

# **State of renewable energy in Zimbabwe vs SDG7 –Access to affordable, reliable, sustainable and modern energy services**

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# Definition of terms

- ▶ **Renewable energy**-energy from a source that is not depleted when used, such as wind or solar power
- ▶ **Sustainability** - harmony with nature. Development today must not undermine the development and environmental needs of the future generations.
- ▶ □ **Affordability** - ability to pay - create a balance between project viability and affordable energy cost to provide citizens of Zimbabwe with cleaner, greener and cheaper energy options.

# Why energy matters

- ▶ Installed capacity is 2300MW
- ▶ Generation capacity in 2019 less than 1000MW
- ▶ Peak demand is 1700MW

# Solar Potential

- ▶ Solar potential of 16 to 20 MJ/m<sup>2</sup>/day in Zimbabwe is vastly unexploited and is present in several regions of the Country. Zimbabwe has a present installed capacity of 4.40 MW that is well short of the potential
- ▶ According to World bank 2017, solar PV has a technical potential of over 300 MW.

# Wind Potential

- ▶ Wind speeds of 3 meters per second are not significant for power generation, but can be used for power pumping as per National Energy Policy. Detailed resource assessment studies shall be conducted at 80 m hub height or above in next 3 years to understand the potential for electricity generation.

# Hydro Potential

- ▶ Small hydropower: Significant small hydropower potential is present in the Eastern Highlands region and perennial rivers.
- ▶ Around 120 MW of small hydropower potential is estimated in the country
- ▶ The gross theoretical hydropower potential is 18,500 GWh/year. The technically feasible potential is 17,500 GWh/year, of which 19% has been exploited.

# Biomass Potential

- ▶ Based on IRENA reports, Zimbabwe has a total potential of 1,000 MW from biomass in the form of bagasse, agricultural and municipal waste, forest residue and other forms. Forest residue from commercial forests has been estimated at 70,000 tons which has the potential to generate nearly 150 MW power. Detailed energy resource assessments need to be done to assess potential of biomass as a renewable energy source.
- ▶ More than 200 biogas plants have been installed around Zimbabwe, primarily by the Ministry of Energy. The vast livestock population offers high potential for biogas generation.

