



Federal Ministry
for Economic Affairs
and Energy



TANZANIA: NEW RENEWABLE ENERGY REGULATORY FRAMEWORKS & STEPS TO BECOME AN SPP/IPP

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RENEWABLE ENERGY REGULATORY FRAMEWORKS AND SPPS/IPPs

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TANZANIAN ENERGY GOVERNMENT ARMS

Ministry of Energy and Minerals (MEM): is responsible for setting and reviewing policies and strategies set out in the national Energy policy and Strategy, through issuances and guidelines.

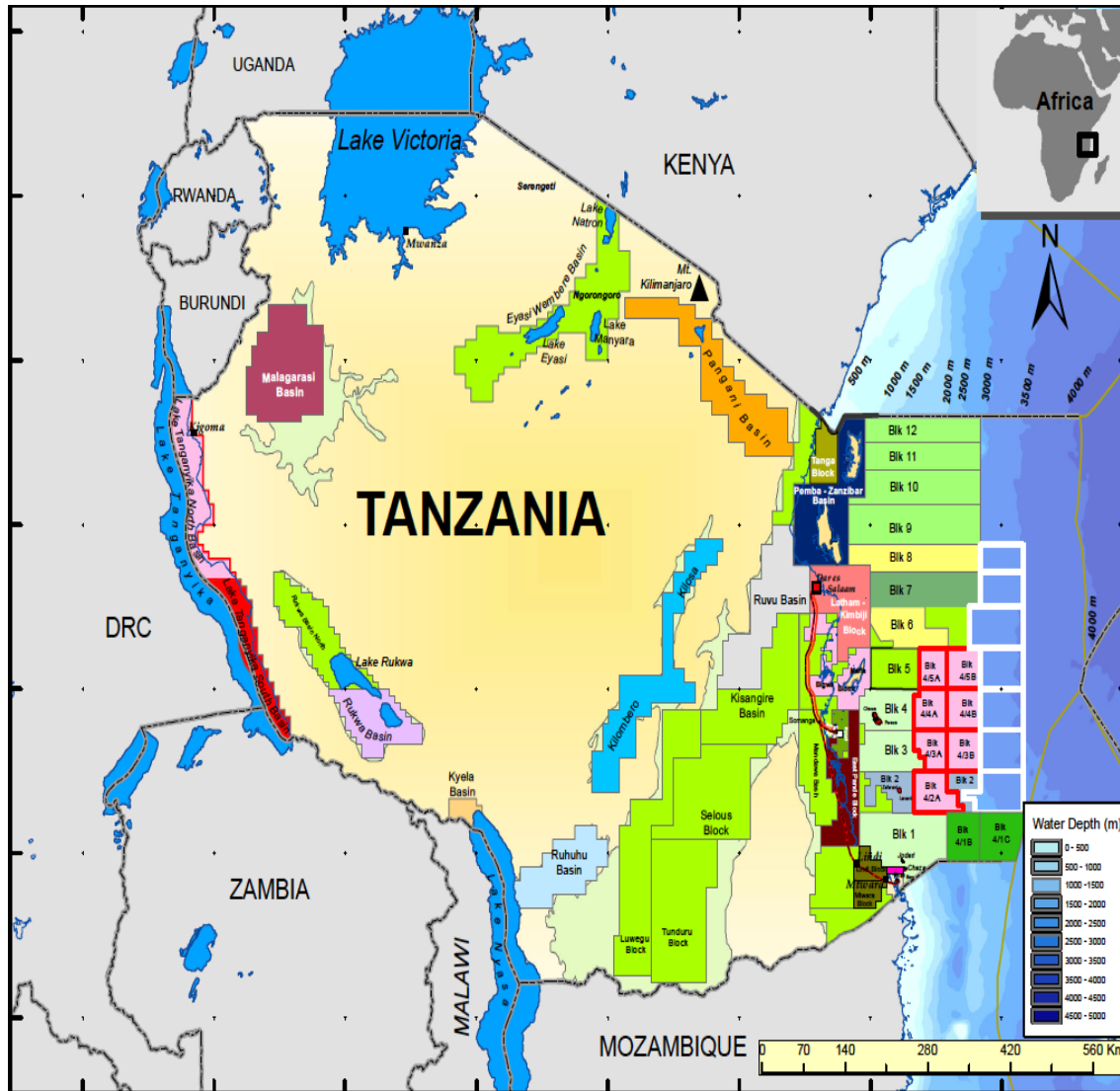
EWURA: is an independent multi-sectoral regulatory authority. EWURA is responsible for technical and economic regulation of the electricity, petroleum, natural gas, and water sectors for Tanzania.

