

# What data to track the energy transition? The IEA perspective

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# 1. What would we need to track the transition?



# A transparent tracking framework

- **To monitor progress of energy sector transition towards both short- and long-term objectives**
- **Providing key elements to inform energy policy efforts over time**
- **Ensuring trust and confidence at international level**

# A set of metrics to track decarbonisation across energy subsectors – fitting national priorities

**Table 2** ▶ Selected indicators to track energy sector decarbonisation

Metric	2014	2030		Unit	
		INDC	Bridge		
Total energy sector	Energy- and process-related greenhouse gas emissions	38.2	41.9	35.8	Gt CO <sub>2-eq</sub>
	Carbon intensity of primary energy supply	2.36	2.14	2.01	t CO <sub>2</sub> /toe
	Energy intensity of GDP	0.176	0.127	0.120	toe / \$1000
Power	CO <sub>2</sub> emissions per unit of electricity	518	382	306	g CO <sub>2</sub> /kWh
Transport	New passenger cars: CO <sub>2</sub> emissions per vehicle-kilometre	155	110	90	g CO <sub>2</sub> /v-km
	Carbon intensity of total transport fuel demand	2.9	2.7	2.7	t CO <sub>2</sub> /toe
Buildings	Residential: energy demand per dwelling*	8 265	7 850	7 400	kWh/dwelling

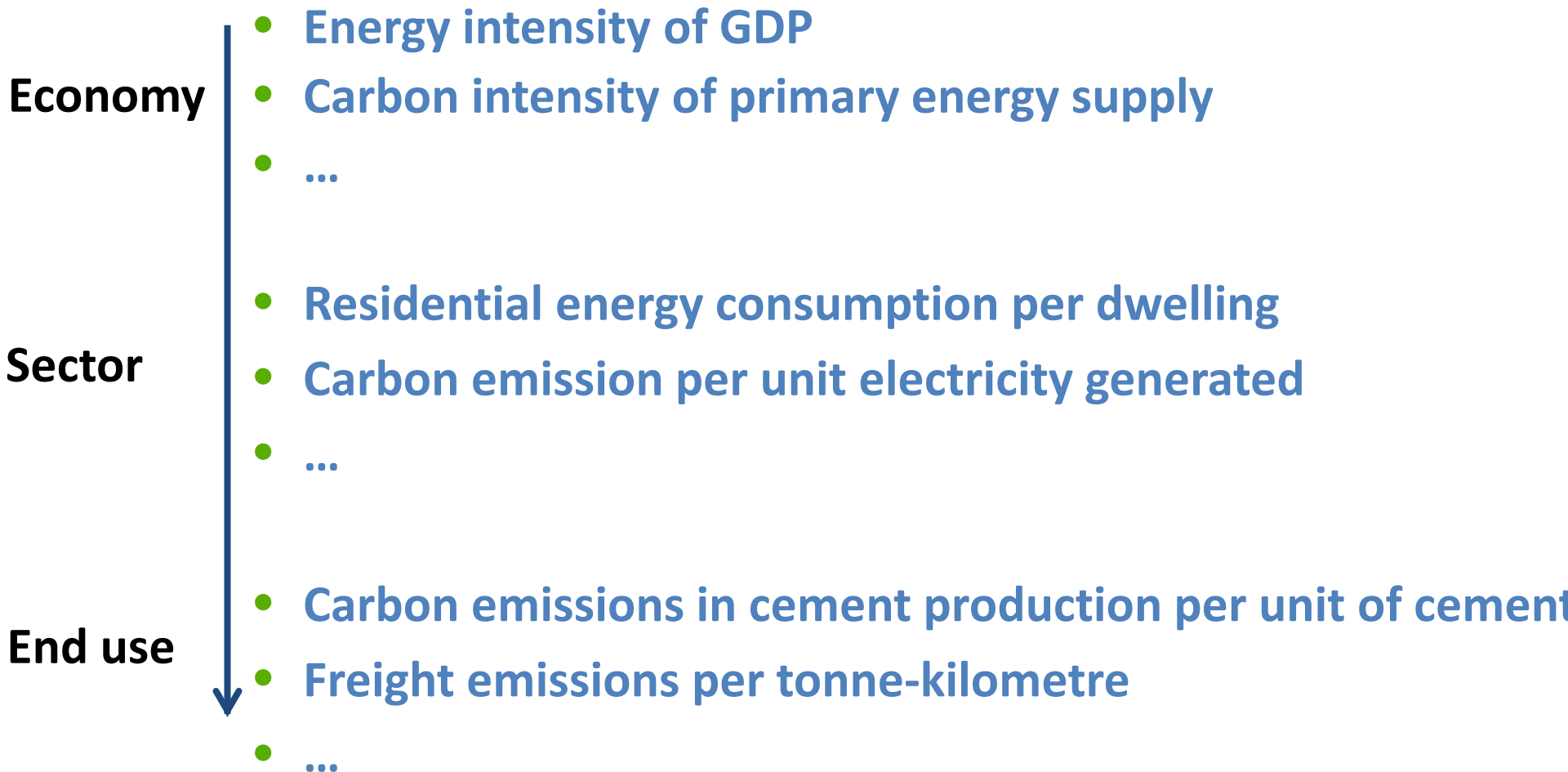
\* Excludes traditional use of solid biomass.

