Renewables 2017

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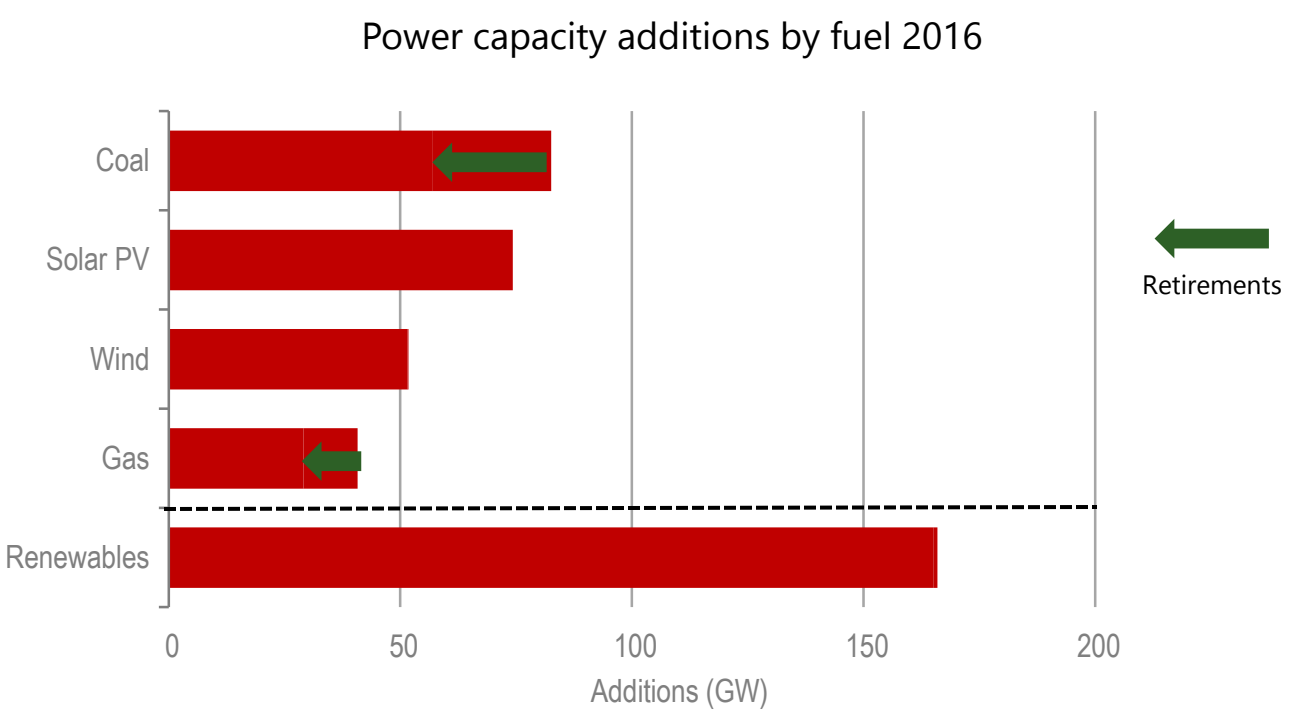
Context

- Policy support & technology progress continue to drive robust growth in renewables
- Solar PV broke new records in 2016, led by China
  - *Solar PV grew faster than any other form of generating capacity*
- Competitive auctions are seeing record-low prices for wind & solar
- Prospects for renewables underpinned by need to address core energy challenges
  - *Air pollution still a major problem*
  - *Universal access to modern energy remains a distant goal*
  - *Current climate pledges fall short of meeting mitigation goals*

