

Energy Efficiency Trends and Opportunities

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- Global energy demand rose by nearly 2% in 2017, and CO₂ emissions rose by 1.4% after three years of being flat, this continued in 2018
- Energy efficiency improvements are enhancing productivity and reducing emissions, but policy action is weakening.
- The Efficient World Scenario sees global GDP double between now and 2040 with emissions lower than today, and large savings in air pollution and energy costs.
- The IEA sets out an Efficient World Strategy that, through cost-effective measures and available technologies, unlocks the untapped potential for energy efficiency.

2017 saw a resurgence in global demand growth

Change in global primary energy demand, 2011-17



Source: Adapted from IEA (forthcoming), World Energy Outlook 2018; IEA (2018c) World Energy Statistics and Balances 2018 (database)

Global energy demand rose by nearly 2% in 2017, the fastest rise this decade, driven by economic growth and changes in consumer behaviour.



Decomposition of final energy use in the world's major economies

Note: Countries covered are IEA 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 emissions with and without energy efficiency improvements, 2000-17



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

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What sectors are contributing to efficiency gains?



Sectoral contributions to energy savings from improvements in energy efficiency

Notes: IEA includes Mexico, other major economies are China, India, Brazil, Indonesia, Russia, South Africa and Argentina. Major emerging economies are Brazil, China, India, Indonesia, Mexico and South Africa

Industry has been the largest contributor to energy savings, particularly in major emerging economies. Buildings have made a larger contribution in advanced economies, with transport smallest



- 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?



Doubling global GDP for a marginal increase in energy demand 🛛 😡 🌢 🤶



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



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. 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.

Efficiency bring 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



	The EWS opportunity	Key policy actions
Transport	 Energy demand could stay flat, despite doubling activity levels. Passenger cars and trucks offer two- thirds of potential savings. 	 Stronger and broader policies for cars and trucks and non-road modes. Provide incentives to support uptake and sustainable use of efficient vehicles.
Buildings	 Building space could increase by 60% for no additional energy use. Space heating, cooling and water heating offer 60% of savings. 	 Efficiency policies, targeting both new and existing building stock and appliances. Incentives to encourage adoption of efficient appliances and deep energy retrofits.
Industry	 Value-added per unit of energy could double. Less energy-intensive industry offers 70% of potential savings. 	 Standards for key industrial equipment, including electric heat pumps and motors. Incentives to encourage the adoption of energy management systems.







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