Notes: toe = tonnes of oil equivalent, g CO<sub>2</sub>/kWh = grammes of CO<sub>2</sub> per kilowatt-hour, g CO<sub>2</sub>/v-km = grammes of CO<sub>2</sub> per vehicle-kilometre, t CO<sub>2</sub>/toe = tonnes of CO<sub>2</sub> per tonnes of oil equivalent.

Source: IEA World Energy Outlook Special Report 2015: Energy and Climate Change



# Metrics may range from economy-wide to sectoral and end-use level – data requirements vary





# The capacity to collect all relevant data across countries

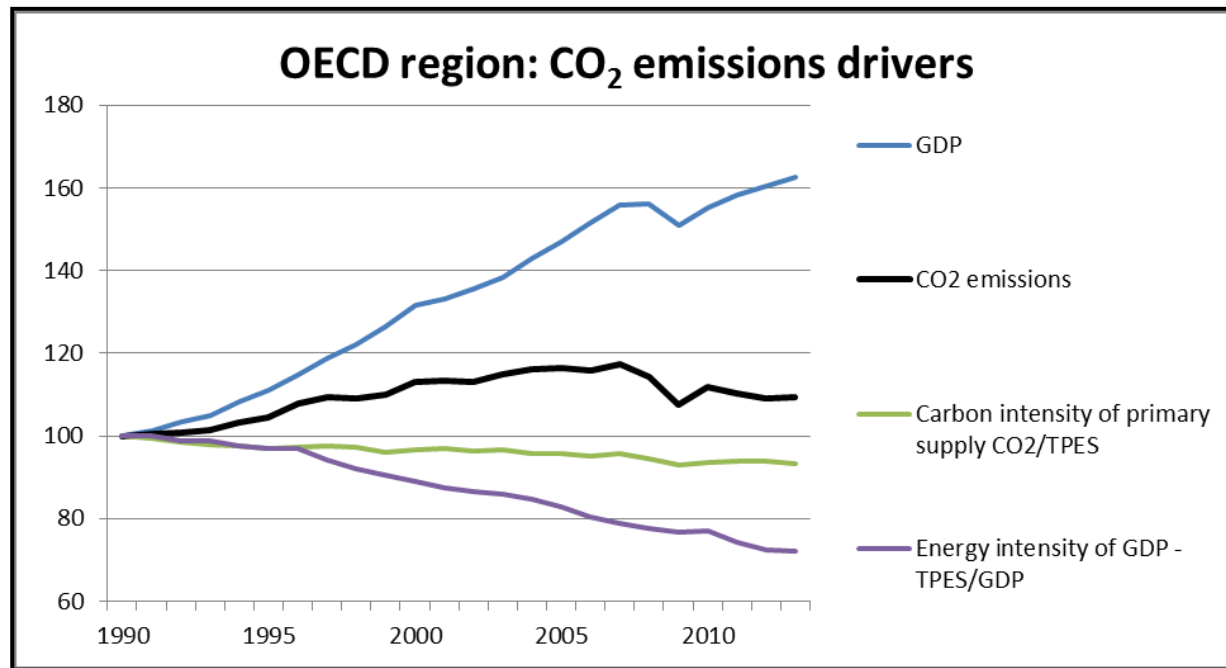
- **Transparent methodologies for comparability**
- **Technical expertise**
- **Adequate institutional arrangements and resources**



