

Third meeting of the project “*ODYSSEE-MURE,
a decision support tool for energy efficiency policy
evaluation*”

26-27 April 2018, Vienna, Austria

WP2 - What's new with ODYSSEE tools?

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Content

1. Decomposition tool
2. Energy saving tool
3. Supply-side tool
4. Indicator scoreboard

ODYSSEE PROJECT

ABOUT THE ODYSSEE DATABASE

The Odyssee indicators are accessible under different data tools: the full data base, the key indicators facility, as well as five specific data facilities that focus on specific issues and provide some interpretation: market diffusion, decomposition, benchmarking, energy saving and indicator scoreboard. The access to the data base is restricted, whereas all other data tools are in public access.



Upgrade of the decomposition tool

1. Factors of variation of the final energy intensity

Decomposition of final intensity variation: usual approach

- The final energy intensity variation is usually decomposed into two main effects:
 - **Structural effects** , reflecting the change in the GDP structure.
 - **Energy intensity effect**, showing the impact of changes in the intensity of the different sectors.
- The usual methodology is based on the DIVISIA method to have a strict decomposition without residues.
- This is what was done in ODYSSEE until now.

Decomposition of final intensity variation: new approach in ODYSSEE (1/2)

- The final energy intensity variation is decomposed into **three** main effects:
 - **Structural effects**, calculated as before .
 - **Energy savings effect**
 - **Other effects**,
- The **energy savings effect** shows the impact of energy savings on the final intensity, with the energy savings calculated from ODEX, i.e. with detailed indicators by sub-sector ("top-down method"). It is calculated with a **fictive** final intensity without energy savings (final consumption minus savings divided by GDP).
- The **other effects** are calculated as the difference between the previous intensity effect and the energy savings effect.
- This new calculation will be implemented in the decomposition tool in May 2018.

Decomposition of final intensity variation: new approach in ODYSSEE (2/2)

- The **structural effects** is decomposed in **three components**, that were combined before and difficult to interpret : .
 - **GDP structure effect**, showing the effect of a variation of the share of industry, services and agriculture in the GDP;
 - **Households structure effect**, measuring the effect of a variation of the private consumption of households in the GDP;
 - **Industrial structure effect**, showing the effect of a variation of the share of total VA of industry among industrial branches

Methodology of decomposition of structural effects

Sector level

GDP structure effect

-VA industry
-VA services
-VA agriculture

A

-Private cons. of households

Effect of variation of the shares of
VA and private cons. in GDP

Households
structure effect B

Industry level

-structural effect among
branches

C

Industry
structure effect

Total structural effect = A + B + C

Decomposition tool

DECOMPOSITION TOOL

Country:
European Union

Sector:
Final

Unit:
Mtoe

Period: 2000 - 2016

Graph:
Waterfall

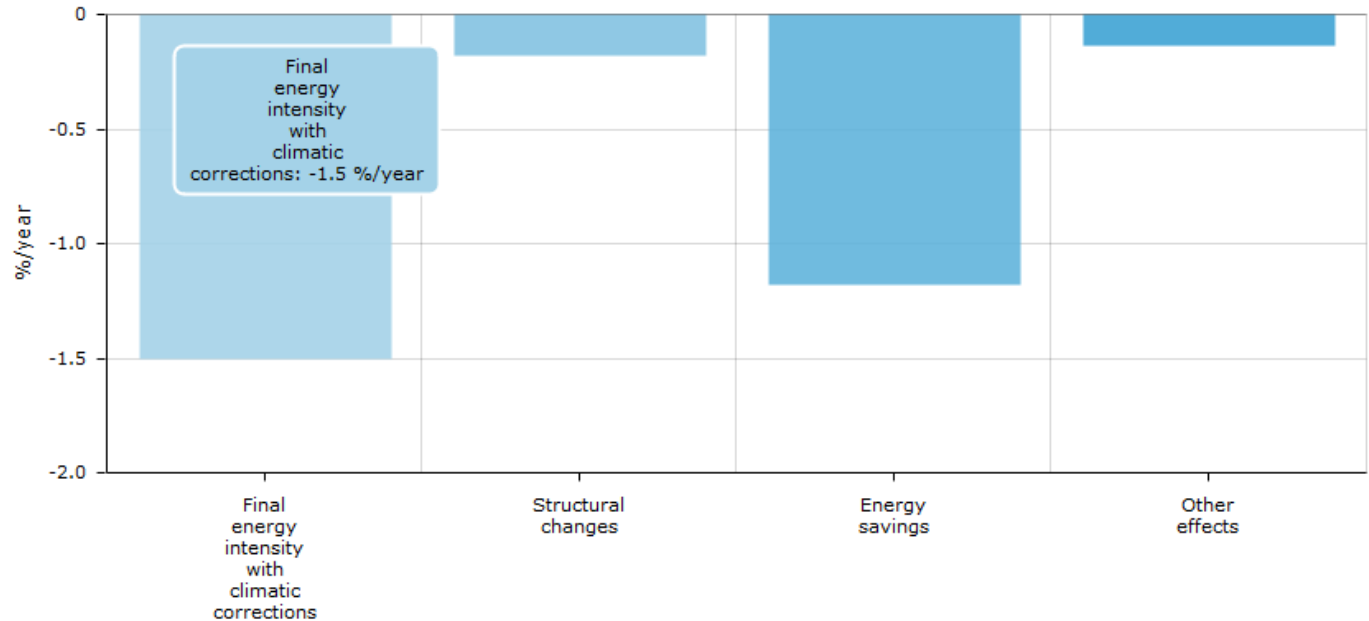
Structure effect
[Methodology](#)