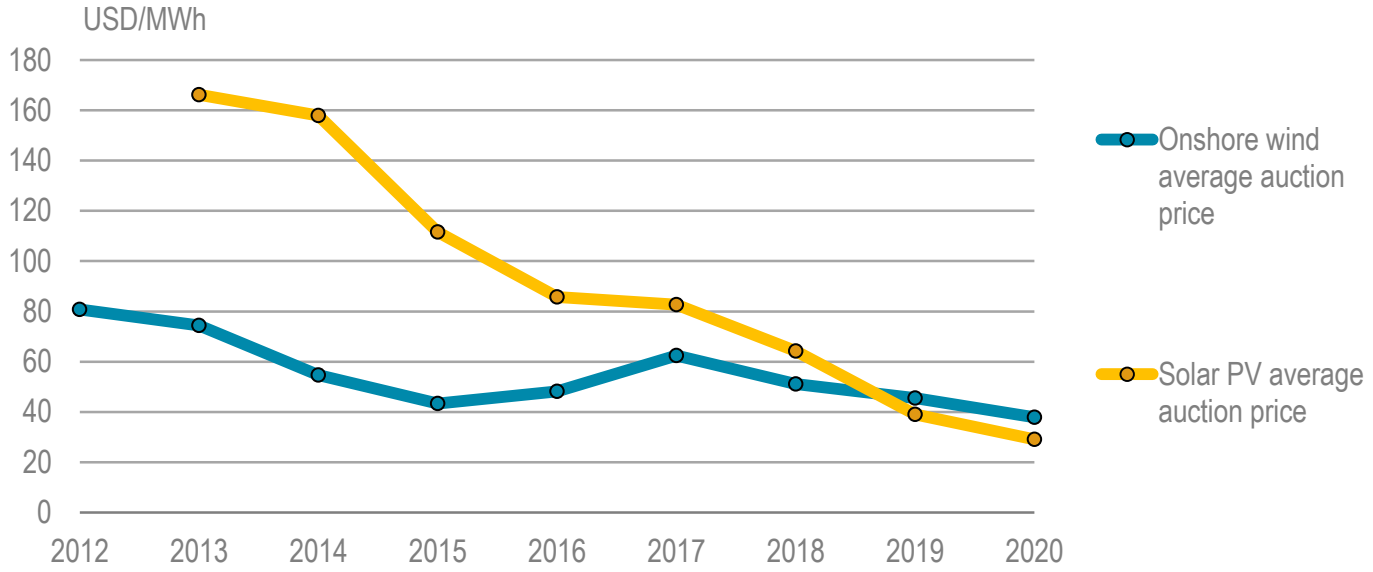
2016 – Renewables hitting new records driven by solar PV



Renewables breaking an all-time record accounting for two thirds of global net capacity additions; For the first time solar PV becoming the global leader in net capacity growth