## **2. What are we able to track now? The IEA experience**



# Economy-wide indicators available at global level



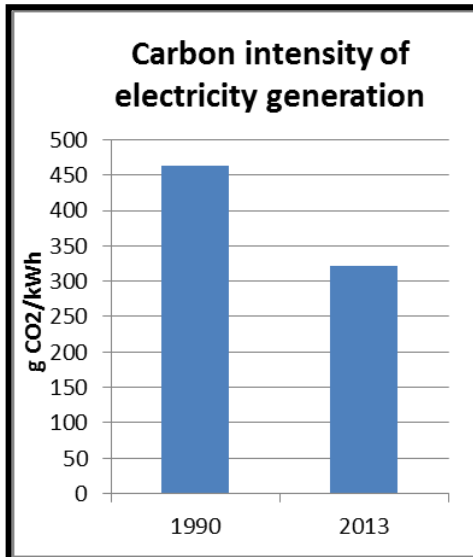
Source: IEA CO<sub>2</sub> emissions from fuel combustion, 2015  
 Based on identity  $CO_2 = CO_2/TPES \times TPES/GDP \times GDP$

## Provide integrated view of energy sector trends

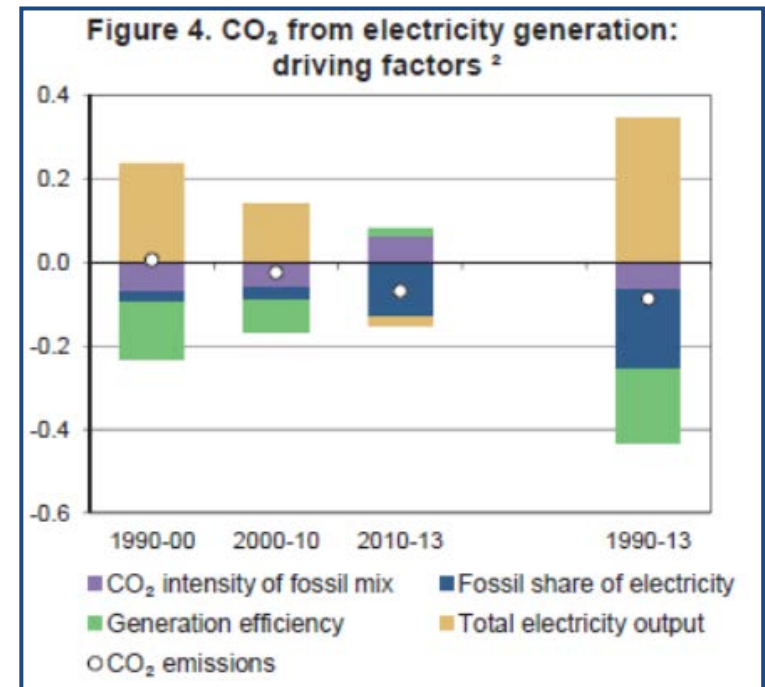




# Sectors well tracked globally: the electricity example



OECD Europe



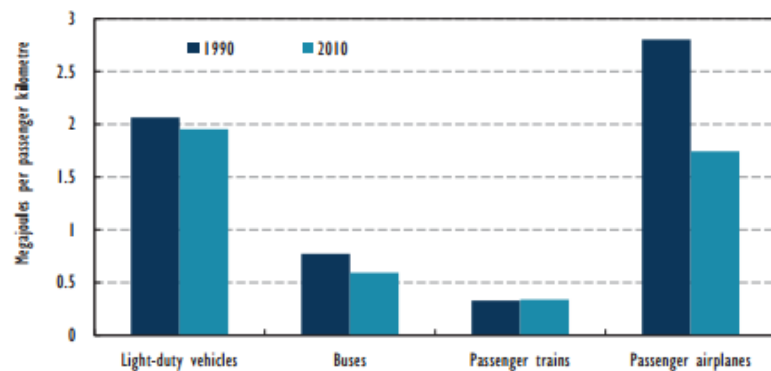
Source: IEA CO<sub>2</sub> emissions from fuel combustion, 2015

**Sectoral indicators help identify drivers of energy trends**

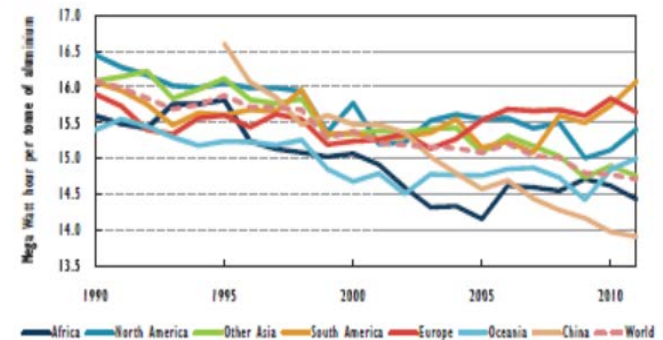


# End-use level indicators availability and quality vary

**Figure 6.7** • Example of level 2 indicators for IEA15: energy consumption per passenger-kilometre by transportation mode



