



Renewables – the next chapter

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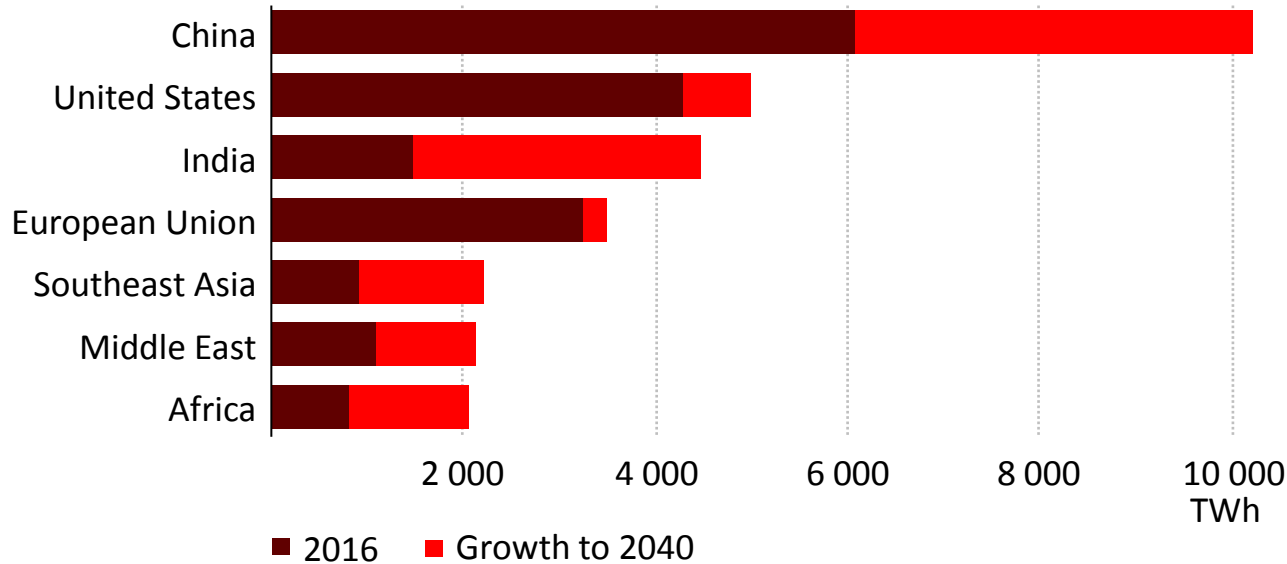
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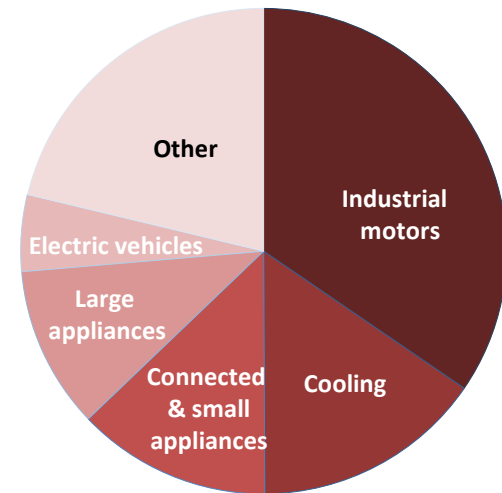
- Four large-scale upheavals in global energy:
 - The **United States** is turning into the undisputed global leader for oil & gas
 - **Solar PV** is on track to be the cheapest source of new electricity in many countries
 - **China's** new drive to “make the skies blue again” is recasting its role in energy
 - The future is **electrifying**, spurred by cooling, electric vehicles & digitalisation
- There are many possible pathways ahead & many potential pitfalls if governments or industry misread the signs of change

