



Country Spotlight for Zimbabwe: Opportunities For The Energy Sector

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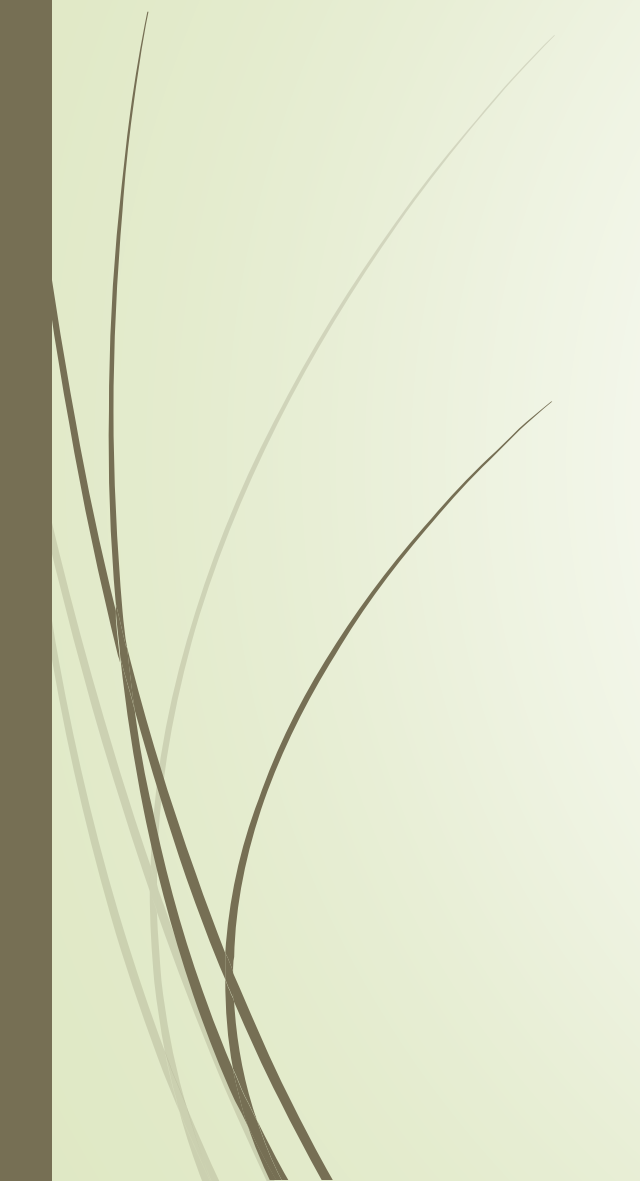


PRESENTATION OUTLINE

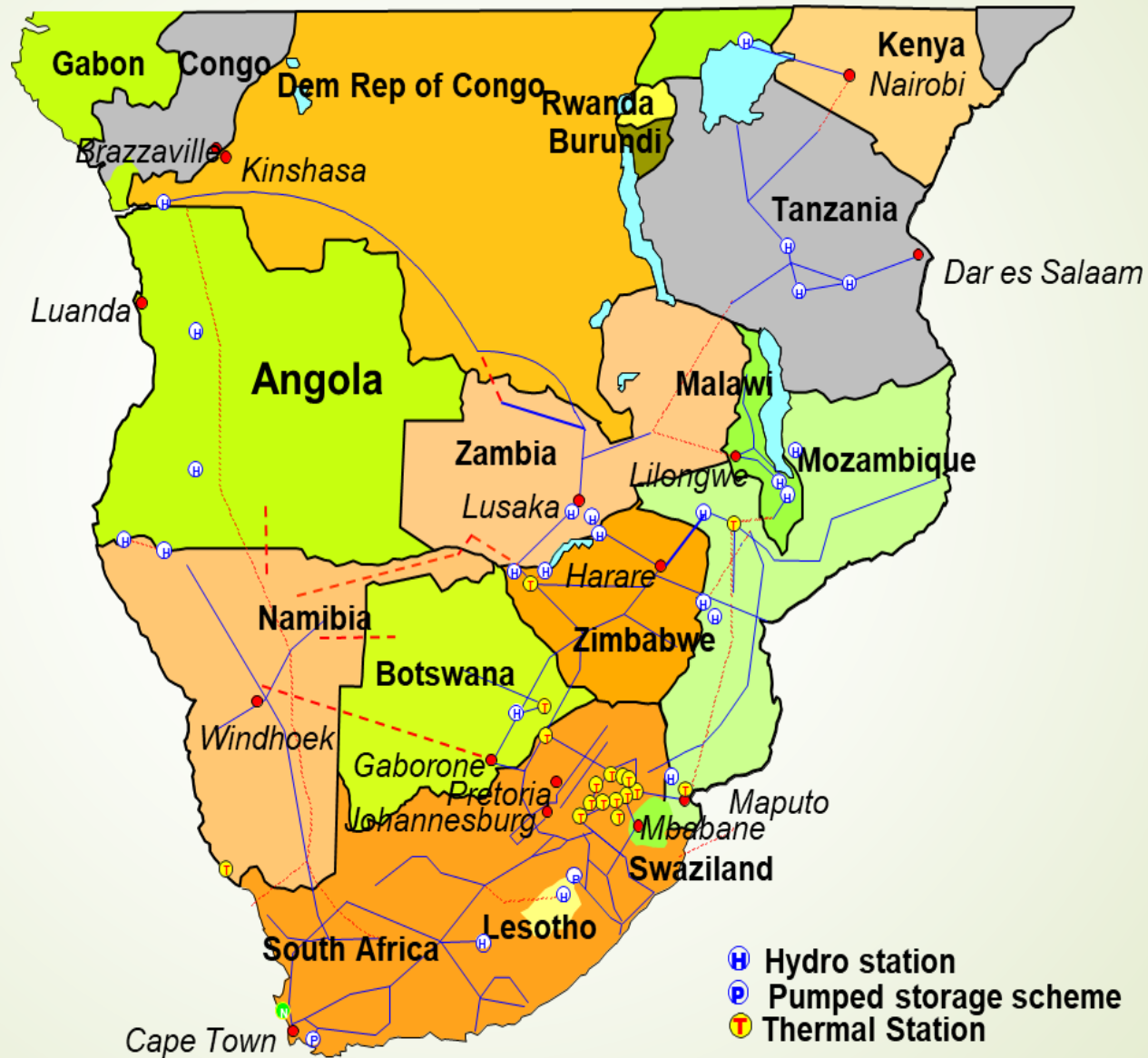
1. Zimbabwe Overview
 2. Energy Sector Overview
 3. Policy and Regulatory Framework, Plans and Programmes
 4. Why Zimbabwe
 5. Electricity Sector
 6. Petroleum Sector
 7. Renewable Energy Sector
 8. Energy Resources
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ZIMBABWE

