Danish Energy Agency

ODYSSEE-MURE

Tour of the database

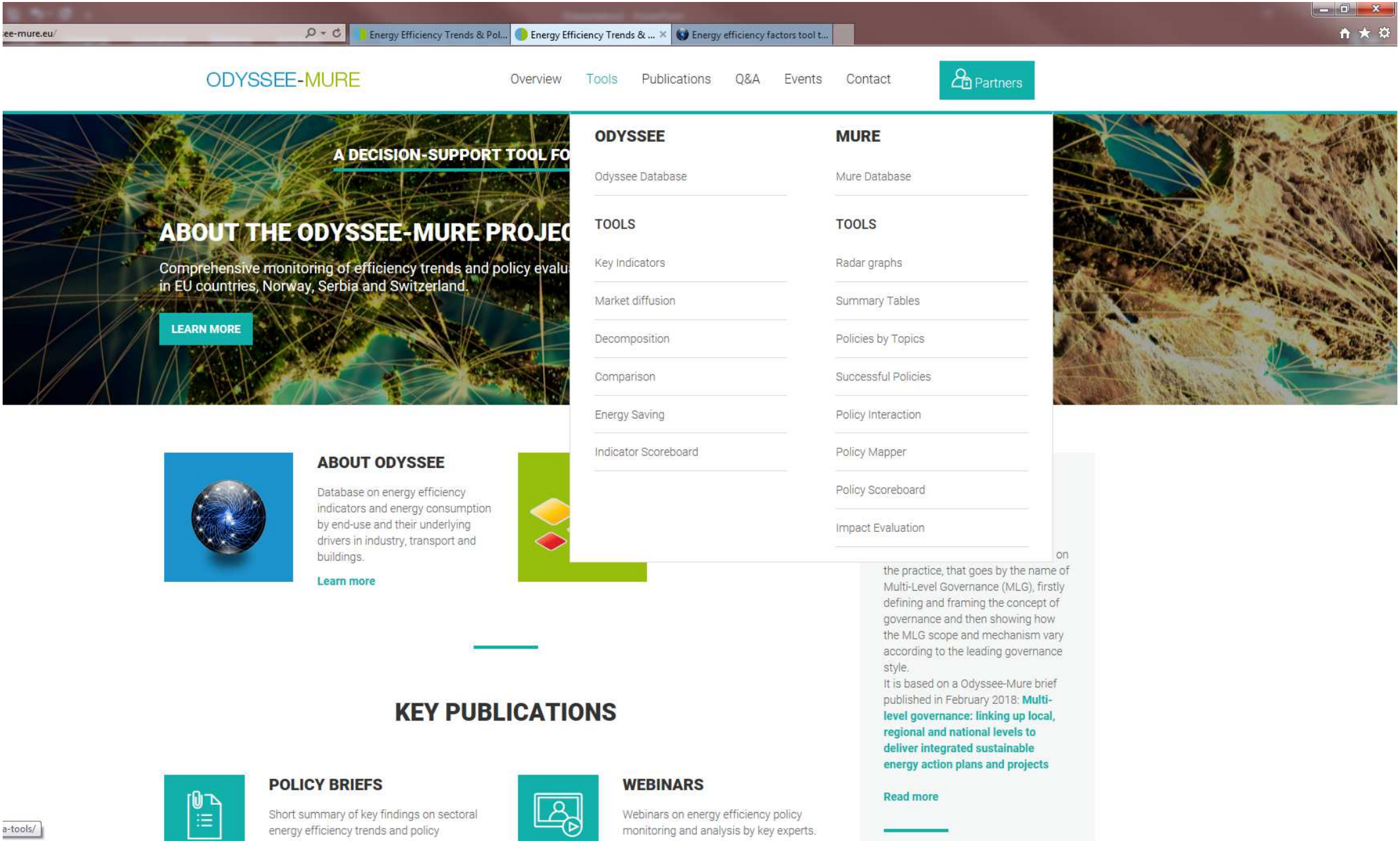
Jane Rusbjerg

Training seminar - 28 May 2018

Topics

Presentation of website

ODYSSEE – an indicator or two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Comprehensive monitoring of efficiency trends and policy evalu
in EU countries, Norway, Serbia and Switzerland.
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ABOUT ODYSSEE
Database on energy efficiency indicators and energy consumption by end-use and their underlying drivers in industry, transport and buildings.
Learn more
on
