

REGULATIONS AND MODALITIES FOR FEED-IN TARIFF OF GEOTHERMAL POWER IN TANZANIA



*Presentation at the
German Geothermal Congress
East Africa Rift Forum*

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Presented by:

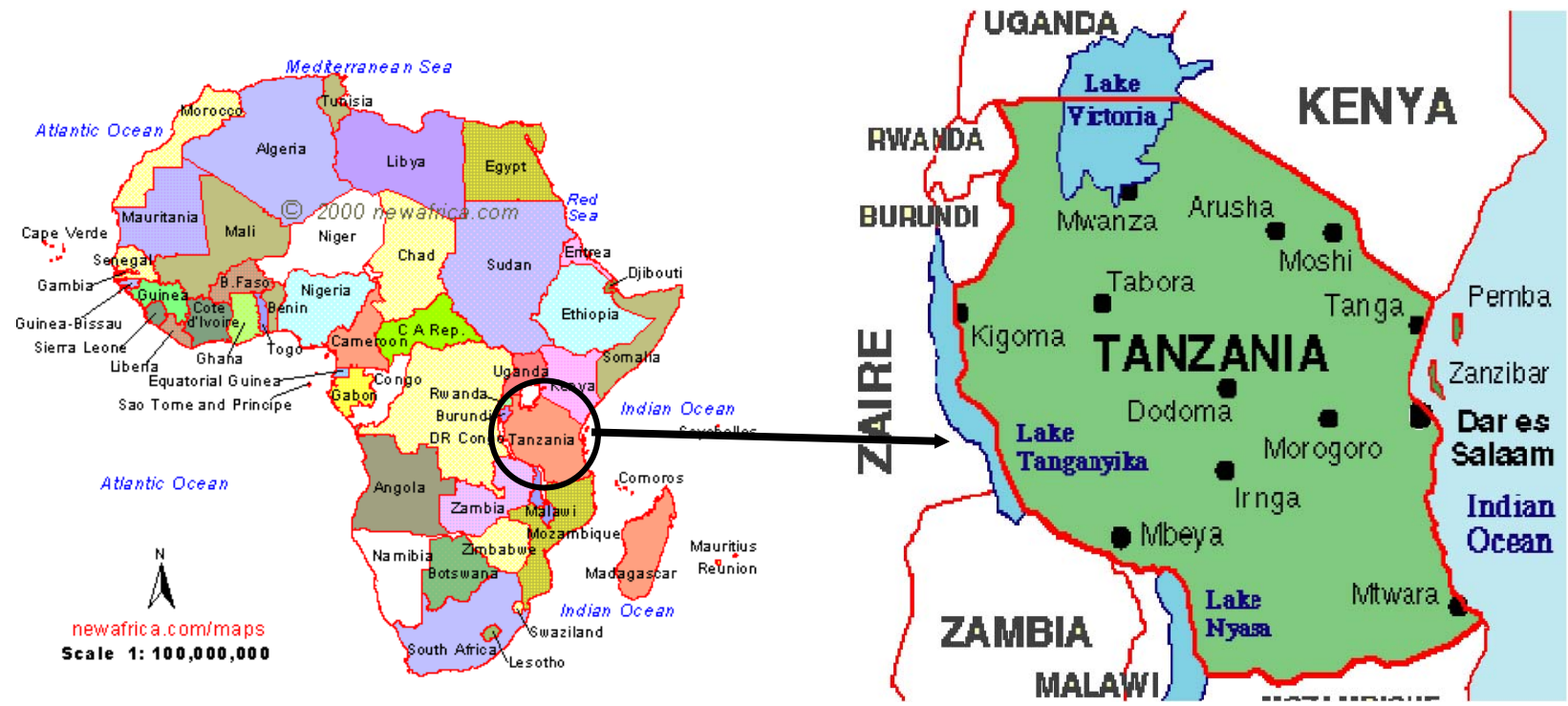
Kato T. Kabaka (kato.kabaka@tanesco.co.tz)

TANZANIA ELECTRIC SUPPLY COMPANY LIMITED (TANESCO)

Presentation Outline

1. Introduction
2. National Energy Policy and Reforms
3. Power System Master Plan
4. Geothermal Potentials
5. Feed in Tariff Regulation & Modalities

1. Introduction



Introduction (cont.)

