

World Energy Outlook 2016

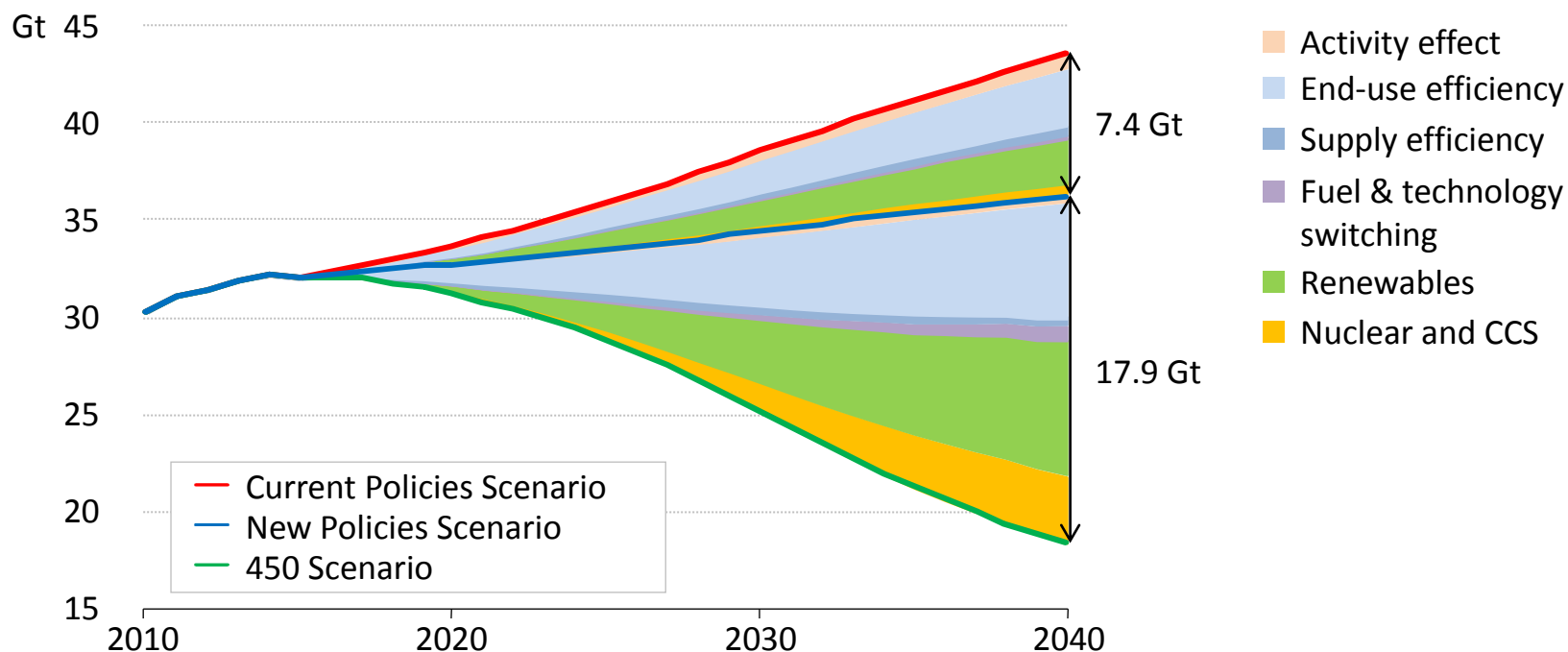
**The importance of end-use
data for policy**

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Current energy efficiency policies leave large potentials untapped towards the 2°C target

