

Village Solar PV Mini Grid

Melela Kololo, Morogoro, Tanzania

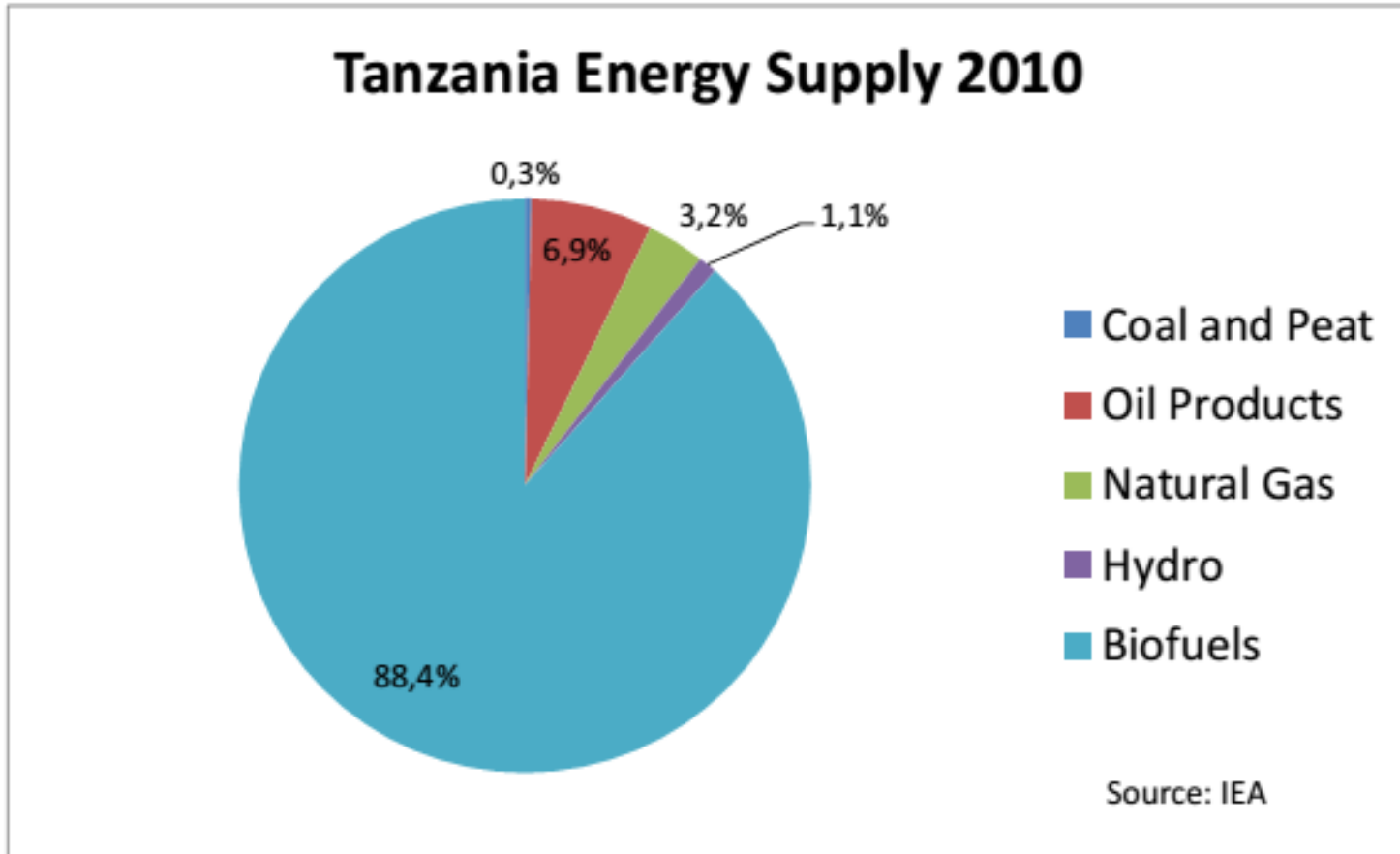
