



Global Energy Futures Implications for Emerging Economies

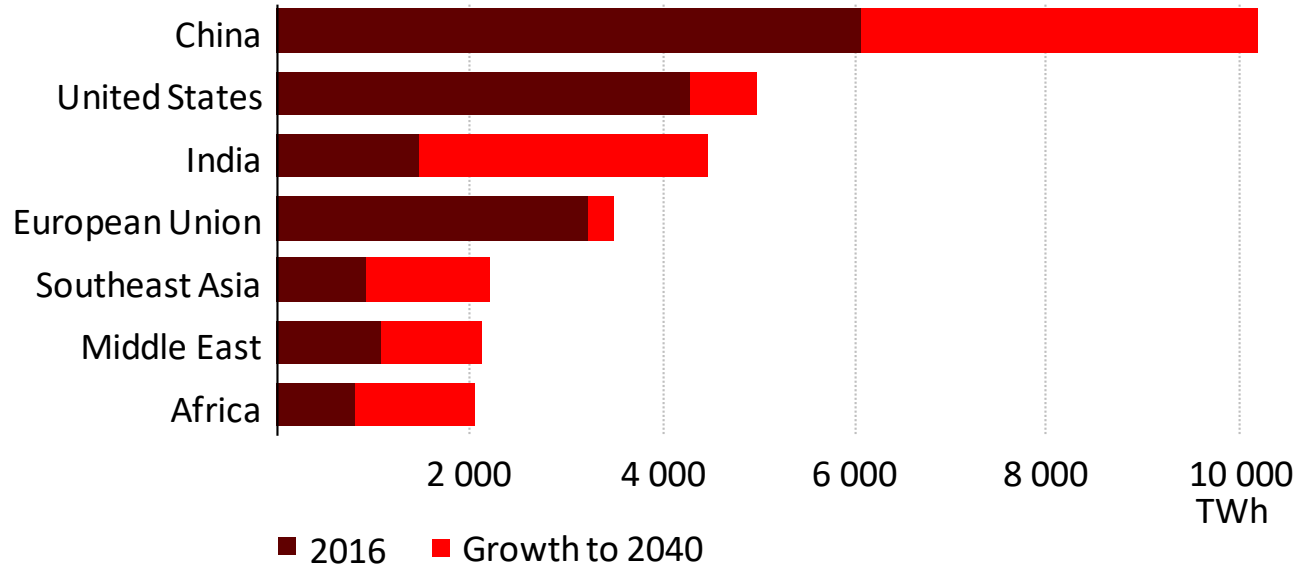
Matthew Wittenstein, Senior Electricity Analyst

July 19, 2018, Washington, D.C.

