



# ***Renewable energy markets and global climate goals***

**Nordic cleantech cooperation in Africa:  
Needs, opportunities, challenges and solutions  
COP22, Marrakech  
November 9, 2016**

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**The IEA works around the world to support an accelerated clean energy transition that is**

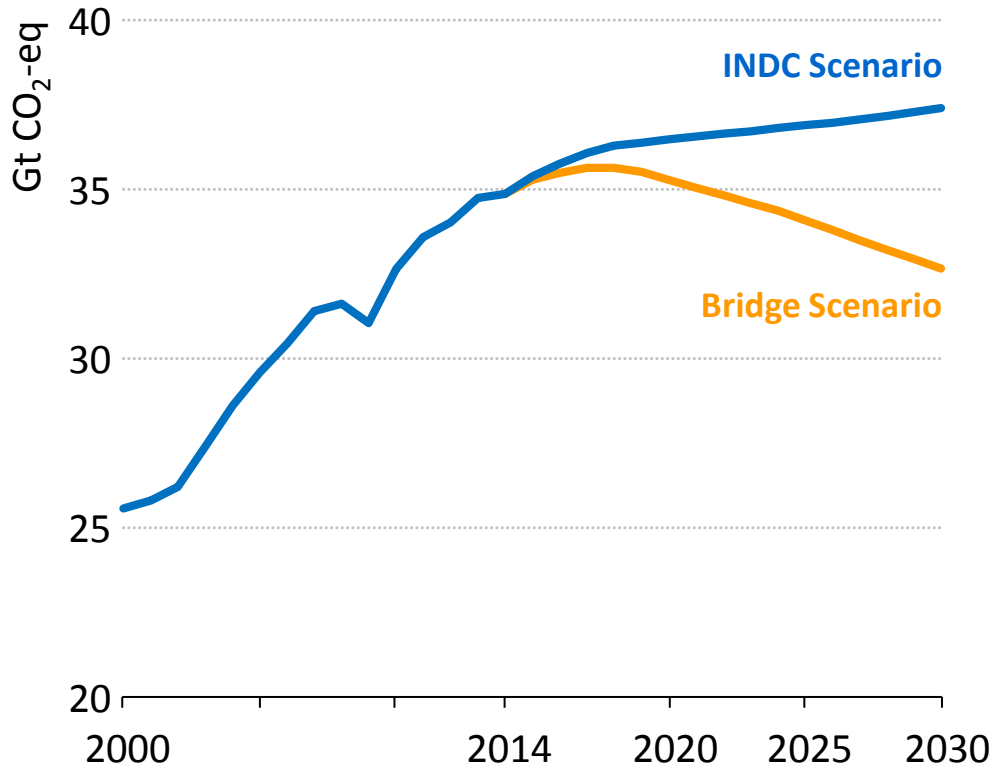
