

Planning and prospects for renewable power: Eastern and Southern Africa

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SPEAKERS



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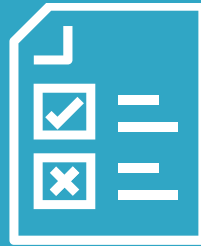
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Planning and Prospects for renewable power: Eastern and Southern Africa



What are the benefits of long-term planning for the energy infrastructure development in Africa?

Summary from “Planning renewable energy strategies: Africa power sector, achievements and way forward”, Abu Dhabi January 2015

Long-term energy planning, if done properly,

- » Creates consensus among stakeholders
- » Can help to avoid costly investment mistakes
- » Reduces uncertainties in policy directions/project selections
- » Sends signals to investors on the type & quantity of investments needed
- » Accelerates service delivery



Components of good long-term planning



Data and narratives



Transparent
methodologies

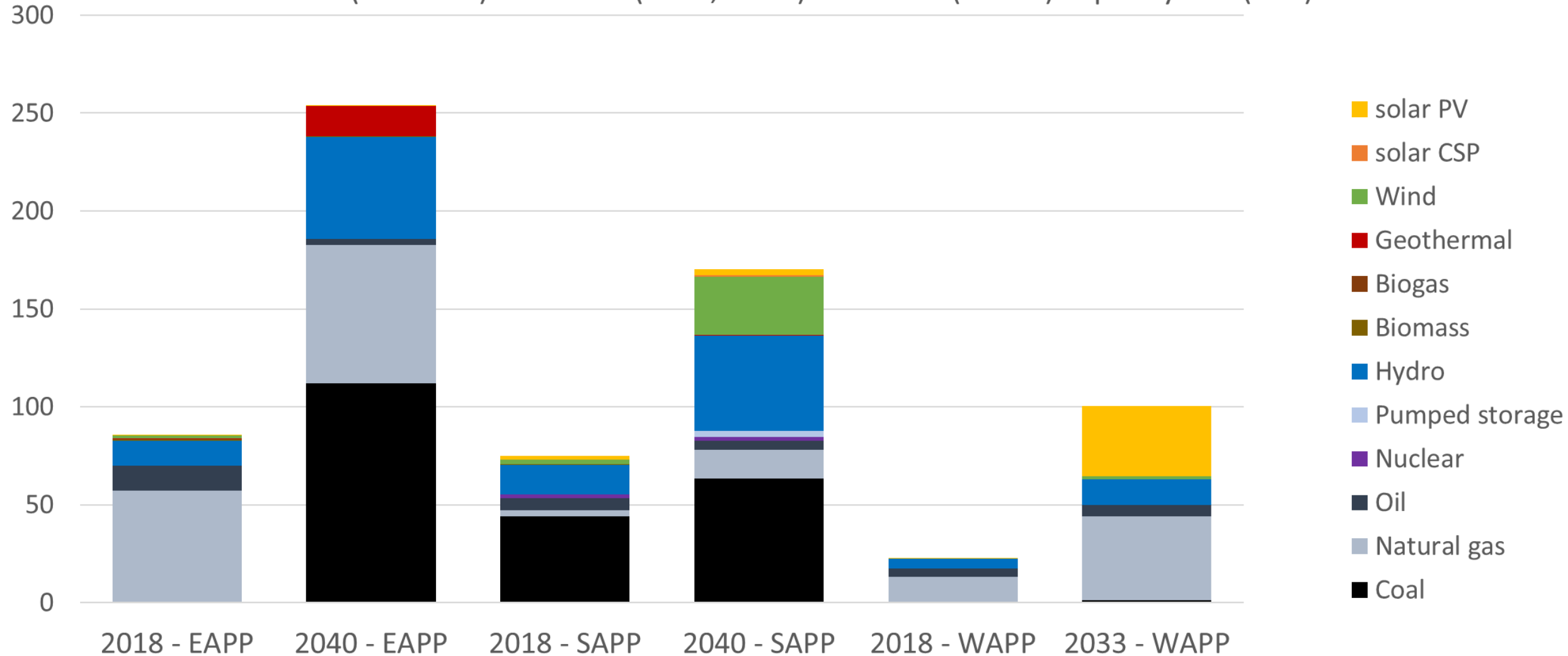


Planning governance/
Institutional capacity

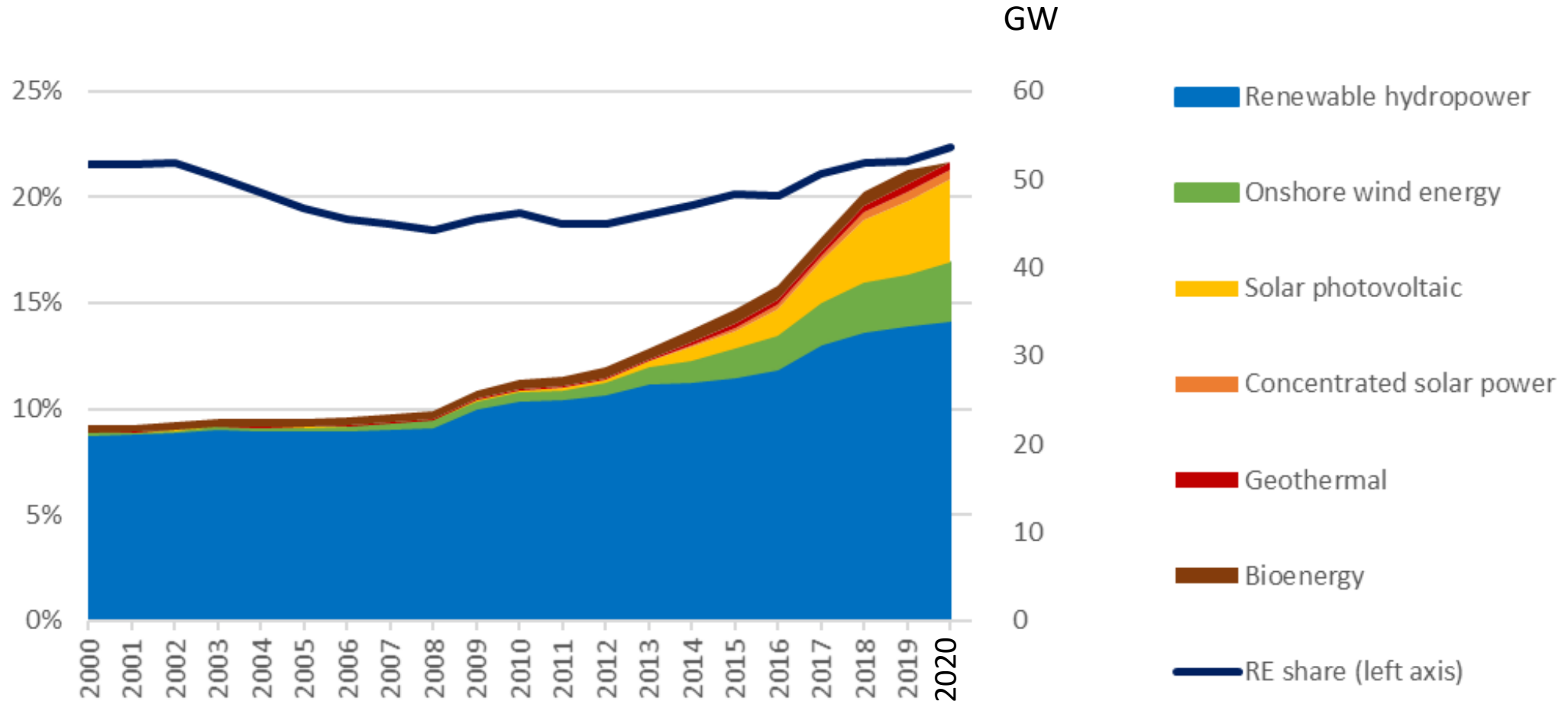
Regional power pool masterplans

GW

2018 (statistics) and 2040 (EAPP, SAPP) and 2033 (WAPP) capacity mix (GW)