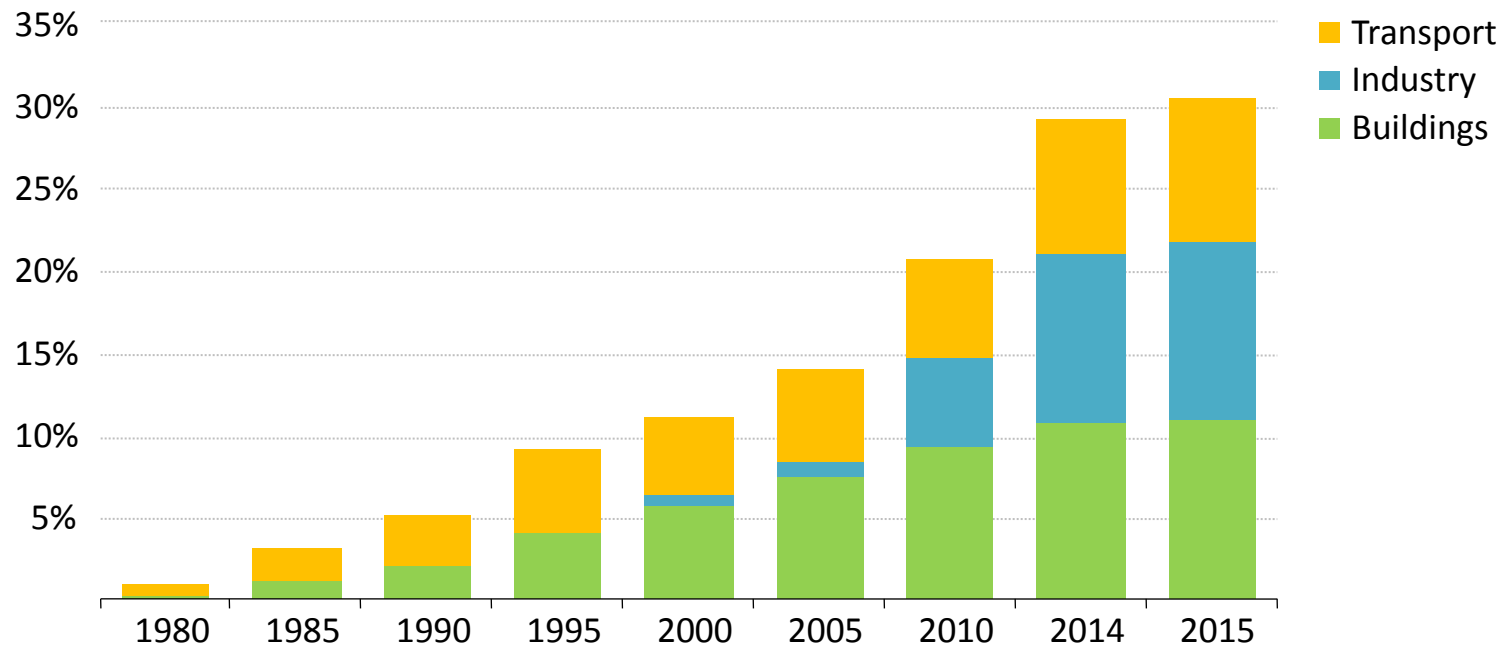
World energy-related CO₂ emissions abatement by scenario



***Energy efficiency is a key abatement measure
in the New Policies and the 450 Scenario***

Mapping current energy efficiency policies is an obvious first step

Share of global final energy consumption covered by mandatory energy efficiency regulation



Global mandatory energy efficiency regulation more than doubled over the past decade

How are on-going efforts leveraged by tracking energy efficiency progress?

■ Tracking energy efficiency progress, what does this mean?