- Population of Tanzania is ~38 million (estimate) 34.6 million (2002 last census)
- Electricity consumption in Tanzania is at 100 kWh/capita
- GDP growth (2001-2007) averaged 7.2%, 7.5% for 2008 and projected 6.5% in 2009.
- Plan: increase power capacity at a rate of 15% per annum to support the economic development envisaged in national “Vision 2025”

2. National Energy Policy & Reforms

Policy statements:

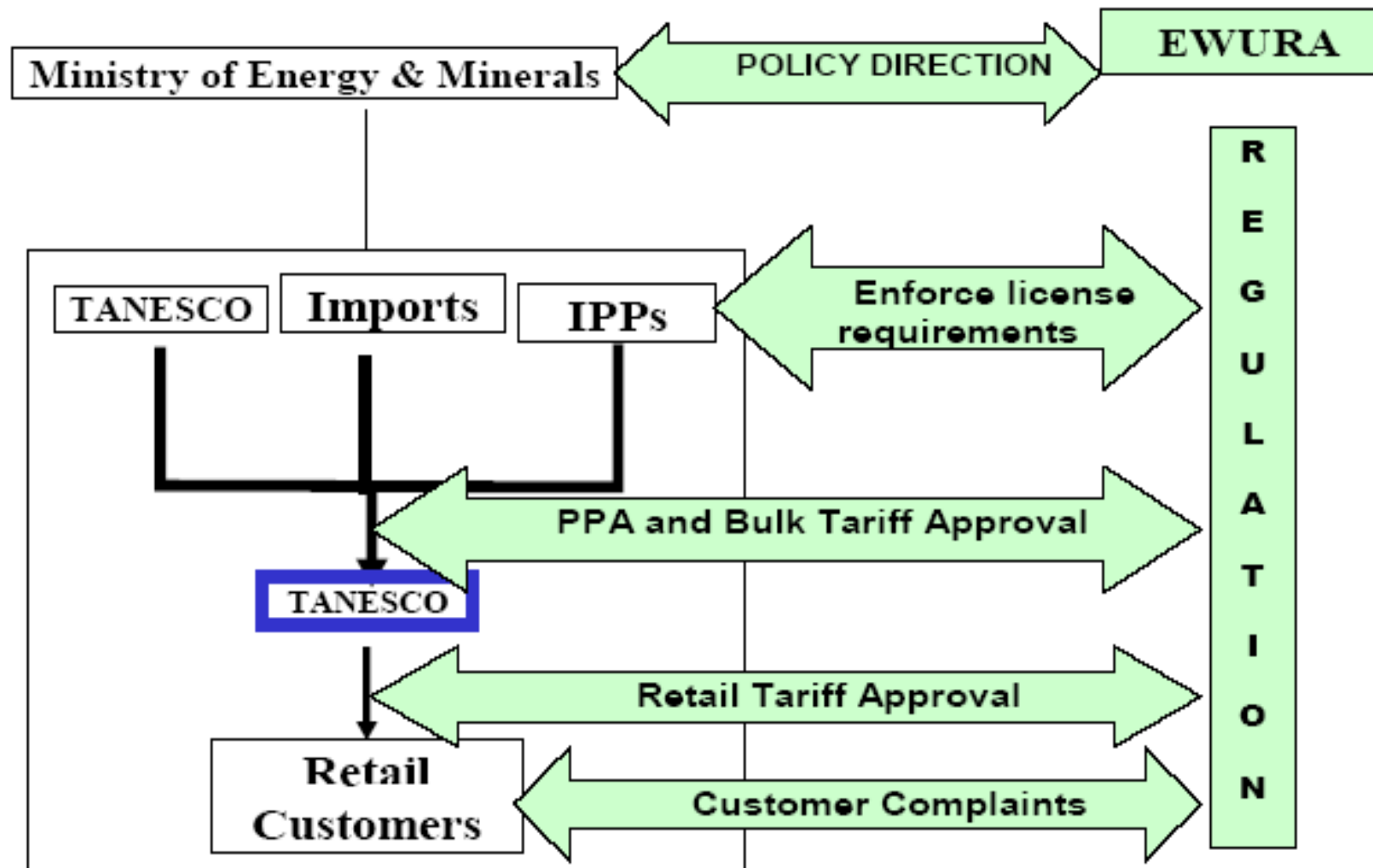
“ to ensure availability of reliable and affordable energy supplies and their use in a rational and sustainable manner in order to support national development goals. ”

“ to have a liberalised but regulated energy sector. The main thrust being increased private sector initiatives and investment for exploitation of energy resources in the country.”