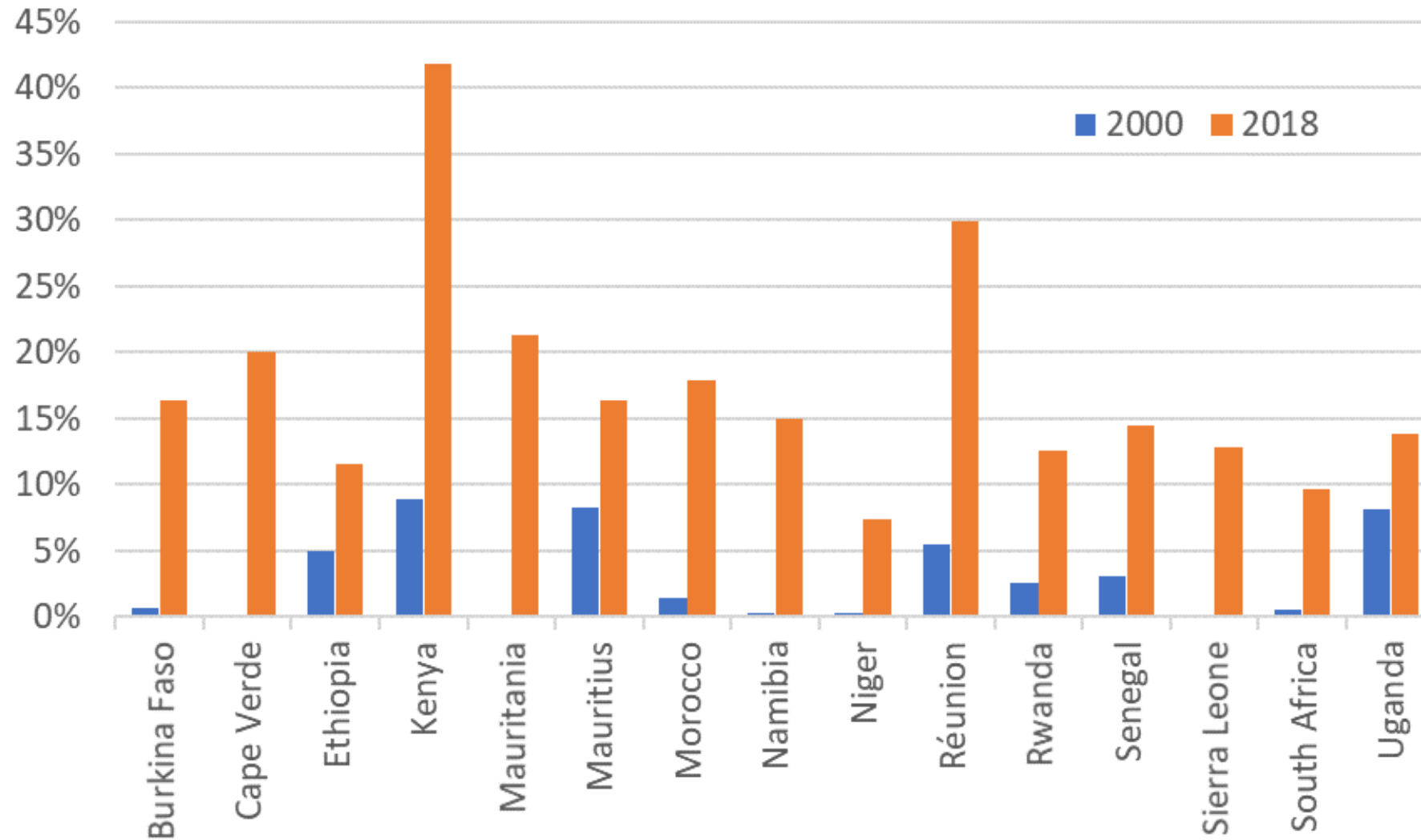


Renewable energy uptake in Africa – last 20 years



Source: IRENA (2021) Renewable Capacity Statistics

Fast adopters – share of non-hydro renewables in generation capacity



Source: IRENA (2020) Renewable Capacity Statistics 2020



IRENA's long-term power sector planning analysis

- » SPLAT model, with IAEA's MESSAGE framework
- » RE and power sector infrastructure database (calibrated according to the masterplans)
- » Analyze future power sector in 47 African countries
- » Tool transfer: built for long-term, sustainable, ownership of modelling and planning skill

Assumptions:

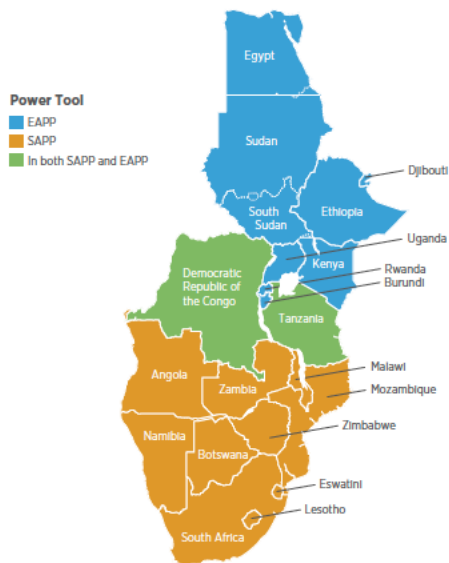


- Investment options: not just listed pipeline projects, but also VRE zones with high potential
- Costs: reducing CAPEX of renewables
- Enabling infrastructure: cross-border interconnectors

Scenarios:



- Varying generation targets for different technologies, e.g. VRE penetration targets
- Hydropower availability
- Availability of transmission infrastructure

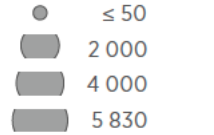


Excellent VRE supply locations

Capacity Factor (Solar PV)