TANESCO: a parastatal organisation under the Ministry of Energy and Minerals. TANESCO generates, distributes and sells bulk electricity to mainland Tanzania. (Sole buyer of on-grid power from SPPs and IPPs)

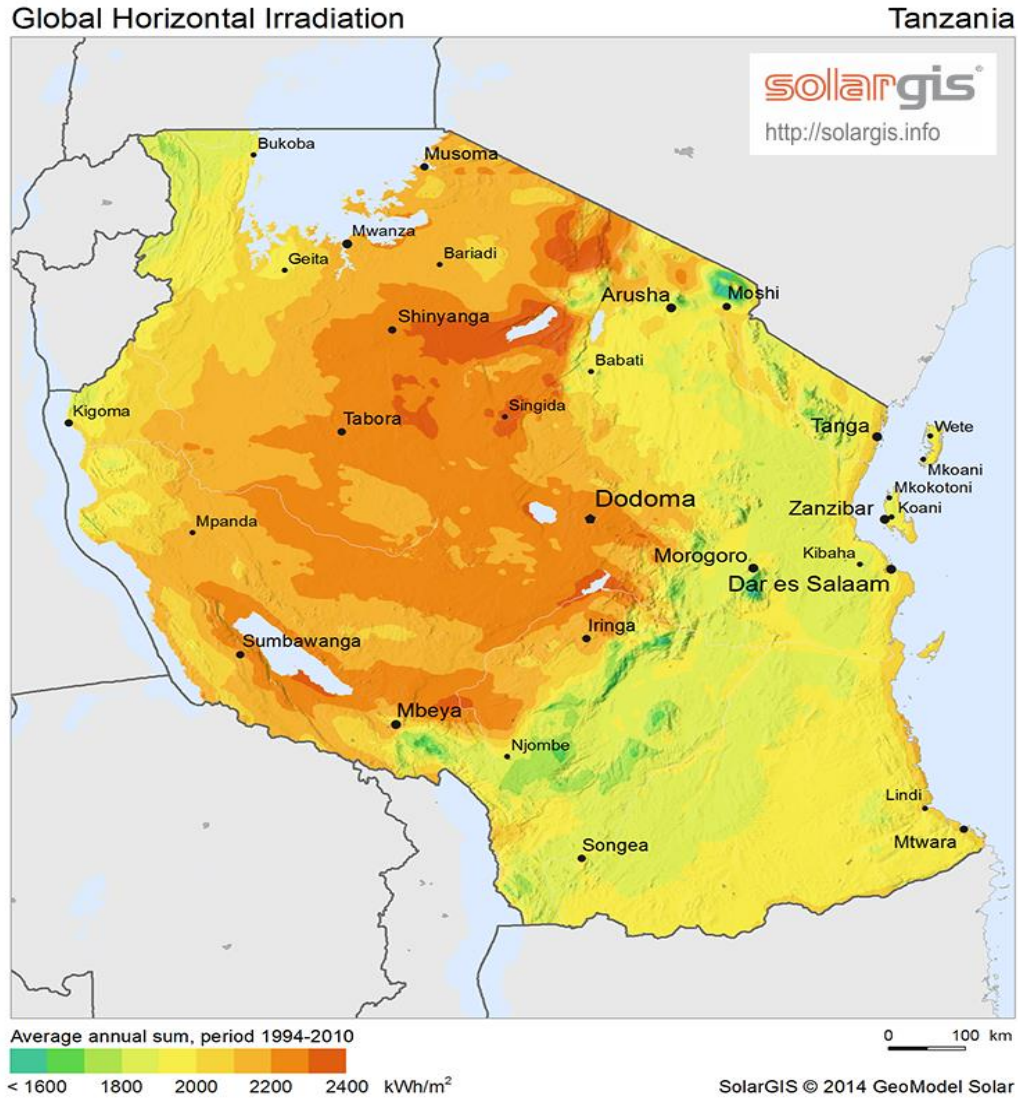
REA: is an independent body under MEM. REA is responsible for promoting, facilitating, and improving modern energy access to rural areas of mainland Tanzania. It is also responsible to finance eligible rural energy projects and activities in rural Tanzania.