VARIATION FINAL ENERGY INTENSITY
EUROPEAN UNION
%/YEAR (2000-2016)

VARIATION ENERGY CONSUMPTION

GRAPH

EXCEL



The final energy intensity variation is decomposed into **three** main effects:

- **Structural effects** (GDP structure, industry structure, households)
- **Energy savings effect**
- **Other effects.**

A click button to split the structural changes into 3 components

Decomposition tool

DECOMPOSITION TOOL

Country:

European Union

Sector:

Final

Unit:

Mtoe

Period: 

2000 - 2016

Graph:

Waterfall


Structure effect

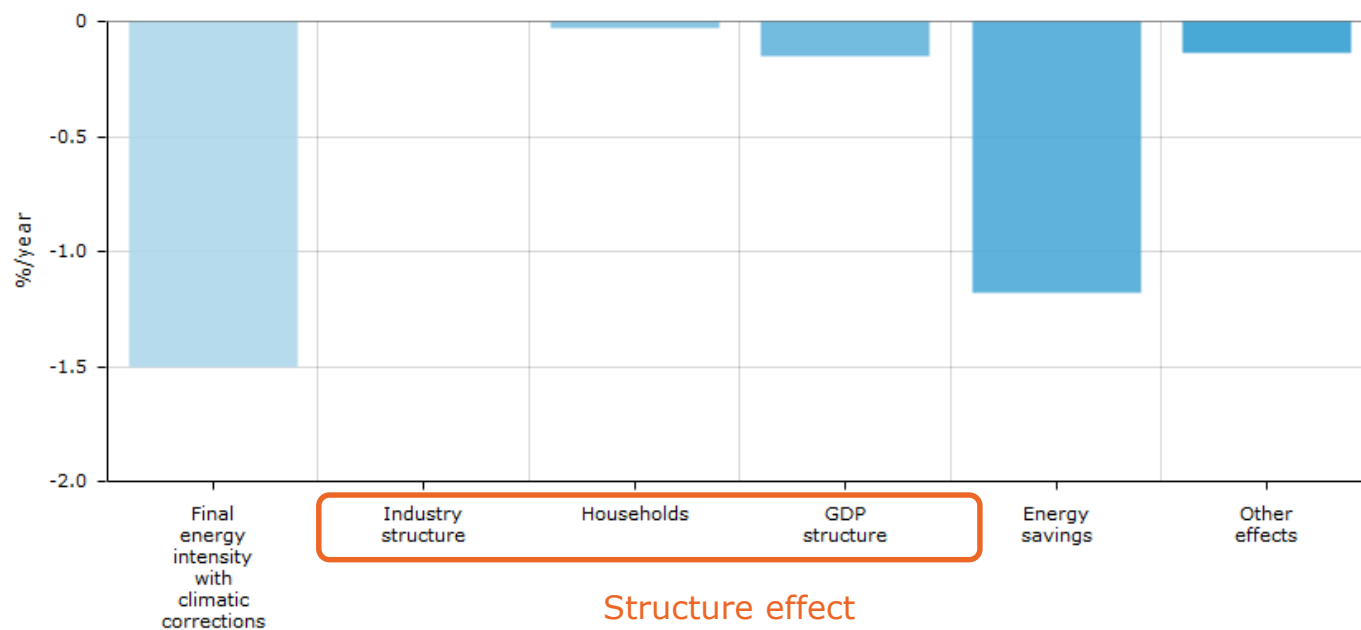
[Methodology](#)

VARIATION FINAL ENERGY INTENSITY
EUROPEAN UNION
%/YEAR (2000-2016)