the practice, that goes by the name of Multi-Level Governance (MLG), firstly defining and framing the concept of governance and then showing how the MLG scope and mechanism vary according to the leading governance style.
It is based on a Odyssee-Mure brief published in February 2018: Multi-level governance: linking up local, regional and national levels to deliver integrated sustainable energy action plans and projects
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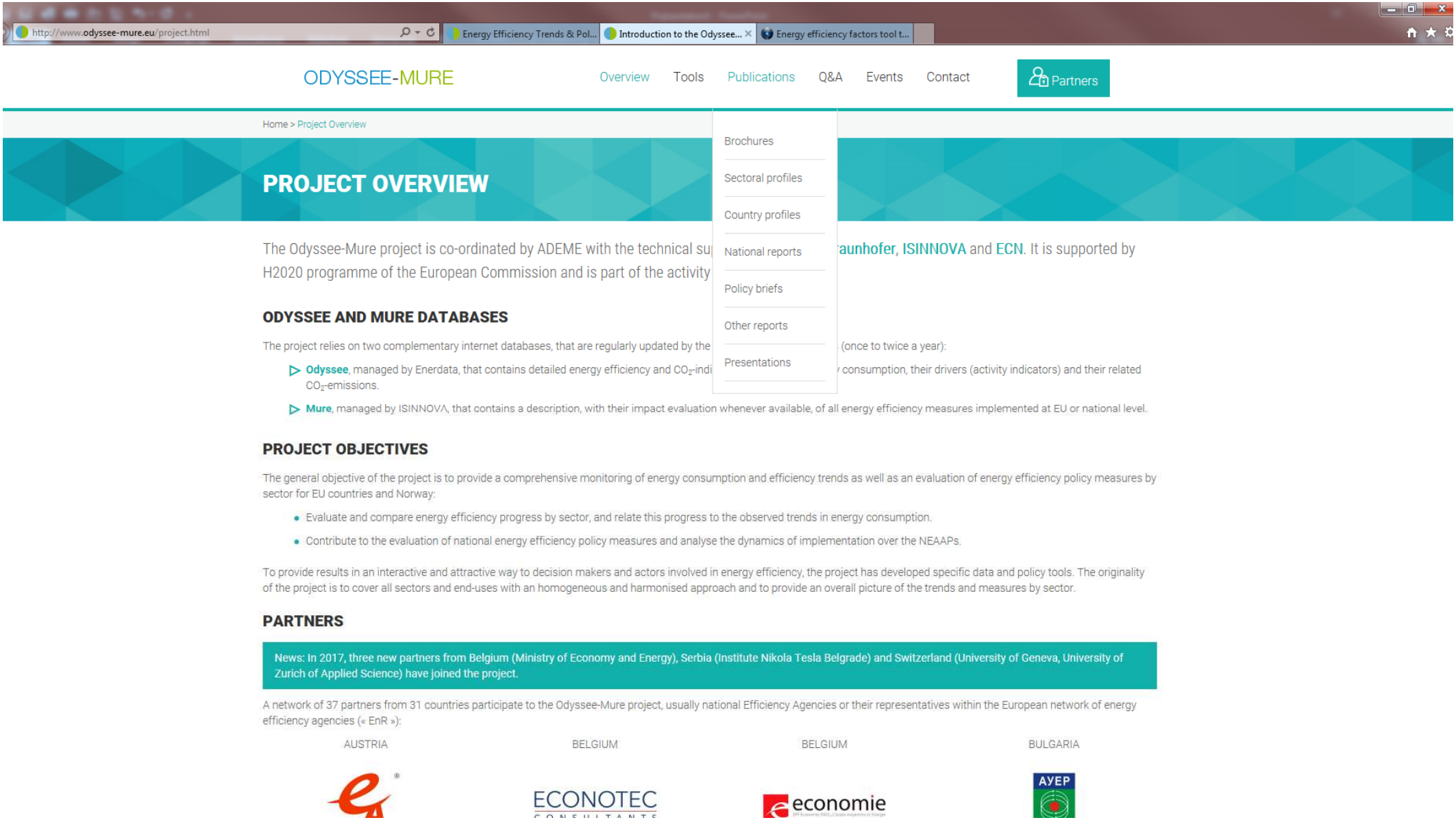
KEY PUBLICATIONS
POLICY BRIEFS
Short summary of key findings on sectoral energy efficiency trends and policy
WEBINARS
Webinars on energy efficiency policy monitoring and analysis by key experts.
a-tools/


