International Energy Agency

IEA Secretariat update

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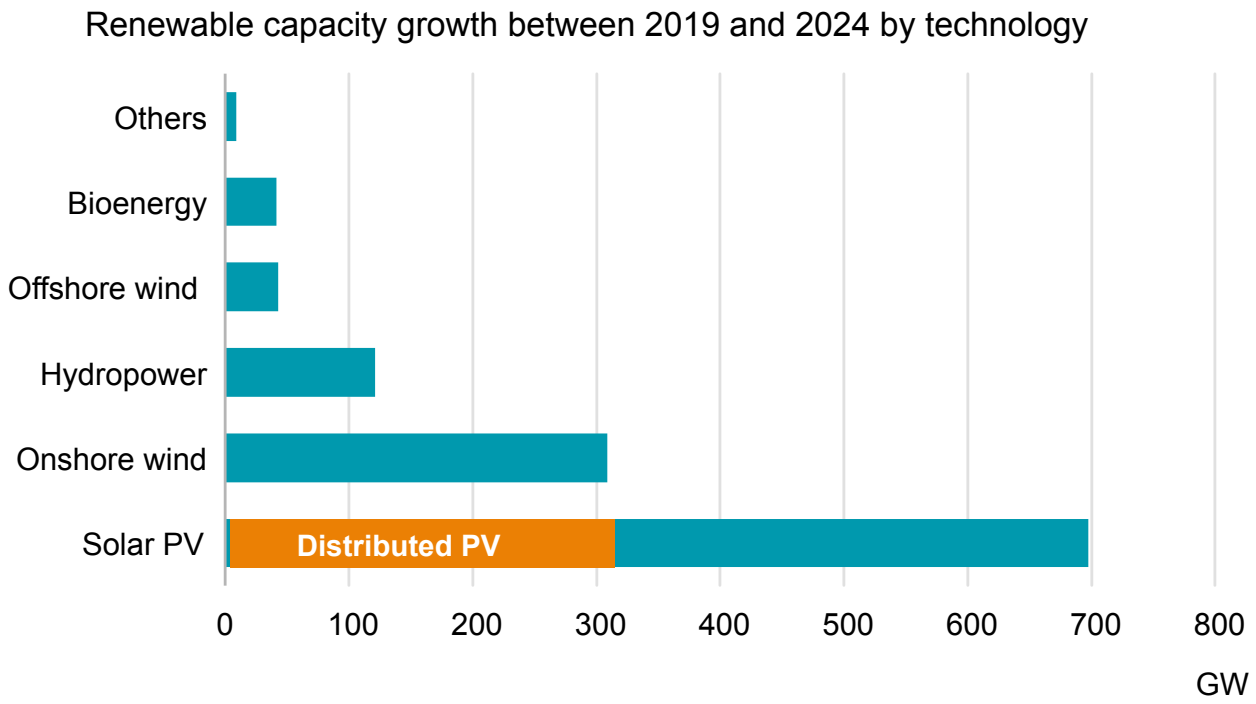
21 October 2019

Renewables 2019

Context

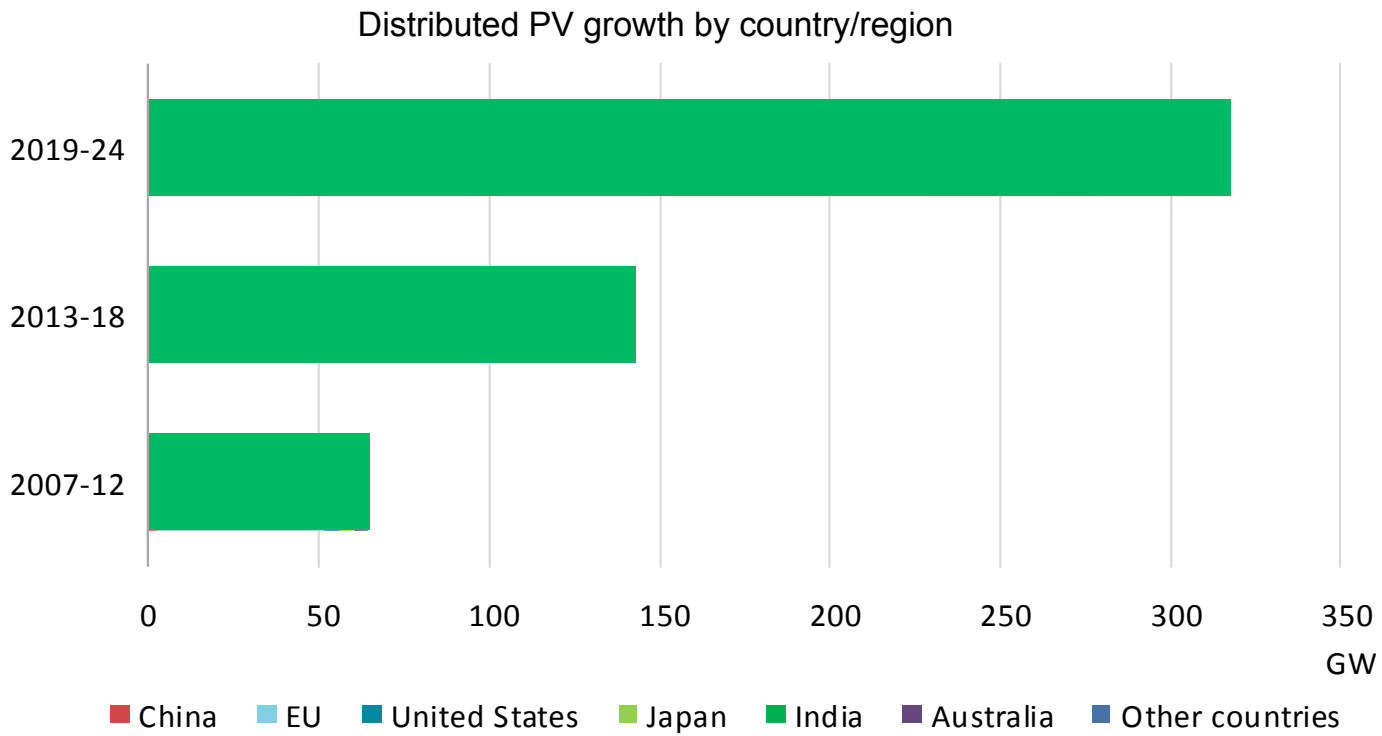
- Despite stalling in 2018, global renewable capacity additions are set to rebound in 2019 by 12%, with solar PV driving their strongest increase in four years.
- Wind and solar PV costs continue to decline rapidly, improving their cost competitiveness versus new coal and natural gas plants.
- Distributed PV systems in homes, commercial buildings and industry have almost tripled since 2014, transforming the way electricity is generated and consumed.
- The share of renewables in world electricity generation reached 25% last year while remaining at 10% in heat and below 4% in transport demand.
- Decarbonising electricity production is a key step, but there is also an urgent need to transform “hard to abate” sectors: transport, buildings and energy-intensive industries (iron & steel, cement etc.).

