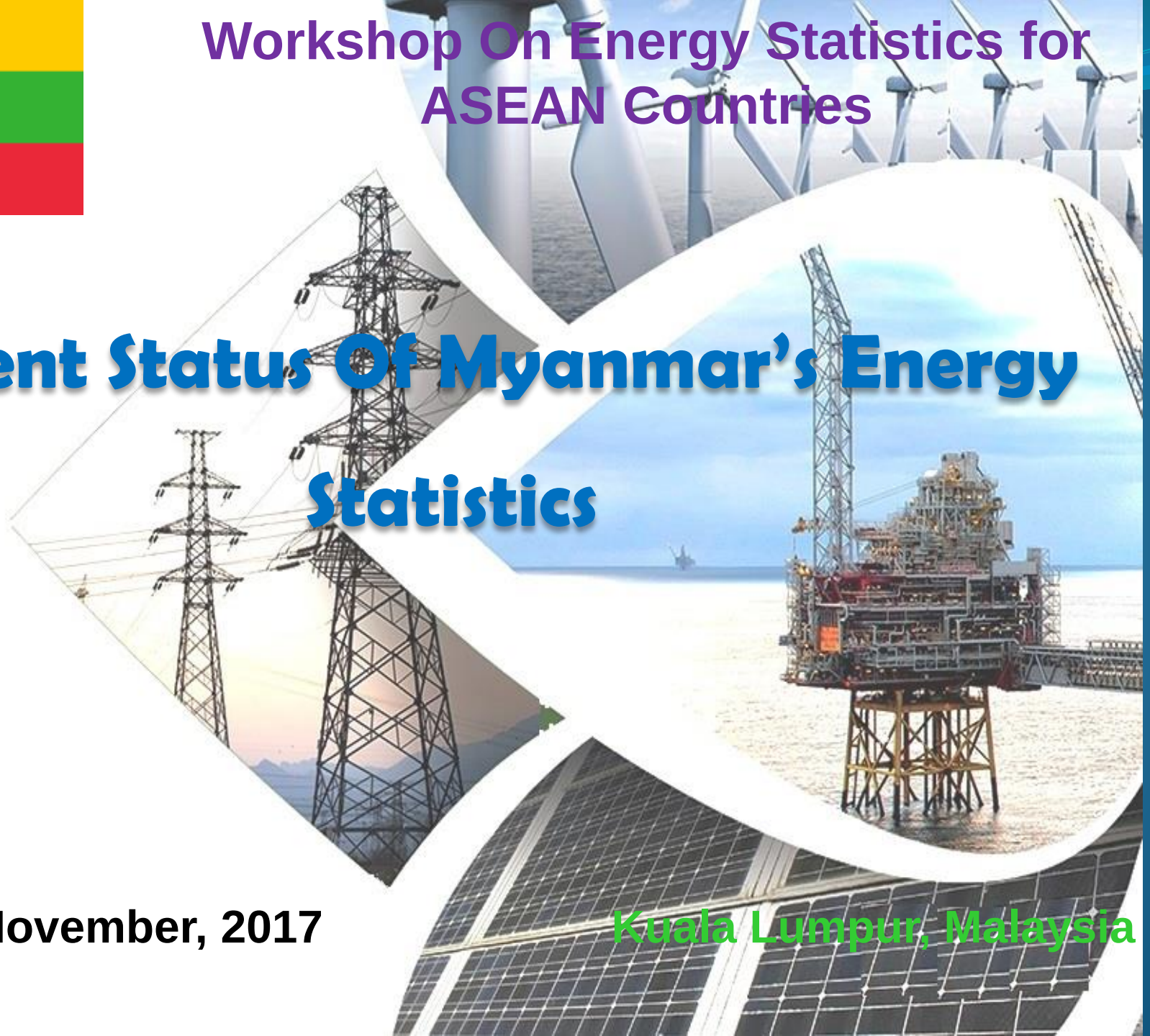
Workshop On Energy Statistics for ASEAN Countries



