AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE DE DÉVELOPPEMENT

Sustainable Energy Fund for Africa

Unlocking the Grid of the Future: Accelerating Transmission Solutions

Just energy transition through regional transmission integration

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The importance of transmission investments in Africa

The IEA's 2022 Africa Energy Outlook estimates the investment required in transmission grid capacity at US$10 billion p.a. between 2026 and 2030 - more than 3 times the level between 2016 and 2020.

Regional integration is key to harnessing Africa's vast renewable energy potential and closing supply-demand gaps that cannot be addressed within national borders only.

Opportunity to develop innovative business models (PPPs) and financing mechanisms (climate finance), crucial for unlocking investments in RE-enabling grid capacity.

Grid investments that enable the integration of renewable energy generation could contribute to the resolution of pre-existing operational and financing bottlenecks.

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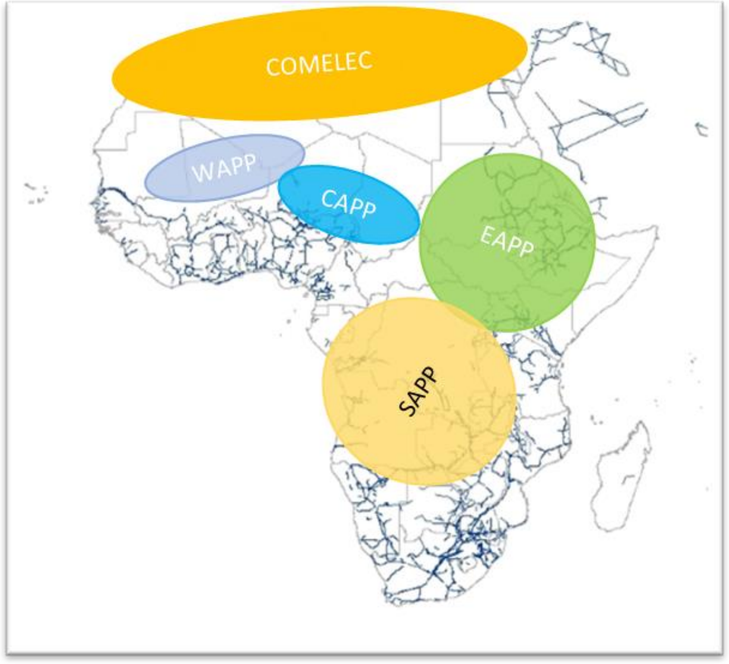
Power sector integration in Africa (Adapted, based on information sourced from AUDA NEPAD)

Current situation

Varying levels of integration based on regional power pool plans.

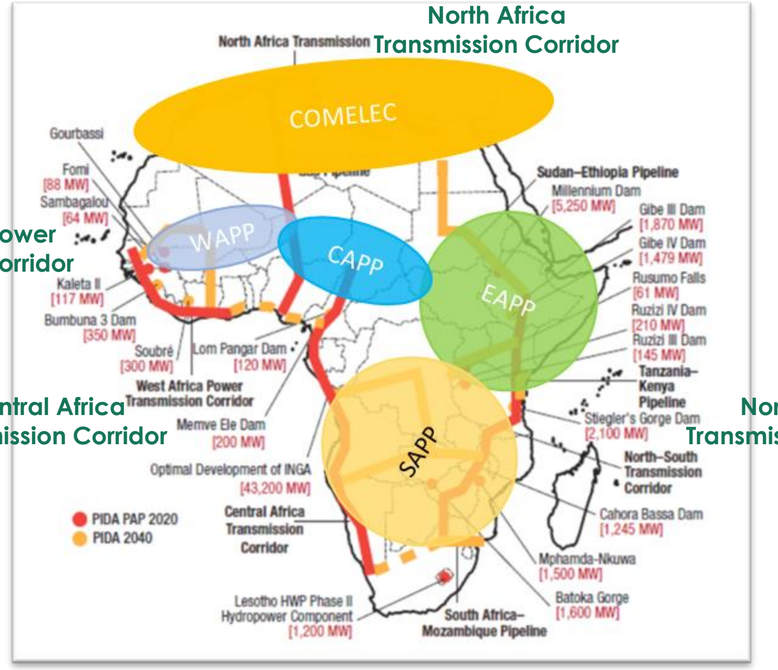


The "hard infrastructure" to enable the Africa Single Electricity Market (AfSEM)

Consideration for linkages with just energy transition/Net-Zero ambitions

Envisaged

Continental Power System Masterplan (CMP) based on priority transmission corridors.



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Transmission development: some key considerations

- **Long lead-times:** around 7 - 10 years to complete major expansion projects, due mainly to processes required to secure servitude/land-use rights and environmental permits.

- **Timing of generation capacity:** solar and (onshore) wind power plants typically take 2 – 5 years from planning to commercial operations.

- **Location of generation capacity:** renewable energy potential often greatest where transmission capacity is most constrained (*and demand is relatively low*).

- **Supply-chain constraints:** manufacturing capacity for cables and transformers; the supply of key inputs (e.g. copper; aluminium; steel; transformer oil; power electronics equipment, etc).

- **Financing:** project preparation and structuring; regulatory frameworks for transmission access and pricing (revenue models); electricity market structures; cost of capital, etc.

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Green Grids Initiative Africa (GGIA) process

- Africa-focused Working Group as part of the global Green Grids Initiative (GGI).
- Established under the auspices of the African Union (AU).
- Collaborative platform facilitating technical assistance, financing and political engagement.

- **Botswana - Zimbabwe**; **Zimbabwe-Zambia**; **Zambia - Namibia**.
- Initial studies done **before consideration for renewable energy potential in Botswana and Namibia**.
- Proof-of-concept; a project within a region.

- **Consolidated** review of **existing** feasibility and ESIA studies.
- **Integration of new solar and wind power generation** – in addition to hydropower.
- Potential to contribute to **regional decarbonisation and linkages with financing mechanisms**.

- Public – public only model
- Public – Private Partnerships
- Project economics
- Optimal capital structures
- Project finance or corporate loans
- Role of concessional finance – including **climate finance**

AfDB support through the Africa Energy Transition Catalyst (AETC) technical assistance programme.

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Concluding thoughts

- **Political support** is crucial for projects at continental, regional and country levels. This will require strong linkages between transmission investments and socio-economic development.
- **As a 'proof-of-concept' ZiZaBoNa is expected to contribute to the mobilisation of climate finance for transmission grids** - crucial for unlocking investments in RE-enabling grid capacity.
- **Green Grids Initiative Africa process is complementary** and builds on existing mechanisms.
- Innovations in technology, business models and finance are key enablers in the process.
- **Transmission capacity has become one of the major constraints inhibiting energy transition. Concerted effort is required to** build political support; enhance the investment environment; develop bankable projects; increase supply-chain capacity; and attract concessional finance at scale.
- **The Continental Power System Masterplan (CMP)**, overseen by AUDA-NEPAD, will ultimately determine continental transmission grid infrastructure investment requirements from Africa's perspective.

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