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Comparing Energy Efficiency Scoreboard Methodologies and Results

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Why Scoring and Ranking?

Scoring and ranking is based on **two important psychological components of human nature**:

- We seek comparison to others to develop benchmarks for our own performance. We ask ourselves, “Am I good or bad compared to the performance of others?”
- When we observe our performance is bad compared to others, we may again ask ourselves, “How are they achieving better performance? Can I learn from them and achieve similar or even better results?”

Two basic objectives for the scoring and ranking procedure we generally call a scoreboard:

(1) measuring performance

(2) comparing entities

Scoreboards in fields other than energy

- *OECD Science, Technology and Industry Scoreboard*
- *OECD PISA*
- *European Innovation Scoreboard*
- *Telekom Innovation Indicator*
- *Shanghai Academic Ranking of World Universities*
- *European Resource Efficiency Scoreboard*
- *Balanced Scorecard at company level*

Scoreboards and ranking principles in the field of energy

Type of Scoreboards	Ranking Principle
ACEEE International Energy Efficiency Scorecard	strong
ODYSSEE-MURE Energy Efficiency Scoreboard	strong
ARAB Future Energy Efficiency Index AFEX (http://www.rcreee.org/projects/arab-future-energy-index™-afex)	strong
CO2 Scorecard (http://www.co2scorecard.org/)	medium
Energy Efficiency Watch http://www.energy-efficiency-watch.org/	medium
IEA Scoreboard 2011 (https://www.iea.org/publications/freepublications/publication/IEA_Scoreboard2011.pdf)	weak
IEA country scorecards specifically related to combined heat and power https://www.iea.org/chp/countryscorecards/	weak/medium[1]

"strong ranking": *Weights for the different criteria and* establishment of a ranked list (underlying methodology: more or less transparent multi-criteria analysis.
"medium strong ranking": *criteria shown as spider/*flower graphs; no overall ranking.
"weak ranking": *reporting of each performance criterion without summary* view.

ACEEE Scorecards

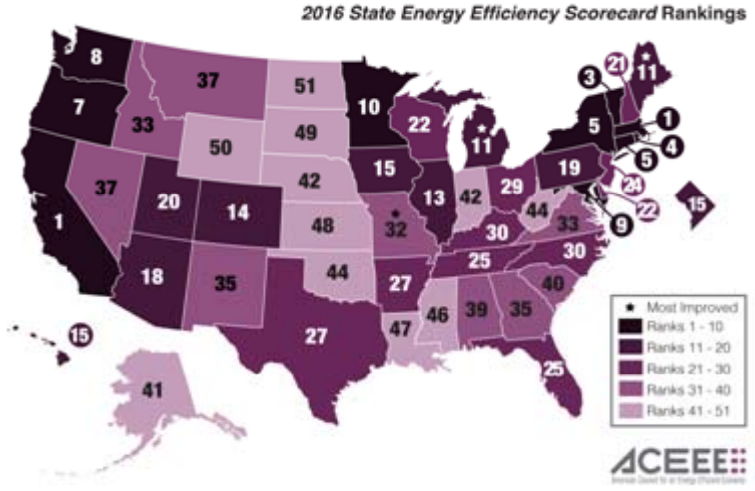
Ranking publication	Jurisdiction	Frequency
State Energy Efficiency Scorecard	51 US states and 3 territories	Annually since 2006
International Energy Efficiency Scorecard	23 countries	Bi-Annually since 2012
City Energy Efficiency Scorecard	51 US cities	Bi-Annually since 2013
Utility Energy Efficiency Scorecard	50+ largest utility providers	Forthcoming in 2017

ACEEE's 2016 International Energy Efficiency Scorecard

- 23 countries; 35 metrics
- Buildings, industry, transportation, national efforts
- 60% policy / 40% performance
- Data collection from centralized sources (IEA, World Bank, WEC, OECD, ICCT, etc.)

ACEEE's 2016 State Energy Efficiency Scorecard

- 50 states, DC and 3 US territories
- Utility programs, transportation, building codes, CHP, state-led initiatives, appliance standards
- Point allocation relative to magnitude of savings potential
- Data collected by request from state energy office and utility commissions



Effect of scoreboards on policy

- Sense of competition motivates action
- Generates discussion with key stakeholders
- Helps identify weaknesses and policy solutions
- Steers conversation toward ambitious targets
- Top scorers provide model approaches
- Prompts more measurement and data collection

Examples of policy impacts

- Public expression of need to improve
  - "Traditionally, Mississippi has been actively engaged in energy efficiency efforts, but national reports show that energy efficiency is an area where Mississippi has room for improvement."

    -*Energy Works: Mississippi's Energy Roadmap*, 2012

  - "Be a Top 10 city as rated by the American Council for an Energy Efficient Economy (ACEEE)."