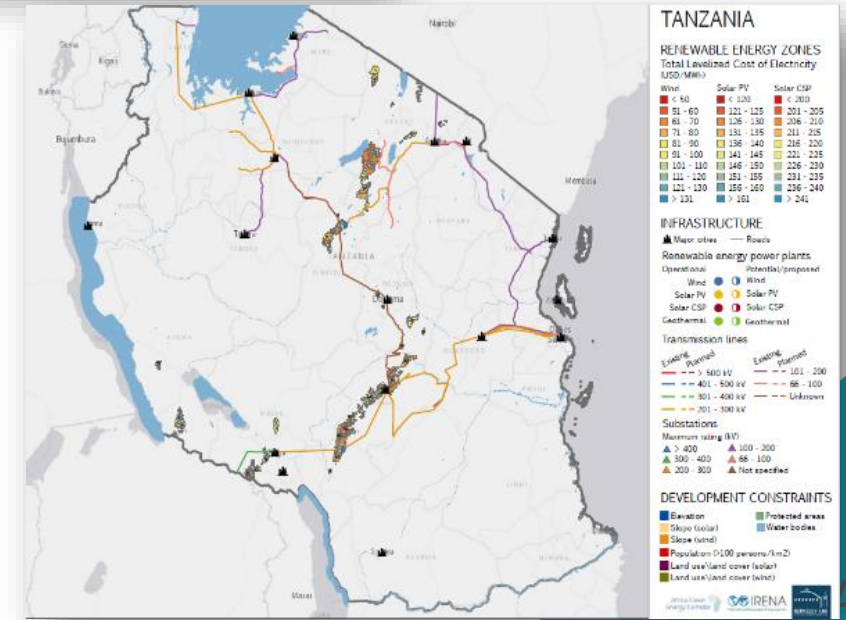
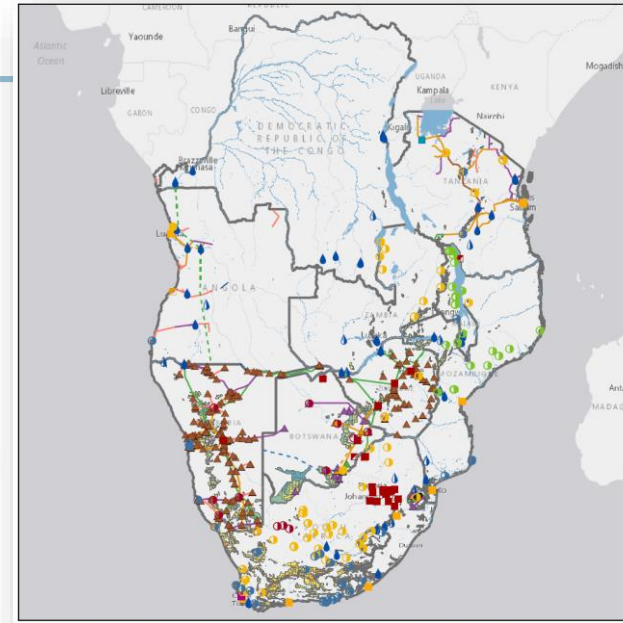
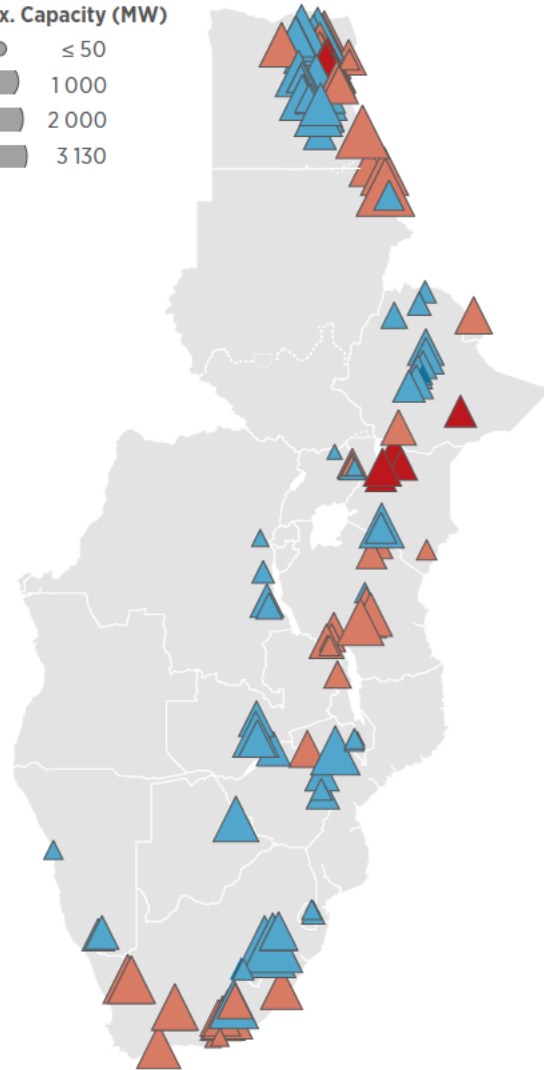
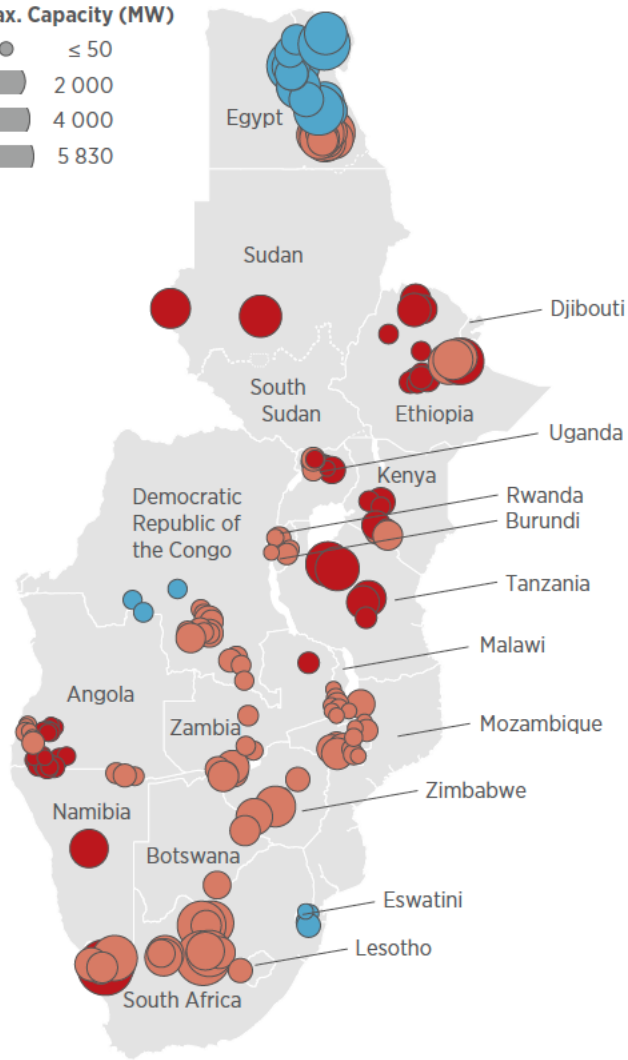
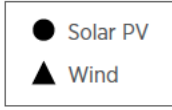
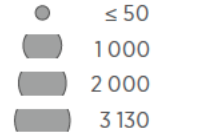
Max. Capacity (MW)



