



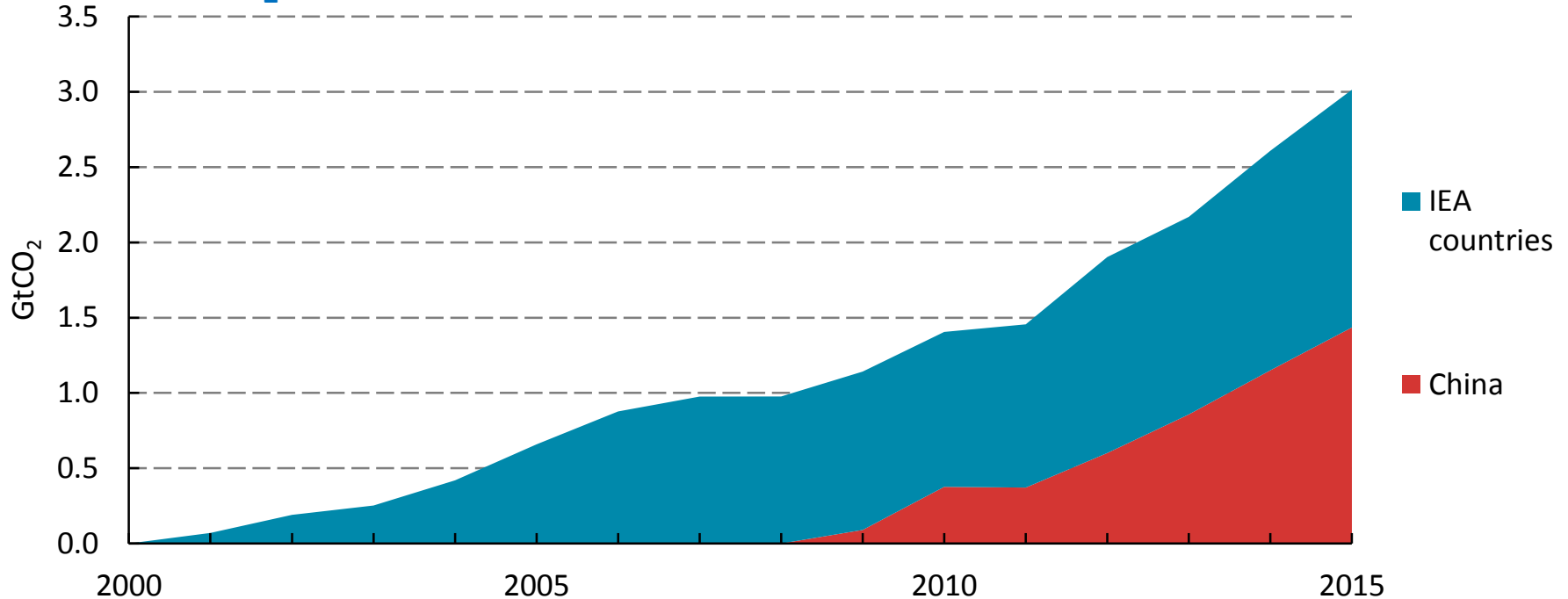
What are the main challenges facing energy efficiency?

Samuel Thomas

Nordic Baltic 8 Conference 2017, Tallinn

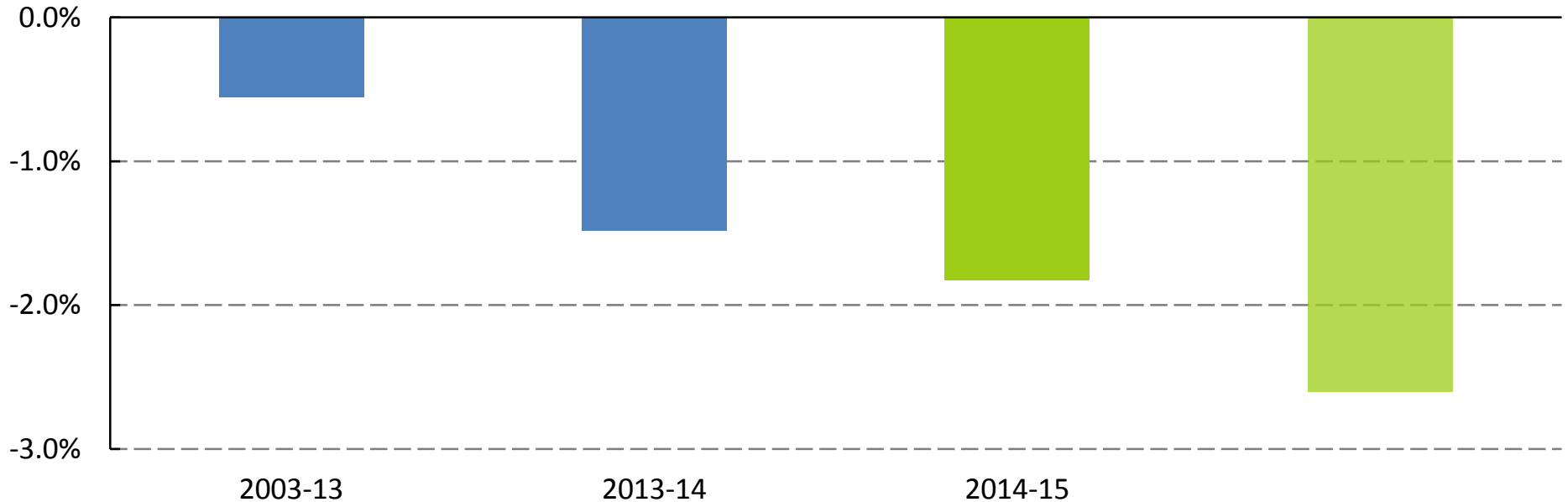
- **Founded in 1974** in the wake of the 1973 oil embargo with mission to promote member country energy security – autonomous agency of the **Organisation for Economic Cooperation and Development (OECD)**
- **29 Member countries:** in **Asia Pacific** (Australia, Japan, Republic of Korea and New Zealand), **North America**, (Canada and United States) and **Europe** (Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey and United Kingdom)
- **Chile** and **Mexico** are in the process of accession to become members of the IEA
- **China, India, Indonesia, Morocco, Singapore** and **Thailand** are **Association Countries**
- **Headquarters:** Paris
- **Decision-making body: Governing Board**, which consists of member country representatives
- **Staff of around 250**, mainly energy experts and statisticians