(AFDB, PDF, Renewable Energy in Africa – Tanzania, 2015)

OIL AND GAS MAP OF TANZANIA



SOLAR RADIATION MAP OF TANZANIA



CURRENT POWER SITUATION

CURRENT AND PLANNED POWER SUPPLY

Source	Current Capacity	Additional Capacity (2015 - 25)	Capacity by 2025
Hydro (MW)	561	1,529.00	2,090.84
Natural Gas (MW)	527	3,968.00	4,469.00
HFO/GO/Diesel (MW)	495	-	438.40
Coal (MW)	-	2,900.00	2,900.00
Wind (MW)	-	200.00	200.00
Solar (MW)	-	100.00	100.00
Geothermal (MW)	-	200.00	200.00
Interconnector (MW)	-	400.00	400.00
TOTAL (MW)	1,583	9,297.00	10,798.24

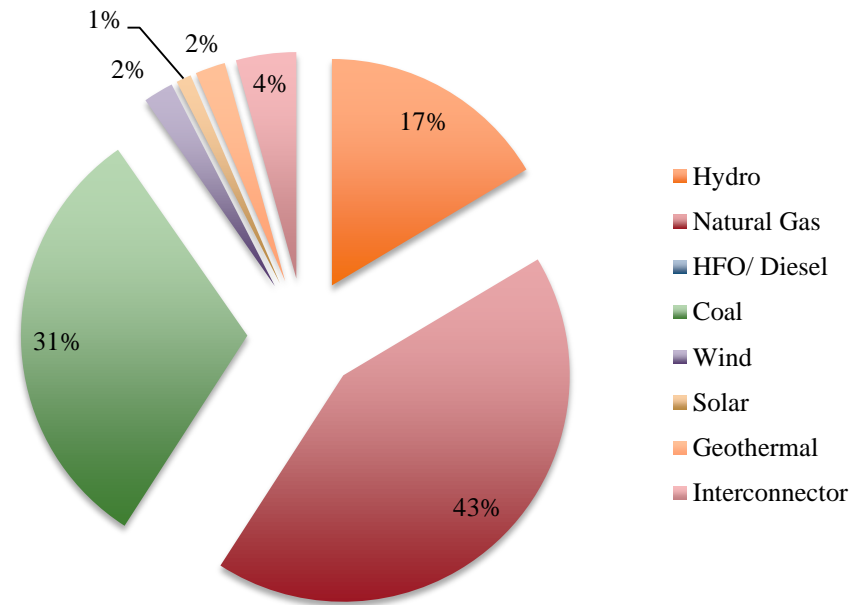
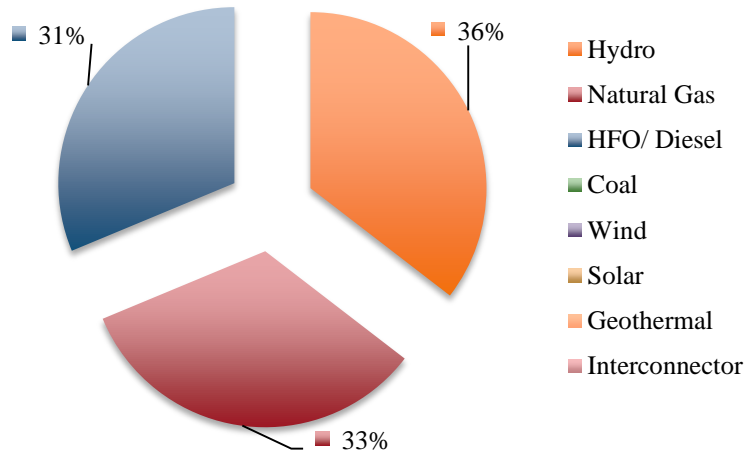
MEM, 30th JUNE 2014, ELECTRICITY SUPPLY INDUSTRY REFORM STRATEGY AND ROADMAP, PDF.

POWER SITUATION FORECAST

CURRENT VS. FUTURE OF ENERGY GENERATION TECHNOLOGIES.

2015-2025

Current



FUTURE ENERGY NEEDS

FUTURE ENERGY NEEDS: 20 YEARS, BUSINESS AS USUAL

- ◆ **9,000 MW** of additional generation capacity will be needed by 2035 to replace older facilities and to meet demand.
- ◆ According to the Tanzanian Power System Master Plan, the additional capacity will be met by **large Hydro (35%), Oil and Gas (21%),** and **coal (41%)** – majority of the bulk.
- ◆ Only **3%** has been given consideration for Renewable Energies.

