# Increasing the use of national statistics data for monitoring energy efficiency in The Netherlands

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# Why are energy saving and efficiency important?

- Using less energy helps attain policy goals for emission reduction and share of renewables
- Lowers energy dependency and costs
- Reduces practical barriers of the energy transition like infrastructure limitations, public resistance
- IEA: multiple benefits of energy efficiency: less energy poverty, less air pollution good for health etc.
- European Commission: energy efficiency first
- Energy saving policies are underutilised, the national monitor may help

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# Reasons for a Dutch national efficiency monitor

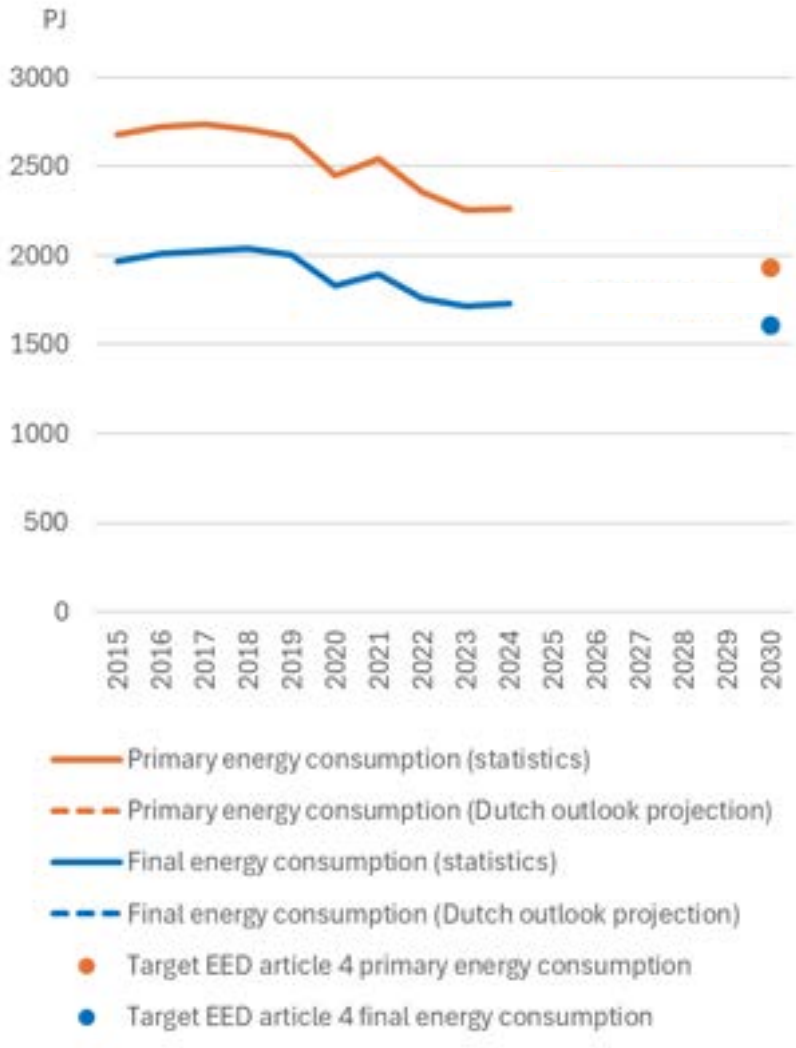
EU Energy Efficiency Directive (EED) article 4 targets,