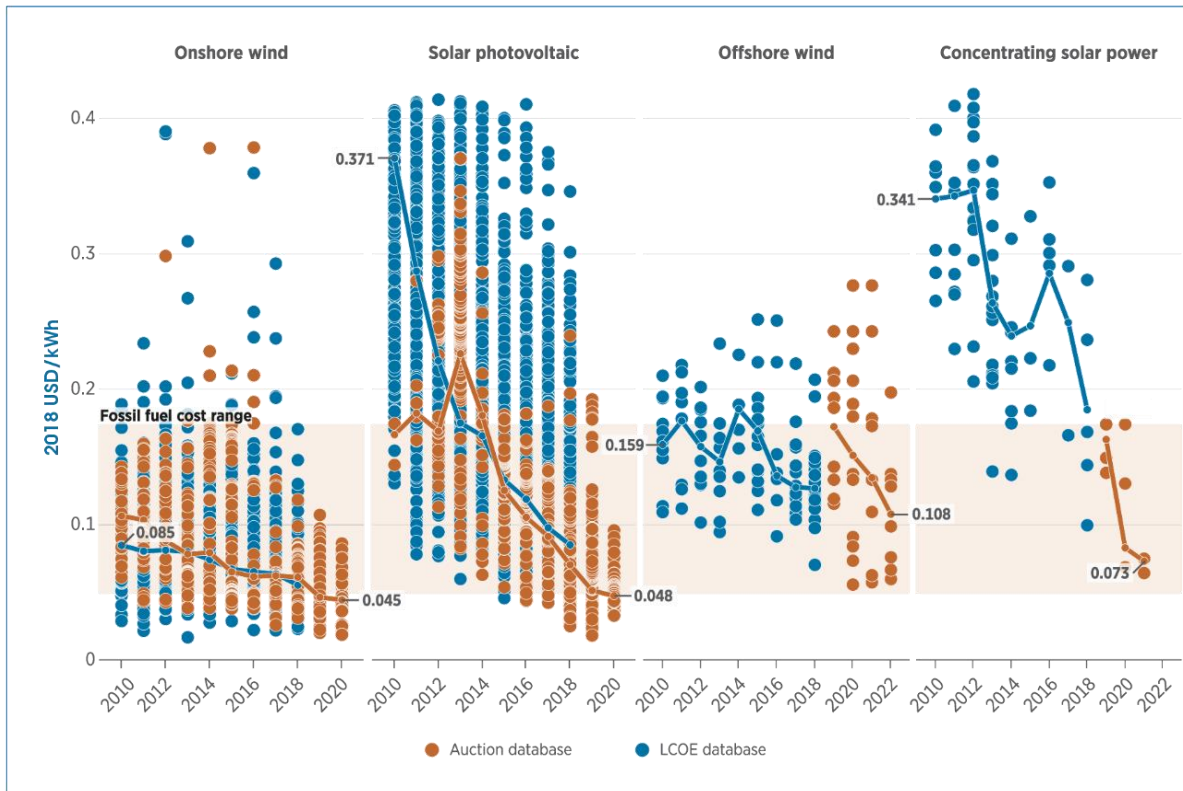
Capacity Factor (Wind)



Max. Capacity (MW)

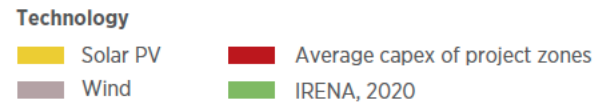
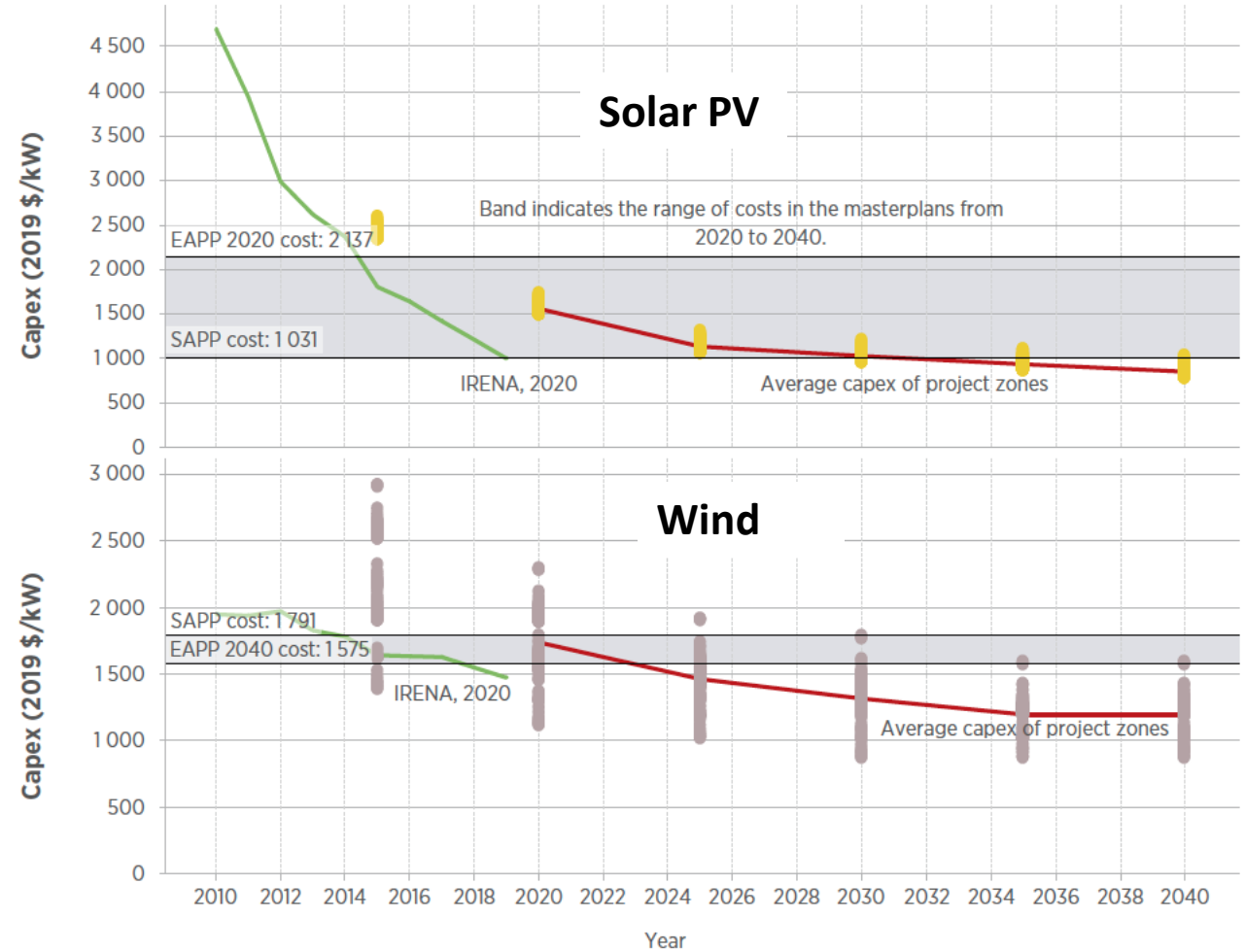