Energy policy and reforms (cont.)

- Establishment of Energy and Water Utilities Regulatory Authority (EWURA) Act of 2003.
- Establishment of Rural Energy Agency and Rural Energy Fund, Act No. 8 of 2005.
- Electricity act, 2008: - providing conducive environment for IPPs to invest in energy sector.

Electricity Sub-sector Market Structure

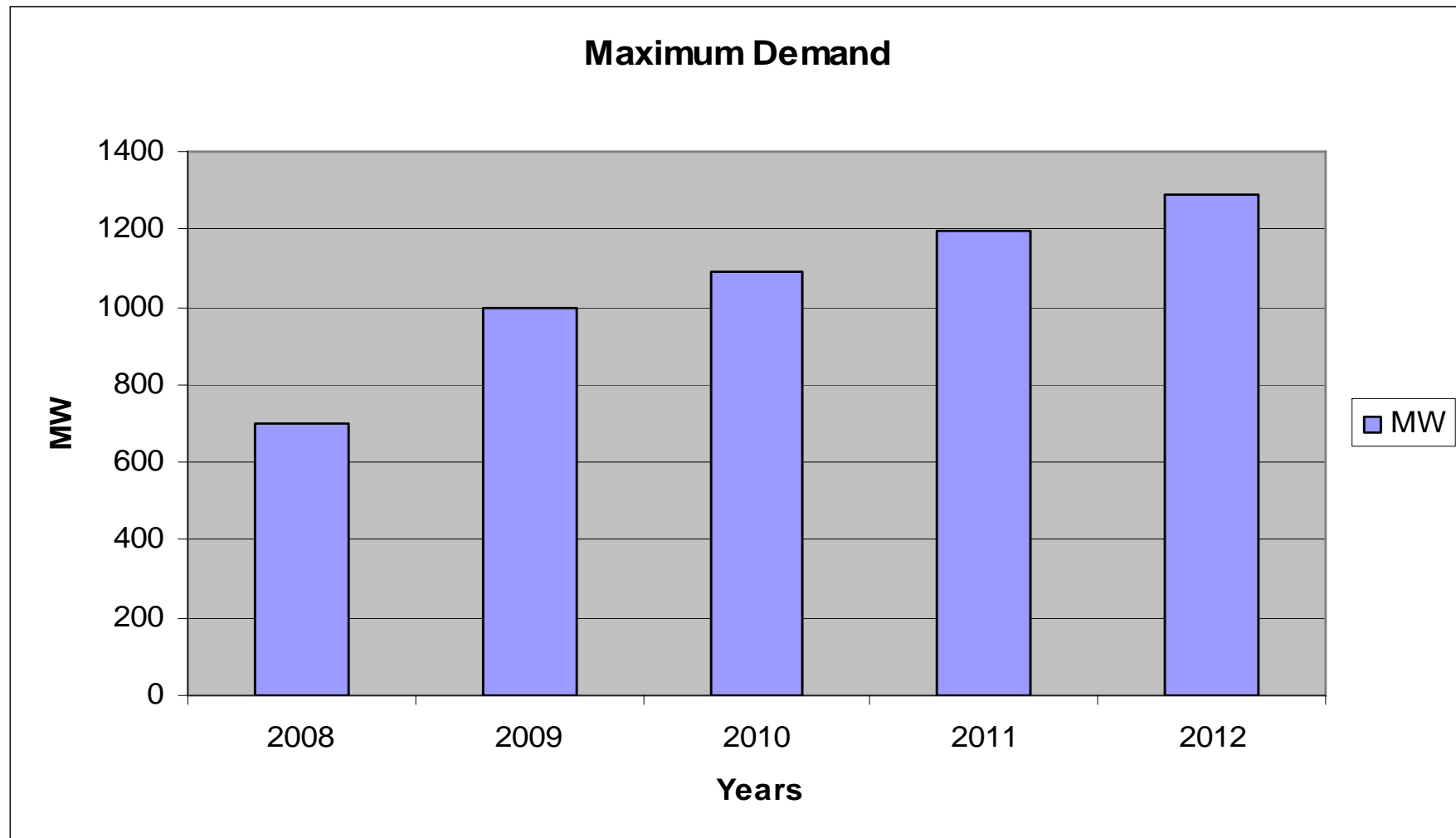


Current Generation Mix (Grid)