FUTURE ENERGY NEEDS

SHORT TERM ENERGY DEMAND

- ❖ Due to severe droughts, capacity for hydro power has decreased by almost 2/3 of original capacity (From 98% down to 40%, currently 36%). **A NEED TO FILL THIS POWER GAP!**
- ❖ Resulting to a situation of load shedding and increased use of thermal power in the short-term needed to compensate for the losses.
- ❖ The 2012 Power System Master Plan foresees additional power need of 2,168 MW gas power plant, 60 MW of Solar PV, 100 MW of Wind Energy, 11 MW of Small hydro power, 60 MW of HFO, and 400 MW of coal between 2013 – 2017. **Most being IPPS!**

REGULATORY ENVIRONMENT: GOVERNMENT FOCUS

- ❖ Government has a focus for rural electrification, they wish to target 75% electrification by 2035.
- ❖ Rural Electrification opportunities through Mini-grids and off-grid systems.
- ❖ Low technical capacities and expertise, favour laws for foreign investors into the country.
- ❖ Grid extension is a priority, as only major towns are connected: Dar, Mwanza, Arusha, Moshi, Tanga.

ASSISTING RE PROGRAMS: Tanzania Energy Development and Access Project

TEDAP

About the program	
What is TEDAP offgrid component?	A program launched by Rural Energy Agency (REA) supported by the World Bank and Global Environmental Facility to help develop offgrid and renewable energy projects in Tanzania. The off-grid component has USD 22.5Mn allocated to improve rural electricity access, promote renewable energy projects and small scale solar market development in Tanzania. The program also has technical assistance funds allocated to build capability for private sector (Banks and developers) in Tanzania to develop renewable energy projects
What is TEDAP Credit Line?	provides long term (15 years) source of funds to financial institutions that lend to eligible rural or renewable energy projects. The program is administered by TIB (Tanzania Investment Bank) on behalf of Ministry of Finance under the direction of REA and BoT.

THE WORLD BANK GROUP, TEDAP PPT. <https://www.esmap.org/sites/esmap.org/files/TEDAP%20SPPs%2011-18.pdf>

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ASSISTING RE PROGRAMS: TEDAP

Benefits under TEDAP - Technical Assistance	
Matching Grants	Provide technical assistance to developers and private financial institutions to hire renewable energy / financial / engineering experts to help with your project .
Connection Performance Grants	Upto 500\$ / connection in rural areas that currently do not have grid access; Covers maximum of 80% of the transmission and distribution costs of a project including HV / LV lines; meters and providing access points; includes connections to households, businesses and institutions; Grant schedule: 40% Disbursement upon signing agreement; 40% disbursement upon materials at site; 20% disbursement upon completion of the works.
Benefits under TEDAP Credit Line - Get long term loans (upto 15 years) for your project	
Loan Refinancing facility	Banks that lend to your project can get upto 70% of your project loan (85% for projects <3MW) refinanced by MoF credit line; upto 15 year loan terms;
Interest Rates	Banks can borrow at interest rates that are linked average of BoT term deposit rates; current rate is between 8-9% and this is revised every six months; These rates are periodically update by TIB in their and REA's credit line program website. The actual interest rate to the project is determined by the banks based on the perceived credit risk of your project.

THE WORLD BANK GROUP, TEDAP PPT. <https://www.esmap.org/sites/esmap.org/files/TEDAP%20SPPs%2011-18.pdf>

ASSISTING RE PROGRAMS: MINI GRIDS

Mini – grids are estimated to provide 20% rural electrification coverage

LIGHTING RURAL TANZANIA COMPETITION (LRTC):

- **LRTC** is a grant award project that came into action in 2010, the LRTC 2010, followed by LRTC 2012, and lastly LRTC 2014.
- The aim of the project is to increase access to modern energy services for off-grid rural areas, support innovative and sustainable local level solutions, and increase private sector participation in rural areas.

LRTC 2014 – Promotion of Mini-Grids for electrification of remote off-grid rural villages and islands in mainland Tanzania.

- Participation was open to all.
- Awards to winners varied in size according to the their needs outlined in their proposals. However, the awards did not exceed TZS 232,170,000.00 (roughly USD 100,000).

