

Presentation on Energy Statistics for Kenya



Seminar on Mainstreaming Energy Sustainable Development Goals (SDGs), Targets and Indicators into Statistical Programmes in Select African Countries

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Introduction

- Gross Domestic Product (GDP) growth at constant prices, 5.6 per cent in 2015
- Population -39.5 Million (2011), 44.2 million 2015
- Petroleum Consumption ('000 tonnes)- 4,738.5
- Electricity consumption (GWh)- 7826.4
- Data Sources for energy statistics-Various
 - *Administrative*
 - *Surveys (KDHS 2014, Census-2009)*

Kenya's Energy consumption

- Wood accounts for..... 68%
- Petroleum accounts for ... 22%
- Electricity accounts for9%
- Others accounts for 1%

Quantity of Imports, Exports and Re-exports of Petroleum Products

Year	Quantity('000 tonnes)				
	2011	2012	2013	2014	2015*
IMPORTS					
Crude Petroleum	1,772.1	997.0	567.4
Petroleum Fuels	2,235.6	2,803.4	2,985.9	4,400.2	4,418.1
Others(Lubricating oils/greaes)	6.5	8.9	9.2	9.2	13.6
TOTAL	4,014.2	3,809.3	3,562.5	4,409.4	4,431.7
DOMESTIC EXPORTS					
Petroleum Fuels	32.0	11.7	17.0	36.8	4.2
Others(Lubricating oils/greaes)	93.2	44.3	11.6	12.1	8.4
TOTAL	125.2	56.0	28.6	48.9	12.6
RE-EXPORTS					
Petroleum Fuels	60.5	55.3	111.1	561.6	752.8
Others(Lubricating oils/greaes)	60.4	71.5	18.2	5.4	0.2
TOTAL	120.9	126.8	129.3	567.0	753.0
TOTAL EXPORTS	246.1	182.8	157.9	616.0	765.5

Petroleum Supply and Demand, 2011-2015

'000 Tonnes

	2011	2012	2013	2014	2015*
DEMAND -					
Liquefied petroleum gas	91.6	93.6	92.9	149.7	148.6
Motor gasoline (premium a	562.1	618.5	774.5	903.8	1,107.0
Aviation spirit	2.8	1.8	2.2	2.3	18.7
Jet/turbo fuel	670.6	671.0	551.3	529.3	635.3
Illuminating kerosene ...	269.6	309.0	296.1	300.3	390.1
Light diesel oil	1,461.8	1,486.3	1,601.2	1,721.4	2,080.9
Heavy diesel oil	27.6	20.8	18.7	3.0	0.1
Fuel oil	771.8	437.0	371.0	328.1	357.8
TO TAL	3,857.9	3,638.0	3,707.9	3,937.9	4,738.5
Refinery usage	83.7	48.0	31.3	0.0	0.0
TO TAL DOMESTIC DEMAND	3,941.6	3,686.0	3,739.2	3,937.9	4,738.5
Exports of petroleum fuels	32.1	11.7	6.2	36.8	4.2
TO TAL DEMAND	3,973.7	3,697.7	3,745.4	3,974.7	4,742.7
SUPPLY -					
Imports:					
Crude oil	1,772.1	997.0	567.4	0.0	0.0
Petroleum fuels	2,235.6	2,803.4	2,985.9	4,400.2	4,418.1
TOTAL	4,007.7	3,800.4	3,553.3	3,746.8	4,418.1
Adjustment ¹	-34.0	-102.7	192.1	227.9	324.6
TO TAL SUPPLY	3,973.7	3,697.7	3,745.4	3,974.7	4,742.7

Electricity ..

	Total installed capacity is 2,333.6 MW in 2015
* Hydro	821 MW.....35.8%
* Geothermal	598 MW.....26.1%
* Fossil fuel	827 MW.... 36.1%
* Co-generation	26 MW.... 1.1%
* Wind	25.5 MW.....1.1%

Wind power situation will change with completion of 300MW Lake Turkana wind project in 2016

The peak load was projected to grow to 2,511MW by 2015 and 15,026MW by 2030

Electricity

- Electricity generation 9,514.6 GWh in 2015
- Number of customers connected under the Rural Electrification Programme (REP) ,703,190 customers as at July 2015, up from 528,552 as at July 2014.
- KDHS 2014- 36.0 % households had electricity
 - * *Households with electricity, urban areas (68.4%)*
 - * *Hhds with electricity, rural areas (12.6%).*

