
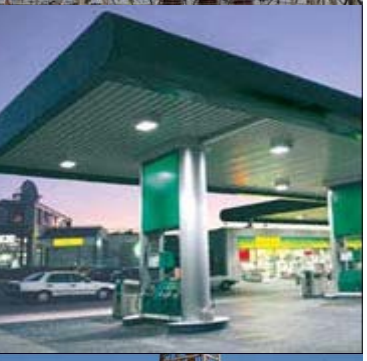

THE ENERGY AND WATER UTILITIES REGULATORY AUTHORITY (EWURA)

Brief Overview of Renewable Energy Regulation in Tanzania

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At the NARUC – EWURA Mission

Illinois Commerce Commission

Springfield, ILLINOIS

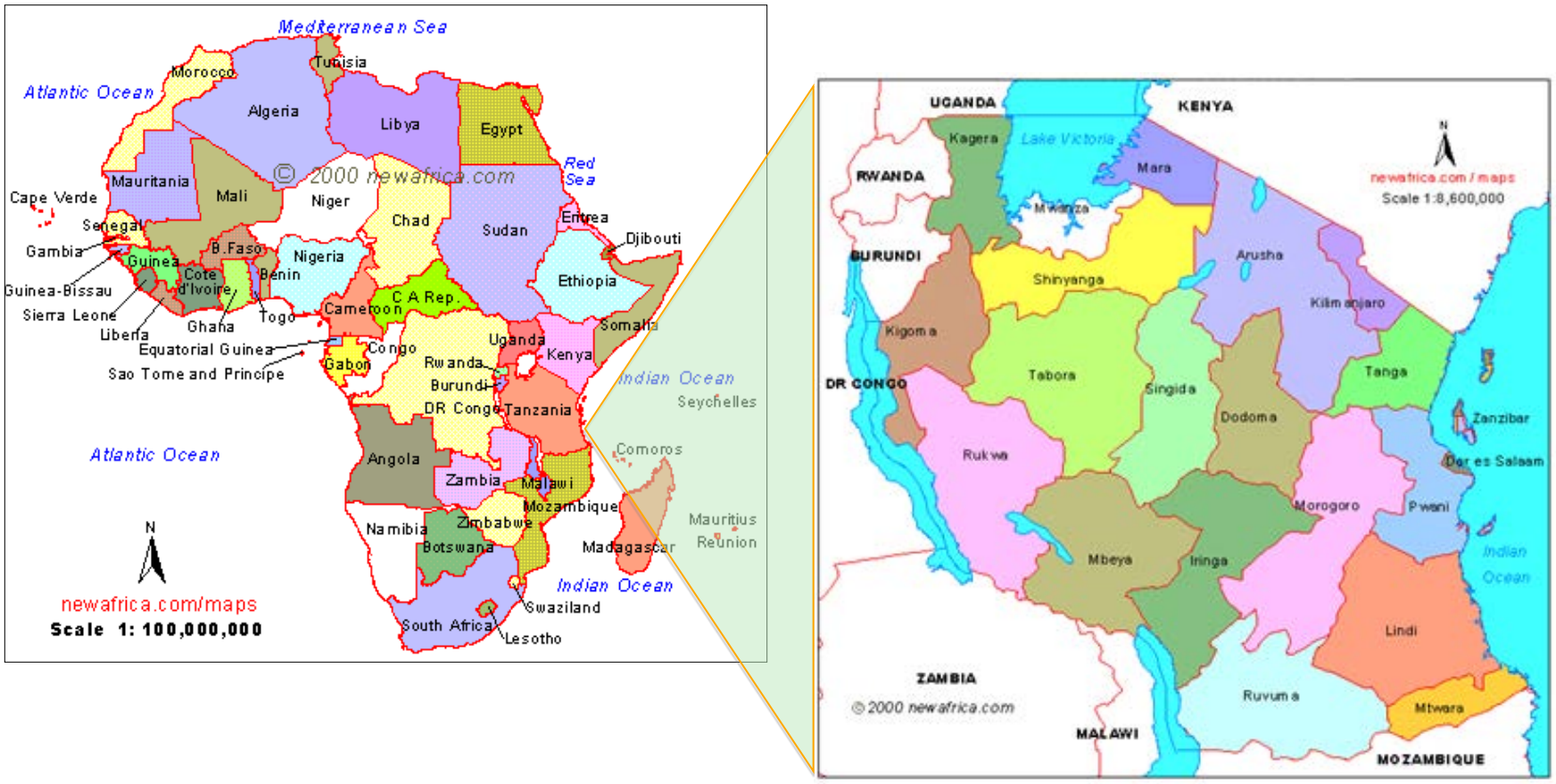
27th January, 2014

Outline

- Introduction
- Regulating Renewable Energy in Tanzania
- Challenges
- Conclusion