CO₂ emissions savings from efficiency improvements since 2000



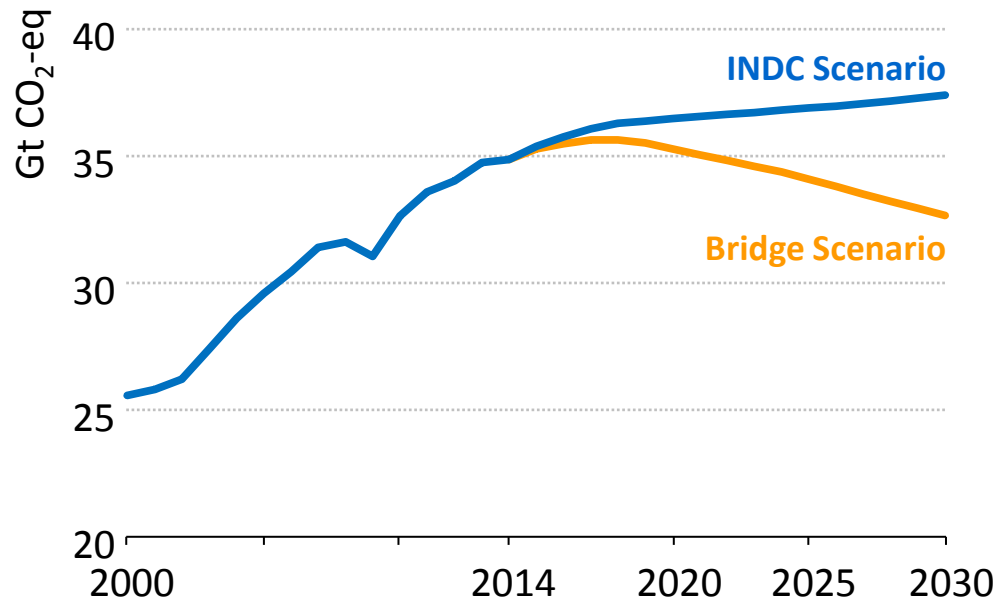
In 2015, efficiency gains in IEA and China reduced their combined emissions by 15%; Efficiency policy in China has become one of the most important global actions to reduce emissions

Global annual energy intensity gains

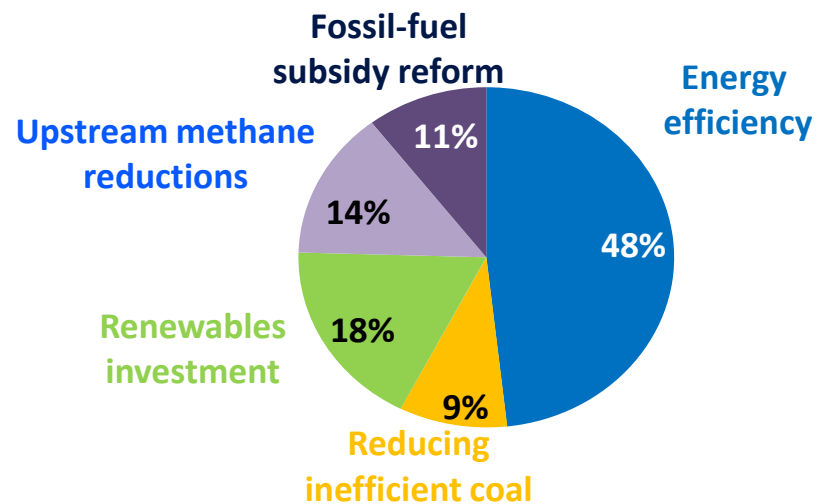


In 2015, global intensity improved by three times the average of the last decade, despite a low price environment. Intensity gains need to increase to 2.6% to achieve our climate goals.