Electricity Installed and Effective Capacity, 2011-2015

Year	INSTALLED CAPACITY MW						EFFECTIVE CAPACITY MW					
	Hydro	Thermal Oil	Geothermal	Wind	Co-generation	Total	Hydro	Thermal Oil	Geothermal	Wind	Co-generation	Total
2011	763.2	660.5	198.0	5.3	26.0	1,627.0	735.0	582.7	190.6	5.3	26.0	1,539.6
2012	788.4	660.6	209.5	5.4	26.0	1,689.9	769.9	610.6	199.6	5.3	26.0	1,611.4
2013	812.3	714.4	241.8	5.9	26.0	1,800.4	766.6	693.2	236.5	5.3	21.5	1,723.1
2014	818.3	751.3	573.4	26.3	26.0	2,195.3	797.5	712.6	558.0	5.3	21.5	2,094.9
2015*	820.7	833.8	627.0	26.1	26.0	2,333.6	799.5	797.1	619.0	26.1	21.5	2,263.2

Source: Kenya Power & Lighting Company Ltd and Kenya Electricity Generation Company Ltd

Generation and imports of Electricity

										GWh	
GENERATION										Imports	Total
Year	Hydro	Thermal oil				Geo thermal	Co- gene- ration	Wind			
		KenGen	IPP	EPP	Total						
2011	3,183.3	903.0	1,538.8	358.7	2,800.5	1,443.7	80.9	17.6	33.9	7,559.9	
2012	3,976.8	682.5	1,208.9	309.0	2,200.4	1,515.9	104.7	14.4	39.1	7,851.3	
2013	4,386.0	598.3	1,386.2	177.2	2,161.7	1,780.9	55.6	14.7	49.0	8,447.9	
2014	3,410.6	844.2	1,673.0	68.0	2,585.2	2,917.4	50.0	17.0	158.4	9,138.6	
2015*	3,463.3	393.4	954.2	64.5	1,412.1	4,520.7	0.0	59.7	58.8	9,514.6	

Source: Kenya Power & Lighting Company Ltd and Kenya Electricity Generation Company Ltd

Enabling Environment.. Policies, Regulations and Standards

- ❖ Feed -in-Tariff Policy, 2008 revised in 2012 and currently under review
- ❖ Solar PV regulations, 2012
- ❖ Solar Water Heating regulations, 2012
- ❖ Energy Management regulations, 2012
- ❖ Improved Cook stoves standards, 2014
- ❖ Domestic biogas standards, 2015
- ❖ Small hydro power standards – nearing completion

Enabling Environment.. Policies, Regulations and Standards

- ❖ The National Energy and Petroleum Policy
- ❖ The Energy Bill 2015
- ❖ The Petroleum (Exploration, Development and Production) Bill, 2015
- ❖ Energy (Local Content) Regulations, 2014
- ❖ Petroleum Exploration, Development and Production (Local Content) Regulations, 2014

Ongoing programs ...The 5000+MW

- The Government in 2013 embarked on an ambitious plan (project 5000+MW) to raise generation capacity to slightly over 6,700MW by 2016 (40 months)

To be developed from the sources below :-

- Geothermal ...1,646MW
- Natural Gas ..1,050MW
- Wind power.. 630MW
- Coal plants ...1,920MW

(through government, Power utilities and IPPs under the PPP framework)

Ongoing programs.... Geothermal

- ❖ Kenya's installed capacity now stands at 598MW and 8th in global ranking as largest producer of geothermal energy.
- ❖ Kenya has the potential to produce 10,000MW of geothermal power from the Rift Valley basin (studies by MOEP)
- ❖ Geothermal now accounts for 29% of Kenya's energy mix, up from the previous 13% four years ago.

(according to a study presented to the World Bank by state-owned KenGen)

The US 3,389 MW ,Philippines (1,894MW), Indonesia (1,333MW), Mexico (980MW) Italy (901MW), New Zealand (895MW) and Iceland (664MW).