    -Los Angeles "Sustainable City pLAn," 2015

- Justify/guide specific policy development
  - "Staff also stated that it developed its proposed savings targets to meet the criteria for an EERS as established by the American Council for an Energy-Efficient Economy (ACEEE)..."

    -New Hampshire Energy Efficiency Resource Standard (EERS), 2016

Key points of comparison between ACEEE and ODYSSEE-MURE

- Similarities
  - Strong ranking principle (weighting and scoring)
  - Transparent criteria traced back to energy use or policies
  - Results show room for improvement
- Differences
  - Approach to policy and performance metrics
  - Level of adjustment to normalize data for comparison
  - Measurement of impact of policies
  - Data collection and availability

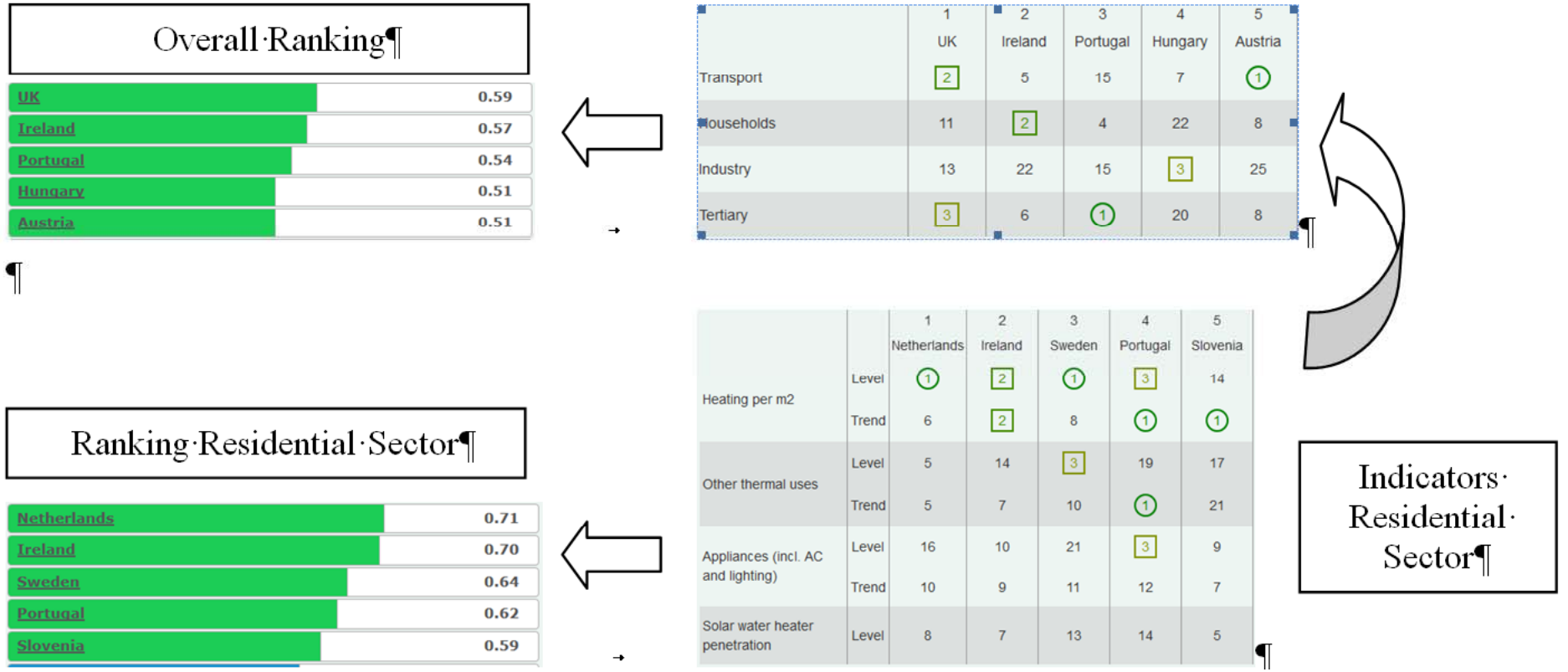
Odyssee Indicator Scoreboard

- scores level and progress of countries in energy efficiency
- Scoring done for list of selected indicators repre-sentative of end-uses, transport mode or sub-sector.

  - Buildings (4 end-uses[3])/Transport (3 + 2 modes[4]): several indicators (each combined 50% by level and 50% for the trend). The score of each indicator is multiplied by the weight of the indicator (for details on the weighting see ODYSSEE-MURE methodological documents); which has been defined on the basis of the share of the end-use or transport mode in the sector consumption. The normalized indicator scores multiplied by their weight have been added to obtain the score of each sector.
  - Industry: energy intensity at EU average industry structure, and one composite indicator summarizing energy efficiency trends (ODEX). For ODEX weighting occurs with the share in energy consumption.
  - Service sector: distinguishes fuel and electricity consumption per employee (and also level/trend).

