Energy Efficient Prosperity

Strategies to support energy efficiency goals

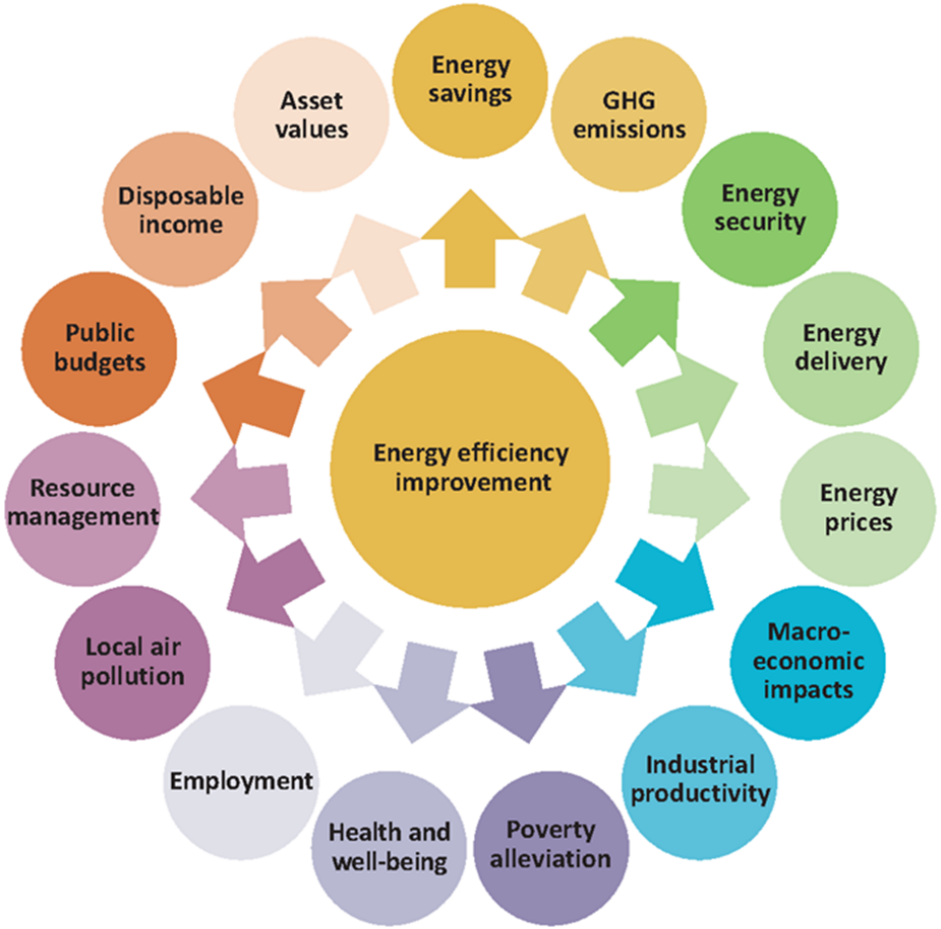
Ailin Huang, IEA

New Delhi, 10 December 2018

#energyefficientworld

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Multiple Benefits of Energy Efficiency



Energy Efficient Prosperity

Energy efficiency as a means to support economic and social development.