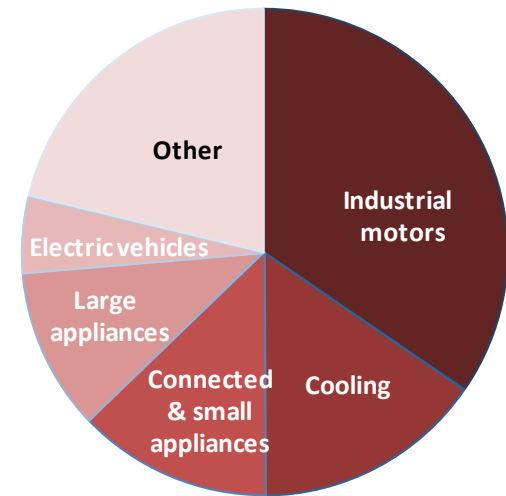


The future is electrifying

Electricity generation by selected region



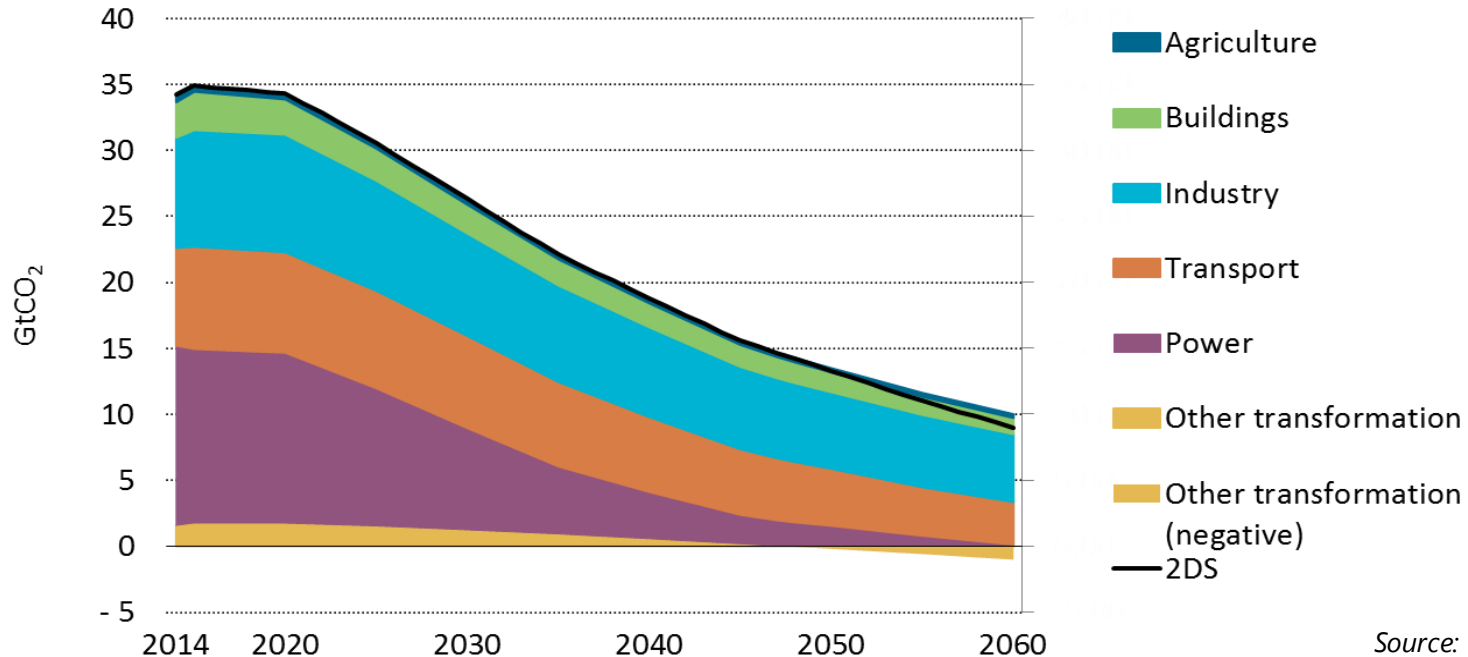
Sources of global electricity demand growth



Source: World Energy Outlook 2017

India adds the equivalent of today's European Union to its electricity generation by 2040, while China adds the equivalent of today's United States