Global energy-related GHG emissions



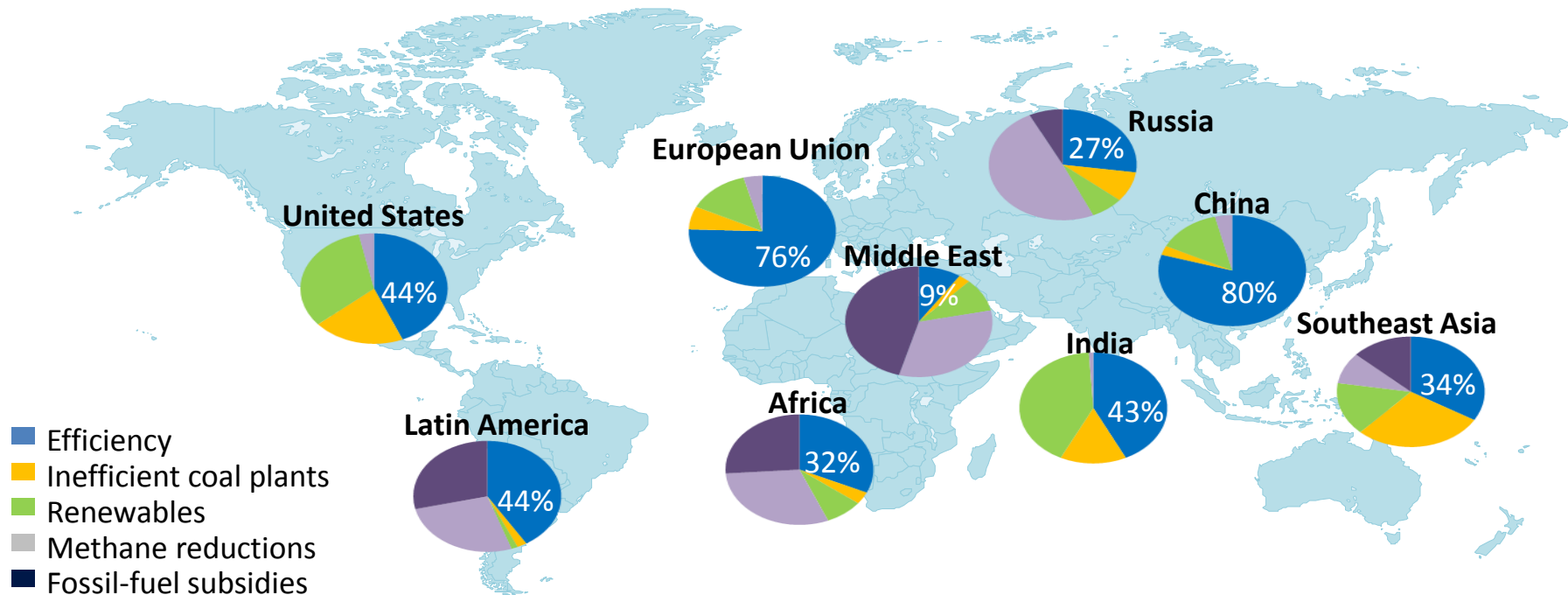
Savings by measure, 2030



Five measures – shown in a “Bridge Scenario” – achieve a peak in emissions around 2020, using only proven technologies and without harming economic growth

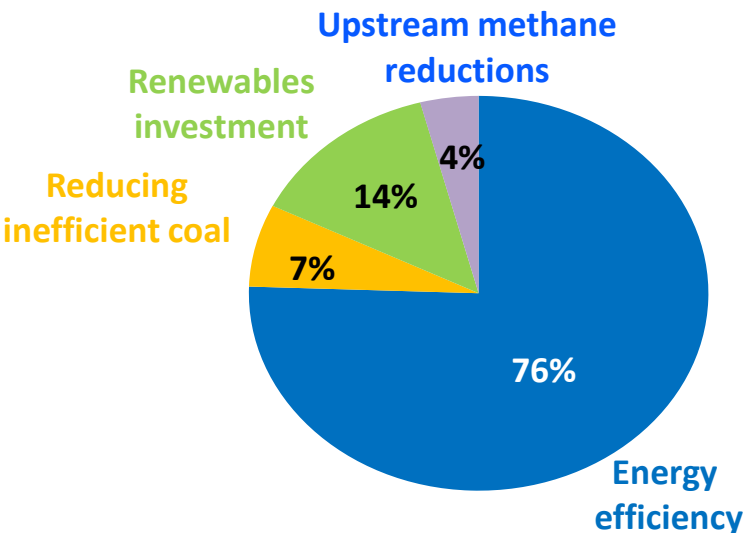
Bridging strategy is flexible across regions

GHG emissions reduction by measure in the Bridge Scenario, relative to the INDC Scenario, 2030

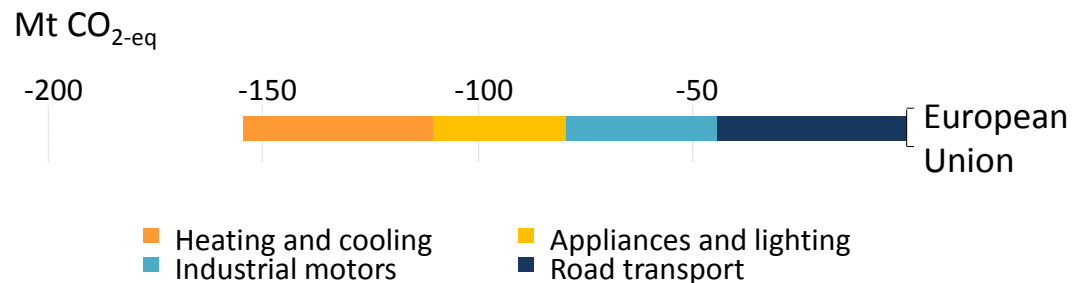


The measures in the Bridge Scenario apply flexibly across regions, with energy efficiency and renewables as key measures worldwide

