

CESA INFRASTRUCTURE INDABA

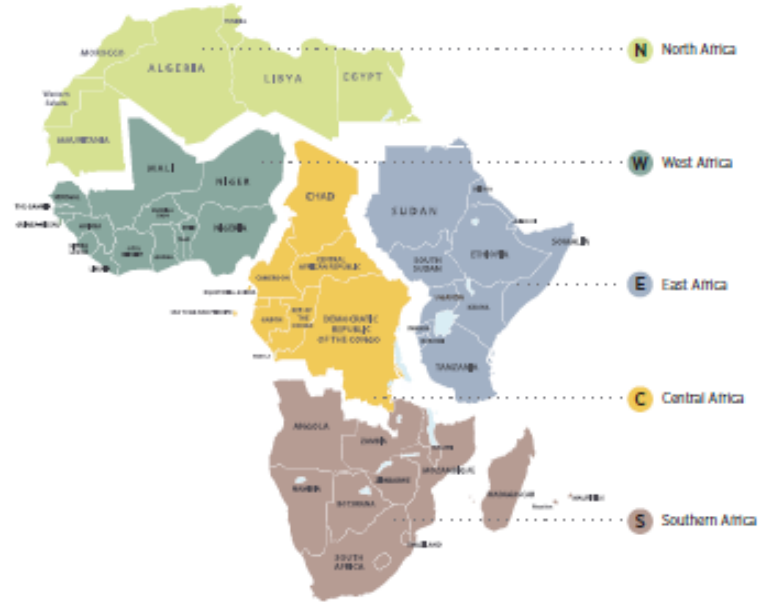
How can the consulting industry leverage on the new energy transition? Redefining our existing business models and services

Presentation by KT. Katyora

Aug 18, 2022



AFRICA ON A MAP

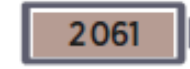
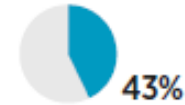
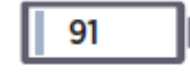
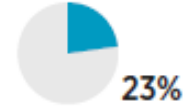
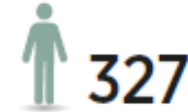
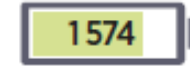


Population
(million people)

GDP billion/yr
(current international \$)

Access to electricity
(% population)

Electricity
(KWh per capita)



* Note: statistics refer to 2013, except for access to electricity which refers to 2012.

KEY DONORS & FINANCIERS

An estimated **\$70 billion** in annual renewable energy investments is required for Africa to meet its electrification targets by 2030, according to a report by the International Renewable Energy Agency (IRENA).

The annual investment requirements for transmission projects in Africa from 2015 to 2040 are estimated to be between \$3.2 billion and **\$4.3 billion USD** per year, compared to between **\$10.6 billion** and \$14.2 billion per year for distribution and between \$33.4 billion and \$63 billion per year for the whole power sector, though the region has only spent 19%-36% of annual power sector investment requirements over the past decade.



