



Energy Outlook of Laos

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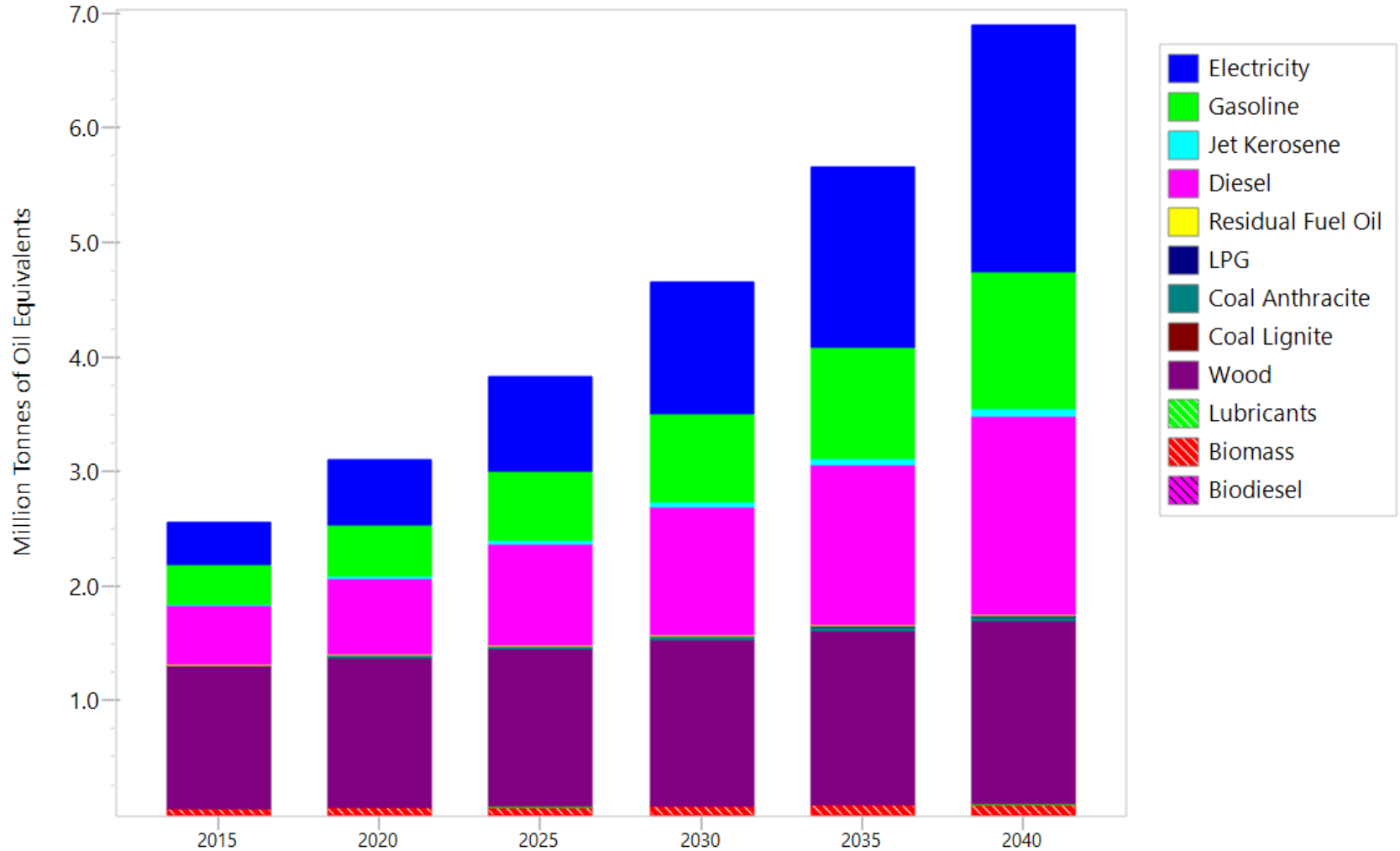
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Energy Demand Final Units