CO₂ emissions in the 2 Degree Scenario

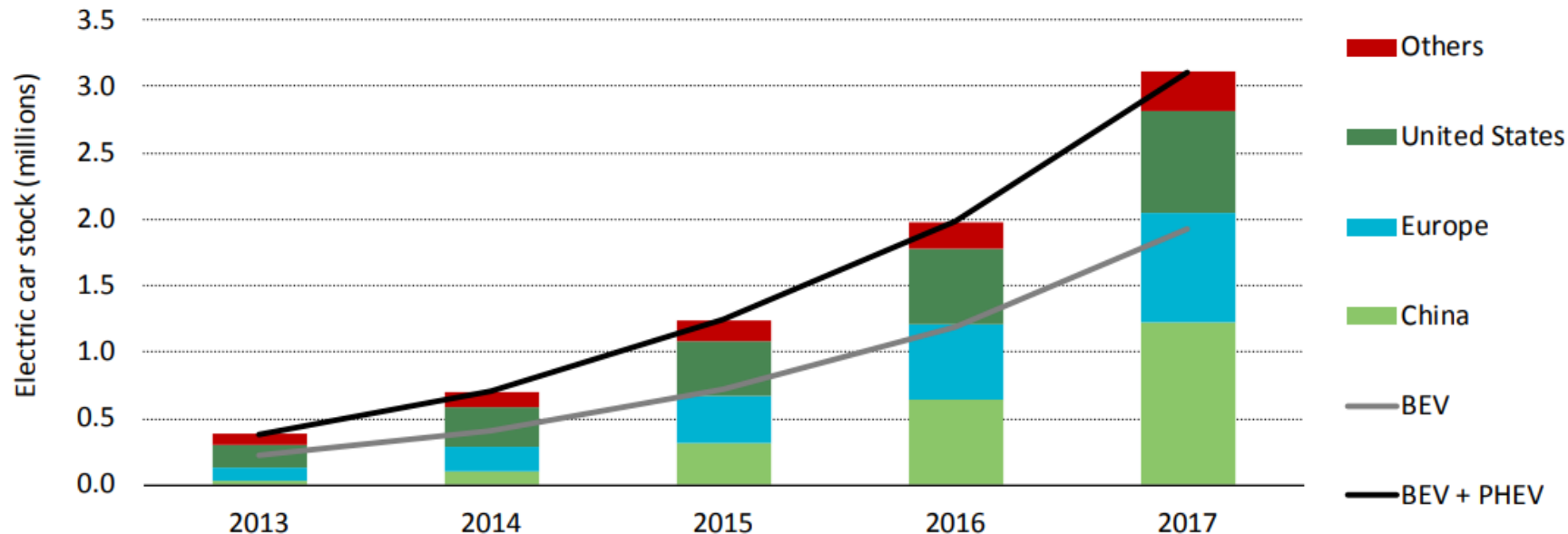


Source: ETP 2017

Electrification can leverage power sector decarbonisation to support decarbonisation of other sectors – in particular, transport.

Transport electrification: rapid but uneven

Evolution of the global electric car stock, 2013-17

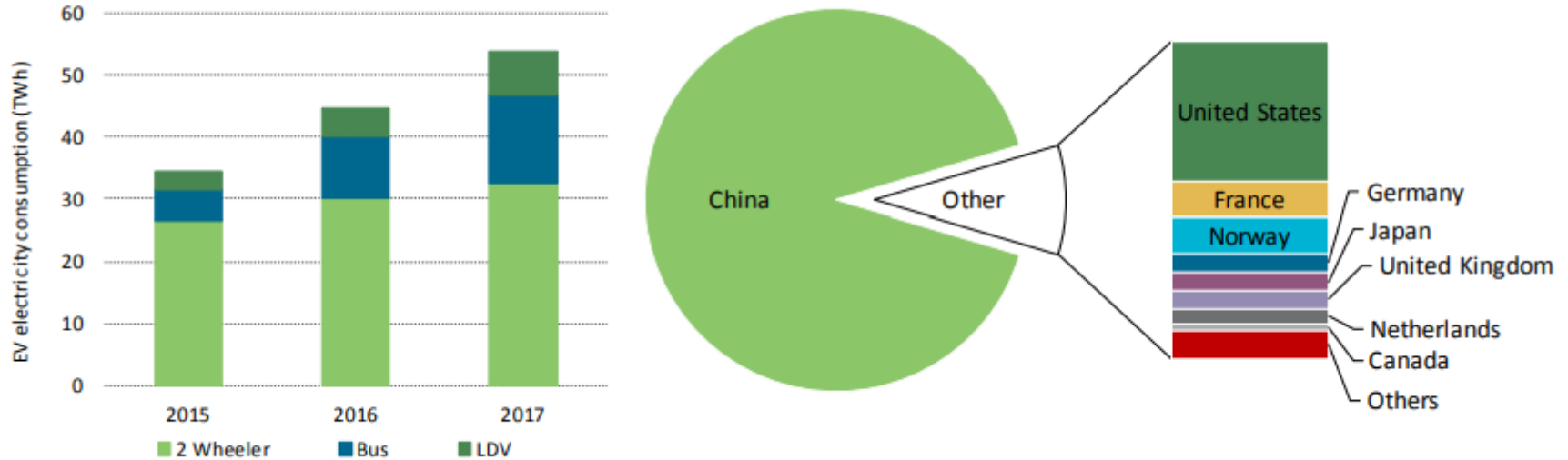


Source: IEA GEVO 2018

The global electric car stock is expanding rapidly, crossing the 3 million vehicle threshold in 2017. However, nearly all of these growth is constrained to three regions.

