Insights offered by energy system models on SDG7 (and SDG6) – Africa focus

High-level Conference on Financing for Development and the Means of Implementation of the 2030 Agenda for Sustainable Development

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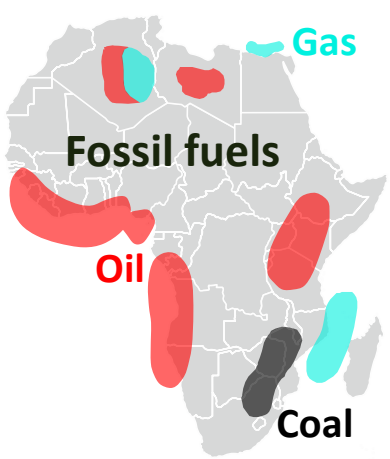
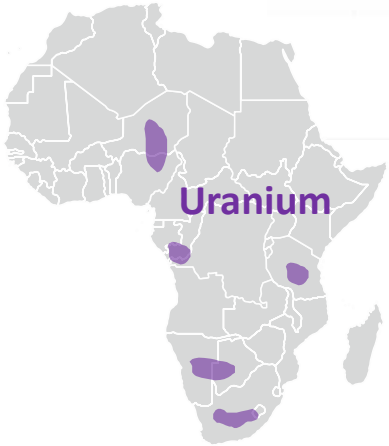
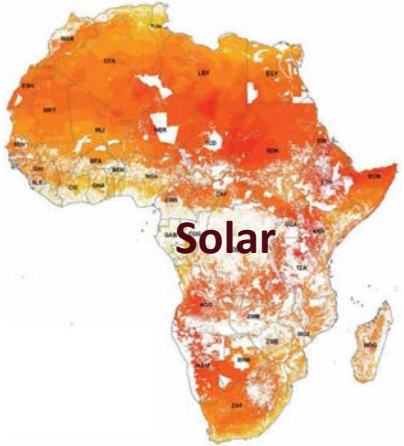
Africa’s energy resources

