International Energy Agency

Importance of demand side data and energy efficiency indicators for policy - industry

Renee Stephens

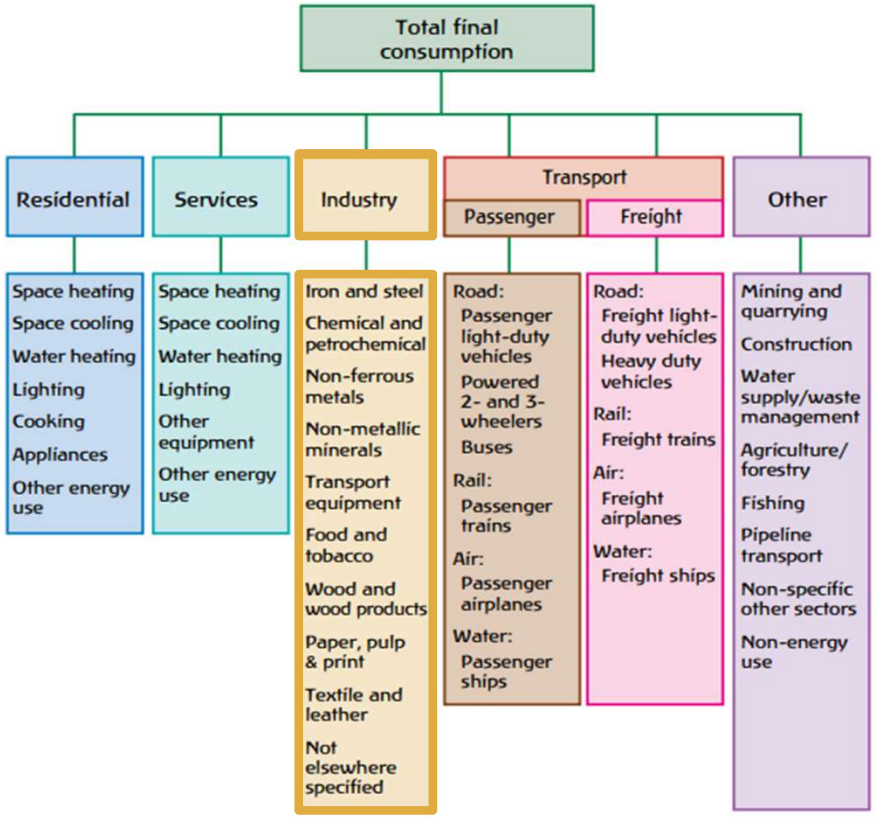
Online workshop – 10 June 2025

Demand side data and energy efficiency indicators - industry

Photo credits © Getty Images

Demand side data

- Demand side data represents the **energy consumption and activity data** for the end use sectors
- Often grouped into the three end-use sectors of **buildings** (residential and services), **industry** and **transport**
- Energy consumption data is typically the **per annum consumption by fuel-type** for a given category. It can be expressed in various units (kWh, joule, tonnes of oil equivalent)
- **Activity data varies by category** and covers a wide range of activities: population, steel production, industrial value added expressed in as many units as activities



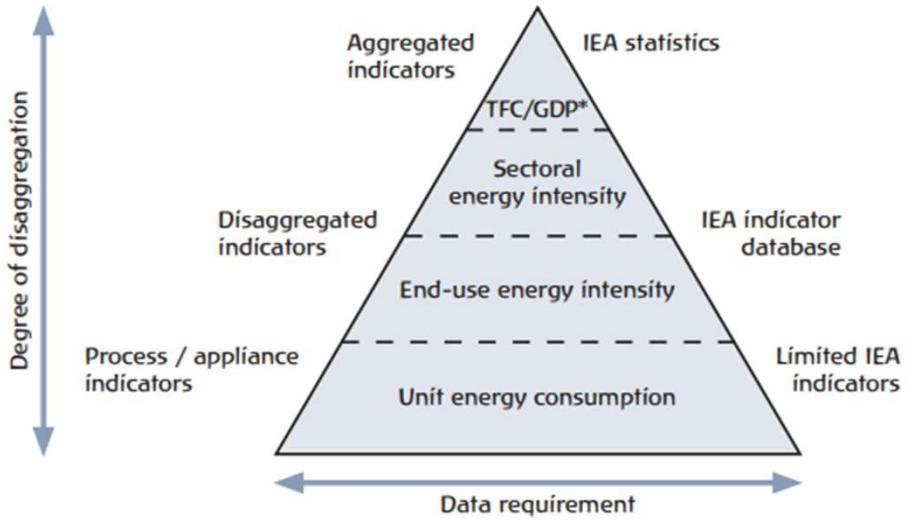
Energy efficiency indicators

- An energy efficiency indicator is typically a **ratio** that represents **energy consumption per unit of activity** of the given category

$$\frac{\text{energy consumption}}{\text{activity}} \qquad \frac{\text{total final consumption}}{\text{gross domestic product}}$$