Current Status Of Myanmar's Energy Statistics

21~23 November, 2017

Kuala Lumpur, Malaysia

Content

- National Energy Policy
- Institutional Framework for Myanmar Energy Sector
- Legal Basic on energy statistics
- Government agencies collecting energy statistics
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National Energy Policy

- To invite the local and foreign investments for the extraction and utilization of natural resources in order to fulfill the nation's energy needs by minimizing the environmental impacts and practicing the HSE and Corporate Social Responsibility (CSR)activities measures
- To adopt prioritized plans on Energy Efficiency and Conservation
- To define the energy pricing by observing the ASEAN and international energy pricing policy for the affordable and reliable energy prices for end users & customers.
- To formulate the energy standards and specifications which are appropriate for the nation and which are also in compliance with ASEAN and international practices.
- To promote private sector participation or privatization according to the State's economic policy
- To lay down the short term and long term plans not only for increasing the power generation of hydropower, renewable energy sources, thermal power plants but also the feasible alternative energy sources.

National Energy Policy

- To establish the regional cooperation for energy by expanding the power grid and pipeline network to neighboring countries.
- To implement full-fledged power generation as short term and long term plans in order to get stability of power generation.
- To establish Energy Database System and to draw and execute the energy supply plans by surveying the nation's energy demand annually.
- To plan energy stockpiling for energy security.
- To formulate the short term and long term plans for fulfilling petro-chemical products requirements of the country by constructing the innovative refineries and plants

Institutional Framework for Myanmar Energy Sector

Petroleum & Electricity Geothermal	MINISTRY OF ELECTRICITY & ENERGY
Coal	MINISTRY OF MINERAL RESOURCE & ENVIRONMENTAL CONSERVATION
Energy Efficiency and Conservation	MINISTRY OF INDUSTRY
Renewable Energy (Solar, Wind, Mini/ Micro Hydropower, Biomass, Bio-fuels, Biogas)	MINISTRY OF EDUCATION (Leader)
	MINISTRY OF AGRICULTURE , LIVESTOVES AND IRRIGATION
	MINISTRY OF ELECTRICITY AND ENERGY
	MINISTRY OF NATURAL RESOURCE & ENVIRONMENTAL CONSERVATION
	MYANMAR ENGINEERING SOCIETY & RENEWABLE ENERGY ASSOCIATION MYANMAR
Civilian Nuclear Energy	MINISTRY OF EDUCATION

Laws on Energy Statistics

1. The Central Statistics Authority Act, Act No.34 of 1952 (Amended on 2016)
2. The Petroleum Act, 1934 (Amended on 2017)
3. Law on Petroleum Exploration, Extraction and Production

These laws are mostly based upon British Law Codes (Pre-independence Indian statutes)

Compiling Energy Statistics

- Categories into each fuel source
  - Coal (solid fossil fuels and manufactured gases)
  - Natural gas
  - Electricity and heat
  - Oil (crude oil and petroleum products)
  - Renewable Energy
- For all energy products, all elements have to be provided
  - Production, imports/exports, stock changes
  - Various transformation and losses
  - Consumption
- Technical parameters, such as calorific values

Source of Data

MOEE

Crude Oil Production
Condensate Production
Natural Gas Production and consumption by sector
Export data of Natural Gas and Condensate
Refined Petroleum Products
Import of Petroleum Products
Power Generation
Electricity Consumption by sector

Other Related Ministry

- RENEWABLES (MOE&MOALBI)
  Solar
  Wind
  Biomass
  Hydro
- GDP (MOPF)
- Population(MOLIP)
- Coal Production &Consumption(MONREC)
- Fuel wood & Charcoal (MONREC)

Private Sector

- Petroleum Product (MPTA)
- Small & Medium Industry (still lack)

Source of Coal Data

- Production &Consumption
- Fuel wood & Charcoal

MINISTRY OF NATURAL RESOURCE & ENVIRONMENTAL CONSERVATION

- Import and Export

MINISTRY OF TRADE and COMMERCE

- **Data Collection Period - Annually**

Coal Production, Consumption, Export and Import

(000 ton)

