



MINISTRY OF ENERGY

GHANA'S POWER INFRASTRUCTURE INVESTMENT AND BUSINESS OPPORTUNITIES

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OUTLINE

- Demographics & Economic Data of Ghana
 - Investment Climate
 - Overview of Power Generation & Demand
 - Investment Opportunities in Power Sector Value Chain
 - Investment Opportunities in the Petroleum/Gas Sector
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DEMOGRAPHICS OF GHANA

Land Area: **238,500 km²**

Population: **28.9 million** (2017)

Electricity Access: **84 -85%** (2018)

Major Export: **Cocoa, Gold, Timber, Bauxite, Oil, Electricity**

ECONOMIC DATA

GDP: USD 58.3 billion (2017)

GDP per Capita: USD 2,014 (2017)

GDP Growth Rate: 8.1% annual Change (2017)

Currency: Ghana Cedi trading at about 5.4 Ghs per USD

Inflation: 9.4% in July 2019 (from 9.1% in June 2019)



Investment Climate

- Political Stability
- Legal and Institutional Framework for Players in the Energy Sector
- The Rule of Law
- Free and Independent Press
- Transparency and Accountability
- Commitment to fight Corruption and Crime
- Vibrant Private Sector
- Strong Civil Society
- Attractive Incentives to All Investors (GIPC Act)