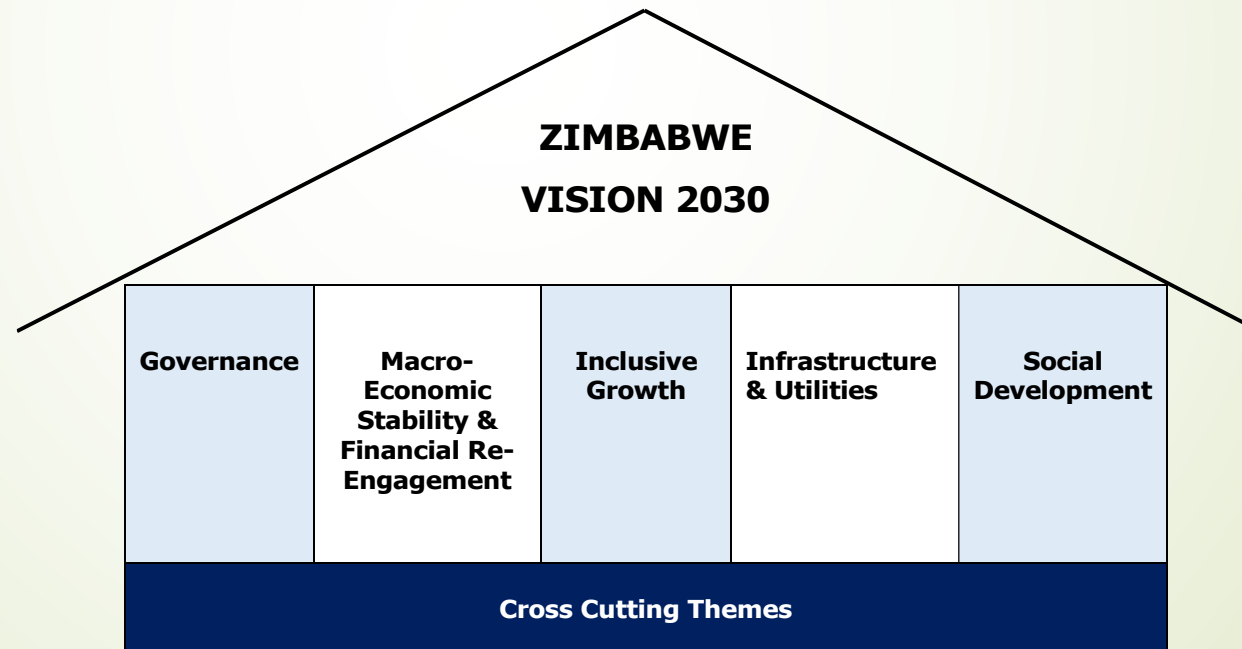
- Zimbabwe is a landlocked country in the Southern Region of Africa.
 - It is bordered by South Africa, Botswana, Zambia and Mozambique
 - The country boasts some of the best known climates in the world, ranging from 6°C to 38°C in the lowveld and between 12°C to 24°C in the Highveld
 - It has a population of 17.3 million people and a literacy rate of 94.5%
 - The total surface area is 390 757km², which is almost the same as Germany (357 386km²).
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ZIMBABWE'S LOCATION



ZIMBABWE VISION 2030

- ▶ Zimbabwe's vision 2030 is to be an upper middle income economy by the year 2030.
- ▶ **Vision 2030** will be realised through the Transitional Stabilisation Programme (TSP) (2018-2019) and successive *Five-Year Medium-Term Plans* (**2020-2025**) and (**2020-2030**)
- ▶ **Vision 2030** will be realised through the pillar approach