VARIATION ENERGY CONSUMPTION

 GRAPH

 EXCEL



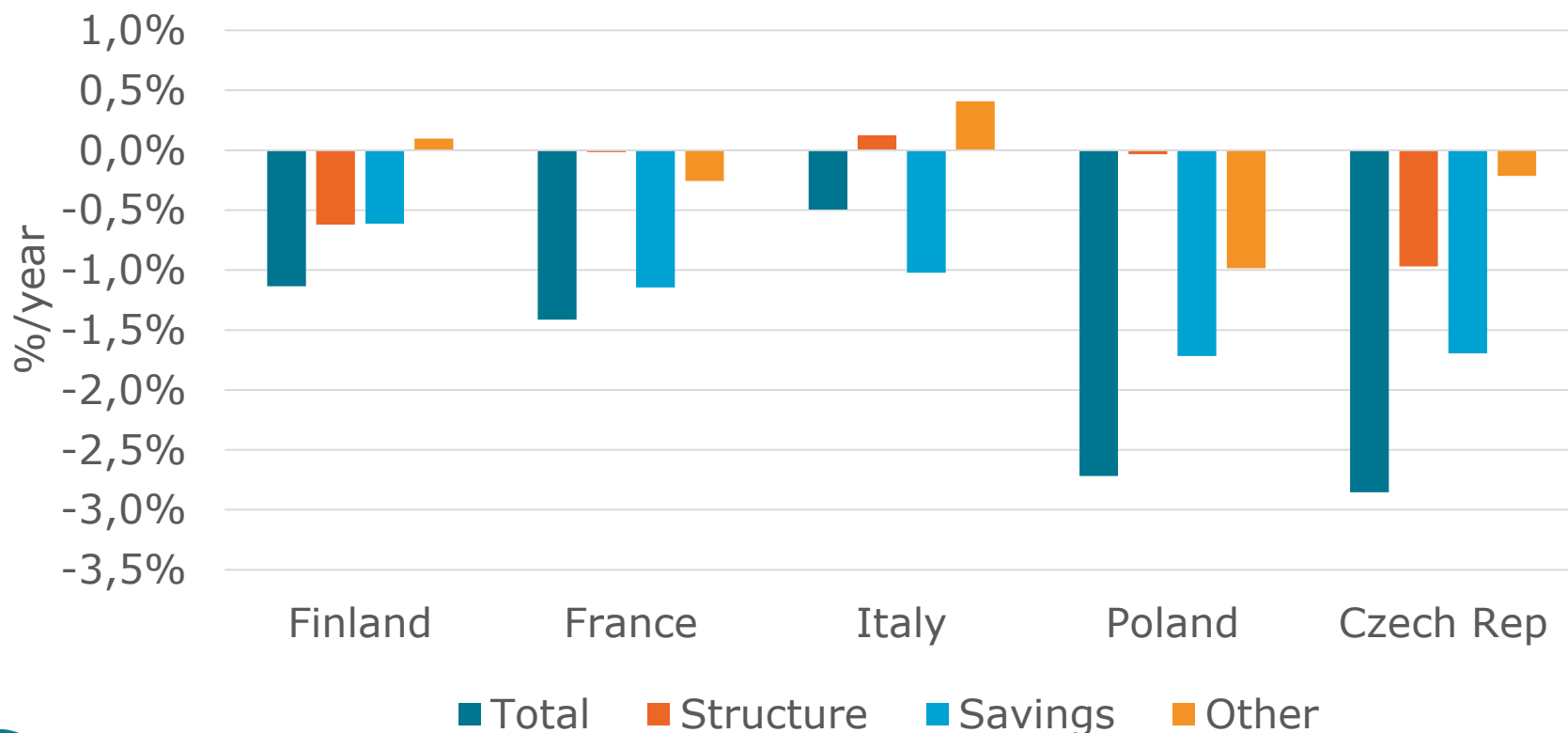
The final energy intensity variation is decomposed into **three** main effects:

- Structural effects
- Energy savings effect

Decomposition of final intensity variation – EU countries

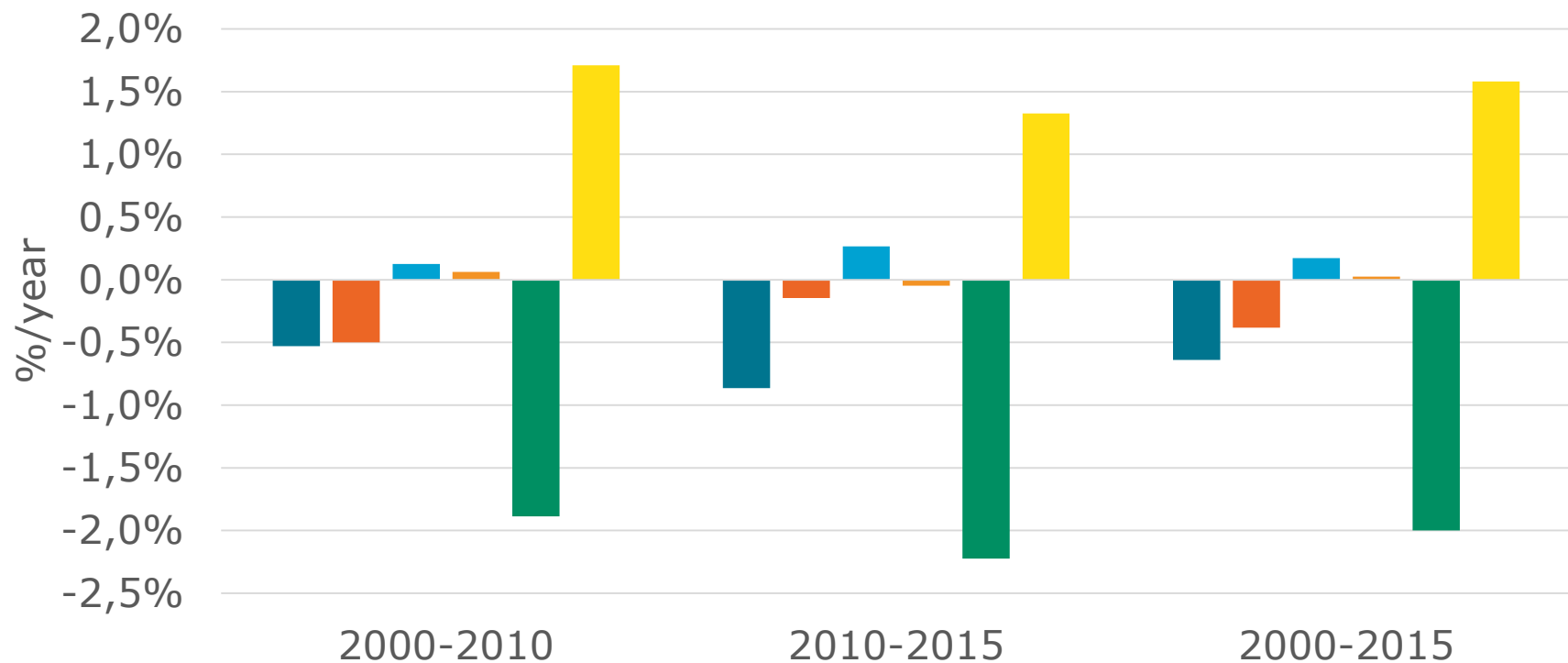
- The other effect is mainly related to the other effects of final consumption decomposition.

Final intensity variation decomposition 2000-2015



Decomposition of the final energy intensity: case of Portugal

« Other effects » difficult to explain for some countries!