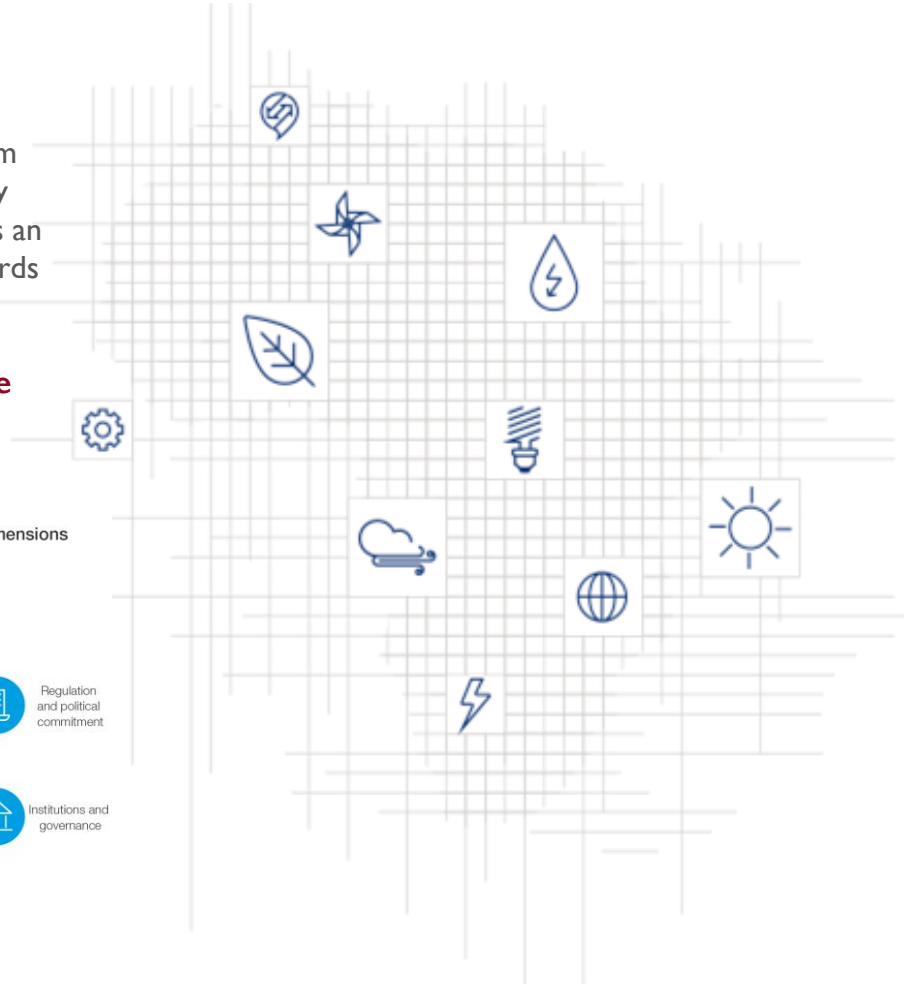
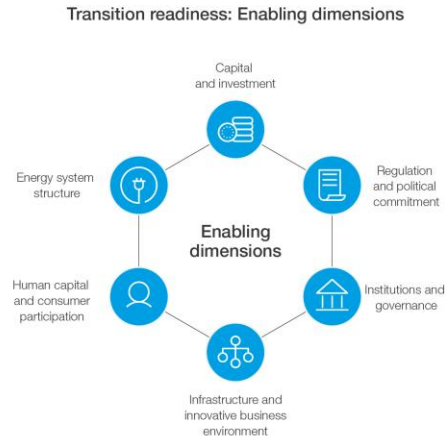
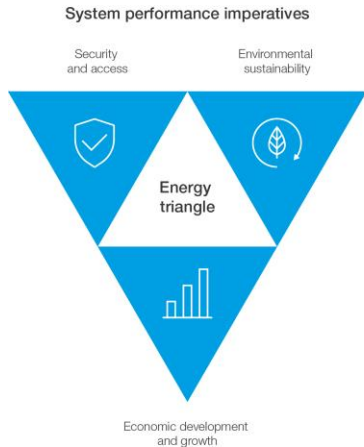