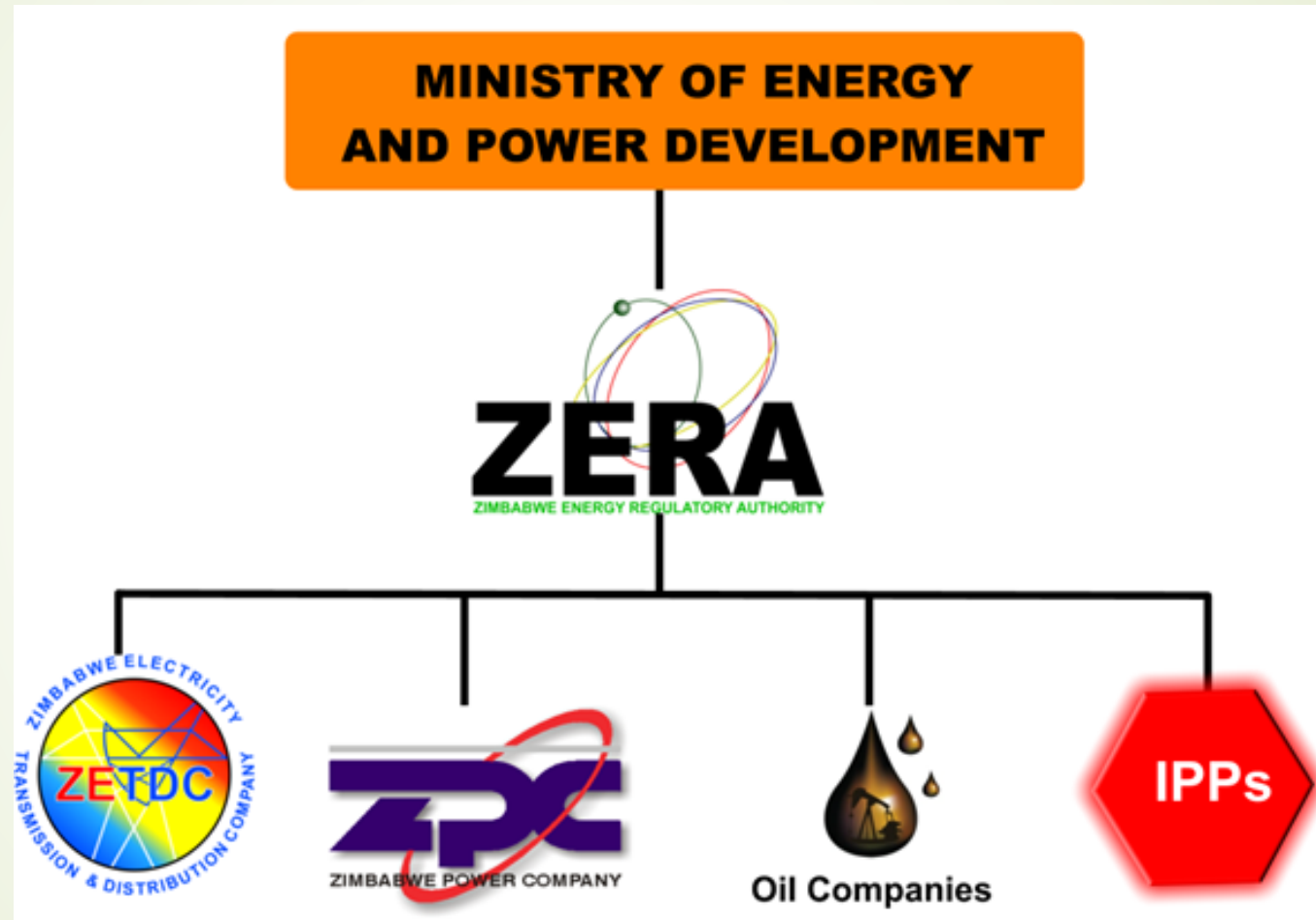


Vision 2030 continued...

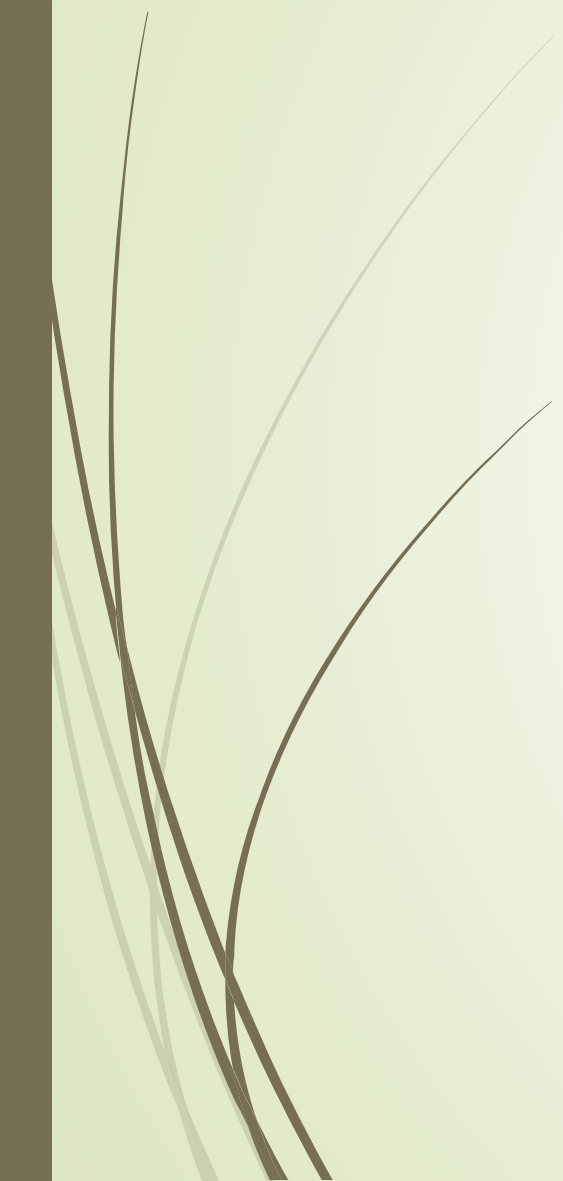
OBJECTIVES OF THE VISION:

- **Political and Economic Re-engagement with the global community.**
- Creation of a Competitive and Friendly Business Environment.
- **Attainment of optimal generation of power from both renewable and non-renewable sources**
- Enhanced domestic and foreign investment.
- An aggressive fight against all forms of Corruption.

ENERGY SECTOR OVERVIEW



ZIMBABWE'S POLICY LANDSCAPE





GOVERNMENT POLICIES

1. National Energy Policy (2012)

- Seeks to promote the optimal supply and utilisation of energy, for socio-economic development in a safe, sustainable and environmentally friendly manner. It brings out Government's objective to ensure that the energy sector's potential to drive economic growth and reduce poverty is fully harnessed.

2. National Renewable Energy policy

- Policy aims to promote investment in the renewable energy sector by providing specific incentives:
- recommends providing National Project Status to all the renewable energy projects.
- It encourages the Ministry of Energy to recommend RE projects for according Prescribed Asset Status
- reduction in licensing fees and relaxations in licensing requirements for renewable energy projects.



POLICY continued...

- ▶ Favourable tax incentives and rebates are also recommended in the NREP in addition to the existing Statutory Instruments.
- 3. Biofuels Policy**
 - ▶ ensures that biofuel production, processing, distribution and marketing in Zimbabwe will remain within the parameters of economic, environmental and social sustainability
 - 4. National Energy Efficiency Policy (Under Development)**

Policy cont.....

5. Emobility

A draft e-mobility framework is in place awaiting statutory approvals





OTHER GOVERNMENT POLICIES

Zimbabwe Climate Policy (2016)

- Seeks to create a pathway towards a climate resilient and low carbon development economy. The policy mainstreams climate issues in all sectors of the economy including energy

2030 Agenda for Sustainable Development

- The Goal 7 and 13 of UN Sustainable Energy underscores the importance of Renewable Energy in the global energy mix.



ENERGY SECTOR PLANS AND PROGRAMMES

1. Rural Energy Master Plan (REMP) (Draft)

- provide a systematic and prioritized approach guiding rural electrification efforts across the country. Recommends use of solar energy technology in its various forms including solar home systems (SHS), solar micro and mini grids, to electrify 46% of the un-electrified rural public institutions and households countrywide, while the remaining 54% is to be connected to the national grid by 2035.

2. Network Masterplan (and System Development Plan)

3. National Intergrated Energy Resource Plan (Underdevelopment)

- this guides the twenty year resource utilization and least cost investments in the energy sector.

2. Zimbabwe's Revised Nationally Determined Contribution (NDCs)

- Seek to reduce Carbon emissions primarily by reducing carbon emissions from power plants.

ENERGY SECTOR LAWS

1. Electricity Act [Chapter 13:19] (2002)

- To establish Zimbabwe Electricity Regulatory Commission & provide its functions & management, & detail licensing & regulation for generation, transmission, distribution & supply of electricity by the utility and IPPs.

2. Rural Electrification Fund Act [Chapter 13:20] (2002)

- To establish the Rural Electrification Fund Board whose main focus is to spearhead rapid and equitable electrification of rural areas in Zimbabwe

3. Zambezi River Authority Act [Chapter 20:23/1987]

- The Act provides for the sustainable development and utilization of water and other resources along the Zambezi River

4. Environmental Management Act [Chapter 20:27] (2002)

- To establish the National Environmental Council and Environmental Management Agency.

5. Petroleum Act [Chapter 13:22] (2006)

- To establish the Petroleum Regulatory Authority and its function and management, and licensing and regulation of the petroleum industry.

6. Energy Regulatory Authority Act [Chapter 13:23] (2011)

- To establish the Energy Regulatory Authority and provide its functions and management, and amend the provisions of Electricity Act (2002) and Petroleum Act (2006).



ENERGY SECTOR REGULATIONS

- **Electricity (Net Metering) Regulations, 2018 [Chapter 13:19]**
 - The regulations provide for guidelines for the participation in net metering, Interconnection, compliance, Issuance, duration, surrender and renewal of certificates. It also regulates the compensation of energy exported and billing
- **Third Party Access Regulations**
 - govern the rights and obligations of industry players on the usage of the National Grid.
- **Grid Codes**
 - The Grid Code is intended to establish the reciprocal obligations of industry participants around the use of the National Transmission System (NTS) and operation of the Interconnected Power System (IPS).