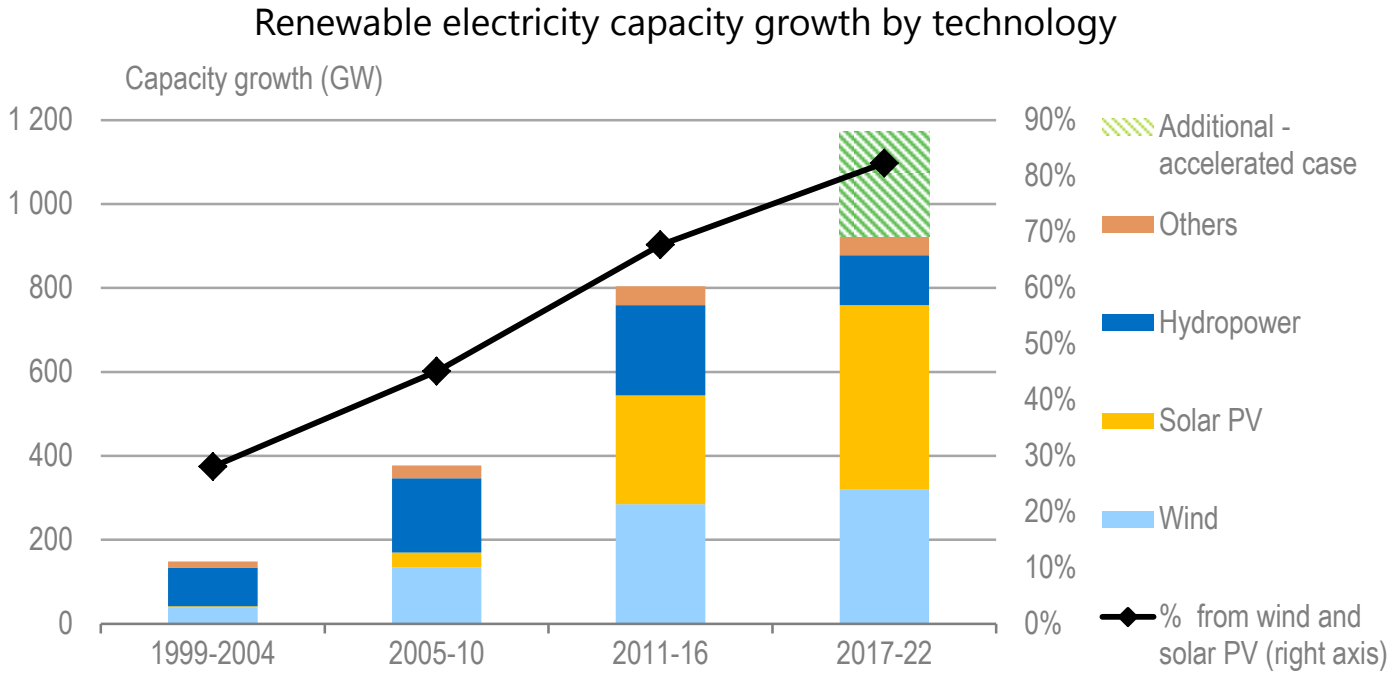
Competition driving costs down

Announced wind and solar PV average auction prices by commissioning date



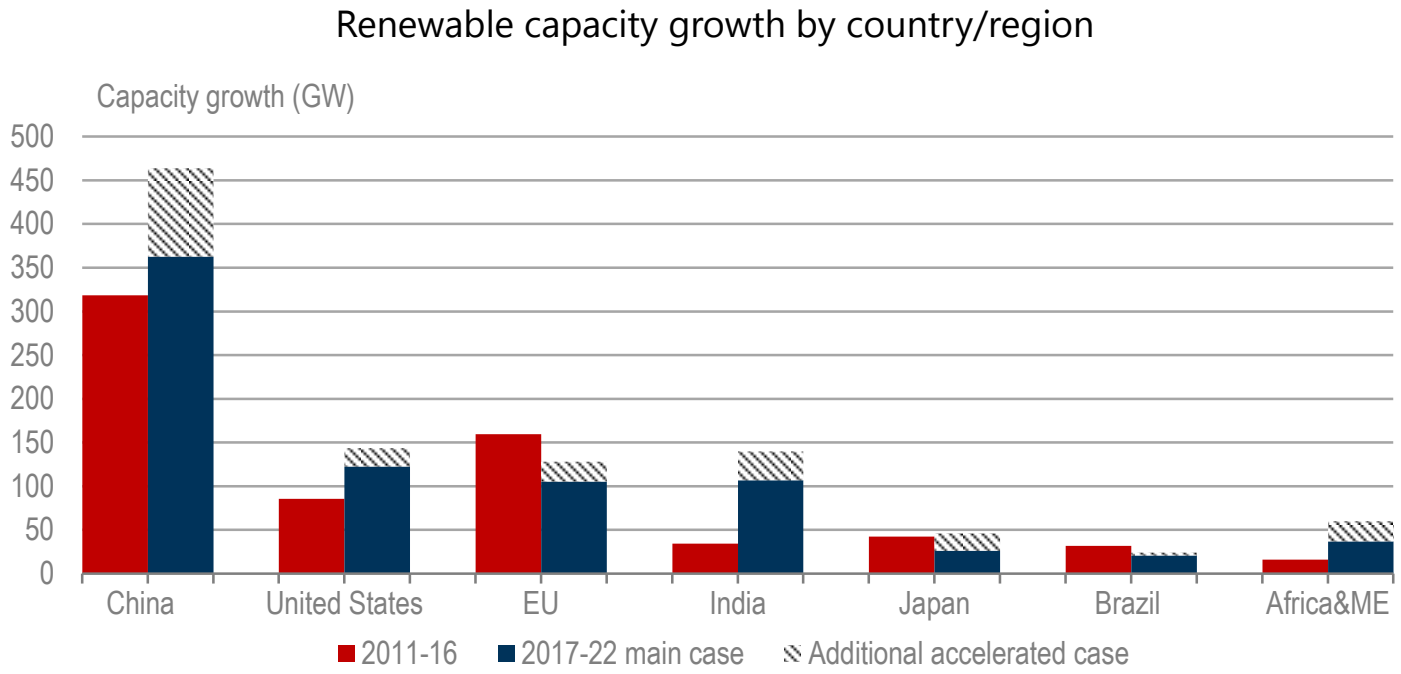
Price discovery through competitive auctions effectively reduces costs along the entire value chain; Auctions with long-term contracts will drive almost half of new capacity growth over 2017-22

