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# How will the role of gas, IPPs, and other energy sector players evolve as the energy transition accelerates in Africa?

Presenter: Erastus Ndungu  
Senior Manager - Business Development  
GE Gas Power - SSA

# About GE Gas Power



GE's Value proposition is built on key pillars, which differentiate it within the SSA region

**Early-Stage Project Development**

**Broad Regional Coverage**  
(Localized)

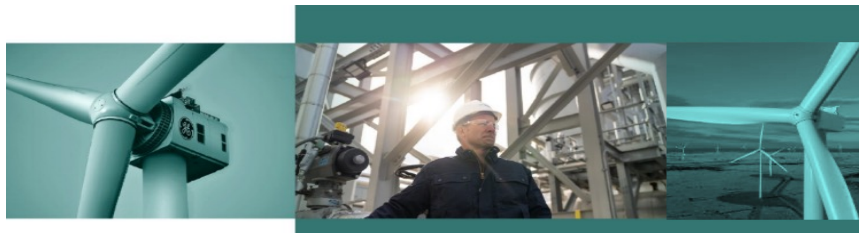
**Strong Industry Relationships**  
(Fuel Suppliers, Lenders, EPC's)

**Global**

**Sub Saharan Africa**

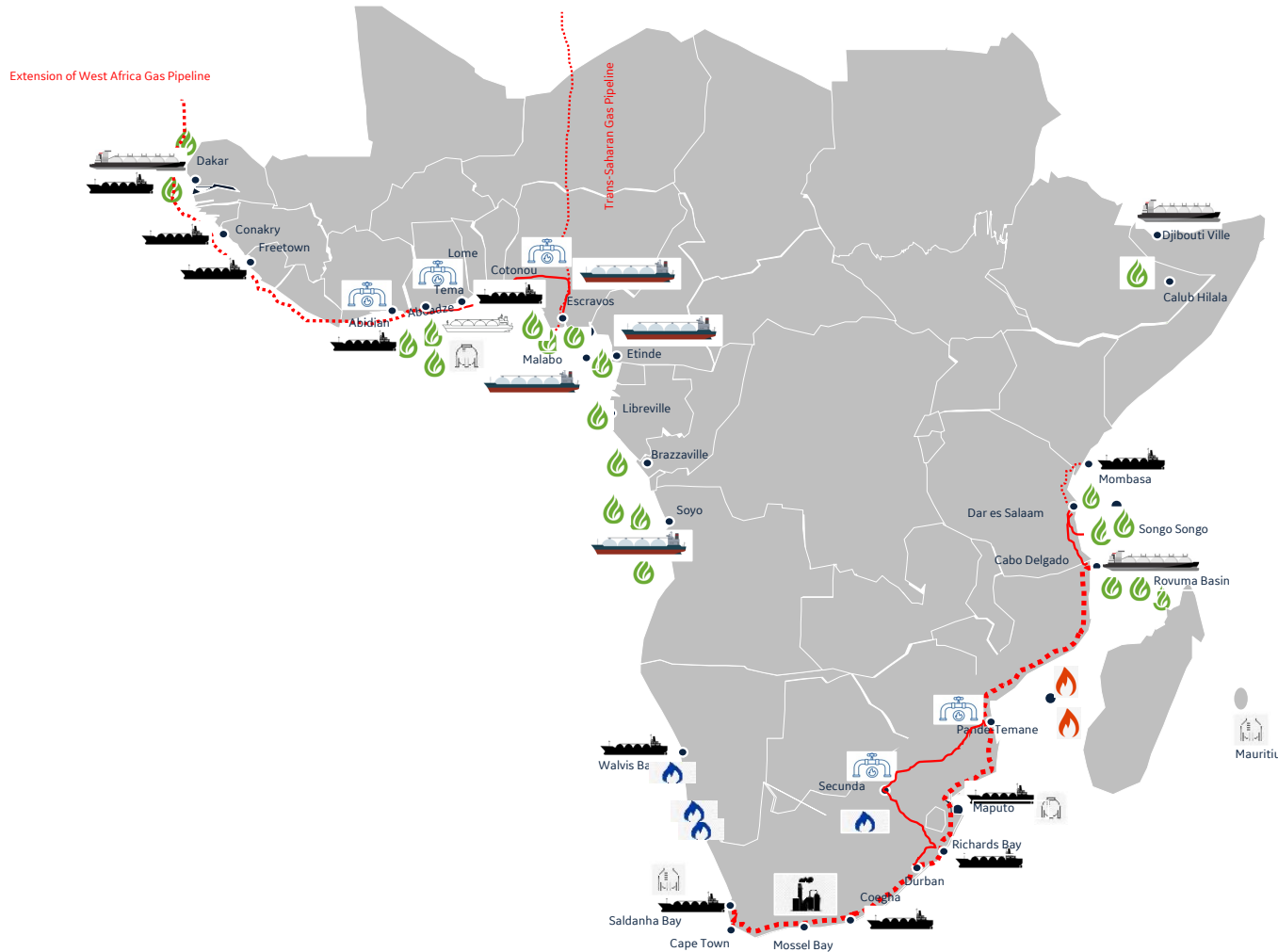
- **+50% global market share**, GE Gas Power is a world leader in power generation
- **+1600GW** of power is generated by GE technology, nearly a 1/3 of the world's electricity in 140 countries
- **Wide spectrum of fuel sources** → Gas, Renewables, Coal, Nuclear, Grid and Digital Solutions.