realisations and

Dutch Climate and Energy Outlook projections

for primary and final energy consumption in the Netherlands

Results available earlier than at Eurostat



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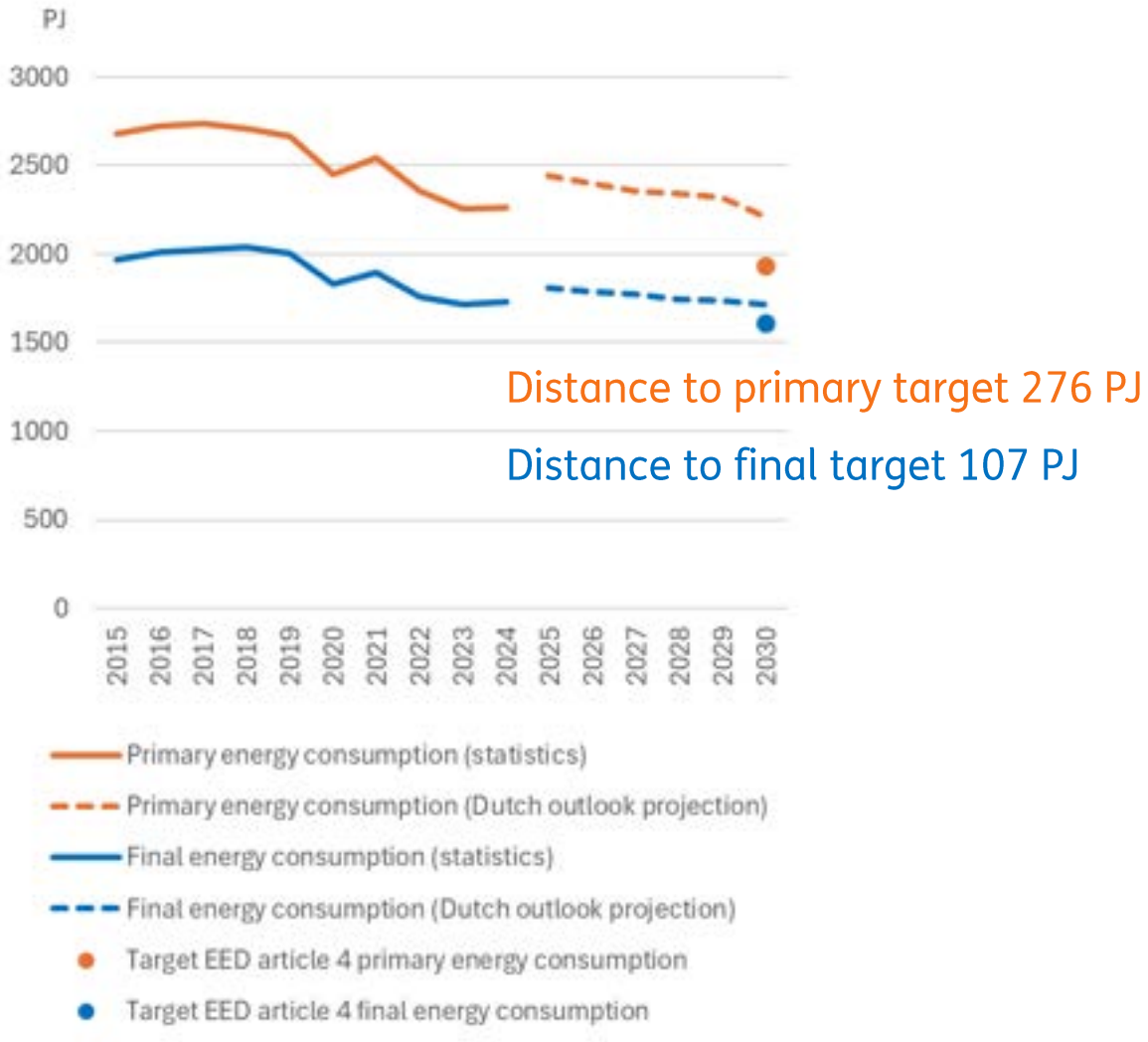
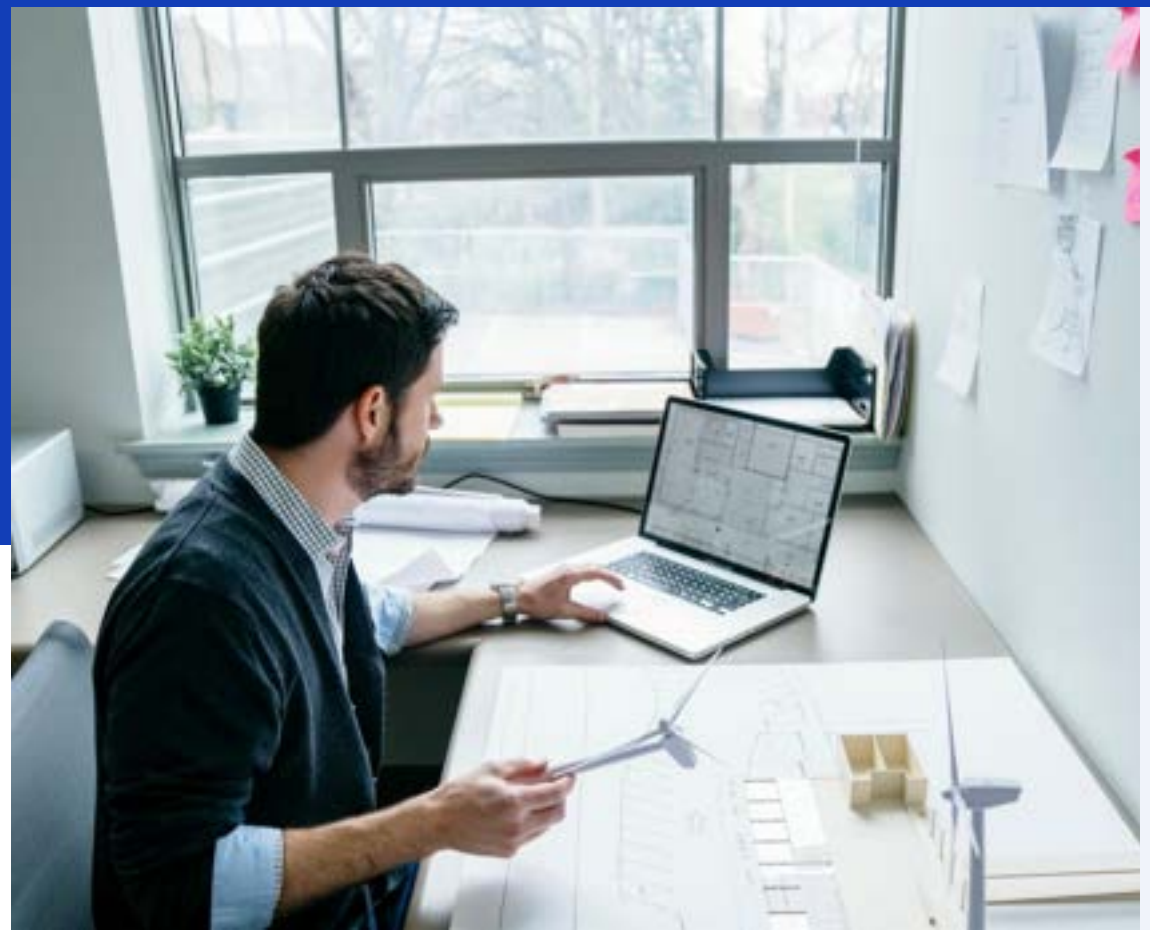


