



United Republic of Tanzania



COUNTRY REPORT ON KCCP PROGRAMME ON ENERGY POLICY

Presenter : Clemens Roman Kasongo
Ministry of Energy – Tanzania
June, 2026



Outline

1. General Information
2. Key Energy Resource Reserves
3. Socio-Economic Indicators
4. Organizational Structure Related to Energy
5. Past Energy Demand and Supply
6. Final Energy Consumption by Sector & Source
7. Electricity Generation & CO2 Emissions (Past 10 Years)
8. Electricity Generation Source Projections (MW)
9. Major Difficulties & Bottlenecks Faced
10. Program Objectives & Expectations
11. Appendix: Supplementary Data Profiles
 - a) Energy Prices & Tariff Structures
 - b) Regional Integration



1. General Information

- **Country Profile:** United Republic of Tanzania
- **Capital City:** Dodoma (Official Political Capital) & Dar es Salaam Commercial Hub.
- **Geographical Location:** East Africa, bordering the Indian Ocean (East), Kenya, Uganda (North), Rwanda & Burundi (Northwest), DRC (West), Zambia (Southwest), Malawi, and Mozambique (South).
- **Total Land Area:** 947,300 square kilometres. (Land Area: 885,800 km² and Water Area: 61,500 km²)

Global and Regional Ranking

- **In Africa:** It ranks as the **13th largest country** by total surface area.
- **In East Africa:** It is the 2nd **largest country** within the East African Community (EAC) regional bloc.
- **Globally:** It stands as the **31st largest country** in the world.

2. Key Energy Resource Reserves

- **Installed Capacity:** 4,522 MW,
- Hydro 2,727.31 MW (60.3%), Natural Gas 1,284MW (28.4%), HFO/Diesel 262.36 MW (5.8), Solar 65 MW (1.44%), Wind 2.40 MW (0.05%), Biogas 135.49 MW(3%) and Coal 45.40 MW(1%) as of May, 2026.
- **Resources Potential**
 - Solar 5GW, Wind 1.5GW, Géothermal 5GW,
 - Natural Gas 57 trillion cubic feet (TCF) of discovered reserves
- Hydro 5GW,
- Nuclear 10GW.
- *Coal*: Estimated reserves of 1.9 billion metric tonnes

3. Socio-Economic Indicators

- **Population:** 61,741,120 (based on the 2022 Census) ~68.5 million (Projected for 2025/2026)
- **Number of Households:** ~14.3 million households (Average size of 4.7 persons per household).
- **GDP:** ~\$85 Billion USD (2025 estimate).
- **GDP Growth Rate:** Sustainable baseline growth of 5.5% – 6.1% annually.
- **GDP Per Capita:** ~\$1,240 USD.
 - **Electricity Access rate;** 85.%
 - Electricity Connection Rate: 52.1
 - Clean Cooking: National Access rate 28.6%

4. Organizational Structure Related to Energy

- Ministry of Energy (MoE) — Responsible for formulating national energy policies, strategies, and legislative frameworks
- Main areas/departments (Electricity and Renewable Energy and Petroleum (Oil and Gas)
- **Ministerial Institutions:**
 - Energy and Water Utilities Regulatory Authority (EWURA) — Regulates technical, economic, and safety aspects of the electricity, petroleum, and natural gas sub-sectors.
 - Petroleum Upstream Regulatory Authority (PURA) Regulate and monitor all upstream petroleum operations (exploration, development, and production) and Liquefied Natural Gas (LNG) activities across Mainland Tanzania.
 - Tanzania Electricity Supply Company (TANESCO) State-owned utility Company responsible for generation, transmission, and distribution

5. Past Energy Demand and Supply

Primary Energy Supply by Source & Fuel Type (Historical Baseline)

- **Total Primary Energy Supply (TPES):** ~36,119 ktoe (2022 Baseline) growing to ~44,464 ktoe (2024/2025 Data).
- **TPES by Source (Production vs. Trade):**
 - *Domestic Production:* ~84% to 86% of total primary energy is produced locally (predominantly biomass/biofuels and domestic natural gas)
 - *Imports:* ~14% to 16% (Entirely comprised of refined petroleum products—gasoline, diesel, jet fuel—as Tanzania has no active oil refineries)
 - *Exports:* Negligible electricity wheeling or minor coal shipments to neighbouring regional markets (<0.5%).
- **TPES by Energy Source (Fuel Mix Share):**
 - *Biofuels & Waste (Biomass):* ~75.9% – 82.0% (The fundamental base of traditional household energy)
 - *Oil Products (Imported):* ~13.8%
 - *Natural Gas:* ~7.4%
 - *Hydropower:* ~0.9% – 1.5% .
 - *Coal:* ~1.5% – 2.0%
 - *Geothermal, Solar & Others:* <0.5%