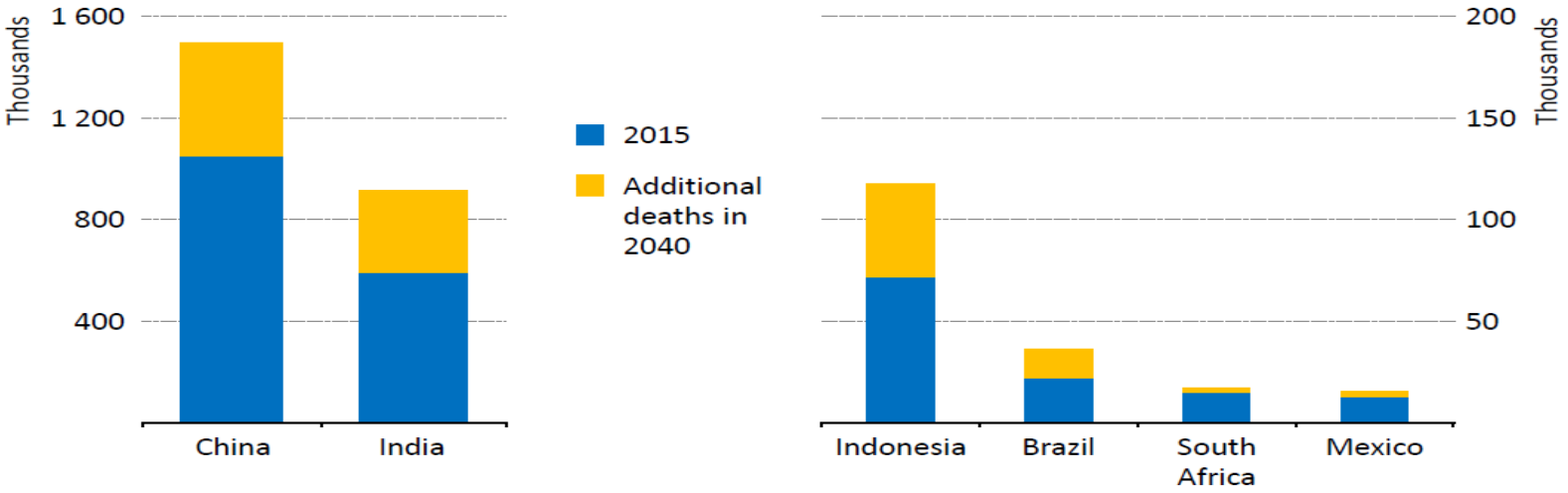
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Energy Efficient Prosperity: Reduced air pollution



Energy Efficient Prosperity: Improved health

- Air pollution is the fourth largest risk to human health
- 3.5 million premature deaths are linked to energy poverty due to the use of biomass for cooking and kerosene for lighting
- 3 million premature deaths are linked to outdoor air pollution, mostly in cities



Source: World Energy Outlook Special Report on Energy and Air Pollution, IEA 2016

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Impact on health and productivity

- **labor productivity**: increase by 6–16%
- **students' test scores**: shows ~20–26% faster learning
- **Influenza and cold rates**: can decrease by as much as 20%, resulting in a USD10 bln/yr savings in US alone
  - reduced respiratory disease;
  - reduced allergies and asthma;
  - reduced sick building syndrome;
  - direct improvements in worker performance unrelated to health

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Energy Efficient Prosperity: Safety

Poor visibility



More energy use

Better light quality



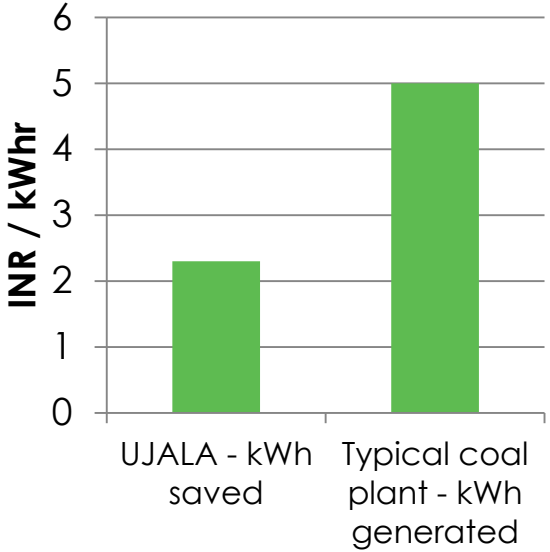
Less energy use

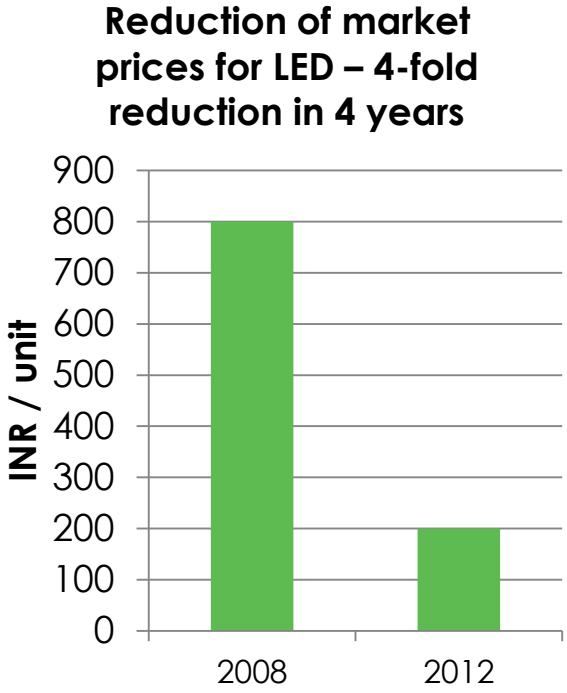
Improved lighting has improved safety

Source: APEC, 2011 - Survey Report and Best Practice Guide for LED Street and Outdoor Lighting