Renewables growth more and more dependent on wind and solar



Solar PV enters a new era, becoming the undisputed leader in renewable power capacity growth; PV also accounts for 60% of the upside potential in the accelerated case

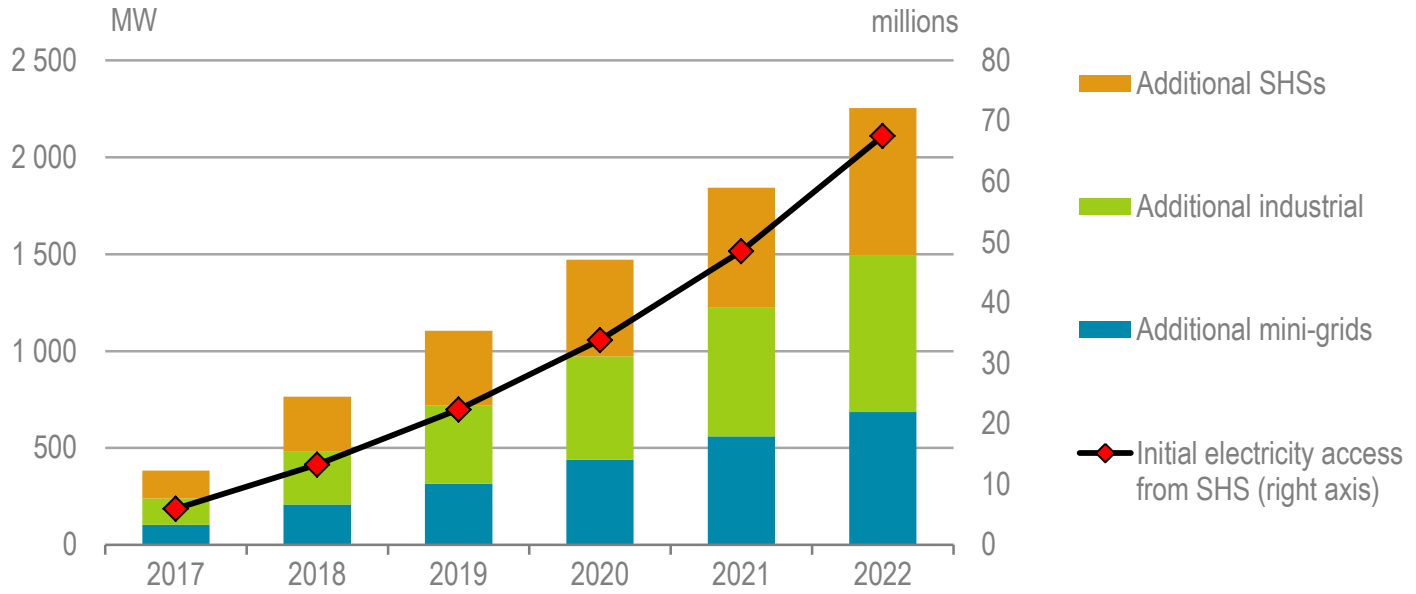
China continues to lead growth while India overtakes the EU



The forecast is 12% more optimistic vs. last year mainly due to solar PV revisions in China and India; Growth could be 27% higher with enhanced policies addressing regulatory uncertainties and grid integration

