International Energy Agency

Energy efficiency progress and future prospects

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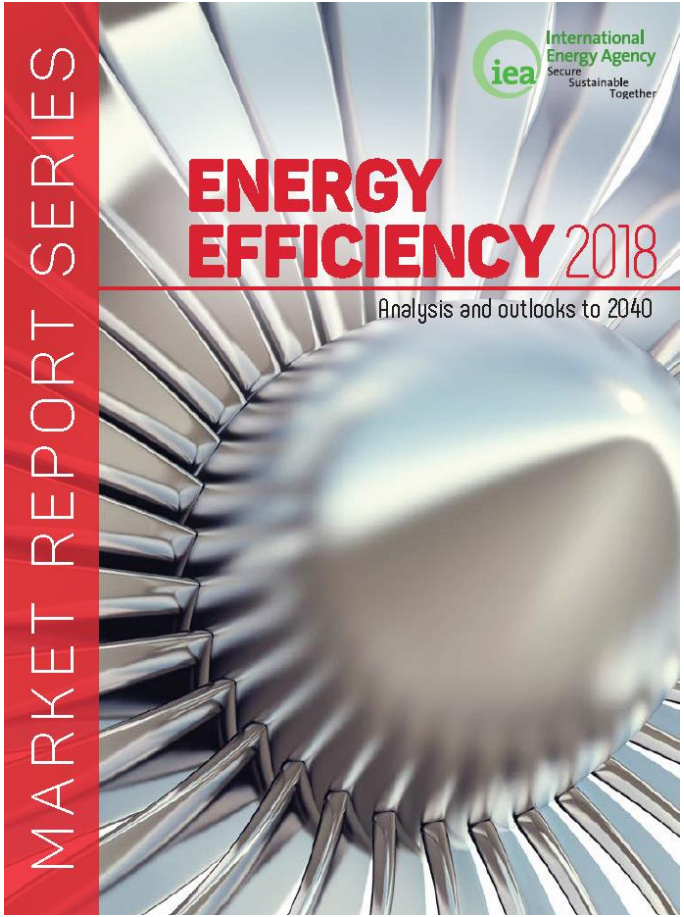
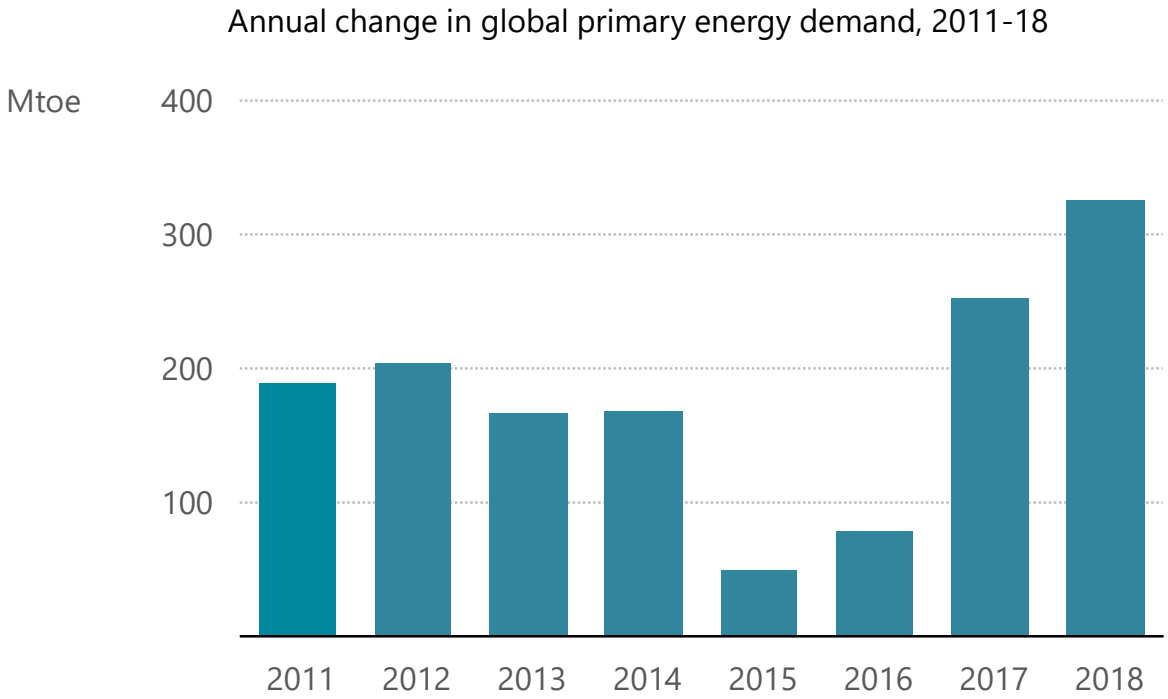
Energy Efficiency 2018