Savings by measure, 2030

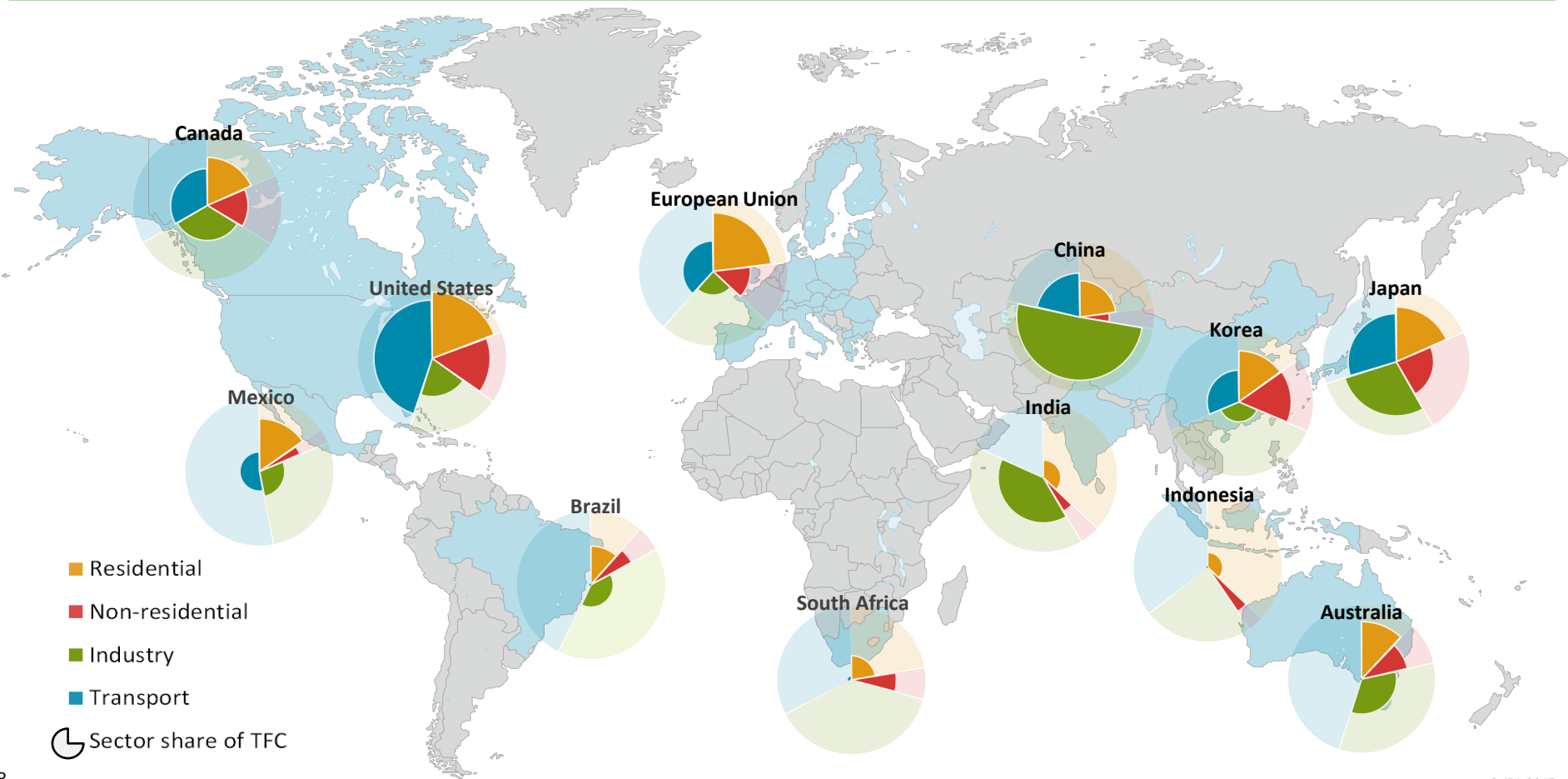


Savings from efficiency by measure, 2030

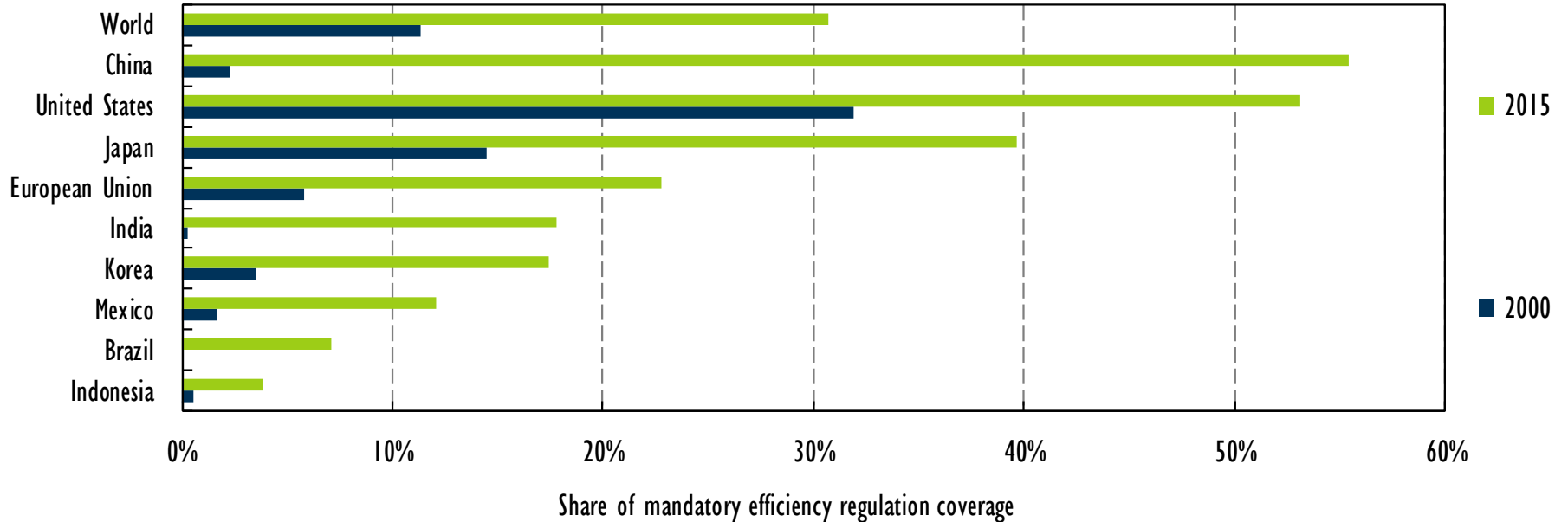


Performance standards can cut the least efficient technologies out of the market, while market-based instruments can pull through the best performing