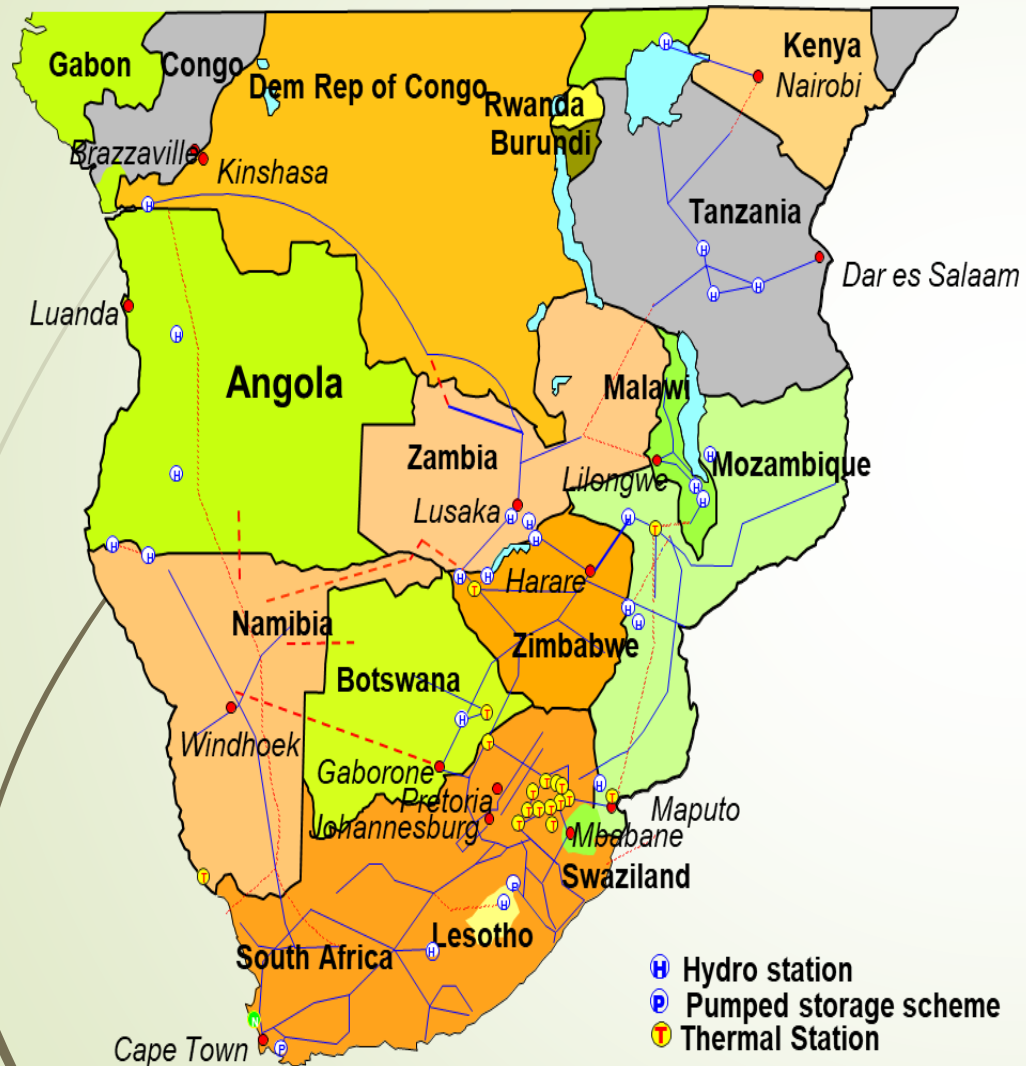


ZIMBABWE INVESTMENT LAWS

The Zimbabwe Investment Authority Act [Chapter 14:30]

- ▶ is the enabling legislation for foreign investments. A foreigner wishing to establish any business operations in Zimbabwe is supposed to obtain an Investment License in terms of the ZIA Act

Why Zimbabwe's Energy Sector



- Zimbabwe is strategically located at the centre of SADC and COMESA
- Power evacuation can be to various SADC and COMESA countries
- Access to markets beyond Zimbabwe
- Unsatisfied local market- 62% access to electricity
- Vast opportunities – diverse renewable and fossil energy yet to be fully utilised
- Robust energy regulations
- Growing economy – Vision 2030
- SAPP Pool Plan – prioritizes large hydro projects on Zambezi – Batoka, Devils Gorge, Mphanda Nkuwa & Inga as key to lower energy costs
- Committed transmission investments projects