	Installed (MW)	Available (MW)	% Of Total Available
A. HYDRO PLANTS			
KIDATU, KIHANSI MTERA, PANGANI SYSTEMS (NYM, HALE & NPF)	561	550.5	58.2%
B. DIESEL PLANTS			
IPTL, TANESCO	185	114	12.0%
C. GAS BASED PLANTS			
UBUNGO (TANESCO), SONGAS (IPP)	282	282	29.8%
GRAND TOTAL	1,028.00	946.50	100%

3. Power System Master Plan Update (2009)

Short -Term Demand Projection: 2008-2012



Power System Master Plan (cont.)

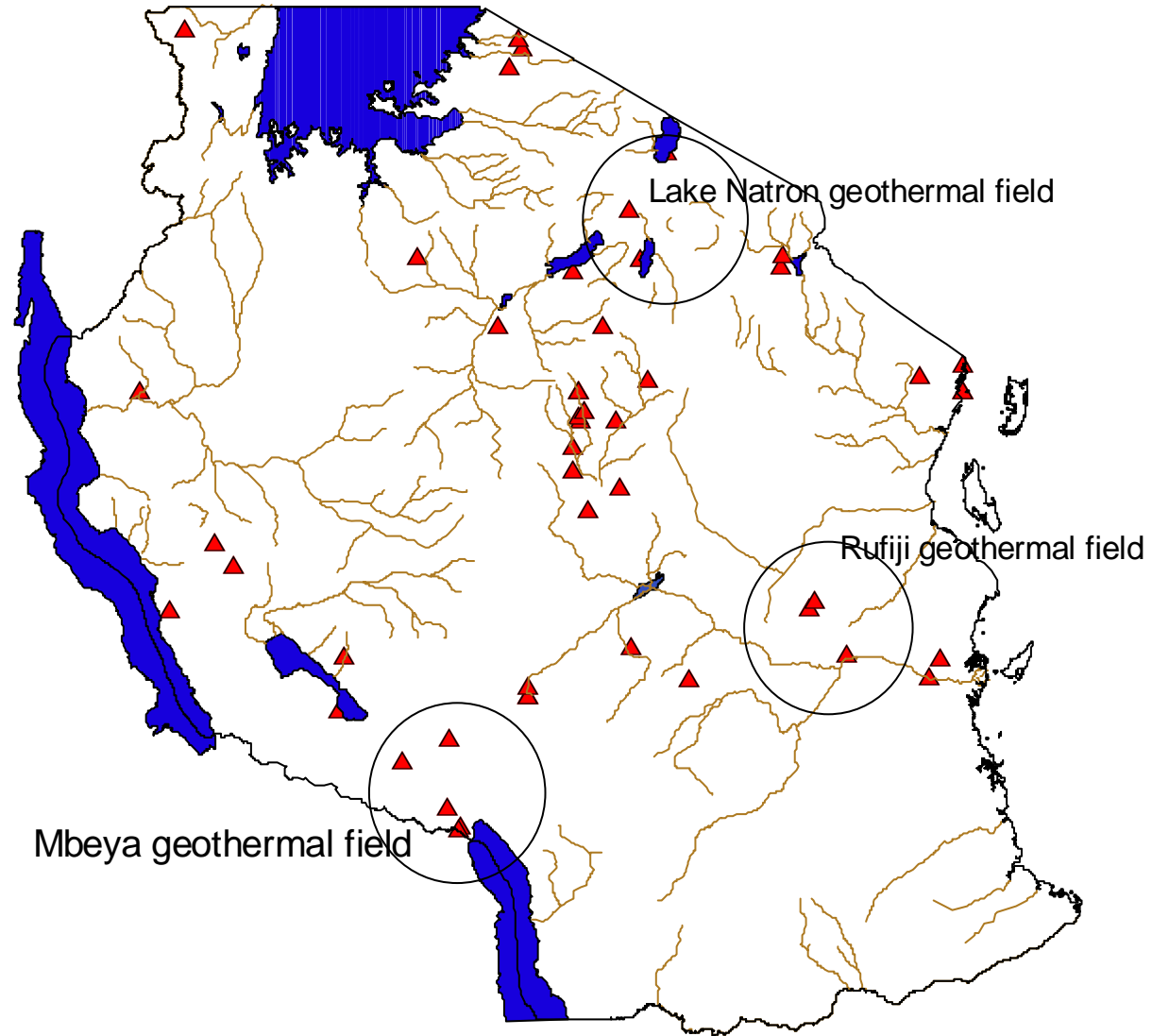
The PSMP, 2008/9 study shows that there is insufficient information to allow a geothermal source to be a firm candidate for the short or mid term.