http://www.odyssee-mure.eu/project.html
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PROJECT OVERVIEW
The Odyssee-Mure project is co-ordinated by ADEME with the technical su
aunhofer, ISINNOVA and ECN. It is supported by
H2020 programme of the European Commission and is part of the activity
ODYSSEE AND MURE DATABASES
The project relies on two complementary internet databases, that are regularly updated by the
(once to twice a year):
Odyssee, managed by Enerdata, that contains detailed energy efficiency and CO2-indi
consumption, their drivers (activity indicators) and their related CO2-emissions.
Mure, managed by ISINNOVA, that contains a description, with their impact evaluation whenever available, of all energy efficiency measures implemented at EU or national level.
PROJECT OBJECTIVES
The general objective of the project is to provide a comprehensive monitoring of energy consumption and efficiency trends as well as an evaluation of energy efficiency policy measures by sector for EU countries and Norway:
Evaluate and compare energy efficiency progress by sector, and relate this progress to the observed trends in energy consumption.
Contribute to the evaluation of national energy efficiency policy measures and analyse the dynamics of implementation over the NEAAPs.
To provide results in an interactive and attractive way to decision makers and actors involved in energy efficiency, the project has developed specific data and policy tools. The originality of the project is to cover all sectors and end-uses with an homogeneous and harmonised approach and to provide an overall picture of the trends and measures by sector.
PARTNERS
News: In 2017, three new partners from Belgium (Ministry of Economy and Energy), Serbia (Institute Nikola Tesla Belgrade) and Switzerland (University of Geneva, University of Zurich of Applied Science) have joined the project.
A network of 37 partners from 31 countries participate to the Odyssee-Mure project, usually national Efficiency Agencies or their representatives within the European network of energy efficiency agencies (« EnR »):
AUSTRIA
BELGIUM
BELGIUM
BULGARIA
ECONOTEC
economie
AYEP

e-mure.eu/faq/ Answers for specific energy...

Home > Q&A

Q&A - HOME

Questions & Answers for a better understanding of the databases

HOME | DEFINITION | METHODOLOGY | INTERPRETATION | TOOLS

Q&A FACILITY – QUERY BY KEYWORDS

This Q&A highlights definitions of indicators and policies as used in ODYSSEE and MURE tools. It also guides to know which of the many tools available is best suited to answer specific questions.

Click on keywords displayed in the tag cloud below to see the questions or select your question in the top menu

load factor
space heating
observed
Labels
power
potential
tkm
modal shift
tool
bottom-up
NEEAP
structure
ppa
policy evaluation
specific consumption
transport mode
energy efficiency
NEEAP 1
cooling
data collection
impact evaluation
industry
road transport
countries
Sectors
index
NEEAP 2
database query
impact interaction
productivity
energy intensive
degree day
normal climate
savings
climate corrected
cars
activity
pkm
energy intensity
odex
trend
final energy
decomposition
trucks
key words
adjustment
border trade
market diffusion
policies
unit consumption
indicator
services
passengers
NEEAP 3
transport
Article 7
Evaluation
primary energy
benchmarking
calculation
equipment
fixed year
performance
methodology
public transport
residential
target
branches
economic
renewables
Definition, Measures
radar graphs
policy interaction
period
top-down
stock
impact
measure
ranking
TPES
cross-cutting
categories
methods

NEED FURTHER ASSISTANCE ? | DOWNLOAD Q&A

WEBINARS

In the framework of Odyssee-Mure, Enerdata with support from Fraunhofer ISI will coordinate 10 webinars mainly targeted at public authorities (at national, regional or local level). Webinar hosted by Leonardo will be scheduled every 2 months from November 2016, and will be based on the Odyssee-Mure policy briefs on energy efficiency.