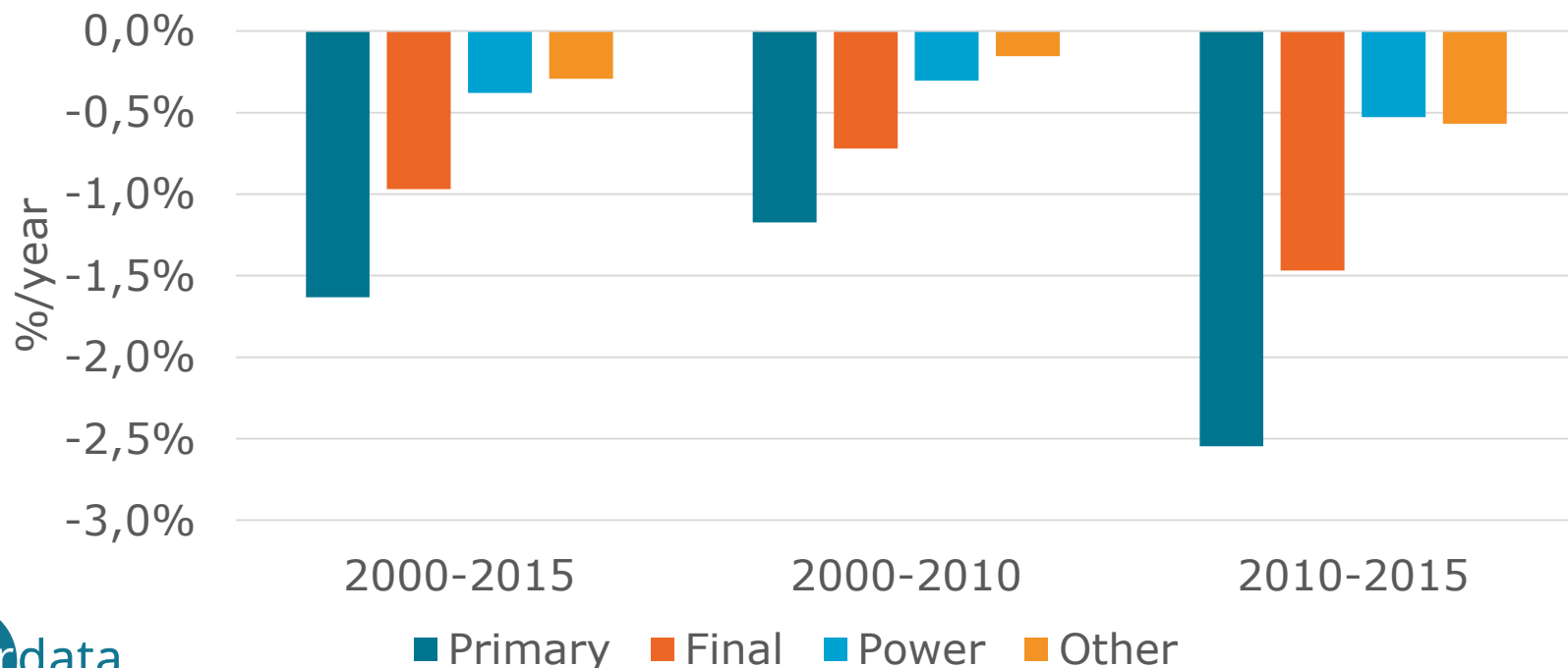


■ Total ■ GDP structure ■ Industry structure ■ Households ■ Savings ■ Other

2. Factors of variation of the primary energy intensity

Decomposition of primary intensity variation

- Contribution of each factor to the primary intensity variation :
 - Final intensity effect
 - Power intensity effect : net consumption of the power sector divided by the GDP
 - Other transformations effect as residual
- New calculation will be implemented in the decomposition tool.



Decomposition tool: primary energy

Specific button to access to intensity

DECOMPOSITION TOOL

Country:

European Union

Sector:

Primary

Unit:

Mtoe

Period:

2000 - 2016

Graph:

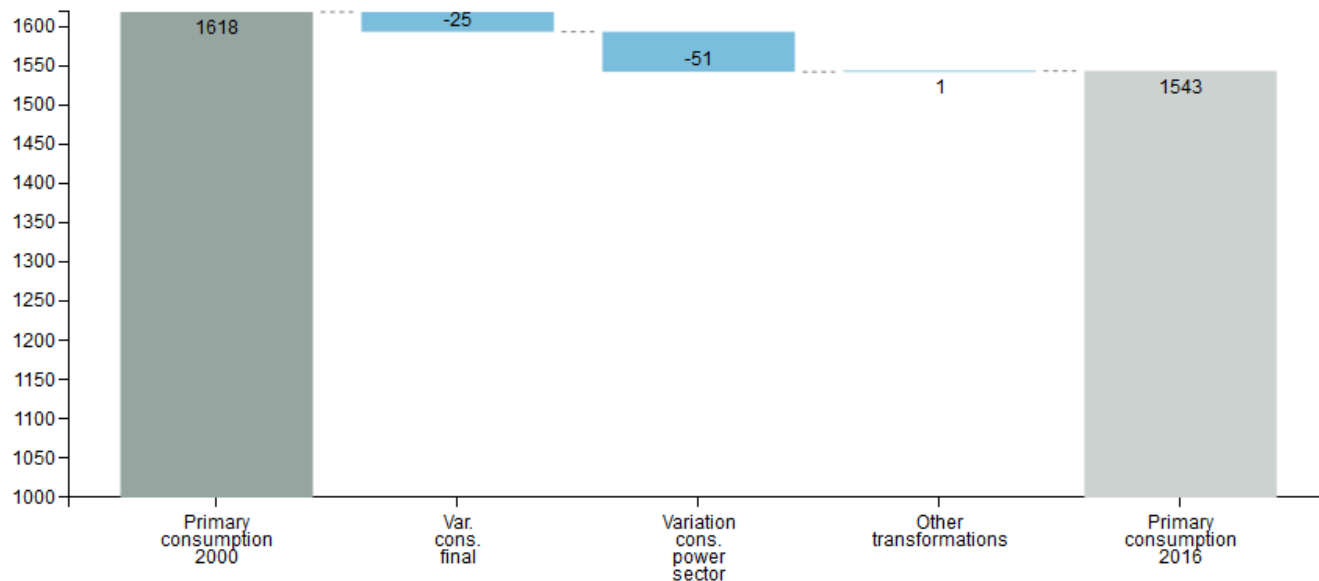
Waterfall

Climatic corrections

Non-energy uses

[Methodology](#)

VARIATION PRIMARY ENERGY CONSUMPTION EUROPEAN UNION MTOE (2000-2016)



VARIATION ENERGY INTENSITY

EXCEL

Source: ODYSSEE for primary consumption (ie Eurostat for EU and national sources for countries) and Eurostat for power sector.