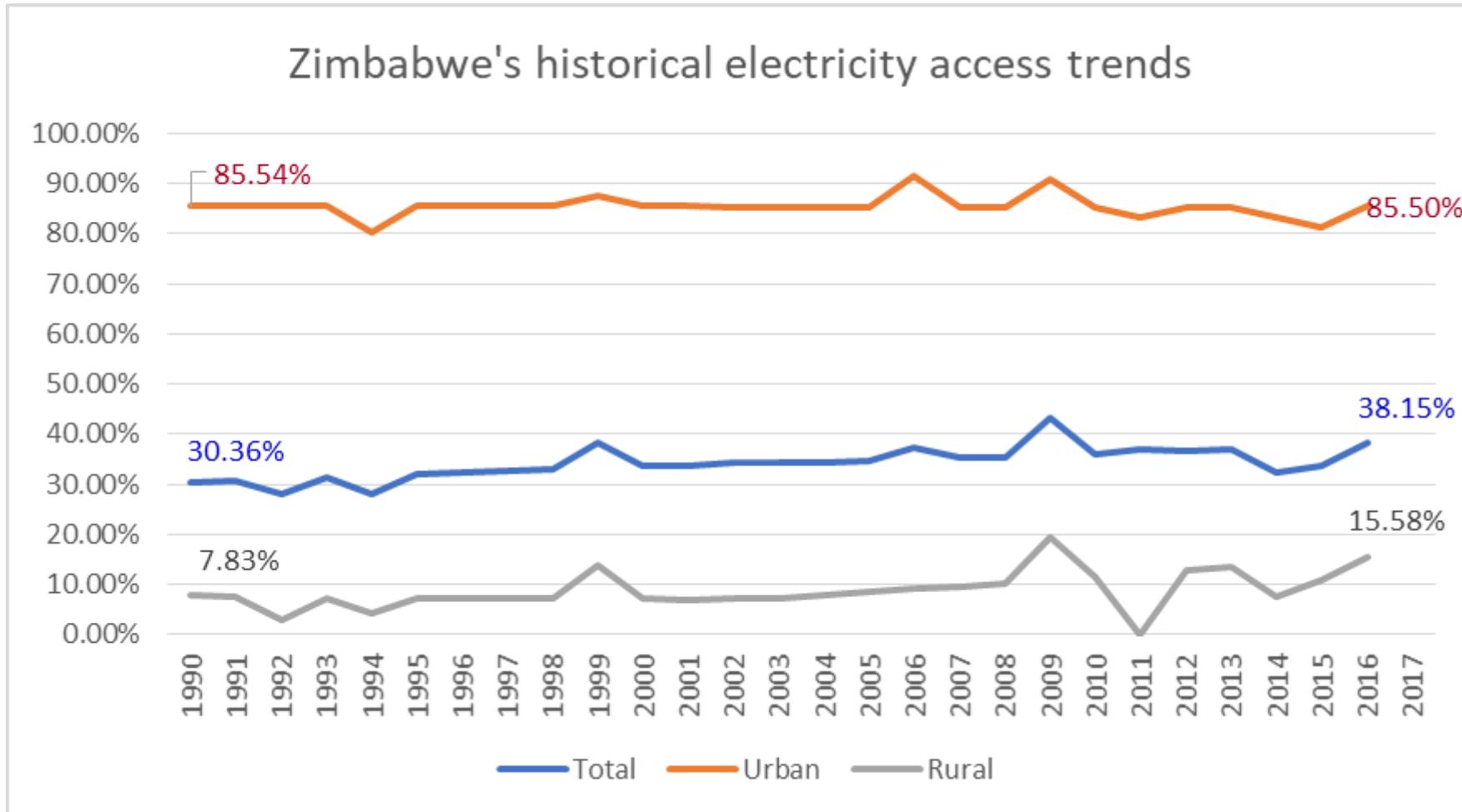
# Geothermal Potential

- ▶ Zimbabwe also has geothermal energy potential of around 50 MW that has not been harnessed and presents scope for future exploitation. Detailed energy resource assessments need to be done to assess potential of geothermal energy
- ▶ 50 MW of geothermal potential was identified in 1985, but little has been done since to further catalogue the resource.