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Multiple benefits of India's UJALA programme





Jobs:
Employment for 35,000 people

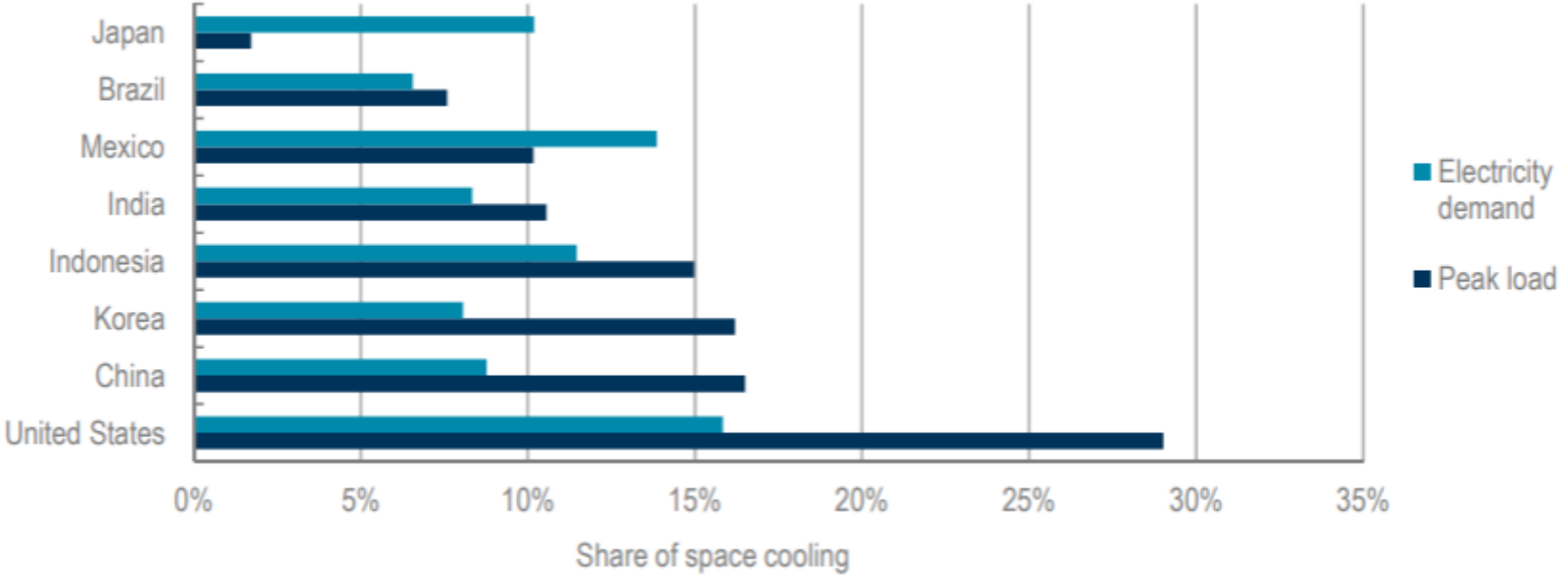
Avoided Emissions:
3 million tonnes of CO_2 a year or 2.7 million cars taken off the roads