Global levelised cost of electricity significantly reduced in recent years

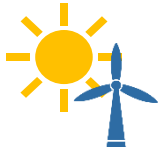


By project and global weighted-average

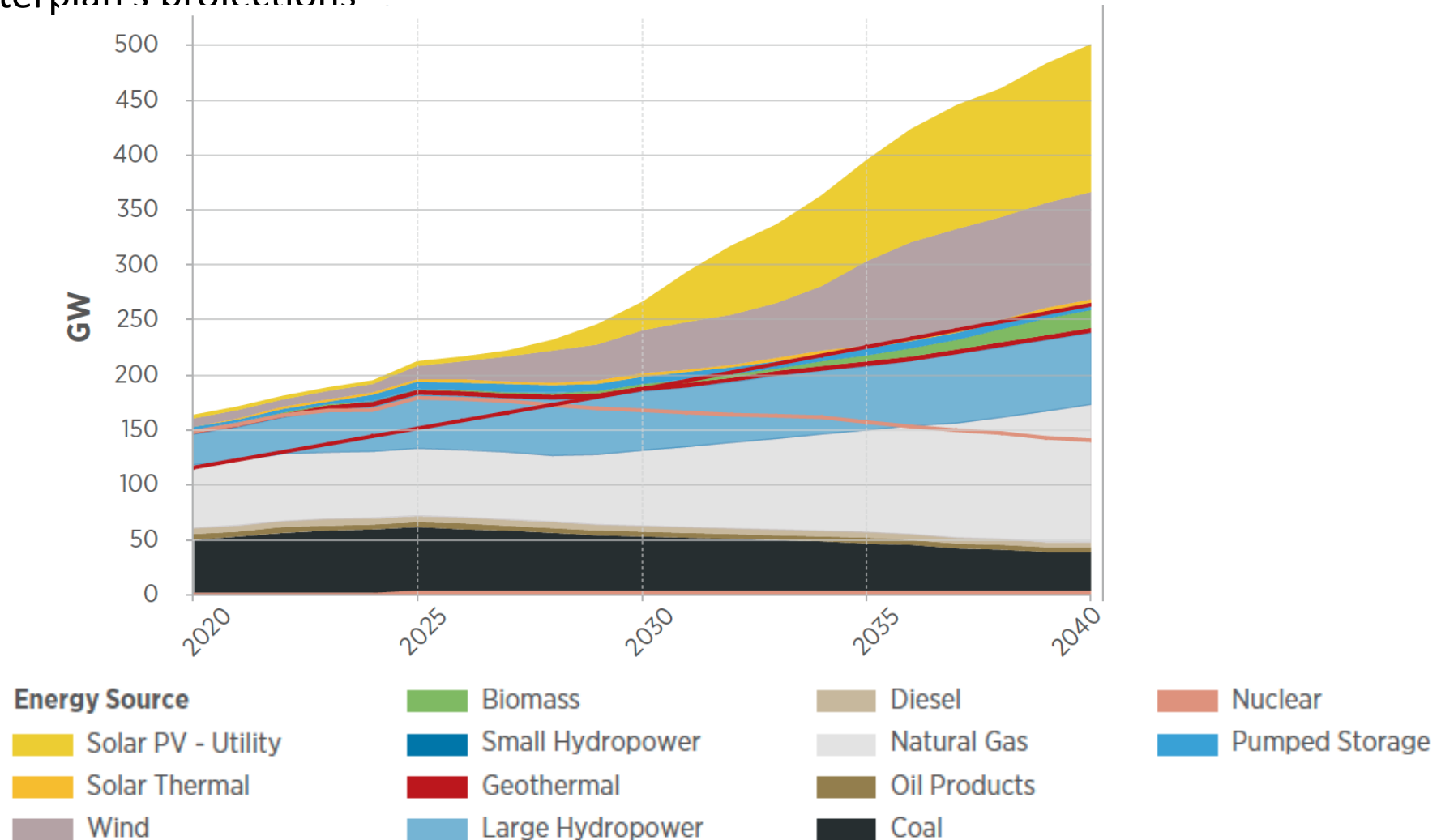
Source: IRENA (2020) Renewable Power Generation Costs in 2020



