



Energy Efficient Cooling

John Dulac, IEA

New Delhi, 10 December 2018



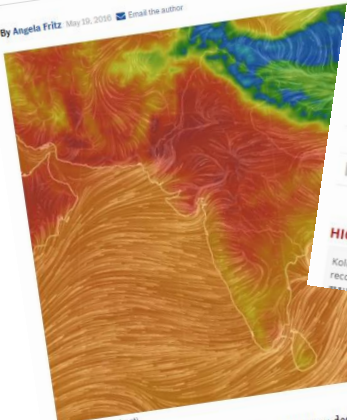
#energyefficientworld

The world is getting hotter

India just set a new all-time 123.8 degrees

Capital Weather Gang

By Angela Fritz May 19, 2018



A small city in northwest India climbed to a searing 51 degrees Celsius — or 123.8 degrees Fahrenheit — on Thursday afternoon, and broke the country's record for all-time hottest temperature. The previous record, 50.6 degrees Celsius, was set in 1886.

(earth.nullschool.net)

Kolkata records hottest day of the season as heat wave hits hard

News / India / Kolkata records hottest day of the season as heat wave hits hard

India Today

New Delhi June 19, 2018

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Humidity and heat wave is kicking the City of Joy to a record-breaking maximum temperature yesterday. Kolkata today is faced with yet another heat wave as the Regional Meteorological Centre at Alipore.

Cycle van puller stops to wipe his sweat at a Kolkata street sign.



Coal Rallies to Six-Year High as Heatwave Fires Up China Demand

Technology

By Ben Sharples

June 8, 2018, 7:12 AM GMT+2

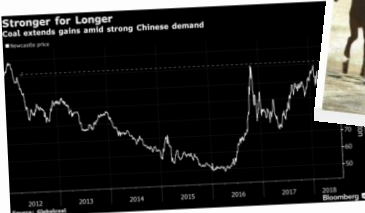
Newcastle price in Australia climbs to \$112.05 on Thursday

Imports by top user rise 8.2% in the first five months of 2018

The heat is on in the global coal market.

Prices of Newcastle coal are at the highest level since 2012 after surging 20 percent since mid-April to \$112.05 a metric ton on Thursday as China maintains robust demand during unseasonably hot weather. Despite measures imposed by the top user to cool soaring domestic prices, international miners are on a roll after a five-year downturn that shutte mines and cost jobs.

Stronger for Longer
Coal extends gains amid strong Chinese demand




Symbol	Price	Change
WMEC	115.60	+0.00%
CNY	6.6436	+0.0066
WMEC	5.89	+0.02
GLN	325.05	+0.05

Deadly heat wave kills 33 across southern Quebec

US & Canada

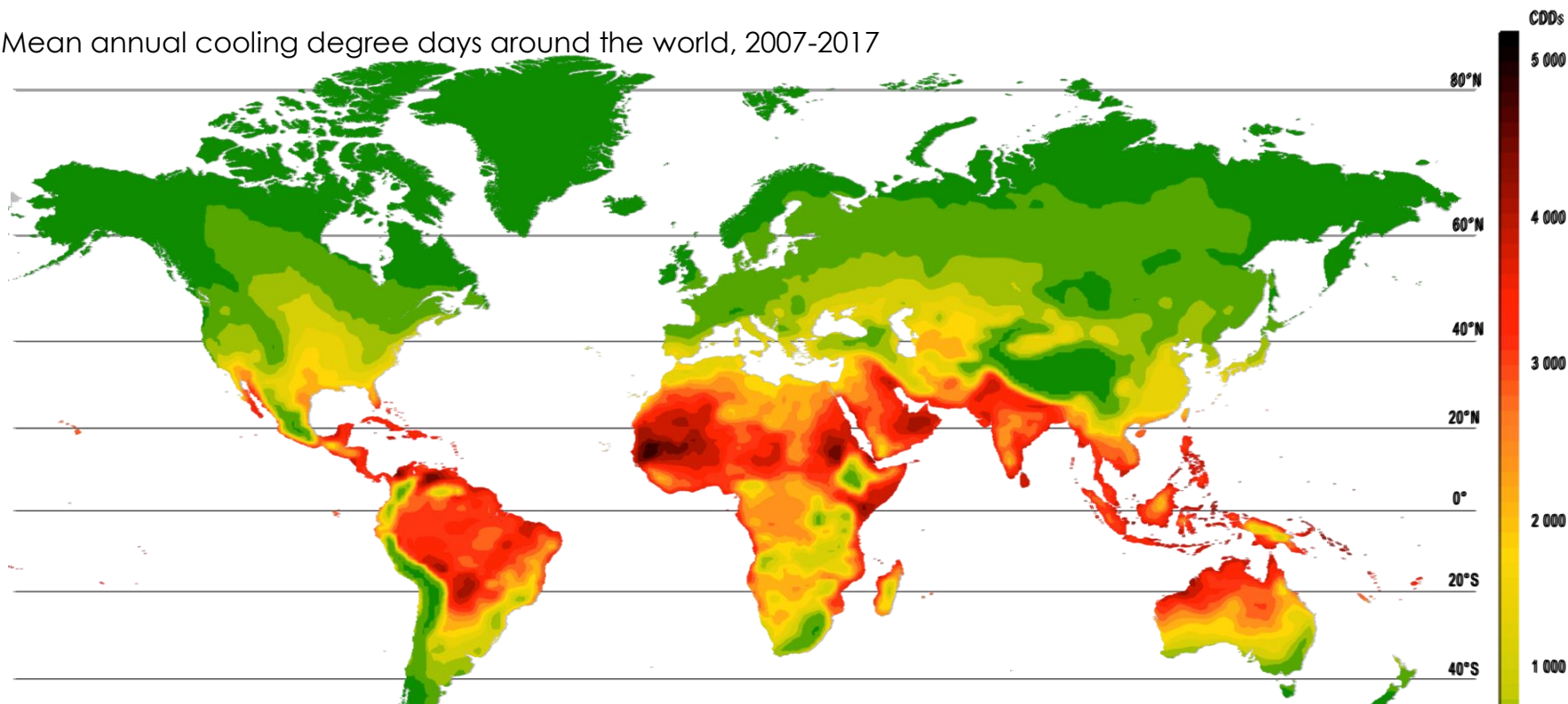
5 July 2018



The need for cooling is growing – and with it demand for air conditioning.

Access to cooling is a critical issue in some of the hottest places

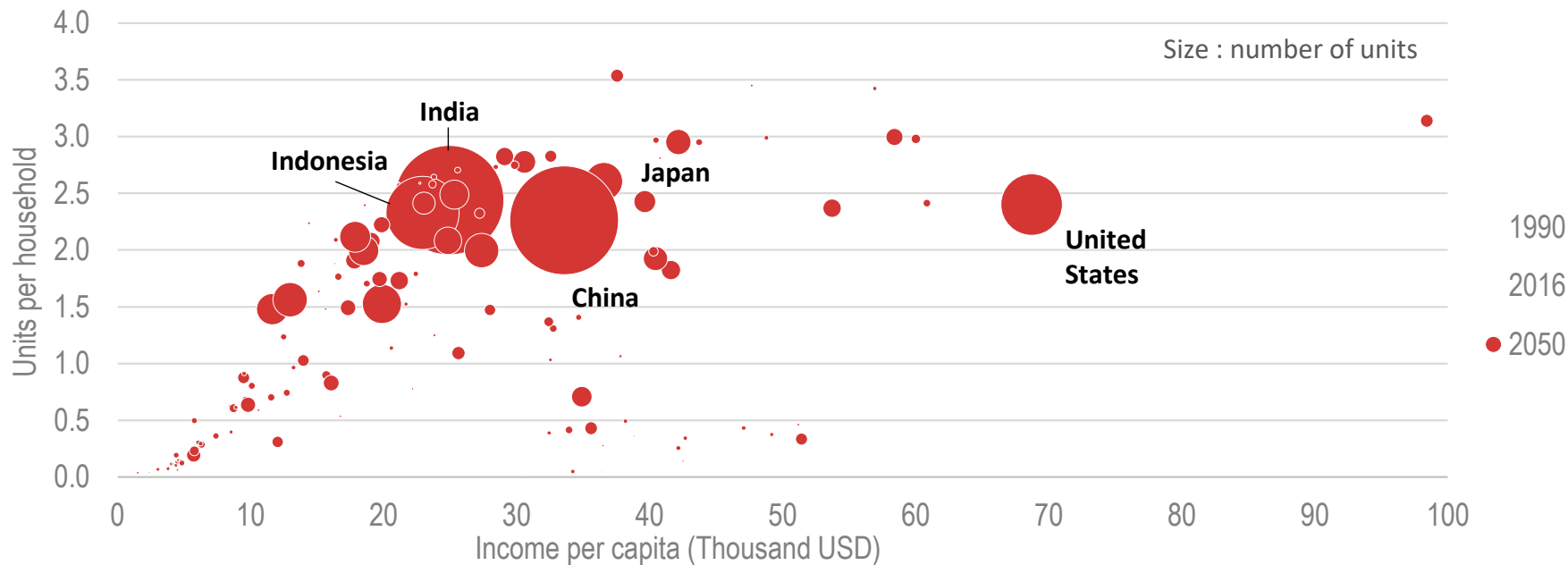
Mean annual cooling degree days around the world, 2007-2017



**There are around 2.8 billion people living in places where it is hot every single day.
Only 8% of them have an air conditioner today.**

AC ownership is expected to soar

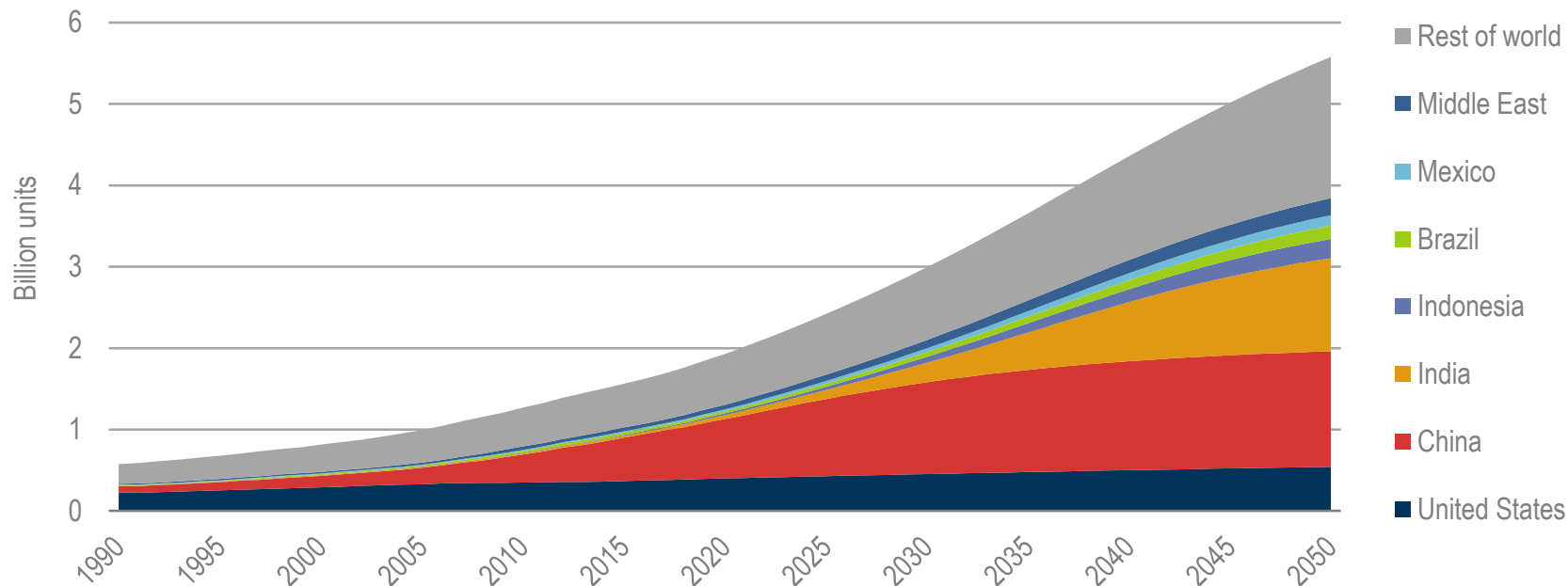
Evolution of global air conditioner ownership



By 2050, around 2/3 of the world's households could have an air conditioner. China, India and Indonesia will account for half of all AC units in buildings in 2050.

The world faces a 'cold crunch'

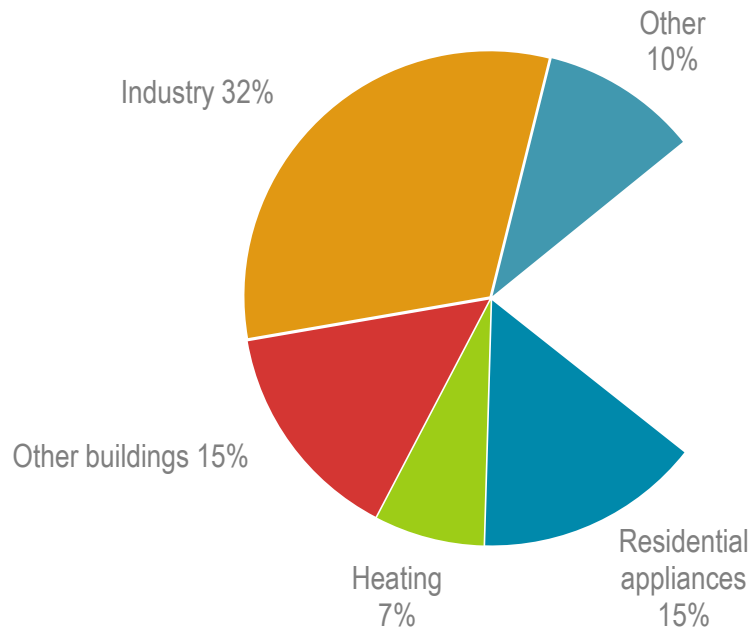
Global air conditioner stock



By 2050, around 2/3 of the world's households could have an air conditioner. China, India and Indonesia will together account for half of the total number.

Cooling is outpacing all other energy end-uses in buildings

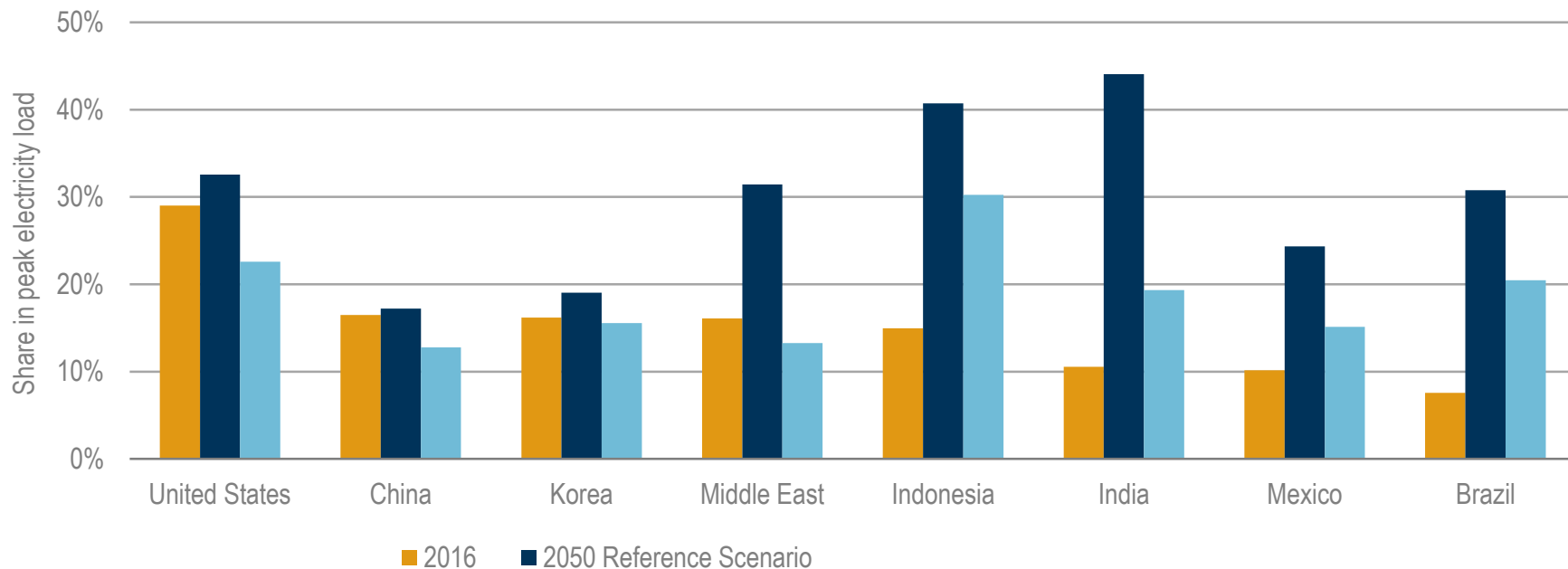
Share of final electricity demand growth to 2050



Without action to address energy efficiency, space cooling will consume more than 20% of global electricity growth – larger than the current generating capacity of the US, EU and India combined.

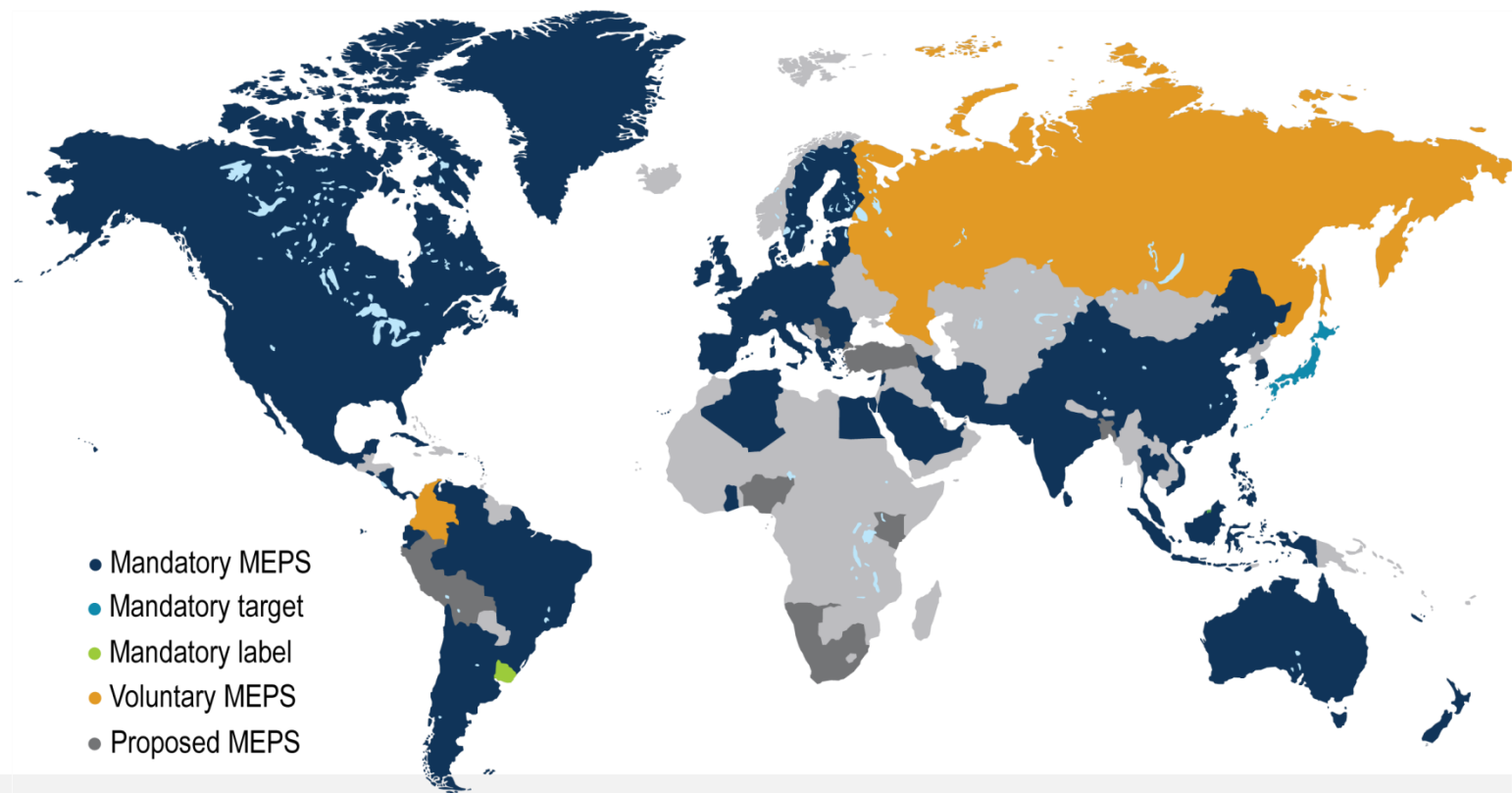
Cooling demand has serious implications for grids

Share of cooling in electricity system peak loads



Efficient air conditioners can help to dampen the impact on the power system.

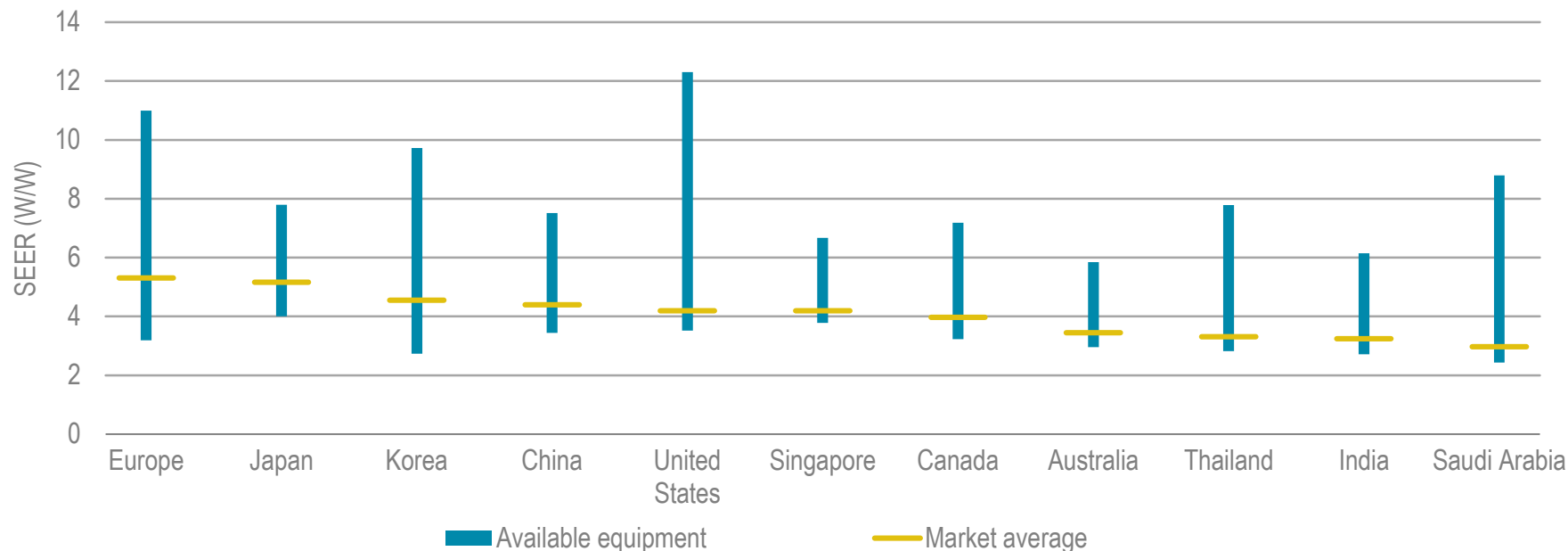
Energy policy is not keeping up with energy technology



Most of the major cooling markets today have mandatory energy performance standards, but the required efficiency levels are typically far below those of the most efficient products available.

Markets are not keeping up with energy efficiency potential

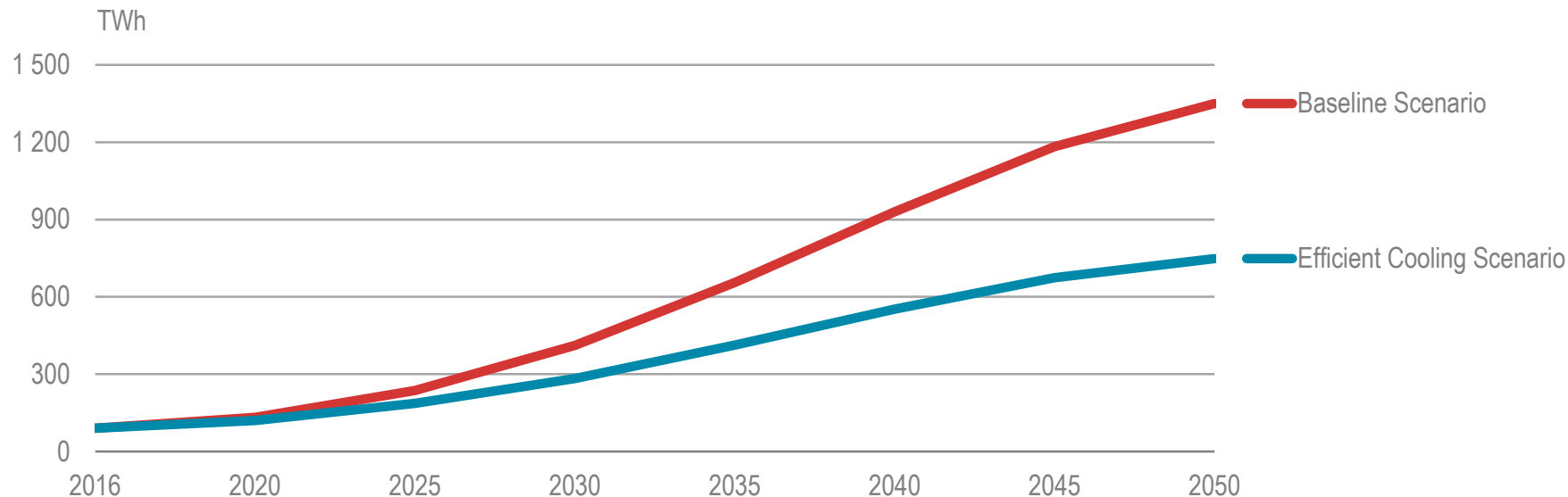
Energy performance of air conditioners already available in markets today



The average efficiency of air conditioners sold today is less than half of what is typically available on shelves – and one third of best available technology.

Energy-efficient air conditioning can halve cooling growth In India

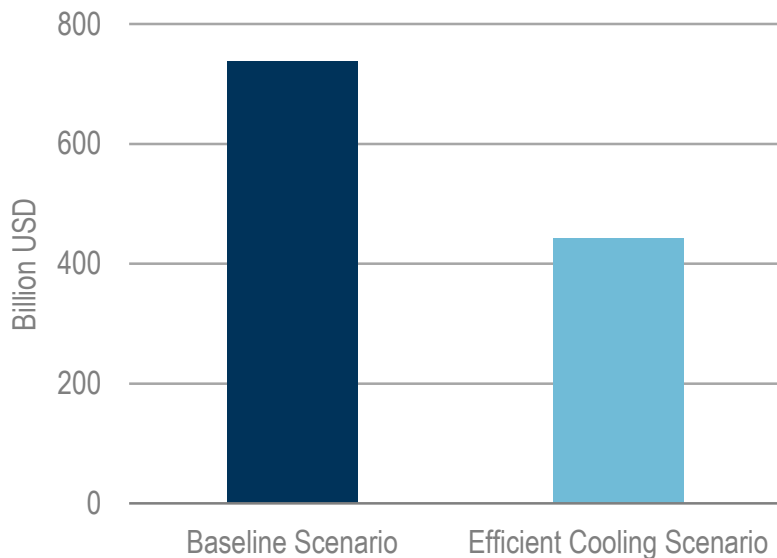
Electricity savings using energy-efficient air conditioning in India



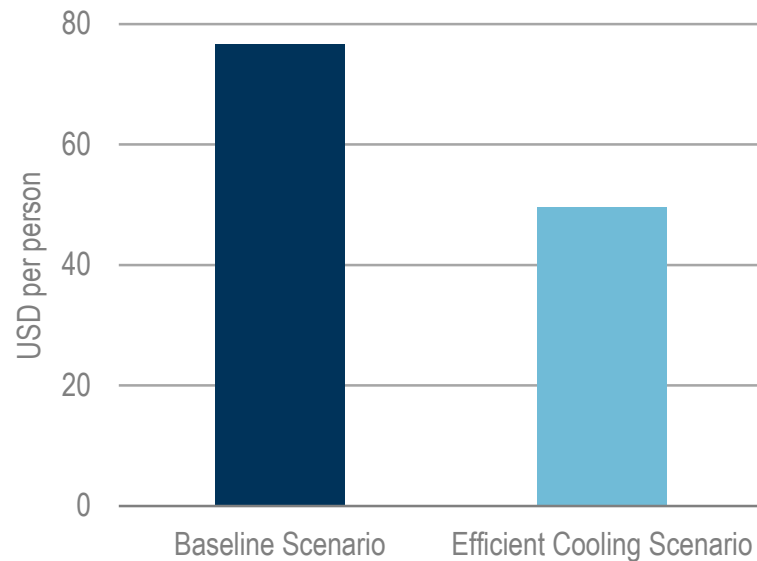
Energy-efficient ACs can deliver more than 8 000 TWh of electricity savings in India to 2050.

Efficient ACs can lessen the costs of new power generation in India

Cumulative investments in power generation for space cooling to 2050 in India



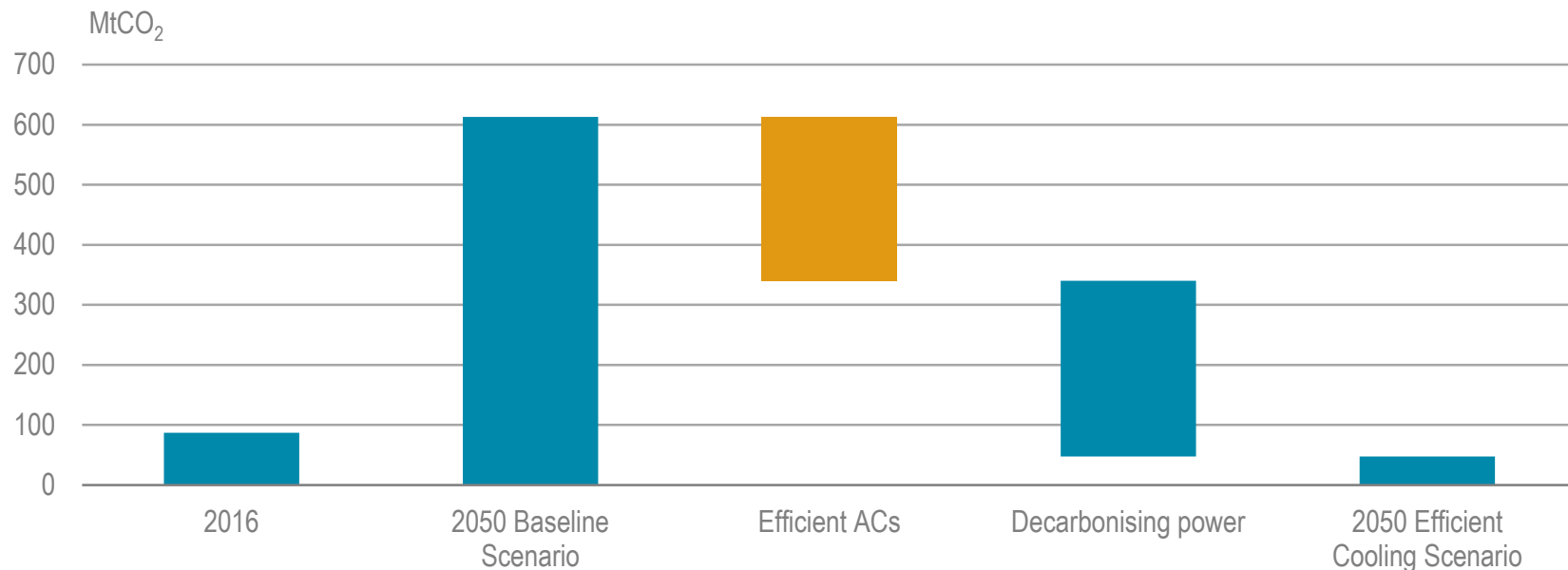
Global average electricity costs per capita for space cooling in 2050 in India



USD 295 billion in power generation investments can be saved in India with more efficient ACs. Average per capita electricity costs for cooling would be cut in third.

Efficient ACs will help cut emissions in India

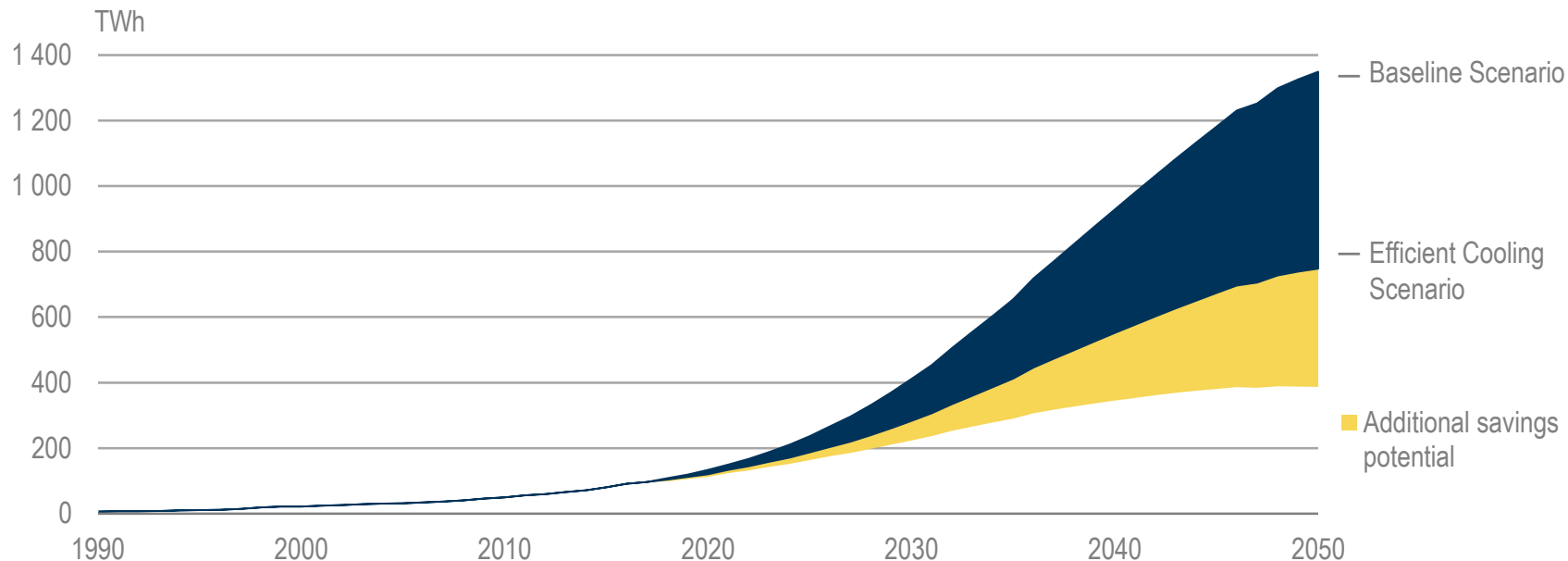
Contribution of more efficient space cooling on CO₂ emissions in India



More efficient ACs in India cut CO₂ emissions from space cooling by nearly 50%. Efficiency also helps enable cleaner power – drastically reducing cooling-related emissions.

Efficient building design can create even further savings in India

Additional energy savings potential through energy efficiency measures



Additional measures – such as better building design and construction, can reduce cooling energy demand in India – while also allowing millions of people better access to keep cool.

Capturing the major energy efficiency potential for space cooling in buildings

- Absent firm policy interventions, energy demand for cooling in India will soar
- Recent announcements on AC MEPS and the advisory on default temperature settings are a positive step towards sustainable cooling in India
- Further policy action can deliver substantial energy savings quickly by making AC equipment much more efficient
 - Increase consumer awareness of energy efficient products
 - Build on recent building code to increase uptake of energy efficiency and renewables in an integrated fashion
 - Bring public and private stakeholders together to identify strategies and solutions for sustainable cooling



Thank you!

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