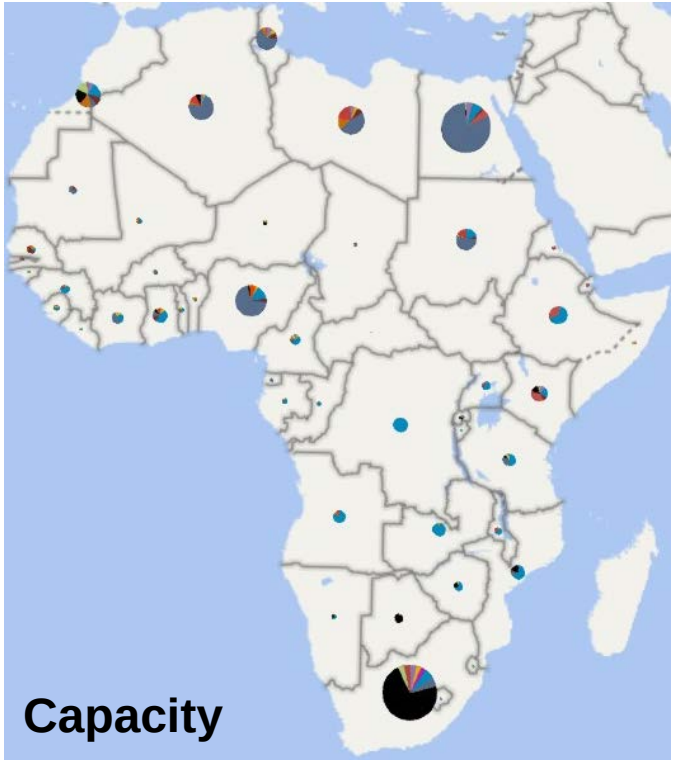




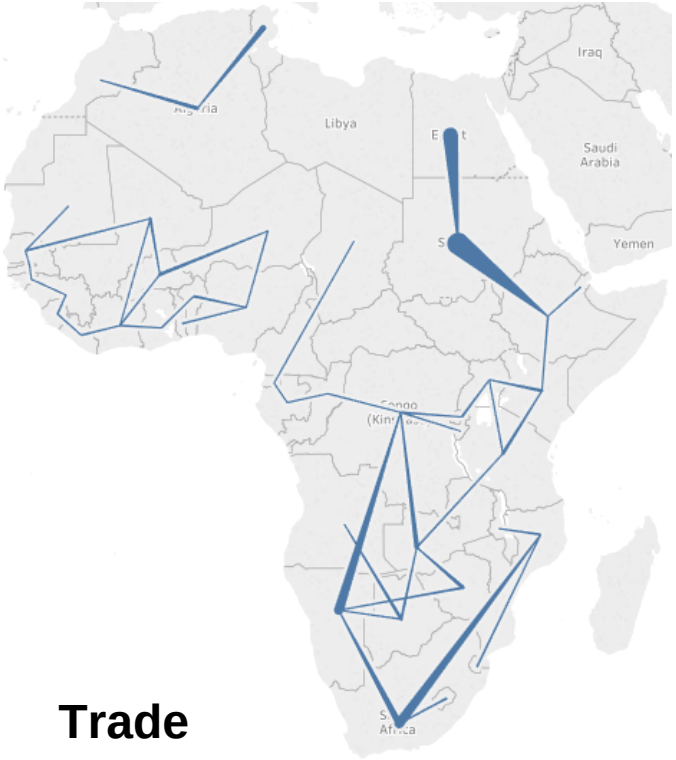


Sources: Rogner, 2016 (Adapted from IEA, 2014), IRENA, 2014

Electricity trade across Africa - 2020



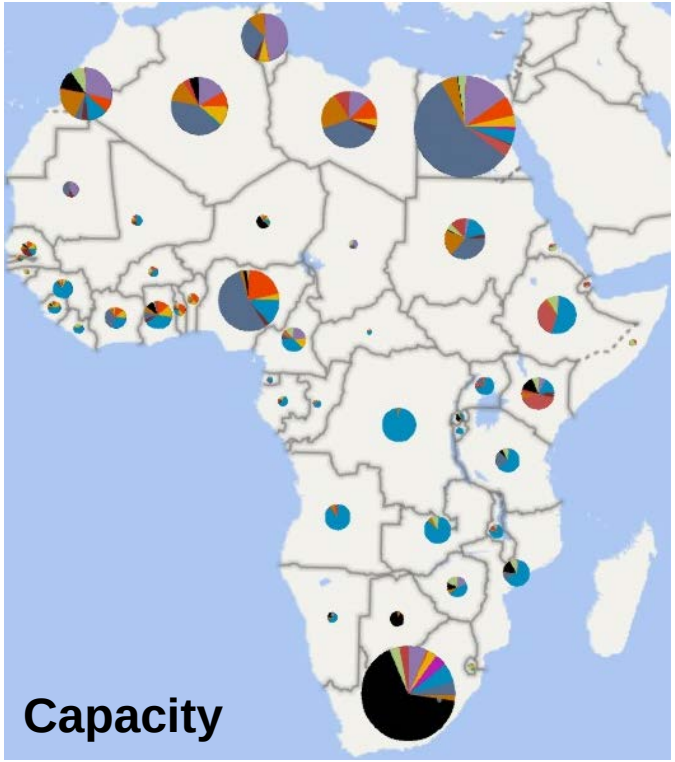
Capacity

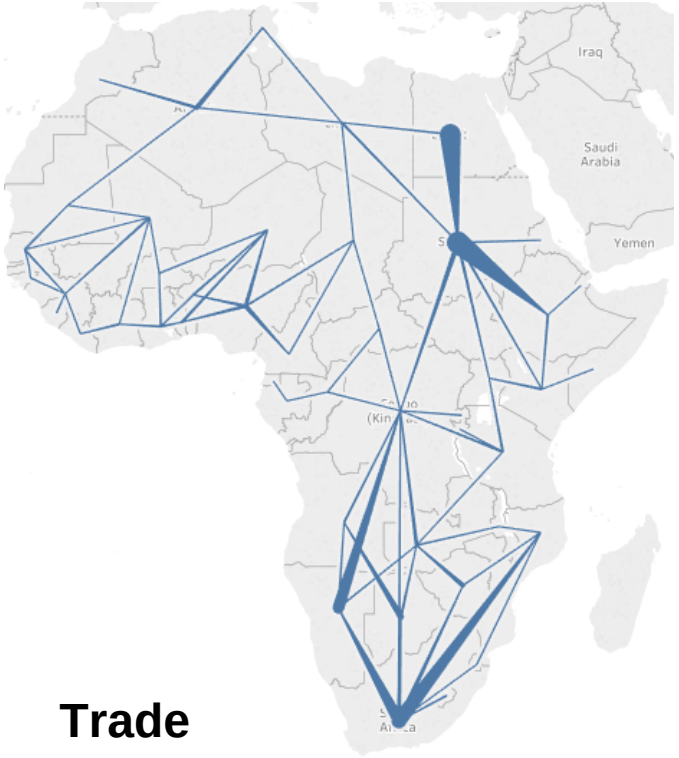


Trade

Coal | Diesel | HFO | Gas | Wind | Solar PV | Solar Thermal
Hydro | Geothermal | Nuclear | Biomass | Dist. Diesel | Dist. PV