Coverage of mandatory energy efficiency policies is increasing globally

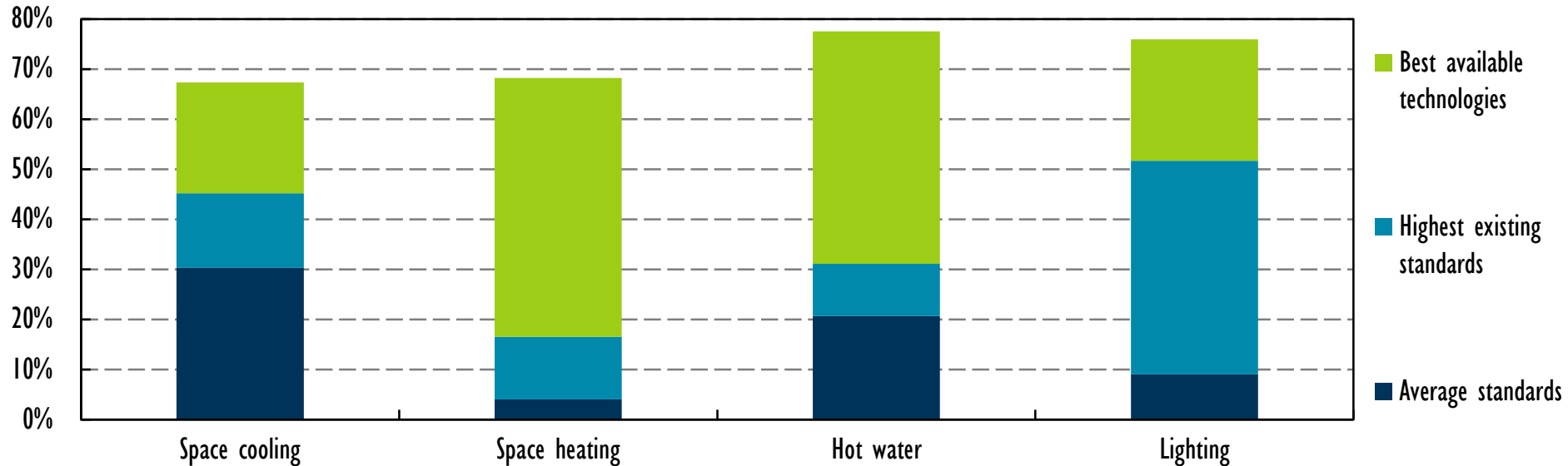


Energy use covered by mandatory efficiency regulations



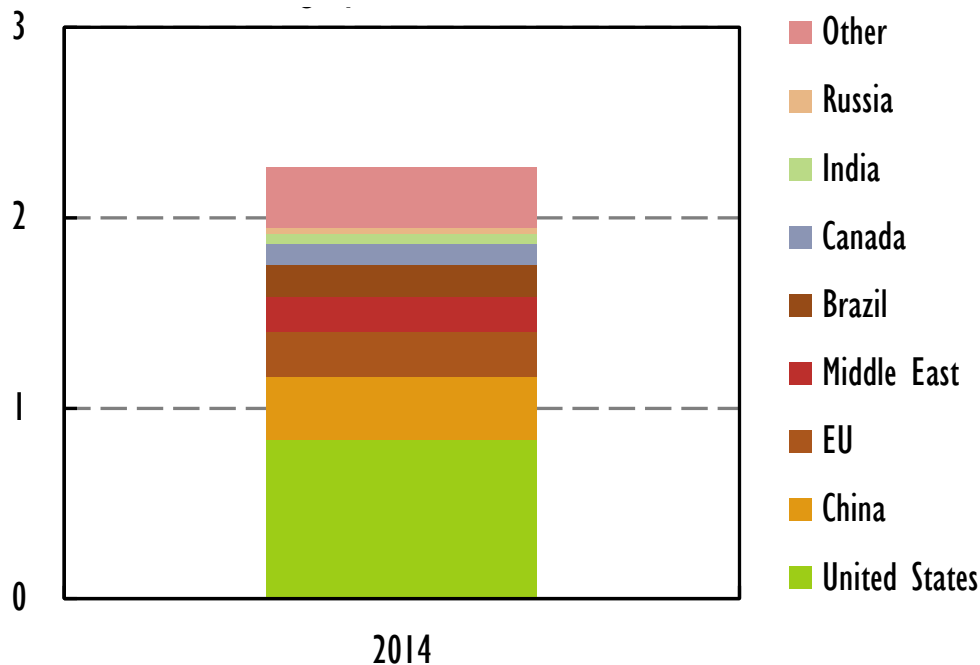
Energy performance standards are growing in coverage

Energy savings potential of standards as a share of global end-use energy, 2015



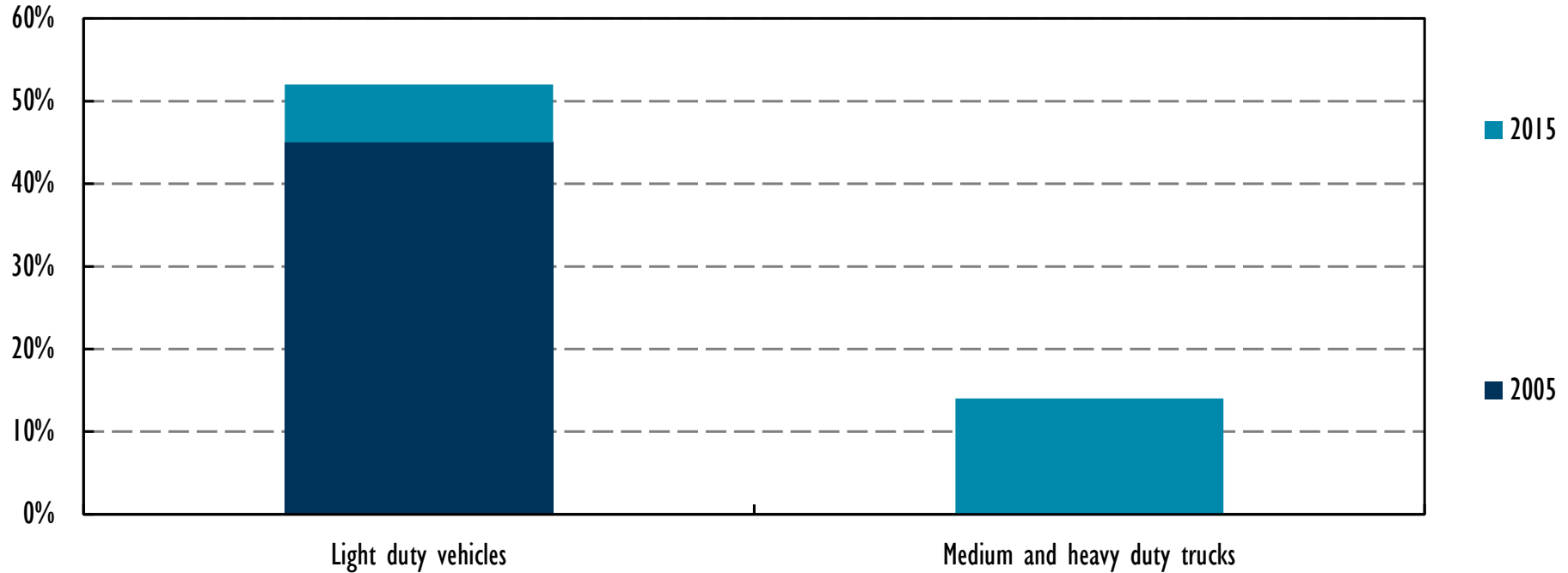
If the best in class standards had been implemented in all countries, global residential energy consumption would have been 14% lower in 2015

Additional global savings potential from application of Japanese passenger vehicle standards