• **ROUGHLY 18% OF TANZANIA IS CONNECTED TO THE MAIN GRID.**

STATUS OF ISOLATED MINI GRIDS OPERATED BY TANESCO AS AT MARCH 2015

	POWER STATION	NO. OF UNITS	UNIT CAPACITY (kW)	TOTAL CAPACITY (kW)
1	BIHARAMULO	2	424	848
2	BUKOBA	4	640	2,560
3	KASULU	2	1,250	2,500
4	KIBONDO	2	1,250	2,500
5	KIGOMA	5	1,250	12,310
		2	1,000	
		4	640	
		3	500	
6	LIWALE	2	424	848
7	LOLIONDO	4	1,250	5,000
8	LUDEWA	2	510	1,270
		1	250	
9	MAFIA ISLAND	2	640	2,128
		2	424	
10	MBINGA	2	1,250	2,750
		1	250	

PATRICE TSAKHARA, TANESCO, SOLAR-PV HYBRID WORKSHOP BERLIN, PPT.

STATUS OF ISOLATED MINI GRIDS OPERATED BY TANESCO AS AT MARCH 2015

	POWER STATION	NO. OF UNITS	UNIT CAPACITY (kW)	TOTAL CAPACITY (kW)
11	MPANDA	2	660	2,600
		2	640	
12	NAMTUMBO	1	400	400
13	NGARA	2	476	952
14	SONGEA	2	1,800	8,095
		1	1,915	
		1	660	
		3	640	
15	SUMBAWANGA	4	1,250	5,000
16	TUNDURU	2	640	1,980
		2	350	
17	SOMANGA	3	2,500	7,500
18	MTWARA	7	2,000	21,800
		4	1,950	
	TOTAL			82,291

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ASSISTING RE PROGRAMS: BIOGAS

TANZANIA DOMESTIC BIOGAS PROGRAM (TDBP)

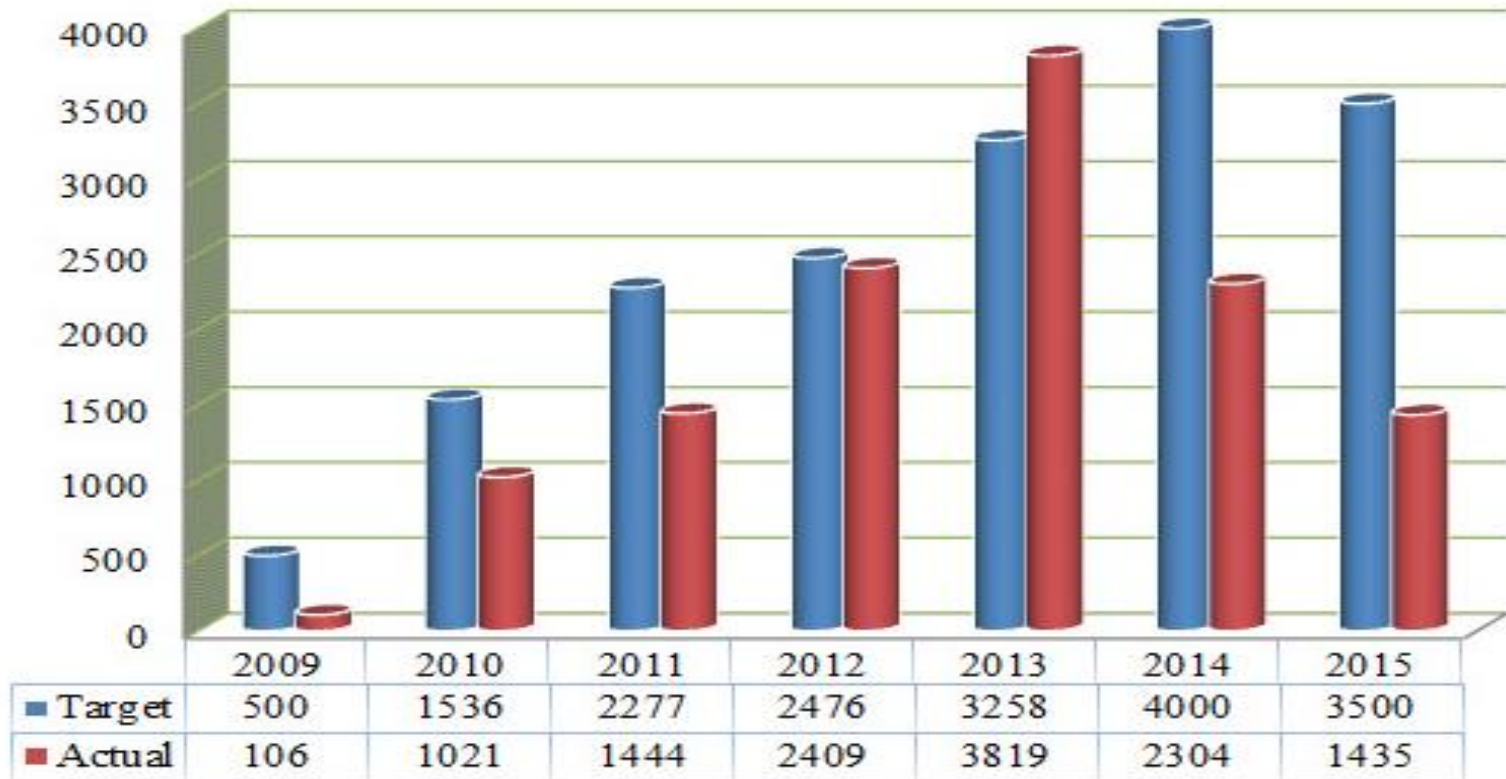
- Component of the African Biogas Partnership Programme funded through Hivos, and SNV.
- Implementation of TDBP was between 2009 -2014 under the National Biogas Steering Committee (NBSC), chaired by the Ministry of Energy and Minerals.
- The aim of the programme is to **achieve installation of around 33,000 domestic biogas plants, capacities of 4m³ – 13m³ by December 2017.**
- TDBP promotes the use of the biogas slurry as an alternative to expensive fertilisers.