UJALA ≡ Affordable LEDs and Appliances for All

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Reducing peak demand

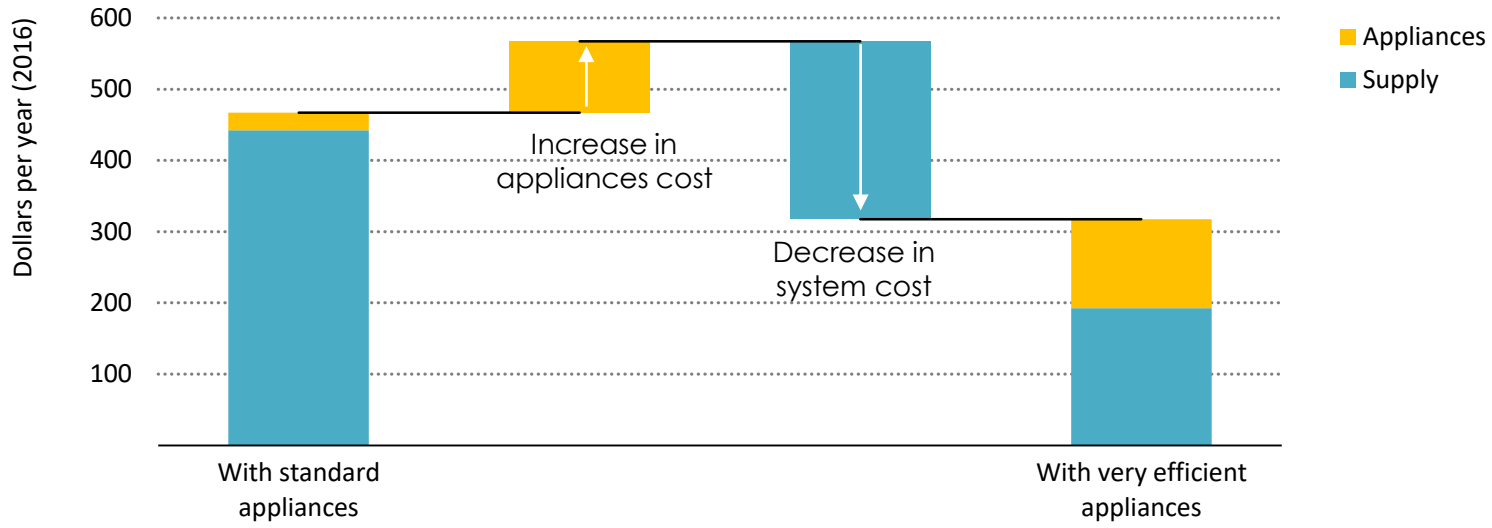
Share of cooling in peak load and total electricity demand by country/region, 2016



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Energy efficiency reduces the cost of increasing energy access

Cost of providing electricity access through off-grid solar PV, with and without efficient appliances, 2030



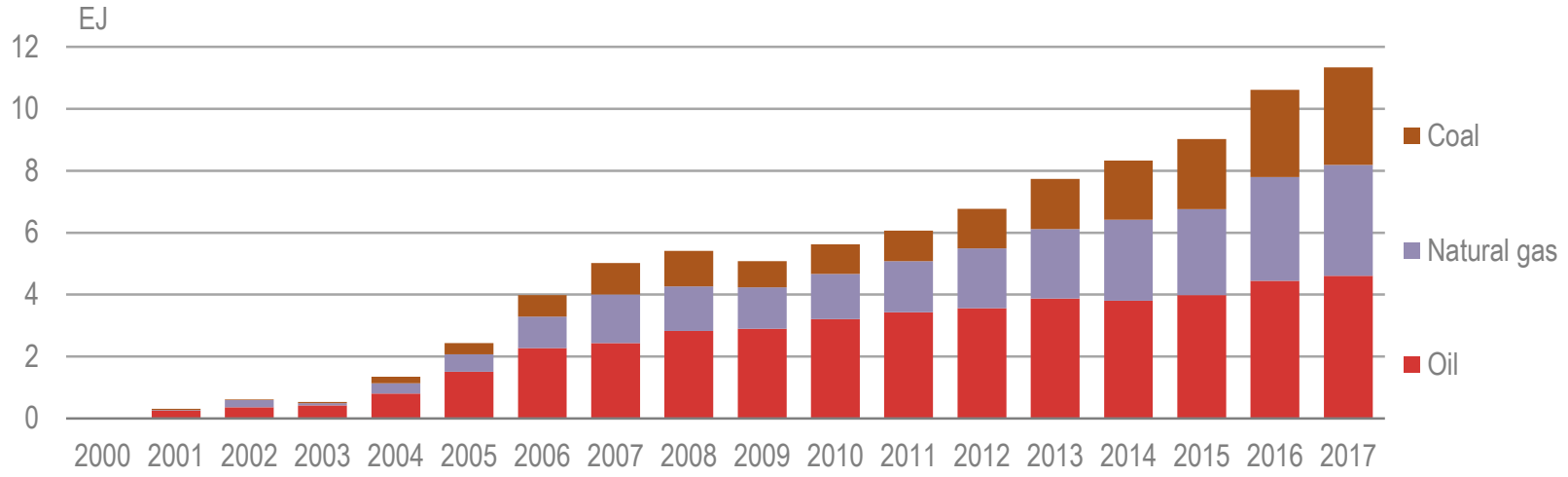
Source: *Energy Access Outlook 2017*

The use of efficient appliances reduces the amount of energy required to meet demand for energy services, reducing the cost of improving energy access.