The future is electrifying

Electricity generation by selected region



Sources of global electricity demand growth

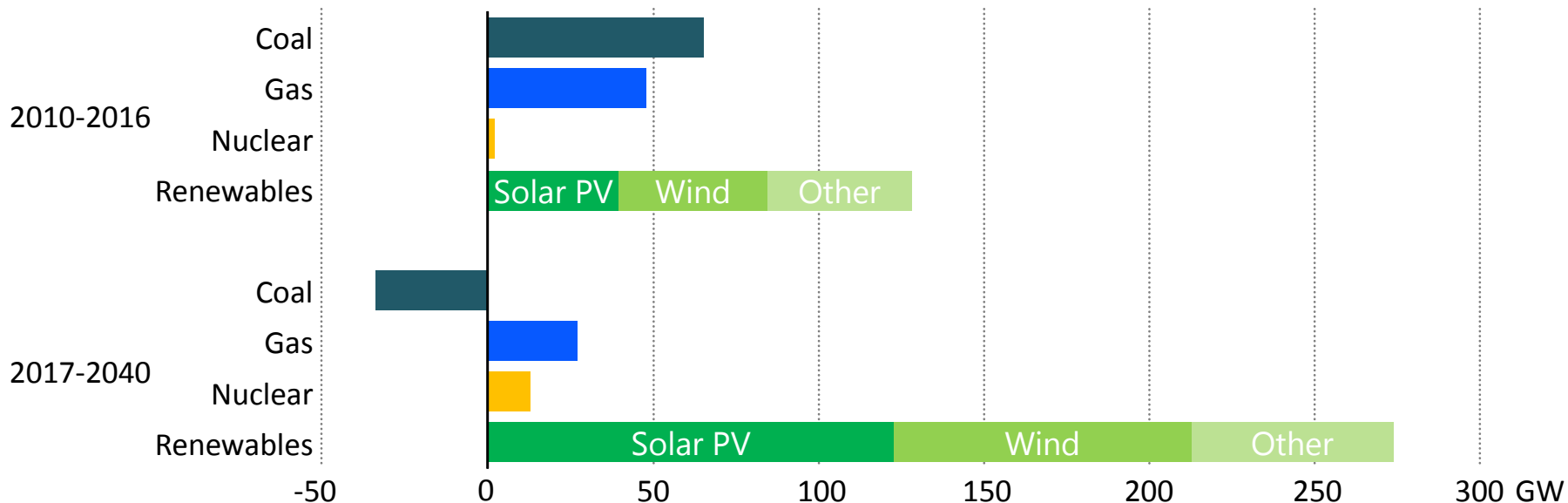


Source: World Energy Outlook 2017

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

Solar PV forges ahead in the global power mix

Global average annual net capacity additions by type in the Sustainable Development Scenario