(<http://www.biogas-tanzania.org/tdbp/about/category/archivements>)

ASSISTING RE PROGRAMS

TANZANIA DOMESTIC BIOGAS PROGRAM (TDBP)

Digesters annual projections and actual constructed figures



NEW REGULATIONS FOR RENEWABLE ENERGIES

COMPETITIVE BIDDING PROCESS FOR SOLAR PV AND WIND PROJECTS:

- On the 29th of February 2016, EWURA approved the **Competitive Bidding (tendering)** framework for Small scale projects (**1MW – 10MW**), for **Solar PV and Wind, or Hybrid technologies. (In Effect from 1st April 2016)**
- SPPs of upto **1MW**, for Solar PV and Wind, will be **exempt** from the competitive bidding/ tendering process.
- Tariffs for solar PV and Wind upto **1 MW** will be based on a **Published document**, **‘REFIT of a 500 kW biomass’ project**, connected to the **main grid PLUS a 5% premium**, and **15% premium for those connected to the Isolated Mini Grid.**
- SPPs generating electricity through **Biomass or hydro-power**, tariffs shall be determined based on **technological costs.**
- **For larger RE (large IPPs) projects above 10MW, the FIT is still negotiable.** *(2008, PV magazine, Tobias Cossen)*

SPP DEVELOPERS: SIGNED SPPA

SUMMARY OF SPP DEVELOPERS

	SPP NAME	TECHNOLOGY	EXPORT CAP. (MW)	LOCATION	SPPA SIGNED	COD/ EXPECTED
1	TANWAT - Njombe	Biomass	1.5	Grid connec.	17.09.2009	15.06.2010
2	TPC - Moshi	Biomass	9.0	Grid connec.	06.10.2009	13.09.2010
3	Mwenga - Mufindi	Hydro	4.0	Grid connec.	19.01.2010	21.09.2012
4	Ngombeni - Mafia Island	Biomass	1.5	Off Grid	19.01.2010	11.02.2014
5	AHEPO - Mbinga	Hydro	1.0	Off Grid	25.02.2013	Mar-15
6	St. Agnes Chipole - Songea	Hydro	7.5	Off Grid	11.01.2013	Jul-15
7	NextGen Solawazi - Kigoma	Solar	5.0	Off Grid	16.01.2013	
8	EA Power Ltd - Tukuyu	Hydro	10.0	Grid connec.	25.02.2013	
9	Darakuta - Manyara	Hydro	0.24	Grid connec.	16.11.2013	Jun-15
10	Mapembasi - Njombe	Hydro	10.00	Grid connec.	15.01.2014	
TOTAL CAPACITY			49.74			