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Energy efficiency enhances energy security

Reduction in fossil energy imports in IEA countries and major emerging economies due to efficiency improvements since 2000



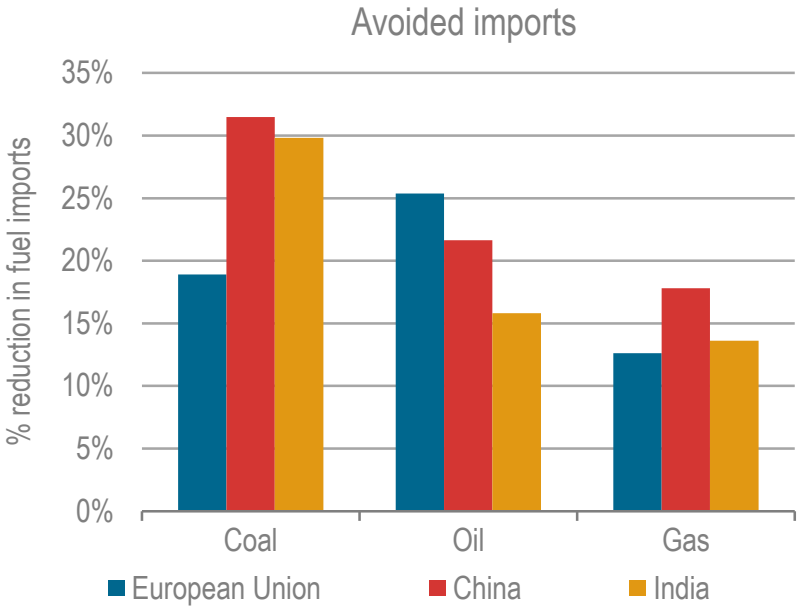
Note: Countries covered are IEA countries plus China, India, Brazil, Indonesia, Russia, South Africa and Argentina.

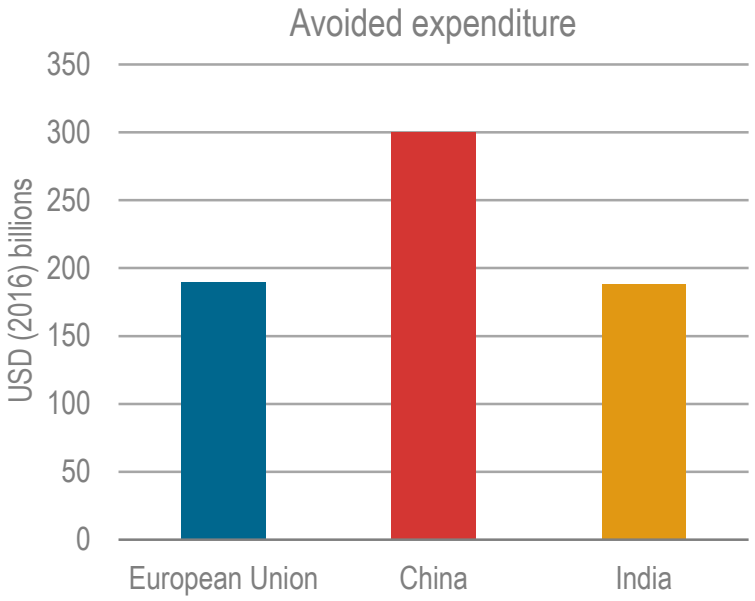
Efficiency gains since 2000 avoided the need for over 11 EJ or 20% more fossil fuel imports in 2017.

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Efficiency can further enhance security in major importing regions

Avoided imports (left) and reduction in fossil-fuel net-import bills (right) in the Efficient World Scenario compared with the New Policies Scenario in 2040