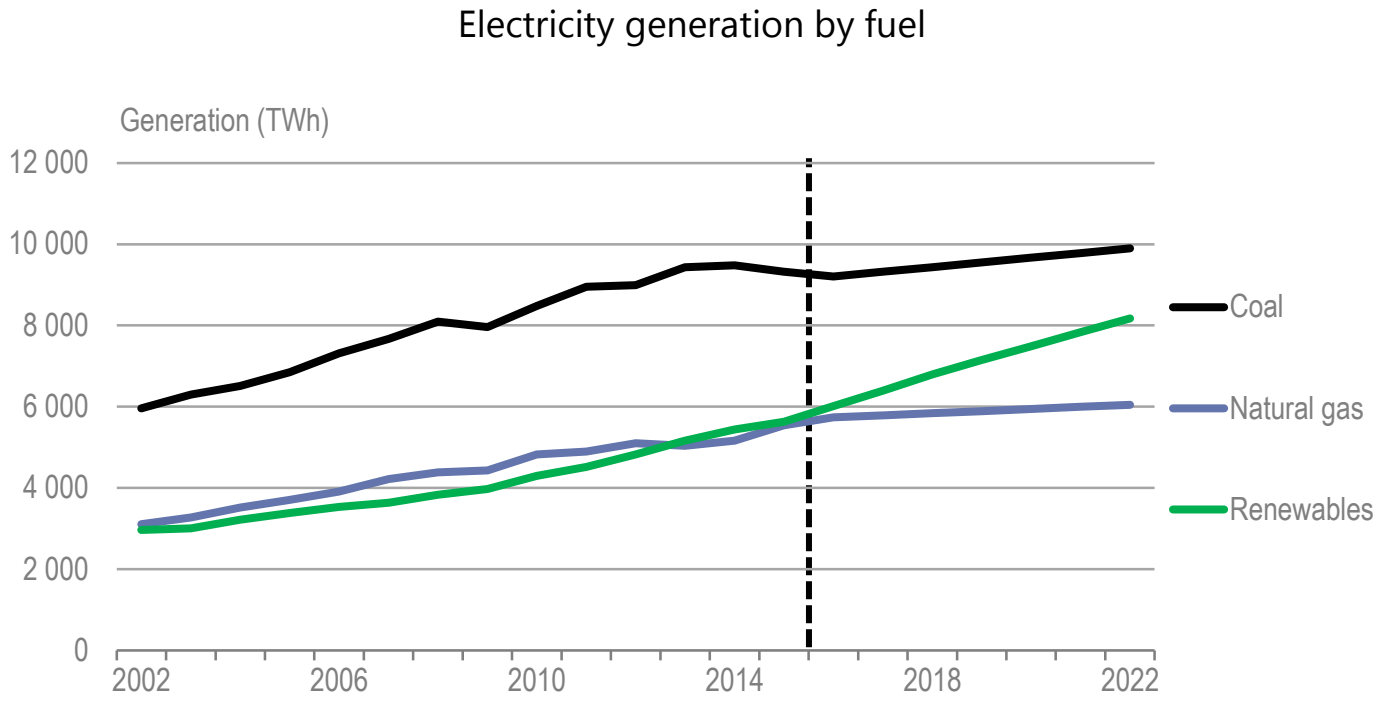
Solar PV enabling electrification in India, Bangladesh and sub-Saharan Africa

Cumulative growth of off-grid solar PV applications in developing Asia and sub-Saharan Africa



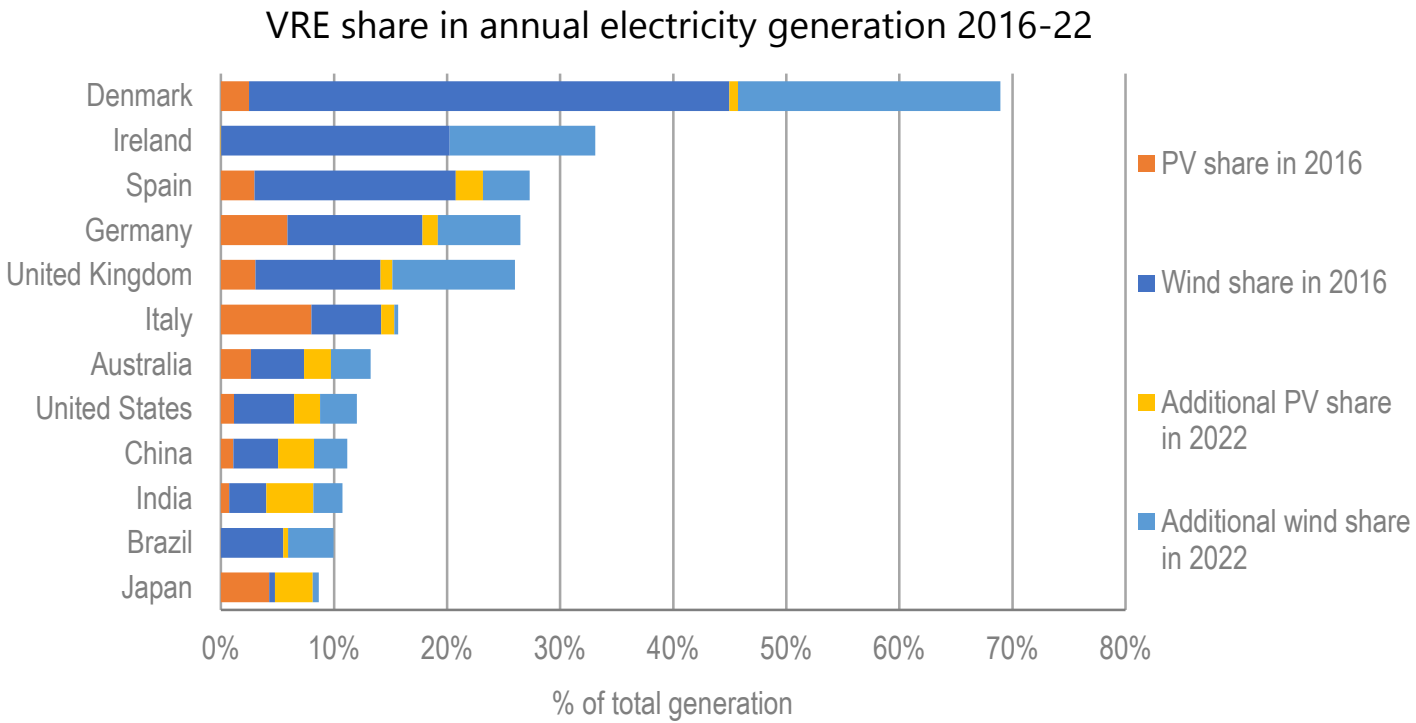
With government policies and innovative business models, off-grid PV capacity triples in Africa and developing Asia. Small home systems bring initial electricity access to almost 70 million by 2022