# Introduction



**Motives and considerations:**

- Increased interest of Dutch government in energy consumption and efficiency
- Partly because of EED article 4 goals
- National sector definitions
- Detailed monitoring of final energy efficiency already done by Odyssee-Mure and IEA…
- … but some energy conversion efficiencies not covered
- Odyssee-Mure and IEA use lower quality data for some activities due to lack of official data
- This concerns mostly data on physical production and activities, but also some detailed energy consumption data

# Goals

- Improve official data availability by involving Statistics Netherlands CBS
  - (Only CBS can determine EED article 4 energy consumption on the sector level for the Dutch sector definitions)
- Insight in the main developments behind primary and final energy consumption
- Developing definitions of energy efficiency indicators for use within the national and international context

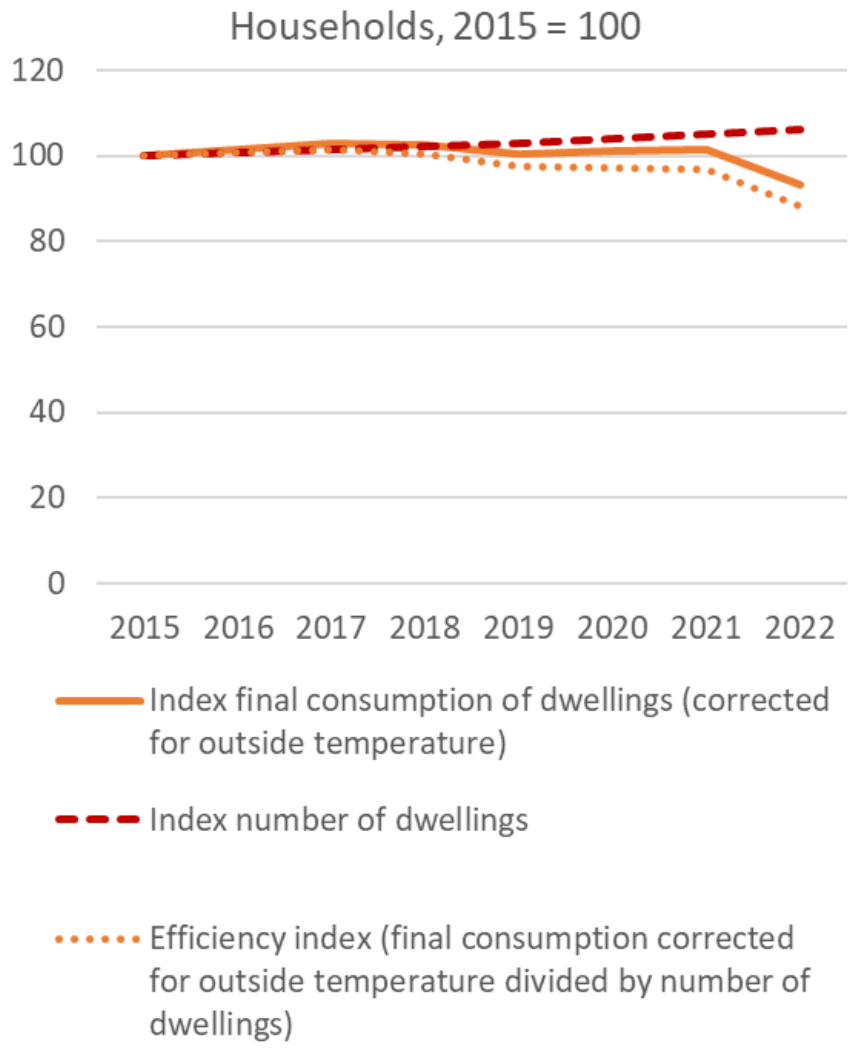
# Methodology 1/3

- Sector definitions of the Dutch Climate Agreement, convenient for policymakers
- Industry includes refineries, production of oil and gas, coke ovens and blast furnaces
- Conversion losses of autoproducer CHP are allocated to end use sectors
- Energy use by mobile machinery is allocated to transport
- Energy data exclusively from CBS, consistent with Eurostat data for calculation of EED article 4 goals
- Aviation bunkers are not part of the Dutch Climate Agreement, but within scope of EED

| EED definitions | | Sector definitions Dutch Climate Agreement | | | | | |
|---|---|---|---|---|---|---|---|
| Primary | Final | Consumption type | Power and Heat | Industry | Built Environment | Transport | Agriculture |
| | | transformation losses, own use | main activity electricity | other transformation | | | |
| | | transformation losses of electricity and sold CHP heat | main activity CHP | auto-producer CHP | auto-producer CHP | | auto-producer CHP |
| | | transformation losses of own use of CHP heat | | auto-producer CHP | auto-producer CHP | | auto-producer CHP |
| | | final consumption | | final use | final use | final use | final use |
| | | final consumption mobile machinery | | final MM | final MM | | final MM |
| | | bunker fuels | | | | Aviation bunkers | |
| | | | | | | Marine bunkers | |
| | | non-energetic | | | | | |