Year	Production	Consumption						Export	Import
		Cement	Steel	Briquetting	Electricity	FeNi Factory	Other		
2010-11	555.79	166.23	3.30		290.10		96.16		
2011-12	732.52	237.65			338.12	69.30	62.95	24.50	47.10
2012-13	790.43	218.91			302.59	73.15	162.08	33.70	8.00
2013-14	565.21	199.09			131.41	88.94	92.36	53.41	
2014-15	532.58	159.77	154.45	5.33	26.63	0.00	186.40	20.00	
2015-16	419.87	239.92	71.97	3.99	19.99	0.00	63.98	20.00	

Coal Reserve - 543.75 Million Metric Ton in 2016-2017

Source of Oil and Gas Data

- Crude Oil Production
- Condensate Production
- Natural Gas Production and consumption by sector
- Export data of Natural Gas and Condensate
- Refined Petroleum Products
- Import of Petroleum Products

Ministry of Electricity and Energy

- **Data Collection Period** - **Daily, Weekly, Monthly, Annually**

Crude Oil & Petroleum Products Production, Consumption, Import and Export

(000 Barrel)

Year	Production	Consumption	Import	Export
2011-2012	6623.65	5949	12610	
2012-2013	6196.59	5175	9790	1012
2013-2014	6117.62	4223	20830	1706
2014-2015	5760.90	3985	29080	1376
2015-2016	4765.19	3255	55120	1084

Oil Reserve - 105.78 Million Barrel in 2017

Natural Gas Production, Consumption and Export
(MMSCF)

Year	Production	Consumption	Export
2010-2011	450379	28771	365708
2011-2012	464935	87517	364985
2012-2013	467005	81561	362155
2013-2014	482277	82929	372690
2014-2015	671335	112295	538672
2015-2016	696231	119206	557956

Natural Gas Reserve – 6.6 Trillion Cubic Feet in 2017

Source of Electricity Data

- Power Generation
- Electricity Consumption by sector

} Ministry of Electricity and Energy

- **Data Collection Period** - **Monthly, Annually**

Electricity Generation, Consumption and Distribution (GWh)

Year	Installed Capacity (MW)	Generation (GWh)	Consumption (GWh)	Export (GWh)
2010-11	3460.98	8624.68	6312.08	
2011-12	3594.98	10450.19	7696.23	
2012-13	3731.03	10964.9	8253.87	
2013-14	4145.34	12202.08	9612.56	2532.27
2014-15	4805.294	14156.304	11254.96	1463.37
2015-16	5075.52	15971.96	13396.01	1238.82

Source of Renewable Data

- Solar
-Wind
-Mini / Micro Hydropower
-Biomass
-Bio-fuels
-Biogas

- Ministry of Education
- Ministry of Agriculture, Livestock and Irrigation
- Ministry of Electricity and Energy
- Ministry of Natural Resources and Environmental Conservation
- Myanmar Engineering Society
- Renewable Energy Association Myanmar

- **Data Collection Period - Annually**

Renewable Energy Production By Sector

Year	Bagasse	Fuelwood	Charcoal	Biomass	Biogas	Woodwaste (Gasifier)	Photovoltaic (Electricity)	Wind Turbine	Micro Hydro
	1000t	*Cubic Ton*	*Cubic Ton*	*1000t*	*(10^{10}KCal)*	*1000t*	*GWh*	*GWh*	*GWh*
2011-12	417	224.659	200.959	22040	0.521585	0.558	4.32	0.0016	0.002
2012-13	604	227.471	217.001	22302	0.547863	0.558	4.32	0.0016	0.002
2013-14	775	263.379	228.584	21410	0.521598	0.558	4.32	0.0016	0.002
2014-15	912	276.052	231.168	23043	0.52	0.558	13.91	0.0016	5.753
2015-16	737	289.056	233.273	20622	0.52	0.558	10.94	0.0016	1.253