Renewables closing the gap with coal



Renewable generation to expand by over a third with its share increasing from 24% in 2016 to 30% in 2022, rapidly closing the gap with coal

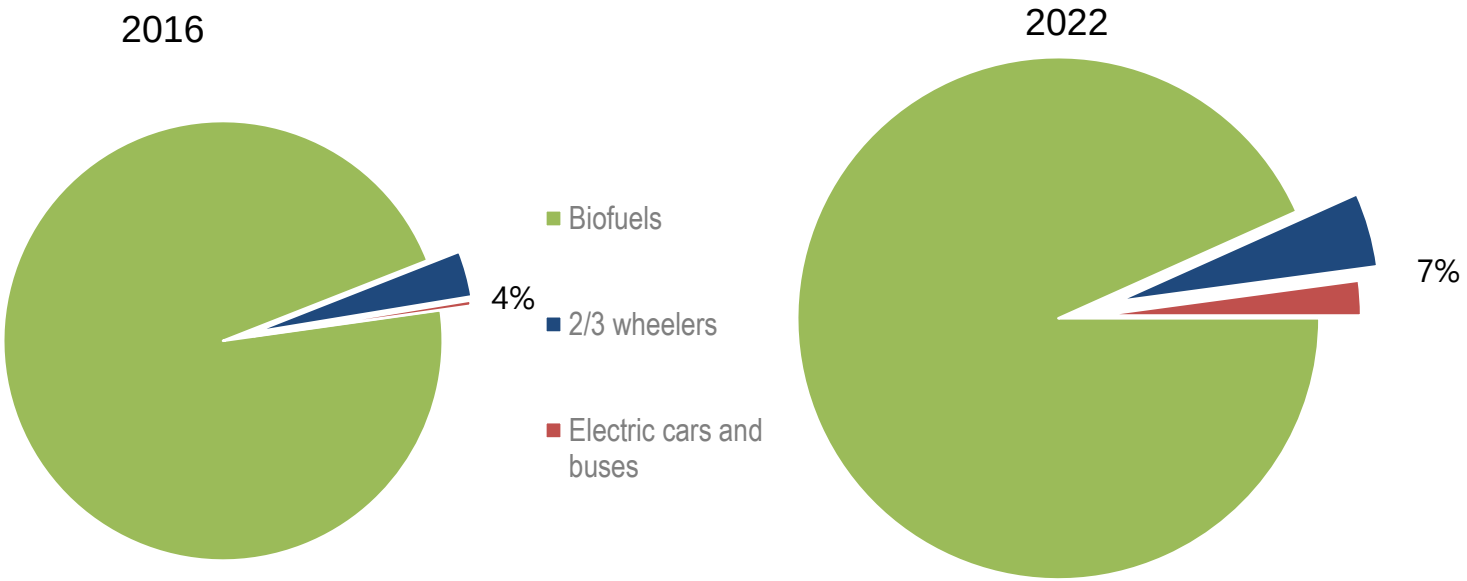
Wind and solar transforming power sector - system integration becomes key