Electricity demand from EVs: China in the lead

Total electricity demand from EVs by country, 2017

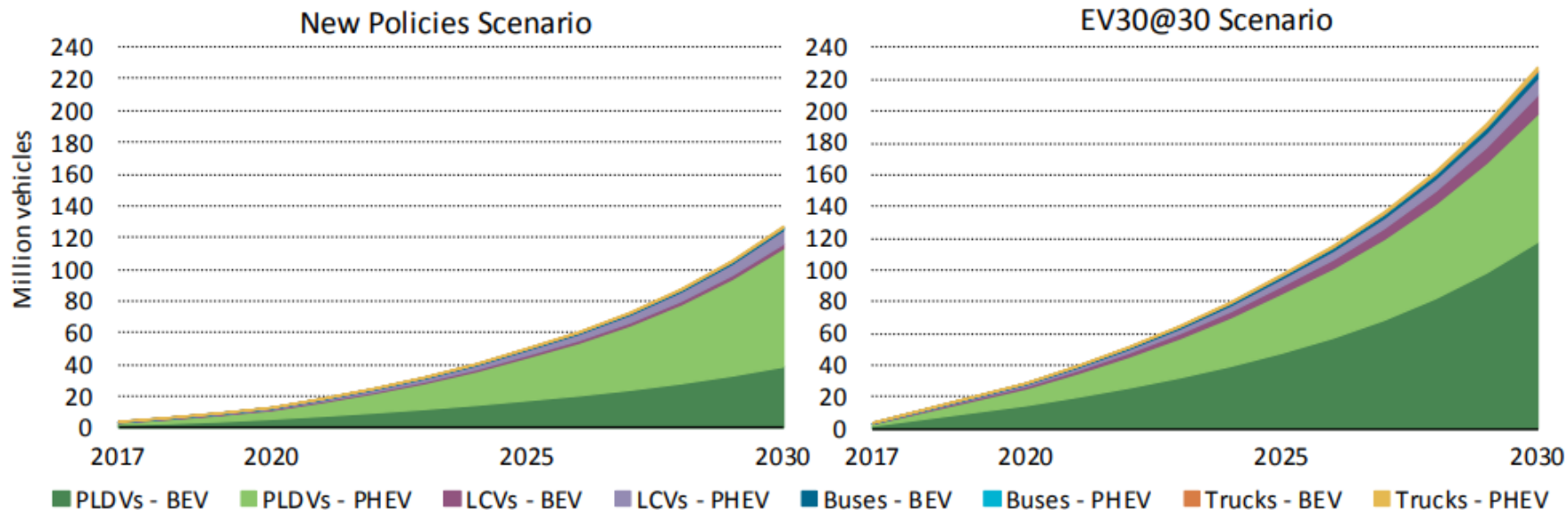


Source: IEA GEVO 2018

China dominates global electricity demand for EVs. Largest year-on-year growth in electricity demand comes from light-duty vehicles (LDVs).

Global EV growth: the long road ahead

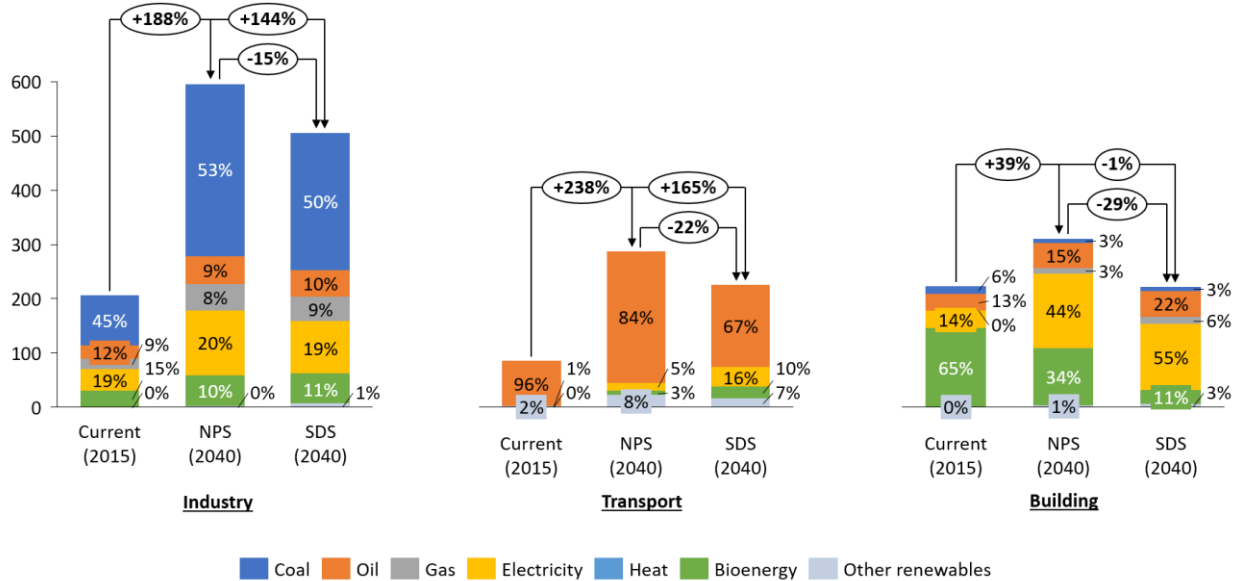
Global EV stock in the New Policies and EV30@30 scenarios, 2017-30