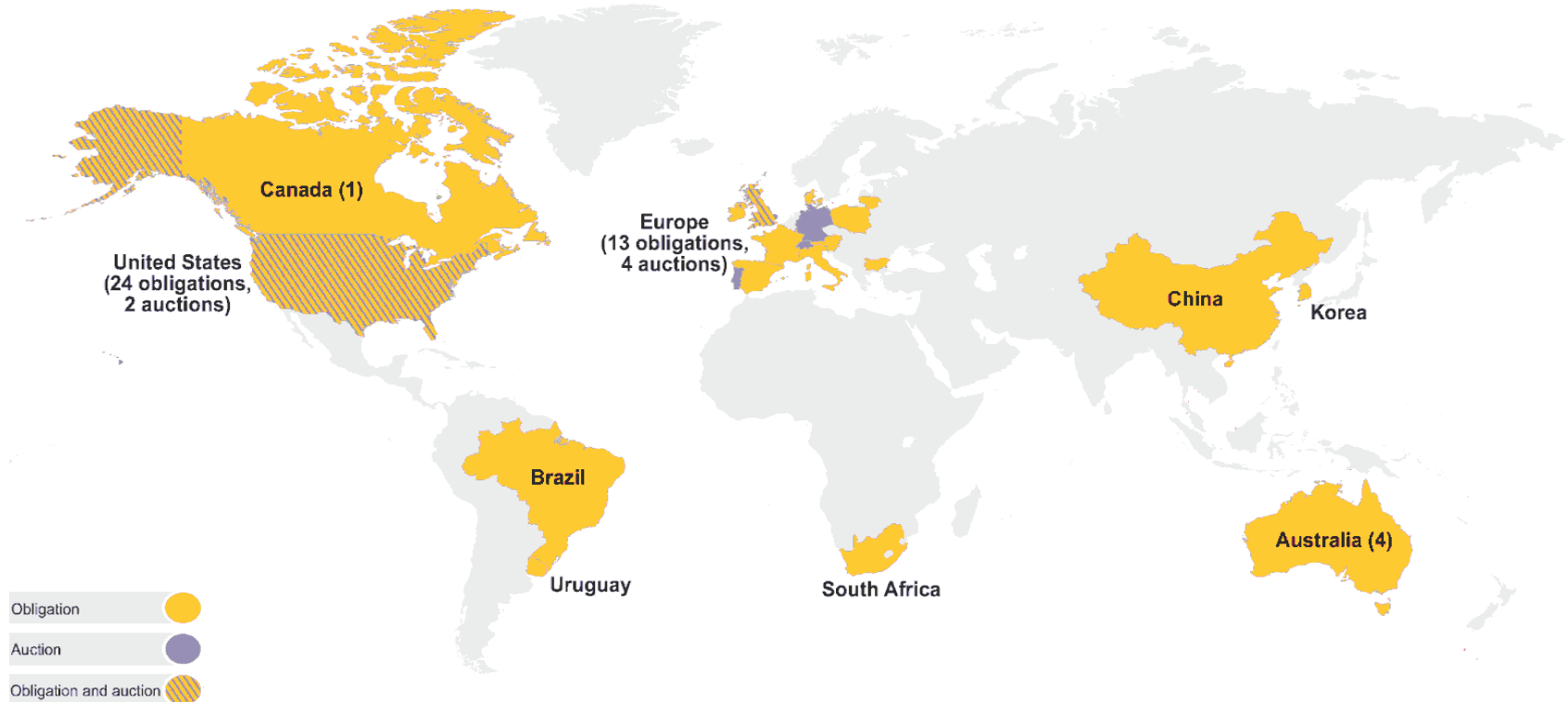
Japan's efficiency standards for passenger vehicles are best in class and if every major vehicle market adopted them, oil demand would be reduced by an additional 2.3 million barrels per day

Global energy consumption in light, medium- and heavy-trucks covered by efficiency standards



Truck standards are lagging behind the passenger vehicle market

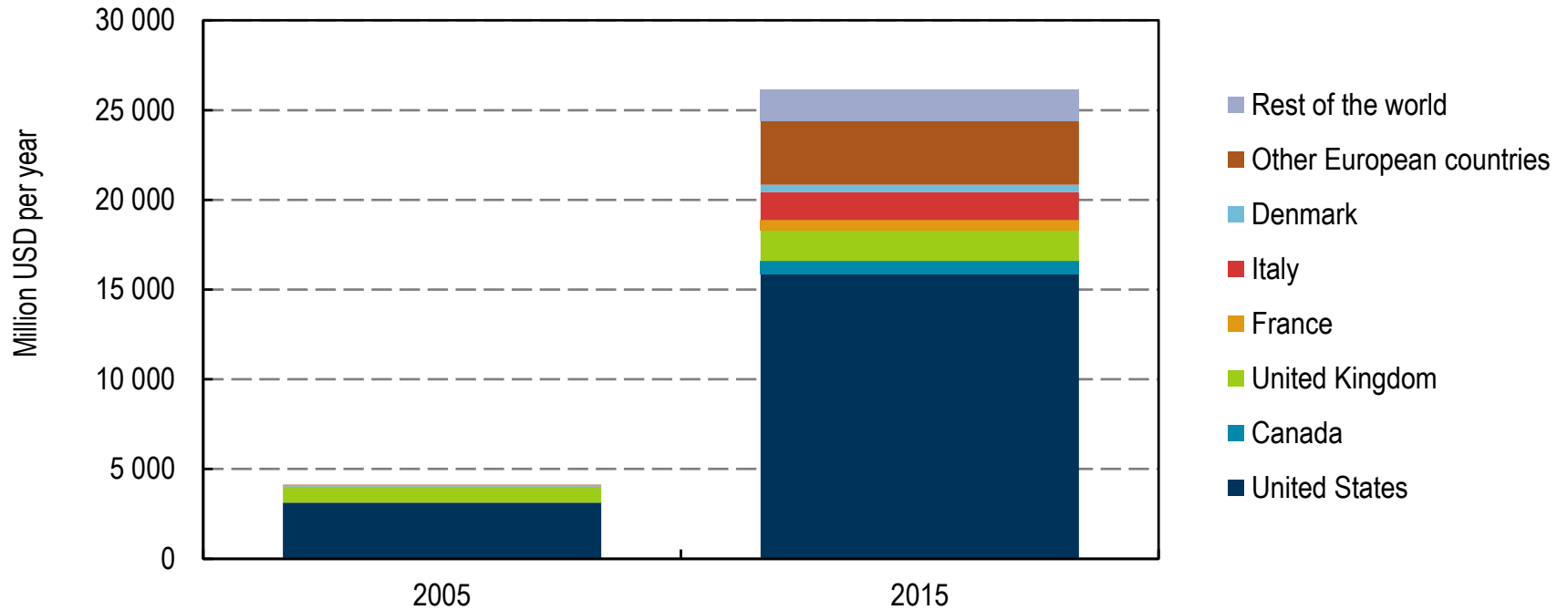
Market Based Instruments (MBIs) for energy efficiency