Summary of Projects under FiT

	Wind	Biomass / Biogas	Small Hydro	Solar PV	Geo thermal	TOTAL	Capacity (MW)
Plants in Operation	0	0	2	1	0	3	1.4
Projects With Signed PPA's	2	3	11	0	0	16	132
Projects with Initialled PPA's	2	0	0	0	0	2	151
Projects with Finalized PPA Negotiations	0	0	1	5	0	6	200
Projects with PPA's under Negotiations	2	3	2	3	0	10	292.94
Approved Projects with PPA Negotiations Yet to Start	1	1	8	2	0	12	165.65
Projects with Feasibility Studies approved and sent to ERC-LCPDP	0	0	1	6	0	7	217.7
Projects in Feasibility Study Stage	10	15	42	51	1	119	2601.17
Total Approved Projects	17	22	67	68	1	175	
Total Capacity (MW)	876	351	388	2129	15	3759	3761.86

Ongoing programs...

Wind

- * Wind Atlas developed in 2008;
- * Two wind PPAs executed with IPPs for development of 300 MW(LTWP) and 60 MW (KWP).
- * Other proposals are under PPA negotiation

Solar

- * Solar installation in public institutions – 1400

Small Hydro Power

- * Feasibility studies for 36 sites completed,
- * Finalized GIS-based National Hydro Power

Ongoing programs ...HYBRIDS

- **Mini-grids** – installation of solar/wind hybrid systems in off-grid power stations:
 - * Solar hybrids - *Mandera 300kW, Lodwar and Hola 60kW each, Elwak, Takaba and Rhamu 50kW each and Merti 10kW.*
 - * Wind hybrids - *Marsabit 500kW*
 - * Solar/wind hybrids- *Habaswen 50kW wind/30kW solar*
 - * *Currently we save USD 800,000 annually from installed RE capacity of 1.16MW*

Ongoing programs ...BIOENERGY

Biogas – institutional biogas systems installations Piloting on flower waste carried out in two flower farms. Collaborated with KENAFF in domestic biogas promotion

Clean cook stoves- 50 institutional cook stoves installed. Partnering with GIZ and CCAK in promotion of clean cook stoves

Biodiesel - Development of locally fabricated biodiesel plant underway; Oil extractor and filter completed

Development Bioenergy strategy

Ongoing programs ...SE4All

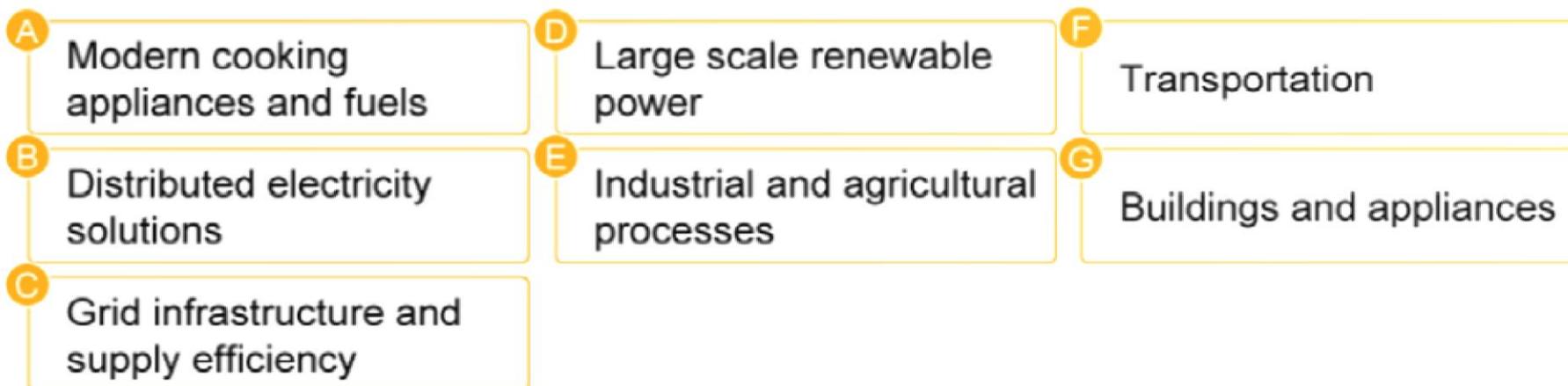
Sustainable Energy for All (SE4All)

UN led Initiative to achieve universal energy access, double RE in the energy supply mix and double rate of improvement in energy efficiency;