Source: IEA GEVO 2018

The EV30@30 Scenario sees 228 million EVs (excluding two- and three-wheelers), mostly LDVs, by 2030; around 100 million more than in the New Policies Scenario.

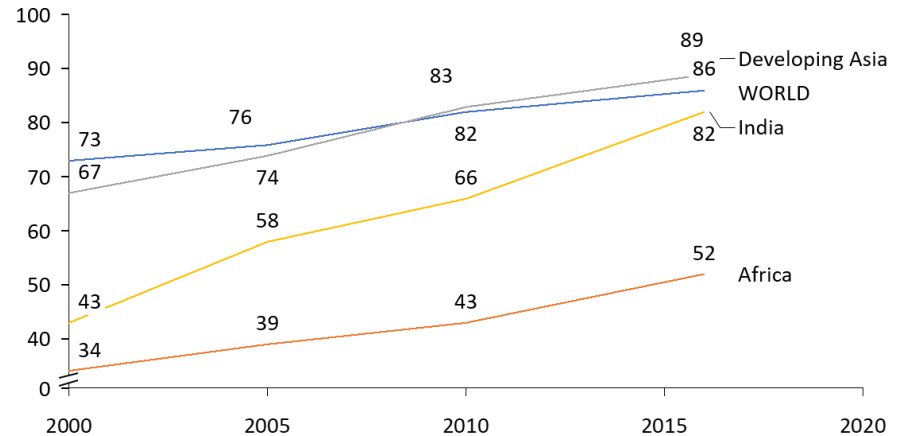
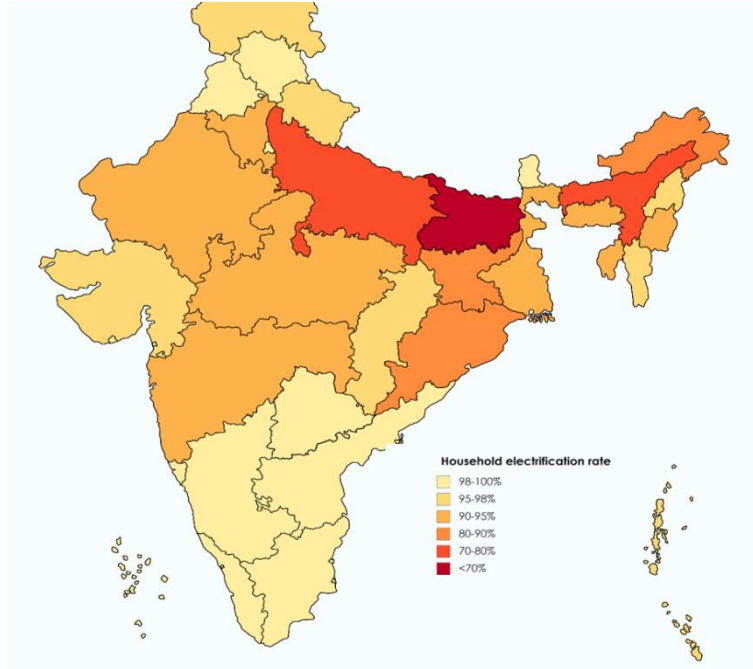
India's energy consumption by sector and fuel in different scenarios



Source: World Energy Outlook 2017

Electricity demand in India is significantly higher in the transport and buildings sectors under the SDS, as compared to the NPS.