Solar PV drives strong rebound in renewable capacity expansion



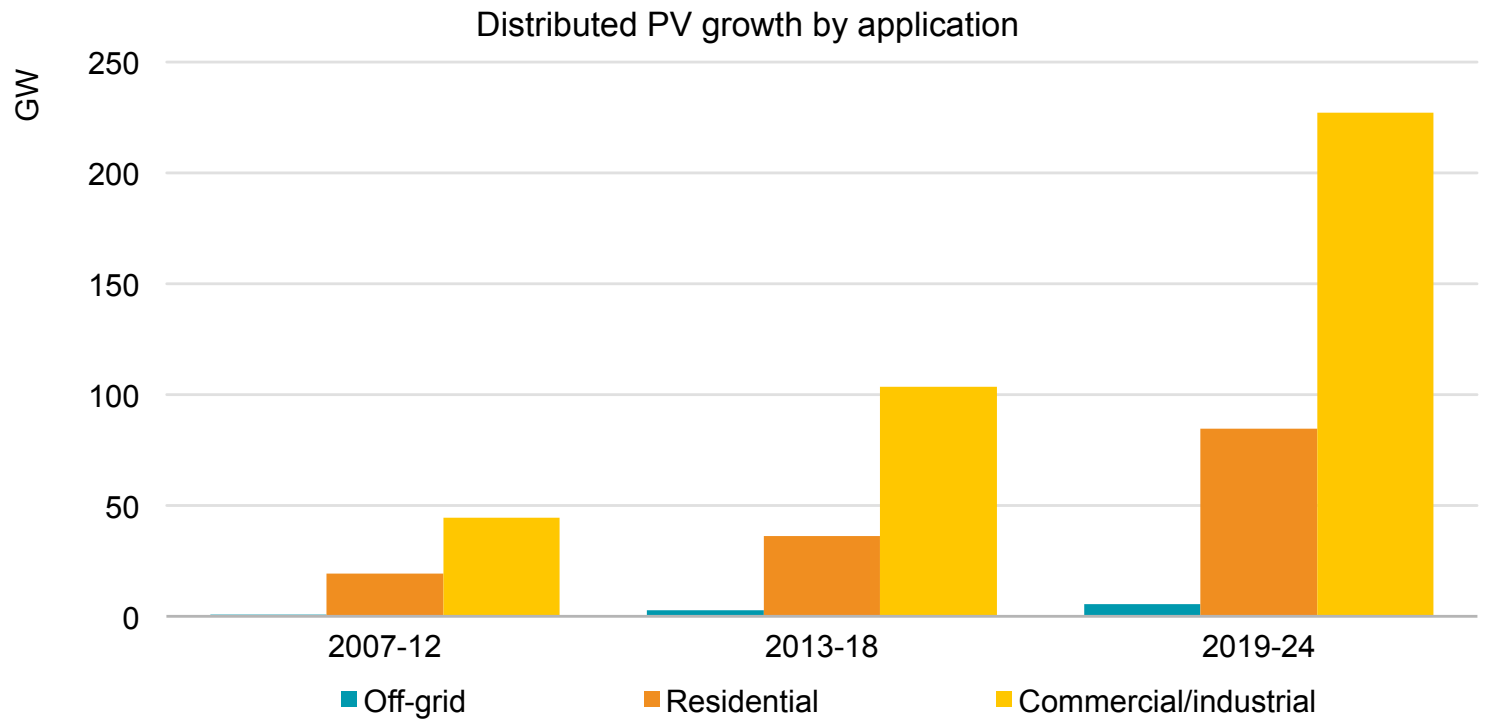
Renewables expand by 50% through 2024, with distributed PV alone growing as much as onshore wind. The IEA forecast is 14% higher than last year due to improved policies and increasing competitiveness

Distributed PV expansion more than doubles



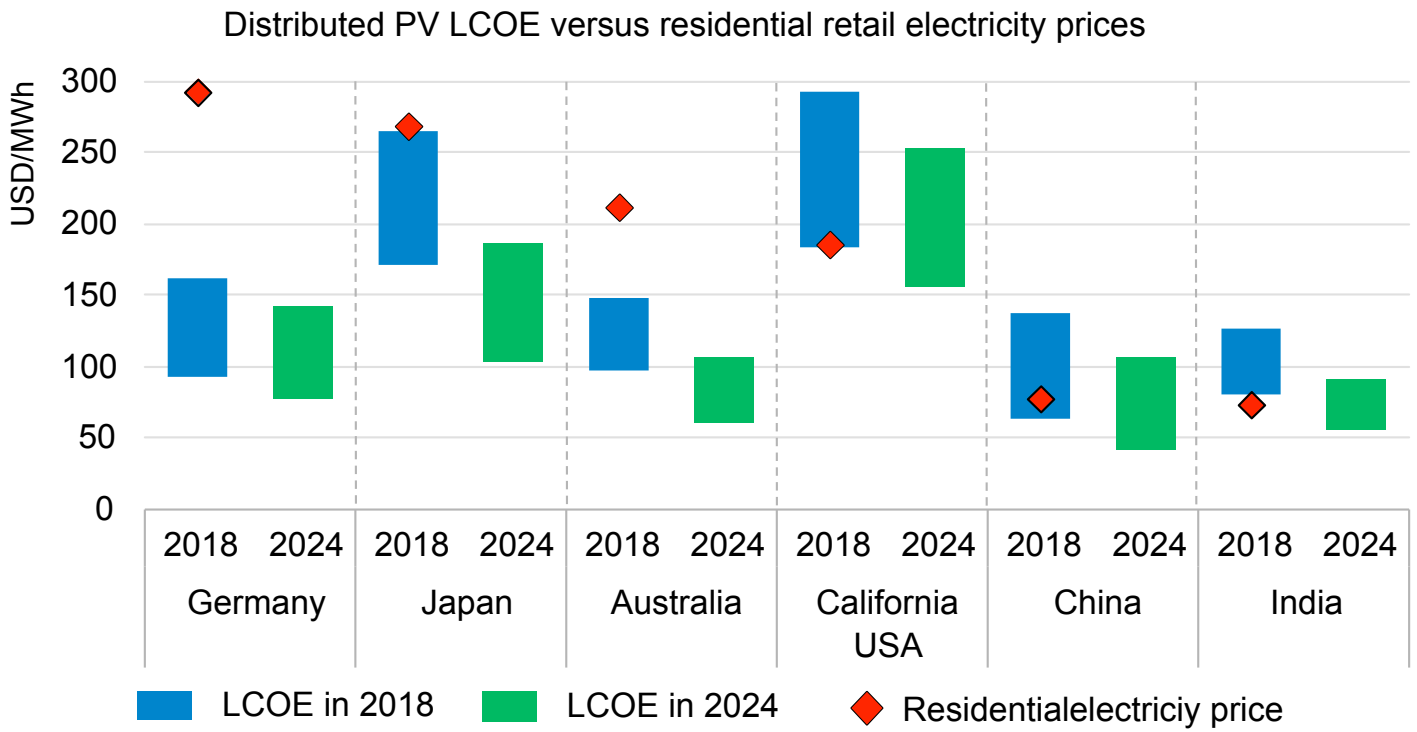
Over the next five years, China's distributed PV capacity becomes the world's biggest, growth in the EU resumes, and other countries such as India emerge as new markets