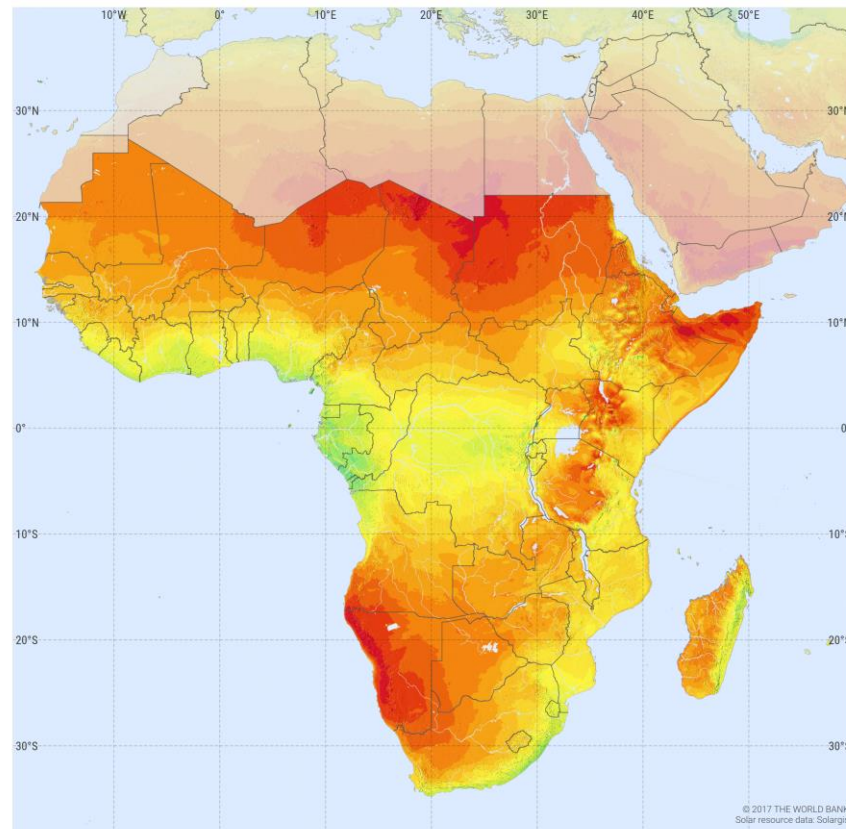
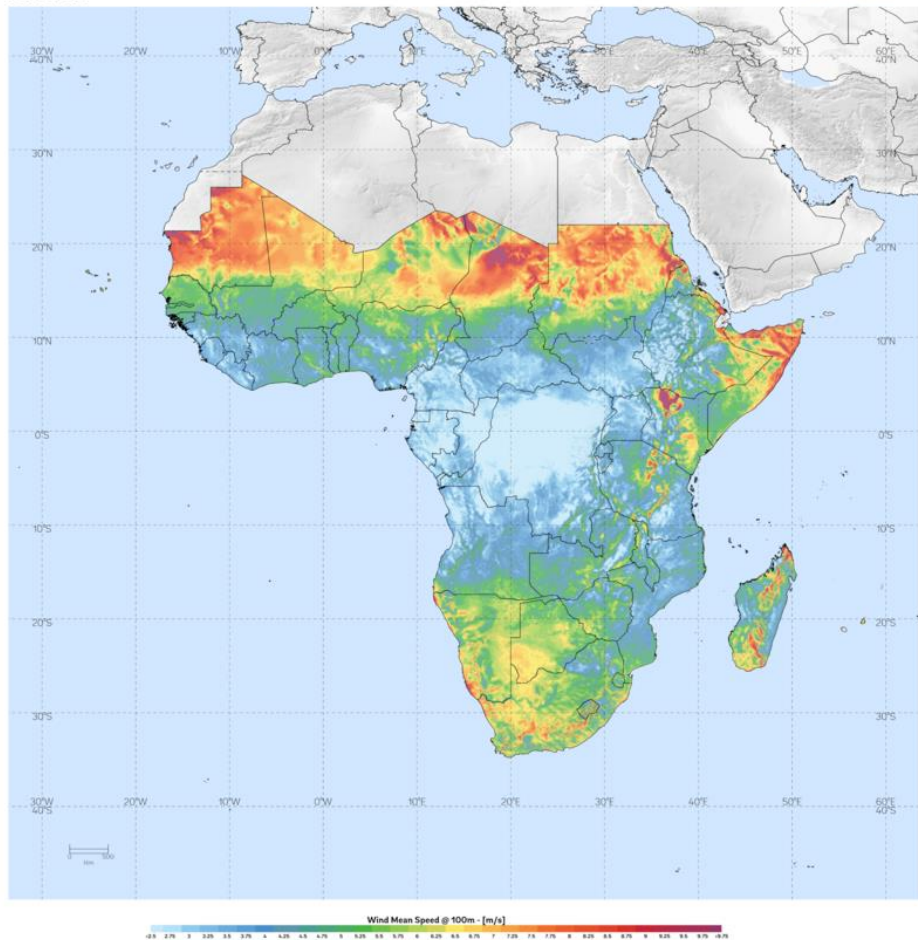
ENERGY TRANSITION