- Global trends and outlooks
  - Energy intensity and efficiency trends
  - Introduction to efficient world scenario
  - Policy progress and trends
  - IEA Efficient World Strategy
- Sector chapters
  - Transport, Buildings and Industry
- Investment finance and business models
- Energy Efficiency in Emerging Economies
  - Brazil, China, India, Indonesia, Mexico and South Africa
- Available for free from www.iea.org/efficiency2018

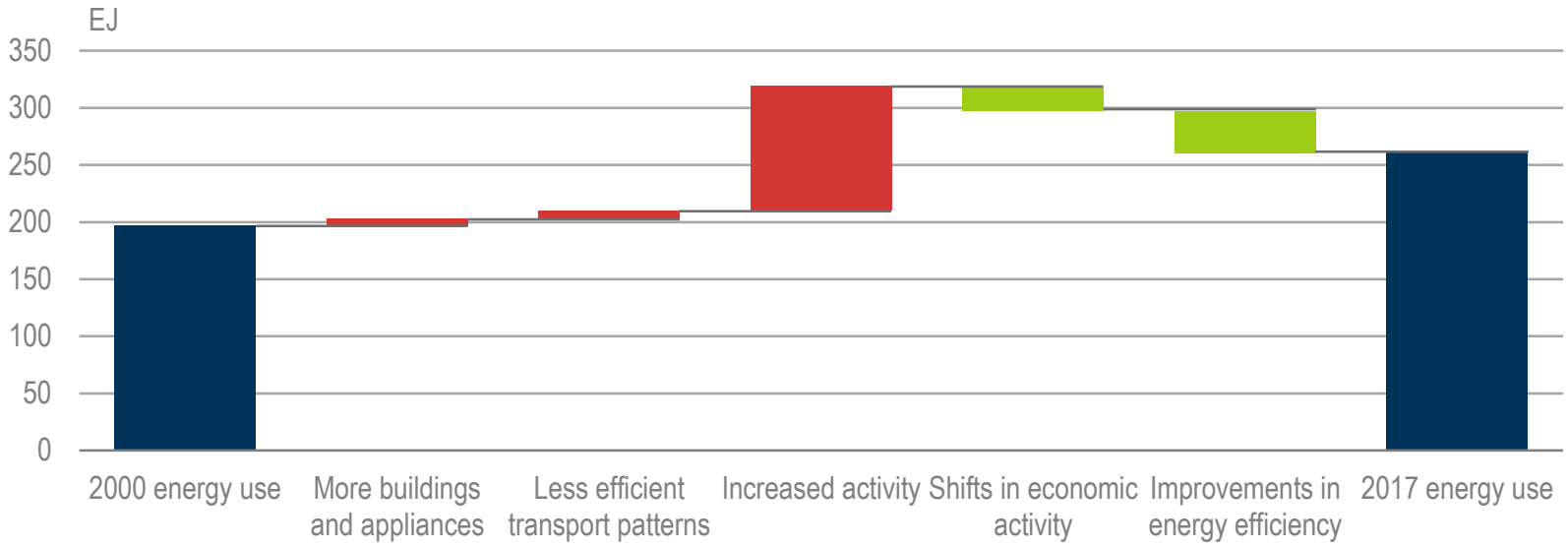
Global energy demand is on the rise



Global energy demand last year grew by 2.3%, the fastest pace this decade.