Electricity trade across Africa - 2030





Coal | Diesel | HFO | Gas | Wind | Solar PV | Solar Thermal
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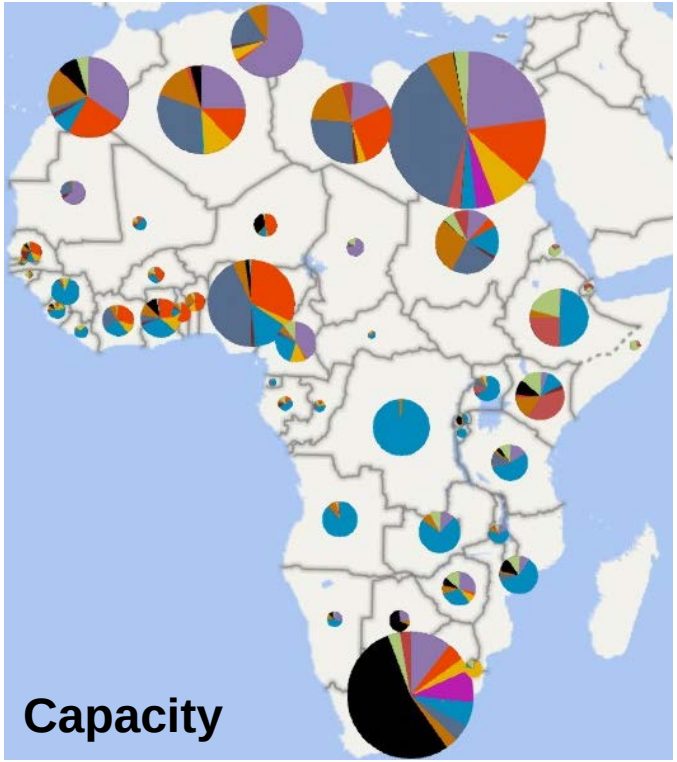
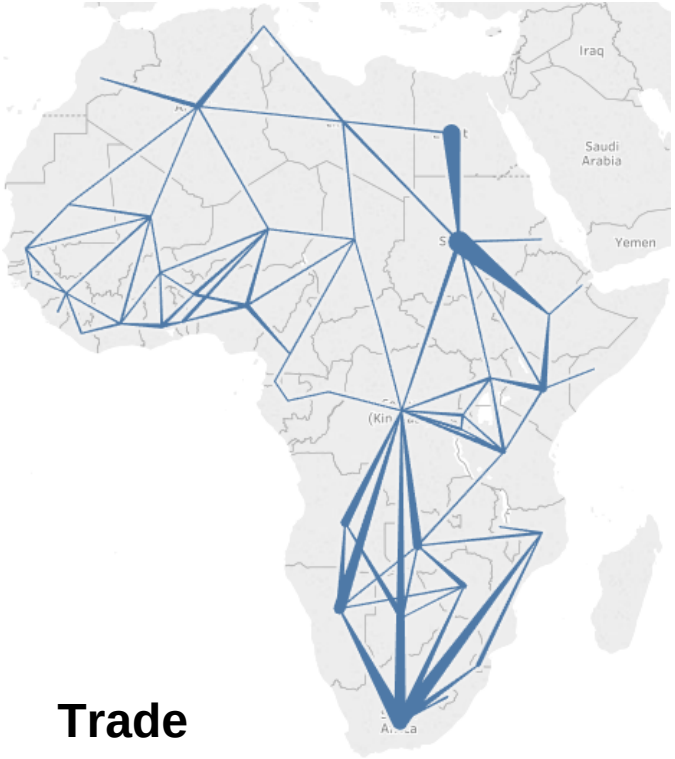
Electricity trade across Africa - 2040