Webinars are grouping by sector:

- 4 webinars on industry (November 2016 to May 2017)
- 3 webinars on cross cutting (July 2017 to December 2017)
- 3 webinars on buildings (January 2018 to June 2018)

For each sector, one webinar will be dedicated to present energy efficiency trends while the others will present best practices in energy efficiency policy.

LAST WEBINARS

1 MARCH 2018

Multi-level governance: linking up local, regional and national levels for delivering integrated sustainable energy action planning and projects

This webinar provided an overview on the practice, that goes by the name of Multi-Level Governance (MLG), firstly defining and framing the concept of governance and then showing how the MLG scope and mechanism vary according to the leading governance style.

Speakers: Stefano Faberi (ISINNOVA)

Recording: **View the webinar recording online**.

Presentation: **Download the presentation as PDF**.

The webinar is based on a Odyssee-Mure brief published in February 2018: **Multi-level governance: linking up local, regional and national levels to deliver integrated sustainable energy action plans and projects**

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1 DECEMBER 2017

Impact of the economic crisis on the EU's industrial energy consumption

This webinar presented the impact of the economic crisis on the EU's industrial energy consumption and addressed the following key questions:

• To what extent is the decrease in the EU's industrial energy consumption after the economic crisis due to energy efficiency improvements?

• What has been the impact of changes in production level of industrial branches?

Speakers: Francis Altdorfer (Econotec)

Recording: **View the webinar recording online**.

Presentation: **Download the presentation as PDF**.

The webinar is based on a Odyssee-Mure brief published in April 2017: **Impact of the economic crisis on the EU's industrial energy consumption**

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7 SEPTEMBER 2017

How are Member States implementing Articles 7 and 8 of the Energy Efficiency Directive?

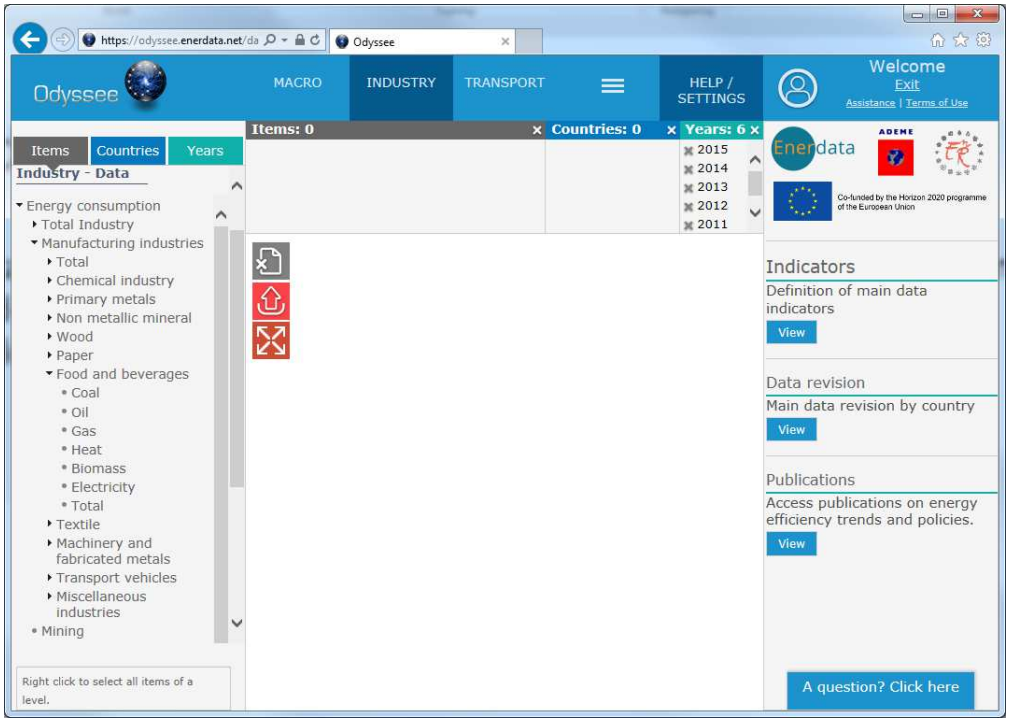
This webinar provided an overview of the requirements of two important articles of the EED, and their implementation by Member States – Article 7 on energy efficiency obligation schemes, and Article 8 on energy audits and energy management systems.