What factors are influencing energy demand

Decomposition of final energy use in the world's major economies, 2000-17

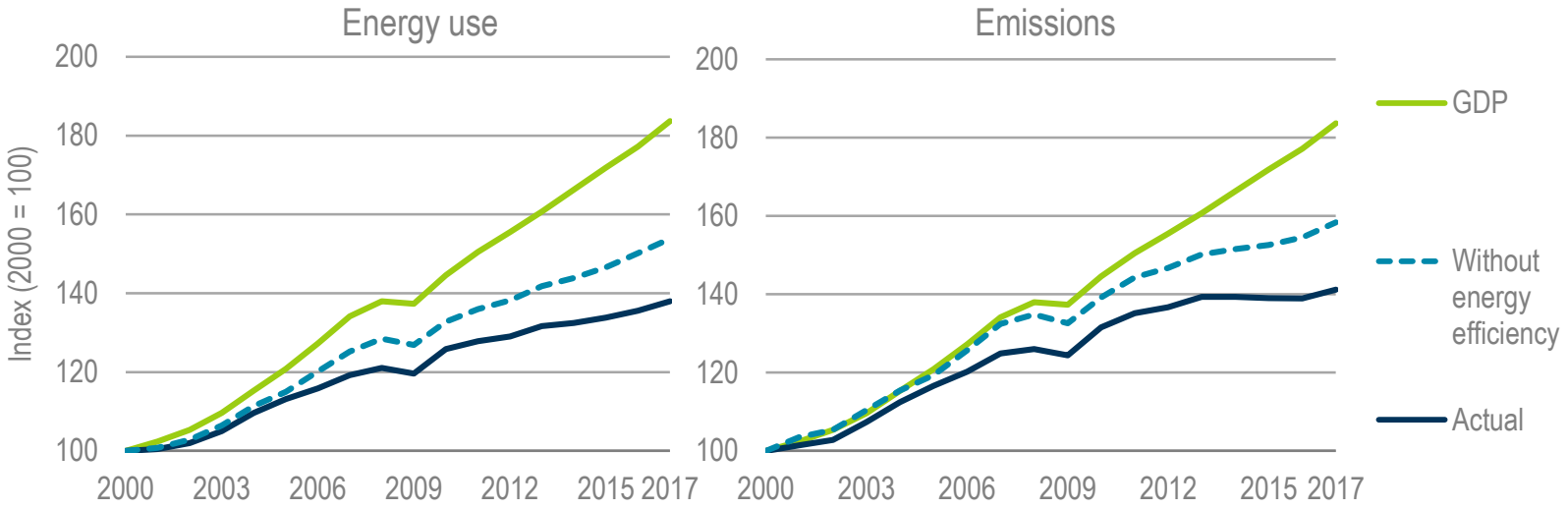


Notes: Major economies are IEA member countries plus China, India, Brazil, Indonesia, Russia, South Africa and Argentina.

Global energy efficiency is improving, but its impact is being overwhelmed by factors that create more demand for energy.

The impacts of energy efficiency are already significant

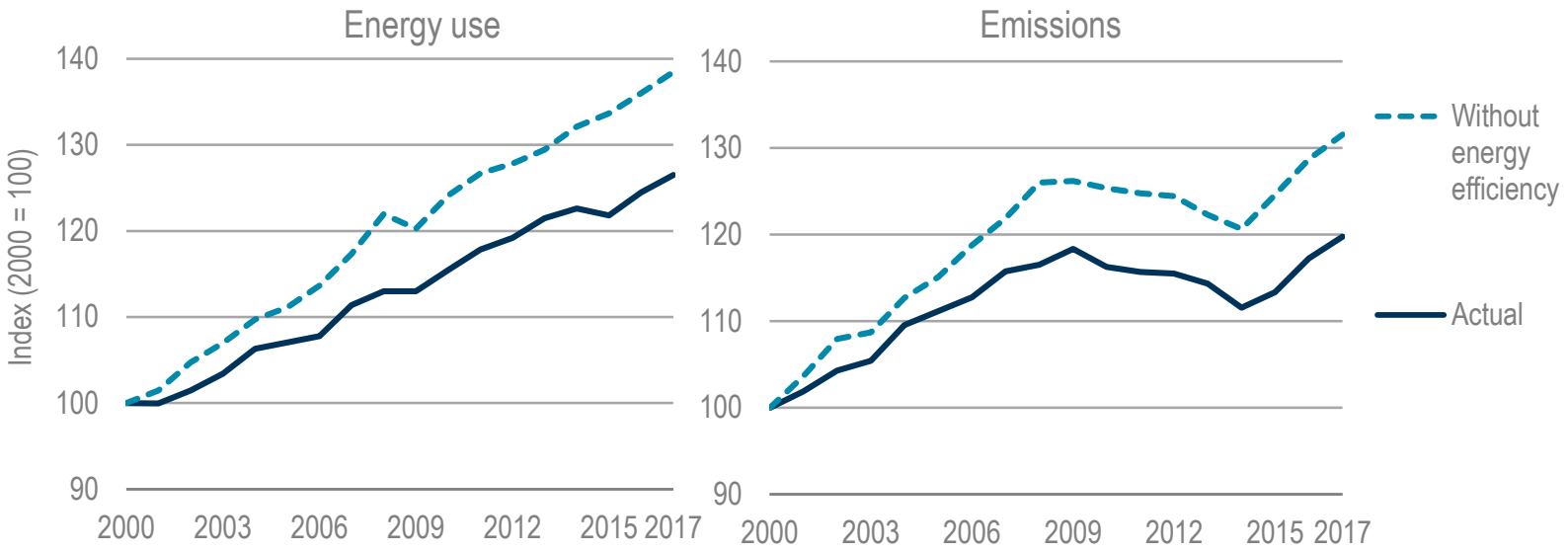
Global final energy use and energy-related CO_2 emissions with and without efficiency improvements, 2000-17



Energy efficiency improvements since 2000 prevented 12% more energy use and emissions in 2017.

