

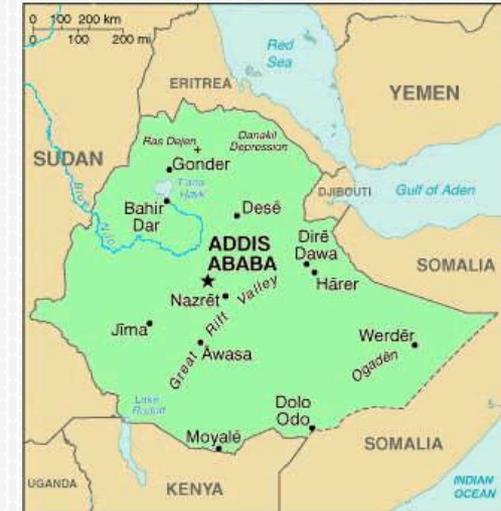


HIGHLIGHTS OF THE ETHIOPIAN ENERGY SECTOR

Samson Tsegaye, Country Director, Solar Energy Foundation June 27-29.2016

ETHIOPIA

- ✘ Population size (2016): 99.39 million (world bank)
- ✘ Per capita electricity consumption < 100 kWh/a
- ✘ From 2002 to 2006, average annual electricity demand grew by 13%.
- ✘ Present growth rate > 20%
- ✘ Geographic access to electricity grid – 55%
 - + Connectivity ~ 30%
- ✘ Electrified towns ~ 6,000
- ✘ Customers > 2 million



Plan (Grid Connected PV)

- 300MW

Plan(Rural Electrification)

- + GTP II, 3.6Mill lanterns and SHS 400,000 by 2020
- + 40,000 solar home Systems installed in 7 year instalment loan(REF)program
- + Close to 60,000 (by NGOs and private companies)
- + Close to 1million lanterns sold (NGOs and Private companies)

Over 14 million Ethiopian rural households demand for solar

CURRENT ENERGY SITUATION

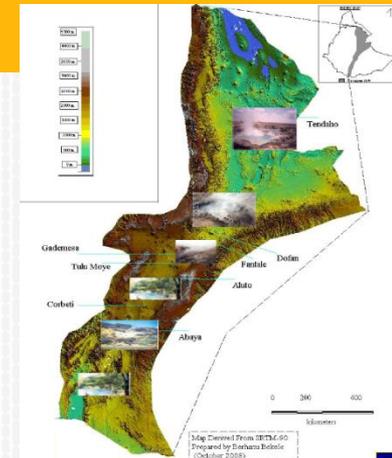


Potential 45,000 MW
 Current 3,810 MW
 GTP II 11015MW
 (2020)

Potential 1,350 GW
 Current 324 MW
 GTP II 1520MW

Potential 5.5 kWh /sq
 Current 7 MW
 (<100,000SHS and
 <1000000lanterns)
 GTP II plan by2020
 300MW Grid Connected
 OFF-Grid
 - 3.6Mil. Lanterns
 - 40000 SHS

