

IEA ENERGY EFFICIENCY IN EMERGING ECONOMIES

TRAINING WEEK

20-24 May 2019

Paris, France





Strategy for an Energy Efficient World

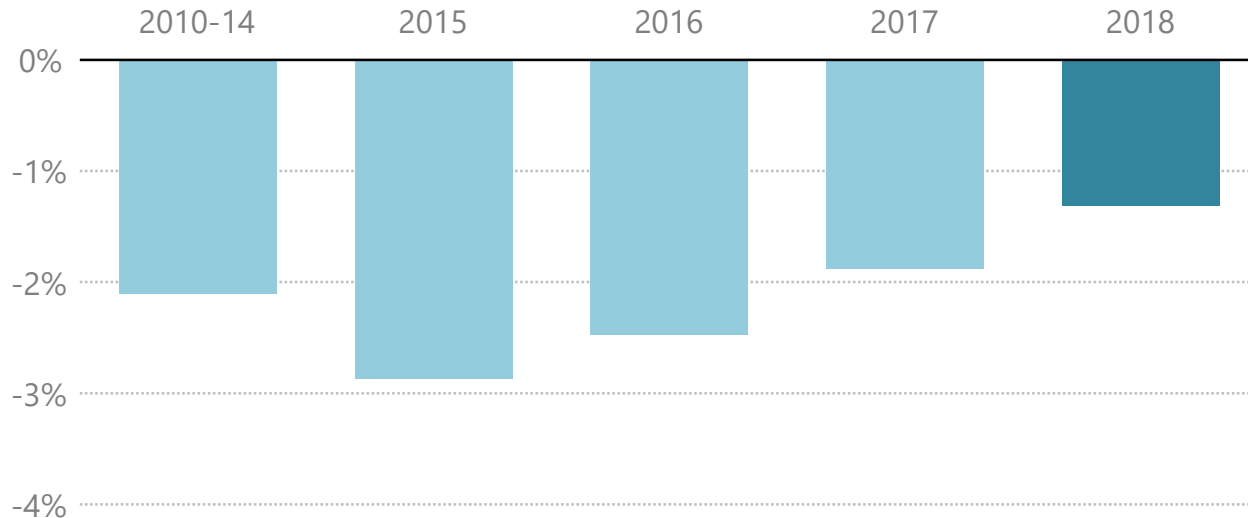
Brian Motherway, Head of Energy Efficiency Division, IEA



@BrianRMotherway #energyefficientworld

Energy intensity improvements are slowing

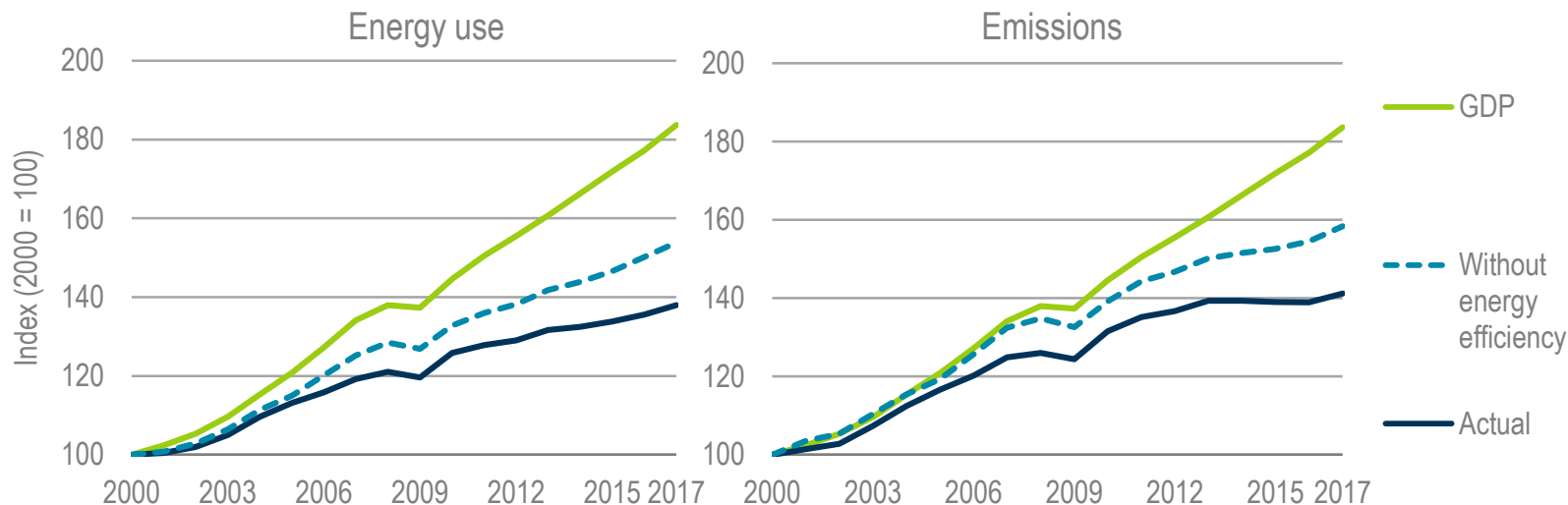
Average annual change in primary energy intensity, 2010-18