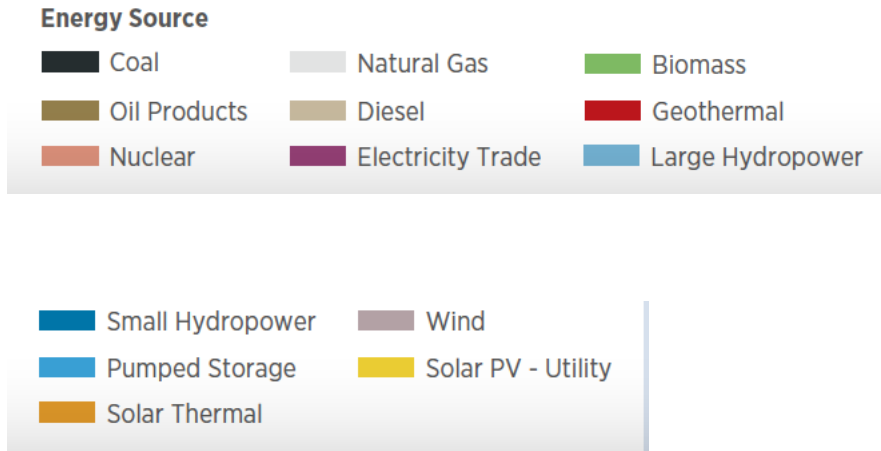
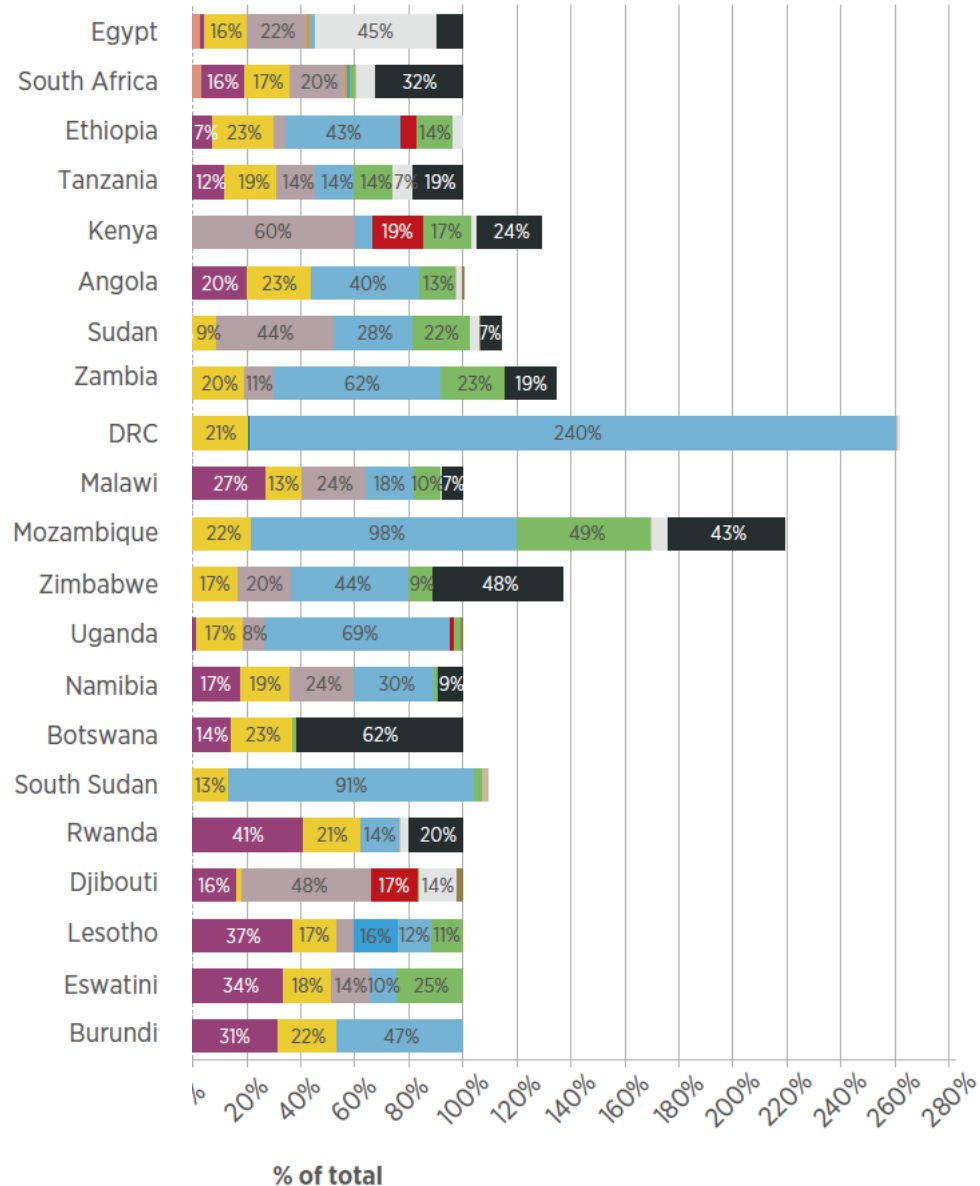
East and Southern Africa: Vast opportunities of VRE