Overview of Power Generation & Demand

Installed Capacity

4,700 MW

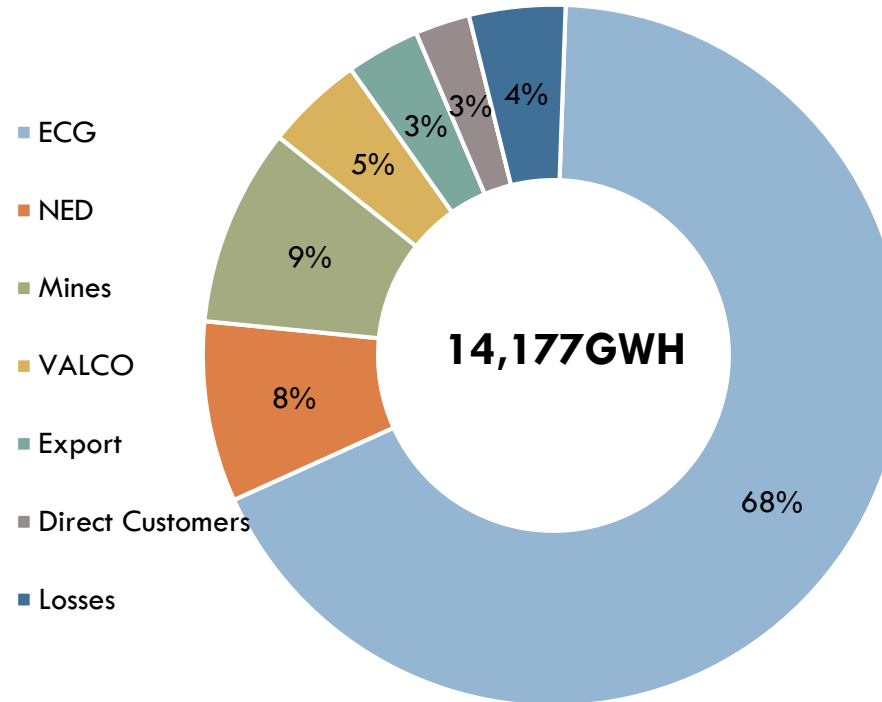
Available Capacity

3,500 MW

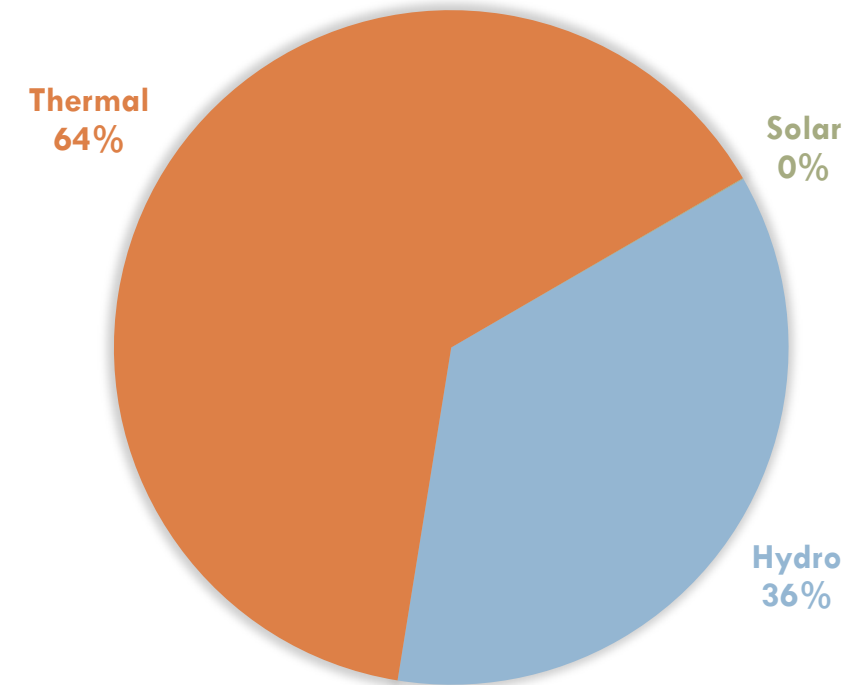
Projected 2019 Peak Demand

2,700 MW

ACTUAL ENERGY CONSUMPTION 2017

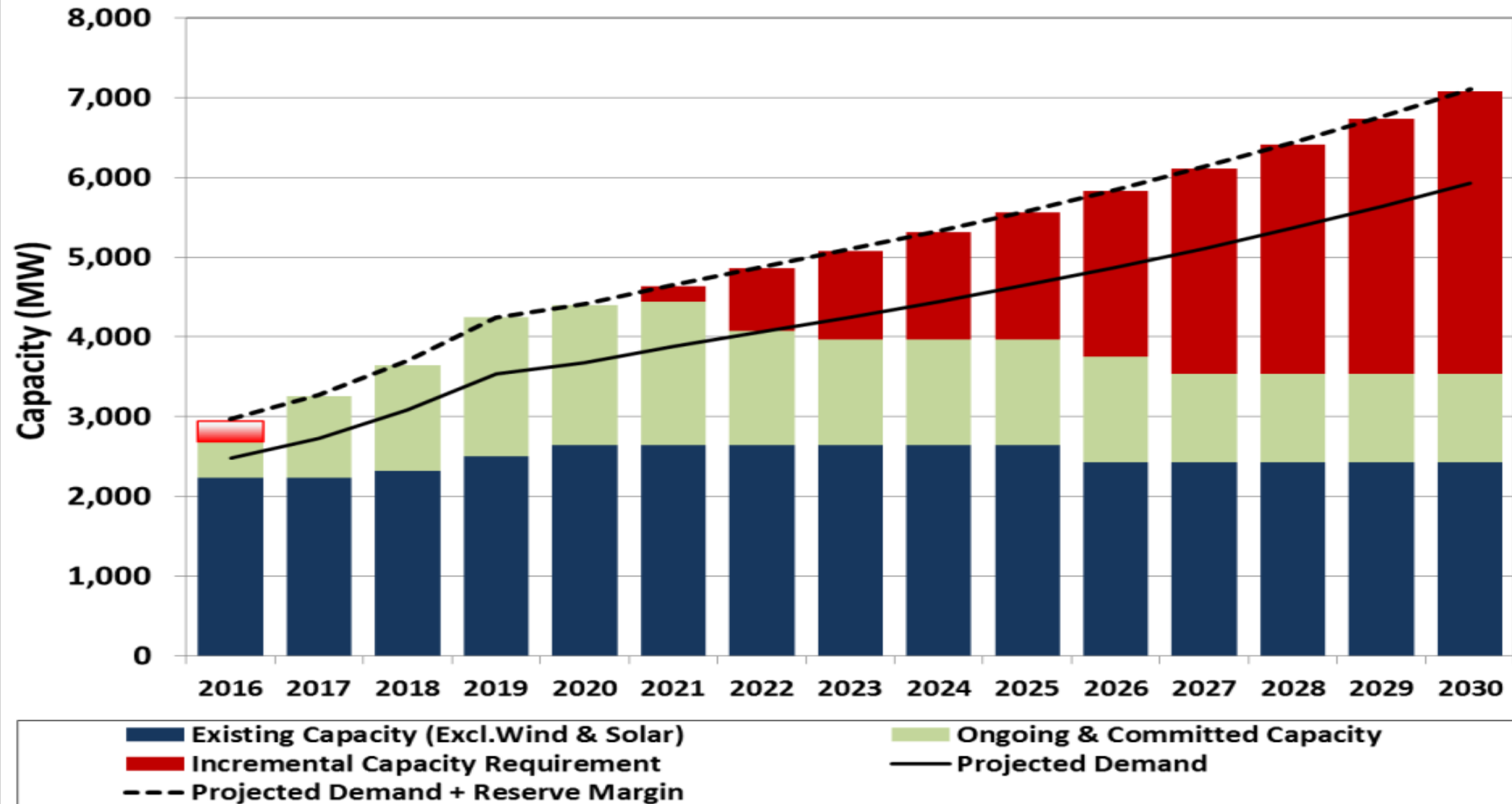


DEPENDABLE GENERATION MIX




➤ Of the total capacity, GRIDCo can effectively call on/ dispatch only about half to meet current demand. The highest system demand in 2018 is 2,496 MW recorded on October 26, 2018.

Projected Capacity Demand/Supply Outlook for Ghana (2016 - 2030)





Investment Opportunities-Generation

- New investments in power generation capacity beyond 2022
 - Collaboration and investment in the expansion/rehabilitation of existing plants (VRA-Hydro&Thermal Assets)
 - Ghana is well placed in the sub-region to generate power for export into the land-locked areas of the region. Investors may wish to site their plants in Ghana to take advantage of the opportunity offered by GoG policy of being a net exporter of power into the sub-region.
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NATIONAL GRID SYSTEM

- Transmission Network: 5,000 km
- Voltage Levels : 69, 161, 225, 330 kV
- 68 Substations
- Interconnection (WAPP):
Burkina Faso, Togo, Cote D'ivoire





INVESTMENT IN TRANSMISSION INFRASTRUCTURE DEVELOPMENT

- Investment requirements by GRIDCo in Transmission infrastructure between 2017 – 2022 alone was estimated at **US\$634 million** in the areas of construction of new 161kV and 330kV switching stations, substation upgrades, transmission line extensions and upgrades, etc.
 - 161kV Takoradi – Tarkwa – Prestea Line Upgrade
 - 161kV Aboadze – Takoradi Line Upgrade

 - Investments, in collaboration with West Africa Power Pool (WAPP), to provide the transmission facilities for power exports into the sub-region. (GS E&C of Korea is developing the WAPP Interzonal Transmission Hub project from Prestea-Kumasi)
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INVESTMENT OPPORTUNITIES IN POWER PARK/ENCLAVE DEVELOPMENT


- A very critical system stability and security consideration by GRIDCo, the power system operator, is to have thermal power generation sites not restricted to only the current locations or enclaves of Tema and Takoradi, which are now very heavily developed.
- The consideration is, therefore, to encourage increasing the number of power generation enclaves to effectively improve system reliability (stability and security).
- Investments opportunities therefore exist for the Domunli Enclave Development (in the Western Region) and DAWA (in the Greater Accra Region).