6. Final Energy Consumption by Sector & Source

- **Total Final Consumption (TFC):** ~22,337 ktoe (2022) scaling towards ~25,000 ktoe currently
- **TFC by Sector:**
 - *Others (Residential, Commercial & Public):* ~64.0% to 70.0%, *Residential cooking alone dominates this segment.*
 - *Industry:* ~16.4% (Thermal processing, cement manufacturing, and mining assets).
 - *Transport:* ~12.2%, (Heavily dominated by road freight and passenger vehicles consuming imported diesel/gasoline).
- **TFC by Fuel Source:**
 - *Biofuels & Waste (Wood/Charcoal):* ~77.0%
 - *Oil Products:* ~16.1%
 - *Electricity:* ~3.1%
 - *Coal and Coal Products:* ~2.3%
 - *Natural Gas (Direct Use):* ~1.5% [IEA]

7. Electricity Generation & CO2 Emissions (Past 10 Years)

- **Electricity Generation Trends (GWh):**

- Total annual generation historically ranged from 6,000 GWh to 9,500 GWh, but has radically transformed past 10,000 GWh due to the commissioning of mega-projects.
- *Natural Gas*: ~50% – 60% of grid generation historically (~4,500 to 5,500 GWh).
- *Hydropower*: Historically ~30% – 40% of grid generation (~2,500 to 3,500 GWh). *Note: The landmark commissioning of the Julius Nyerere Hydropower Plant (JNHPP) at 2,115 MW is structurally flipping the grid to become Hydro-dominant.* *Oil (HFO/Gas Turbines)*: ~2.5% used primarily for peak shaving or isolated off-grid regions. *Solar/Biomass/Wind*: ~1.0% (~50–80 GWh total)
- *Nuclear*: 0% (No nuclear capacity exists or is planned in the short term).

- **CO2 Emissions (Mt CO2) Trends:**

- Total fuel combustion emissions: ~14.5 Mt CO2.
- *Emissions by Sector*: Transport (~50% due to liquid fuels) > Industry (~30%) > Others (~20%).
- *Emissions by Source*: Liquid Oil Products (~70%) > Natural Gas (~22%) > Coal (~8%). *(Biomass emissions are structurally categorized under land-use change rather than fuel combustion).*

8. Electricity Generation Source Projections (MW):

Source	Horizon (Years)		
	2024 - 2028	2029 - 2038	2039 - 2050
	MW	MW	MW
Hydropower	2,835.77	5,207.87	5,264.87
Gas Fired	3,074.82	5,980.82	8,010.82
Imports	200	200	200
Geothermal	135	360	1,110.00
Wind	1,350.00	2,450.00	3,050.00
Solar	1,129.00	1,429.00	1,729.00
Diesel	0	0	0
HFO	0	0	0
Biomass	10.5	10.5	10.5
Uranium	0	0	480
Hydrogen	0	0	50
Total	8,735.09	15,638.19	19,905.19

9. Outlook of Energy Demand and Supply

Slide 7: Energy Demand Outlook (2030, 2040, 2050)

- **Primary Energy Supply Outlook (ktoe):**
 - *2030:* Projected ~52,000 ktoe. Driven by industrialization under the National Development Vision.
 - *2040:* Projected ~68,000 ktoe. Accelerated shift away from traditional biomass towards modern energy.
 - *2050:* Projected ~85,000 ktoe. Full diversification scenario.
- **Final Energy Consumption Mix Shifting Targets:**
 - *Residential Transition:* The government aims to transition **80% of households to clean cooking solutions by 2034**, replacing traditional wood fuels with LPG, natural gas pellets, and electric pressure cookers.
 - *Industrial Expansion:* Industrial consumption is forecasted to grow at a CAGR of 7.5%, overtaking residential shares by 2040 due to expanding manufacturing zones.
- **CO2 Emissions Trajectory:** Decoupling GDP from carbon intensity by heavily implementing gas and hydro solutions, capping energy sector emissions at a lower per-capita baseline compared to global averages