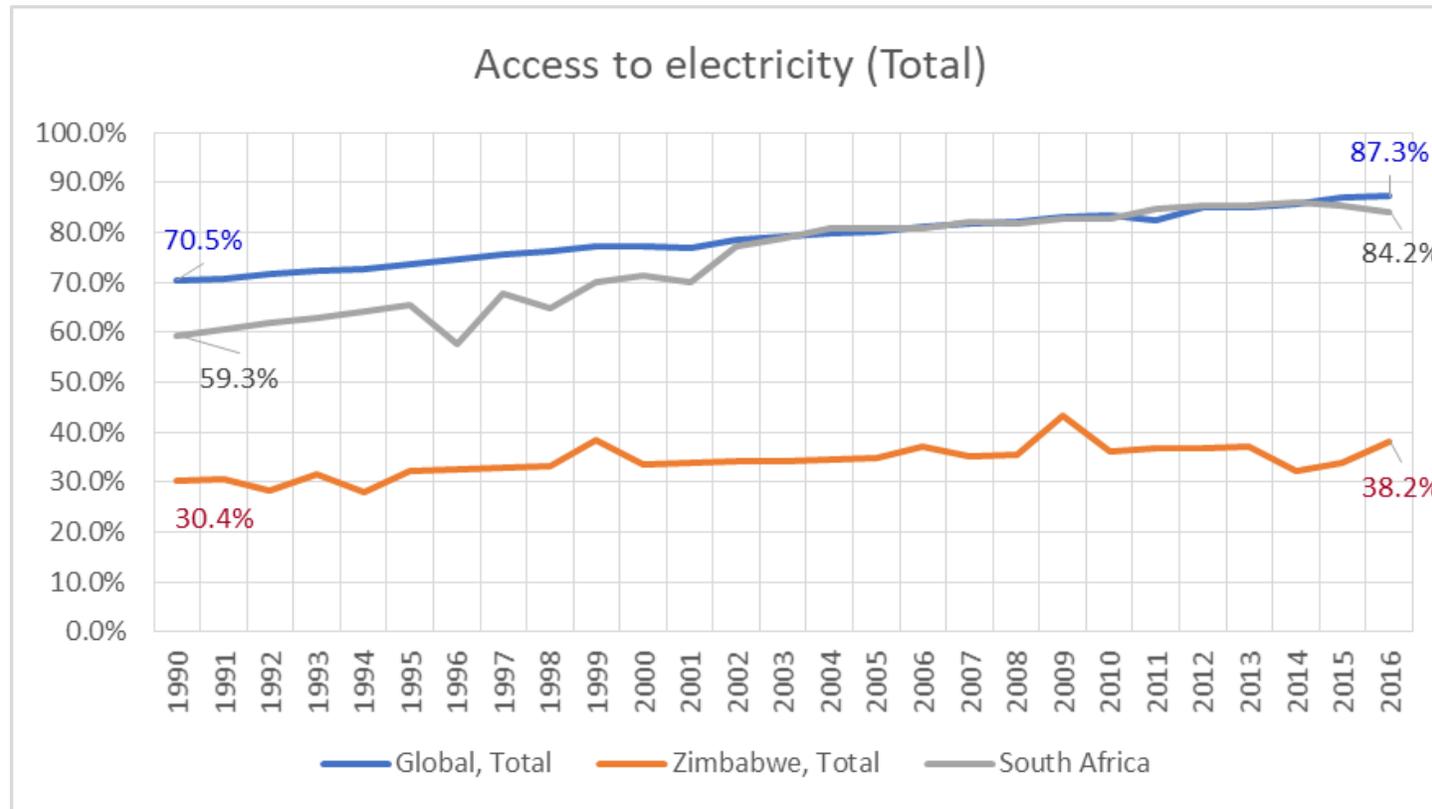
# Facts

- ▶ Roughly 1 billion people - or about 13% of the world's population - live without electricity
- ▶ The regions of sub-Saharan Africa and South Asia continue to have the largest access-deficit
- ▶ Based on the NDC target of achieving emissions 33% below the projected business as usual level, clean energy sources need to generate additional energy of around 2,400 GWh by 2025 and around 4,600 GWh by 2030
- ▶ The renewable energy target for any country should be backed by a strong policy framework, regulations and institutional support to ensure that they are enforced.