**Figure 5.12** • Regional specific electricity consumption in aluminium smelting



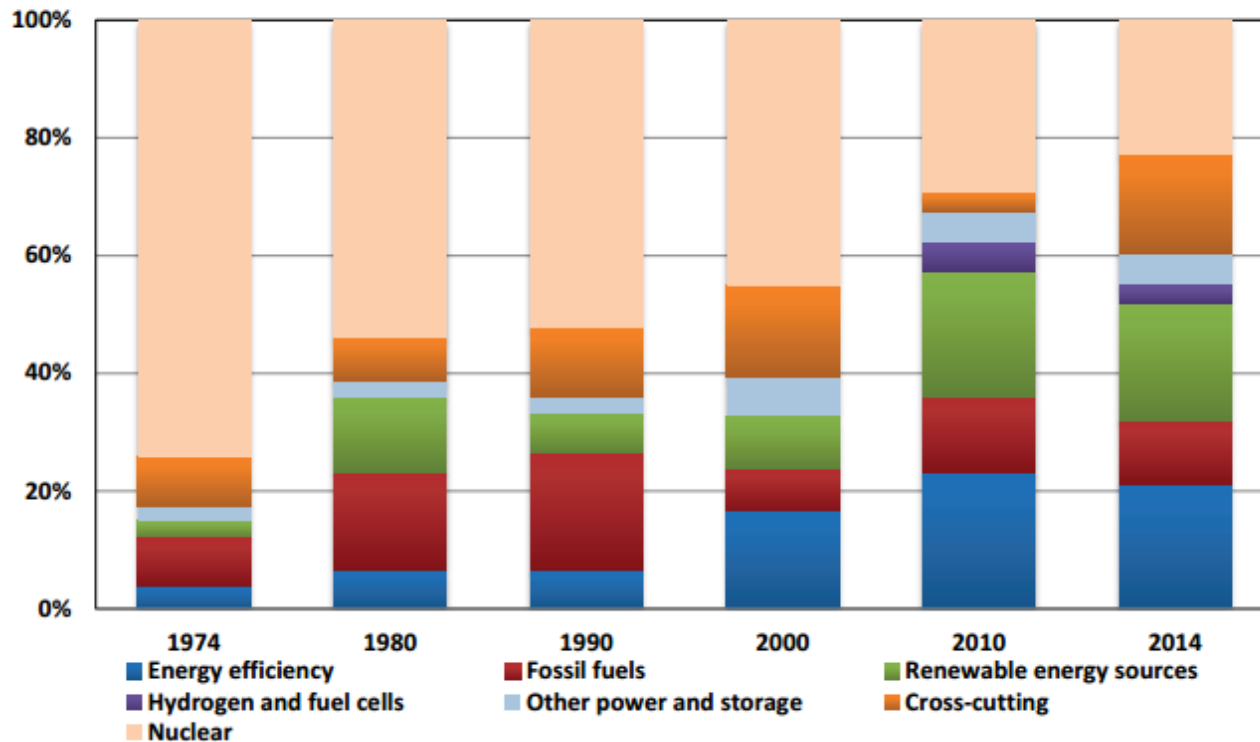
Source: IAI (International Aluminium Institute) (2013), Primary Aluminium Production, IAI, London. See <http://www.worldaluminium.org/statistics/> for definitions of geographical aggregations.

Source: IEA Energy Efficiency Indicators: Essentials for Policy Making, 2014

**Sub-sector, end-use, or even technology indicators give sharper understanding of transition pathways**

# Other key information: investment in energy RDD

Figure 2: IEA Total Public Energy RD&D



Source: IEA Energy RD&D database, 2015

Enhanced if expanded to non-OECD and private sector



## So.. Toward tracking the energy transition

- **Would require a broader set of metrics than those currently collected globally**
- **Countries to scale-up capacity to collect data at sub-sectoral and end-use level to better inform policy**
- **IEA keen to act as a center of global expertise - statistics, technology and modelling**