**enabled by real-world SOLUTIONS**

**supported by ANALYSIS**

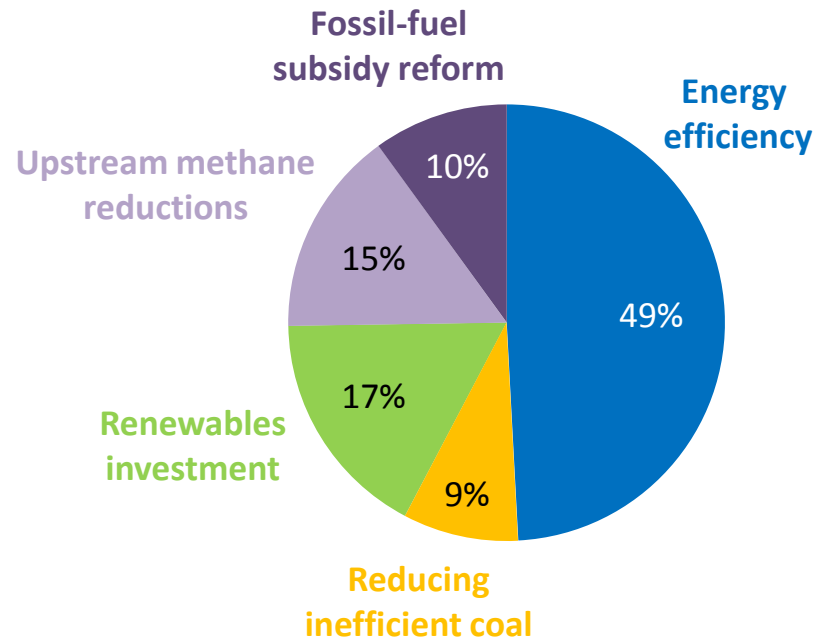
**and built on DATA**

# IEA strategy to raise climate ambition *Peak in emissions (Bridge Scenario)*

Global energy-related GHG emissions



Savings by measure, 2030

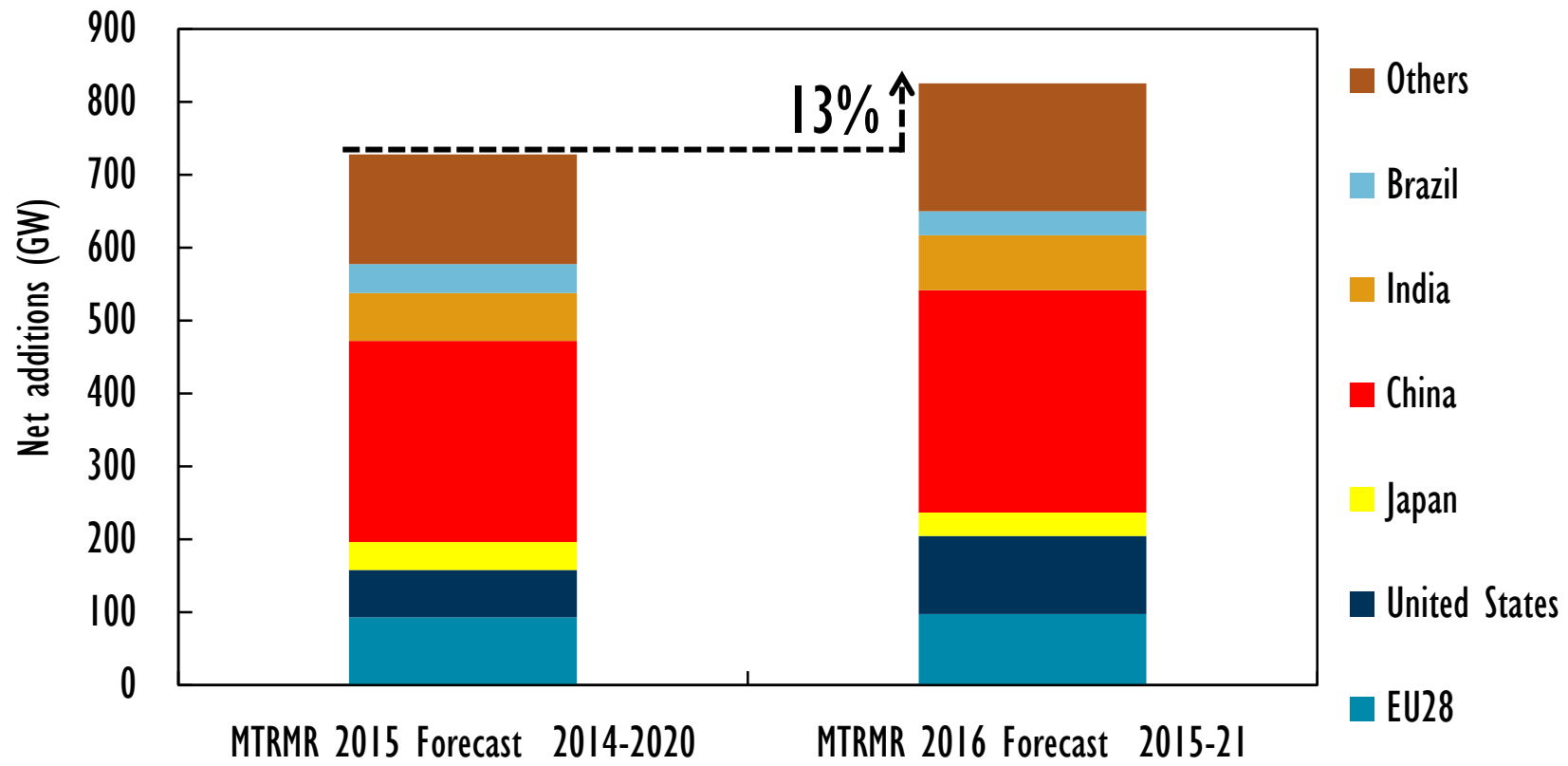


**Five measures – shown in a “Bridge Scenario” – achieve a peak in emissions around 2020, using only proven technologies & without harming economic growth**