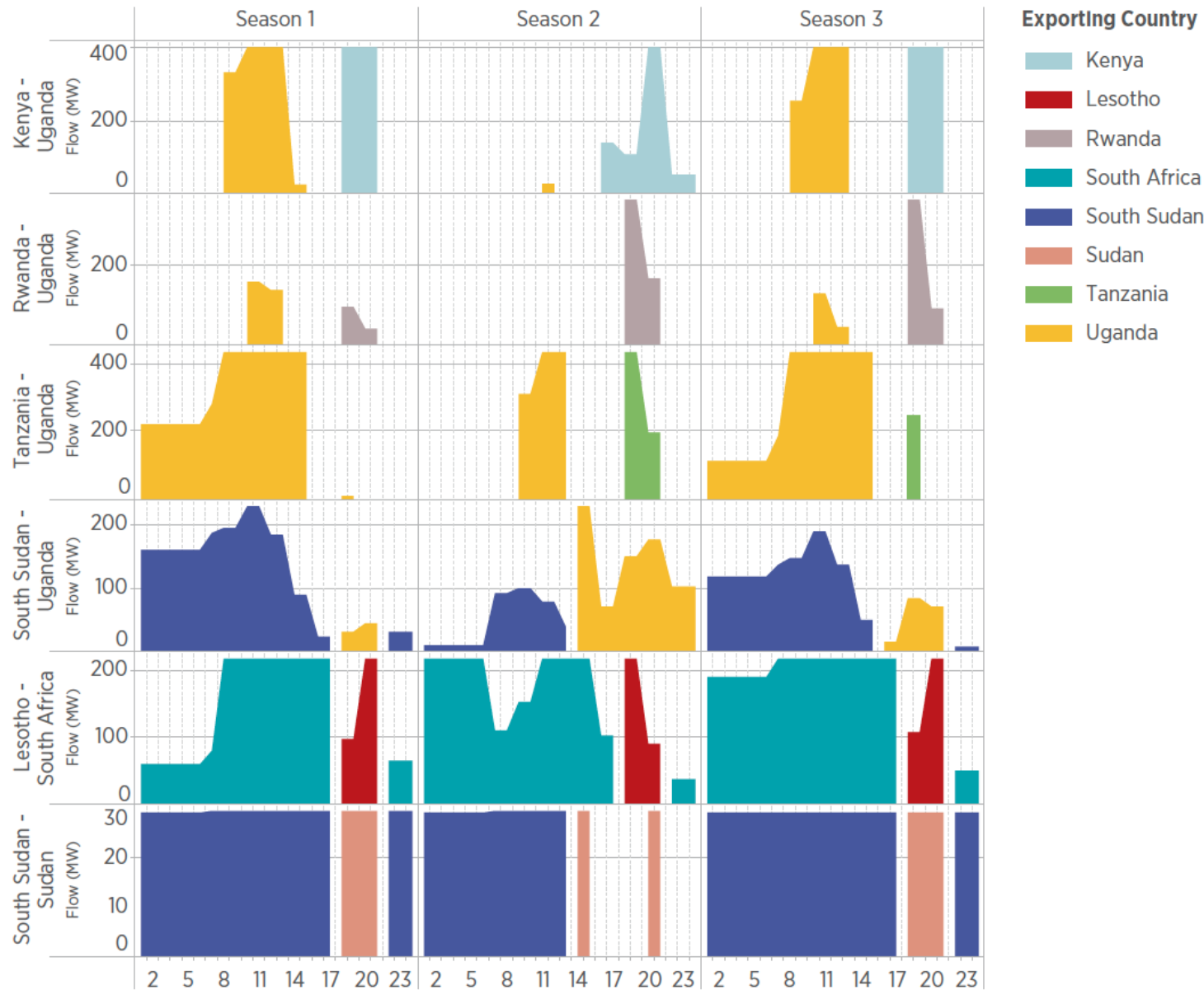
Power generation: 36% VRE penetration under the reference scenario, higher than masterplan's projections



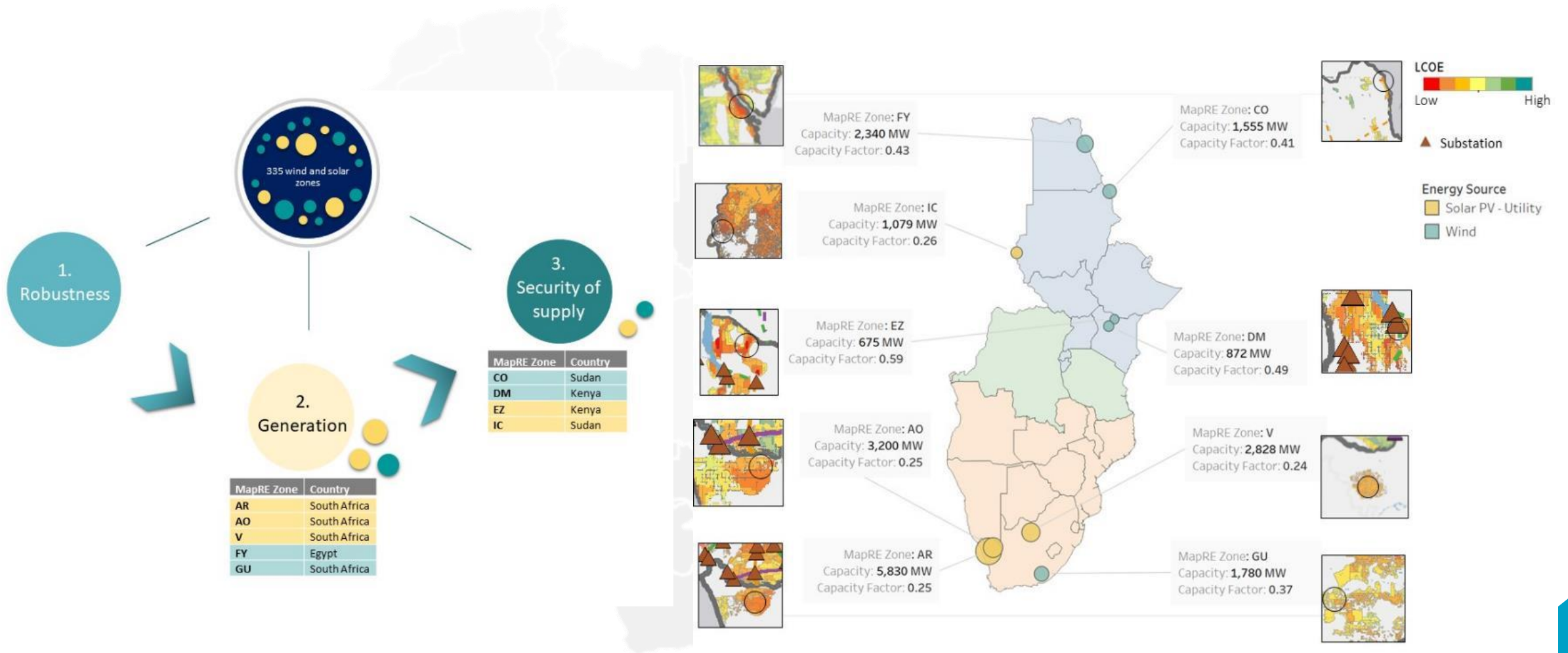
Diversified energy mix with renewable energy



Bi-directional electricity transfer across borders



High potential zones - examples



Masterplan development support programme with Eswatini



Regional Model Analysis and Planning Programme with ECREEE



Continental Power System Master Plan development with AUDA-NEPAD, and power pools

Thank you



Q & A
10 min

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