The decomposition of the variation of the primary energy consumption combines :

- the variation of the final energy consumption for energy uses,
- the decomposition of the variation of the net consumption of the power sector in three effects (changes in electricity

Decomposition tool: primary energy

DECOMPOSITION TOOL

Country:

European Union

VARIATION PRIMARY ENERGY INTENSITY
EUROPEAN UNION
%/YEAR (2000-2016)

VARIATION ENERGY CONSUMPTION

GRAPH

EXCEL

Sector:

Primary

Unit:

Mtoe

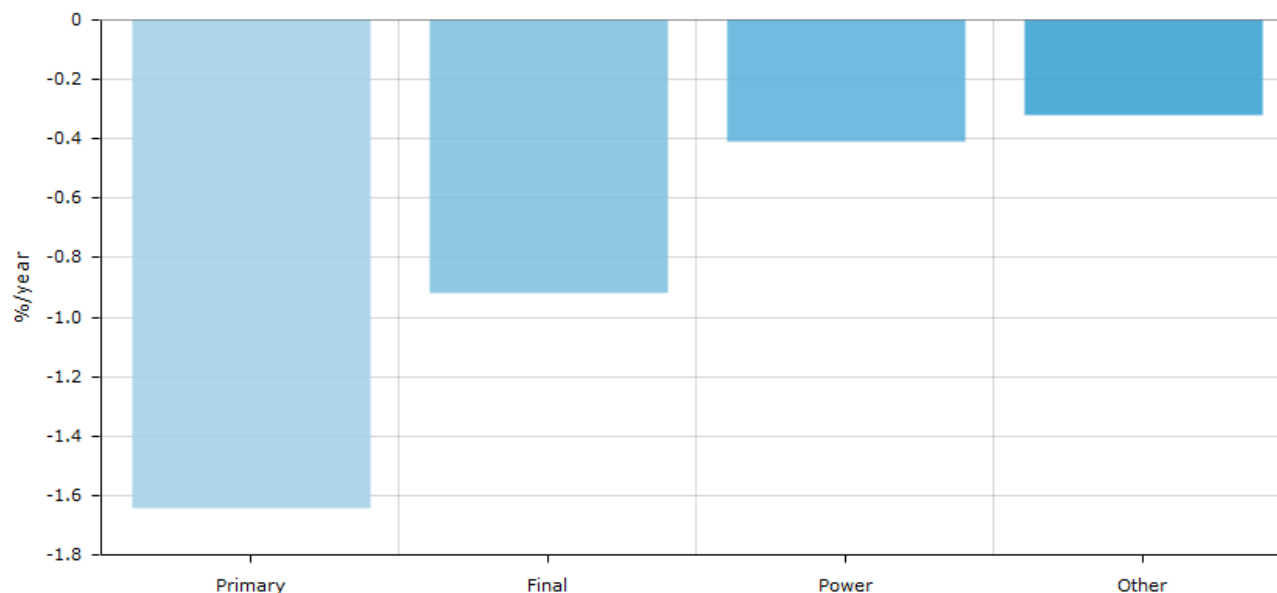
Period:

2000 - 2016

Graph:

Waterfall

[Methodology](#)



The primary energy intensity variation is decomposed into **three** main effects:

- Final intensity effect
- Power intensity effect
- Other transformations effect as residual