OPPORTUNITIES FOR CONSULTING COMPANIES

Energy Transition

The **energy transition** is a change of our energy system from **fossil fuel-based** sources to renewable energy sources. The World Economic Forum (WEF) defines an effective energy transition as: “A timely change towards a more **inclusive, sustainable, affordable and secure energy system** that provides solutions to global energy-related challenges, while creating **value** for business and society, without compromising the **balance of the energy triangle**”

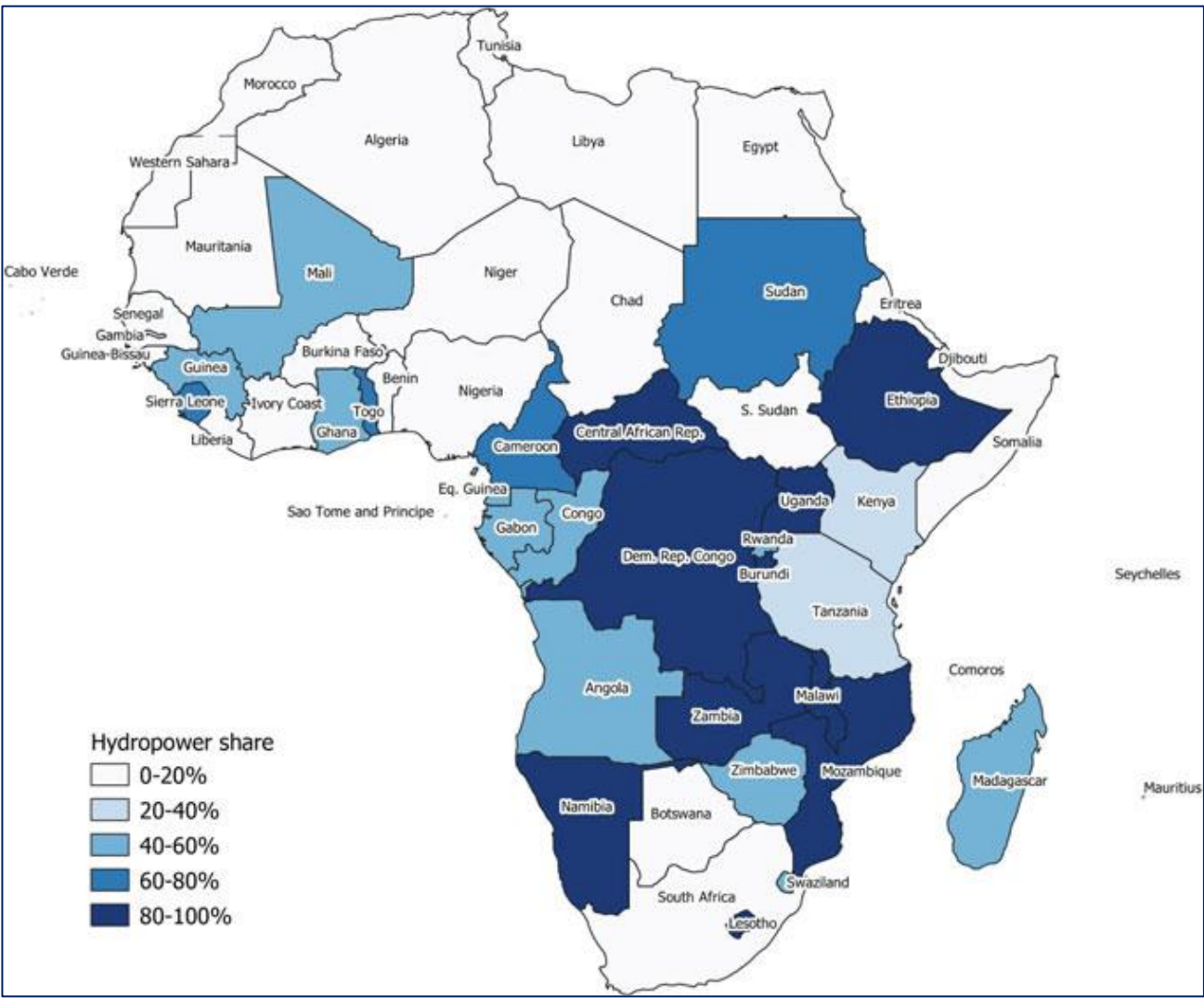




Long term average of GHI, period 1994-2015

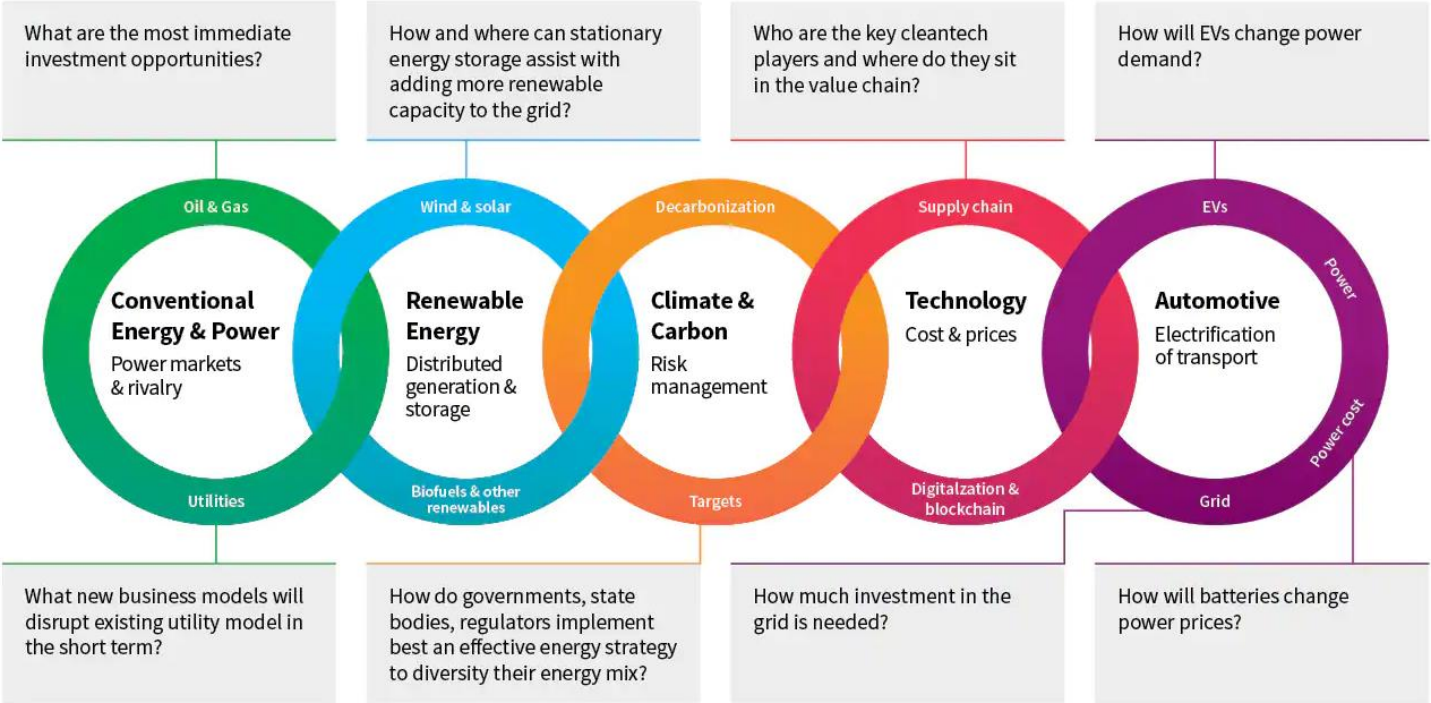
Daily totals:	4.2	4.6	5.0	5.4	5.8	6.2	6.6	7.0
Yearly totals:	1534	1680	1826	1972	2118	2264	2410	2556