INTRODUCTION

Where is Tanzania



Features of Energy Sector in Tanzania (Typical SSA)

- Endowed with energy resources – poor energy & low access
- Significant energy demand - supply gaps exist (e.g. electricity)
- High Domestic energy prices compared to most other LDCs
- Energy capacity utilization is low
- Lack of regional and intra-regional energy infrastructure
- Problem of access is more pronounced in rural areas
- Energy sector exhibits under funding for its provision

Energy Balance

- Biomass: 90%
- Electricity: 1.2%
- Petroleum and Related Products: 8%
- Renewable (Excluding Biomass) and Other Sources: 0.8%

Energy Potential In Tanzania

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- Hydro 4.7GW (only about 12% exploited)
- Natural Gas (33Trilion Cubic Feet of Proven Reserves);
- Coal (1.5 Billion Tones : 536 MT Proven Reserve);
- Small Hydropower (480 MW);
- Geothermal (650 MW);
- Solar (4 – 7 KWh/m²/day;
- Wind Energy (8 – 9 m/s in Central Tanzania and Southern Highlands);
- Biomass:-
  - 35 Million Hectares of Natural Forests
  - Agricultural Wastes (Sugar Bagasse, Rice and Coffee)
  - Industry Wastes (Timber Industry)
  - Municipal Wastes – Not Exploited

Power Supply Facts

Installed Capacity

Total 1521MW (Available 900 MW)

- Hydro 561MW
- Thermal 939MW

Electricity Access (National Connectivity 21 %)

- Urban 39%;
- Rural 7%.

Electrification Targets by 2015

- National Connectivity 30%
- Rural: 15%.

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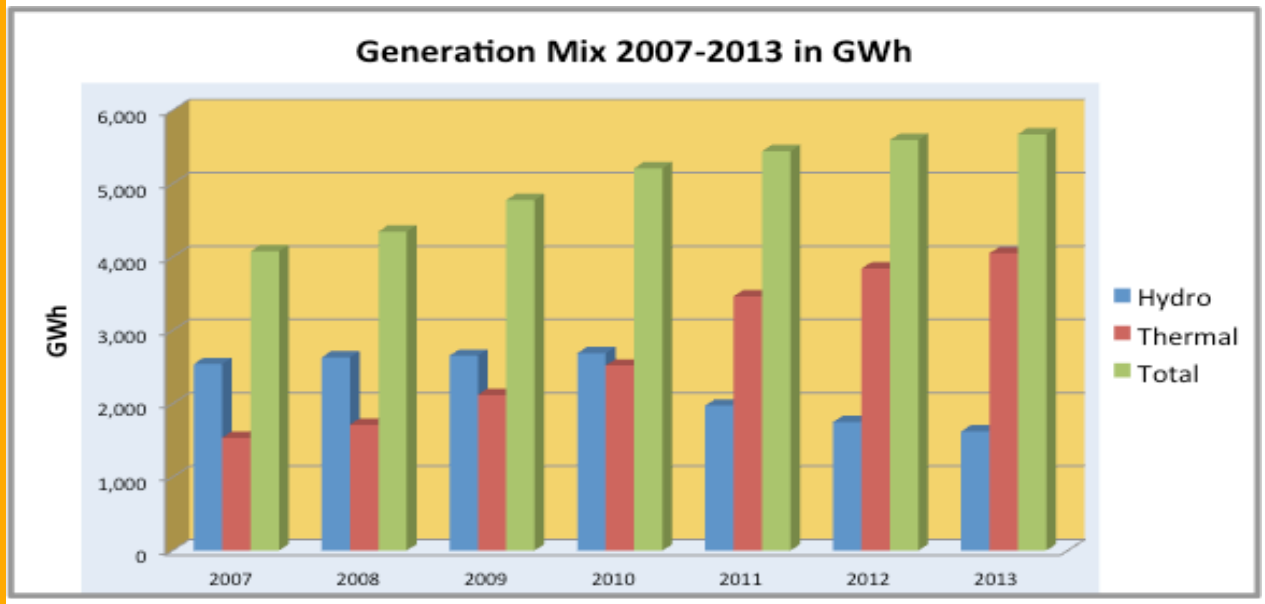
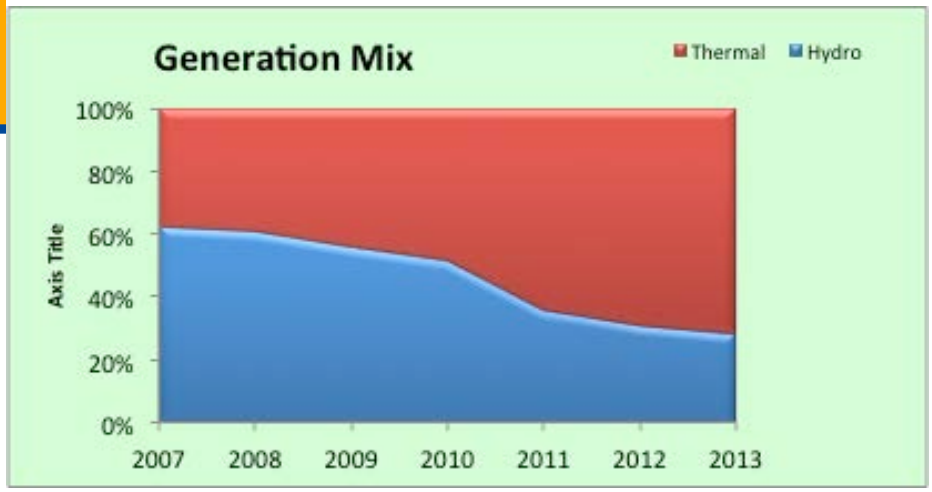
THE NATIONAL GRID SYSTEM