What has been the impact of energy efficiency in Australia

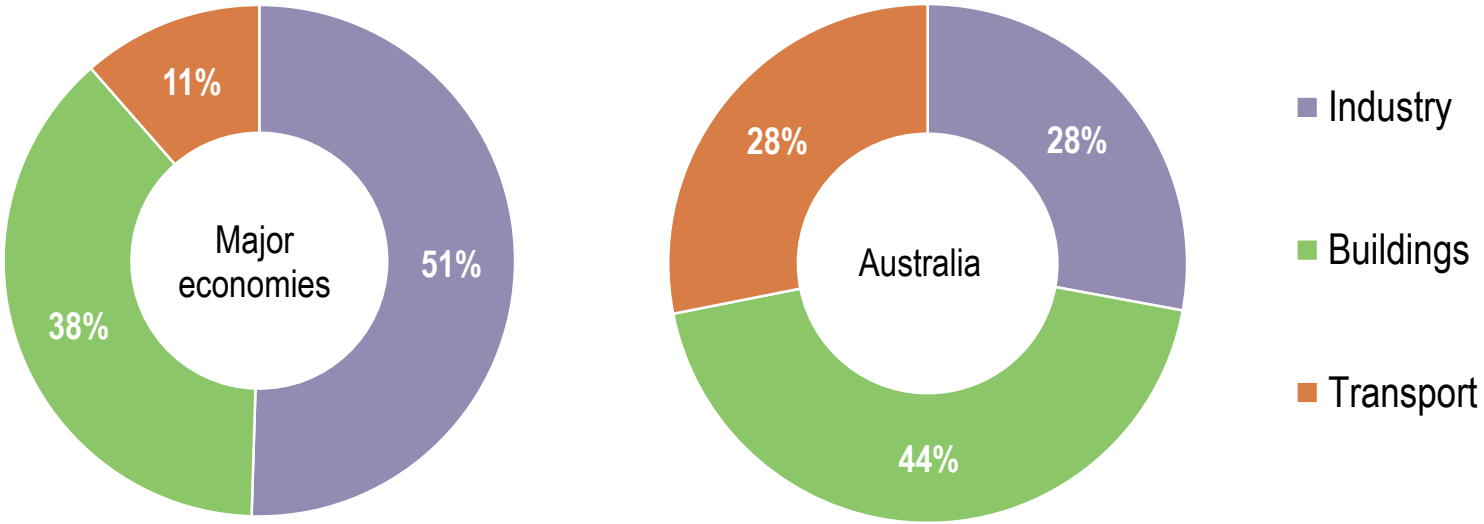
Australian final energy use and energy-related emissions with and without efficiency improvements, 2000-17



Energy efficiency improvements since 2000 prevented 10% more energy use and emissions in Australia in 2017.

What sectors are contributing to efficiency gains

Sectoral contributions to energy savings from improvements in energy efficiency



Notes: Major economies are IEA member countries plus China, India, Brazil, Indonesia, Russia, South Africa and Argentina. Australian industry savings include mining and quarrying.

Industry has been the largest contributor to global energy savings, with transport smallest.
Buildings are the largest contributor to efficiency gains in Australia.

What does a more efficient world look like?

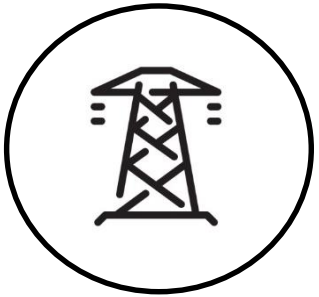
- The world is missing opportunities to improve energy efficiency, policy is not delivering the full potential gains that are available with current technology.

- What is possible with greater efforts on energy efficiency? The IEA's new Efficient World Scenario answers the question:

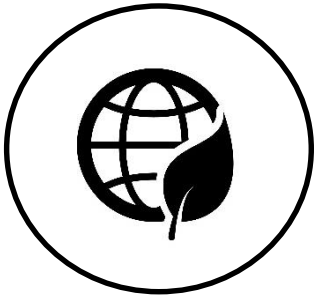
What would happen by 2040 if countries realised all the economically viable energy efficiency potential that is available today?