INVESTMENT IN DISTRIBUTION AND SALE OF ELECTRICITY

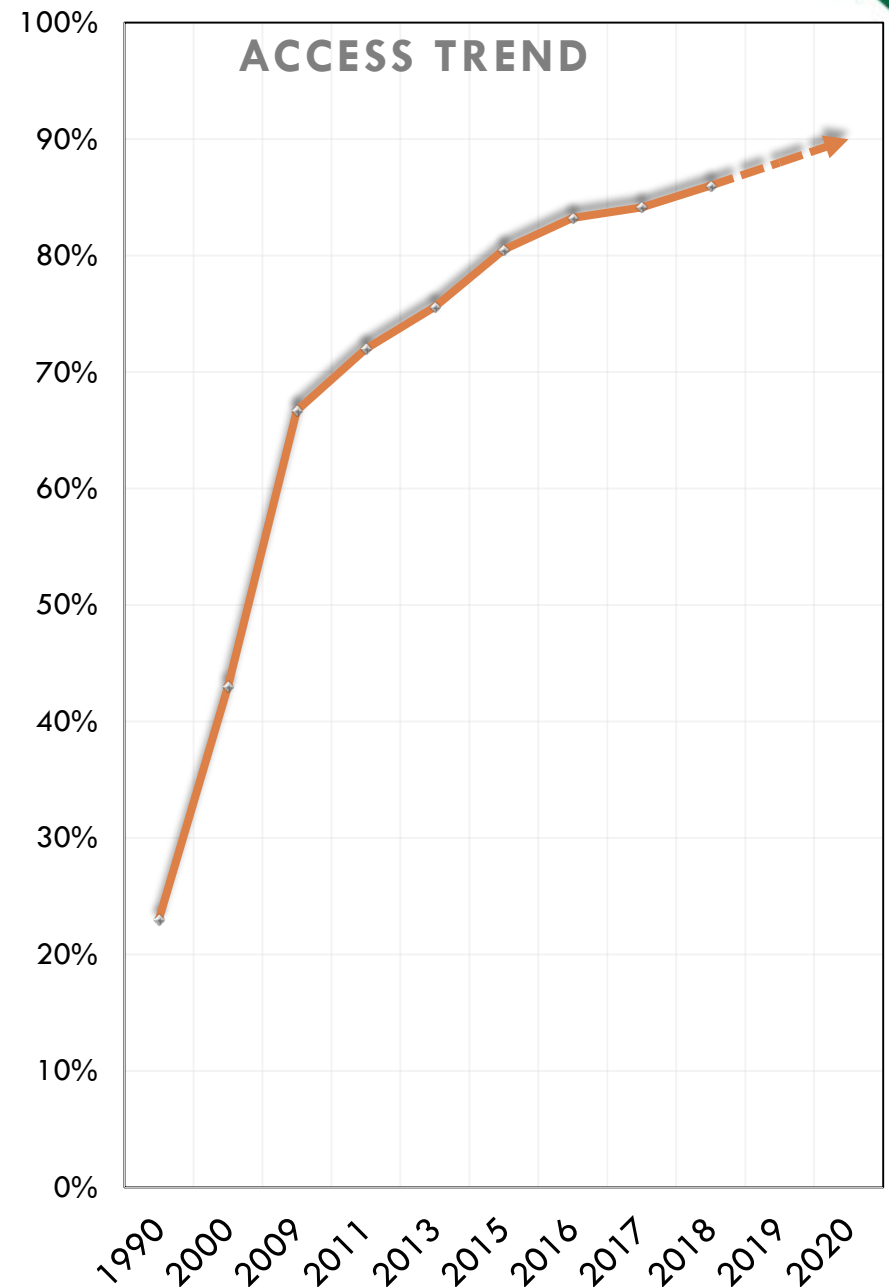
➤ Electricity Company of Ghana (ECG) needs investments in the provision Network Capacity expansions/ line extensions projects, Technical Loss Reduction/ Voltage Improvement Projects, Commercial / Revenue Improvement projects and Institutional Development projects between 2017 – 2021 was estimated at **US\$770 million**

➤ Northern Electricity Distribution Company (NEDCo) requires similar investments in the areas of Commercial Improvement projects, Technical Loss Reduction/ Capacity improvements, Technical Assistance, Reliability improvement Projects, etc. between 2017 and 2021 was estimated at **US\$282 million.**



INVESTMENT IN RURAL ELECTRIFICATION TO PROVIDE WIDER ACCESS TO ELECTRICITY

- Ghana's current measure of electricity access to its people is a little over 84% (based on population). GoG policy is to cover or provide 'Universal Access' (up to 90% or better) of electricity to its people by 2020.
- The nation is, therefore, in the "last mile" of extending the grid across the country. Areas yet to be covered are mostly in "Island" communities and in area very expensive to reach with the national grid.