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SPP DEVELOPERS

	SPP NAME	TECHNOLOGY	SELL CAP. MAX (MW)	LOCATION	LOI DATE
1	Nkwilo project - Sumbawanga	Hydro	2.9	Off Grid	12.02.2013
2	Ilundo power project - Tukuyu	Hydro	0.4	Grid connec.	11.03.2013
3	Maguta power project - Kilolo	Hydro	2.5	Grid connec.	23.10.2013
4	Luganga project - Iringa Rural	Hydro	2.8	Grid connec.	23.10.2013
5	Luswisi project - Ileje, Mbeya	Hydro	4.7	Grid connec.	23.10.2013
6	Yovi project - Kilosa	Hydro	2.0	Grid connec.	31.12.2013
7	Ilungu ward project - Mbeya	Hydro	5.0	Grid connec.	31.12.2013
8	Momba power project- Mbeya	Hydro	10.0	Grid connec.	25.02.2014
9	Kikuletwa II project - Hai Kili	Hydro	7.5	Grid connec.	20.05.2014
10	Ilondo project - Mufindi	Hydro	10.0	Grid connec.	16.09.2014
11	Lyamanji hydropower Makete	Hydro	2.3	Off Grid	16.09.2014
12	Waste to Energy project	Biomass	5.0	Grid connec.	24.09.2014

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SPP DEVELOPERS

	SPP NAME	TECHNOLOGY	SELL CAP. MAX	LOCATION	LOI DATE
13	Lwega hydropower project	Hydro	5.0	Off Grid	25.09.2014
14	Mpanga Hydropower project	Hydro	5.8	Grid connec.	07.10.2014
15	Mkumbara biomass project	Biomass	5.0	Grid connec.	06.11.2014
16	Mabuki solar power project	Solar PV	10.0	Grid connec.	12.12.2014
17	Kishapu solar power project	Solar PV	10.0	Grid connec.	12.12.2014
18	Nakatuta hydropower project	Hydro	10.0	Grid connec.	15.01.2015
19	Mpanda solar power project	Solar PV	1.0	Off Grid	17.02.2015
20	Sumbawanga solar project	Solar PV	2.0	Off Grid	17.02.2015
21	Lugarawa power project	Hydro	1.7	Grid connec.	20.02.2015
22	Matembwe power project	Hydro	0.5	Grid connec.	20.02.2015
23	Kitewaka power project	Hydro	4.2	Grid connec.	24.02.2015
24	Uzia hydro power project	Hydro	1.0	Off Grid	24.02.2015
25	Kalumbaleza power project	Hydro	1.0	Off Grid	24.02.2015
26	Mafia solar power project	Solar PV	1.0	Off Grid	24.02.2015
	TOTAL CAPACITY		113.3		

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HOW TO BECOME AN IPP: STEPS AND PROCEDURES



NOT APPLICABLE FOR SOLAR OR WIND POWER

INDICATOR THAT DNO HAS NO OBJECTION OF THE PROJECT. FACILITATES TO ATTAIN OTHER LICENSES FROM RELEVANT AGENCIES. OFF-GRID PROJECTS ARE EXEMPT.

SPP'S UP TO 1MW ARE EXEMPT FROM EWURA'S LICENSING REQUIREMENTS.

Guidelines for Small Power Project Developers, EWURA, August 15, 2009, pdf.

CHALLENGES AND BARRIERS FOR NEW REGULATIONS

BARRIER	MITIGATION MEASURES	RELEVANCE
Limited role for Renewable Energies for Power Expansion plan to 2035 (excluding hydro)	PSMP planning team need better planning processes and tools. Better RE modeling and feasibilities studies can shed light to introduce more RE into the future PSMP plans.	Solar PV, Wind, Biogas, and Biomass.
High Risk of Utility, TANESCO. Payment Delays.	Financially sustainable utility reduces risk perception for developers. Introducing tariffs that can aid to compensate for distribution/generation/ and collection costs.	Solar PV, Wind, Biogas, and Biomass. SPPs, IPPs.
Lack of affordable Financing, and poor Financing conditions.	Large commercial banks to increase access to Long-term financing options, as RE technologies are capital intensive. Risk guarantees can be offered to foreign equity partners.	Large RE IPPs.
Low Incomes and Access to capital.	SACCOS or Micro-finance institutions should provide better access to capital, and facilitate technology transfer to allow wider access to modern technologies.	Biomass, Biogas, Solar PV. Mini-Grids.

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