Energy Balance For Myanmar 2014-2015

Energy Balance for Myanmar 2014-2015

Unit: ktoe

Commodity Transaction	Coal	Crude Oil	Petroleum products						Natural Gas	Electricity		Biomass					Total
			LPG	Gasoline	Jet fuel /	Gas / Diesel	Others	Total		Primary	Processed	Fuel wood &	Bagasse	Charcoal	Biogas	Total biomass	
UNIT	ktoe																
Production	264	653	-	-	-	-	-	-	12,419	915	-	8,555	323	157	0.52	9,036	23,286
Imports	15	-	24	1,344	109	2,755	283	4,515	-	-	-	-	-	-	-	-	4,530
Exports	-13	-149	-	-	-	-33	-	-33	-9,952	-107	-	-	-	-	-	-	-10,253
Stock Changes	-	-58	-2	-13	14	171	-21	150	-	-	-	-	-	-	-	-	92
PRIMARY ENERGY SUPPLY	266	446	22	1,331	123	2,893	263	4,632	2,466	808	-	8,555	323	157	1	9,036	17,655
Oil Refining	-	-428	6	150	17	144	84	400	-	-	-	-	-	-	-	-	-27
Power Generation									-							-	-
Hydro	-	-	-	-	-	-	-	-	-	-799	799	-	-	-	-	-	-
Steam	-	-	-	-	-	-	-	-	-	-	25	-	-	-	-	-	25
Natural Gas	-	-	-	-	-	-	-	-	-1,745	-	536	-	-	-	-	-	-1,209
Coal	-13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-13
Diesel	-	-	-	-	-	-152	-	-152	-	-	5	-	-	-	-	-	-147
Own Use	-	-	-	-	-	-	-5	-5	-277	-9	-4	-	-	-	-	-	-295
Tx & Dx Losses	-	-	-	-	-	-	-	-	-68	-	-208	-	-	-	-	-	-276
Other Conversion	-	-	5	-8	-	-	-	-3	-13	-	-	-	-	-	-	-	-16
NET SUPPLY AVAILABLE	254	18	33	1,473	140	2,885	341	4,872	364	-	1,152	8,555	323	157	0.52	9,036	15,696
Statistical Differences	-0	-18	0	-71	-1	-60	-0	-132	-4		0	-	-	-	-	-	-155
FINAL CONSUMPTION	253	-	33	1,402	139	2,824	341	4,740	360		1,152	8,555	323	157	0.52	9,036	15,541
Transport	-	-	-	1,119	139	501	253	2,013	121		-	-	-	-	-	-	2,134
Industry	211	-	-	42	-	784	12	838	238		354	-	-	-	-	-	1,642
Other (Commercial, Residential, others)	43	-	33	240	-	1,539	76	1,889	0		798	8,555	323	157	0.52	9,036	11,765

	Coal	Crude oil	Petroleum					Natural gas	Electricity	Biomass			
			LPG	Gasoline	Jet fuel /	Gas / Diesel	others			Fuel wood &	Bagasse	Charcoal	Biogas
Conversion	ktoe /	ktoe /	ktoe /	ktoe /	ktoe /	ktoe /	ktoe /	toe/scf	toe/MWh	ktoe/kCt	ktoe /	ktoe /	ktoe /
Caloric value	0.628	1.00	1.075	1.053	1.056	0.96	0.966	1.78E-05	0.08598	0.4091	0.4386	0.6713	1.000

Note: For simplicity, this exercise assumes calorific value for off-shore natural gas. In reality, calorific values of natural gas are different for on-shore and off-shore