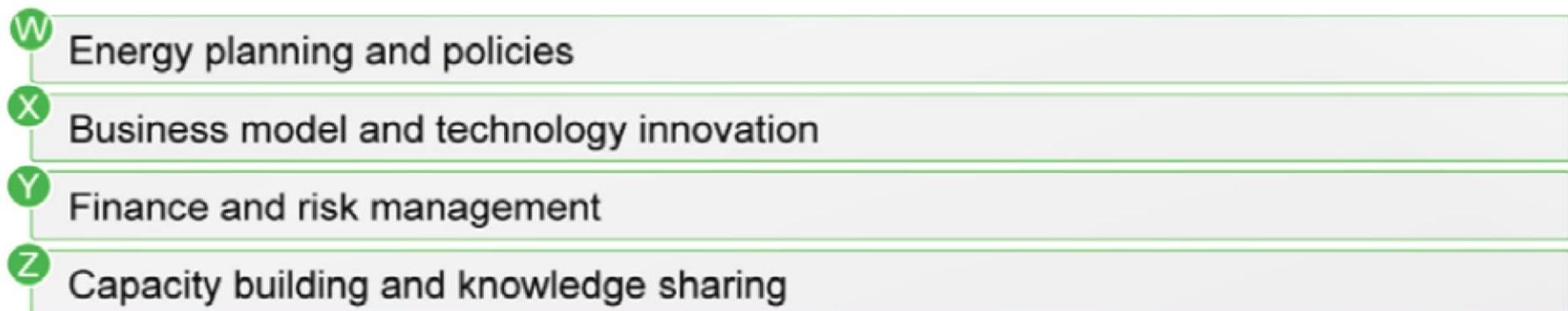
- Country opt in – 2012
- Gap analysis and stocktaking – 2013
- Development of Action Agenda (AA)and Investment Prospectus (IP)-Validated 2015
- **Vision 2030 MTP-AA integration** –2015
- Official Launch of Kenya SE4All AA/IP– June, 2016

Kenya's SE4All ...Action Areas

Sectoral Action Areas



Enabling Action Areas



Energy Efficiency and Climate

- * Support to KAM (Ksh35 million annually) for EE capacity building and audits
- * Standards and labels programme with Ministry of Industrialization
- * Mainstreaming of climate change in the Energy sector.
- * Development of Nationally Appropriate and Mitigation Actions (NAMAs) –(3RE) biogas, clean cook stoves and geothermal
- * Preparation of Kenya's Intended Nationally Determined Contribution (INDC)- actions to combat climate change and green house gases

Focus on Government Energy strategies and plans:

- Kenya Vision 2030
- Kenya's 5,000+ MW Power Plan (2013-2016)
- Kenya's Last Mile Connectivity Project (2015-2017)- create access 2013-26%, 2016-53% and 70% by 2017
- Least Cost Power Development Plan(2013-2033)
- Scaling-up Renewable Energy Programme (SREP) – Investment Plan for Kenya
- Rural Electrification Master Plan

Government driven strategies and plans

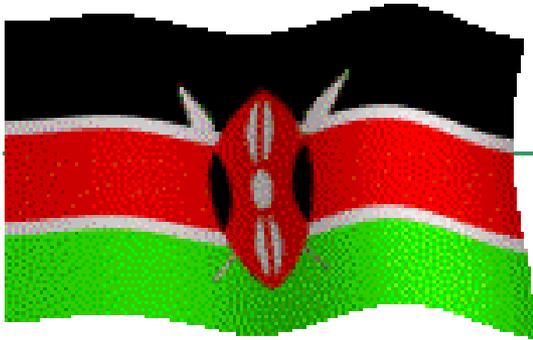
- Street lighting project- to County HQs, Security and 24hr economy
- Early oil pipeline project- Lokichar/Lamu
- LPG Access- distribution infrastructure
- Kenya National Climate Change Response Strategy

Private Sector Strategies:

Kenya National Domestic Biogas Programme (KEDBIP)

- The second phase runs for 4 years (2014 to 2017) and will build on the achievements realized in phase one to further develop the domestic biogas sector in Kenya, and targets to install some 27,500

Kenya Country Action Plan – Cook stoves (CCA-K, ISAK, EnDev-Kenya...



Thank you

.. Asante Sana

www.energy.go.ke