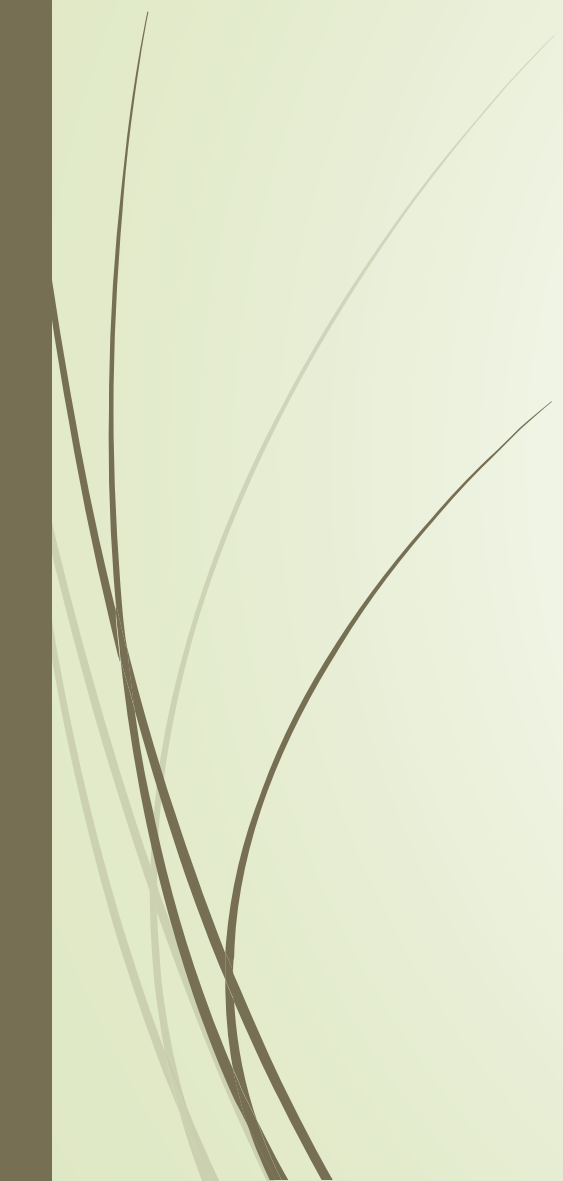


ZIMBABWEAN ENERGY BALANCE

- ▶ 38 percent of households in Zimbabwe are without electricity (2022)
- ▶ Internal power generation averages 1 500MW (out of 2 900MW installed) against a peak demand of 1 800MW. Demand Supply gap bridged by power imports from neighbouring countries
- ▶ primary sources of energy used include wood fuel, coal, electricity and petroleum products
- ▶ major use of fossil fuel as primary energy source leads to deforestation and pollutes the environment



ENERGY BALANCE (Cont...)

- ▶ Petrol daily demand averages 2.5 million litres
 - ▶ Diesel averages 3.5million litres per day
 - ▶ Demand for LPG for cooking on rise as it is faster when cooking, more efficient, cleaner and cheaper
 - ▶ About 175 tonnes of LPG are used per day.
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ELECTRICITY SECTOR-ENERGY MIX

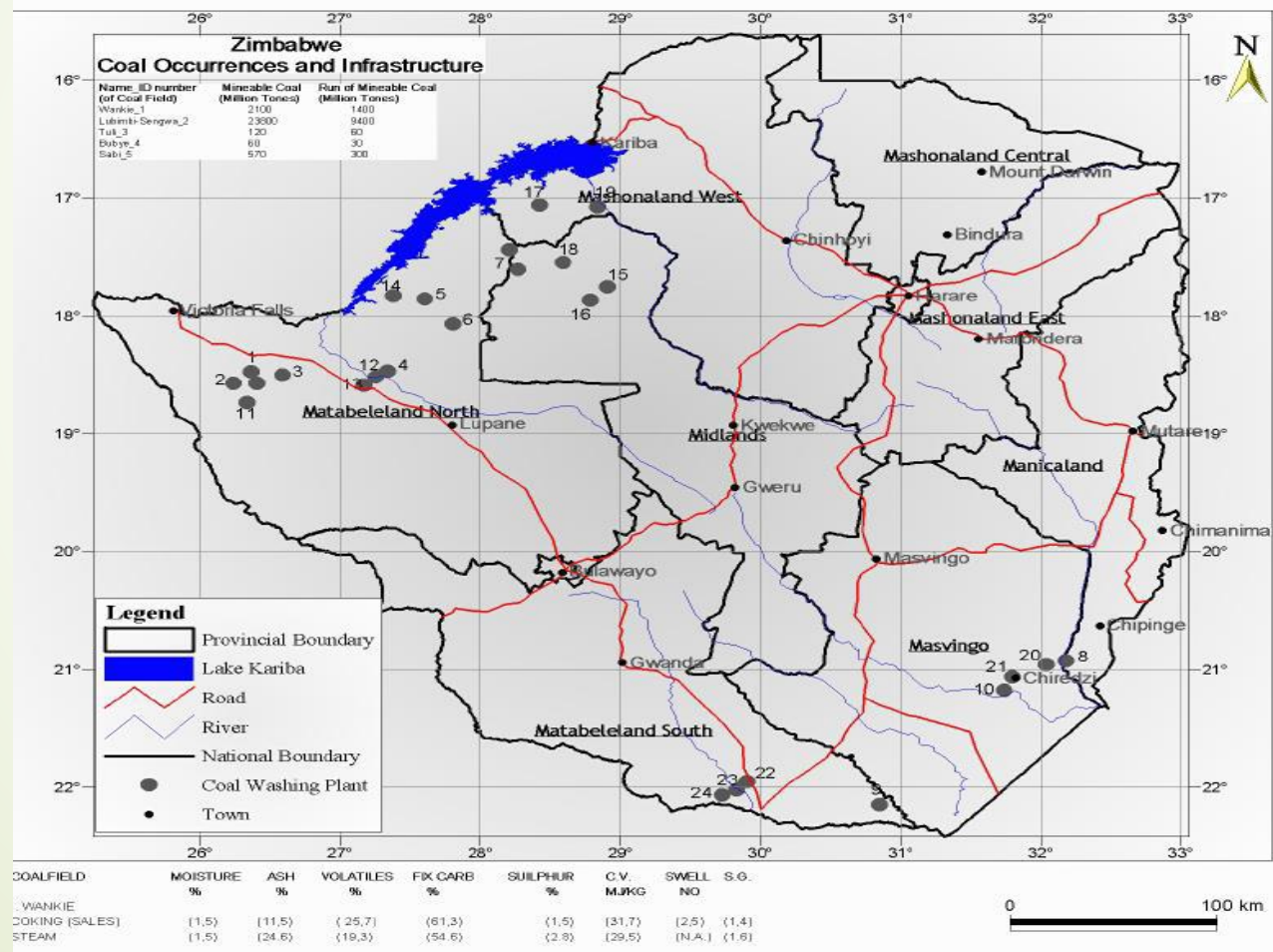
- ▶ Zimbabwe has installed capacity of around 2,900 MW with ZPC contributing around 97% of this;
- ▶ 52% of the capacity is from thermal based power plants and;
- ▶ 48% of the capacity from Kariba Hydro Project, mini hydro projects, bagasse and small solar power plants.
- ▶ Licencing for power generation is for projects above 100kW
- ▶ IPPs can choose their preferred off-taker
- ▶ Transmission and distribution is under Zimbabwe's utility company-ZETDC
- ▶ Sector is governed by the Electricity Act of 2002 and the Energy Regulatory Act of 2011