In 2018 energy intensity improved by 1.3%, half the rate of the period 2014-2017. Weaker energy efficiency policy implementation and strong demand growth in more energy intensive economies contributed to this slowdown.

But the impacts of energy efficiency are already significant

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



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

What does a more efficient world look like?

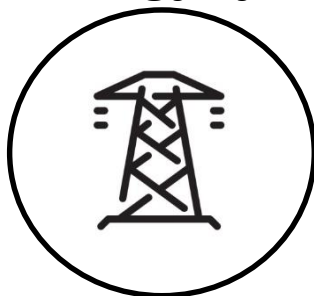
- The world is missing opportunities to improve energy efficiency, policy is not delivering the full potential gains that are available with current technology.
- What is possible with greater efforts on energy efficiency? The IEA's new Efficient World Scenario answers the question:

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



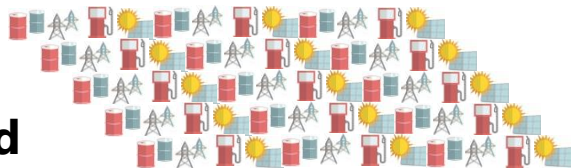
Doubling global GDP for a marginal increase in energy demand

Now

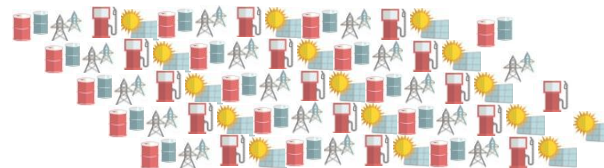
GDP



Energy demand



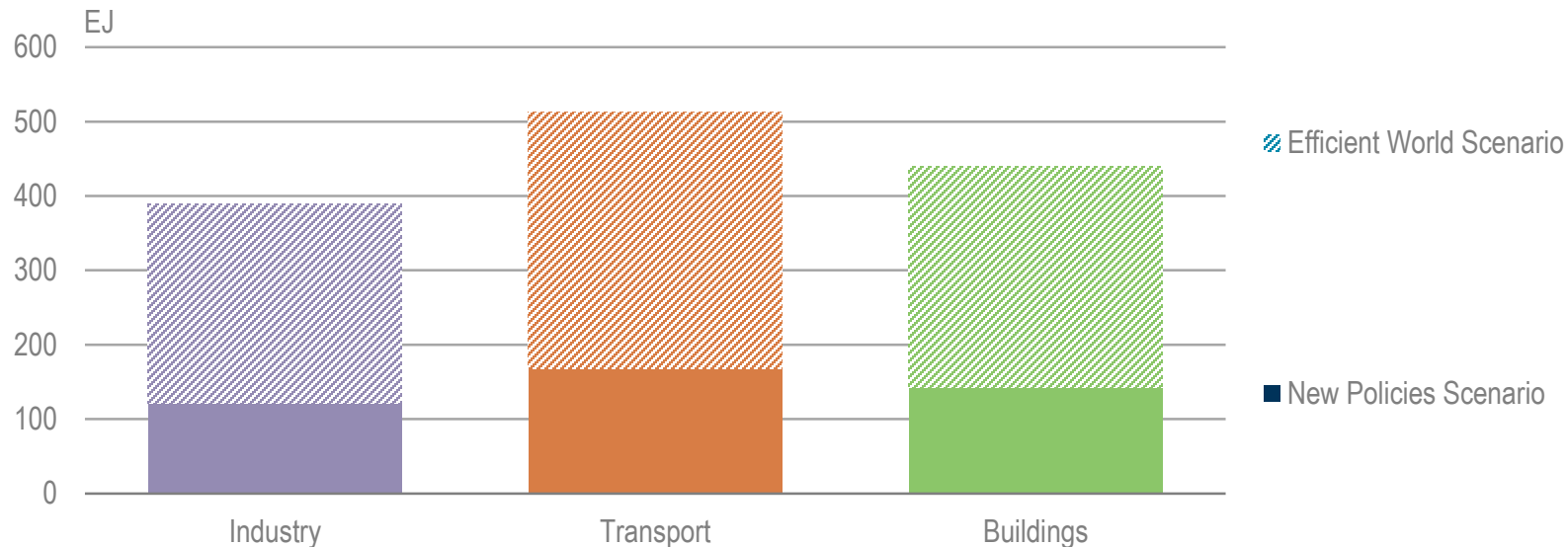
2040



Energy productivity can more than double, from USD 9000 to USD 18 000 of GDP for every tonne of oil equivalent of energy demand.

There is significant cost-effective savings potential in every sector

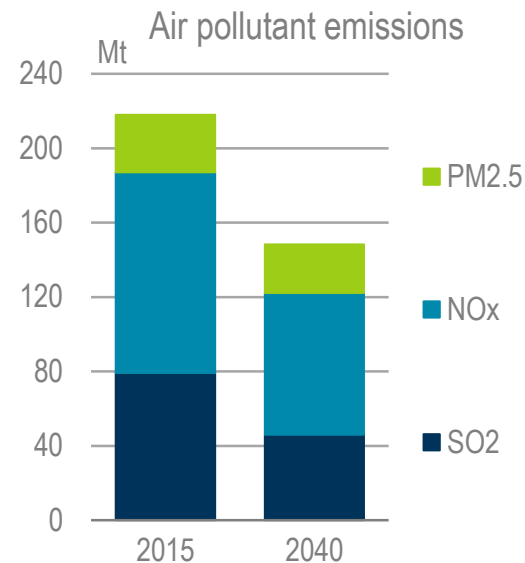
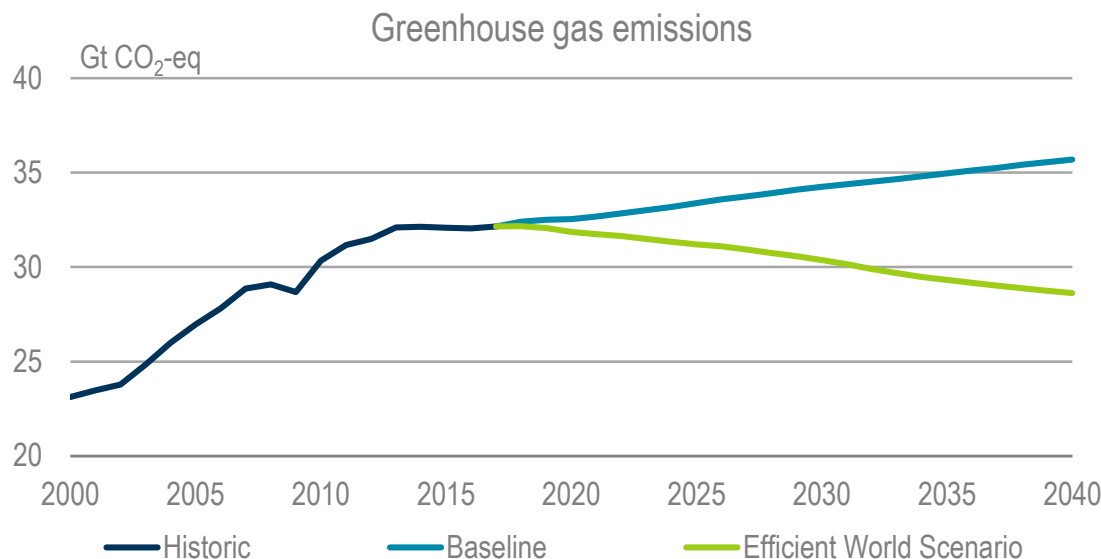
Cumulative energy savings in NPS and additional potential in the EWS to 2040



Only one third of the potential cumulative energy savings from efficiency gains by 2040 are realised in the NPS. The majority of potential across all sectors is realised in the EWS.