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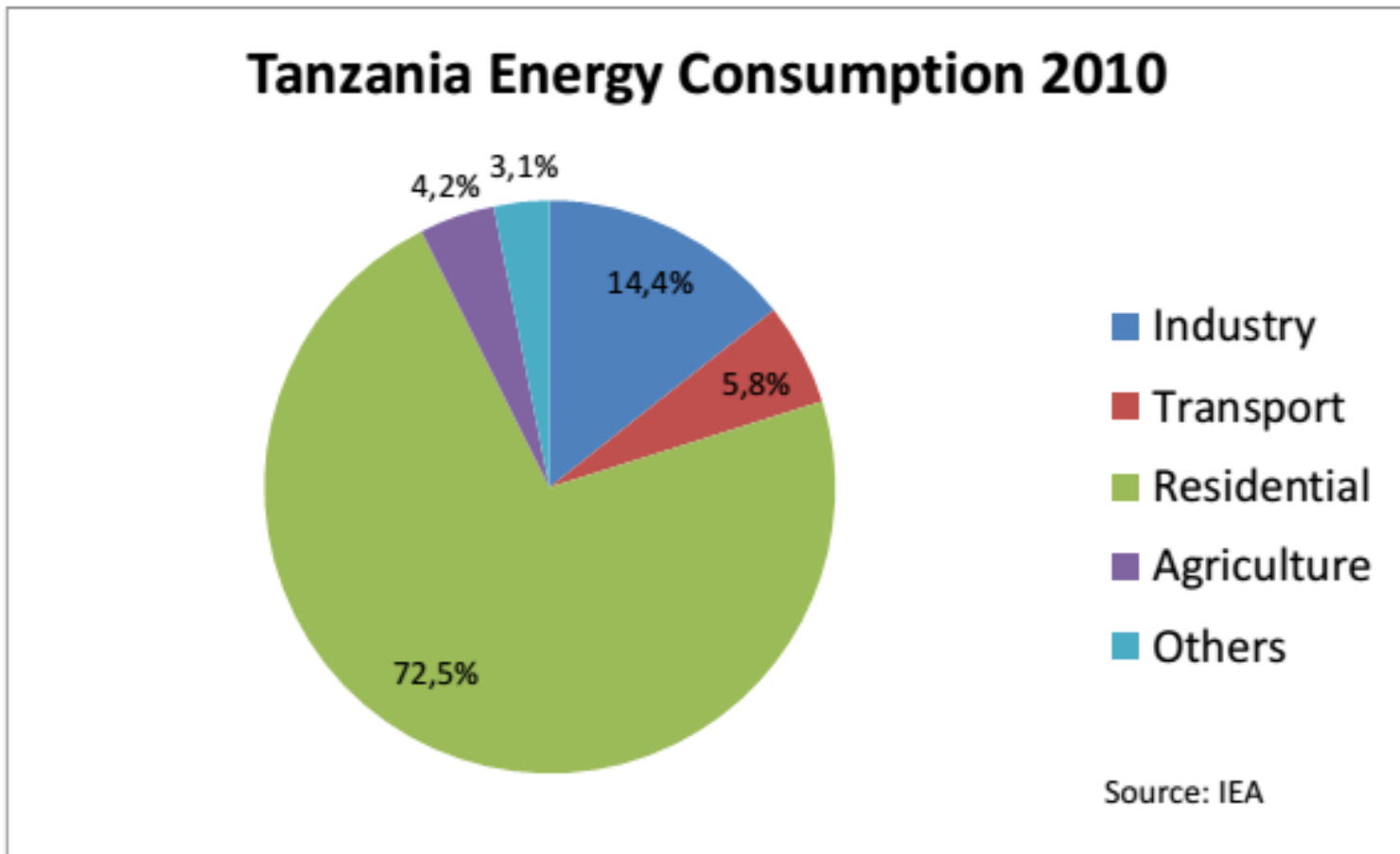
1.0 Location