FOSSIL FUELS



COAL RESOURCES

- ▶ Zimbabwe has 17 known coal reserves with a combined total of 12 Billion Tonnes of coal.
- ▶ CBM - ≈40 trillion cubic feet (TCF) of potentially recoverable gas



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PETROLEUM SECTOR

- Governed by the Petroleum Act of 2006 allowed private companies to participate in the sector.
- Traders bring fuel using pipeline from Beira ($\geq 95\%$), road and rail.
- Mandatory blending of petrol of up to 20% using ethanol grown in the country (E20)
- Biodiesel also being produced in small quantities from Jatropha to compliment petroleum to allow blending mandate of 2 % (B2

GAS

LPG storage and distribution

- ▶ The country imports LPG from South Africa and Mozambique by road. Importation and distribution of LPG is also regulated by ZERA.
- ▶ Opportunities exist for the incorporation of residential reticulation distribution infrastructure in the country. This will require further investment in additional storage facilities to ensure uninterrupted and increased use of LPG.

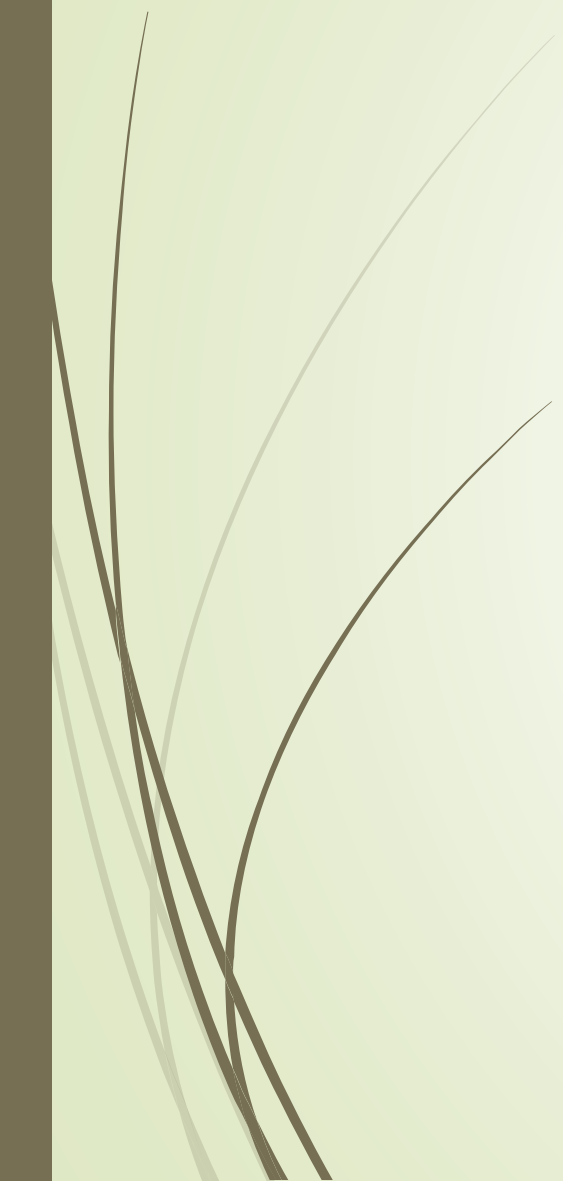
Oil and Gas

- ▶ Exploration for oil in the Zambezi Valley concluded that the area has potential for natural gas pending commercial confirmation