- Indicators are signs describing observable changes or events. They provide useful evidence for policymaking
- Energy intensity is the most general indicator of energy efficiency
- This concept applies at different scales (economy, sectoral and sub-sectoral, processes/equipment)
- Indicators **allow for tracking and comparisons**

IEA's energy indicators pyramid



Examples

Energy consumption per unit of value added
e.g., GJ/thousand USD, PPP

Energy consumption per unit of physical output
e.g., GJ/Tonne produced

Demand side data is vital for effective policy making

Sectoral level demand side energy and activity data often supports data-driven policy in:

Policy development

Identify high potential opportunities to inform the policy approach, establish the baseline and set realistic targets for policy initiatives (e.g., targets for the penetration of electric motors in industry for equipment replacement programs)

Monitoring and enforcement

Track the progress towards the interim to long-term targets

Refinement

Modify policies based on the progress tracking to maximise their relevance and effectiveness

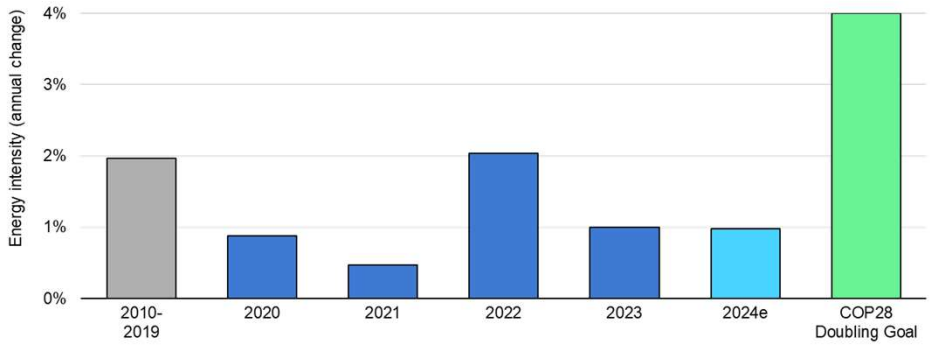
Global energy efficiency progress tracking

- COP28 global doubling energy efficiency goal
- Tracking energy efficiency progress at the global level
- Tracking energy efficiency progress at the regional and country level
- Helping countries to determine, what might be an appropriate level of progress to contribute to the COP28 2030 global doubling goal