Speakers: Anna-Liisa Kaar (Ricardo Energy & Environment) and Rebecca Turner (Ricardo Energy & Environment)

Recording: **View the webinar recording online**.

Odyssee

Database on energy efficiency indicators and energy consumption by end-use and their underlying drivers in industry, transport and buildings.



Some selected indicators

- how to calculate

Decomposition

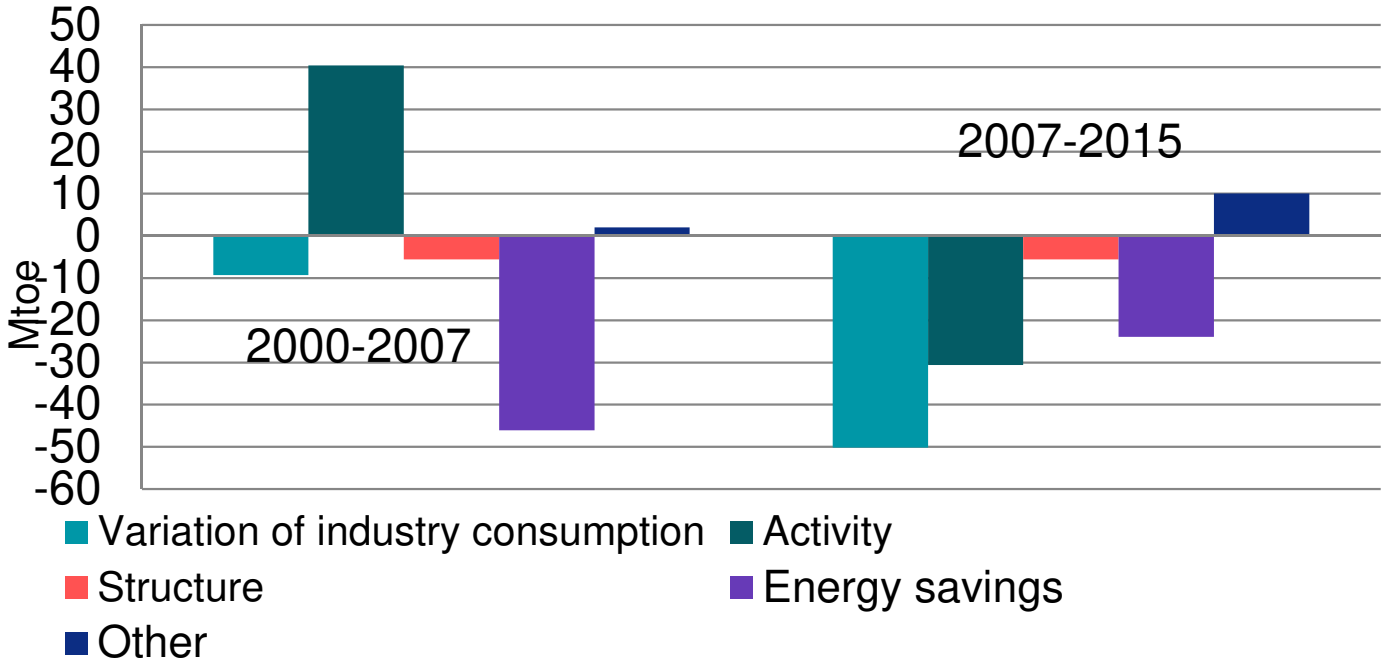
Facility displays the various factors behind changes in energy consumption.