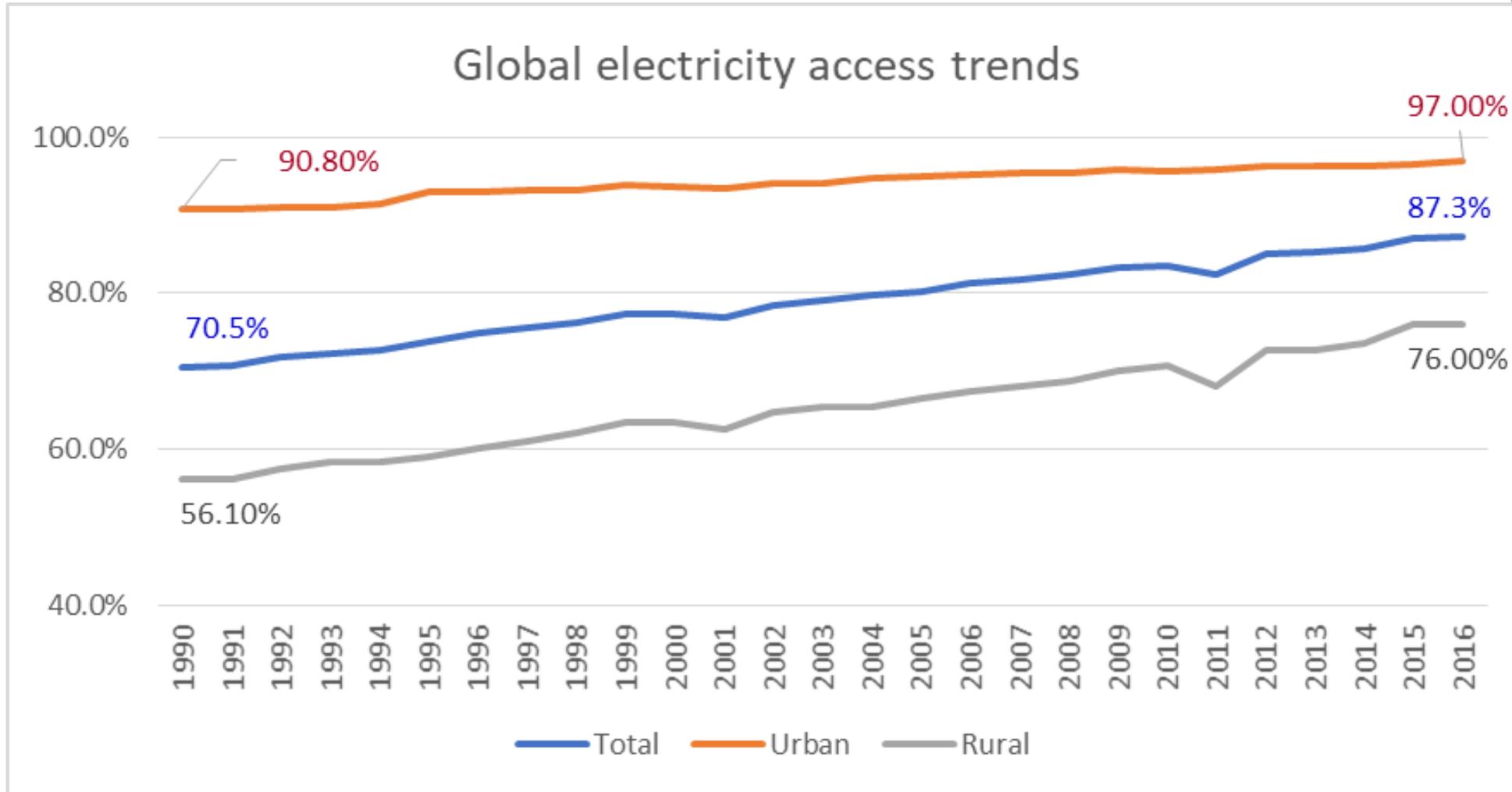
# Progress to date



# Progress towards 2030



# Why energy



# Barriers to uptake of Renewable Energy in Zimbabwe

Renewable Energy Investment Enabler	Barriers identified in stakeholder discussions and reports
Creating/assessment of market potential for RE	Inadequate studies on potential for development of renewable energy technologies
Setting up a procurement model for purchase of RE	Lack of clear tariff structure for renewable energy projects High production costs affecting the economic viability of RE projects
Attracting developers including private sector participation	Lack of transmission and distribution infrastructure to develop, install and commission RE projects Lack of standard specifications for various RE technologies to address the quality concerns

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Institutional structure and process for approvals and clearances	Inadequate institutional structure dedicated to renewable energy Absence of clarity on the approvals and timelines for development of RE projects and the responsible agencies for the same
Developing an efficient funding mechanism	Absence of a policy to attract foreign direct investment (FDI)/foreign funding for large scale project Inadequate financing for developing RE projects due to high capital costs and absence of long term financing
Skill development and local manufacturing	Absence of appropriate skill development and technology transfer mechanism for local empowerment Lack of incentives for Research and Development in RE Sector ▫ Absence of incentive for local manufacturing

# Energy efficiency

## Gaps and barriers

- ▶ Lack of energy efficiency culture throughout most organisations and the public in general
- ▶ Data gaps for development and monitoring of energy efficiency policies
- ▶ Use of old infrastructure with significant energy wastage
- ▶ Limited capacity to conduct audits and lack of technical knowledge to adopt energy efficient technologies
- ▶ High technology risk and lack of bankable projects - local developers of equipment are relatively young and have small experience
- ▶ High transaction costs due to the small size of most of the projects proposed
- ▶ High interest rate may prevent the investment in energy efficient technologies

# Potential good practices that can be adopted for Zimbabwe to achieve total energy access

- ▶ 1. Strengthen national and regional institutions to adopt and implement RE/EE projects
- ▶ 2. Create policies, strategies, plans and other frameworks to ensure an enabling environment for RE/EE investments
- ▶ 3. Have appropriate regulation and standardization frameworks for RE/EE projects and investments
- ▶ 4. Attract private sector participation in investments for RE and EE
- ▶ 5. Build capacity to design, develop, build, implement and maintain RE/EE projects
- ▶ 6. Avail financing for RE/EE projects
- ▶ 7. Develop projects, technologies and knowhow transfer to meet demand targets
- ▶ 8. Promote adoption of RE/EE through information, advocacy and awareness
- ▶ 9. Consider cross-sectoral and cross-cutting issues when implementing RE/EE projects

# Conclusion

- ▶ About 4.4% increase per annum required between 2019 and 2030 in order to achieve 100% access. The current average 0.3% per annum increase will only take us to 45% by 2030.
- ▶ Zimbabwe's transmission infrastructure, besides rehabilitation, requires upgrading in support of new generation projects, providing electricity for new settlements as well as addressing changes in demand.
- ▶ Countries, international organizations, private sector and civil society need to more than double existing energy investments
- ▶ Need to have proper MRV for our targets

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