More flexible power systems, adapted market design and policies will have to play a key role in integrating larger shares of wind and solar in a secure and cost-effective way

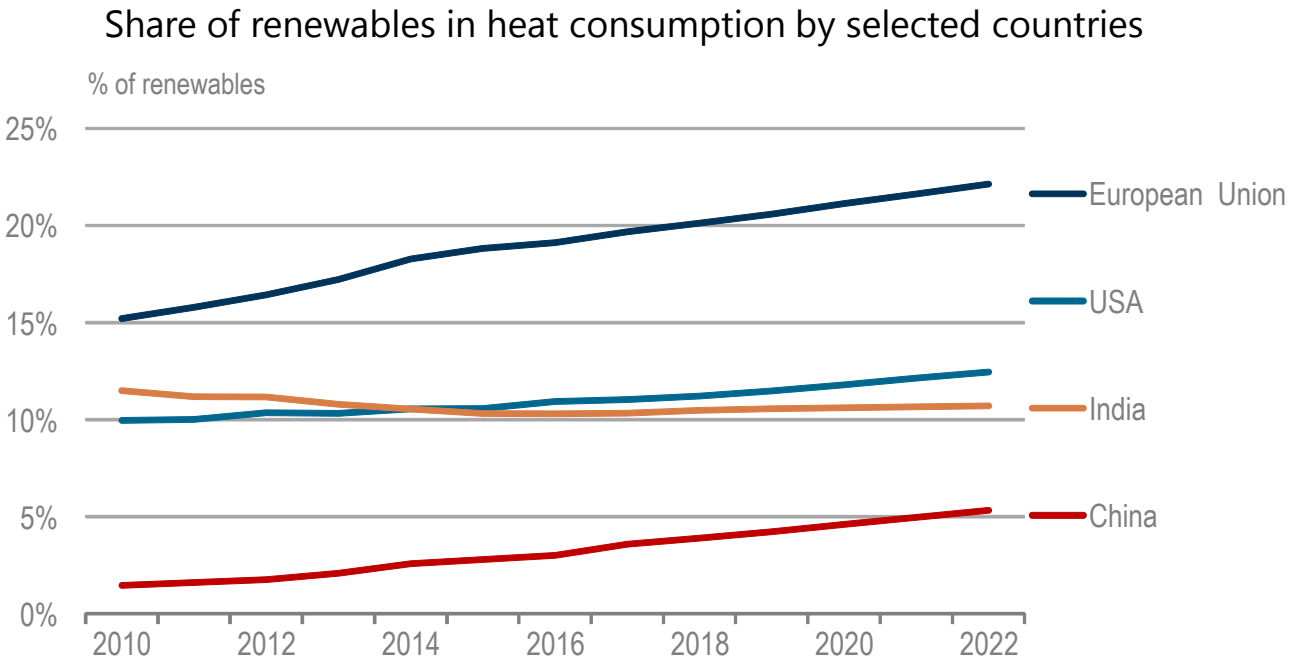
Surging EVs to complement biofuels in renewable transport

Biofuels and electric vehicles contribution to renewable energy consumption in road transport



Share of renewables in road transport increases from 4% in 2016 to almost 5% in 2022, with biofuels representing 80% of the growth led by Asia & Brazil; EV electricity consumption doubles by 2022, with renewables providing 30% of demand

Progress in renewable heat depends on strong policies



Renewables share in heat consumption rises from 9% in 2016 to 11% in 2022. China leads absolute growth with new targets; EU remains the largest renewable heat consumer while total heat demand outpaces renewables growth in India

Concluding remarks

- Renewables rise by 1,000 GW to 2022, equal to half of current total coal capacity
- Renewables generation exceeds 8,000 TWh by 2022, equal to total electricity consumption of China, India & Germany combined
- Solar PV enters a new era leading the growth in renewables, driven by a rapid expansion in deployment & manufacturing capacity in China
- Despite rapid growth in EVs, decarbonisation of transport is a long way off
  - *Only 30% of electricity used by EVs is sourced from renewables*
  - *Advanced biofuels require specific incentives to bolster deployment*
- Policymakers have to turn their focus to system integration & expanding the use of renewables for heating & cooling

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