ODEX – energy efficiency index

Combination of the different assessments of energy efficiency progress by end-use to get one trend for the whole sector.

Decomposition, Industry, example, histogram

- Since 2007 the reduction of activity (-30 Mtoe) is the main driver of the decrease of consumption (-50 Mtoe);
- Energy savings had a much lower impact since 2007 (3.4 Mtoe/yr compared to 7.6 Mtoe/yr over 2000-2007).
- Structural effects had a low impact on the consumption variation.



Energy savings: technical savings; based on specific consumption per unit of production (in physical terms or production index)
Other: "negative" savings due to inefficient operations

Decomposition - industry

Industrial energy consumption is changing under the influence of various factors:

- Change in total industrial activity, measured with the production index (IPI) ("activity effect");
- Structural changes, i.e. the fact that the production* of individual branches with different specific consumption are not growing at the same rate (e.g. if production of machinery is growing much faster cement production, this will decrease the overall consumption of industry, all things being equal, as machinery less energy intensive);
- Technical energy savings (i.e. change in the branches' specific energy consumption) (calculated from ODEX);
- Other effects: mainly "negative" savings due to inefficient operations in industry.

*Production measured in physical units or with IPI

Example of decomposition, calculation

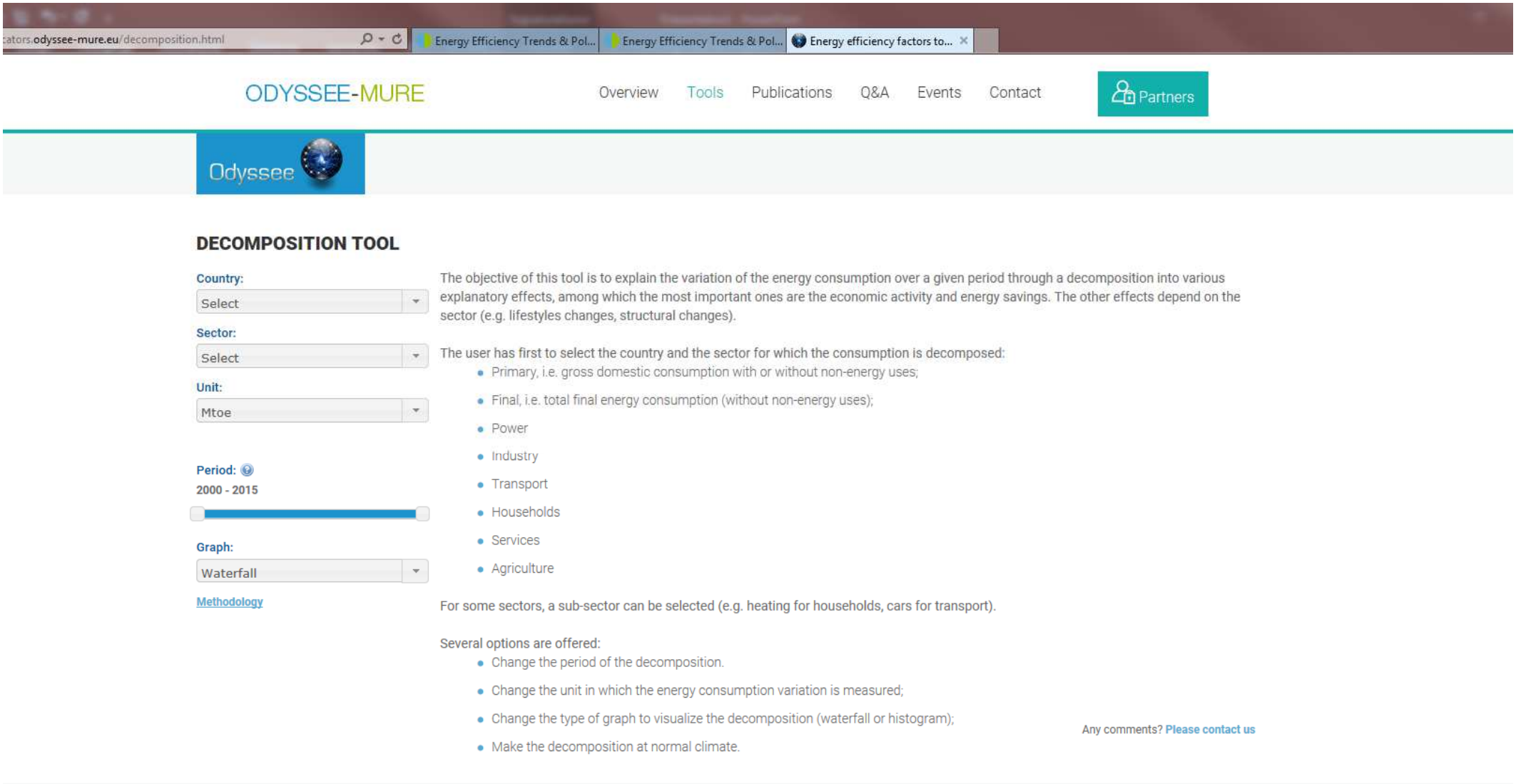
Year	Energy consumption (Mtoe) E	Production (Mt) Q	Specific consumption (Mtoe/Mt) E/Q
2000	0.85	10	0.085
2016	1.2	15	0.080