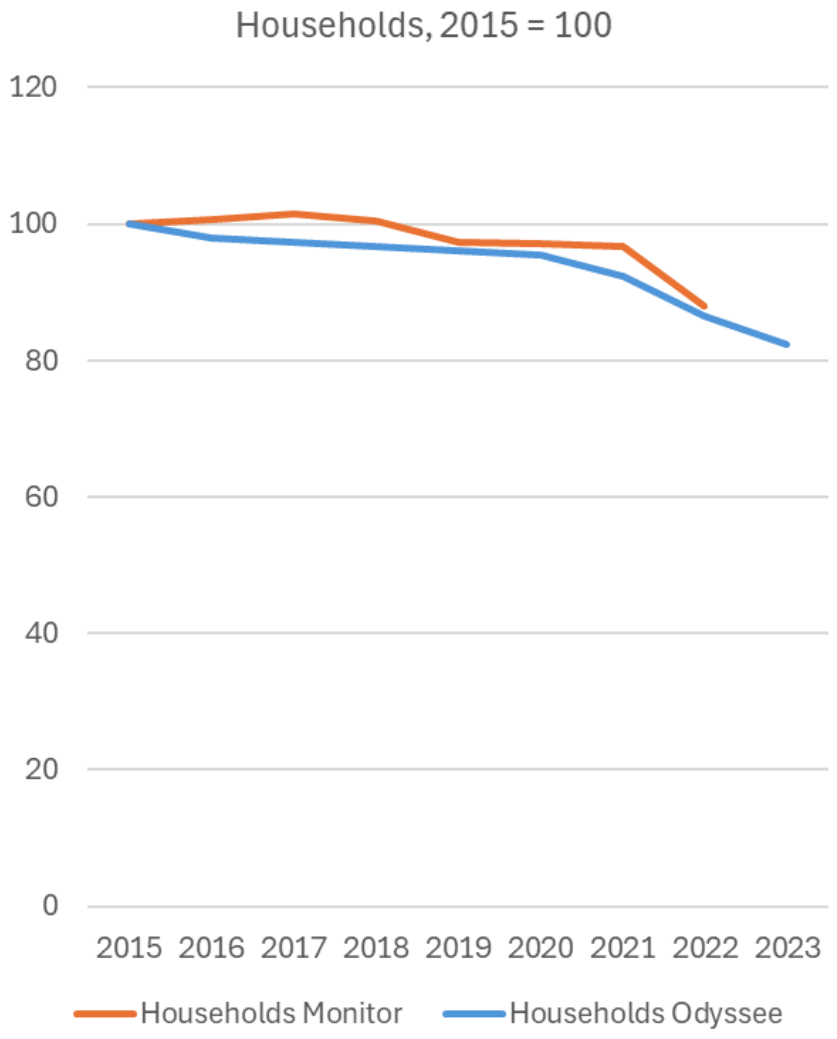
# Methodology 2/3

- Efficiency indices used: primary and final energy consumption divided by levels of dominant activities
- Base year is 2015
- Efficiency indicators on the sector level for relatively homogeneous sectors (Power, Households, Services, Agriculture (dominated by horticulture)
- Industry is largely covered by efficiency indices for refineries, chemical industry, steel industry
- Transport is largely covered by efficiency indices for cars, trucks, light vehicles, air traffic
- No sector level efficiency indices for industry and transport, nor primary and final ones on the national level