The Economy

The Energy System

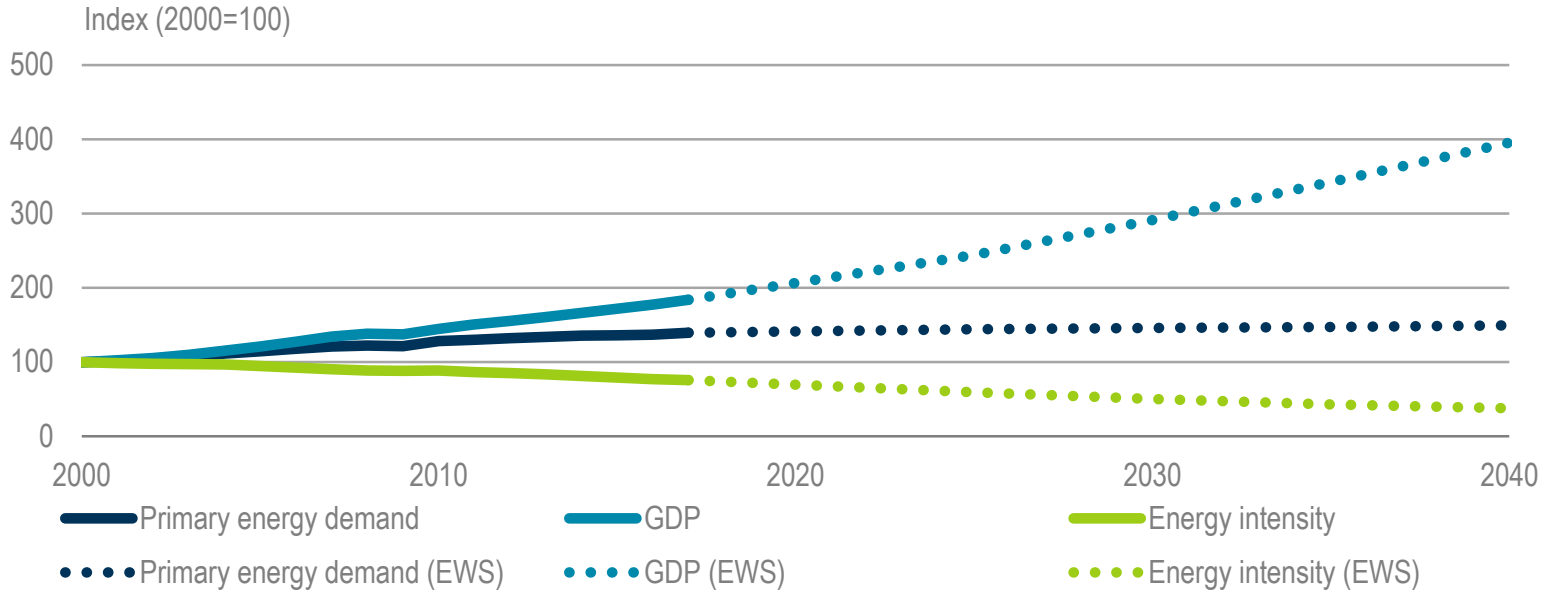


The Environment



Energy intensity improvements could accelerate

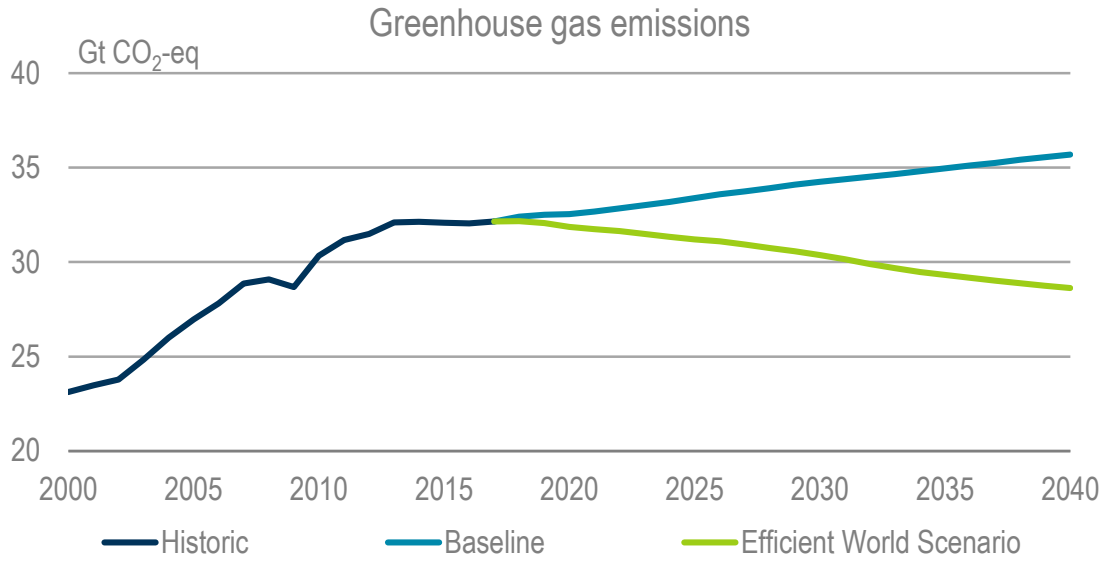
Global primary energy demand, GDP and intensity, historically and in the EWS, 2000-40