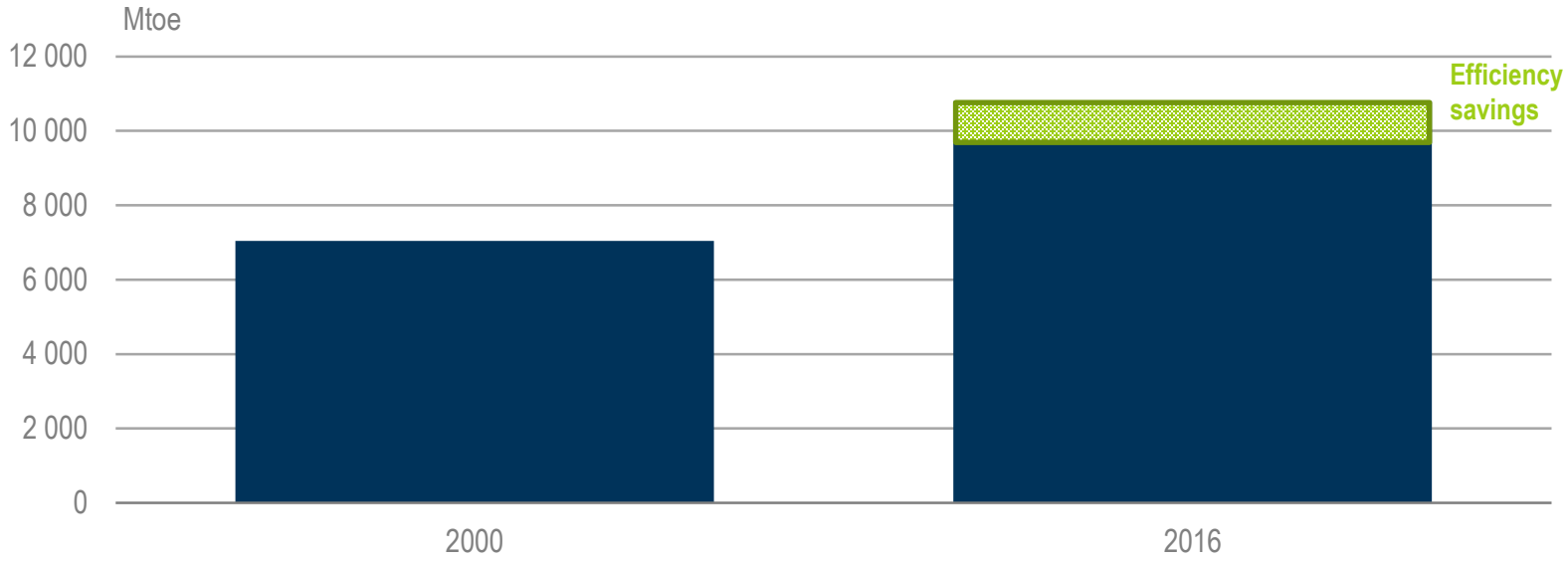


The EU, China and India, could avoid nearly USD 700 billion in fossil fuel imports by 2040.

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Efficiency is reducing global energy use

Global final energy consumption and savings from energy efficiency

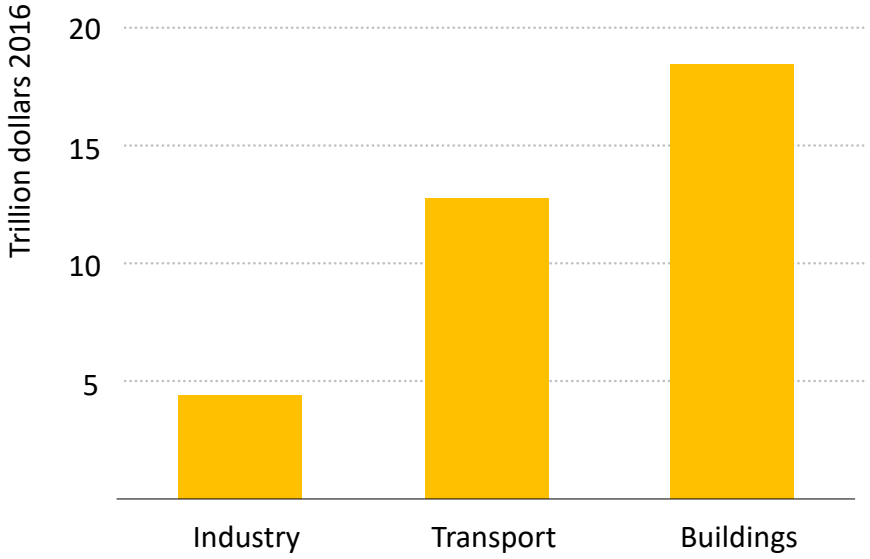


Energy efficiency reduced global energy use by 12% in 2016.
This is an amount equivalent to the energy use of the European Union.