# New policies underpin a more bullish forecast for renewables



Renewable electricity capacity growth (GW) in *MTRMR's main case*

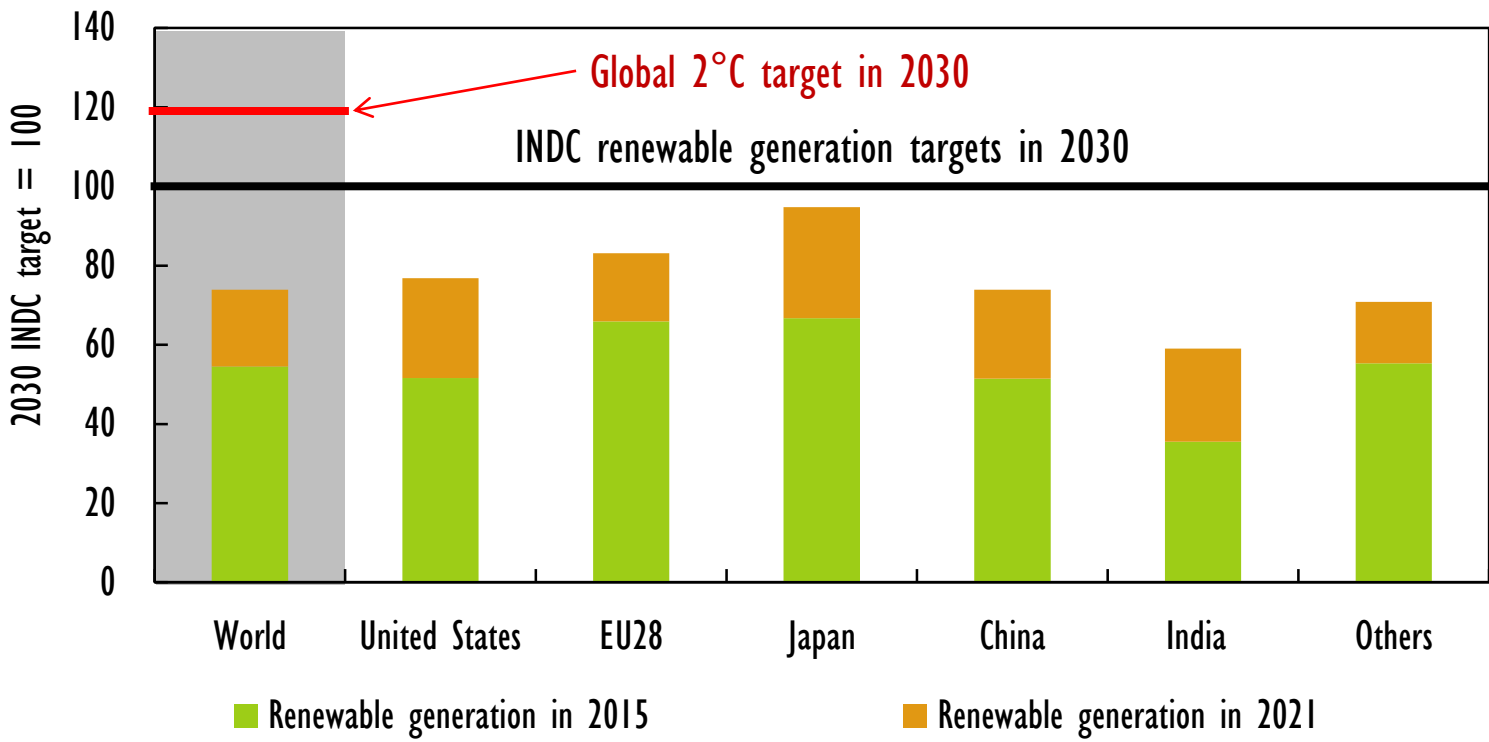


**China remains key growth market for renewable capacity, while the United States surpasses the EU for the first time**

# Medium-term renewable