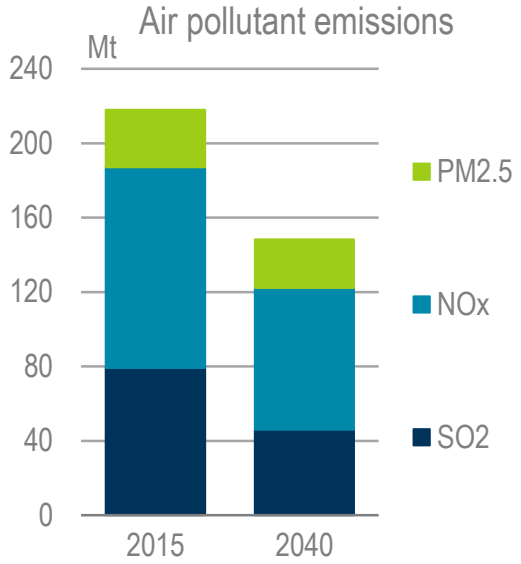


In the Efficient World Scenario, energy intensity will improve by around 3% per year, a step-up from current levels, resulting in minimal increases in energy demand, despite the global economy doubling.

Efficiency can deliver immediate environmental benefits

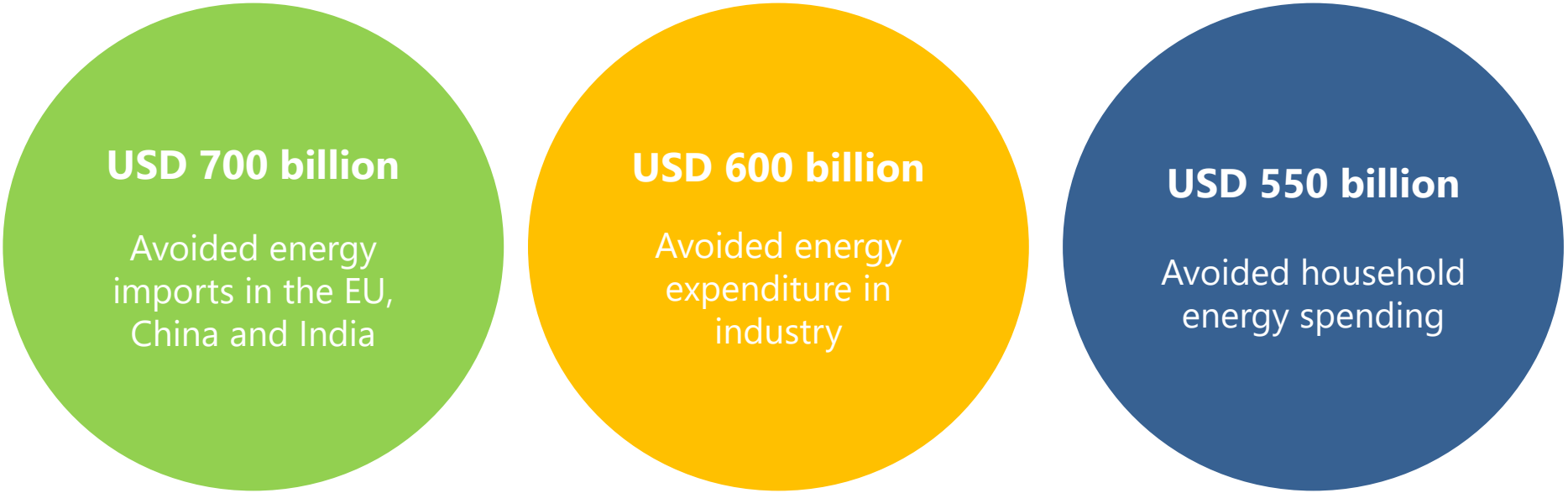
Greenhouse emissions in the NPS and EWS, 2000-40 (left) and air pollutant emissions in the EWS, 2015-40 (right)





The EWS results in an early emissions peak and over 40% of the abatement required by 2040 to be in line with Paris targets. Energy efficiency is indispensable to achieving global climate targets.