3. Introduction of a GDP structure effect

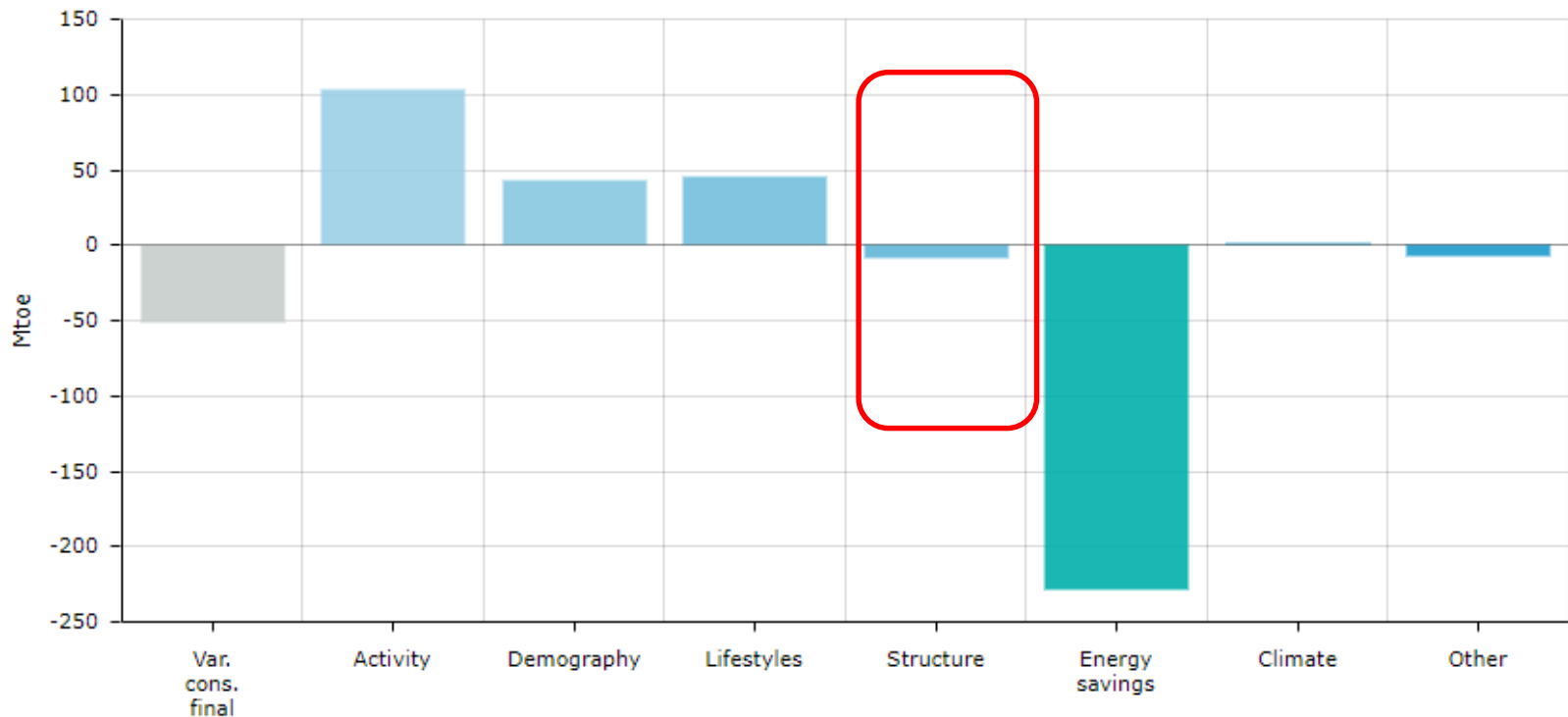
Modification of the structure effect in final consumption variation decomposition (1/2)

Currently, structure effect = modal shift effect in transport + structure effect in industry

VARIATION FINAL ENERGY CONSUMPTION - EUROPEAN UNION - MTOE (2000-2015)