Commercial buildings and industry lead distributed PV growth



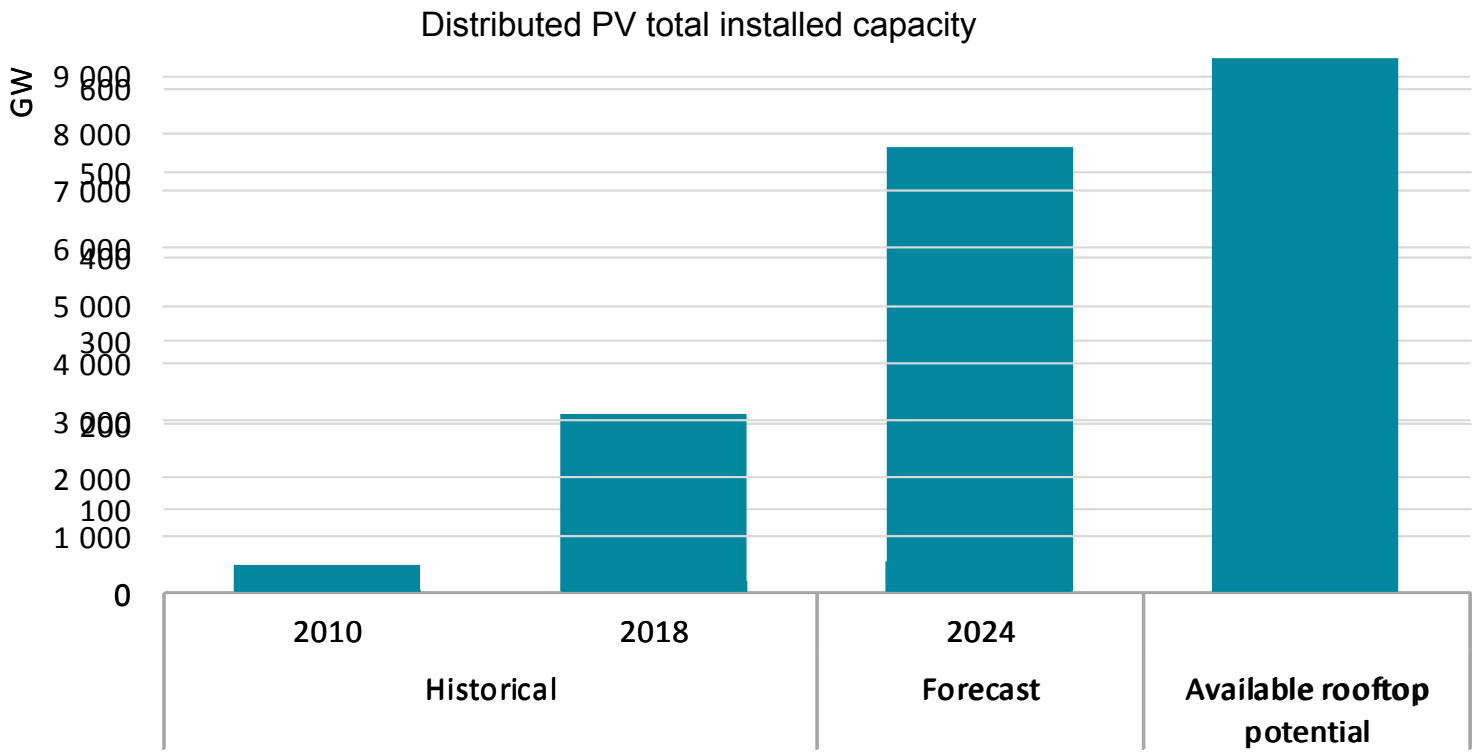
Economies of scale + better match between PV output and electricity demand in commercial/industrial applications enable higher self-consumption, saving more on electricity bills than in case of residential

Distributed PV increasingly cheaper than retail electricity prices



Continuing decline of solar PV costs widens the gap with retail electricity prices, increasing distributed PV's economic attractiveness for private investors

Towards a distributed solar PV boom?



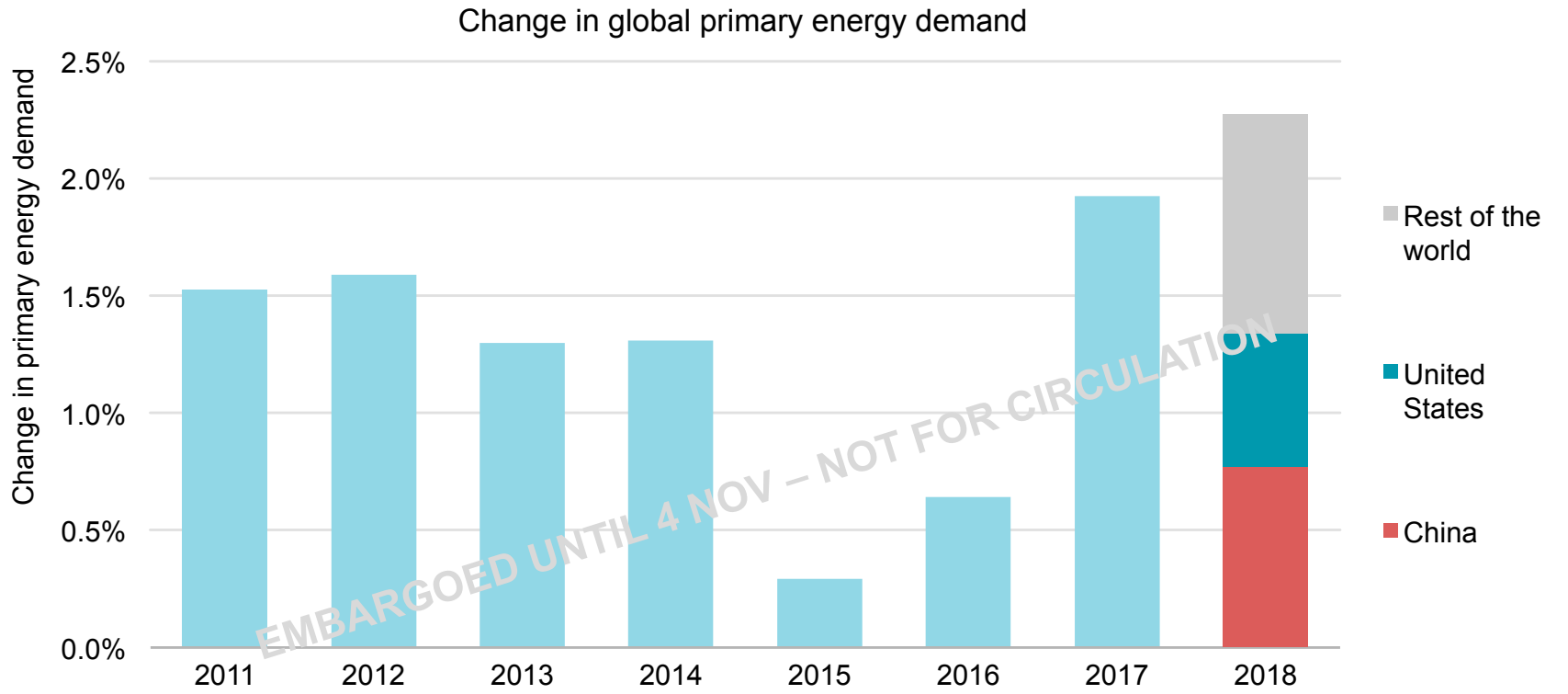
With improved policies, lower costs and rapid adoption, total distributed PV capacity more than doubles by 2024. However, this represents only 6% of the global technical potential.

Energy Efficiency 2019 – Coming on Nov 4

Overview

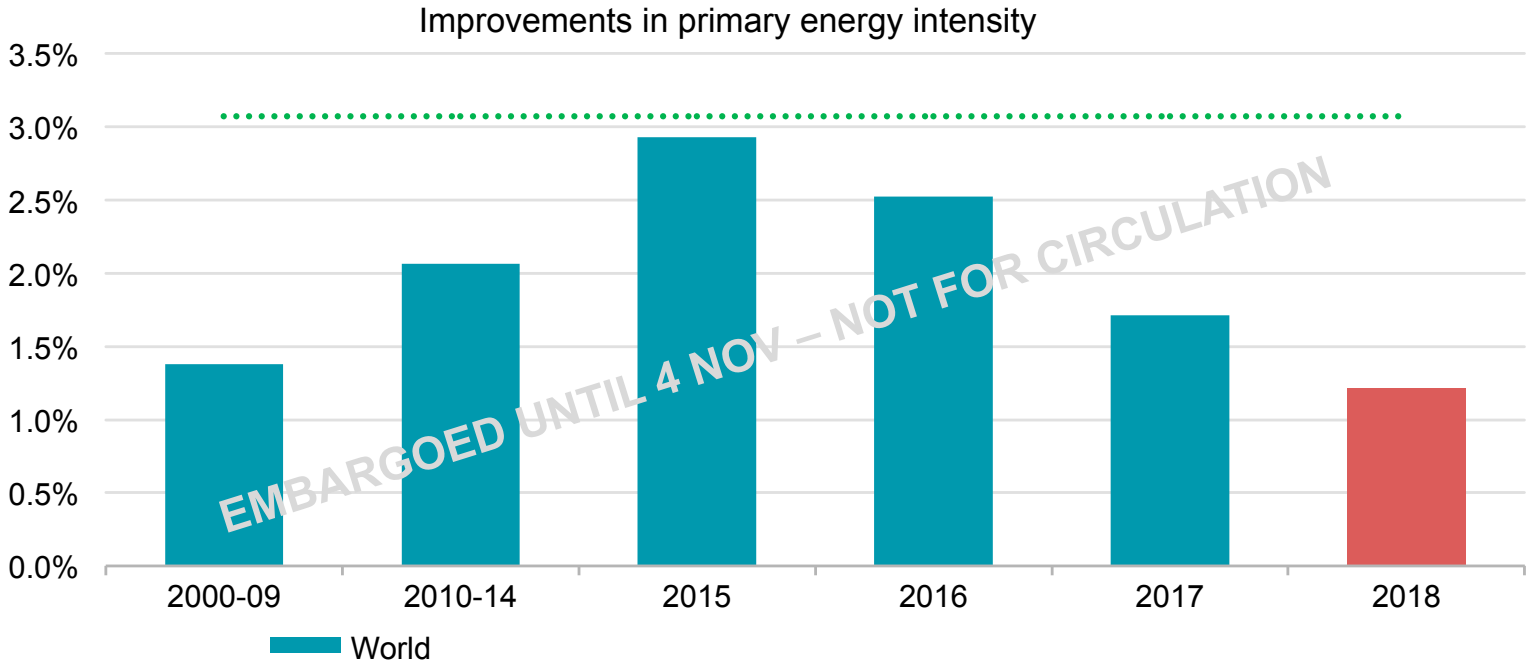
- Global energy efficiency improvements are slowing down. Opportunities to reduce costs and emissions are being lost.
- The slowdown is caused by a mixture of societal and economic trends that are driving more energy use, combined with some recent, exceptional factors.
- Energy efficiency policies are bringing benefits, but aren’t doing enough to drive the investments necessary to overcome these wider trends.
- As Governments seek to scale up energy efficiency, digitalisation presents opportunities, but new policies and approaches will be needed.