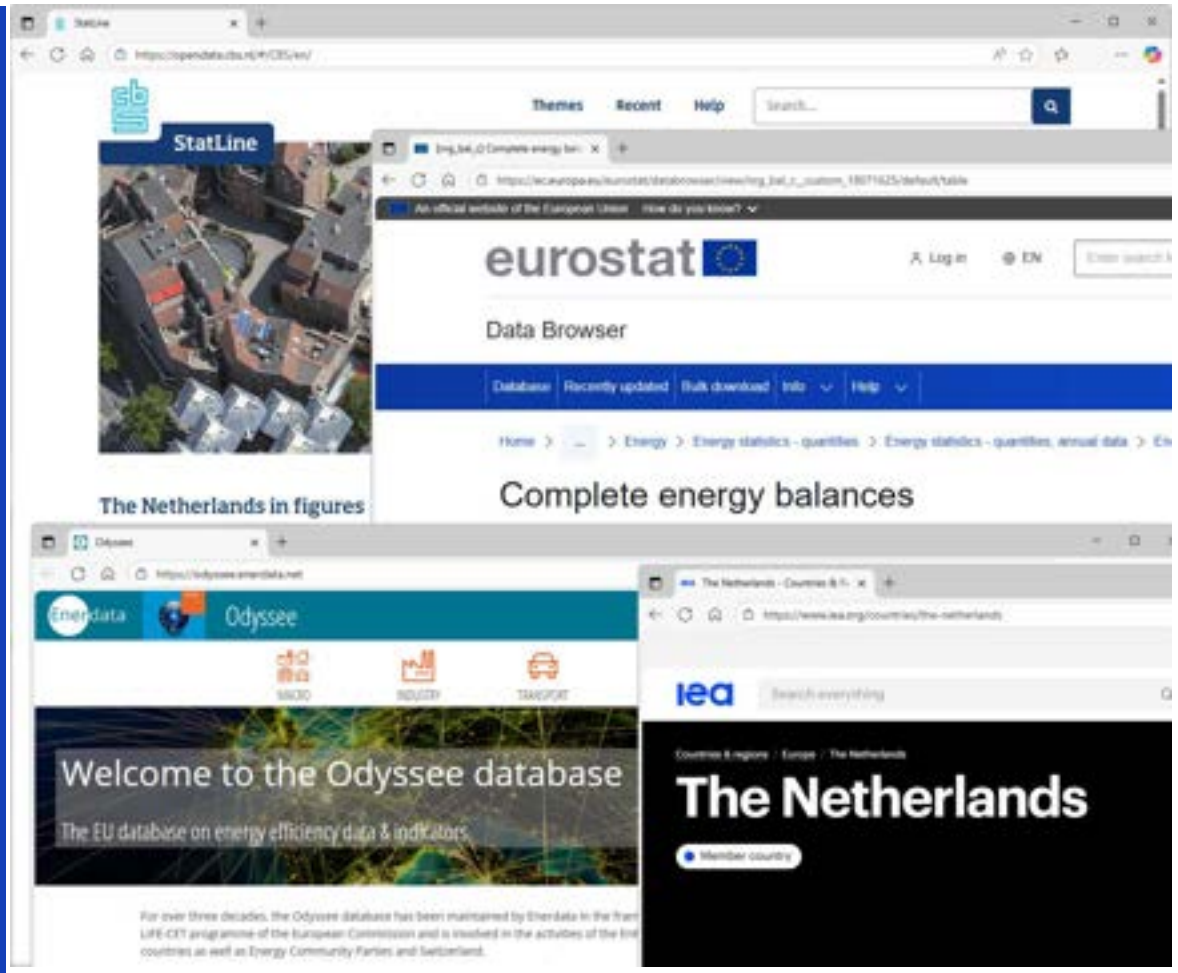
# Methodology 3/3

- Less detailed than Odyssee-Mure and IEA; structural effects not taken into account
- No 3-year averaging
- Example: for households, total energy consumption is divided by the number of households, without taking changes in heating systems or appliance ownership into account
- This is deliberate, as we do not aim to replicate the level of detail in Odyssee-Mure
- This also means less efficiency gains than in Odyssee-Mure if consumption-increasing structural effects have occurred



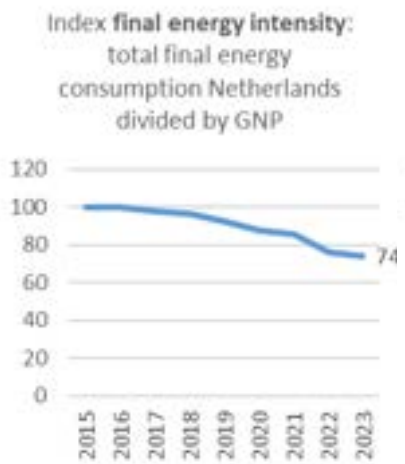
# International context

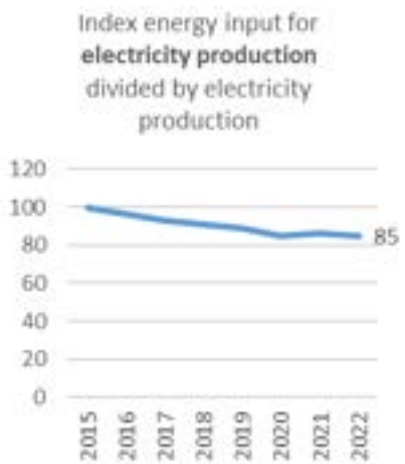
- Definition of indicators aligned to match the national and, if possible, international context
- This makes indicators consistent between different energy efficiency reporting obligations
- Most important example: allocation of CHP input energy to electricity and heat