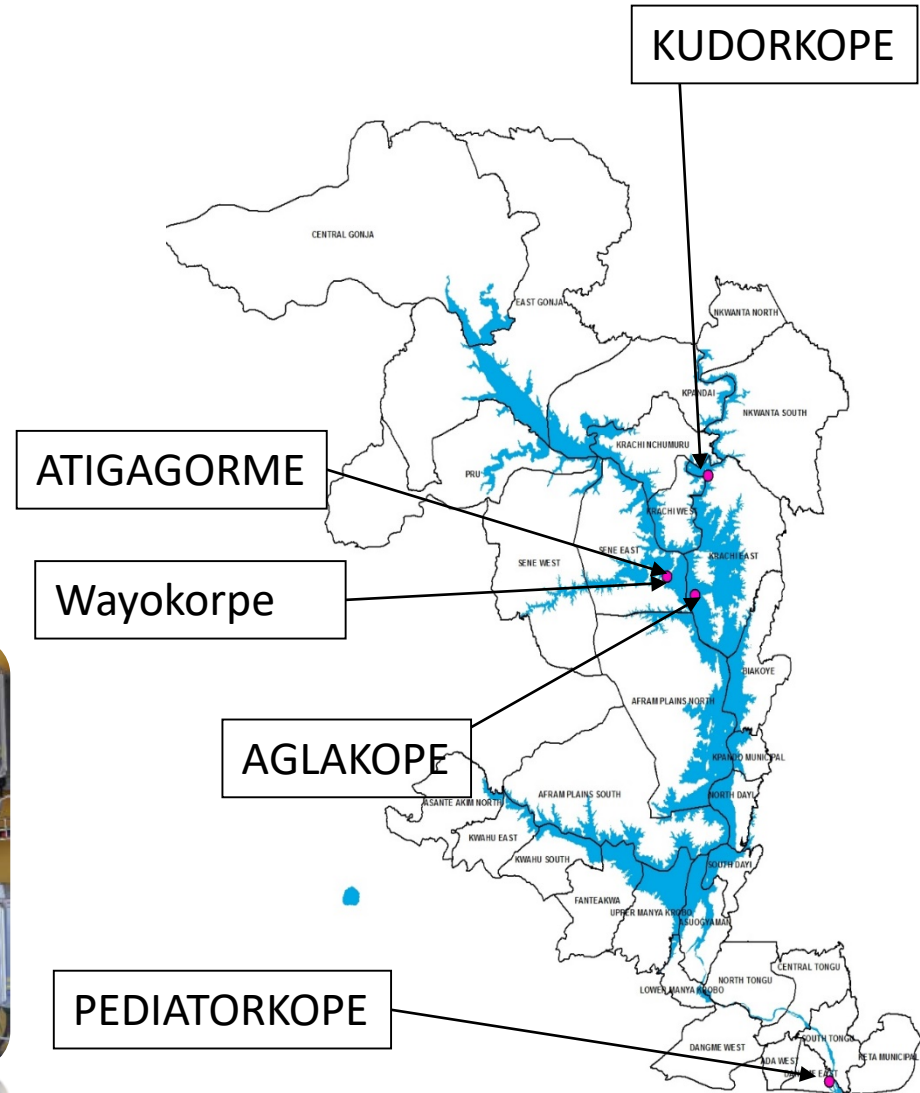
Renewable Energy Policy Objectives

- Achieve universal access to electricity by 2020
- Increase the renewable energy supply in national energy mix to 10% by 2030
- Solar-target is 250 MW
- Mini Hydros
- Waste to Energy-want to make our cities very clean

RENEWABLE ENERGY DEVELOPMENT PROJECTS

- There are over 200 islands and more than 2000 communities in 23 districts along the Volta lake that cannot be immediately connected to the national grid by 2020. The objective is to provide such communities with decentralized energy solutions;
- RE based Mini-grid with diesel hybrid;
- Stand alone RE systems (wind, solar, biomass etc);
- Solar Lanterns with mobile phone charging facilities until such a time that grid electricity is extended.