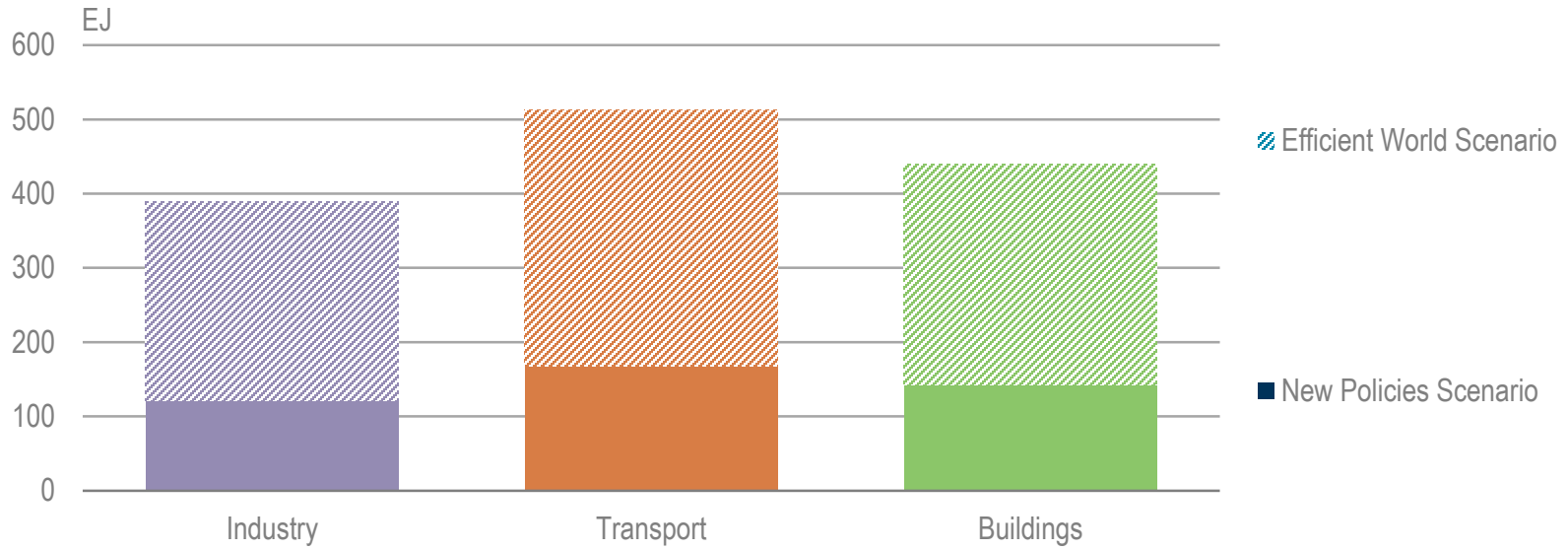
Efficiency brings benefits to all levels of the economy



The Efficient World Scenario also fully delivers the energy efficiency target (Target 7.3) of the UN Sustainable Development Goals

There is significant cost-effective potential in every sector

Cumulative energy savings in NPS and additional potential in the EWS to 2040



The majority of energy efficiency potential across all sectors is realised in the Efficient World Scenario.

Opportunities and policy actions for transport

The EWS opportunity	Key policy actions
	• Improve coverage and strength of transport policies for cars and trucks and non-road modes. • Provide incentives to support uptake and sustainable use of efficient vehicles. • Information to support efficient vehicle uptake and mode shift.
• Energy demand could stay flat, despite doubling activity levels. • Passenger cars and trucks offer two-thirds of potential savings.	