However, 100 MW geothermal plant is considered a candidate by 2025 .

Resource evaluation: Available information not sufficient in comparison with other indigenous energy sources, e.g. hydropower, natural gas and coal

Level of studies: No geothermal field of commercial value has been singled out so far but rather preliminary assessments.

4. Geothermal Potentials in Tanzania



Major Geothermal Prospects in Tanzania



Potential Role of Geothermal Energy in Tanzania

- Significant load shedding occurred in 1994, 1995 and 2006, mainly due to drought and October, 2009 due to insufficient generation capacity
- Geothermal could cushion against bad weather that significantly influences hydro generation
- Geothermal could contribute significantly to Tanzania's future energy mix and contribute to improve national energy security.

5. Feed in tariff and modalities

- GoT through MEM and regulator (EWURA) has established framework for development of Small Power projects (SPP), geothermal inclusive .
- **SPP** : a power plant using a renewable energy source or waste heat, or cogeneration of heat and electricity, with an export capacity of up to 10 MW
- The aim is to promote development and operation of small power projects by local and foreign private investors (IPPs).

Standardized Power purchase Agreements & Tariff Approved Documents

- SPPA is a legal contract between an electricity generator and a power purchaser
- So far the feed in tariff (SPP) in Tanzania is not technology specific

SPPA documents:

- [Main Grid Connection](#)
- [Isolated Min Grid Connection](#)
- Standardized Tariff calculation Methodology
 - [Main Grid Connection](#)
 - [Isolated Min Grid Connection](#)

(downloadable at [http://www.ewura.go.tz /](http://www.ewura.go.tz/))

	Main grid	Mini-grid
Process Guidelines (roadmap)	<i>Guidelines for Developers of Small Power Projects (SPP) in Tanzania (under consultation)</i>	
Process rules	In draft form, under consultation	
Interconnection Guidelines	<i>Guidelines for Grid Interconnection of Small Power Projects in Tanzania (Parts A, B, C) (under consultation)</i>	
Interconnection rules	In draft form, under consultation	
Standardized PPA	<i>✓ Standardized Power Purchase Agreement for Purchase of Grid-Connected Capacity and Associated Electric Energy Between Buyer and a Small Power Project</i>	<i>✓ Standardized Power Purchase Agreement for Purchase of Off-Grid Capacity and Associated Electric Energy Between Buyer and a Small Power Project</i>
Tariff methodology	<i>✓ Standardized Tariff Methodology for the sale of Electricity to the Main Grid in Tanzania Under the Standardized Small Power Purchase Agreements.</i>	<i>✓ Standardized Tariff Methodology for the Sale of Electricity to the Mini-grids Under the Standardized Small Power Purchase Agreements</i>
Tariff calculations for year 2009	<i>✓ Detailed Tariff Calculations under the SPPA for the Main Grid for year 2009</i>	<i>✓ Detailed Tariff Calculations under the SPPA for the Mini-grids for year 2009</i>

Tariff incentive structure

- The national utility, TANESCO, has obligation to buy from SPP.
- Standardized tariff is above market rate to cover cost of generation and reasonable profit; for 2009 TZS 86.50 /kwh (wet season) 115.33 /kwh (dry season)
- Higher rate for off-grid SPP (334.83 /kWh), based on avoided cost of replacing diesel plants)
- Tariff is guaranteed for 15 years, reviewed annually