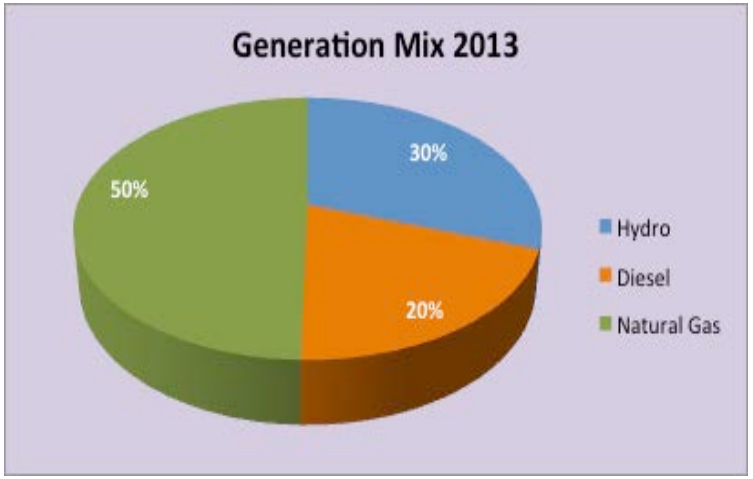
Electricity Capacity by Sources

Category	Total Capacity (MW)
TANESCO	**884**
IPPs	292
EPPs	317
SPPs	26
Isolated	81
Imports	14
Total	1,614



Generation Mix has increasing Thermal proportion due to reduction in Hydro contribution resulting from repeated drought





Capacity Insufficiency

Resource	Capacity		Utilization
	Installed	Available	
Hydro	561.8	299.3	53%
Natural gas	501.0	359.4	72%
Liquid fuel	438.40	243.88	56%
TOTAL	1501.2	902.5	60%

Why Low Availability?