power forecast in line with COP21 goals



Renewable electricity generation indexed to INDC targets

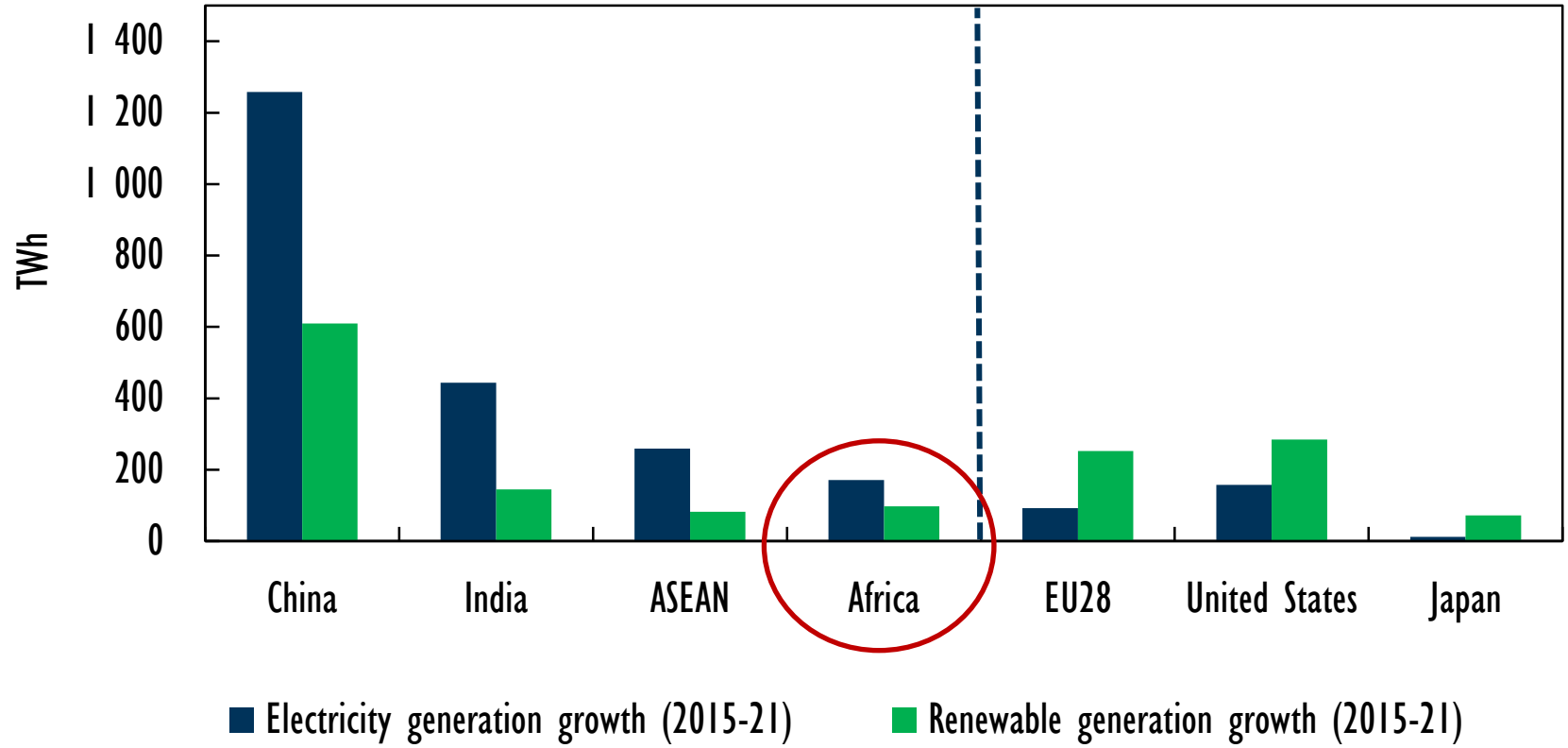


***But even more is needed to meet the ambitious climate targets agreed at COP21***

# A two-speed world for renewable electricity



Electricity and renewable generation growth by country/region