Consumption variation between 2000 and 2016 = 1.2 – 0.85 = 0.35 Mtoe

- Quantity effect = Variation of energy consumption due to the increase in production of cement between reference year (2000) and year t (2016): (Q[i,t]-Q[i,0])*(E[i,0]/Q[i,0])=(15-10)*0.085=0.425 Mtoe
- Unit consumption effect = variation of consumption due to variation in unit consumption (E[i]/Q[i]) = Q[i,t]*(E[i,t]/Q[i,t]-E[i,0]/Q[i,0]) =15*(0.085-0.080)=-0.075 Mtoe = energy savings

Consumption variation = quantity + unit consumption effect = 0.425 – 0.075 = 0.35

A glance in the databases



DECOMPOSITION TOOL

Country: Denmark

Sector: Households

Sub sector: All

Unit: Mtoe

Period: 2000 - 2015

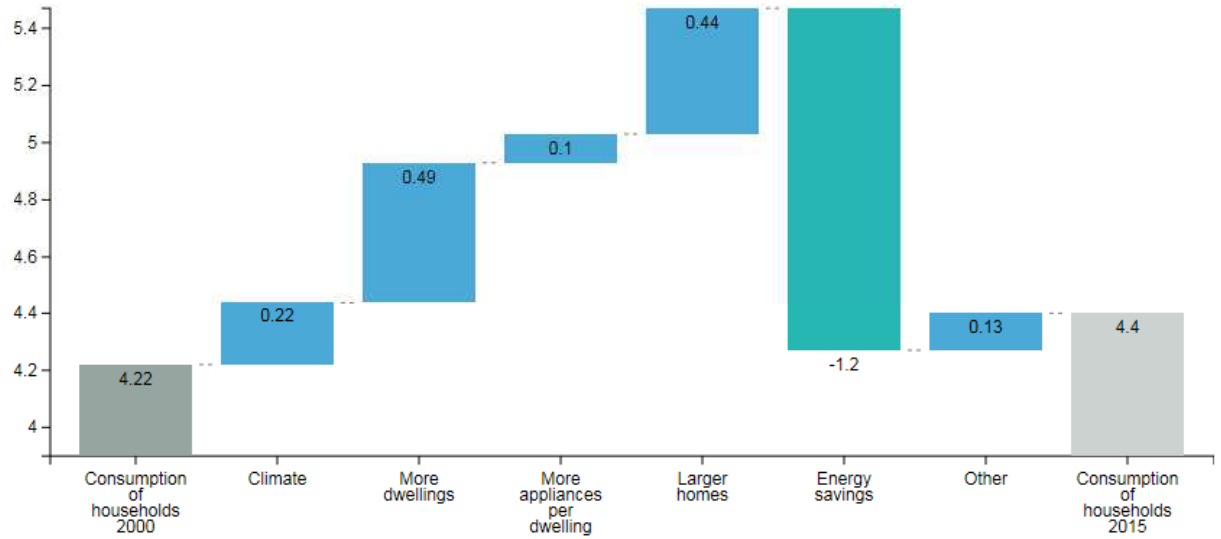
Graph: Waterfall

Climatic corrections

Methodology

VARIATION HOUSEHOLDS CONSUMPTION - DENMARK - MTOE (2000-2015)

EXCEL



Source: ODYSSEE

The variation of the households energy consumption between two dates is influenced by:

- Climatic difference between these two dates ("climatic effect");
- Change in number of occupied dwelling ("more dwellings");
- "More appliances per dwelling" (electrical appliances, central heating);
- Change in floor area of dwelling for space heating ("larger homes");
- Energy savings, as measured from ODEX;
- Other effects (mainly change in heating behaviors).

Energy savings correspond to **technical savings**, i.e. to gross savings corrected of negative savings due to inefficient operation of facilities or behaviors.

Decomposition, households

Energy consumption of households between two years, t and t_0 is changing under the influence of various factors :

- Climatic effect (due to climatic difference between years t and t_0);
- Change in number of occupied dwelling ("more dwellings effect");
- Evolution of lifestyles:
  - Average floor area of dwelling for space heating ("larger homes");
  - More appliances (electrical appliances, central heating);
- Technical energy savings (calculated from ODEX);
- Change in heating behaviors.

ODEX – Odyssee energy efficiency index