- Based on OECD Composite Indicators methodology
- Score of sector weighted by share in final energy

Odyssee Indicator Scoreboard



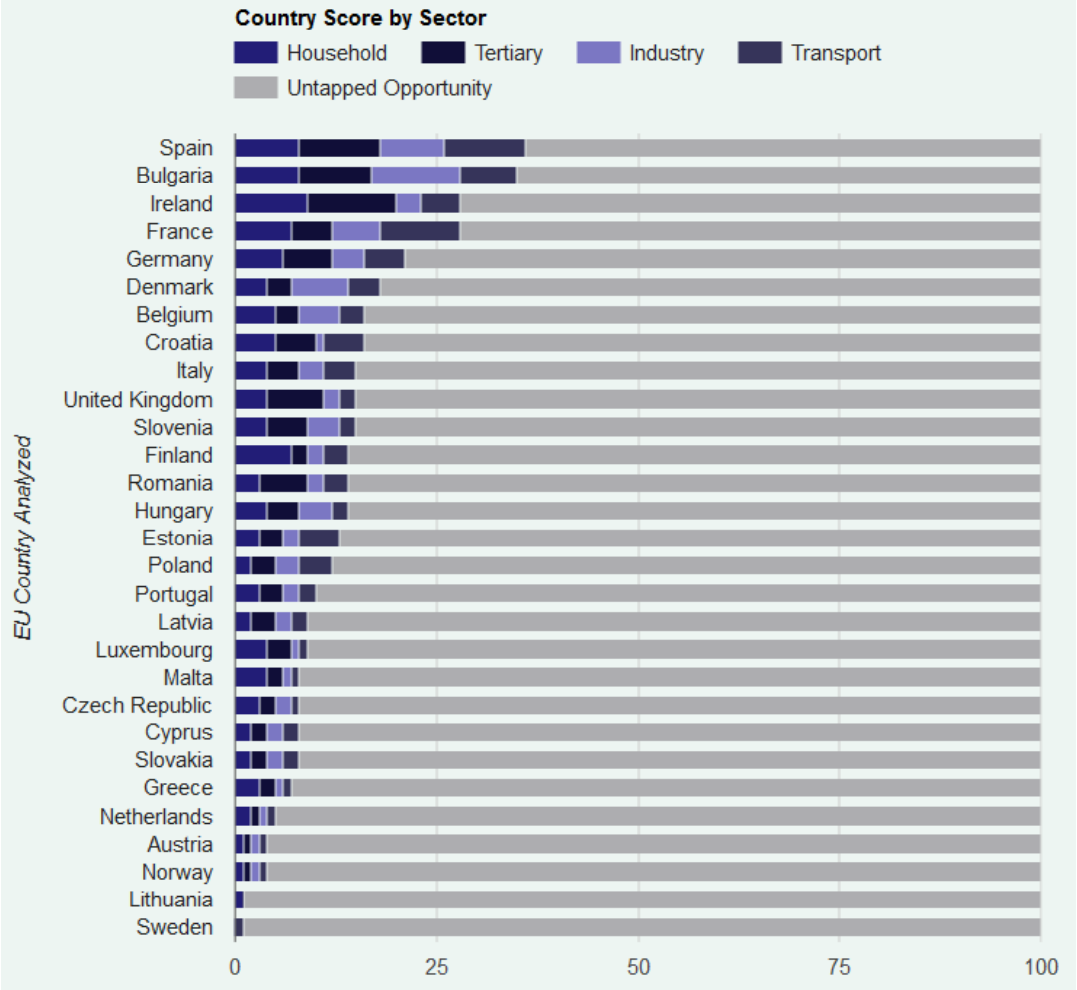
MURE Energy Efficiency Policy Scoreboard

- *Output-based scoring (based on energy savings)*
  - Information on impacts in MURE: Quantitative information + Semi-quantitative expert estimates on measure impacts (3 impact categories)

- *Output-based scoring (related to EE potentials)*
- Output-based scoring *(related to 2020 EE targets)*

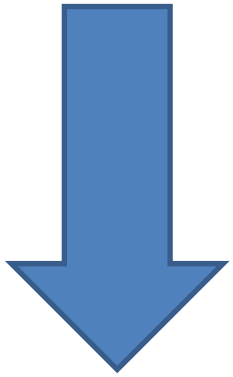
- *Input-based scoring*: based on the inputs to energy efficiency policies (e.g. amount of final subsidies)

Ranking of EE Policies based on MURE



Ongoing development

Level	Trend	Policy Scoring
1 …	1 …	1 …
2 …	2 …	2 …
3 …	3 …	3 …



Combined Odyssee-MURE scoreboard on Energy Efficiency Policies, Trends and Levels

Conclusions on Scoreboards for Energy

- Useful framework for motivating future action
- Understand way rankings are done and recognize limitations
- Methodologically rigorous, accurate data
- Interest beyond policy:
  - NGOs (DENEFF,…)
  - Press
  - General public
- EU Energy Scoreboard
  - ECEEE?
  - European Commission?