kWh/m²



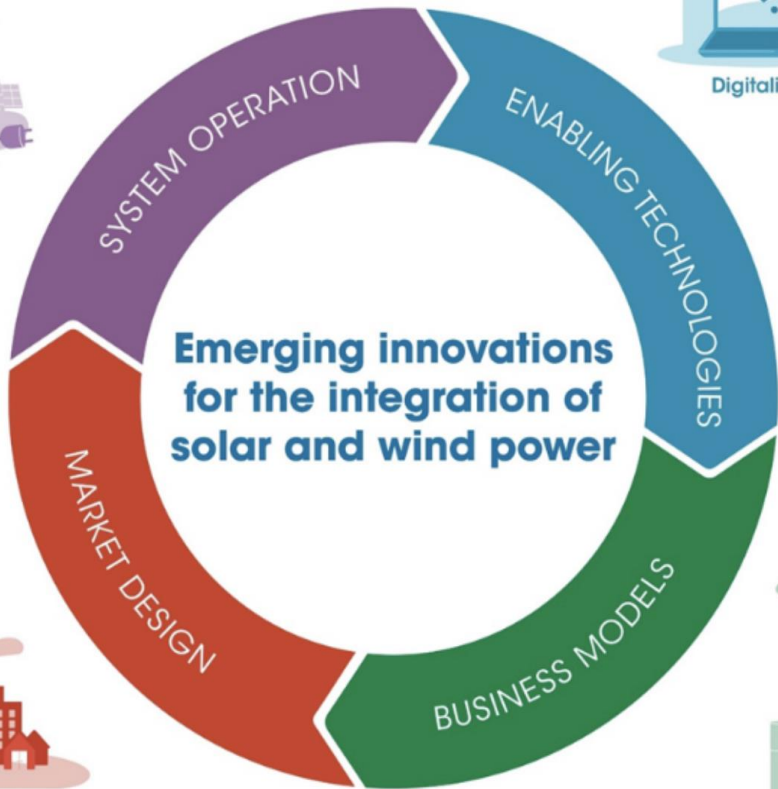
Country dependency on hydropower.
Source: International Energy Agency database

IMPORTANT QUESTIONS POSED BY THE ENERGY TRANSITION



Underlying business and valuation risks as markets, companies and investors adjust to changes in policy, technology and physical risk.





The four main pillars supporting increased flexibility of renewable energy transition Image: IRENA

RESKILLING FOR THE FUTURE

1

Understanding of the power systems networks, and including implementation of new energy technologies

2

Incorporation of sustainable and innovative designs with huge socio-economic impacts

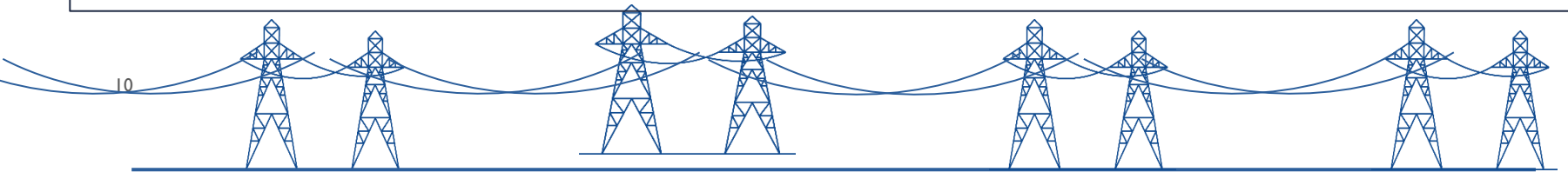
3

Understanding procurement and all operating guidelines within the different projects (transmission, generation etc.)

4

Ability to work in multi-disciplinary and cultural environments, not within companies but externally

Embracing the role of an **'Advisor'** as compared to the traditional **'Consultant'**



A young girl with dark skin, wearing a blue and white checkered school uniform, is sitting at a desk in a dark room. She is looking down at an open book on the desk, which is illuminated by a bright lamp. The lamp is a simple, round, metallic-looking lamp with a green base. The girl's expression is focused and serious. The background is almost entirely black, with only the light from the lamp illuminating the scene.