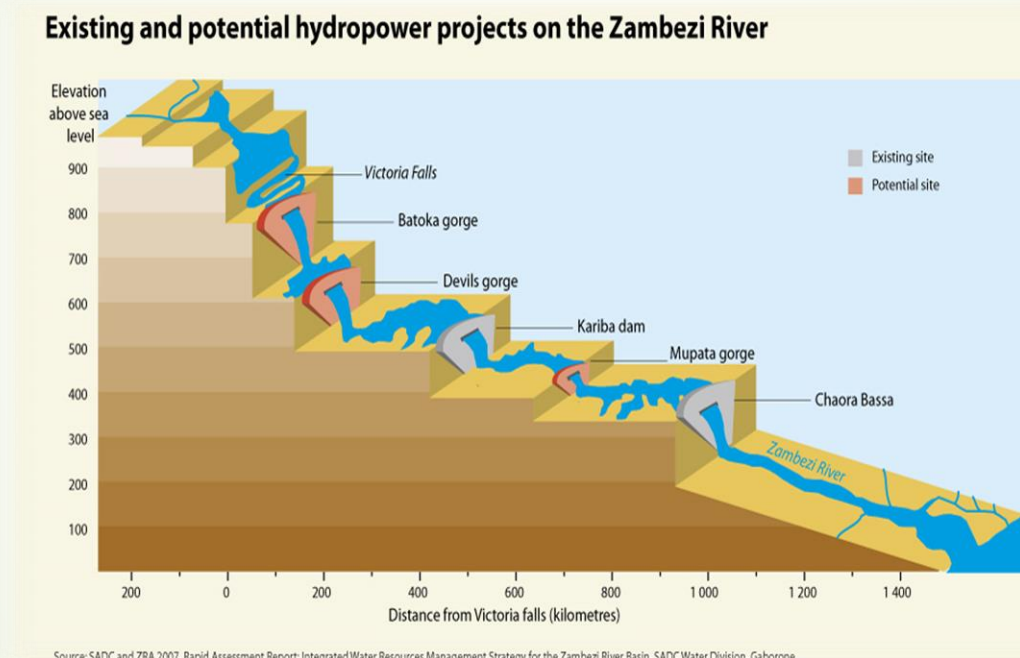
RENEWABLE ENERGY SECTOR

➔ **Zimbabwe has a large resource base for renewable energy in the form of:**

1. Minimum of 300 days of sunlight
 2. Large reserves of biomass and biodegradable waste
 3. Inland dams, rivers and the Zambezi river
 4. Potential wind sites
 5. Potential geothermal sites in existing hot springs
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LARGE HYDRO

- ▶ it is planned to build hydro-electric dam facilities at the **Batoka Gorge** and **Devil's Gorge**, both above Kariba, and the Mupata Gorge, between Kariba and Cahora Bassa



- ▶ 5000MW potential exists along the Zambezi river between Zimbabwe and Zambia.

RESOURCE BASE IN ZIMBABWE

➤ MINI-HYDRO

Potential of 150MW

➤ SOLAR

Solar potential of sixteen (16) to twenty (20) MJ/m²/day

- Photovoltaic (PV) potential is 109,000 MW
- Concentrated Solar Power (CSP) potential is 39,500 MW

➤ BIOMASS AND BIOGAS

- potential stands at 150MW

➤ GEOTHERMAL

- potential is estimated at 50MW

➤ Wind

- Resource assessment still being done and we invite more partners



GEOHERMAL AND WIND

Geothermal:

- ▶ geothermal energy potential of around 50 MW not harnessed and presents scope for future exploitation
- ▶ Invitation to partner Government in the Resource Assessment exercise

Wind:

- ▶ Wind speeds averaging 10ms
- ▶ Detailed resource assessment studies being done in two sights at 80 m hub height

OPPORTUNITIES IN STORAGE

- Wind energy and solar energy are variable and partially unpredictable.
- Climate change is resulting in less rainfall and more sunlight in Zimbabwe.
- Solar PV is becoming more attractive but will need storage at a household level through to utility scale.

Solar CSP

- Has potential 135 000MW according to IRENA RE Zones for Africa Clean Energy Corridor Report, June 2015.

Pumped Storage

- Pumped storage for Inland dams possible

Lithium deposits

- Zimbabwe is the fifth largest producer of Lithium on the planet and the largest on the African continent
- Globally Lithium ion batteries have:
 - Higher energy and power density
 - Higher Cycle Life
 - Greater round trip efficiency
 - Reasonable prices-dropped by over 75% in 2011
- There are major opportunities for Li-Ion batteries in Zimbabwe

OPPORTUNITIES IN THE ENERGY SECTOR

❖ SECOND PIPELINE

Government is considering the construction of a second pipeline from Beira. This is because of increased demand for petroleum products. This project will also include construction of the requisite storage facilities thus creating an inland hub of petroleum products for the region.

❖ OIL REFINERY

Construction of a modern refinery in the event of the successful exploration of oil and gas.

Potential investors will be expected to carry out their own feasibility studies for the project.

❖ GAS TO LIQUID (GTL) AND COAL TO LIQUID (CTL) PROJECTS

These are two key technologies that can play a critical role in guaranteeing security of supply of fuel through inland fuel production. The Government is encouraging the production of liquid fuels from locally available resources like Coal and Coal Bed Methane (CBM) gas reserves.



OPPORTUNITIES cont.....

❖ ETHANOL PRODUCTION

- Government is encouraging the entrance of more players in the production of ethanol to ensure increased supply of ethanol on the market.
- Ethanol production is around 80 mill Litres per year.

❖ BIODIESEL PRODUCTION

- Opportunities exist for partnership in biodiesel production with Finealt Engineering which is currently seeking a joint venture partner for funding of the commercial production and processing of biodiesel. However, investors are free to go it alone or in partnership with other companies.
- Efforts to increase for jatropha feedstock underway.

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