- Drought -Lack of water in dams
- Insufficient gas – infrastructure (processing and pipeline)
- Inadequate funds to buy expensive fuel

Note:

1. The Maximum Demand of just over 900 MW is suppressed demand
2. The Off-grid id about 80 MW excluding own generation by mines

REGULATING RENEWABLE ENERGY IN TANZANIA

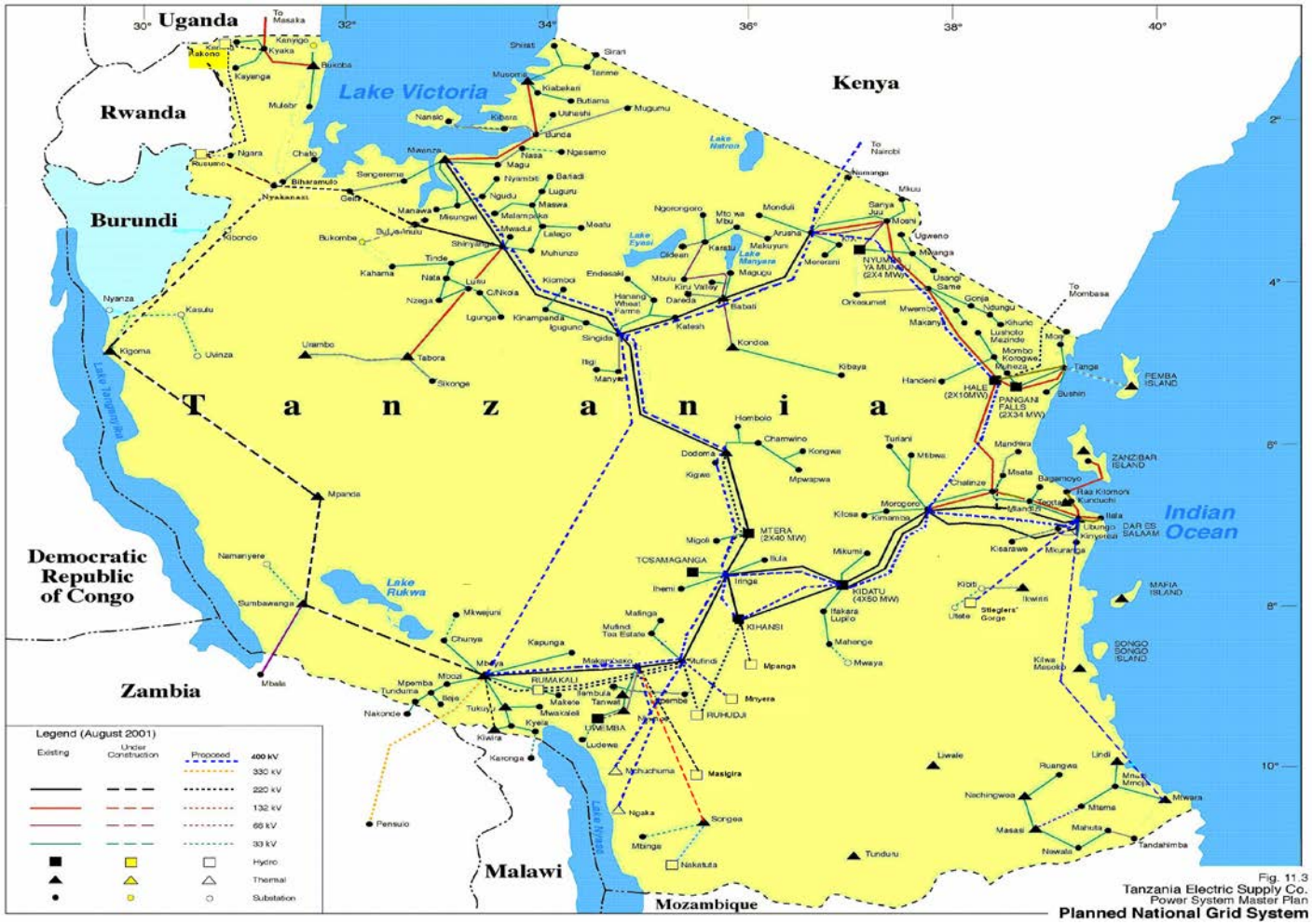


Fig. 11.3
Tanzania Electric Supply Co.
Power System Master Plan
Planned National Grid System

Regulatory tools

- The governing regulatory legal framework:
  - Energy Policy 2003 (under review)
  - The EWURA Act, Cap. 414
  - The Electricity Act, Cap. 131 (2008)
  - The Petroleum Act, Cap. 392 (2008)
  - Listed functions and duties of the Regulator and the Minister responsible for Electricity and Petroleum.
  - Other legislation FCC, REA, TBS, NEMC etc.