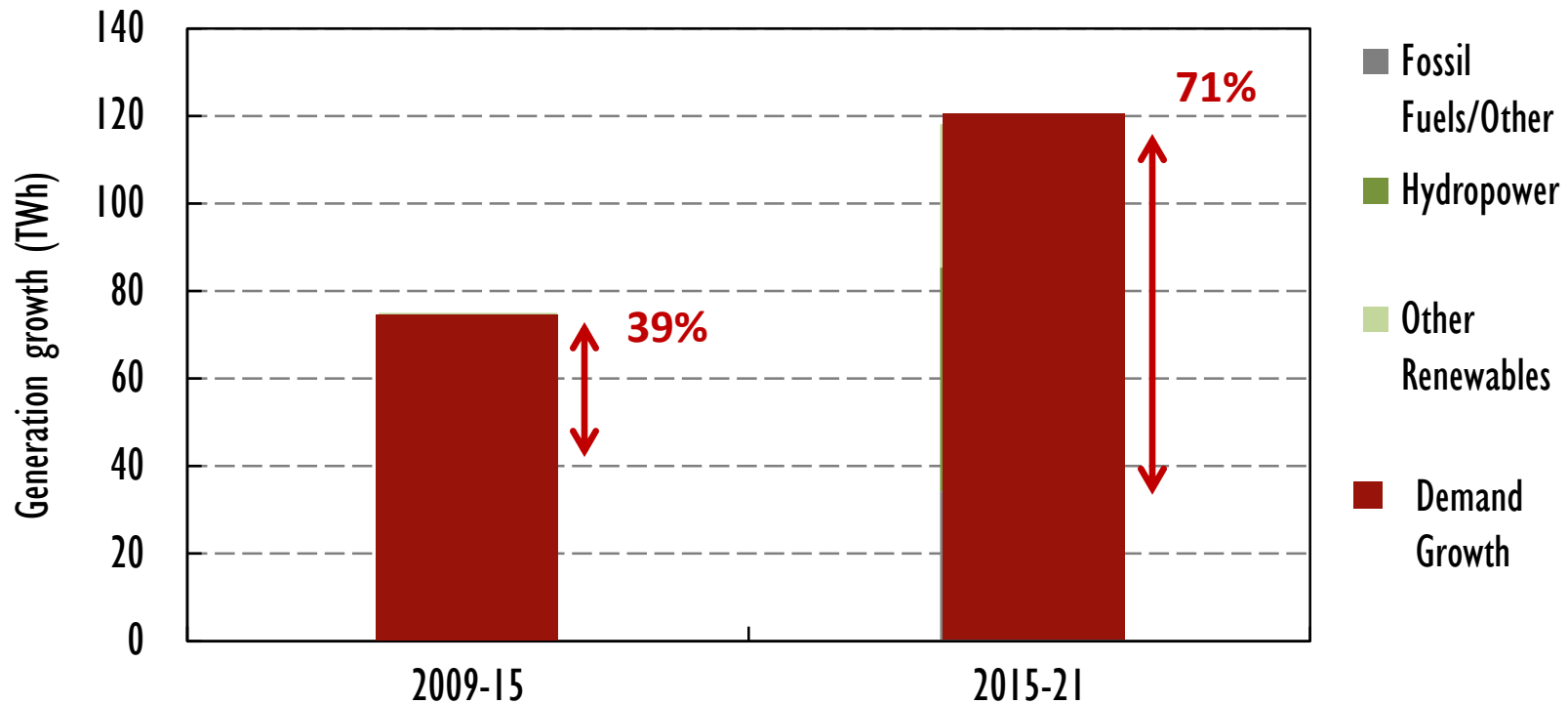


Source: Total electricity generation from World Energy Outlook 2016, forthcoming.

***The increase in generation from renewables in 2015-2021 represents 60% of the global increase in electricity output, but prospects vary across regionally***