Potential ~ 10,000 MW
 Current
 GTP II plan by2020
 1270MW



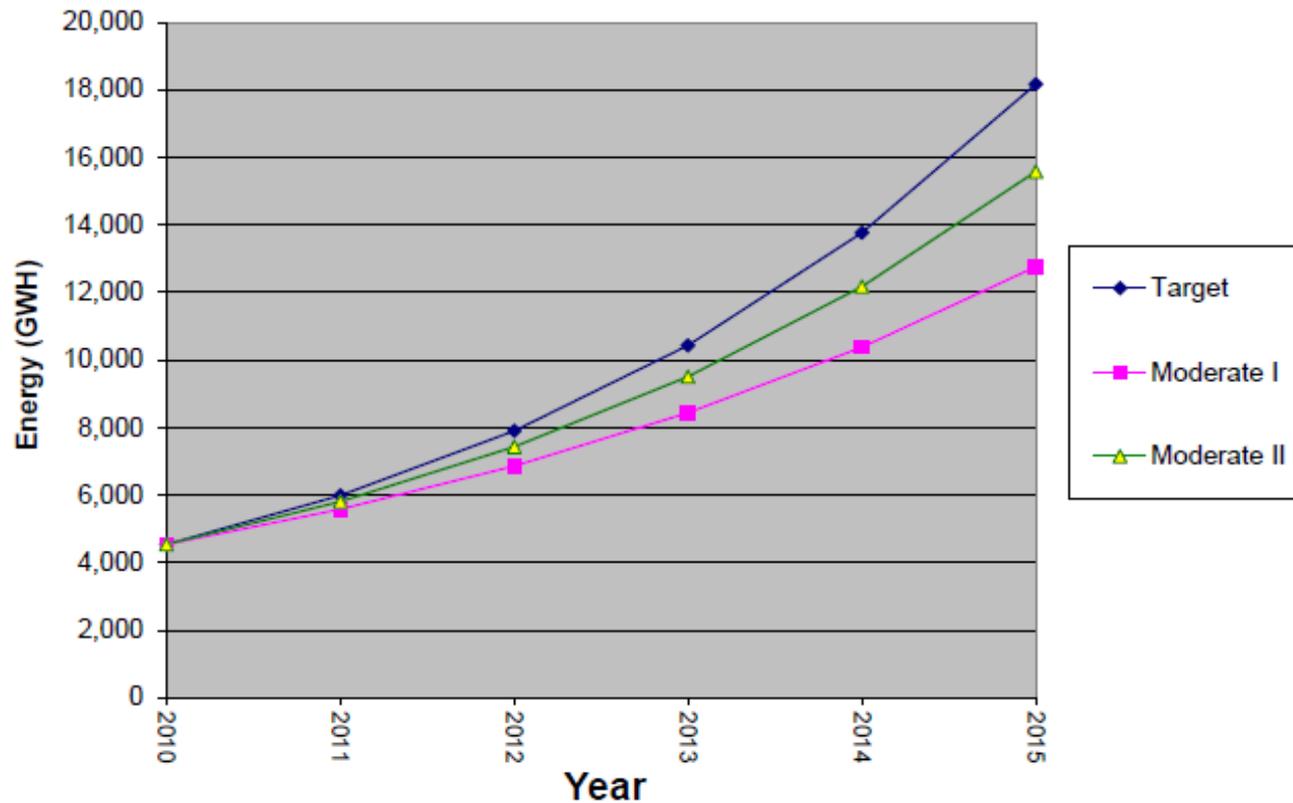
The Energy Resource Potential

Resource	Unit	Exploitable Reserve	Exploited	
			Amount	Percent
Hydropower	MW	45,000	~2100	<5%
Solar/day	kWh/m ²	4 – 6		<1%
Wind: Power Speed	GW m/s	1350 > 7	171MW Under construction	<1%
Geothermal	MW	7000	7.3 MW	<1%
Wood	Million tons	1120	560	50%
Agricultural waste	Million tons	15-20	~6	30%
Natural gas	Billion m ³	113	-	0%
Coal	Million tons	>300	-	0%
Oil Shale	Million tons	253	-	0%

Power Demand Forecast

Target and Moderate forecast

Energy Demand forecast Result



According to the Target Scenario electricity demand will be expected to grow by **32%** for the period 2011-2015.

MAJOR POWER GENERATION PROJECTS

- + Power plants under construction
 - + Grand Ethiopian Renaissance Dam – 6,000MW
 - + Gibe III – 1,870 MW (started power production)
 - + Genale Dawa III – 254 MW
 - + Aluto Langano geothermal expansion – 75 MW
 - + Repi Waste-to-Energy power – 50 MW

Power Plants Under Construction

No	Hydro Plants	Installed Capacity MW	Average energy (GWh/yr)
1	Genale III	254	1,200
2	Gibe III	1,870	6,240
3	Grand Renaissance	6,000	15,700
	Total	8,124	23,140
	Wind Farms	MW	
4	Ashegoda	120	450
5	Adama II	153	479
	Grand Total	8,397	23,514

GRAND ETHIOPIAN RENAISSANCE DAM PROJECT

- × :
- × 6000 MW installed capacity
- × 48% Completed
- × Fully Public Financed Project



REPPi WASTE TO ENERGY PROJECT:

Land fill area,

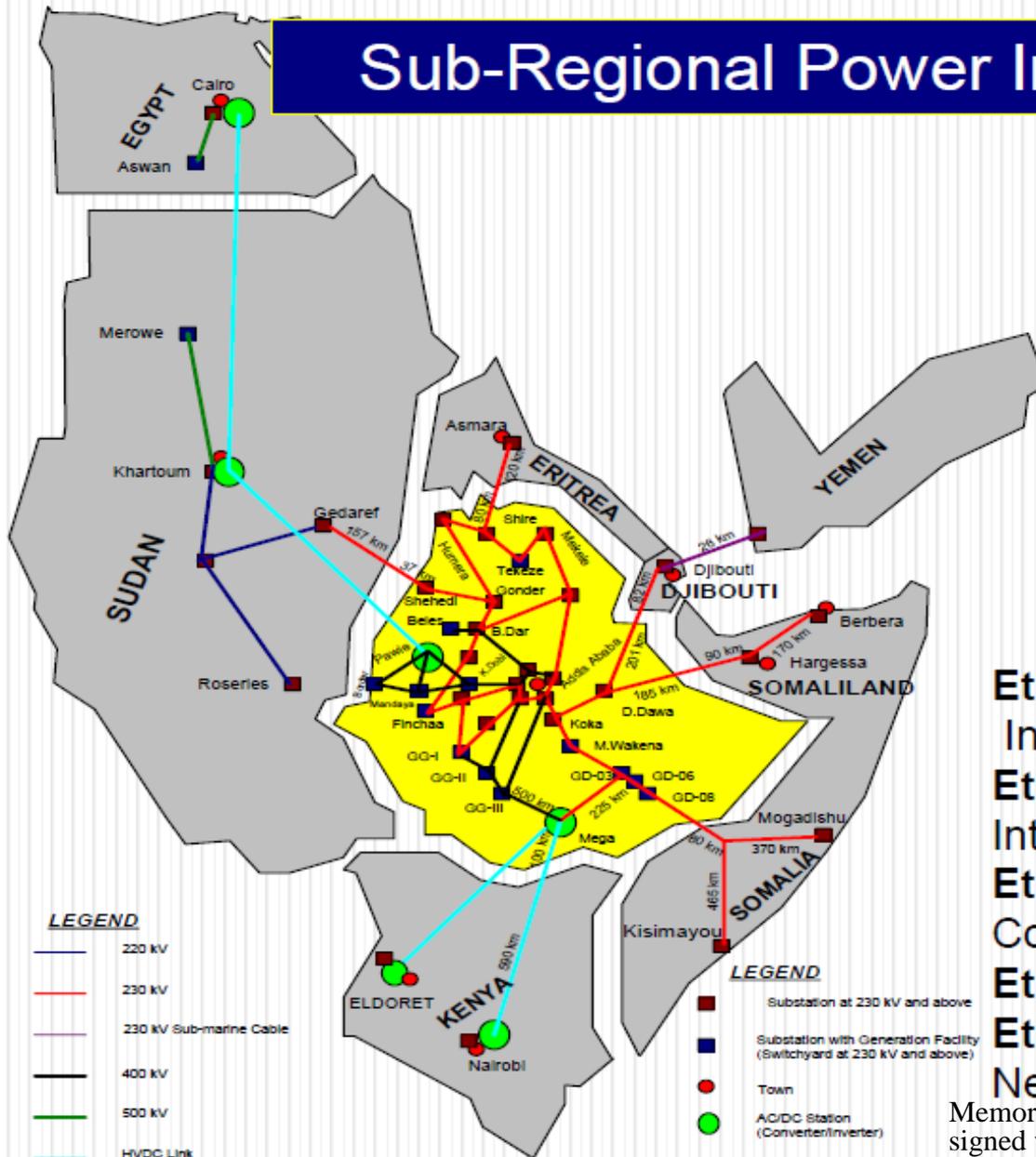
- 50 MW Installed Capacity
- Municipal Solid waste (Addis Ababa)
- The first W to E Plant in Africa
- 68% completed



REGIONAL MARKET

Sub-Regional Power Interconnection

Possible
Interconnection
Lines with
Neighbouring
Countries



LEGEND

- 220 kV
- 230 kV
- 230 kV Sub-marine Cable
- 400 kV
- 500 kV
- HVDC Link

LEGEND

- Substation at 230 kV and above
- Substation with Generation Facility (Switchyard at 230 kV and above)
- Town
- AC/DC Station (Converter/Inverter)

Ethiopia - Sudan –
Interconnection started /100 MW/
Ethiopia – Djibouti-
Interconnection started. /32 MW/
Ethiopia – Kenya-
Construction started .
Ethiopia – Somaliland-
Ethiopia – South Sudan-
Negotiation started

Memorandum of Understanding on power export
signed with Tanzania, Rwanda and Yemen

AREAS OF PARTICIPATION BY THE PRIVATE SECTOR

- × Mini-grid systems based on:
 - + Solar, small-hydro, hybrid systems, etc
- × There are various investment incentives
 - + Tax-free importation of capital goods,
 - + Money repatriation, etc
- × Equipment and appliance manufacturing and supply
 - + Hydro, solar and wind generator components
 - + Transmission & distribution components
(transformers, cables, accessories, poles and towers, meters, etc)
 - + Solar home systems, heating systems, etc



THANK YOU