P3. Mini – Grid RE Electrification Program



There are over 2,000 communities along the Volta lake in 23 Districts with populations above 1000 inhabitants that are not likely to be immediately connected to national grid.



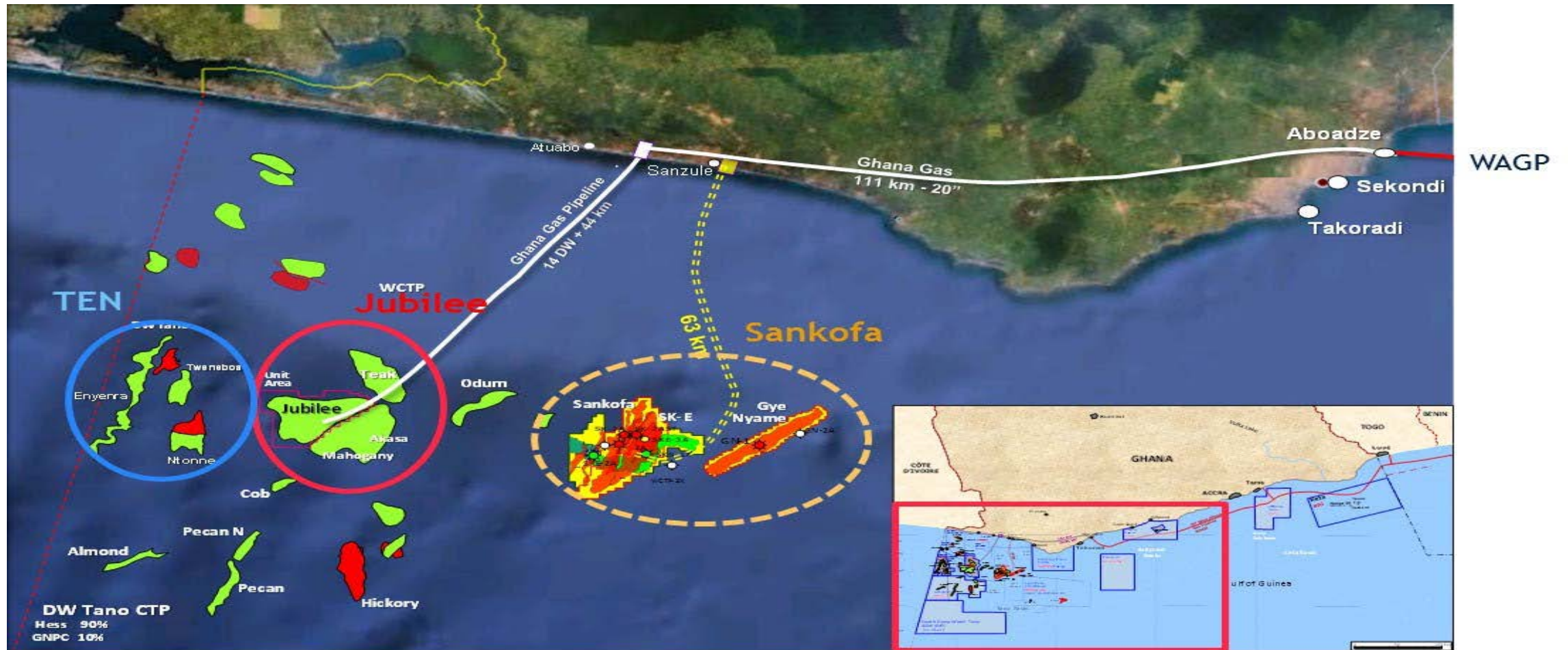
Energy sector bonds

- Investors may also look forward and plan to participate in the sale and purchase of the Energy sector bonds that GoG has issued help sector utilities clean their books and allow them to effectively plan, modernize their systems and operate as prudent operators.
 - The GoG issued two series of bonds totalling GHS 6.5 billion, which were securitized by a portion of the ESLA revenues and is actively trading in the secondary market.
 - Increase in the ESLA levies implies GoG can raise more revenue to support additional issuance of the Bond. The target is to reach GHS15 billion (aprox US\$3 bn)
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INVESTMENT OPPORTUNITIES