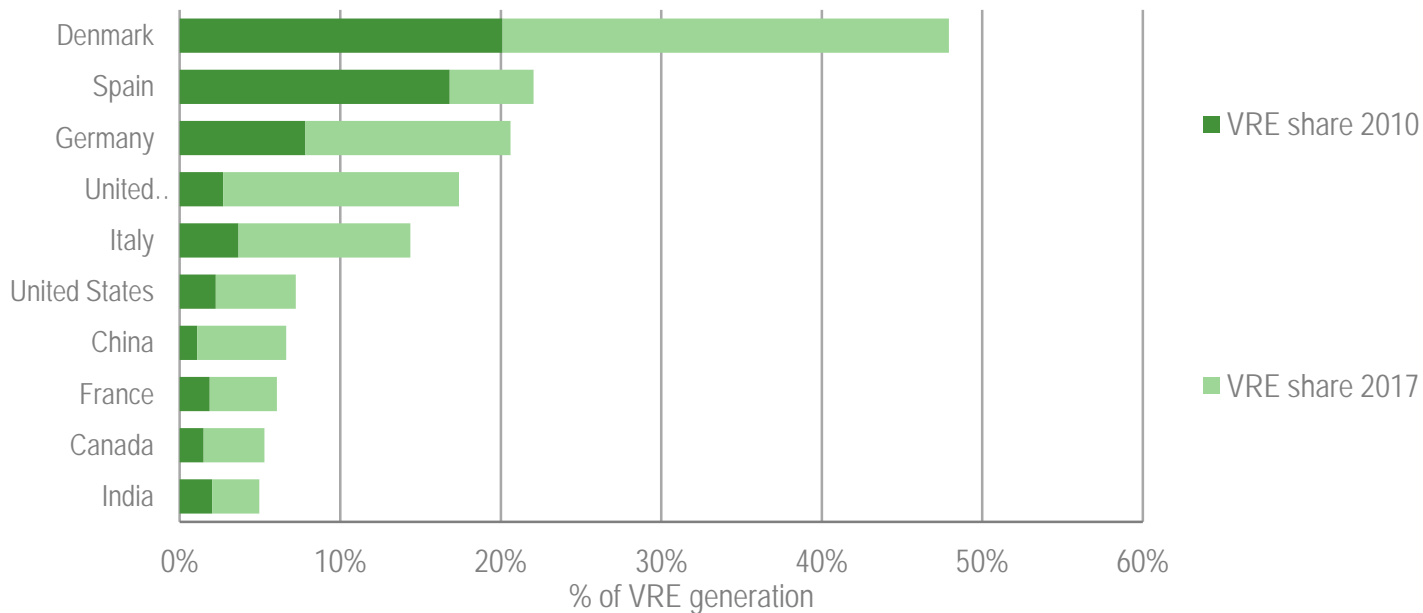


China, India & the US lead the charge for solar PV, while Europe is a frontrunner for onshore & offshore wind. Renewables deliver 63% of total world generation by 2040 in the SDS, requiring 12 USD trillion of cumulative investment