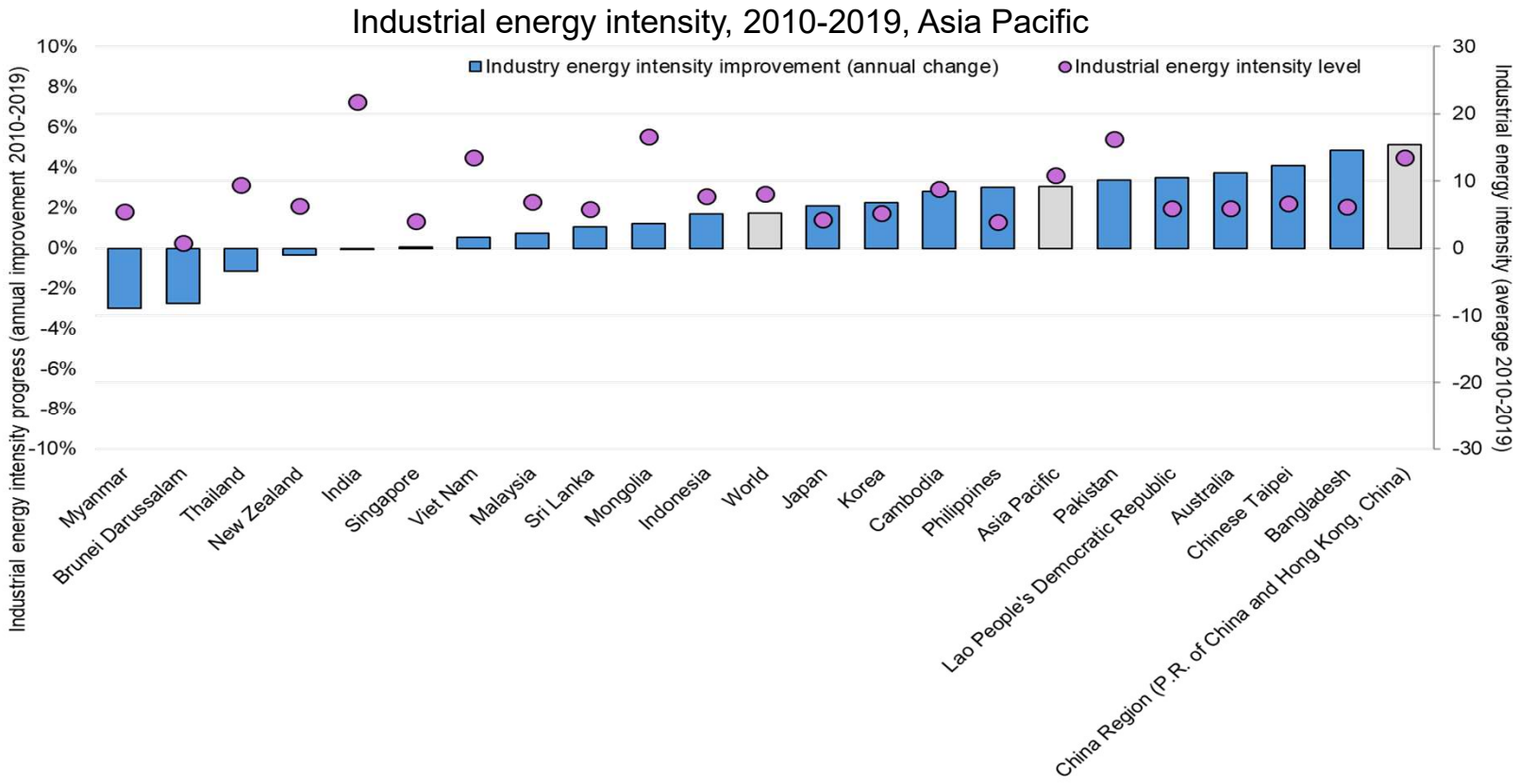
Energy Efficiency Progress Tracker

Tracking energy efficiency progress for all regions and countries

Global annual improvement in primary energy intensity, 2020-2024e, and rate needed to achieve the COP28 doubling goal



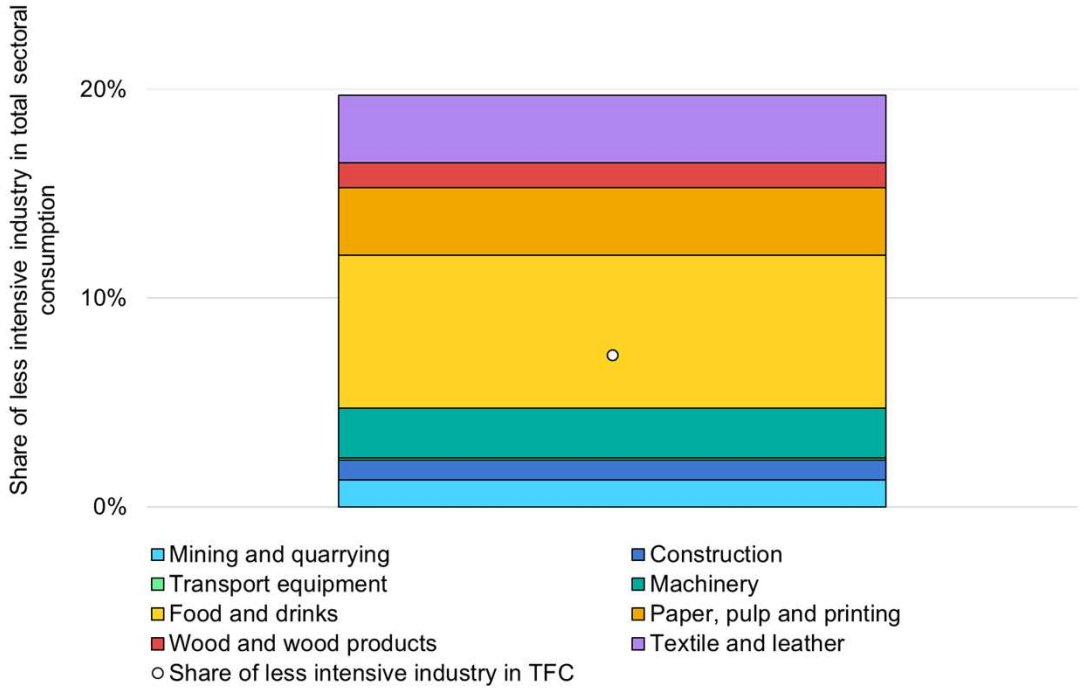
Benchmarking industrial energy intensity for policy development



Industrial energy intensity can be described and tracked at the global, regional, and national level. Differences among economies that can affect the data include energy sources and structural differences.

ASEAN’s light industry sector

Share of less intensive industries in total industry sector energy consumption, and in total final consumption in ASEAN, 2022



Sub-sector data can indicate high priority areas for policy development.