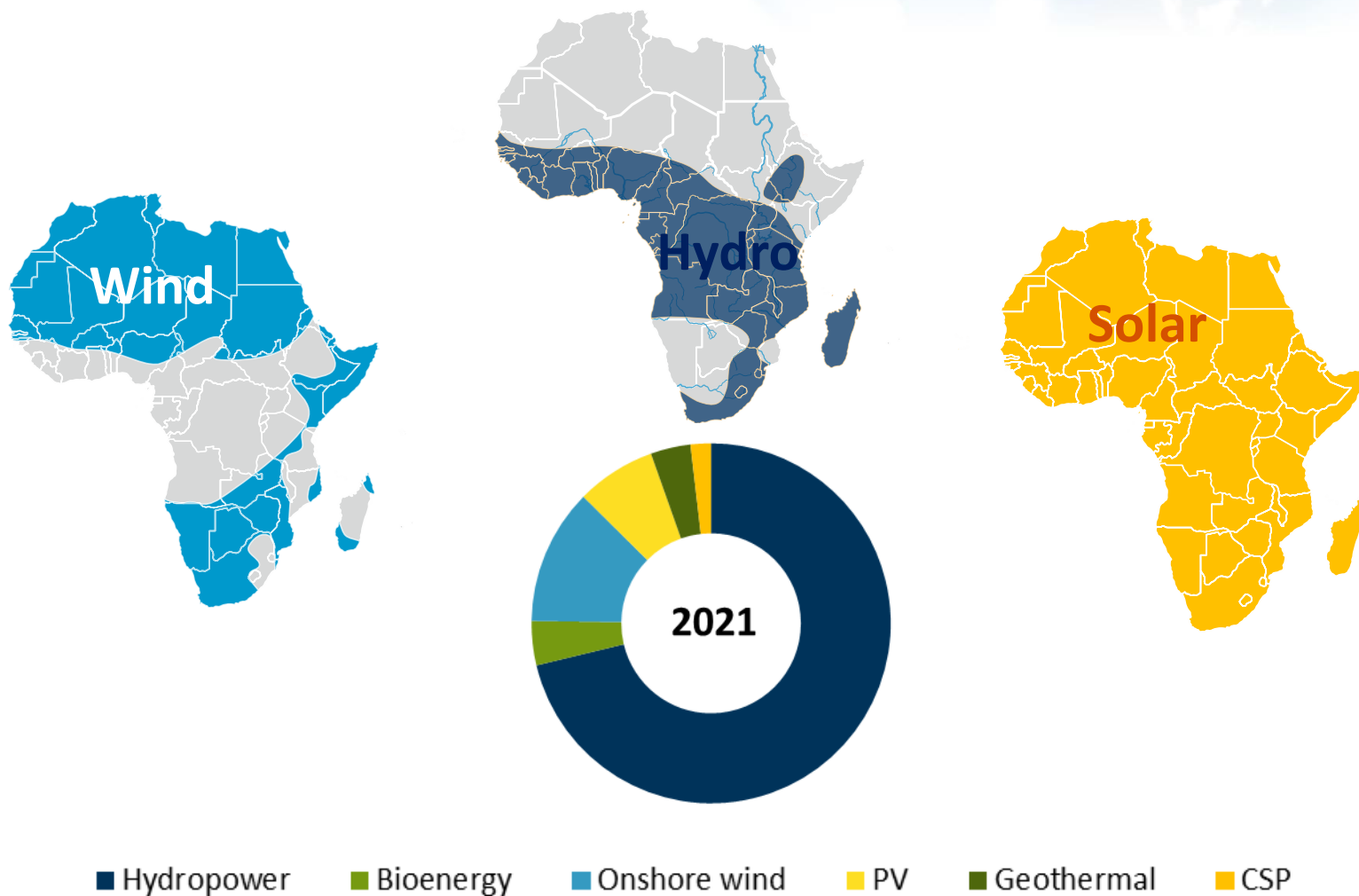
# Renewables can power Africa's economic growth

## Sub-Saharan Africa power demand growth versus supply sources



*With huge resources, improving cost-effectiveness and policy momentum, renewables account for more than two-thirds of demand growth in Sub-Saharan Africa*

# Africa - rich in resources



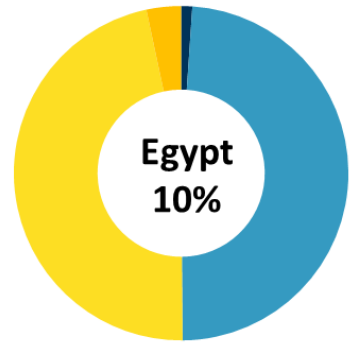
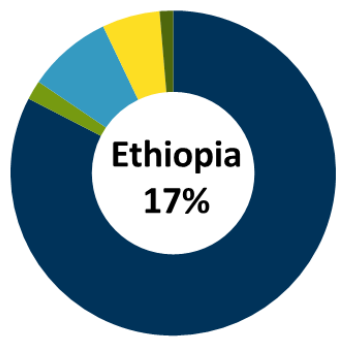
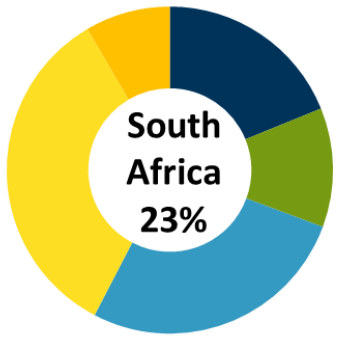
*Renewable power grows by over two-thirds over the medium term, with non-hydropower sources growing the fastest.*