Coal | Diesel | HFO | Gas | Wind | Solar PV | Solar Thermal
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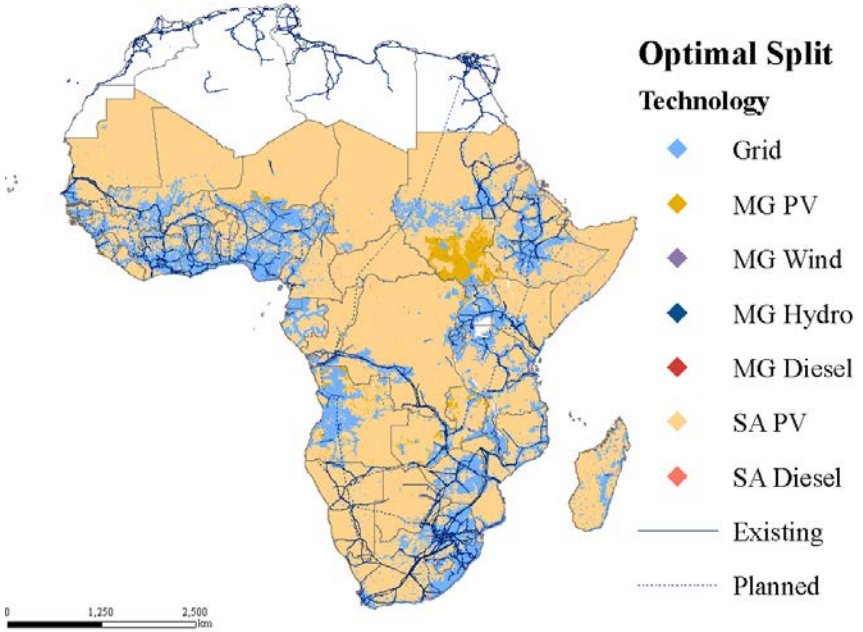
ONSSET – GIS Application, Sub Saharan Africa

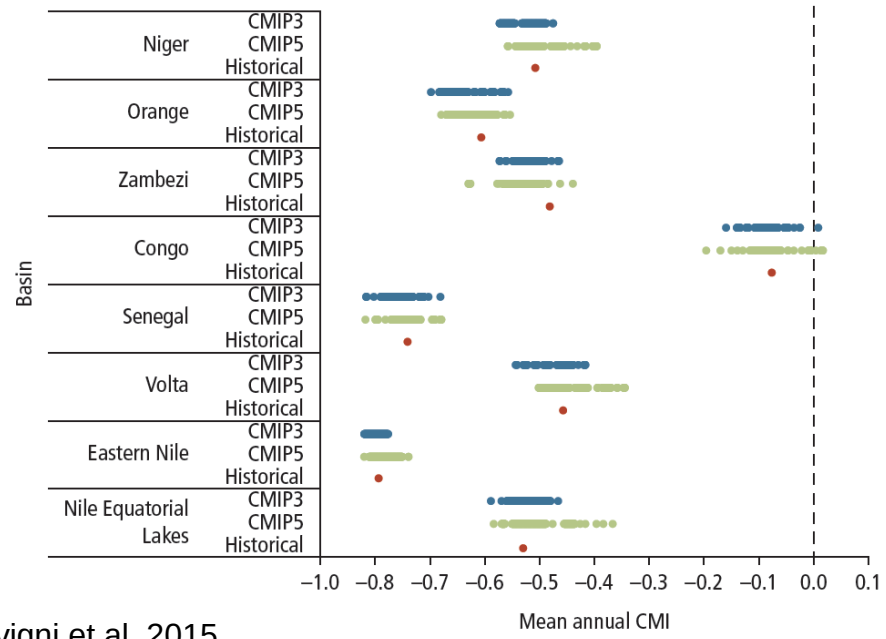
- Administrative boundaries
- Road network
- Nighttime light
- Power plants
- Mines
- Existing Grid Network
- Current population
- Projected population and Grid Network
- Wind power capacity factor
- Global Horizontal Irrandiance
- Mini and small hydropower potential
- Spatial cost of Diesel gensets
- Least cost Electrification option