10. Energy Policy, Measures, & Bottlenecks

Current Energy Policy & Measures (3 Main Points)

Tanzania National Energy Policy, 2015 (NEP 2015) is a strategic framework designed by the Ministry to ensure a sustainable, adequate, reliable, and affordable energy supply for the country's socio-economic development. Other initiatives include:

- 1. National Clean Cooking Strategy (2024–2034):** A high-profile presidential initiative targeting a complete transition of 80% of Tanzanian households away from polluting biomass to clean fuels (LPG, Compressed Natural Gas, Electricity) over a ten-year window (2034).
- 2. Power System Master Plan (PSMP 2024 update) Optimization:** Focuses on expanding baseload grid networks through mega-hydropower infrastructure alongside gas-to-power corridors to guarantee affordable electricity for heavy industry.
- 3. National Energy Efficiency Strategy (2024–2034):** A framework targeted at decreasing transmission grid losses (currently at ~12-14%), optimizing industrial motors, and establishing standardized green building energy codes

11. Major Difficulties & Bottlenecks Faced

- 1. Weak Transmission Infrastructure and System Losses** including High Technical Losses, Frequent Grid Inaccessibility and Low Supply Reliability
- 2. High Vulnerability to Climate Risks** (Hydropower Dependencies) such as Rainfall Fluctuations, Delayed Diversification to renewable energy and Biomass Dominance:
- 3. Financial Constraints and Reliance on External Funding** including Capital Intensity, Foreign Debt Exposure and Low private sector participation

12. Program Objectives & Expectations

Slide 11: Training Goals & Ministry Expectations

- **Subjects I Especially Would Like to Learn in This Program:**
 - *Advanced Power System Planning:* Integrating variable renewable energy (Solar and Wind) into a national grid without compromising stability.
 - *Policy Instrumentation:* Designing effective fiscal incentives, public-private partnership (PPP) models, and tariff structures that attract international clean energy investment.
 - *Energy Efficiency Modeling:* Practical deployment techniques for industrial energy management in expanding developing economies.
- **Expectation of the Ministry to This Program:**
 - *Institutional Capacity Building:* Ability to streamline project appraisal times for international developers looking to build solar, wind, or geothermal installations.
 - *Enhanced Bilateral Cooperation:* Strengthening institutional ties between the Ministry of Energy/TANESCO and international partners like JICA.
 - *Strategic Knowledge Transfer:* The Ministry expects to return with actionable regulatory models from Japan to refine Tanzania's grid-balancing codes.

13. Appendix: Supplementary Data Profiles

- **1. Energy Prices & Tariff Structures**
 - **Electricity Tariffs:** Managed by EWURA under a multi-tier framework
 - *Domestic Low Usage (D1):* Highly subsidized lifeline tariff for low-income households (<75 kWh/month).
 - *General Usage (T1):* Aimed at commercial and standard urban residences (~\$0.10 - \$0.12 per kWh).
 - *Industrial Tariffs (T2/T3):* Structured to promote local value addition with lower per-kWh rates but peak demand charges.
 - **Petroleum Products:** Regulated monthly by EWURA utilizing a transparent import parity pricing formula based on global Mediterranean FOB values plus local taxes/levies.

14. Appendix: Supplementary Data Profiles

■ 2. Regional Integration

Regional transmission interconnections are set to change the landscape of the electricity sector in Tanzania over the next few years. Tanzania's strategic location at the boundary of the EAPP and the SAPP presents vast opportunities for power trade within Southern and Eastern Africa region.

- It is estimated that a total of 1.5 GW of interconnections between Tanzania and neighboring countries (Kenya, Zambia, Burundi, and Rwanda) will be complete by 2028.

■ Recent Development

- ✓ Interconnection with Burundi and Rwanda was completed in March 2023 through the commissioning of transmission lines for the Rusumo Falls Hydroelectric Power Station.
- ✓ The Kenya–Tanzania Power Interconnector Project was commissioned in November 2024
- ✓ Tanzania–Zambia interconnector is already under construction, and its finalization is expected by 2028;