Key Players in the RE

- Ministry of Finance
- Ministry of Energy and Minerals
- Tanzania Electric Supply Company Ltd. (TANESCO)
- Rural Energy Agency (REA)
- Energy and Water Utilities Regulatory Authority
- Power Power Producers
- Financing Institutions (including DPs)
- Civil Societies
- Other regulatory authorities

Renewable Energy Enabling Environment

To increase the use of Renewable Energy the following needs to be in place

- Specific Policy and Legislation for Renewable Energy Development
- Rules and Guidelines
- Standards and Enforcement of Compliance
- Promotion of Renewable Energy

EWURA needs to support or play its regulation oversight towards increased development of Renewable Energy with other players

Policies and Legislation

- Develop Rules and Guidelines
  - *for Procurement of Renewable Energy Projects*
  - *translate the policies and legislation into rules, and guidelines*
  - *for licensing based on share of RE in accordance with Master Plan (Competition vs Sole Sourcing)*
  - *Develop Rules for Tariff regime for Renewable Energy*

- Need for Technical Standards and Enforcement
  - *cause to be established Technical Standards for Renewable Energy materials and Equipment*
  - *Inspection and protect against **substandard materials** and dumping of **obsolete** or environmentally unfriendly products*
  - *promote local capacity to manufacture, install and maintain RE equipment and materials*

Policies and Legislation

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- Promote Renewable Energy
  - Increase technical Know-how with other Key Players
  - Include Renewable Energy in various codes (Building Code)
  - promote local capacity to manufacture, install and maintain RE equipment and materials
  - Increase Public Awareness (Esp. Local)
  - Suitable REFiT for various technologies
  - Recommend Financial Enhancement facilities

Renewable Energy Development

- Renewable Energy Policy under development
- No specific RE legislation
- Small Power Producers Framework (2007)
  - Limited to 10 MW Export capacity
  - Standard Documents (PPA and Tariff Methodology based on Avoided cost)
  - Must take non-dispatchable
  - Avoided cost tariff (REFiT under development)
  - Main Grid seasonally modified
- Donor and Government Support to Financing