- **70%** of SSA's Gas IB constitutes GE technology
- **200 +** units installed across the continent
- **30GW+** GE GT's installed....
- **>150 Gas Power** employees in SSA
- **1898** GE opened first office o/s of US in South Africa.
- Wide SSA Install Base SA, CIV, Nigeria, TZ, Moz, Kenya, Ghana, Botswana, Angola



Accelerating the path to reliable, affordable, and sustainable energy, while helping provide 1/3 of the world's electricity.

# Role of Gas in SSA Energy Transition



	Pipeline Gas commercially available for Power and Industrial use
	FSRU in operation
	Future FSRU projects under developments
	Existing LNG Exports
	New FLNG/ LNG liquefaction projects
	LPG storage for Power Plant
	Gas to Liquid Plant
	Existing major Gas pipelines
	Future Gas pipeline
	Producing Gas fields
	New Gas discoveries
	Depleting Gas fields

## Africa Perspective

- ~600 million Africans without access to electricity
- Over 630 TCF of Gas reserves (~400+++TCF in SSA)
- Mainly exported as LNG (30 MMTPA to increase to ~85 MMTPA++) with less domestic consumption
- 25 % of SSA Gas Reserves (~100 TCF; half on Nigeria Gas reserves) for Power generation will be ;
- ~45++ GW for combined cycle (which is half of Nigeria Gas reserves and equal to Moz Gas reserves)
- ~28.7++ GW for open cycle

# Gas Enabled Energy Mix SSA

## Country Examples



### CÔTE D'IVOIRE

- **93.7 %** Energy independency
- ~21.4 % Rate of T & D power losses
- CO2 emissions: 0.41 t CO2/ capital
- ~ 2. 2 GW installed base
- ~**72.5 %** of stable **reliable supply** by Gas Thermal plants
- ~27.5 % by hydropower
- Pre- electoral crisis (2011 – 2013) 34 % electrification country wide
- Overall Grid access to electricity is **64 %** (92 % for Urban areas and 38 % rural areas)
- One of the Most successful IPP model in SSA with planned generation additions



### TANZANIA

- Installed Capacity of **1,777.05 MW** (Dec '22)
- Evolution of Energy Mix to Gas Based
  - Natural Gas **62%** Hydro 32% ('22)
  - Hydro Accounted 96% ('03) & 34% in 2015
- Access to electricity: Urban areas 65%; Rural areas 17%
- **100%** Natural Gas utilized in Country majorly for Power Generation.
- Natural Gas Policy regulates usage and pricing providing stability/competitive tariffs.
- Integrated Gas Pipeline and Power Generation (Songas) – **200kms/190 MW** –promoting increase in gas generation.
- GE gas turbines provide about **60%** of Tanzania's gas fired power stations

## CONTRIBUTORS TO ADOPTION

Access to Gas/Infrastructure

Enabling Policy & Environment

Overreliance Crisis

# Challenges of Gas to Power in SSA



DES + Premium



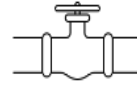
LNG/Gas

+ Tolling Fee



FSRU/ Land based Terminal

+



Pipeline

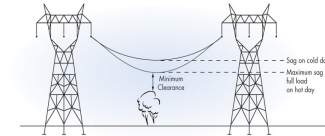
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Delivered Gas price at the flange of the Power pant



Installed Power



Transmission

Counterparty



- Credit Enhancements
- Governance & Mngt
- Capacity Building

Regulatory



- Tariff Regulation
- Enabling Policies
- Energy Market Structures – single buyers
- Dispute Resolutions

Market



- Dispatch Profiles
- Economical Capacities
- Contracting structures
- Incentives and Guarantees

Pricing



- Gas Pricing – global indices.
- Taxes and Levies
- Regulatory

Funding



- Limited Funding Options.
- Investor Apathy – risk appetite.
- Cost of Financing – tariff impacts.

Infrastructure



- Duplication – cannibalization.
- Lack of Regional Coordination – funding mobilization
- Delays – impacts viability of dependent projects



# GE Decarbonization Themes



**Coal, HFO, Diesel Repurposing**

Decarbonization actions will be **determined locally**, based on resource availability, policy, current infrastructure, and demand for power. **New sources of natural gas have driven the economic shift of switching**



**Grid Connection**

**Main decarb path is to reduce self generation using diesel gensets**  
Entire grid system modernization  
Developing gas infrastructure pipelines to power plants  
Efficiency improvement of existing IB i.e SC to CC + unit upgrades



**Gas & RE Hybrids**

GE believes the **accelerated and strategic deployment of renewables and gas power** can change the near-term trajectory for climate change and make substantive reductions in emissions quickly



**Hydrogen fuel**

A key advantage of GE gas turbines is that they are able to operate on many fuels besides natural gas. GE has **proven combustion technology that can operate on up to 95% blends of hydrogen, today.**



**Carbon Capture**

Carbon Capture and Storage offers a highly effective method of decarbonisation especially when considering the impact of carbon tax. **Policy has proven to be key driver of technology adoption**



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