Energy Balance For Myanmar 2015-2016

Energy Balance for Myanmar 2015-2016

Unit: ktoe

Commodity Transaction	Coal	Crude Oil	Petroleum products						Natural Gas	Electricity		Biomass					Total
			LPG	Gasoline	Jet fuel / Aviation	Gas / Diesel oil	Others	Total		Primary	Processed	Fuel wood &	Bagasse	Charcoal	Biogas	Total biomass	
UNIT	ktoe																
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Imports	15	-	24	1,344	109	2,755	283	4,515	-	-	-	-	-	-	-	-	4,530
Exports	-13	-149	-	-	-	-32	-	-32	-9,952	-107	-	-	-	-	-	-	-10,252
Stock Changes	-	-58	-2	-13	14	10	-21	-11	-	-	-	-	-	-	-	-	-69
PRIMARY ENERGY SUPPLY	266	446	22	1,331	123	2,733	263	4,473	2,466	808	-	8,555	323	157	1	9,036	17,495
Oil Refining	-	-428	6	150	17	144	84	400	-	-	-	-	-	-	-	-	-27
Power Generation									-							-	-
Hydro	-	-	-	-	-	-	-	-	-	-799	799	-	-	-	-	-	-
Steam	-	-	-	-	-	-	-	-	-	-	25	-	-	-	-	-	25
Natural Gas	-	-	-	-	-	-	-	-	-1,745	-	536	-	-	-	-	-	-1,209
Coal	-13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-13
Diesel	-	-	-	-	-	-151	-	-151	-	-	5	-	-	-	-	-	-146
Own Use	-	-	-	-	-	-	-5	-5	-277	-9	-4	-	-	-	-	-	-295
Tx & Dx Losses	-	-	-	-	-	-	-	-	-68	-	-208	-	-	-	-	-	-276
Other Conversion	-	-	5	-8	-	-	-	-3	-13	-	-	-	-	-	-	-	-16
NET SUPPLY AVAILABLE	254	18	33	1,473	140	2,727	341	4,714	364	-	1,152	8,555	323	157	0.52	9,036	15,538
Statistical Differences	-0	-18	0	-71	-1	72	-0	-0	-4		0	-	-	-	-	-	-22
FINAL CONSUMPTION	253	-	33	1,402	139	2,798	341	4,714	360		1,152	8,555	323	157	0.52	9,036	15,515
Transport	-	-	-	1,119	139	496	253	2,008	121		-	-	-	-	-	-	2,129
Industry	211	-	-	42	-	778	12	832	238		354	-	-	-	-	-	1,635
Other (Commercial, Residential, others)	43	-	33	240	-	1,524	76	1,875	0		798	8,555	323	157	0.52	9,036	11,751

	Coal	Crude oil	Petroleum					Natural gas	Electricity	Biomass			
			LPG	Gasoline	Jet fuel / Aviation	Gas / Diesel oil	others			Fuel wood &	Bagasse	Charcoal	Biogas
Conversion	ktoe	ktoe /	ktoe /	ktoe /	ktoe / '000	ktoe /	ktoe /	toe/scf	toe/MWh	ktoe/kCt	ktoe / '000	ktoe / kCt	ktoe /
Caloric value	0.63	1.00	1.075	1.053	1.056	0.96	0.966	1.78E-05	0.08598	0.4091	0.4386	0.6713	1.000

Note: For simplicity, this exercise assumes calorific value for off-shore natural gas. In reality, calorific values of natural gas are different for on-shore and off-shore

Conclusion

- *We, Myanmar , has abundant renewable energy and natural resources*
- *Currently, 39 % of Household can access electricity but 61% not yet. We need to formulate the comprehensive policy and Strategy for energy sector development by expending in the field of renewable energy sector, hydro and clean energy LNG. the ongoing enhancement and expansion of Myanmar's electricity industry is thus an important part of enabling economic growth to occur.*
- *Energy Statistic is really need for future development. So that, we have to cooperate with ASEAN for* ***ASEAN Energy Outlook****, with the Norwegian Government for* ***Sustainable Development and Management of the Petroleum Sector 2017-2021)****, with the Economic Research Institute of ASEAN and East Asia (ERIA) for* ***1st Energy Statistics of Myanmar & 1st Energy Outlook of Myanmar***

THANK YOU

FOR YOUR KIND ATTENTION

Questions Are Welcome……..

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