Lack of policy hindrence to growth

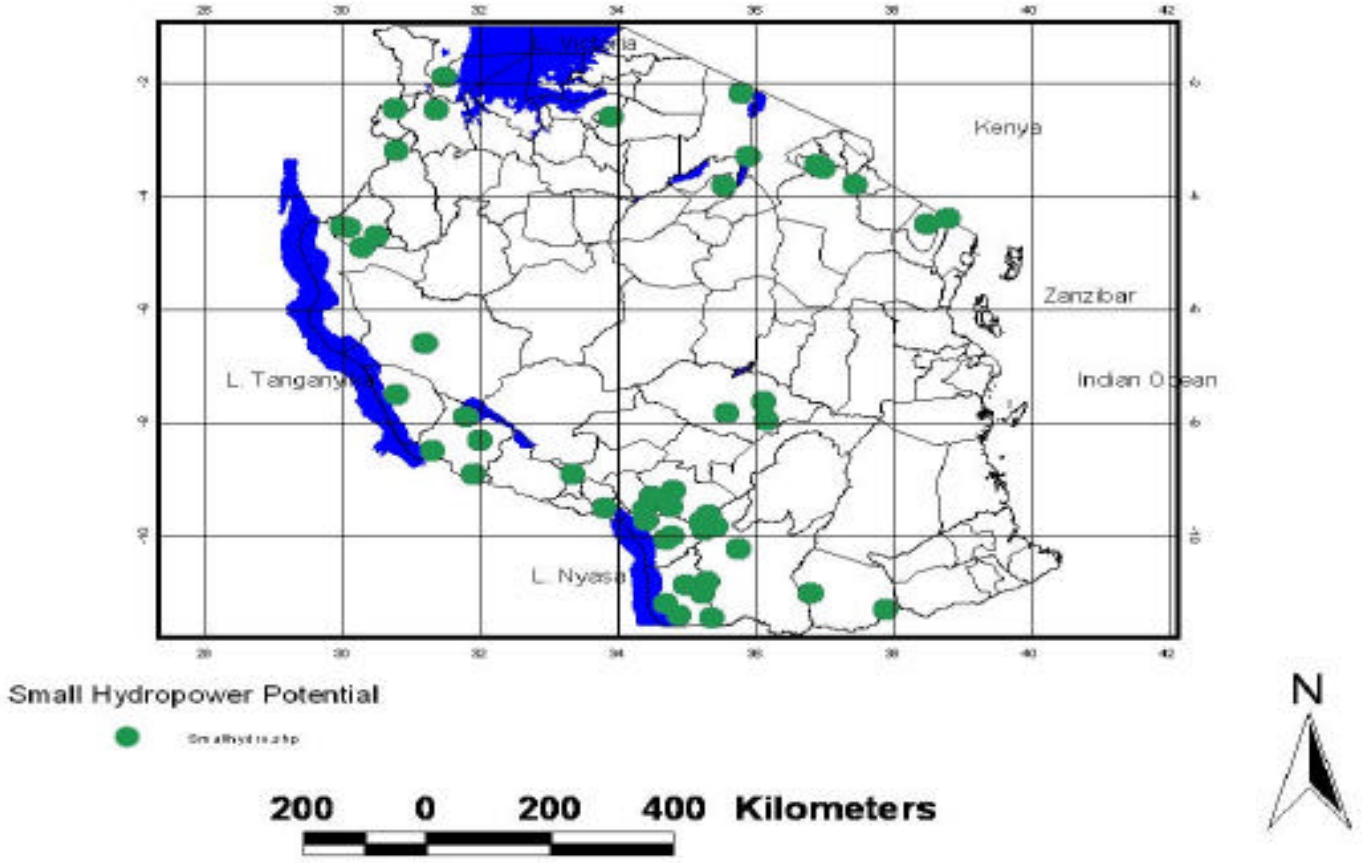
SPP Framework Documents

	Main grid	Mini-grid
Standardized PPA	*Standardized Power Purchase Agreement for Purchase of Grid-Connected Capacity and Associated Electric Energy Between Buyer and a Small Power Project*	*Standardized Power Purchase Agreement for Purchase of Off-Grid Capacity and Associated Electric Energy Between Buyer and a Small Power Project*
Tariff methodology	*Standardized Tariff Methodology* for the sale of Electricity *to the Main Grid in Tanzania Under the Standardized Small Power Purchase Agreements*.	*Standardized Tariff Methodology for the Sale of Electricity to the Mini-grids Under the Standardized Small Power Purchase Agreements*
Process Guidelines (roadmap)	***Guidelines for Developers of Small Power Projects (SPP) in Tanzania;*** ***• Includes standardized forms***	
Process rules	***Rules for Developers of Small Power Projects (SPP) in Tanzania***	
Interconnection Guidelines	***Guidelines for Grid Interconnection of Small Power Projects in Tanzania (Parts A, B, C)***	
Interconnection rules	***◊ Rules for Grid Interconnection of Small Power Projects (Not Yet provided)***	
Annual Tariff calculations	*Detailed Tariff Calculations under the SPPA for the Main Grid for each year*	*Detailed Tariff Calculations under the SPPA for the Mini-grids for each year*

