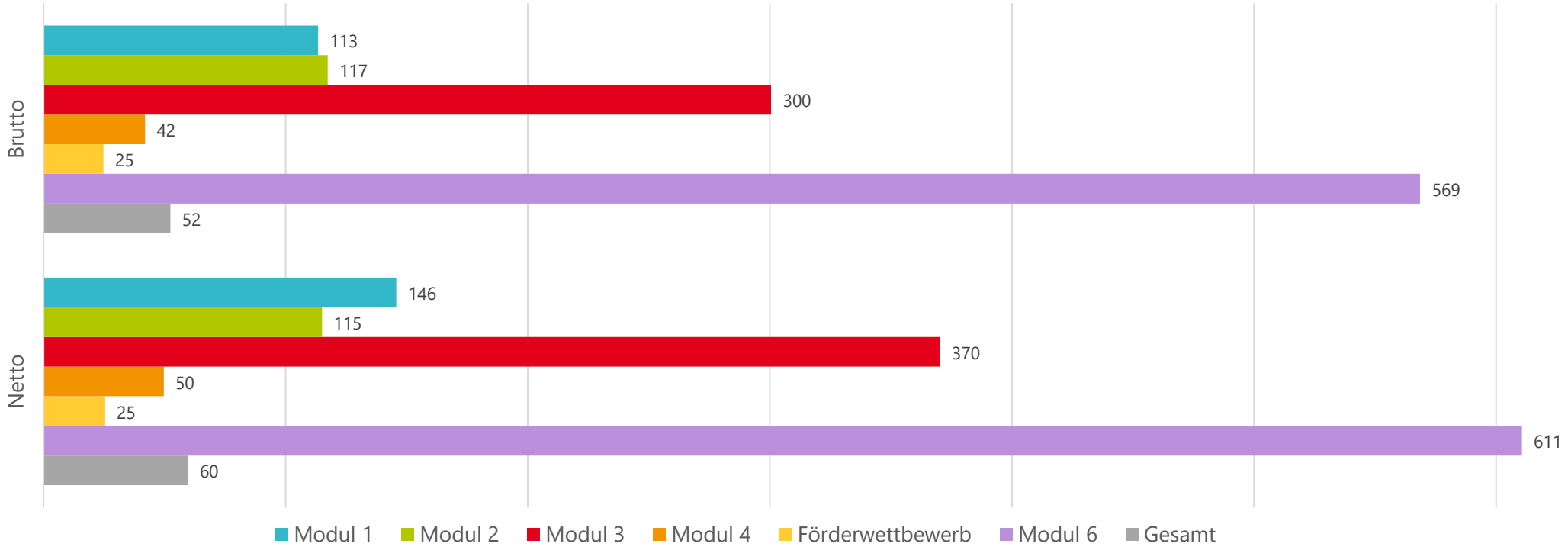
The EEE – Evaluation results 2019-2023

- GHG funding efficiency [€ / t $CO_{2\text{-eq.}}$]*



- Goal: 25 €/t $CO_{2\text{-eq.}}$

* funding incl. administrative costs in relation to GHG-savings over lifetime

Neusel et al. (2024): Jahresbericht 2023. Online available (German): https://www.bundeswirtschaftsministerium.de/Redaktion/DE/Evaluationen/Foerdermassnahmen/250130-evaluation-eew-abschlussbericht.pdf?__blob=publicationFile&v=10

Outlook and potential discussion points

- **How do the bottom-up results fit in with the top-down analysis?**
- **How does the current policy mix fit in with the current discussions in the field of industrial policy (ETS1+2, competitiveness, etc.)?**
- **Which aspects should be particularly emphasised/addressed in the next updates?**

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Thank you!

Partners: