Renewables 2018

Analysis and Forecasts to 2023

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IEA

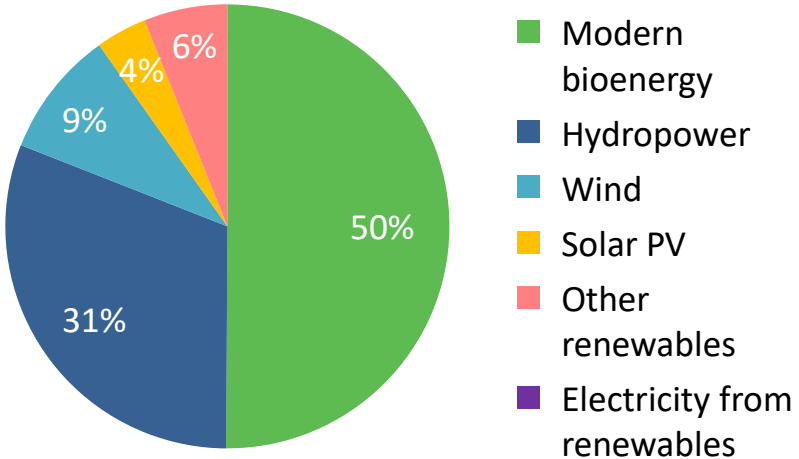
Context

- CO2 emissions to rise again in 2018
- Progress in energy efficiency is slowing
- Expensive energy is back

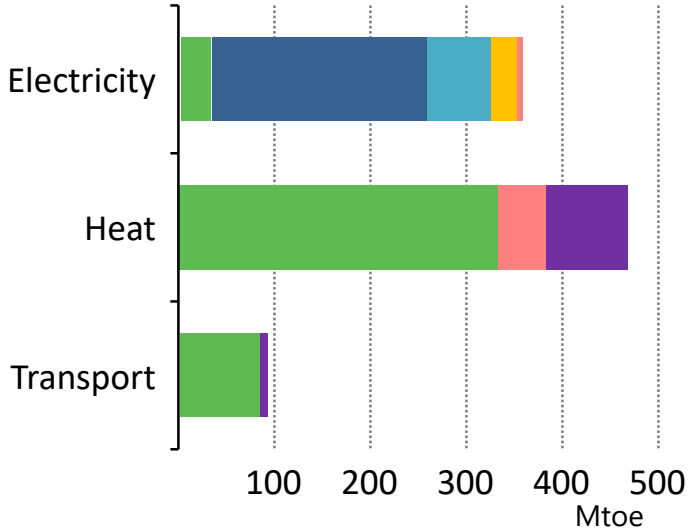
- Solar PV capacity rose faster than any other fuel in 2017 driven by China; offshore wind installations broke a record with auction prices showing significant cost reduction potential
- Global electricity demand grew by over 3% in 2017, a faster rate than overall energy demand but electricity only accounts for 20% of total final energy consumption
- The world energy system has a number of “blind-spots” that require policy attention to achieve a secure , sustainable and affordable energy system

Modern bioenergy: the overlooked giant of renewables

Total final energy consumption from renewables, 2017

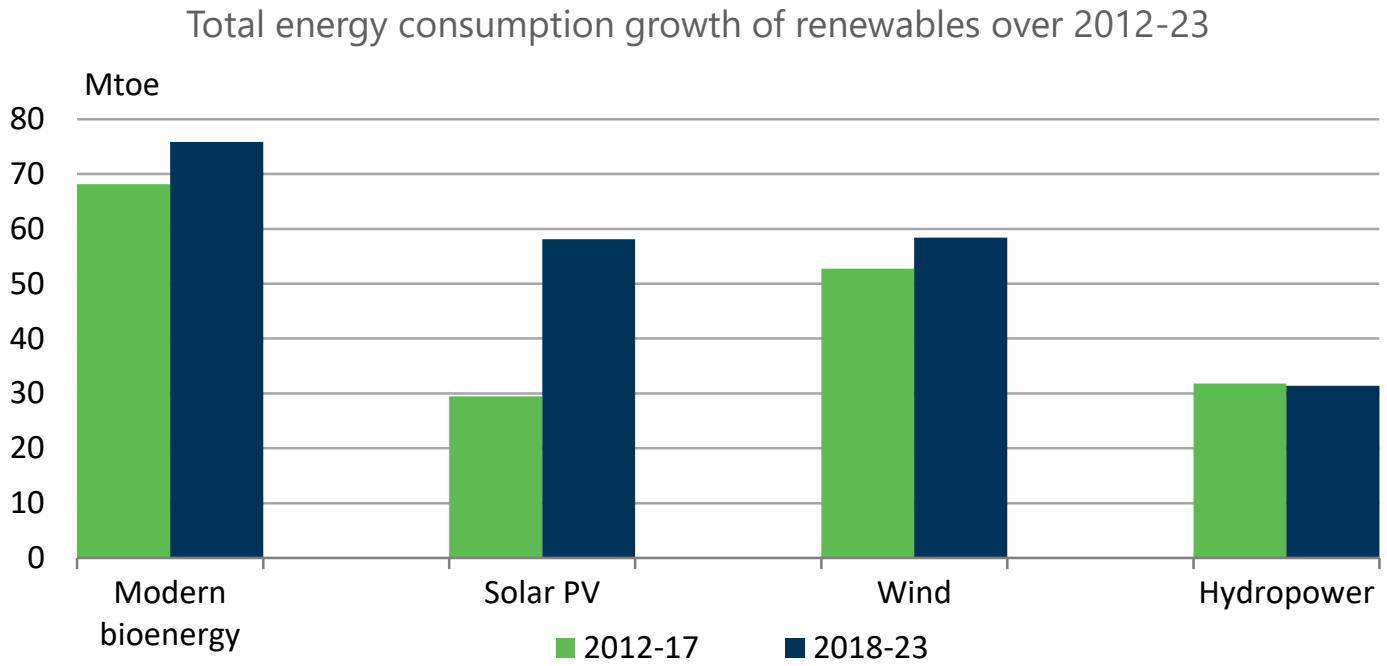


Total final energy consumption from renewables by sector, 2017



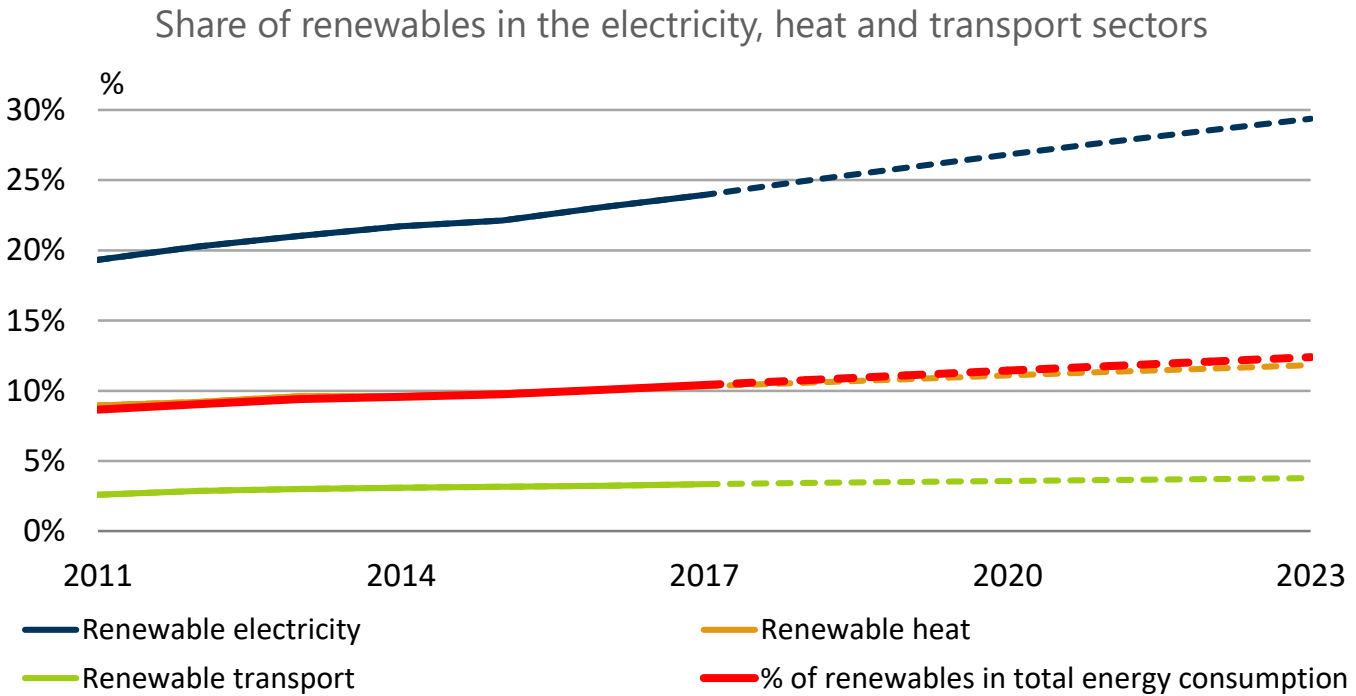
Modern bioenergy is the only renewable source that can provide electricity, direct heat and transport fuels
Two thirds of modern bioenergy heat is used in industry

Modern bioenergy set to lead renewables growth



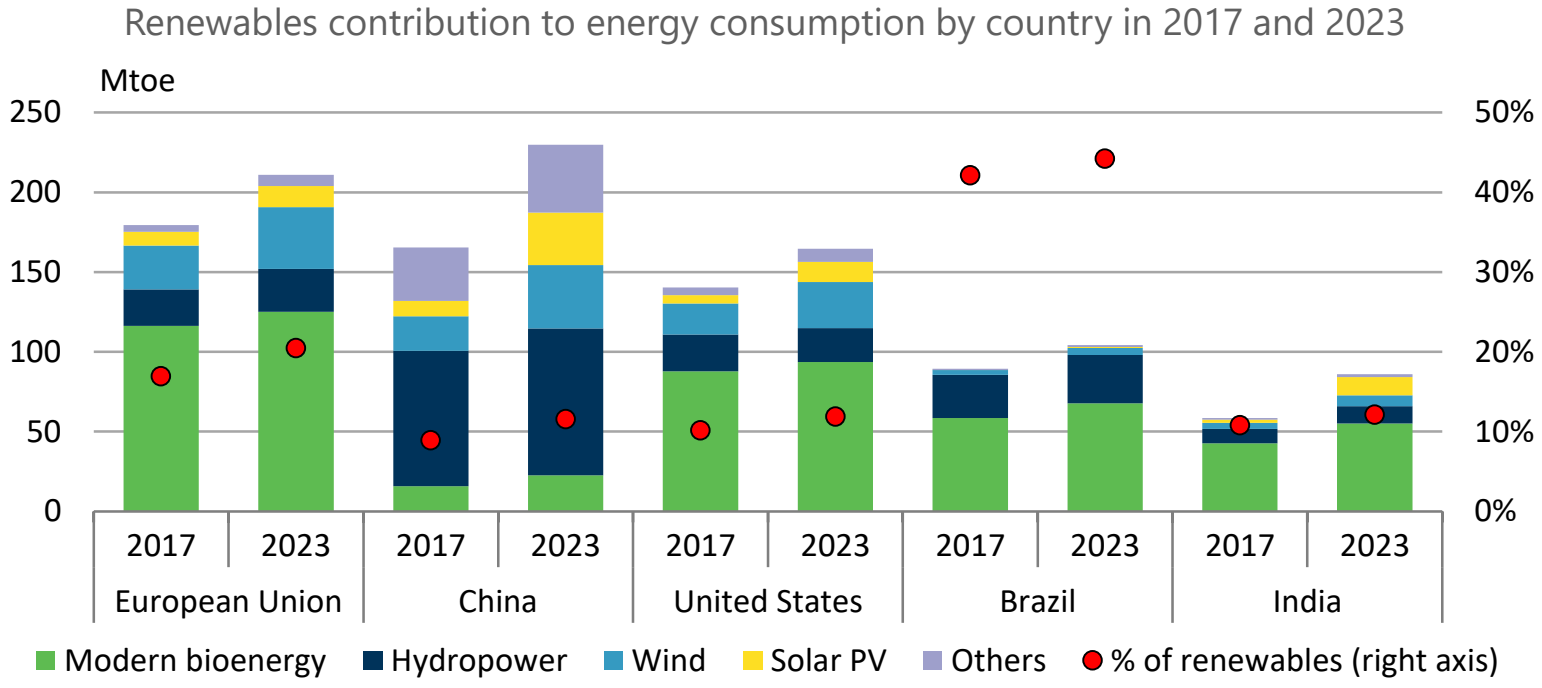
Total renewable energy consumption is expected to increase by almost 30% over 2018-2023, covering 40% of global energy demand growth

Renewables share of energy consumption increases by one-fifth



Electricity contributes to two-thirds of renewables growth but heat remains the largest end-use by 2023
Overall, renewables are not on track to meet long-term climate goals

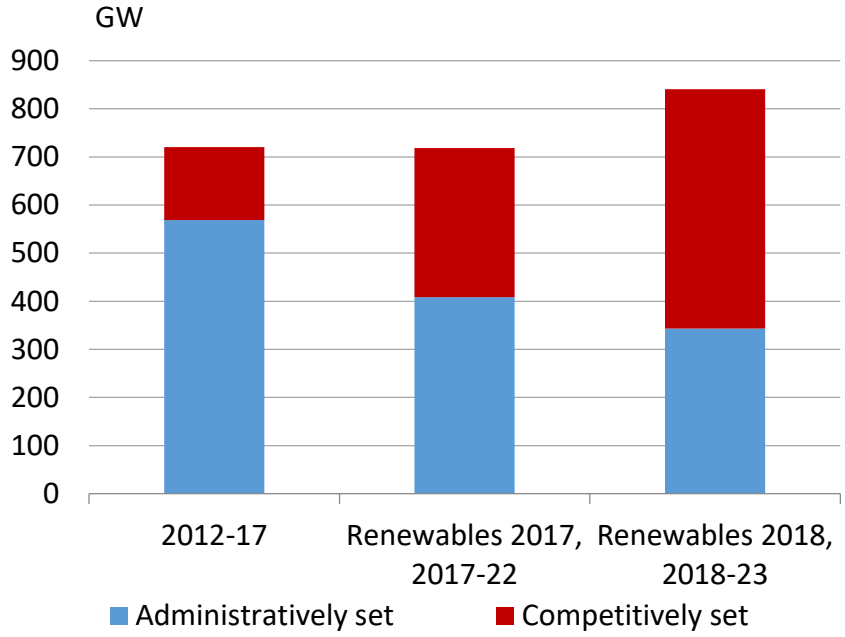
China becomes the largest RE consumer, Brazil has the highest share



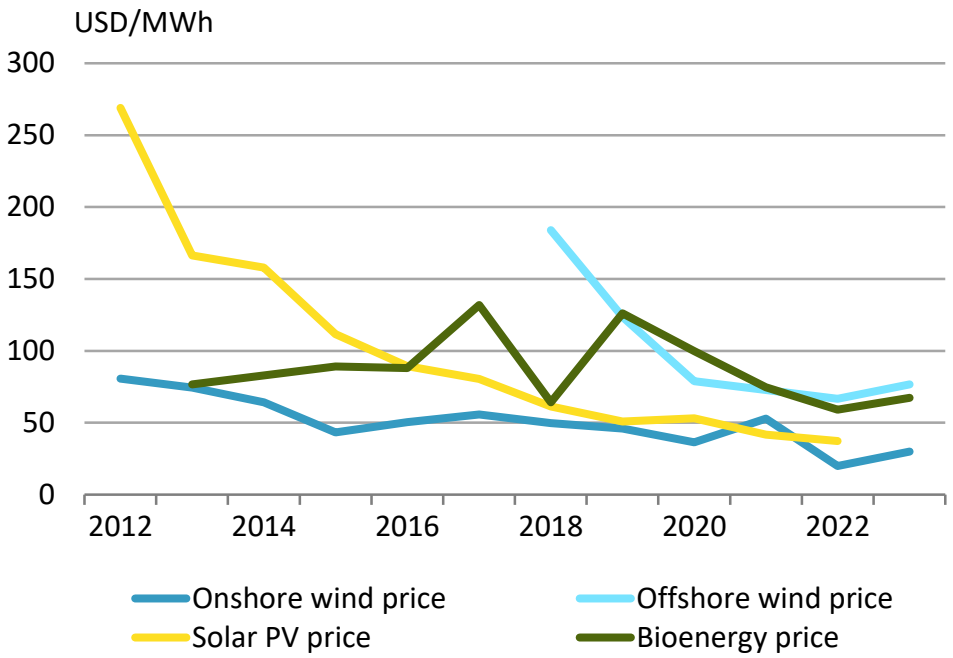
China accounts for the largest absolute growth over the forecast period surpassing the EU, while renewable energy consumption in India increases by 50%

Competition accelerating cost reductions

Fixed remuneration type of utility-scale projects

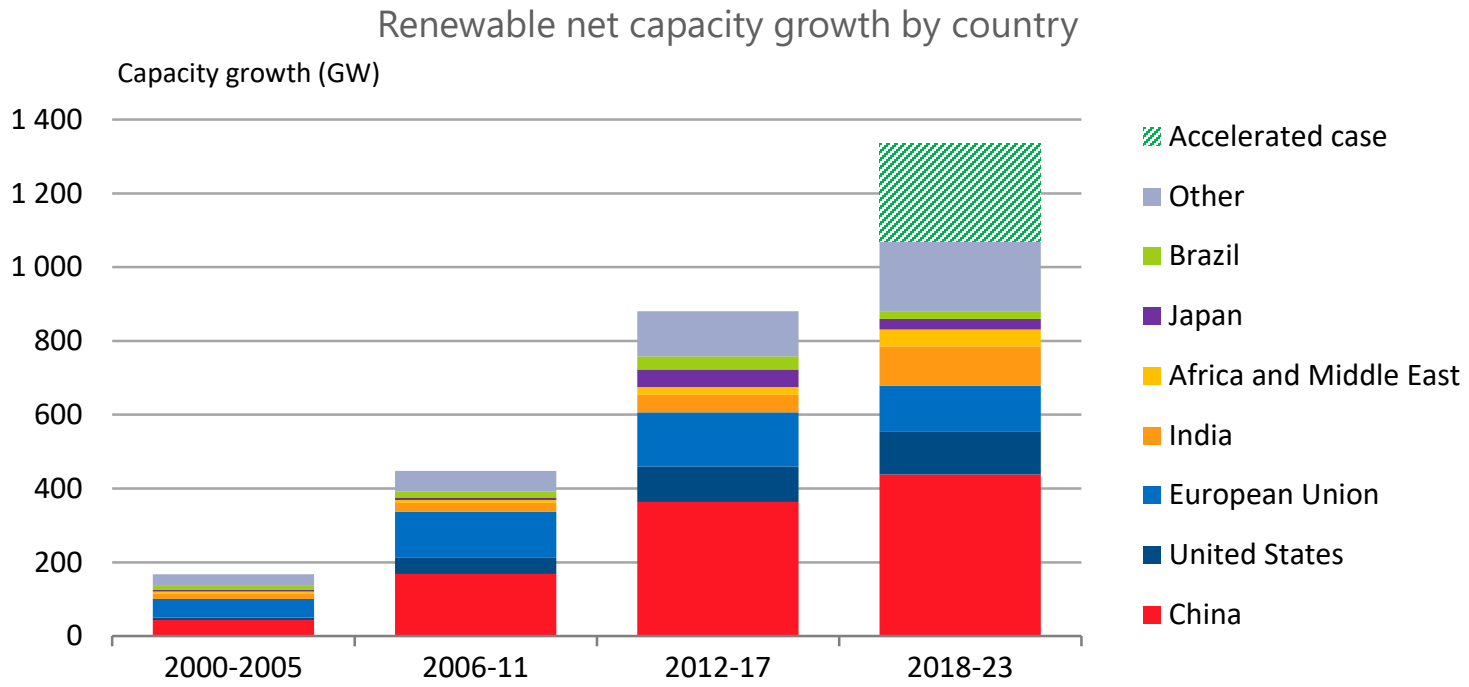


Average auction price by project commissioning date



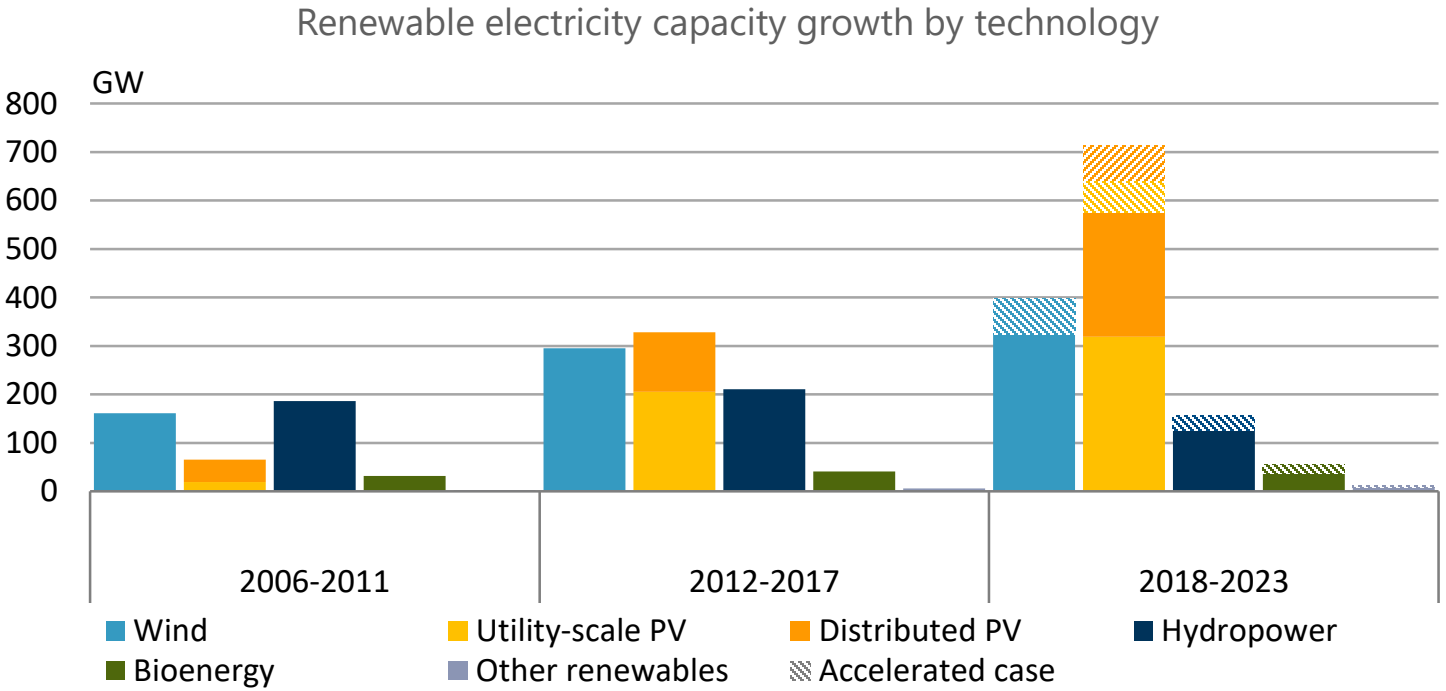
Around 60% of renewable capacity additions over 2018-23 driven by competitive remuneration schemes
Announced contract prices need to be verified as project delivery schedules and final costs may differ

Renewables account for 70% of global capacity expansion



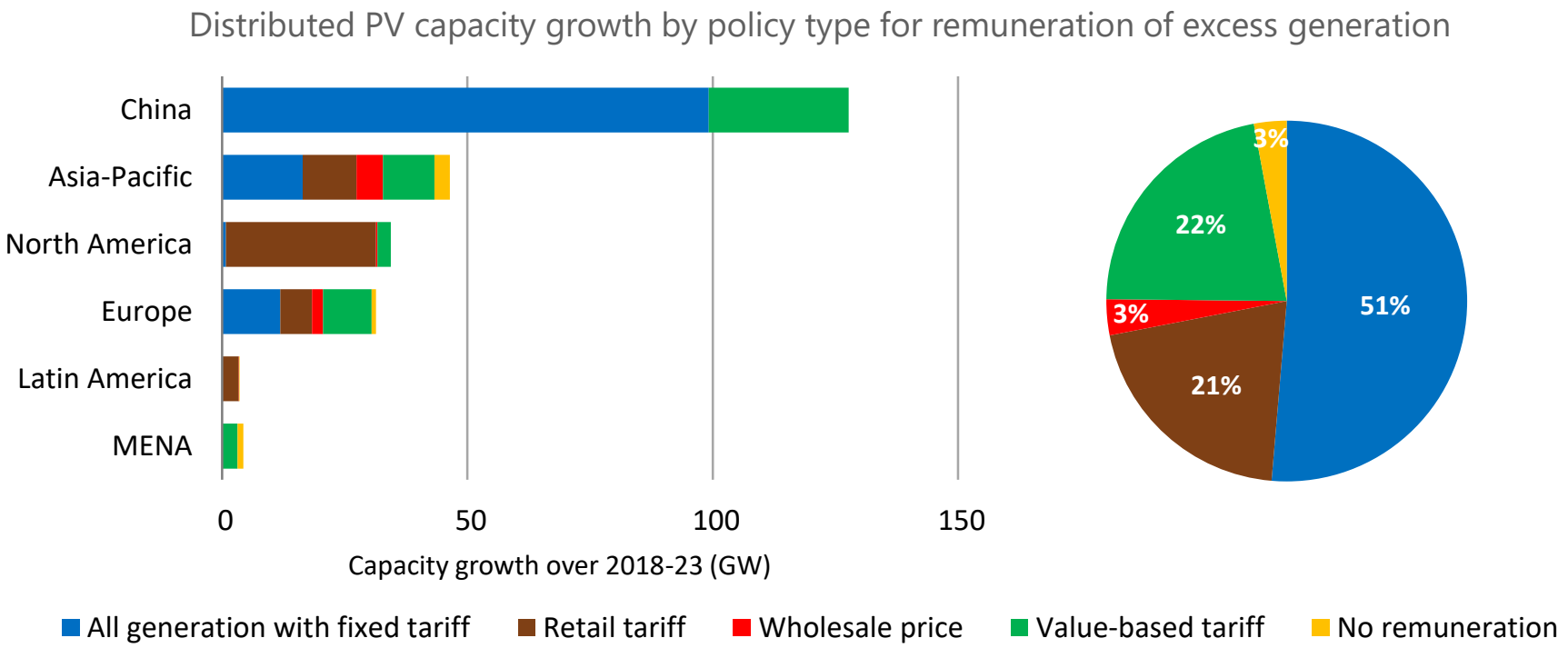
In the accelerated case, renewable capacity could expand by 25% more reaching 1.3 TW, if governments address challenges concerning policy uncertainty, grid integration and affordable financing

Solar PV expansion in electricity larger than all renewables combined



Distributed generation capacity growth makes the difference in solar PV's leadership
Cumulative PV capacity could reach 1.1 TW and wind over 0.9 TW by 2023 under the accelerated case

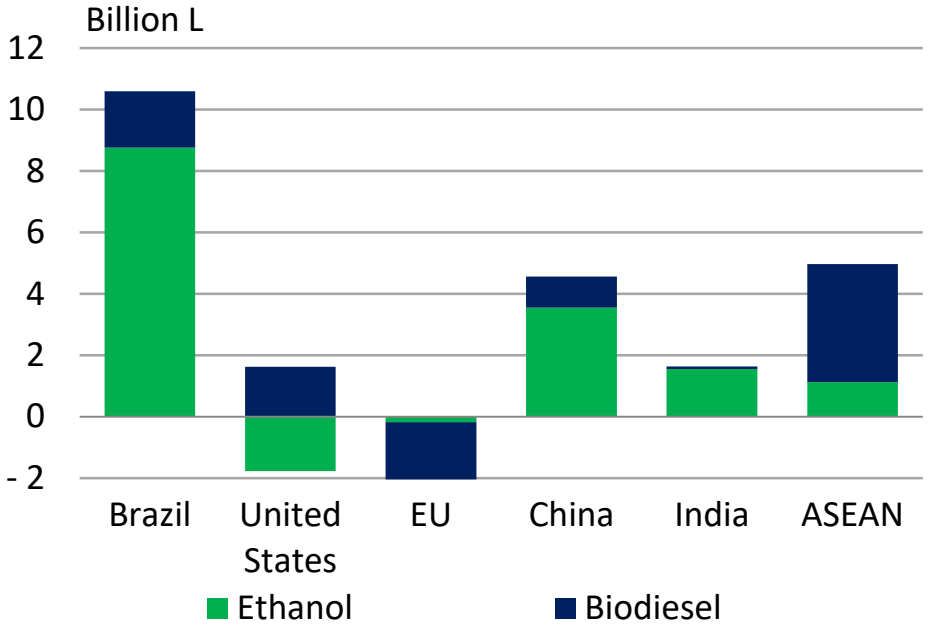
Policies for remuneration to play a key role for distributed generation



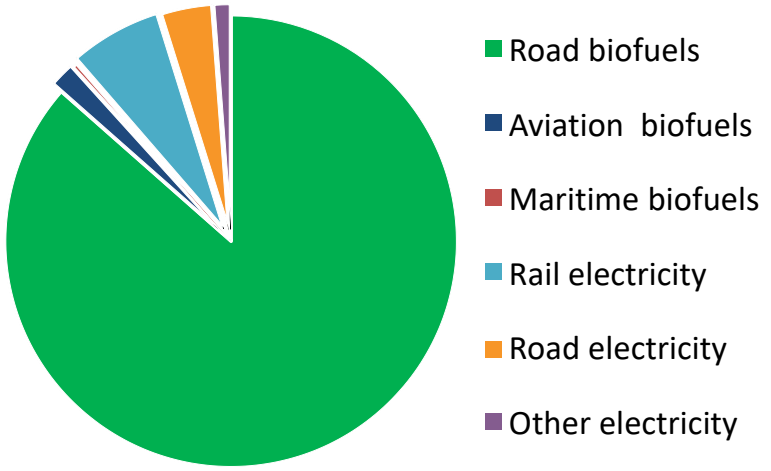
Utilities revenue losses due to self-consumption to almost quadruple (USD 12 bln) by 2023 but accounting for less than 0.3% of total retail bill collection revenues

Asia and Latin America dominate biofuel production growth

Biofuel production growth 2018-23



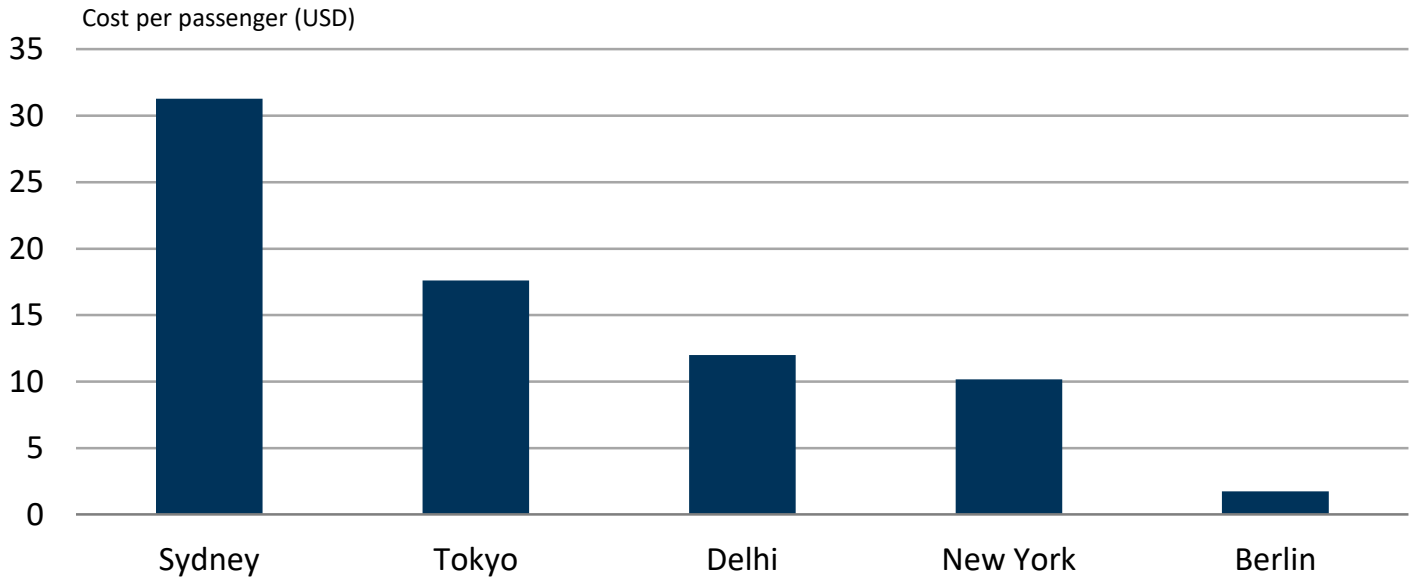
Renewables consumption in transport in 2023



Biofuels production grows by 16%; EVs electricity consumption triples, with renewables providing 30% of demand from electrified transport by 2023

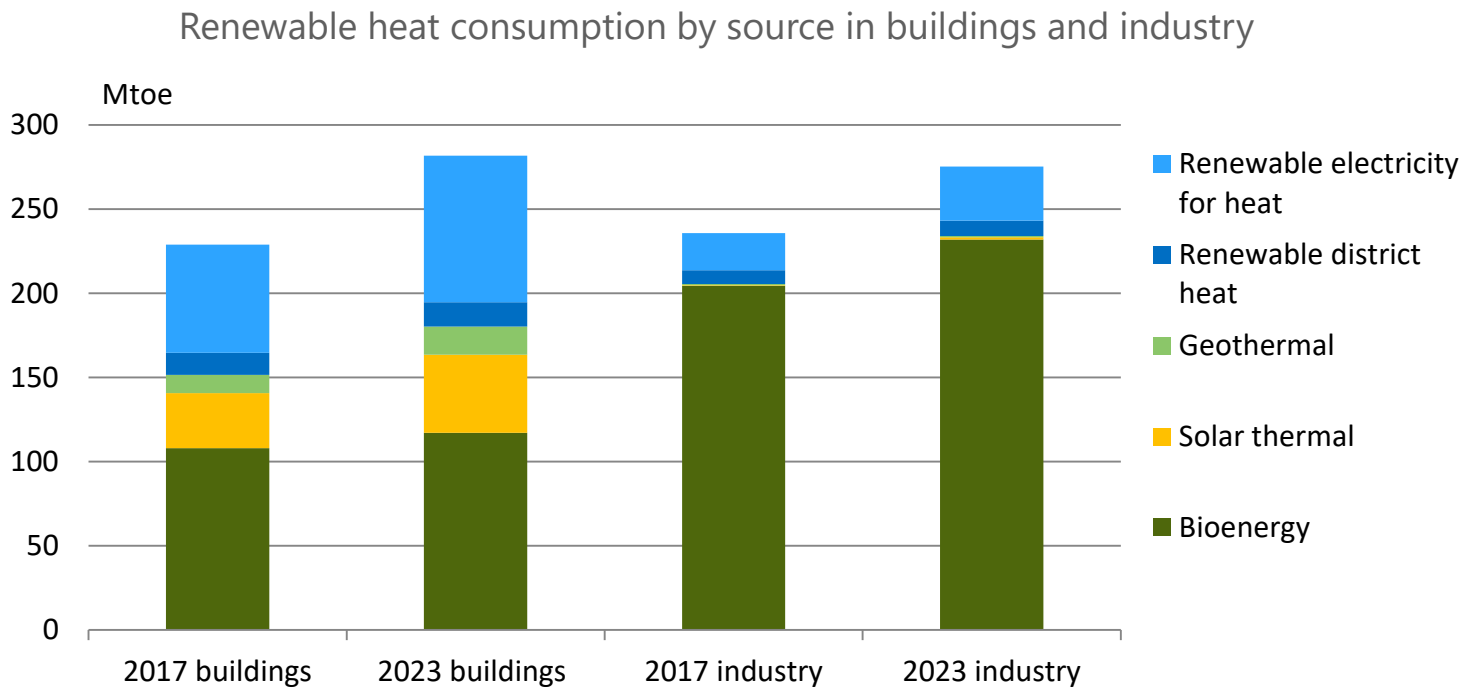
Biofuels open new avenues for more sustainable aviation

Cost premium of commercial aviation biofuels (15% blend) per passenger from London



Policies remain key to bridge the cost gap between aviation biofuels and fossil jet fuels
The most efficient aircraft could reduce fuel costs by around 15%

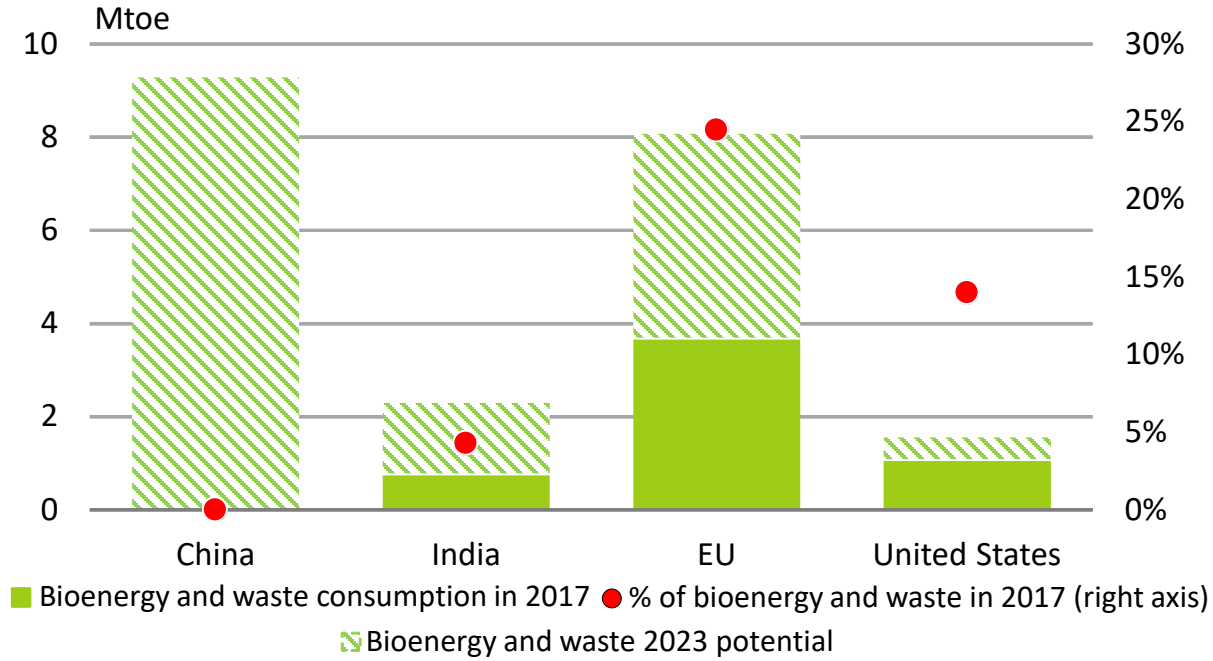
Bioenergy to continue dominating renewable heat consumption



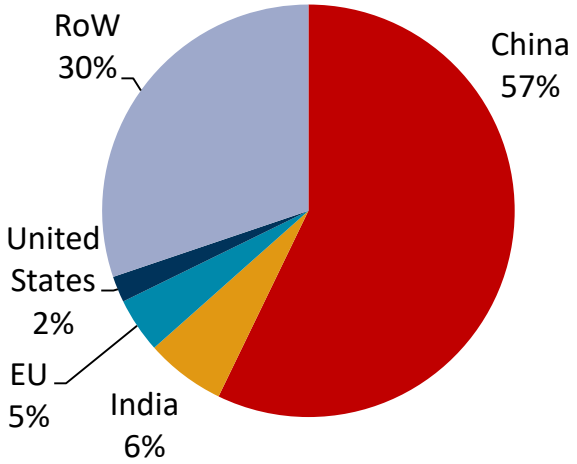
Bioenergy is particularly prevalent in industry, whereas in buildings growth in solar heat and renewable electricity is pushing bioenergy from the top spot.

Waste: a key resource for “greener” cement production

Bioenergy and waste consumption in the cement industry by country

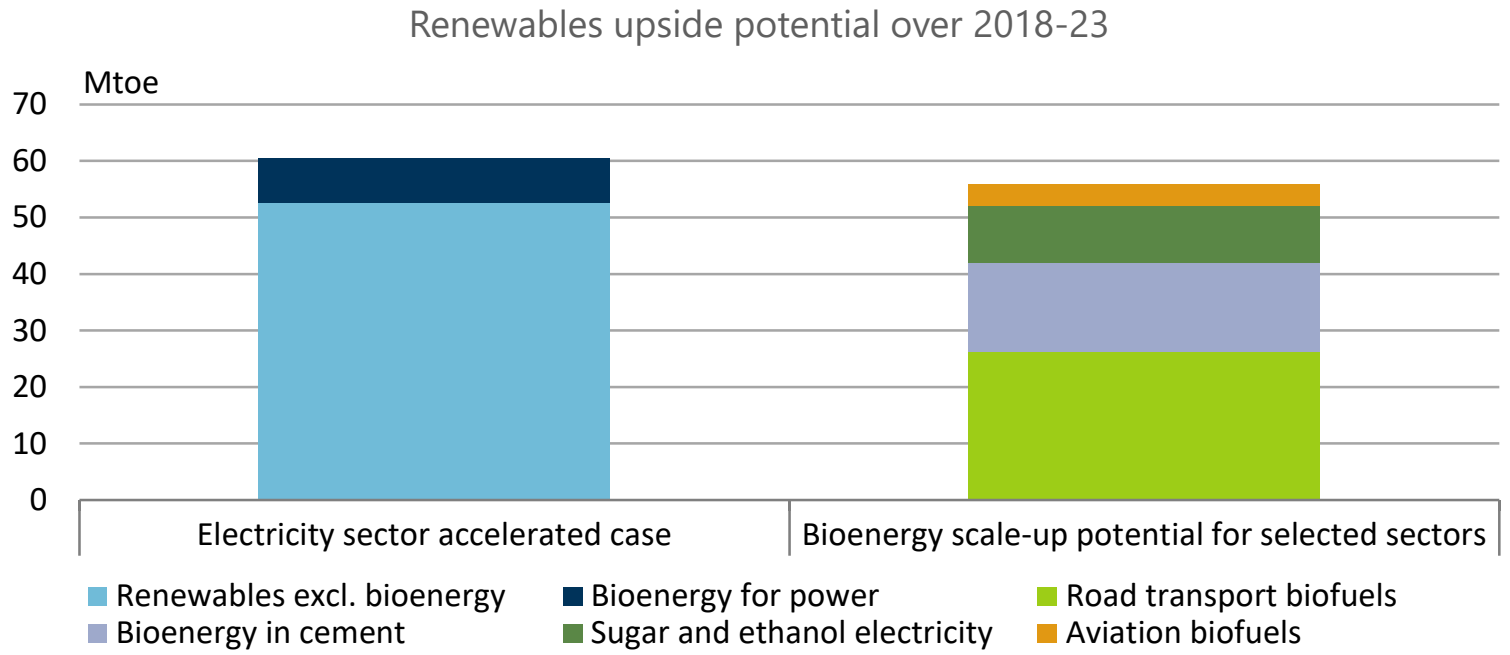


Cement production by country, 2017



The share of bioenergy and waste in the cement industry could be doubled if the robust waste management frameworks present in Europe were replicated in large producing countries

Accelerated deployment is possible with right policies



Policies could accelerate renewable electricity growth by 25%; bioenergy could accelerate consumption across all sectors with an enhanced use of available waste resources

Conclusions

- Even with ongoing cost reductions, government policy remains crucial to attract investment in renewables, ensure appropriate market design and reliable & cost-effective system integration

- Modern bioenergy will continue to lead renewables growth in the next five years and its untapped potential remains huge particularly in China, India, Brazil and the EU

- Further accelerating the use of modern bioenergy hinges on policies & incentives to foster innovation and on rigorous sustainability frameworks

- Greater use of solar, wind, bioenergy & other renewables – together with energy efficiency & other clean energy technologies – is needed in all sectors for emissions to peak rapidly then decline
  - Electrification of end-use sectors
  - Better alignment of energy efficiency and renewable energy policies
  - Enhanced direct renewable heat uses
  - Stronger renewables penetration in industry, including through hydrogen-based fuels & feedstocks

Thank you

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