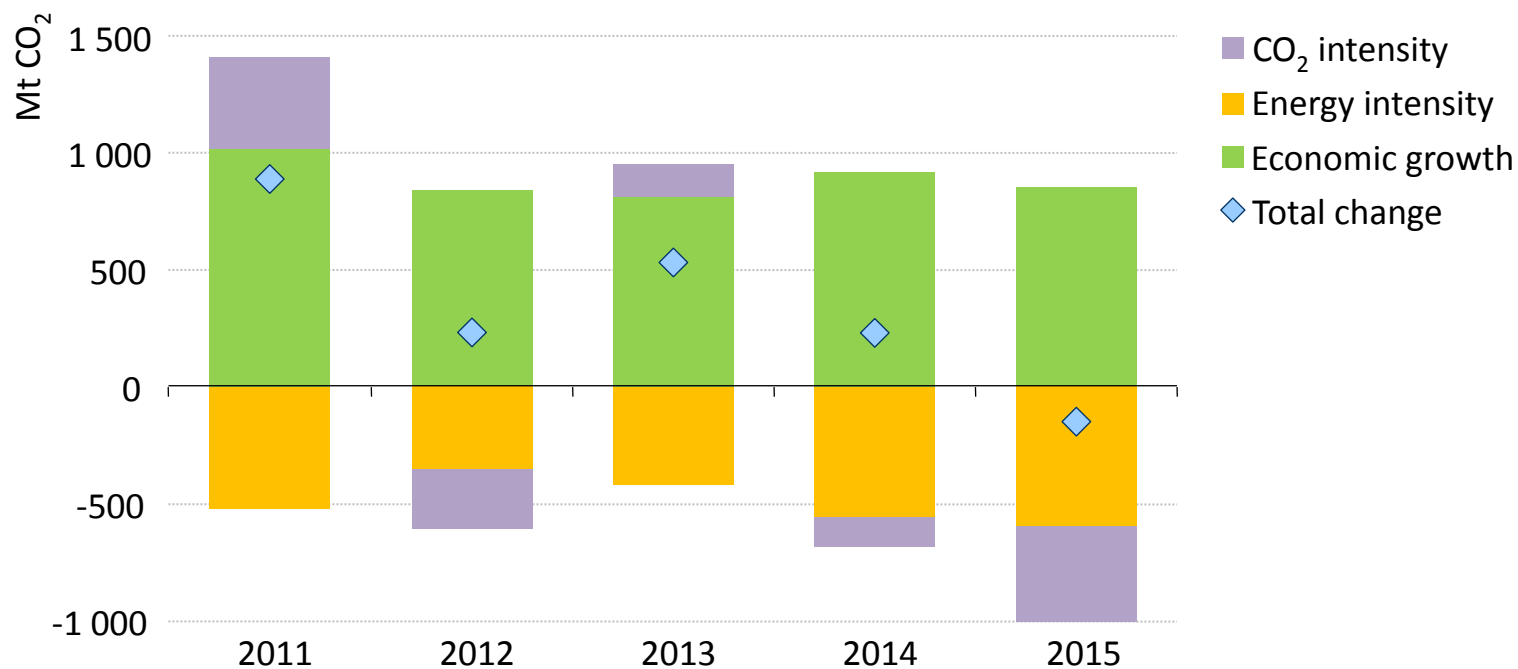
- *Benchmarking current energy efficiency performance levels*
- *Monitoring energy efficiency improvements over time*

■ Key policy-related benefits of tracking energy efficiency progress:

- *Understand why some countries perform better than others*
- *Identify and characterize the best performing policies*
- *Share useful information and on best practices among policy-makers, within and across countries*
- *Adjust design of policies to improve their effectiveness, strengthen policies that do not deliver*
- *Assess the remaining gaps to wider objectives (security of supply, climate change)*

Tracking energy intensity evolution at macro-level is a necessary but not sufficient step

Change in global energy-related CO₂ emissions by driver



Improved energy intensity has significantly slowed growth in CO₂ emissions in recent years

Robust energy efficiency indicators require going much beyond energy balances

Selected IEA recommended indicators, by sector

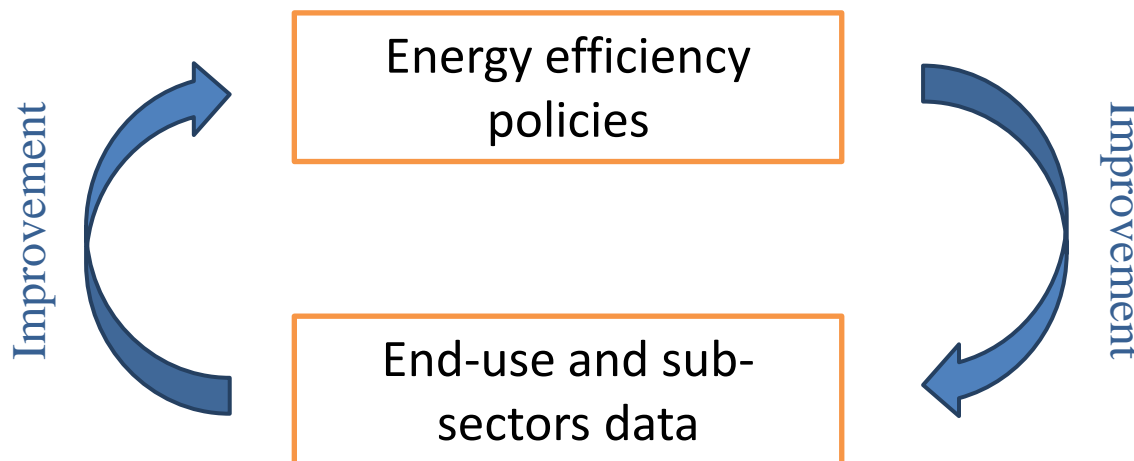
Sector	Indicator (Level*)	Coverage	Energy data	Activity data
Residential	L2: Space heating energy consumption per floor area (heated)	All heating systems	Total space heating energy consumption	Total floor area
	L2: Cooking energy consumption per dwelling	All cooking devices	Total cooking energy consumption	Total number of dwellings
	L3: Energy consumption per appliance unit	By appliance type	Energy consumption for all appliances of type A	Number of appliances of type A
Services	L2: Space cooling energy consumption per floor area cooled	All cooling systems	Total space cooling energy consumption	Total floor area cooled
	L3: Lighting energy consumption per unit of activity	By service category	Lighting energy consumption for service category A	Unit activity of service category A
	L3: Other equipment energy consumption per unit of activity	By service category	Other equipment energy consumption for service category A	Unit activity of service category A
Industry	L2: Energy consumption per unit of physical output	Sub-sector	Total sub-sectoral energy consumption	Sub-sectoral physical output
Transport	L3: Passenger transport energy consumption per passenger-kilometre	By mode / passenger vehicle type	Energy consumption of passenger transport by mode / vehicle type A	Number of pkm of passenger mode / vehicle type A
	L3: Freight transport energy consumption per tonne-kilometre	By freight mode / vehicle type	Energy consumption of freight transport by freight mode / vehicle type B	Number of tkm of freight mode / vehicle type B