A LOOK INTO THE FUTURE

SOUTHERN AFRICA

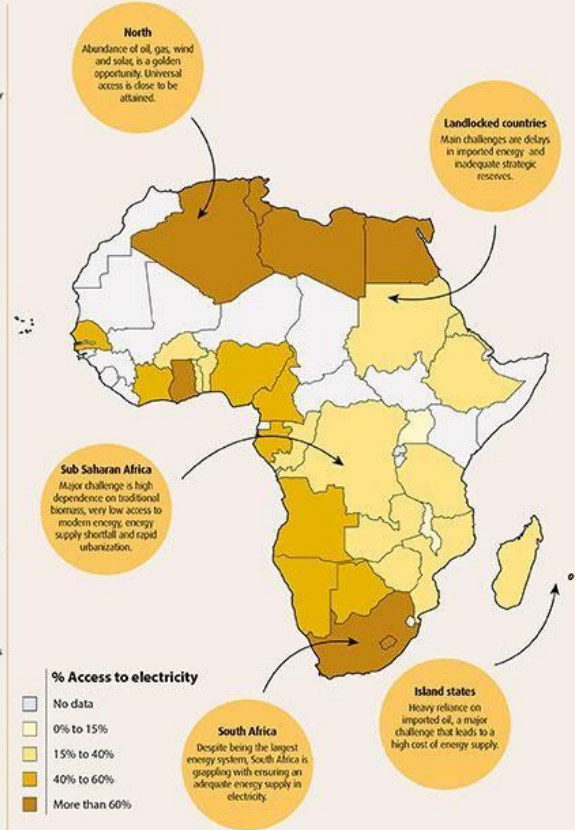
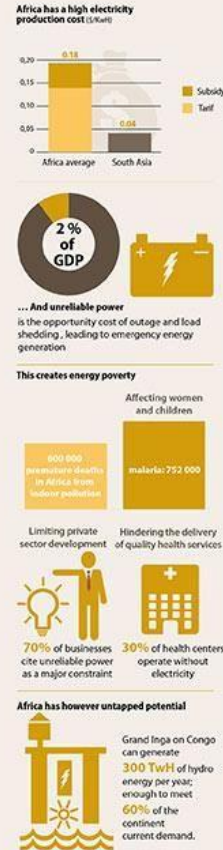
THE FUTURE OF THE SECTOR

Reform and further development within the sector will include:

- Establishment of national energy plans and renewable energy targets
- Fostering stable and long-term market development while adapting to changing technological and market conditions
- Implementation of deployment policies as part of a broad range of cross-cutting policy instruments
- Increase of sources of financing to support expansion in capacity, transmission and distribution infrastructure through regional cooperation
- Expanding regional grid integration and power trade through regional planning, harmonization of standards, procedures, equitable commercial terms and coordination at power pool levels
- Support the energy transition both on a regional and continental level

Africa energy potential challenges and opportunities

Africa has enormous clean energy potential but is faced with big challenges in providing its people with energy access. Over 620 million people in Sub-Saharan Africa—60% of the population—are without access to electricity.



ZOOMING IN ON SOUTHERN AFRICA



Proposed/Planned Transmission Projects Funding Source/Institution



Project Implementation

Mozambique-Malawi

Feasibility Stage/Project Preparation

ZIZABONA

MOZISA

BOSA

ZTK

ANNA

Kolwezi-Solwezi

STE II (Mozambique)

TTP (Mozambique)

Mozambique-Zambia

Huambo-Lubango (Angola)



Pre-Feasibility Stage

Mozambique-Tanzania

Botswana-Namibia

Angola-Zambia

DRC-Angola

Zambia-Malawi

South Africa-Namibia

Tanzania-Malawi

Project Implementation

IDA/Norway

Feasibility Stage/Project Preparation

NEPAD IPPF/AfDB

DBSA (SADC PPDF)

DBSA (IIPSA)

IDA/EU (Zambia-Tanzania)

DBSA (SADC PPDF) NORAD/SIDA

NEPAD IPPF

World Bank

DBSA (SADC PPDF)