Utility obligations and efficiency auctions have been developed in many countries

MBIs create a market for energy efficiency

Investment stimulated by market-based instruments

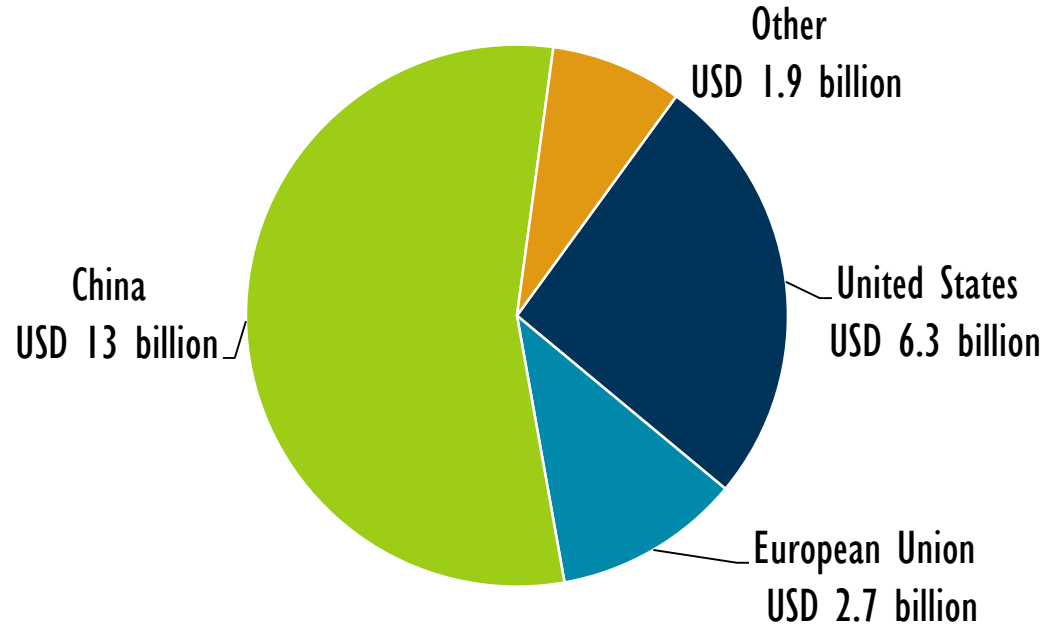


Market based instruments have led to USD 26 billion in energy efficiency investment

- MBIs have worked successfully in many jurisdictions but the evidence on their relative effectiveness is not conclusive
- Freedom for private sector to innovate and discover best delivery routes
- Risk for policy maker that – if designed or implemented badly – market participants will find ways to game the system

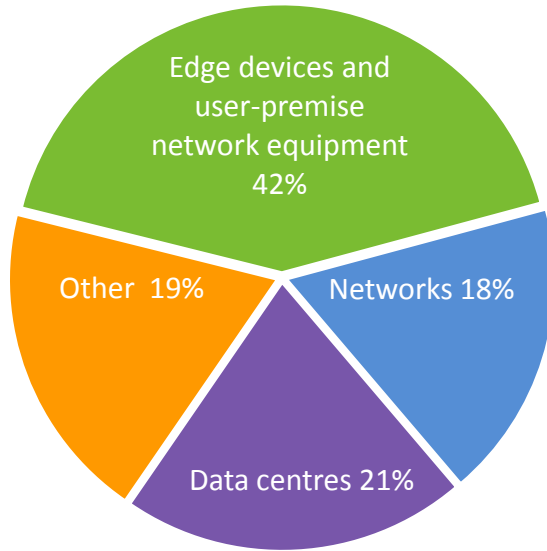
MBIs put a premium on good policy design, including strong monitoring, verification and evaluation

Global energy service company revenues by country/region, 2015



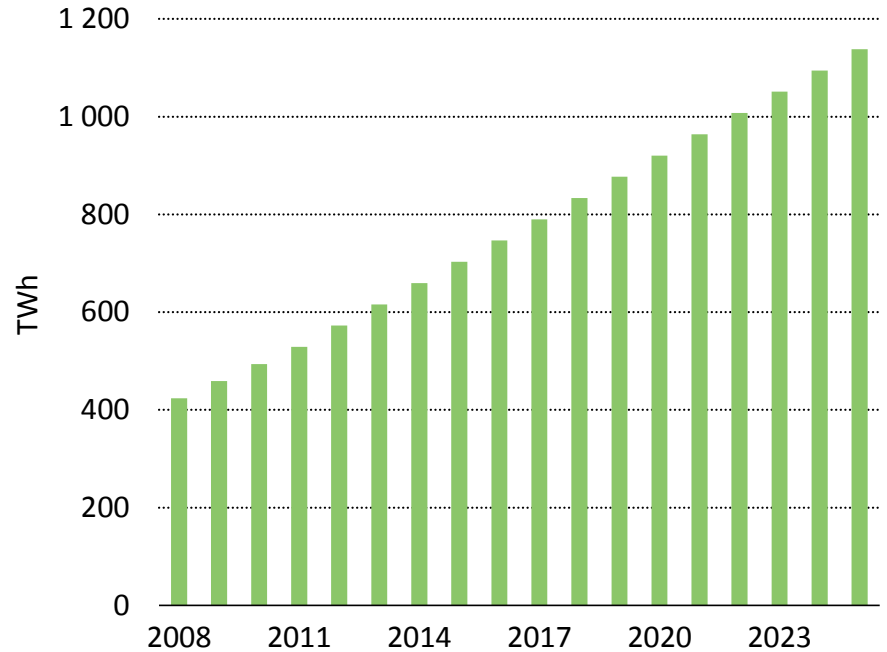
The global energy services market was USD 24 billion in 2015 and indicators point to future growth