Oil & Gas Sector

JUBILEE, TEN AND SANKOFA FIELDS



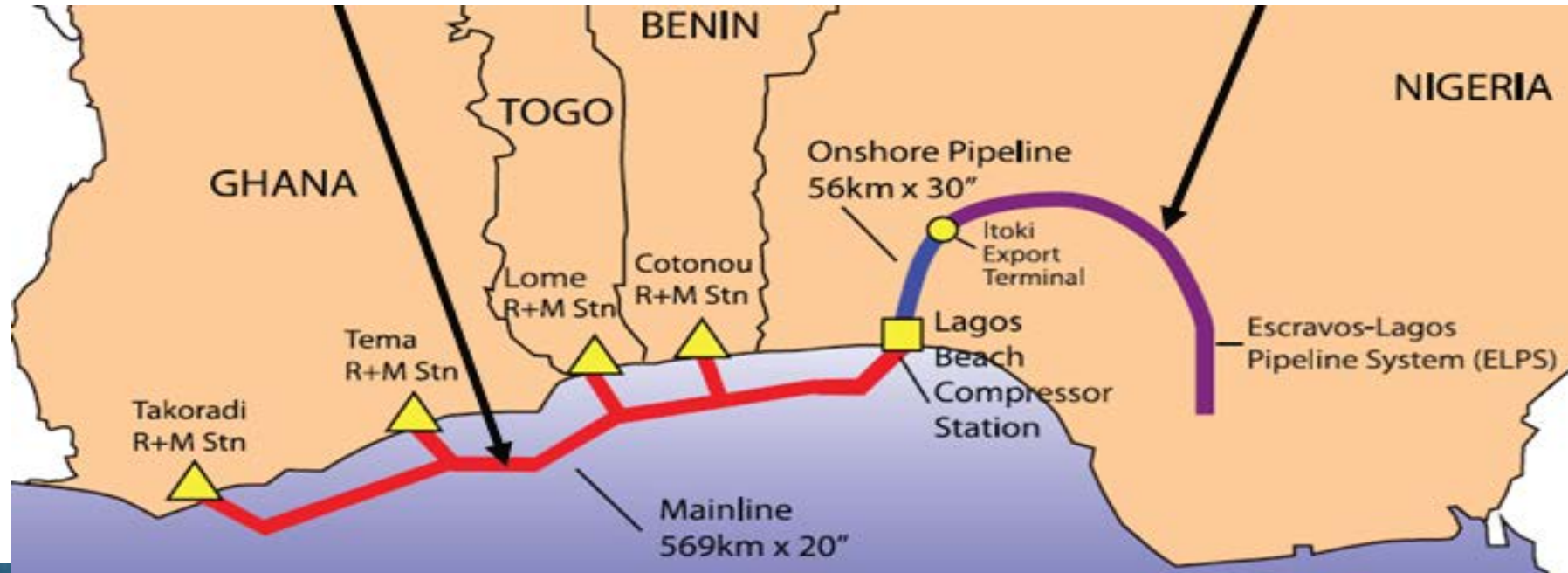
AERIAL EXTENT OF E&P BLOCKS

Areas	Size (Sq.Km)	Area Licensed	(%)	Area Unlicensed
Voltaian Basin (Inland)	103,600	0	0	103,600
Onshore (extensions of offshore basins)	3,500	0	0	3,500
Shelf Region (0 – 200m)	23,000	6,650	29.0	16,350
Deepwater (200- 3000m)	27,000	18,000	66.5	9,000
Total Area	157,000	24,650	16.0	132,450

NATURAL GAS TRANSMISSION SYSTEM



Gas-to-Power Projects



Opportunities

1. Large unallocated acreages including the extended continental shelf
2. Data acquisition projects
3. Farming into existing petroleum licenses
4. Voltaian Basin enhancement project
5. Significant prospects in the deepwater de-risked Tano Basin
6. Development of gas infrastructure
7. Development of petrochemical industry/hub-essentially to refine crude for export and also to develop associated petrol chemical business
8. Expansion of existing refinery to increase capacity from 45K to 145K Barrels per Stream Day (BPSD)

Thank you