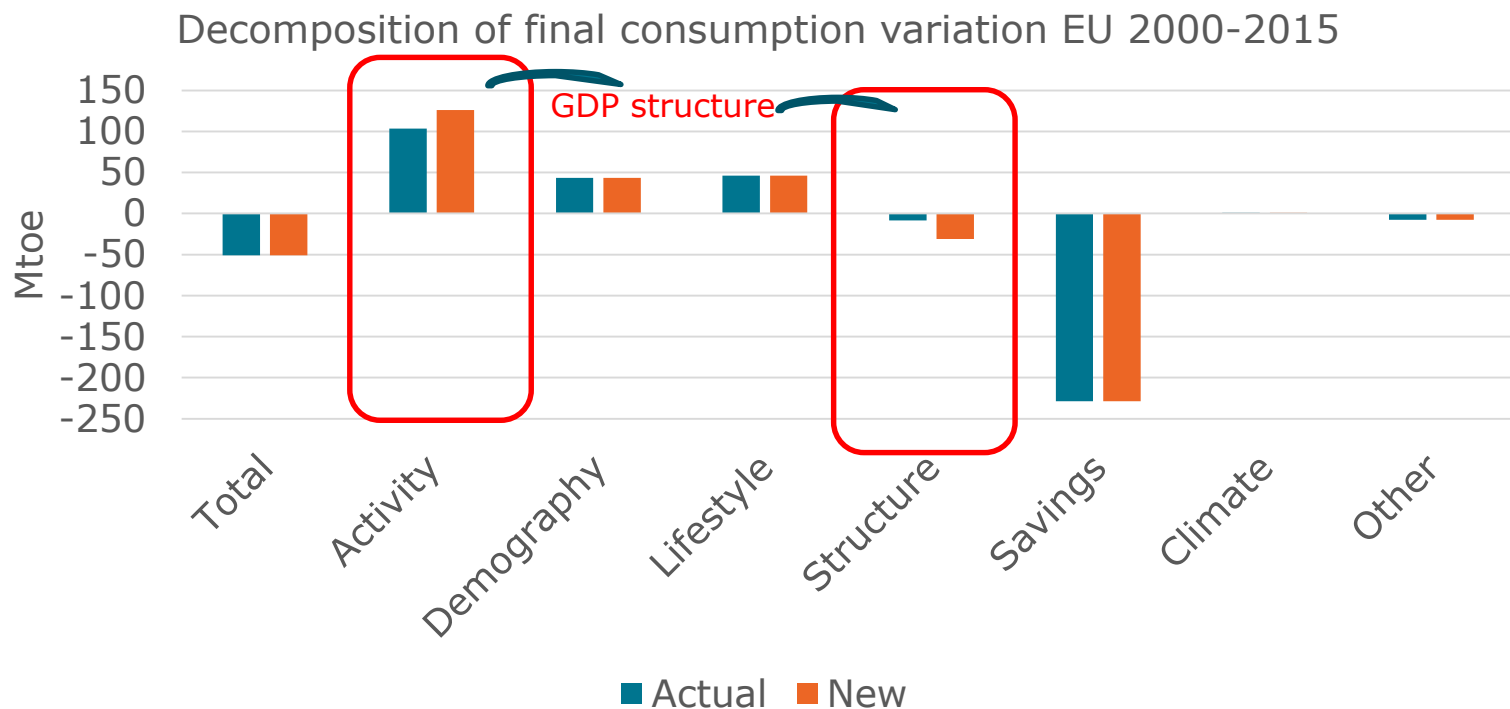
GRAPH

EXCEL



Modification of the structure effect in final consumption variation decomposition (2/2)

Addition of GDP structure to the structure effect and remove it from the activity effect



This modification allows to show the GDP structure effect in final decomposition : it was a request from DG Ener and it is more consistent with Ispra approach.

Upgrade of the Energy Saving tool

Energy savings tool (1/2)

- Updating of the tool for primary, final energy consumption from EUROSTAT (2000-2016), targets 2020 and projections to 2030.
- **new!** Updating of energy savings (2000-2016) with the possibility to visualise savings by sector (stacked graphs).
- **new !** Introduction of energy savings from Article 7 (2014-2016) and target 2020 (<https://ec.europa.eu/energy/en/topics/energy-efficiency-directive/obligation-schemes-and-alternative-measures>)

Energy savings tool (2/2)

- **Prefilled file sent by Enerdata. NT should complete it asap.**

Title	CodeSerie	Country	Unit	Targets/scope	2008	2009	2010	2011	2012	2013	2014	2015	2016	2020	2030
ODYSSEE savings	sav_odg	aut	Mtoe		0,23	0,34	0,45	0,56	0,64	0,75	0,81				
NEEAP savings	sav_esd	aut	Mtoe	EU methods	0,12	0,16	0,19	0,14	0,13	0,08	0,23	0,39			
Energy savings targets (ESD)	targ_sav	aut	Mtoe										1,92		
Target energy savings (Article 7)			Mtoe											5,20	
Energy savings from Article 7			Mtoe								0,23	0,39	n.a.		
Primary energy consumption	prim	aut	Mtoe		32,06	30,19	32,28	31,58	31,40	32,07	30,62	31,47	31,84		
Target for primary energy consumption in 2020	prim2020	aut	Mtoe											31,53	
Low projection* for primary energy consumption	targ2020	aut	Mtoe												32,15
High projection * for primary energy consumption	targ2020a	aut	Mtoe												38,62

- **Next steps:**

- Only half of files received. Please send the ES file to Enerdata in the coming days.
- Tool will be upgraded in May (incl. savings from Article 7)

Supply-side indicators

Supply-side indicators

- ECN has written a methodological note and recently an Excel file with supply-side/CHP indicators.

- Need to validate calculations and test for different countries (Germany, Finland)

May
2018

- New tool to be developed.

May/June
2018

Indicator scoreboard

Specific presentation

Conclusions

When the ODYSSEE database fully ready (May 2016):

- Key indicators will be updated with 2016 data.
- Comparison: automatically updated to 2016
- Decomposition, energy savings: updated to 2016 with preliminary data (estimates possible to implement) May-June

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About Enerdata:

Enerdata is an energy intelligence and consulting company established in 1991. Our experts will help you tackle key energy and climate issues and make sound strategic and business decisions.

We provide research, solutions, consulting and training to key energy players worldwide.

www.enerdata.net



Thank you for your
attention !