2018 demand growth was the fastest rate this decade



Global total primary energy demand rose by 2.1% in 2018, with the largest economies, US and China, responsible for more than 60% of growth. Renewables and gas grew the fastest.

Global energy efficiency improvements are slowing down



In 2018 the global economy produced 1.2% more value for every unit of energy used compared to 2017. Cost-effective opportunities exist to deliver an annual improvement rate of 3%.

What's behind the slowdown?

Four factors are driving the efficiency slowdown:

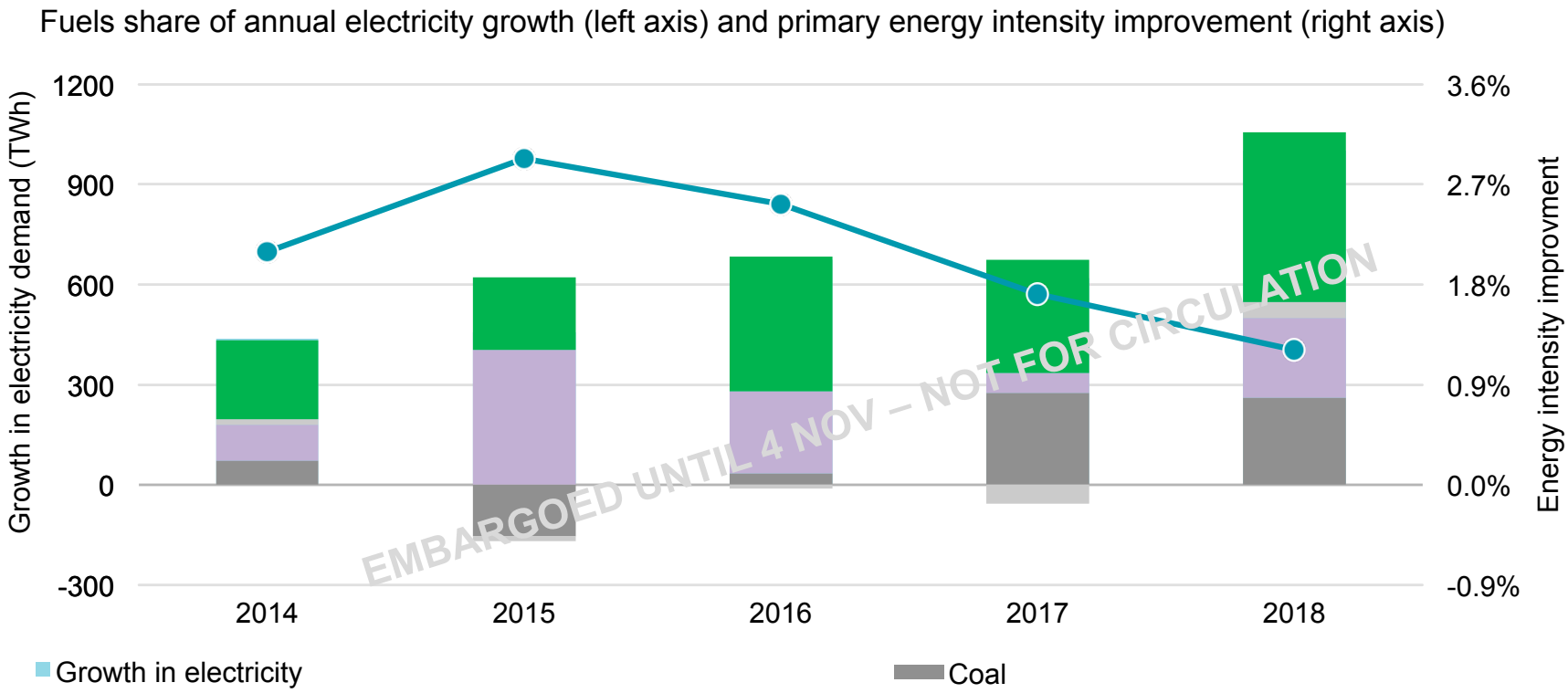
1. Supply side: a recent increase in coal use for electricity adds to generation losses

2. Short term factors: recent weather patterns and jumps in heavy industry activity have pushed up demand

3. Broader trends: overarching structural trends are blunting the impact of technical efficiency improvements

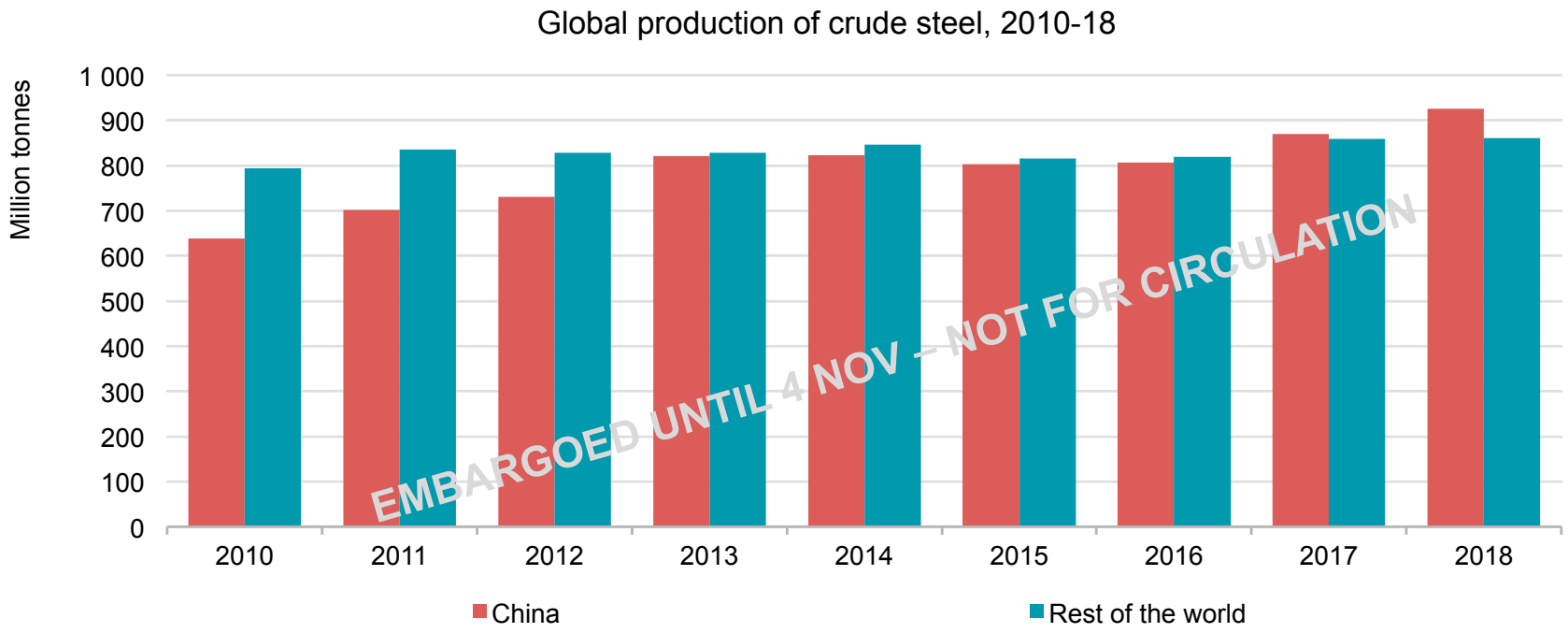
4. Policy progress and investment are flat, and are not keeping up with the upward pressures on demand

Faster electricity demand growth increased reliance on less efficient fuels



Efficiency gains from higher renewables growth were blunted by increased coal use.
Higher thermal losses during electricity production slowed primary energy improvements.

Growth in energy-intensive sectors drove demand

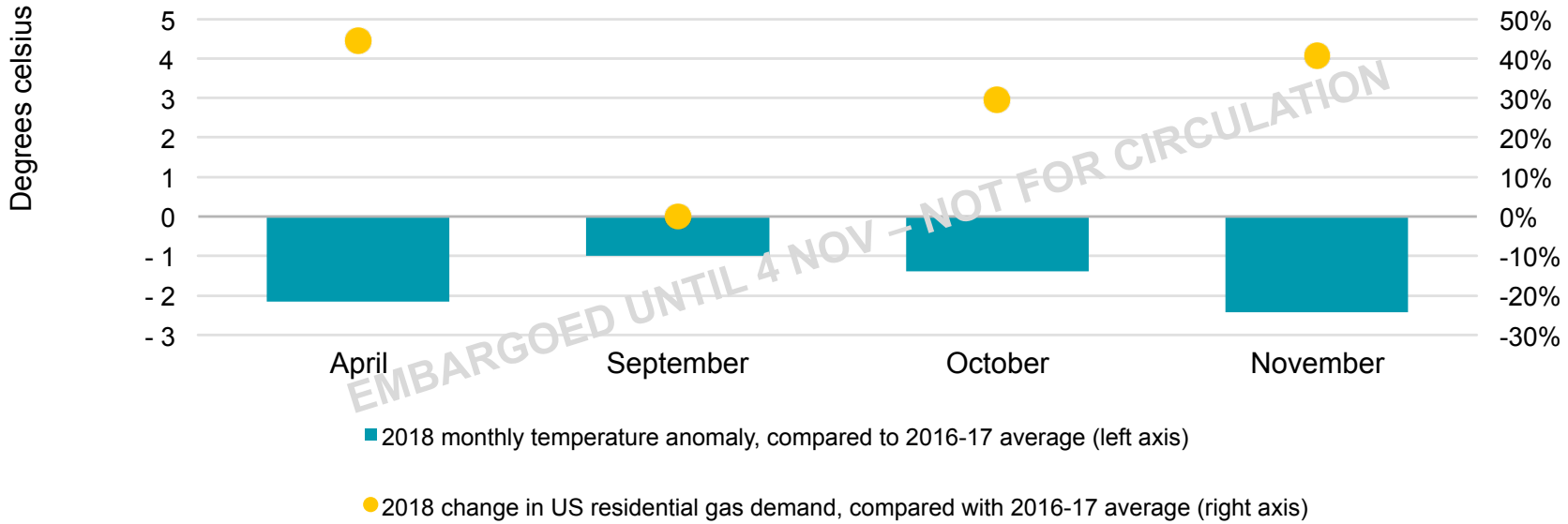


Sources: Adapted from World Steel (2019), Total Production of Crude Steel; IEA (2019p), World Energy Balances 2019 (database).

Chinese steel output grew by 8% in 2017 and 6% in 2018 after 4 flat years. In the US, the petrochemicals sector grew by the highest rate since 2013.

Short term weather patterns also influenced demand

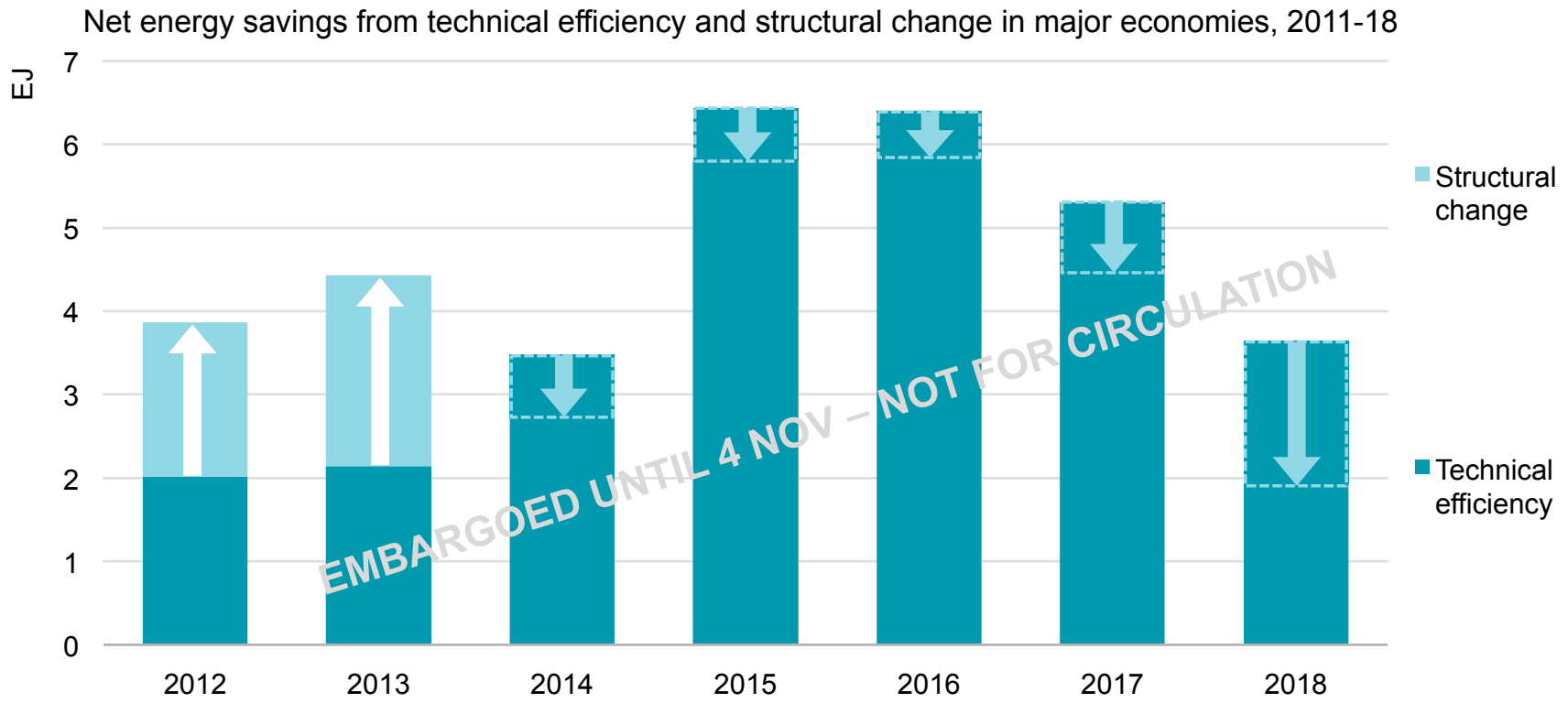
US selected monthly temperature anomalies and change in gas demand, (2018 compared to 2016-17 average)



Source: National Oceanic and Atmospheric Administration (2019), *Climate at a Glance: Global Time Series*
Notes: Anomalies are based on the difference between temperatures in a given year and an average monthly temperature over the period 1910-2000.