Electricity access: significant progress but more work to do

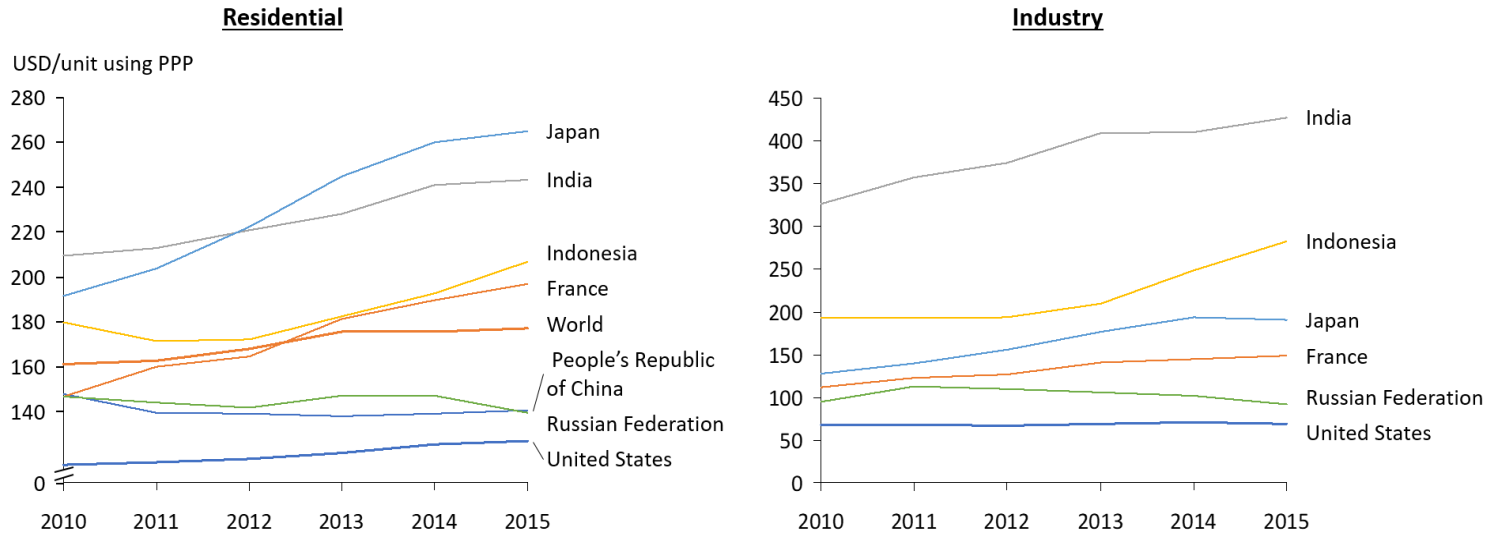


Source: IEA WEO 2017

India has made significant progress in expanding electricity access throughout the country. However, a number of regions remain significantly underserved.

Challenge for India: electricity affordability

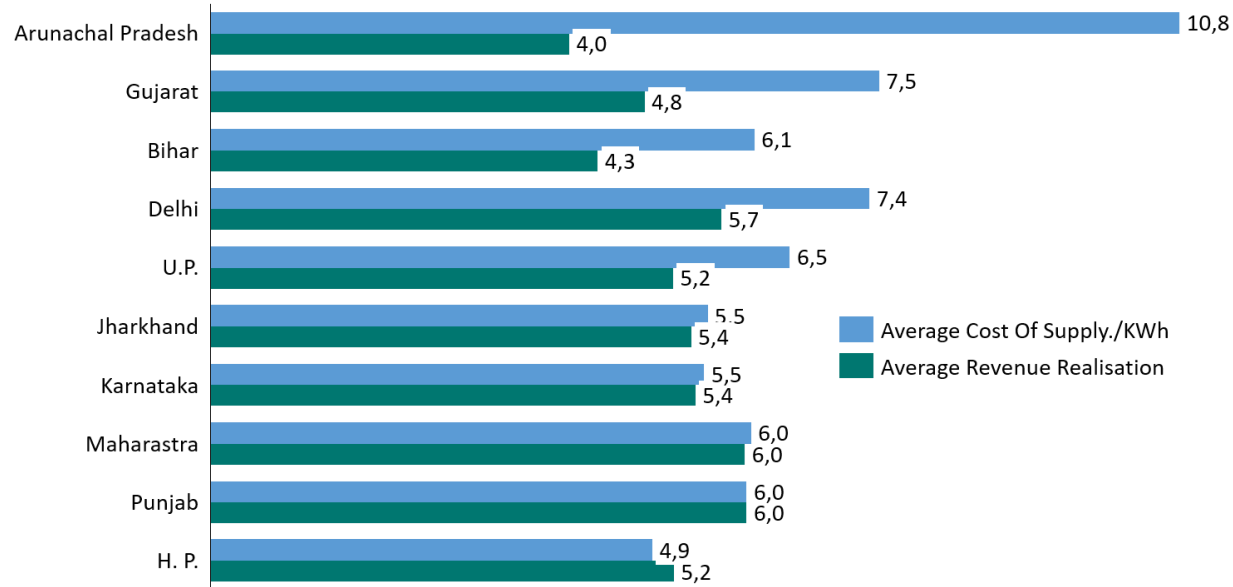
Electricity prices for select countries in USD (adjusted for PPP)/ MWh