* Levels in the IEA energy indicators pyramid : L2 (Level 2), L3 (Level 3)

Source : IEA (EEI) 2014

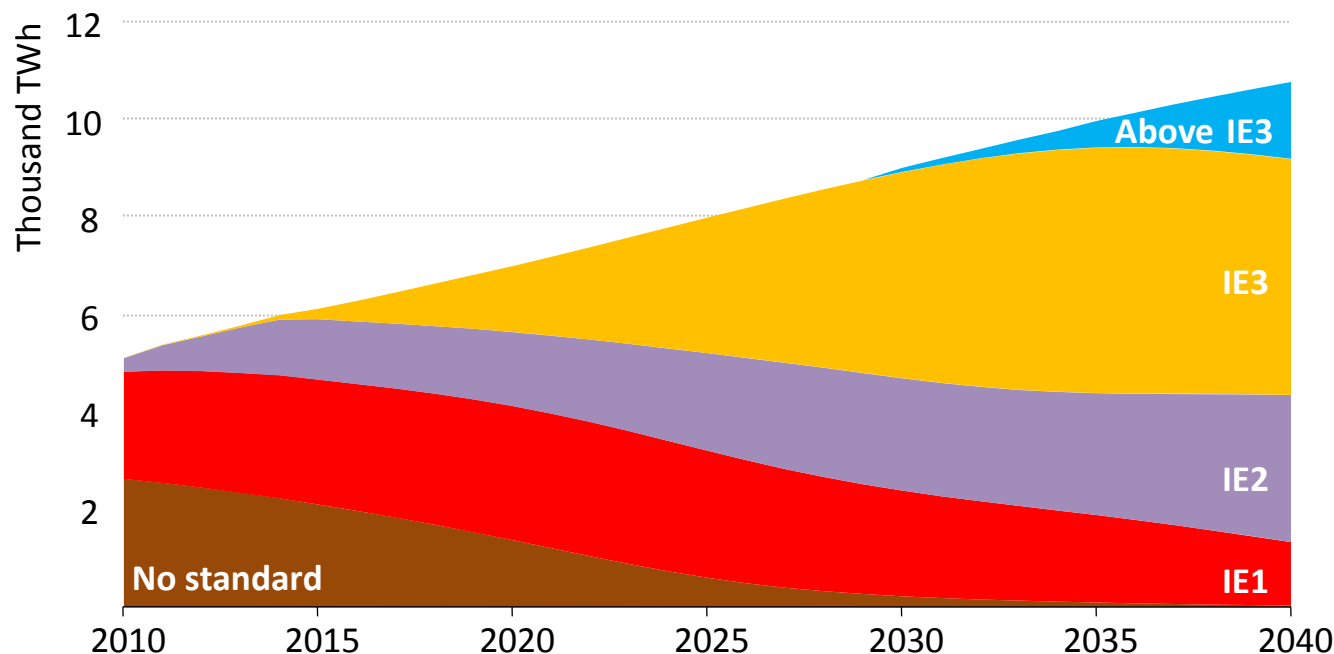
Positive feedback loop between energy policies implementation and improved data collection

- **Some policies include MRV provisions by design, or reveal useful information to policy-makers and experts**
 - *Perform, Achieve and Trade (PAT) scheme in India*
 - *White Certificate schemes in several European countries*
- **Which in turn can be used to improve energy efficiency policies, through better design (scope, targets, allocations, etc.)**



End-use data are also useful for forward looking analyses on energy efficiency...