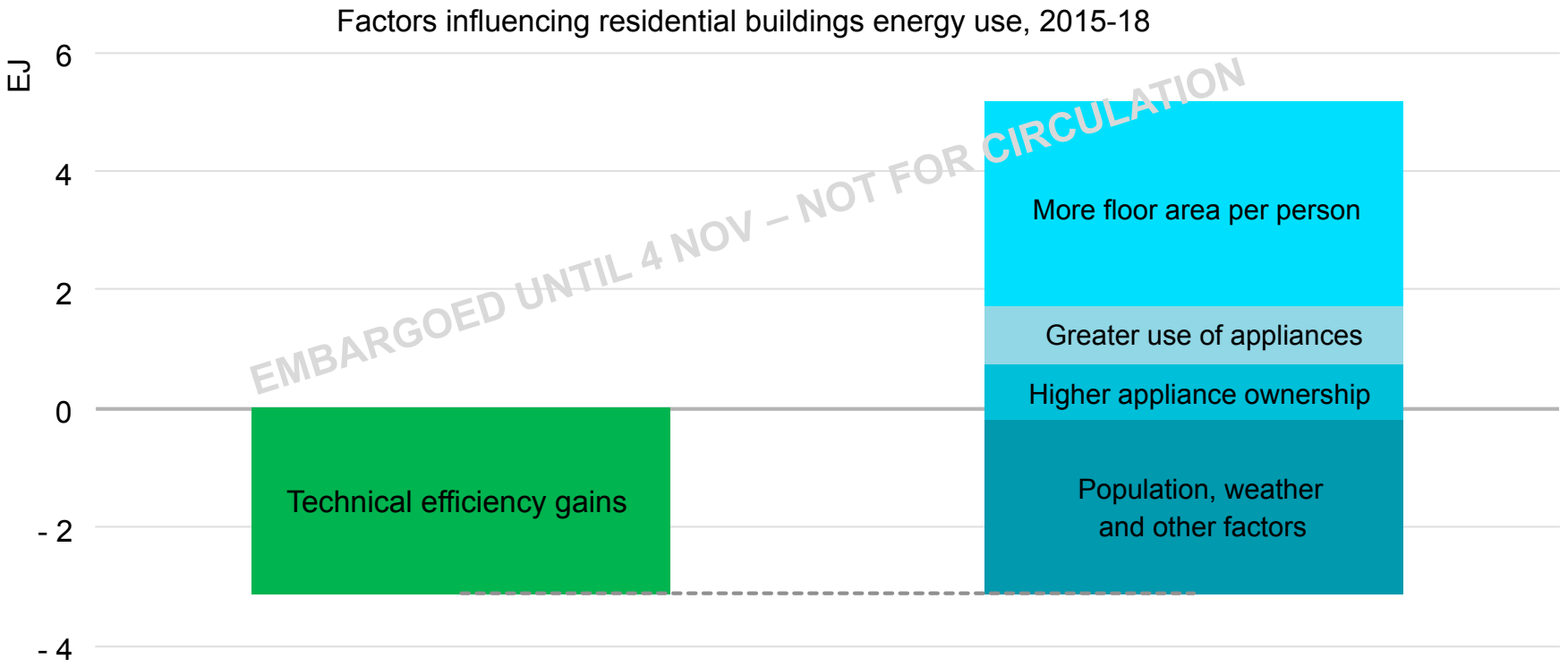
In the US and China, relatively cooler winter months led to higher gas use. Electricity use for air conditioning was also higher in several regions due to hotter summers.

Structural change is blunting technical efficiency gains



Structural factors can be as influential on energy demand patterns as technical efficiency gains. However, recent structural trends have worked against technical efficiency, creating more energy use.

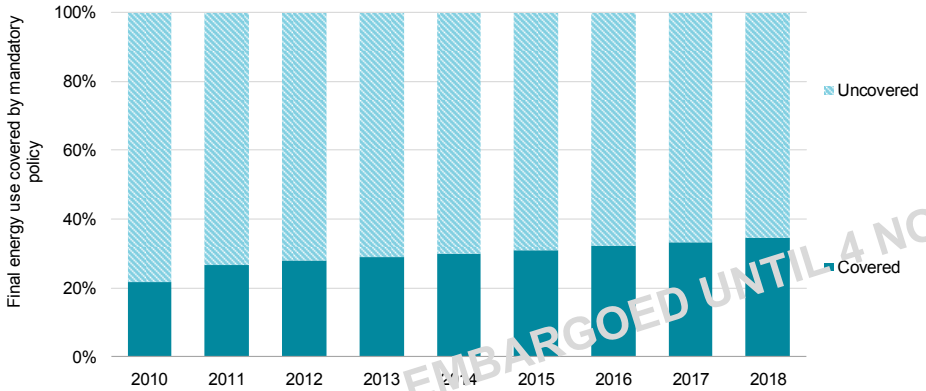
Technical efficiency isn't keeping pace with societal trends



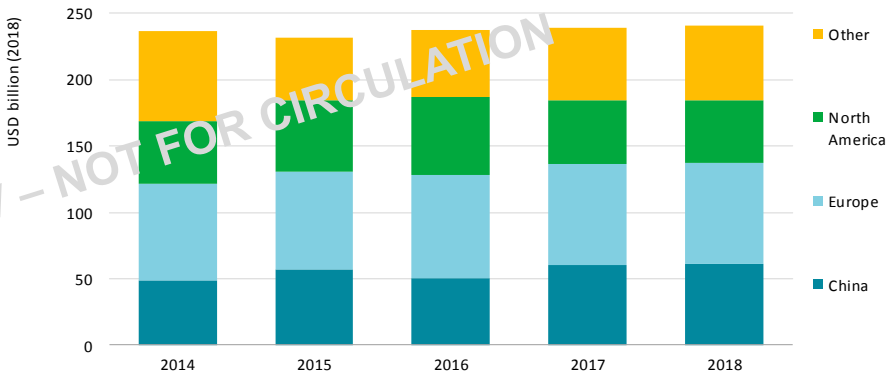
The technical efficiency of homes and appliances is improving, resulting in energy savings. However, these savings are overwhelmed by wider societal factors that create more energy use.