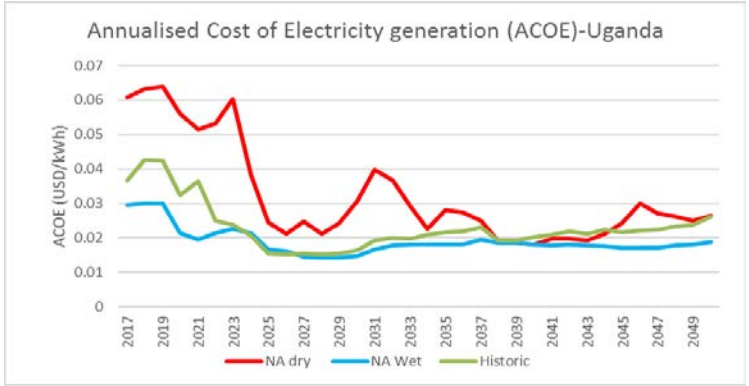
Source: Mentis, D. KTH, 2017

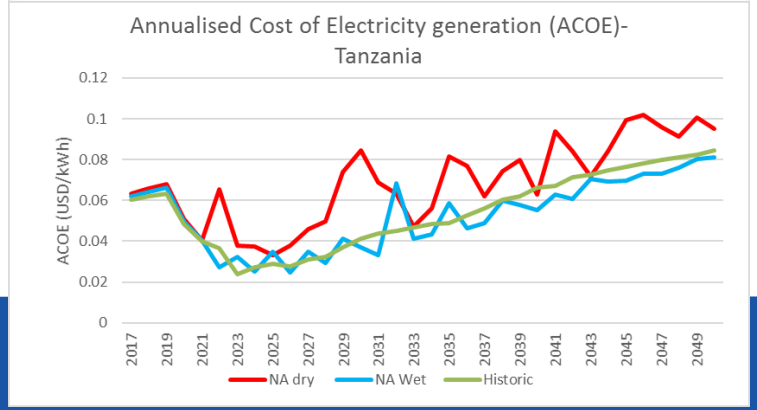
Why is the Changing Climate a concern?

Climate Moisture Index (CMI) variations under different models

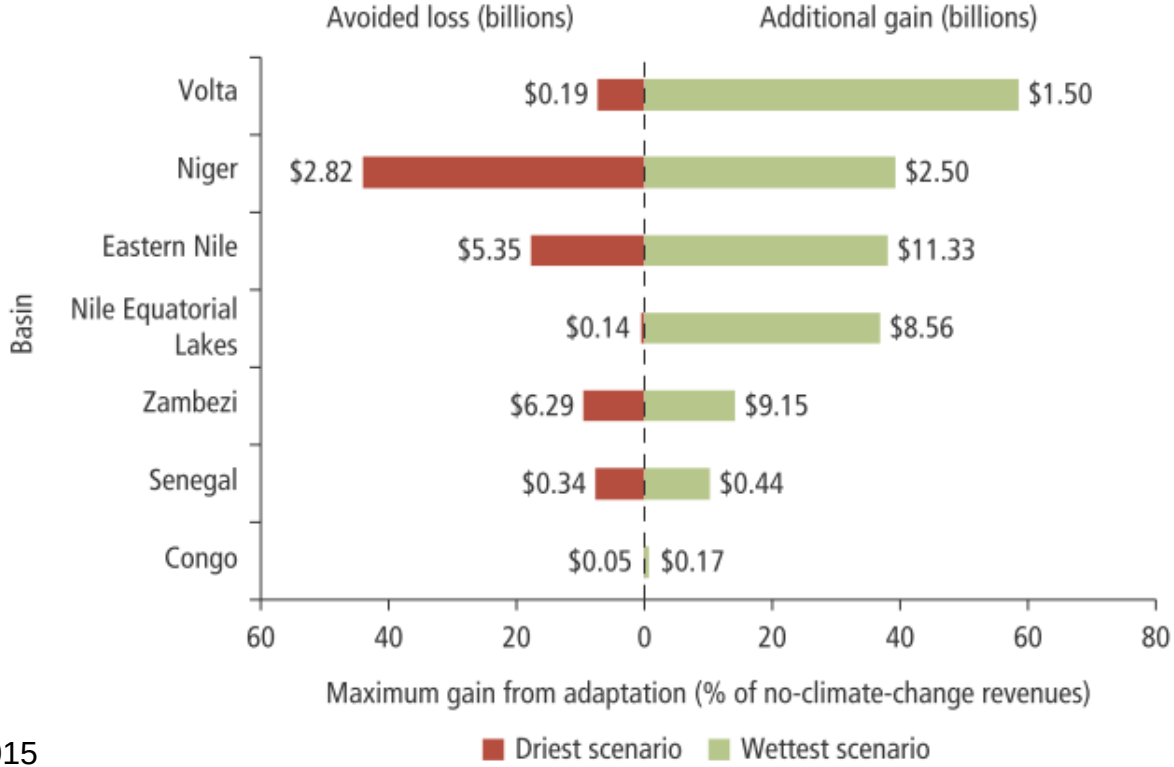


Source: Cervigni et al, 2015





Adaptation gains: Hydropower



Source: Cervigni et al, 2015

Way forward

- Enhancing collaboration to enable electricity trade; power pools can play an important role
- Identifying projects that maximize electricity access – coupling with productive uses
- Climate-proofing of infrastructure investment decisions
- Capacity building of national governments, regional institutions and academia