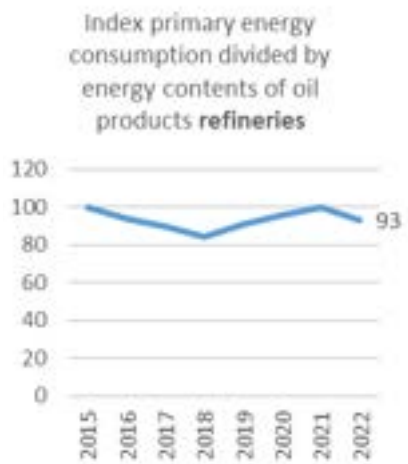


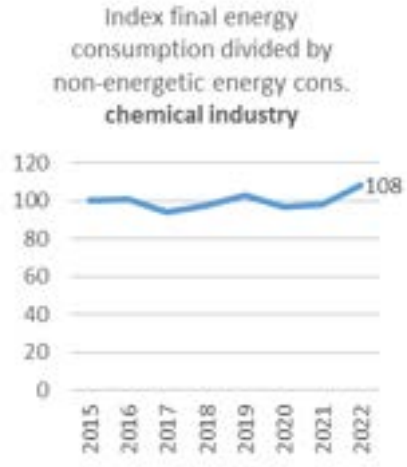
# Results 1/2

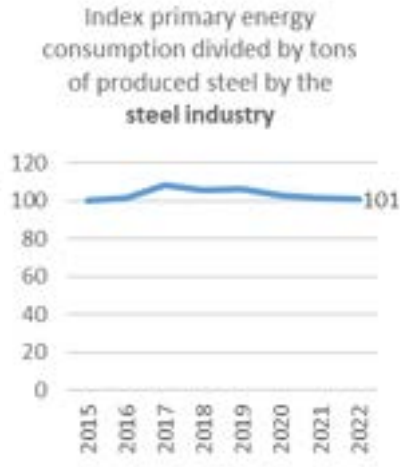
- With the methodology used, only the power and services sectors show convincing trends towards higher efficiency compared to 2015