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Fuel cost savings outweigh investment needs by a factor of three

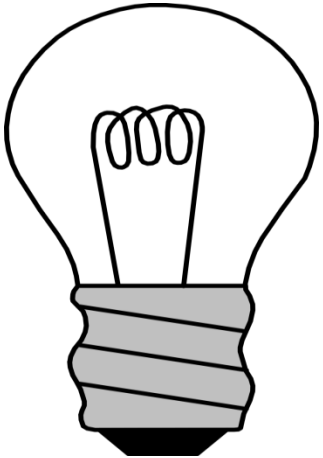
Cumulative investments needs in energy efficiency in a clean energy transition scenario, 2017-2050

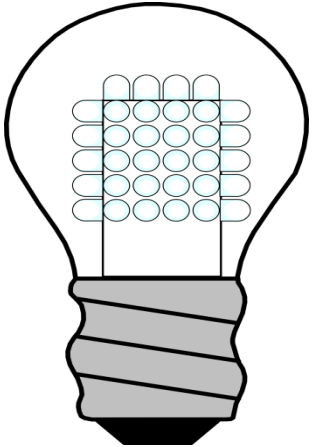


Energy efficiency investments needs in end-use sectors are large, but are outweighed by fuel cost savings; on average, each dollar invested saves three dollars over technology lifetimes.

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Energy Efficient Prosperity





Energy efficient prosperity is about getting more out of the energy we use

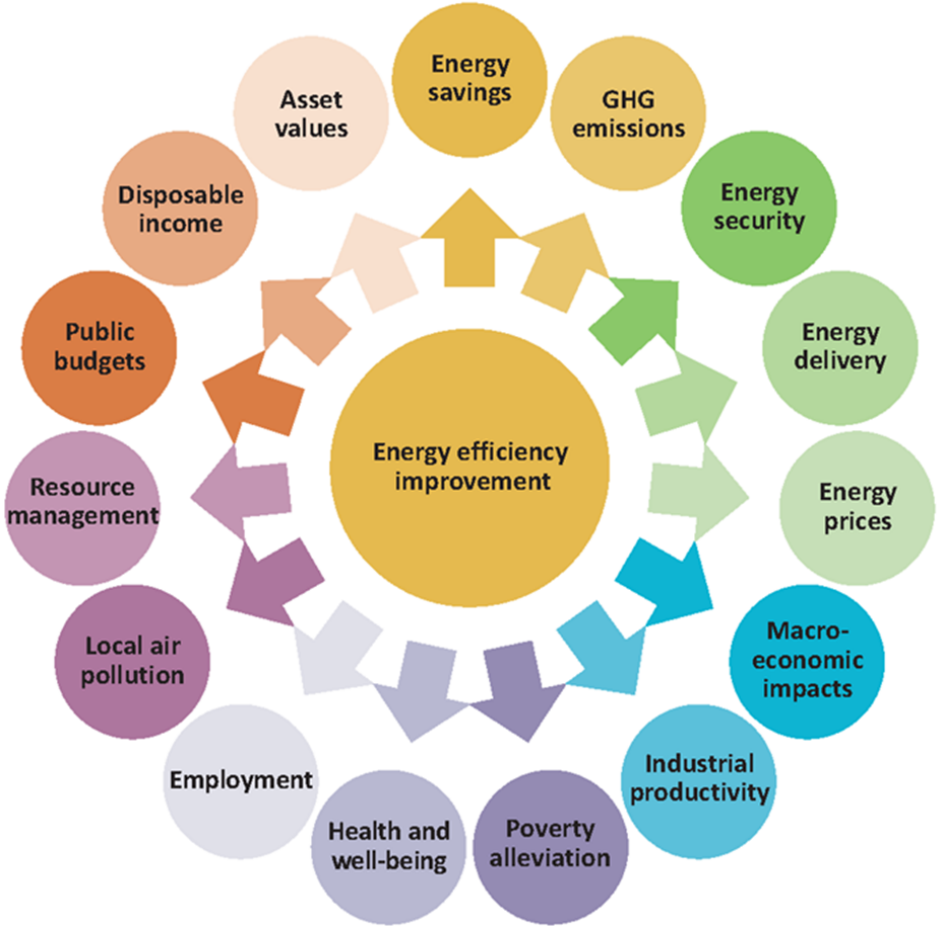
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Energy efficiency as an enabler for at least a third of the SDGs



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The multiple benefits of energy efficiency



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