NEPAD IPPF/USIDA/IDA

AfDB/USAID

Pre-Feasibility Stage

NEPAD IPPF

-

World Bank AREP

-

-

-

-

Project Status

Project Implementation

Construction funded

Feasibility Stage/Project Preparation

Studies completed looking for implementation funding

Feasibility studies

Feasibility studies

Feasibility studies and part complete

Feasibility studies

Feasibility studies completed

Contracts signed, FAT currently underway and including shipment of equipment

2nd Alaska-Sherwood) Feasibility studies

Feasibility studies

PIU operationalization, Loan agreement signed, Owner's Engineer appointed

Pre-Feasibility Stage

Concept stage

Concept Stage

Feasibility studies

Feasibility studies

Concept stage

Concept stage

Concept stage

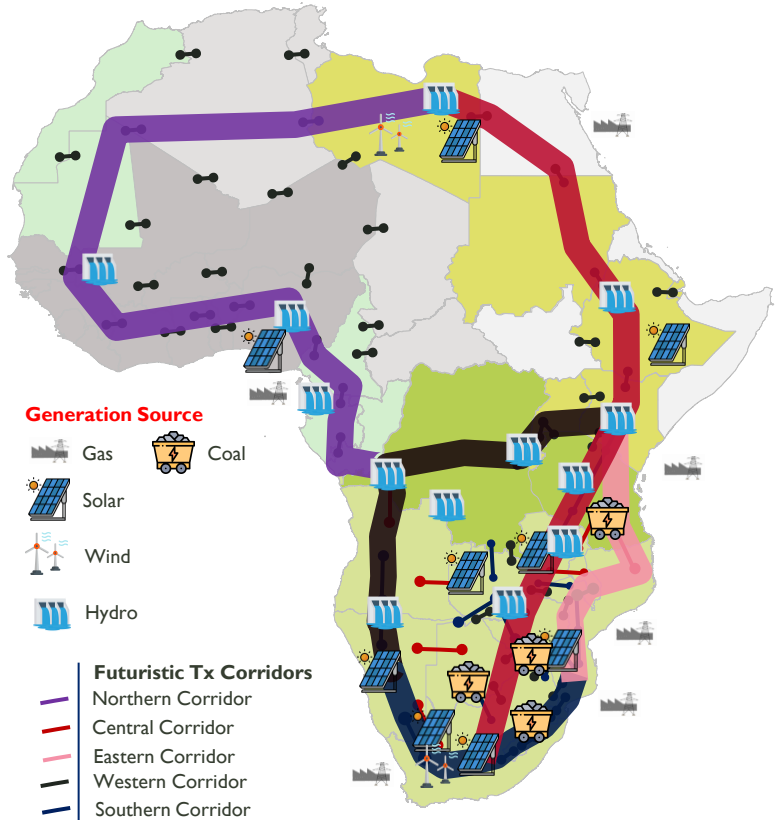
Benefits of an Interconnected Region:

- Enables choice
- Redundant and allows for new connections
- Deals with intermittence and improves Tx losses
- Increase in spot market trade
- Reduces load shedding and facilitates economic growth
- Promotes industrialization within the region

Rational for strong a interconnected system

An accessible, reliable, and redundant interconnected transmission system is a fundamental enabler for growth, both on the supply and demand sides. This will be one of the key drivers of a successful energy transition.

CAPE-CAIRO: A FEASIBLE FUTURE FOR THE CONTINENT



Existing Transmission Interconnectors



Regional Proposed/Planned Transmission Projects



Project Implementation

Mozambique-Malawi

Feasibility Stage/Project Preparation

ZIZABONA

MOZISA

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Pre-Feasibility Stage

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Botswana-Namibia

Angola-Zambia

DRC-Angola

Zambia-Malawi

South Africa-Namibia

Tanzania-Malawi



Sub Saharan Power Pools

Southern Africa Power Pool

East Africa Power Pool

EA & SA Power Pool

West Africa Power Pool

Central Africa Power Pool

Central Africa Power Pool

Central Africa Power Pool

Central Africa Power Pool

+/- USD 100 Billion within the next 5 years

10 – 20 % on engineering services

As engineers, our role in this new transition is going to be important, with this new future comes new opportunities and new services which the continent can benefit from

— Thank you!

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