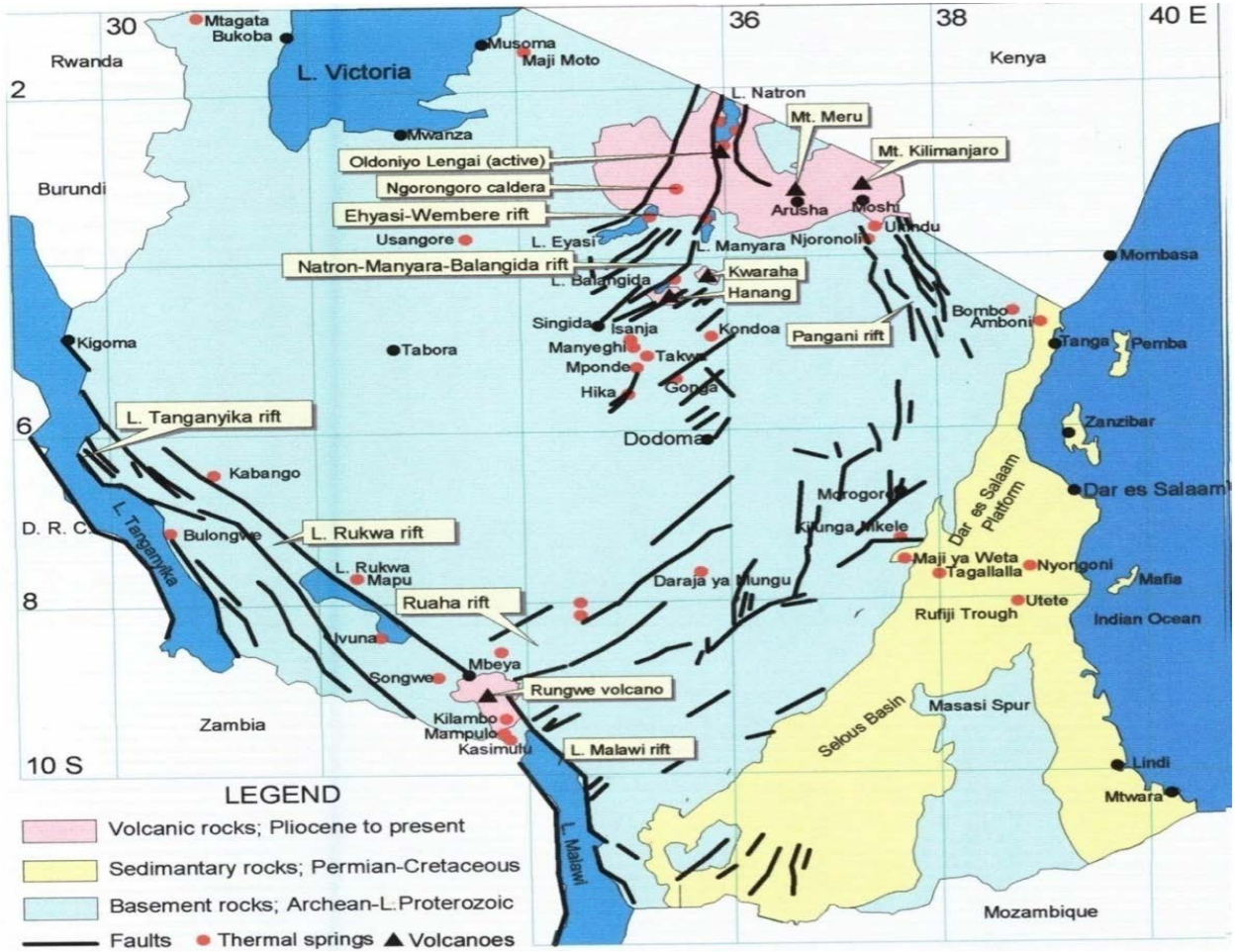
Renewable Energy Contribution

S/N	Renewable Energy Technology	Total Capacity (MW)	Own Use Capacity (MW)	Export Capacity to Main-Grid (MW)
1	Biomass (2)	35.5	25.0	10.5
2	Small Hydropower (2)	15.0	4.8	10.2
3	Solar	6.0	6.0	0
4	Wind	0.3	0.3	0
	Total	**56.8**	**36.1**	**20.7**

Mini-hydroelectric Power Development Identified Sites



Geothermal Potential Sites



Challenges

- Lack of adequate and unreliable energy infrastructures.
- Low access to basic energy services due to in adequate infrastructures
- Non Cost Reflective Tariffs (Recent tariff Increase will achieve cost reflective tariffs).
- Difficulties in attracting private capital, that complement public funds towards energy projects.

Challenges

- Some investors and public servants are uncomfortable with the transparency that characterizes the regulatory process.
- The energy regulatory environment is prone to interferences (state intervention, and regulatory capture etc).
- Difficulty in handling perceived financial risks related to energy projects.
- Inadequate policy framework, such as in relation to renewable energy amid private sector appetite in renewable projects

Conclusions and Way forward

- The Renewable Energy is abundant in Tanzania
- Development of sustainable energy projects requires substantial investment
- Growth of the energy sector in Tanzania is very much dependent on the participation of the private sector.
- There is a need of having continued support for an independent regulatory framework.
- A stable and robust regulatory regime is a major incentive to sustainable development of energy projects.

Conclusions and Way forward

- Need to ensure that there is a level playing field for all players in the energy sector.
- Need to nurture micro-enterprise investing in the energy sector.
- Effective regulation cannot be achieved without stable financing arrangement.
- Need to move towards competitive bidding in sourcing for investors for new investments in the energy sector.

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THANK YOU