Policy progress and investment are flat, just when they need to grow

Mandatory policy coverage

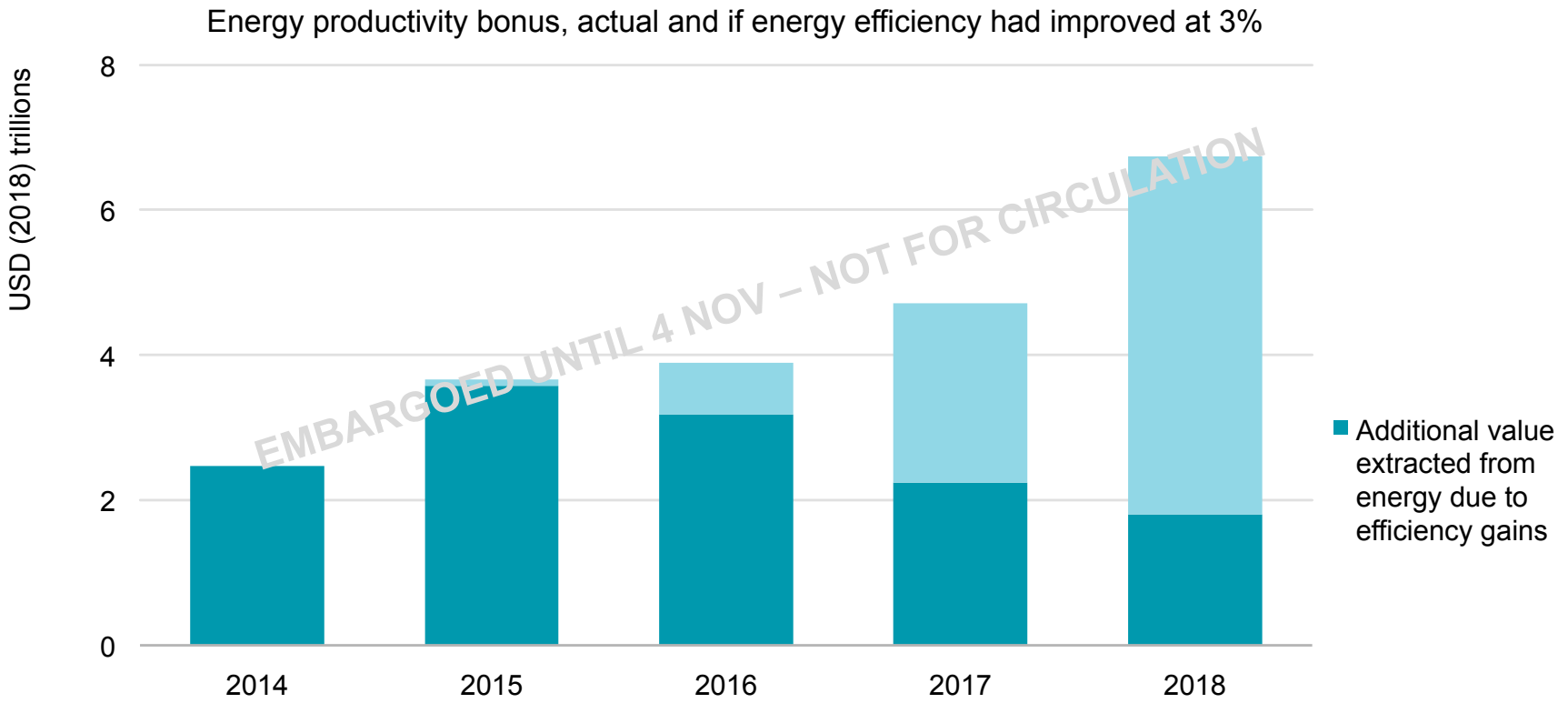


Investments in energy efficiency by region



Efficiency policy progress is slow, and investments in efficiency stayed flat. Returning to a 3% annual improvement in intensity requires annual investments to double on average, between now and 2025.

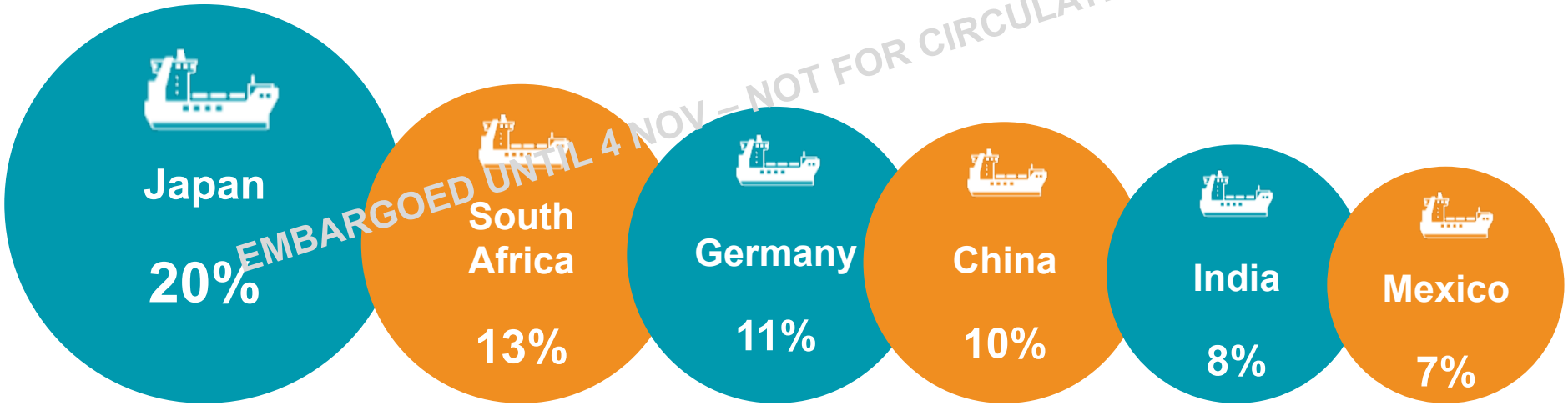
The slowdown is a lost opportunity for the global economy



In 2018, global efficiency improvements equated to $1.8 trillion in additional productivity over 2017. Without the slowdown, the gain would have been three times as big.

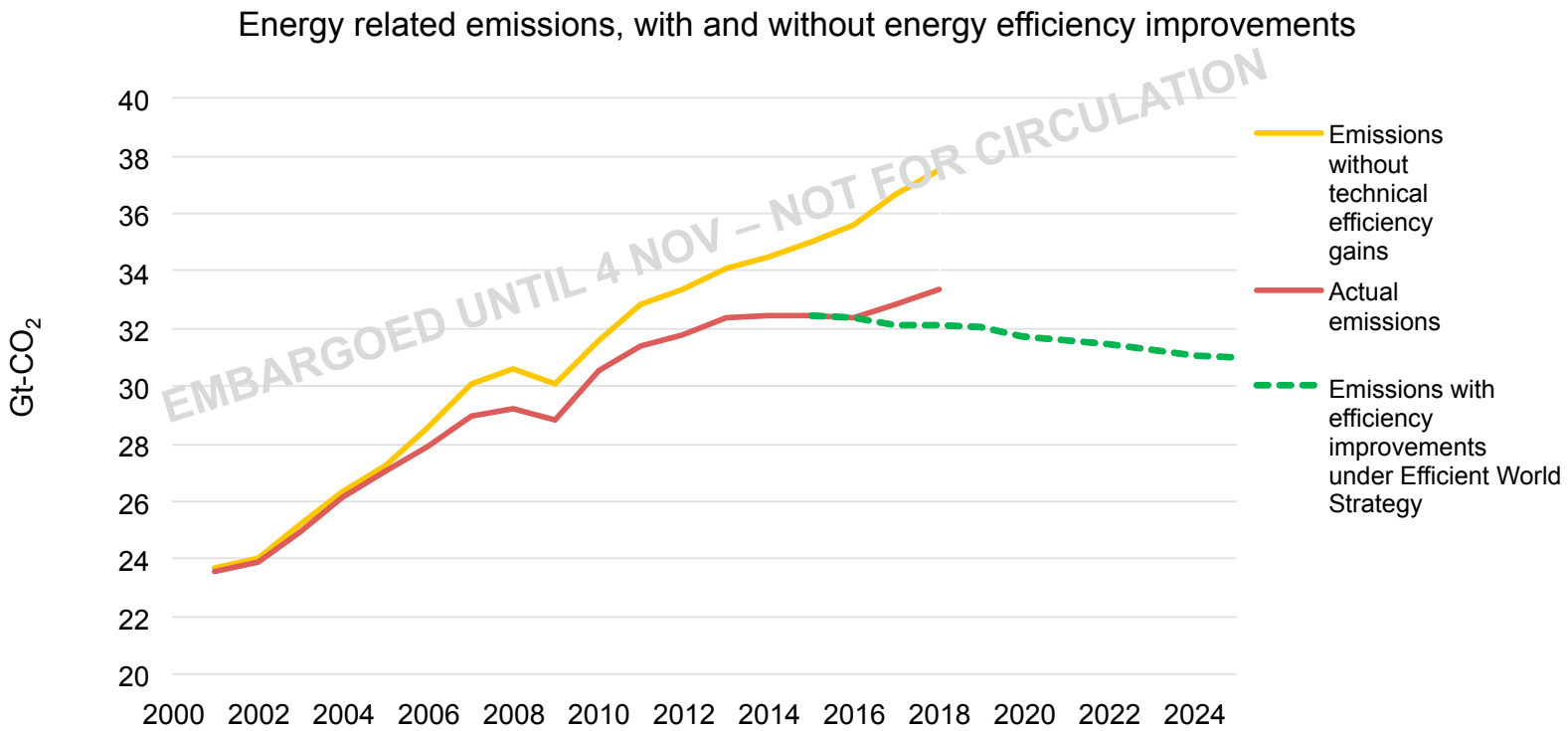
Efficiency continued to deliver financial and energy security benefits

Efficiency gains have reduced oil imports by:



Efficiency bolstered the energy security of all fuels. Because of efficiency gains made since 2000, Japan and China reduced their 2018 oil import bill by $20 billion each.