2.0 Energy Consumption by Primary Source



3.0 Energy Consumption Profile



4.0 Access to Electricity

Total access 18.6%

Rural access 6.6% (4.6% grid, 2% Solar PV)

5.0 Existing Electricity Generation System (MW) (table next page)

	Owner	Installed	Retire	Fuel	Capacity	2012	2013	2014	2015	2016	2017	2018	2019	2020
Aggreko-Tegeta	Aggreko, rental	2011	2014	Gas oil	50	50	50	50						
Aggreko-Ubungo	Aggreko, rental	2011	2014	Gas oil	50	50	50	50						
Hale	TanESCO	1967	2017	Hydro	11	11	11	11	11	11	11			
Kidatu	TanESCO	1975	2025	Hydro	204	204	204	204	204	204	204	204	204	204
Kihansi	TanESCO	2000	2050	Hydro	180	180	180	180	180	180	180	180	180	180
Mtera	TanESCO	1988	2038	Hydro	80	80	80	80	80	80	80	80	80	80
Mwanza	IPP	2013	2038	HFO	60		60	60	60	60	60	60	60	60
Mwenga	IPP	2012	2062	Hydro	4	4	4	4	4	4	4	4	4	4
Nyumba ya Mungu	TanESCO	1968	2018	Hydro	8	8	8	8	8	8	8	8		
Pangani falls	TanESCO	1995	2045	Hydro	68	68	68	68	68	68	68	68	68	68
Songas 1	IPP unit	2004	2023	NG	38	38	38	38	38	38	38	38	38	38
Songas 2	IPP unit	2005	2024	NG	110	110	110	110	110	110	110	110	110	110
Songas 3	IPP unit	2006	2025	NG	37	37	37	37	37	37	37	37	37	37
Symbion 112 (Ubungo)	Symbion, rental	2011	2014	NG/Jet-A1	113	113	113	113						
Symbion105-Arusha	Symbion, rental	2012	2014	NG/Diesel	50	50	50	50						
Symbion105-Dodoma	Symbion, rental	2012	2014	Diesel	55	55	55	55						
Tanwat	SPP/IPP	1995	2029	Biomass	2	2	2	2	2	2	2	2	2	2
Tegeta IPTL	IPP unit	2002	2021	HFO	100	100	100	100	100	100	100	100	100	100
Tegeta GT	TanESCO	2009	2028	NG	44	44	44	44	44	44	44	44	44	44
TPC	SPP/IPP	2010	2030	Biomass	17	17	17	17	17	17	17	17	17	17
Ubungo I	TanESCO	2010	2026	NG	102	102	102	102	102	102	102	102	102	102
Ubungo II	TanESCO	2012	2031	NG	100	100	100	100	100	100	100	100	100	100
Zuzu Diesel	TanESCO	1980	2014	Diesel	7	7	7	7						
Anbdoya		2012	2062	Hydro	1	1	1	1	1	1	1	1	1	1
Ngombezi 1	Mkonge	2012	2062	Hydro	0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

	Owner	Installed	Retire	Fuel	Capacity	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total existing generation						1,431	1,491	1,491	1,166	1,166	1,166	1,156	1,148	1,148
Whereof Rental						318	318	318						
Whereof IPP						189	249	249	249	249	249	249	249	249
Tanesco						924	924	924	917	917	917	906	898	898

Capacity Utilization

Utilisation	2010	2011	2012
Hydro	65%	48%	43%
Thermal Gas	70%	60%	39%
Other Thermal	44%	92%	71%

6.0 Rural Electrification

Technologies used

- § Solar PV
- § Mini Hydro
- § Biomass Cogeneration

7.0 Case Study: Solar PV Mini Grid at Melela - Kololo

- § Number of Solar PV Mini Grids in TZ-4
- § They are private operated
- § SPP Rules allow project $\leq 100\text{kW}$ to operate without licence



System Details

70 power boxes each 60W40Ah

Loads per household

2 LEDs lamps each 5W

Mobile phone charger socket

24DC 10W 24" TV Set

Commercial application

Lighting bars, shops and milling machines



Impact to the community

- § Enabling children reading in the evening
- § Extended time for economic activities
- § Elimination of the use of kerosene thus eliminating green house gases
- § Reduction of energy costs for light and mobile recharge from € 0.43 to € 0.13
- § Possibility of watching television



Thanks for Listening