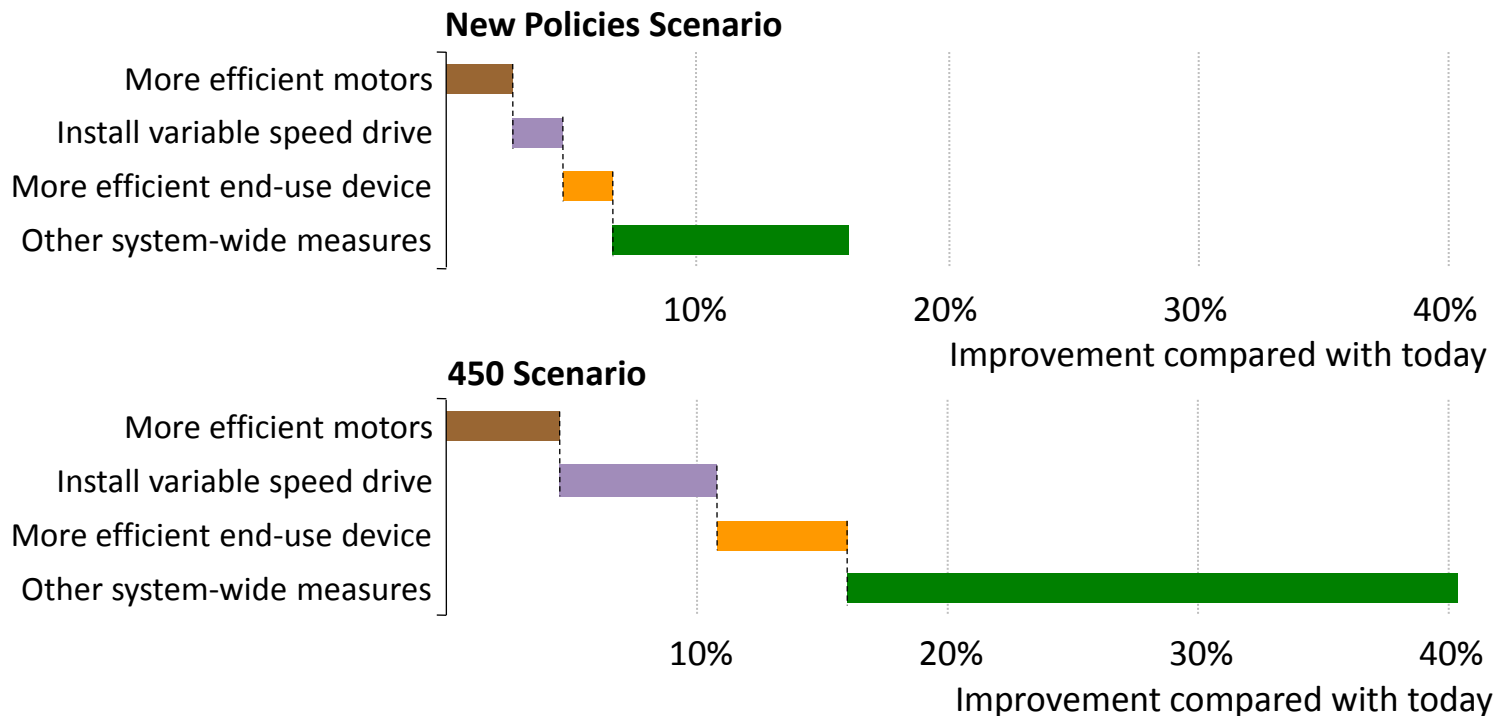
Global industrial electricity consumption by motor efficiency class in the New Policies Scenario



Motor electricity use doubles, but 60% of use in 2040 comes from IE3 motors or better