Opportunities and policy actions for buildings

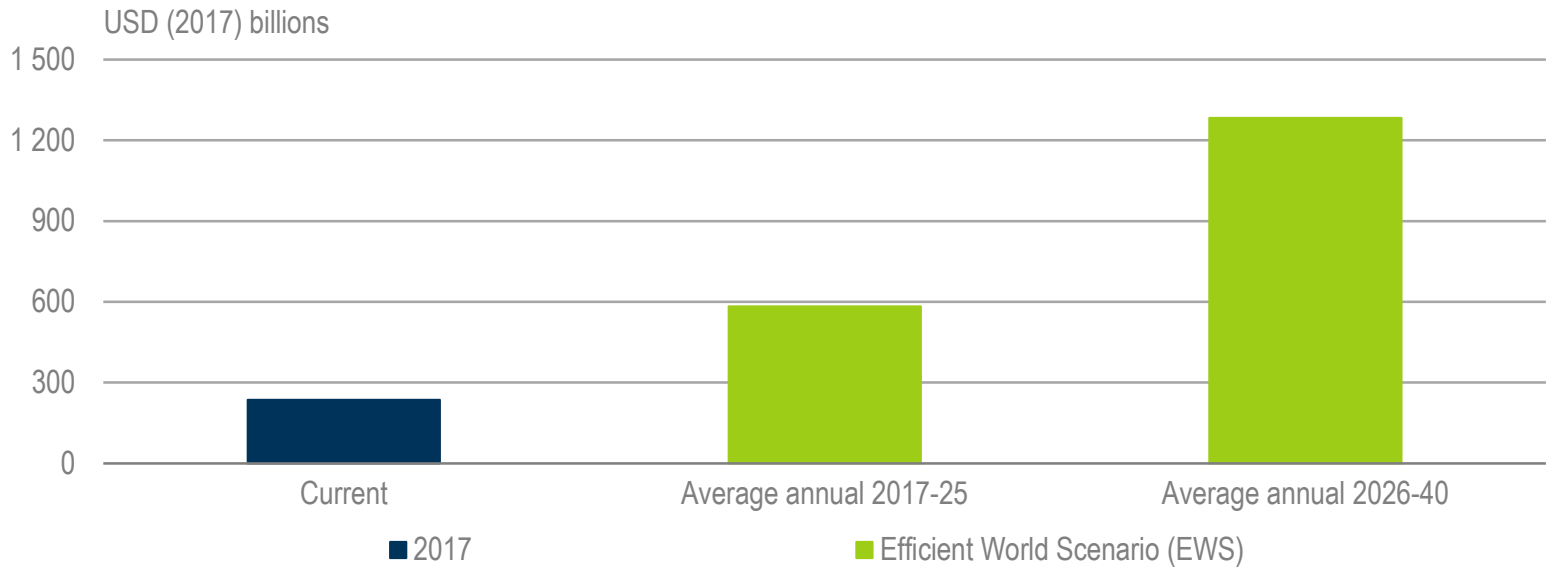
What is possible by 2040	Key policy actions
	• Comprehensive efficiency policies, targeting both new and existing building stock and appliances. • Incentives to encourage consumers to adopt high efficiency appliances and undertake deep energy retrofits. • Improved quality and availability of energy performance information and tools.
• Building space could increase by 60% for no additional energy use. • Space heating, cooling and water heating offer 60% of savings.	

Opportunities and policy actions for industry

What is possible by 2040	Key policy actions
	• Expanded and strengthened standards for key industrial equipment, including electric heat pumps and motors. • Incentives to encourage the adoption of energy management systems. • Mechanisms such as industry networks, training and case studies to enhance awareness and capacity.
• Value-added per unit of energy could double. • Less energy-intensive industry offers 70% of potential savings.	

There is a significant investment opportunity

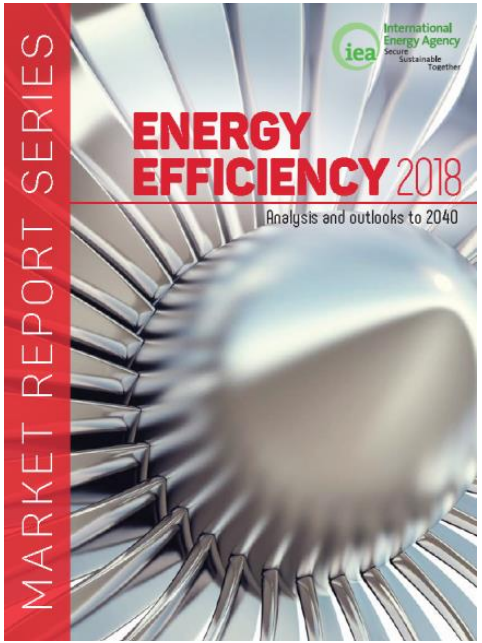
Annual energy efficiency investment in 2017 and in the Efficient World Scenario



Annual energy efficiency investment must double to 2025 and then double again to 2040.
All investments are cost-effective, paying back by an average factor of 3 over the life of measures.

Concluding remarks

- The IEA EWS shows a 2040 world with double GDP and 60% more building space, with lower emissions than today
- Efficiency can reduce air pollution, imports and consumer bills, and EWS maps out the path to delivering the UN SDG on energy efficiency
- The efficiency opportunities are cost-effective and use only technology available today, but require a significant step up in policy action
- Investments need to double now and double again after 2025, but these investments will payback threefold on energy savings alone
- There are good examples today of all the policies required for tomorrow. These form the basis for increased ambition and impact



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