- In ODYSSEE, an energy efficiency index is calculated at sector level (i.e. industry, transport, households) and for all final consumers to assess energy efficiency progress.

- The energy efficiency index by sector combines the trends observed in the various indicators of specific energy consumption by sub-sector or end-use, by weighting indices of specific consumption by sub-sector (or end-use) with the share of each sub-sector in the sector's energy consumption.

- Indices are used to enable to express specific consumption by sub-sector or end-use in different physical units so as to be as close as possible to energy efficiency evaluation (e.g. toe/ton, toe/IPI for industry, toe per pkm or tkm in transport, toe/m2 or kWh/appliance for households).

Calculation of energy efficiency index in 3 steps

1. Calculation of energy efficiency indicators by sub-sector from energy consumption and activity data by sub-sector and conversion in indices;

2. Calculation of weighting factors by sub-sector, i.e. shares of sub-sector's consumption in total consumption of the sector;

3. Calculation of the energy efficiency index for the sector as a whole.

Principe of calculation of energy efficiency index*

1. Specific consumption (Index by sub-sector)	2010	2011	2012	2013
Chemicals (toe/100) (index)	8.5 (100)	8.3 (98)	8.2 (96)	8.2 (96)
Steel (toe/tonne) (index)	0.30 (100)	0.29 (97)	0.26 (87)	0.25 (83)
2. Energy consumption (Weight)				
Chemicals (Mtoe) (%)	20 (50)	20 (48)	20 (44)	22 (46)
Steel (Mtoe) (%)	20 (50)	22 (52)	25 (56)	26 (54)
3. Sector index	100	97.4	90.9	88.6

$IE_{2011} = IE_{2010}$ x (98/100 x 0.48 + 97/100 x 0.52) = 97.4

$IE_{2012} = IE_{2011}$ x (96/98 x 0.44 + 87/97 x 0.56) = 90.9

$IE_{2013} = IE_{2012}$ x (96/96 x 0.46 + 83/87 x 0.54) = 88.6 ➔ Energy efficiency improvement of 11.4% between 2010 and 2013 (=100-88.6)

** Fictive example considering only 2 branches of industry)*

Thank you for your attention!

Any questions?

Contact information

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