ICT electricity demand by segment



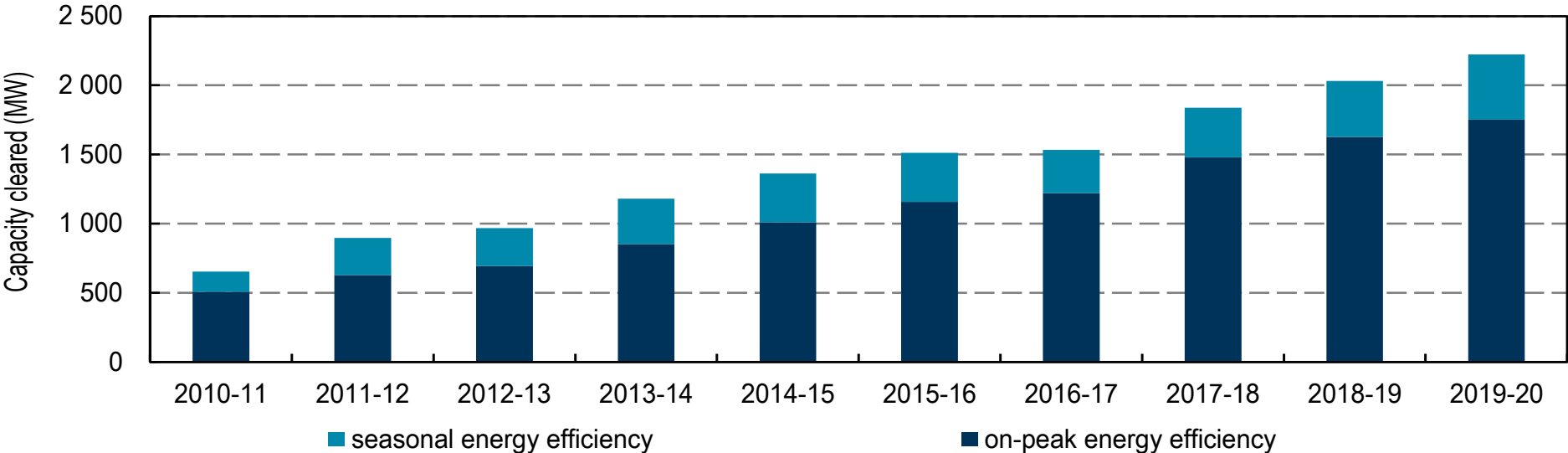
Source: IEA More Data, Less Energy (2014)

Networked device electricity demand



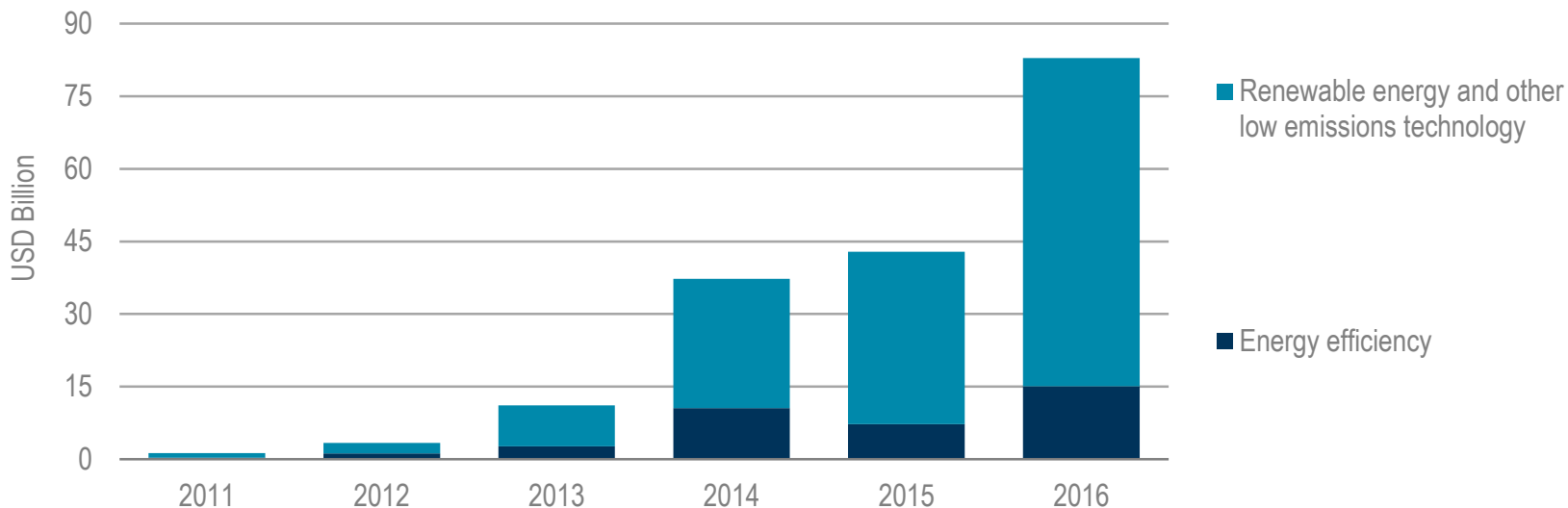
The energy use of connected/networked devices is growing rapidly, presenting new challenges for energy efficiency

Energy efficiency savings successfully cleared in the ISO-NE capacity market



Capacity auctions reward energy efficiency for just one of the multiple benefits they provide

Green bond proceeds – share of energy efficiency



Source: Climate Bonds Initiative

The global green bond market has grown substantially in recent years, but energy efficiency is not attracting a large share of overall investment

- Energy efficiency needs to be considered as part of mainstream energy policy
 - Its influence on climate, energy security, human health and economic productivity requires recognition
- Future policies need to:
 - Focus on driving action and increased investment
 - Take account of the different nature of energy efficiency investment i.e. many small project investments rather than large single project investments
- A portfolio of policies is needed to achieve outcomes across various sectors
- Learning from experience is vital
 - Sharing of experience and lessons from policy development will improve outcomes