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 around 40% of the abatement required by 2040 to be in line with Paris targets. Energy efficiency is indispensable to achieving global climate targets.

What is possible by 2040



- Energy demand could stay flat, despite doubling activity levels.
- Passenger cars and trucks offer two-thirds of potential savings.

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.

Buildings could be 40% more efficient than today

What is possible by 2040



- Building space could increase by 60% for no additional energy use.
- Space heating, cooling and water heating offer 60% of savings.

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.

What is possible by 2040



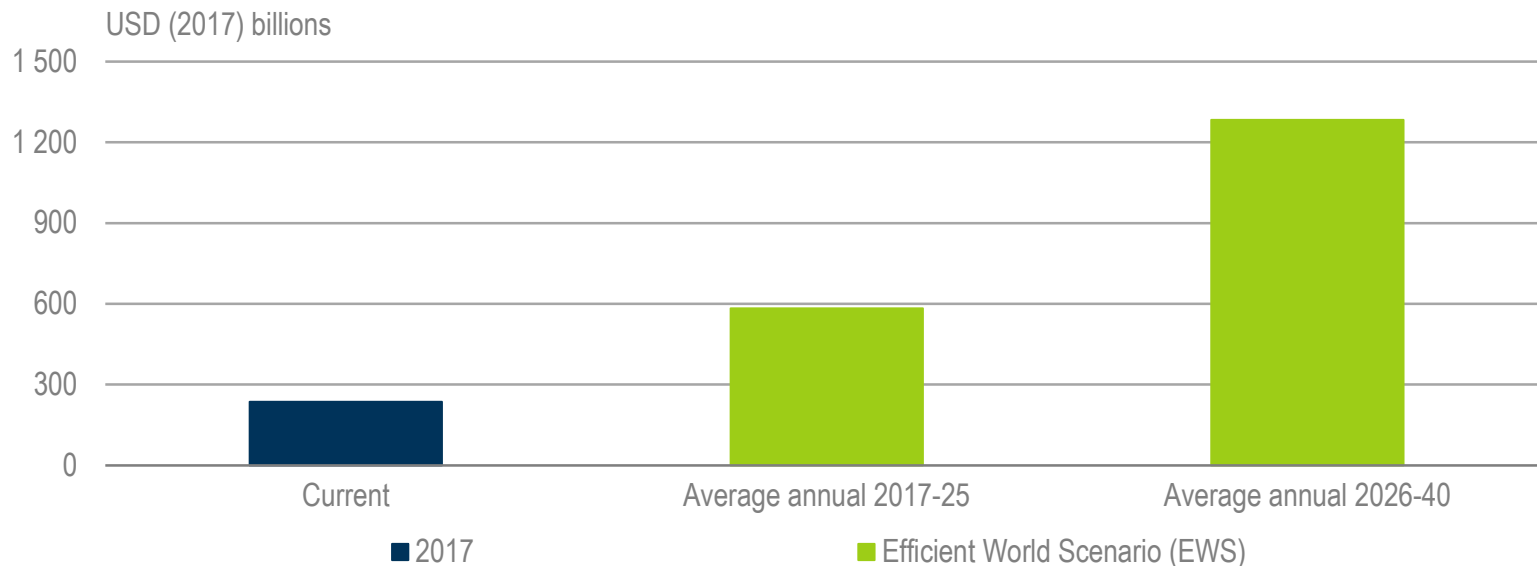
- Value-added per unit of energy could double.
- Less energy-intensive industry offers 70% of potential savings.

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.

But investment levels need to rise

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. Policy will need to facilitate finance and business model innovation to stimulate this investment.

USD 700 billion

Avoided energy
imports in the EU,
China and India

USD 600 billion

Avoided energy
expenditure in
industry

USD 550 billion

Avoided household
energy spending

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



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