Wind & solar transforming the power sector, but challenges emerge

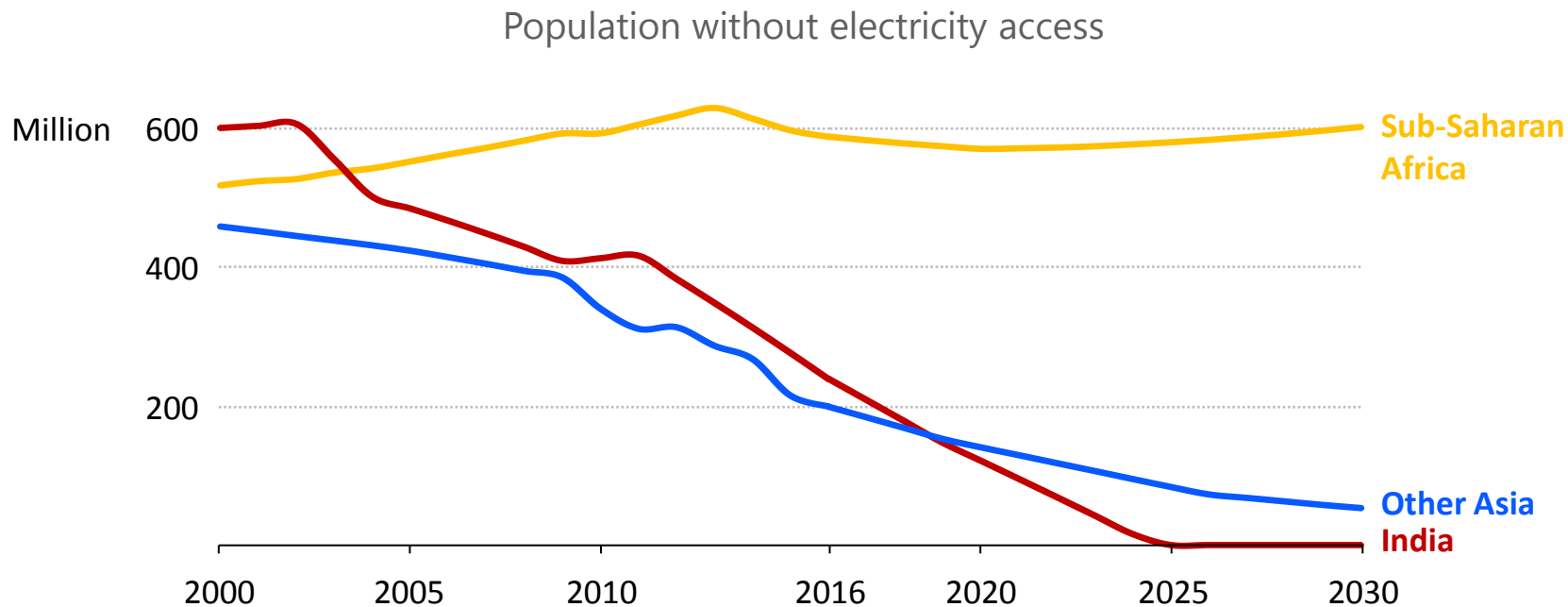


Share of wind and solar in total electricity generation in selected countries



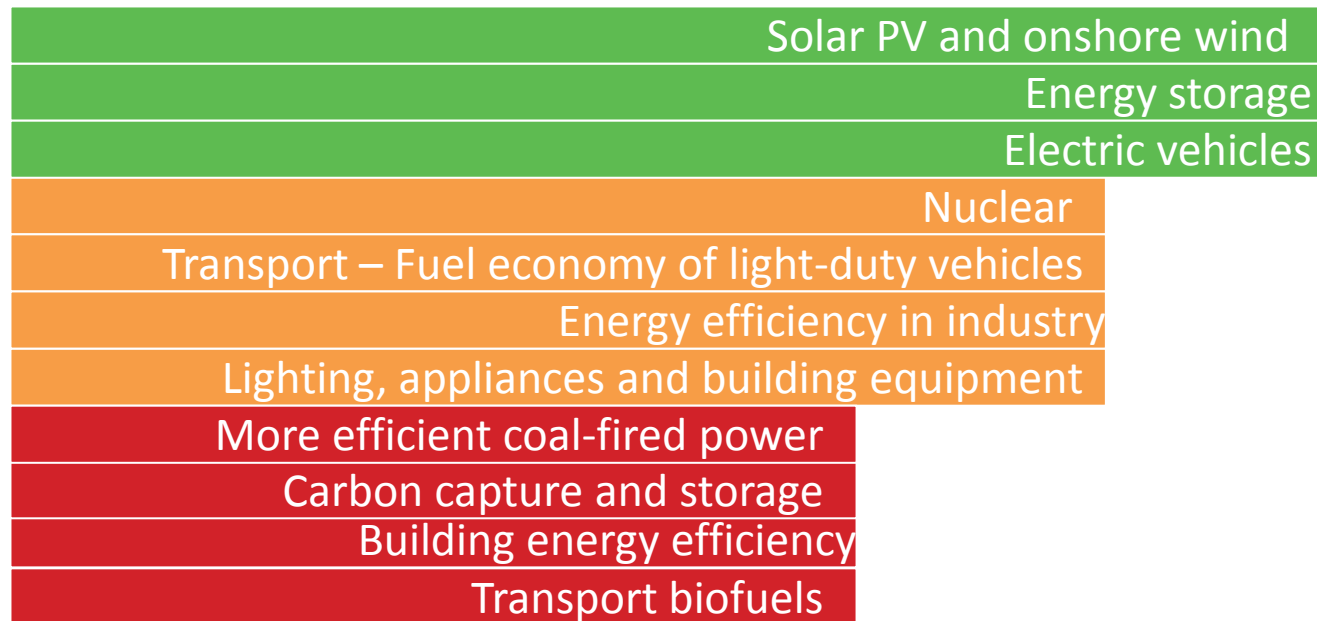
Policies need to maximise the value of renewable electricity in time and location, and incentivise grid strengthening, more flexible power plants, storage and demand side response

Progress in electricity access is uneven



Many countries, led by India, are on track to achieving full electrification by 2030, but – despite recent progress – efforts in sub-Saharan Africa need to redouble

The potential of clean energy technology remains under-utilised



● Not on track ● Accelerated improvement needed ● On track

Recent progress in some clean energy areas is promising, but many technologies still need a strong push to achieve their full potential and deliver a sustainable energy future

Conclusions

- Energy efficiency & renewables will be at the heart of the energy transition, with renewables dominating global electricity growth
- More flexible power systems, adapted market design and policies are required to integrate large shares of solar & wind in a secure and cost-effective way
- Massive untapped potential of renewables still exists in buildings, industry and transport - through renewable heat, biofuels and hydrogen-rich chemicals
- The IEA supports the global clean energy transition in providing cutting-edge technical advice to governments, particularly in major emerging economies