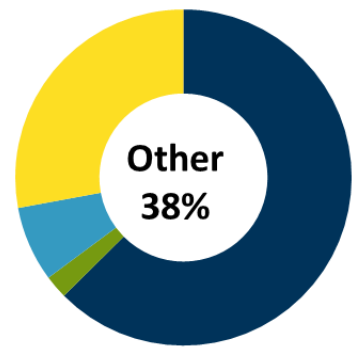
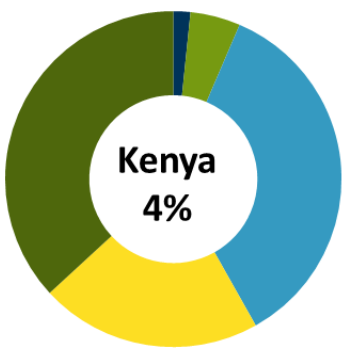
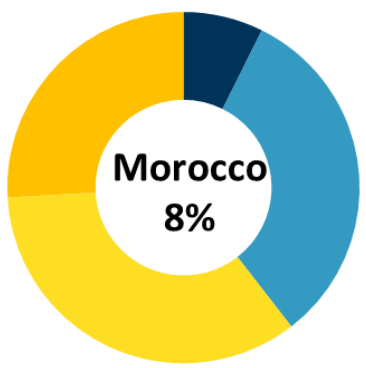
# Renewable market profiles vary: Different drivers and resources



Share of net capacity additions in Africa 2015-21



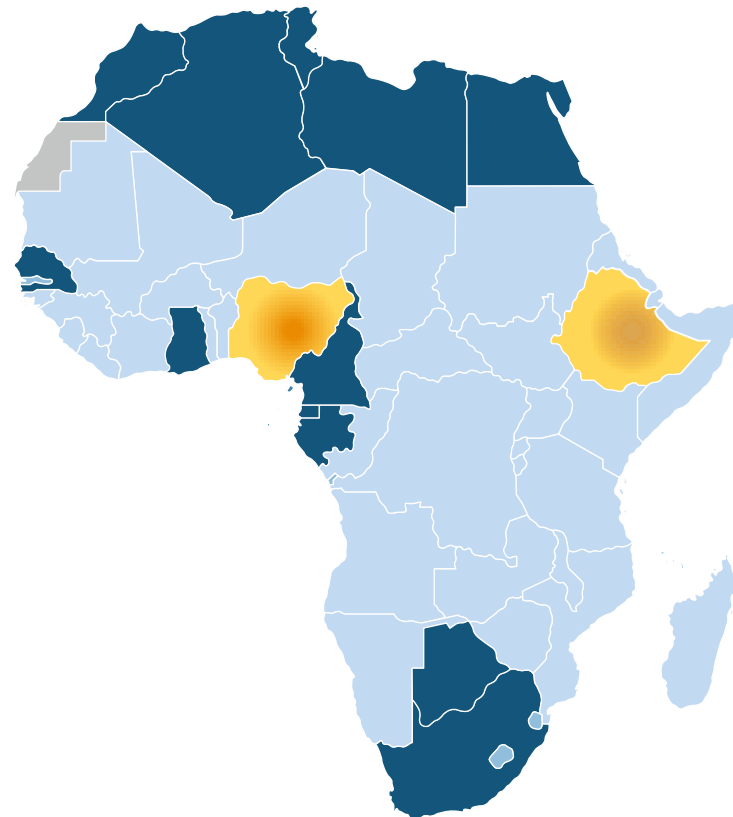
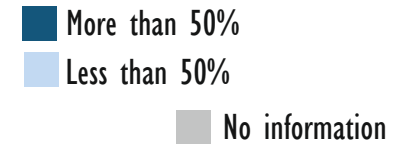
■ Hydropower   ■ Bioenergy   ■ Onshore wind   ■ PV   ■ Geothermal   ■ CSP



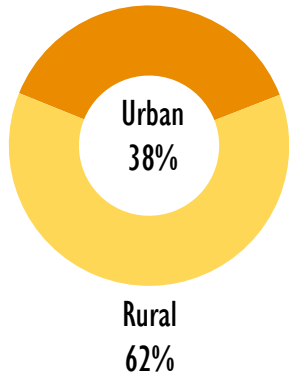
*South Africa leads Africa's deployment driven by IPP competitive auctions, followed by Ethiopia mostly from hydropower expansion. Diversification needs drives growth in Egypt, Morocco, and Kenya*