Source: IEA statistics

Adjusted for purchasing power parity (PPP), electricity in India is among the most expensive in the world. Residential prices are 30% higher than the global average, and industrial 40% higher.

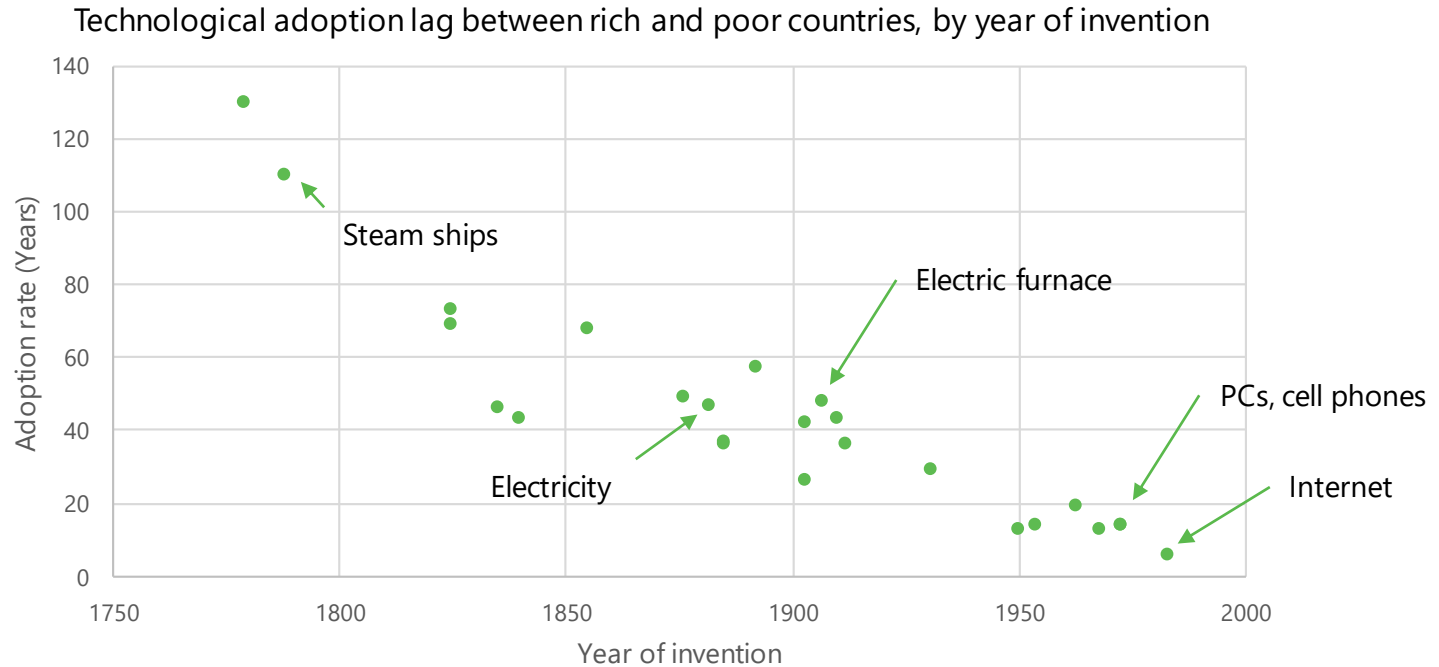
Comparison of cost of supply vs revenue realization for select states of India (2015)



Source: state distribution companies

For most distribution companies in India, the cost of supply of electricity is considerably higher than the average revenues they receive.

The opportunity: accelerating rate of technology adoption



Source: D. Comin and M. Mestieri, 2018

It took approximately 110 years for the steam ship to become adopted globally, 47 years for electricity, 14 years for PCs and cell phones, and only 6 years for the internet.



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