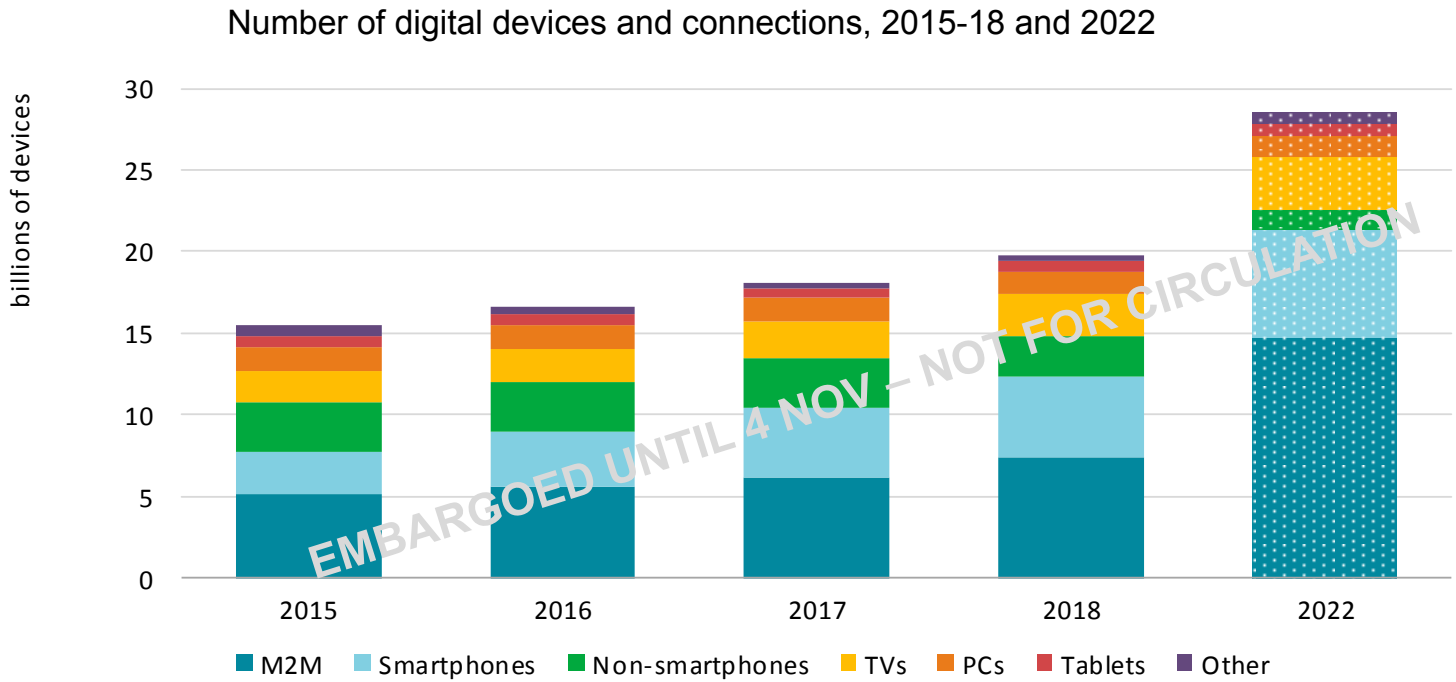
Efficiency lowered emissions, but not as much it could have



Energy-related emissions were lower thanks to efficiency but still continued to increase. Reversing the recent trend is possible with cost-effective energy efficiency measures.

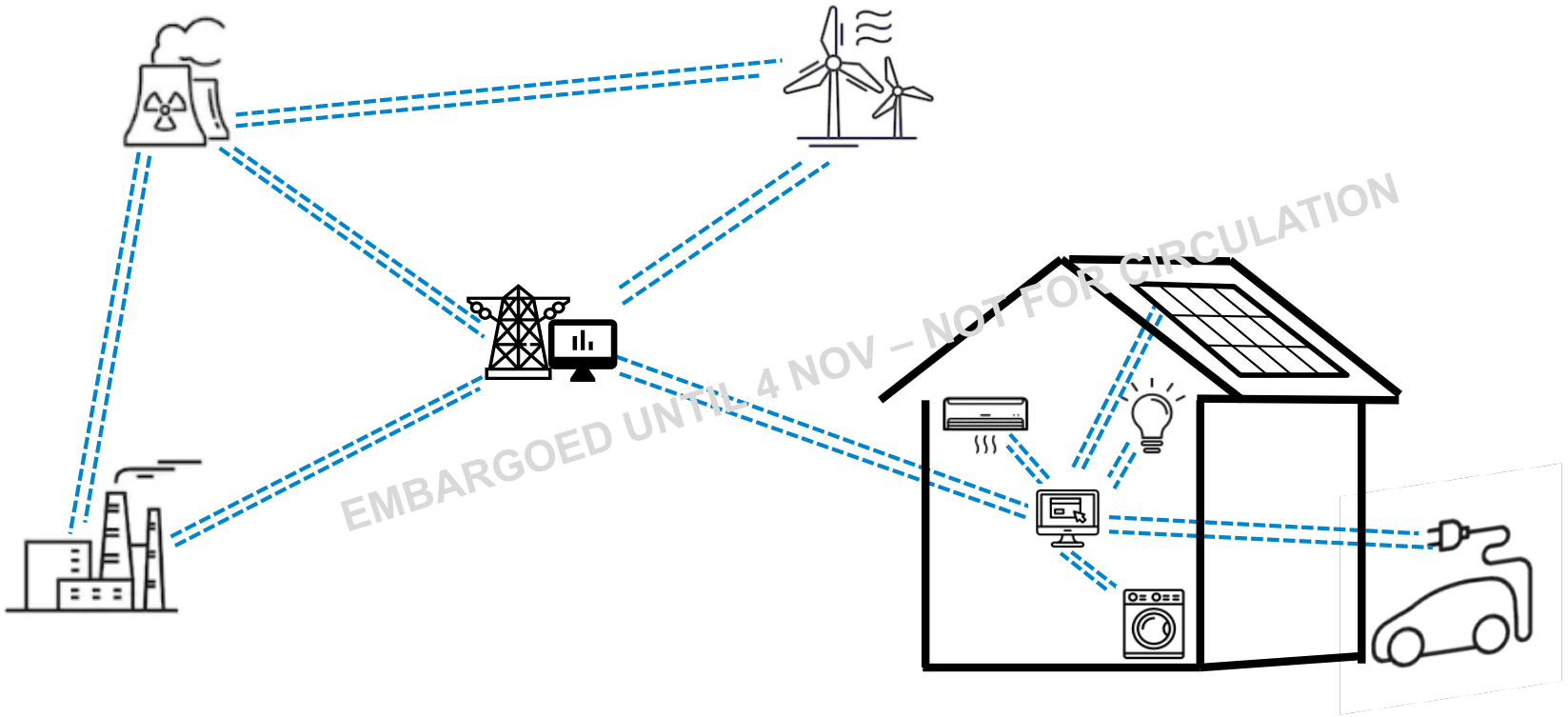
Digitalisation: A paradigm shift?

Policymakers can avail of the digitalisation opportunity



The rapid growth in digital technologies and data opens up new opportunities for energy efficiency.

Digitalisation: From end-use to system efficiency



Traditional efficiency policy addresses devices individually. Digitalisation, with the right policies, enables a progression to optimising the efficiency of the whole energy system.

Conclusion

- The successes of energy efficiency are being eroded by wider trends that policy is not keeping up with
- The slowdown in global energy efficiency is a lost opportunity, when so many cost-effective solutions exist today
- New policy opportunities are emerging from digital innovation, calling for new ways of thinking about energy efficiency
- The IEA is focused on efficiency action – the best policies properly implemented to deliver economic, social and environmental benefits for all
- The Global Commission for Urgent Action on Energy Efficiency will make key recommendations in Summer 2020