# Decentralised renewables could improve electricity access and reliability

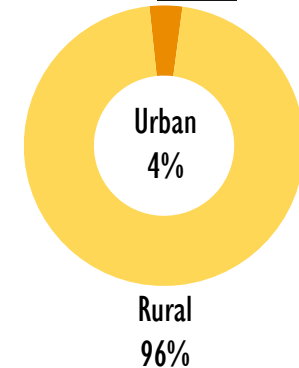
Share of population with access to electricity:



Nigeria  
100 million without access



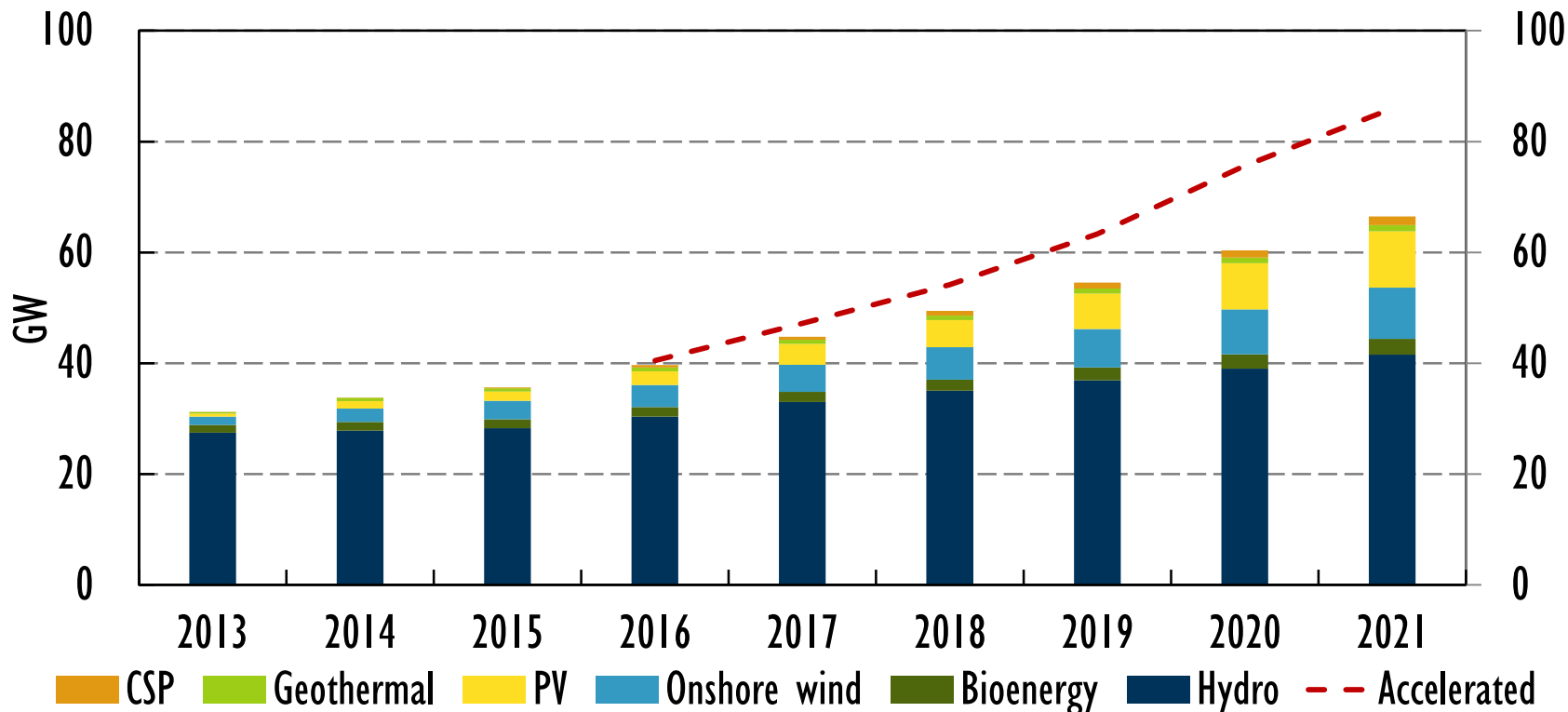
Ethiopia  
75 million without access



*Sub-Saharan Africa requires electrification solutions tailored to population density. Affordable small-scale solar PV can help access in rural areas and improve reliability in urban zones.*

# Accelerated renewable growth could accelerate by 60%

Sub-saharan cumulative capacity (GW)



*Accelerated deployment could be achieved with increased access to affordable finance for planned pipelines as well de-risking the investment climate and clarifying power sector regulations to attract new commercial entrants.*



**Thank you**