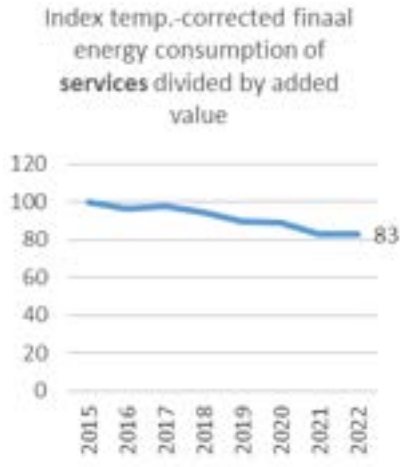


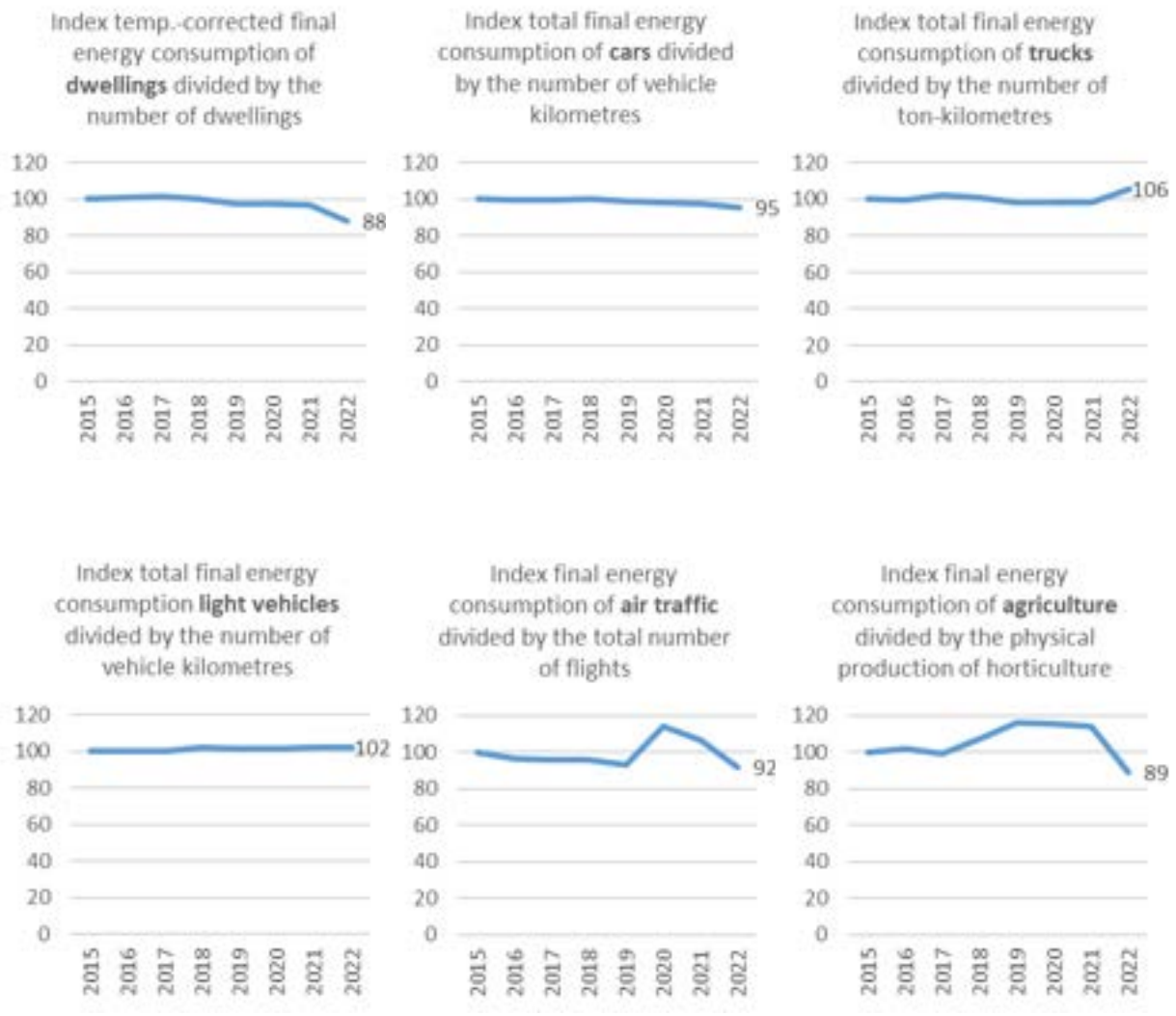



# Results 2/2

- The relatively low index values for residential and agriculture are outliers related to high energy prices in 2022
- A secondary result is the awareness of necessary data that are not (yet) directly available from CBS



# Conclusion and Discussion 1/2


- Some activity data for Odyssee-Mure are collected by TNO from other sources
- Awareness of missing time series helps getting activity data higher on agenda of national statistics offices and decision makers
- Maximum CBS data availability would improve consistency between databases and monitoring methodologies (by IEA, Odyssee-Mure and the annual Dutch Climate and Energy Outlook)

# Conclusion and Discussion 2/2

**Important features of the monitor:**

- Insight in the main trends underlying energy consumption
- Efficiency developments matching the Dutch sector definitions

It can help shape sectoral policies to reach the EED article 4 targets

**Improvements to the monitor may include**

- Averaging over multiple years to smoothen statistical noise
- Constructing efficiency indices on the sector level for all sectors
- Primary and final efficiency indices on the national level



# Questions and discussion

## What is the data availability situation in your country?

Link to extended abstract to appear on https://energy-evaluation.org/resources

Monitor energy saving: https://energy.nl/publications/monitor-energiebesparing/

# Thank you for your attention

# International context

- Definition of indicators aligned to match the national and, if possible, international context
- This makes indicators consistent between different energy efficiency reporting obligations
- Most important example: allocation of CHP input energy to electricity and heat
  - The allocation method used for CHP in power plants is a variant of the standard Dutch calculation of $CO_2$ emissions from electricity generation
  - Energy savings calculated by comparing combined generation of heat and power to separate generation
  - Half of the saved energy is allocated to electricity, half of it to heat generation