... and help tailor policy recommendations for the various sectors and end-uses

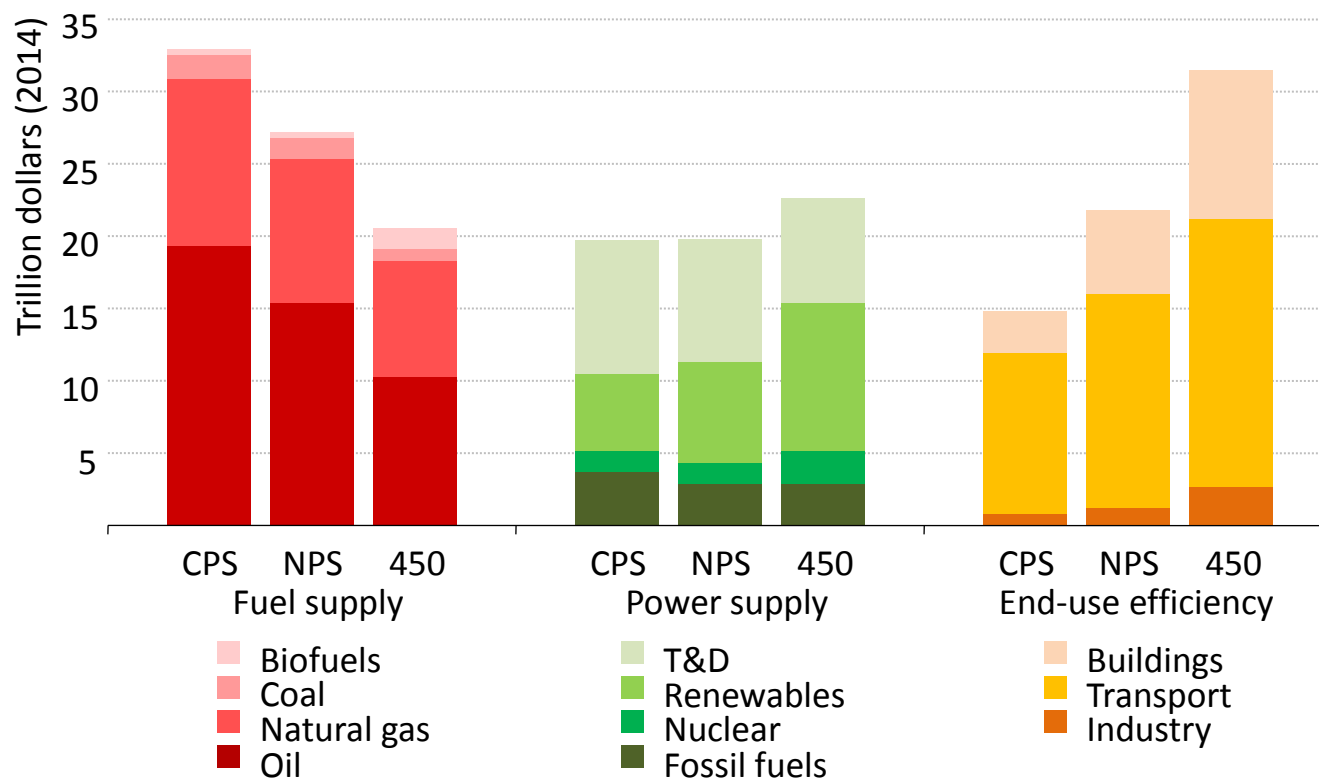
Efficiency improvements in industrial electric motor-driven systems in 2040 compared with today



Most of the energy efficiency potential in industrial electric motor-driven lies beyond motors themselves

Eventually end-use data help assessing the investment challenge in front of us

Cumulative world energy sector investment by sector & scenario, 2015-2040



Measuring energy efficiency investments poses additional methodological challenges as well as data requirements

Conclusion: “Better data for Better policies”

- Large datasets are needed to track energy efficiency progress over time and compare countries
- Those data are also needed for other analytical purposes, such as modelling (energy savings, investments, etc.)
- ... which in turn may substantially improve policy frameworks
- There remains potential to go steps farther in terms of end-use data level (up to very technological one) and data quality
- Many initiatives to collect and organize data already exist, now more should be done to share and streamline information
- Sharing methodologies and data worldwide is also key to reinforce trust and confidence between countries