BAU Scenario

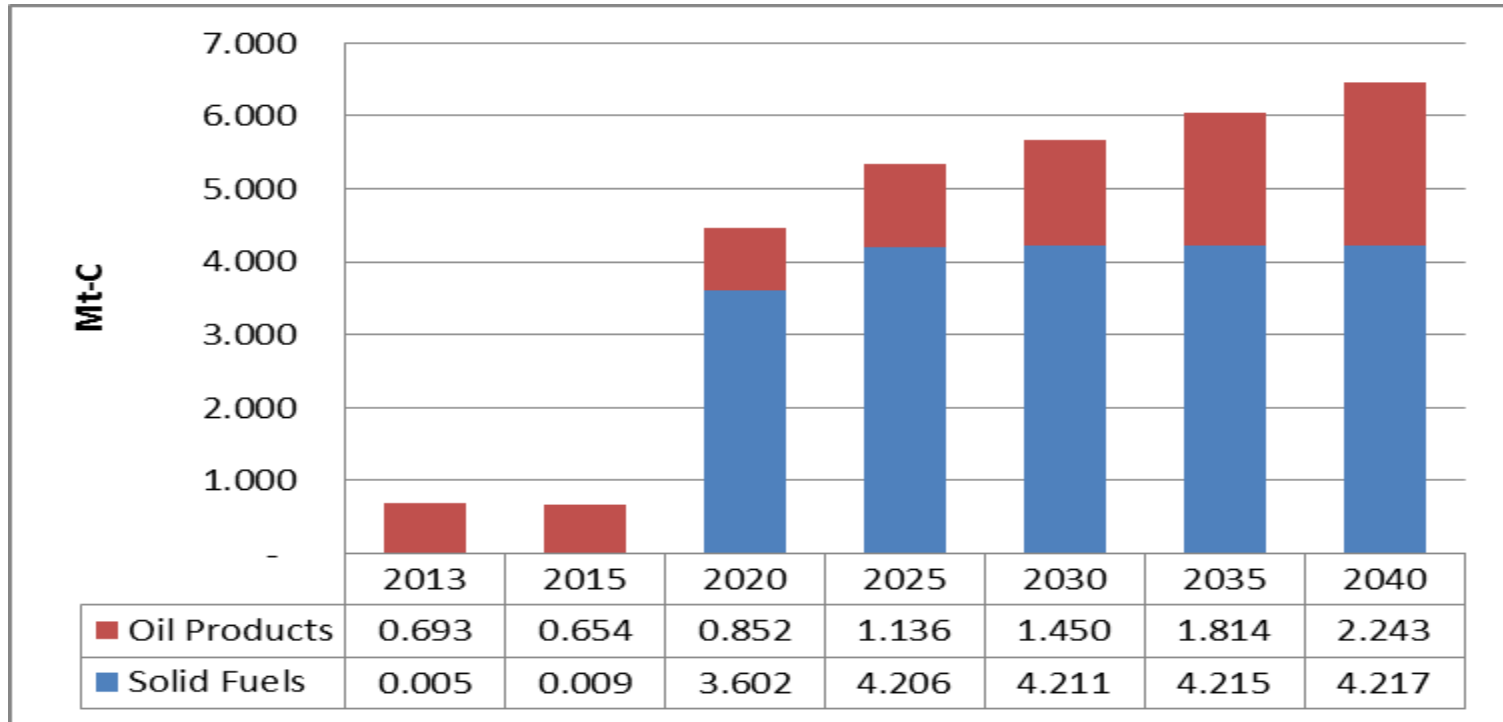


Energy Demand Final Units

BAU Scenario

Fuels	2015	2020	2025	2030	2035	2040	Ann. Avg Growth (%) 2013-40
Electricity	0.4	0.6	0.8	1.2	1.6	2.1	0.1
Gasoline	0.3	0.4	0.6	0.8	1.0	1.2	0.1
Jet Kerosene	0.0	0.0	0.0	0.0	0.1	0.1	0.1
Diesel	0.5	0.7	0.9	1.1	1.4	1.7	0.1
Residual Fuel Oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LPG	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Coal Anthracite	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Coal Lignite	-	-	-	-	-	-	
Wood	1.2	1.3	1.4	1.4	1.5	1.6	0.0
Lubricants	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Biomass	0.1	0.1	0.1	0.1	0.1	0.1	0.0
Biodiesel	-	-	-	-	-	-	
Total	2.6	3.1	3.8	4.7	5.7	6.9	0.0

CO2 Emission Outlook 2016 (BAU)



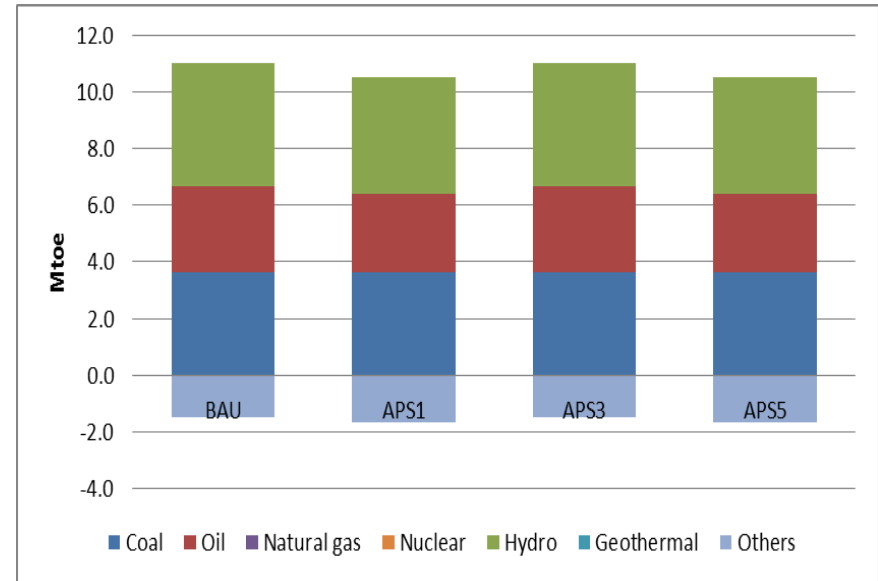
- CO2 Emission is expected to increase from 0.7 Mt-C in 2013 to 6.48 Mt-C in 2040, because from 2016 onward the Hongsa and other coal fired power plants will be in operation and constructed respectively.

APS

- **APS1: Improved Efficiency of Final Energy Demand**
 - **APS2: More Efficient Thermal Power Generation**
 - **APS3: Higher Contribution of Renewable Energy to Total Supply**
 - **APS4: Contribution of Nuclear Energy to Total Supply**
 - **APS5: Combined Effects of APS1, APS2, APS3, APS4 and APS5**
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- This study of Lao PDR Energy Demand Forecast has been carried out the same as all members of the working group which to estimate the energy demand in absolute values and growth rates of energy demand for 2015, 2020, 2025, 2030, 2035 and 2040 in different scenarios such as BAU, APS1, APS2, APS3, APS4, APS5. Unlike some other members, Laos is using only APS1, APS3 and APS5.
 - BAU to calculate the normal energy demand and APSs to calculate the savings if applying the energy policies.

Primary energy supply, MTOE (2040)

	BAU	APS1	APS3	APS5
Coal	3.653	3.649	3.653	3.649
Oil	3.018	2.727	3.018	2.727
Natural gas	-	-	-	-
Nuclear	-	-	-	-
Hydro	4.349	4.123	4.349	4.123
Geothermal	-	-	-	-
Others	(1.496)	(1.657)	(1.496)	(1.657)
Total	9.523	8.842	9.523	8.842

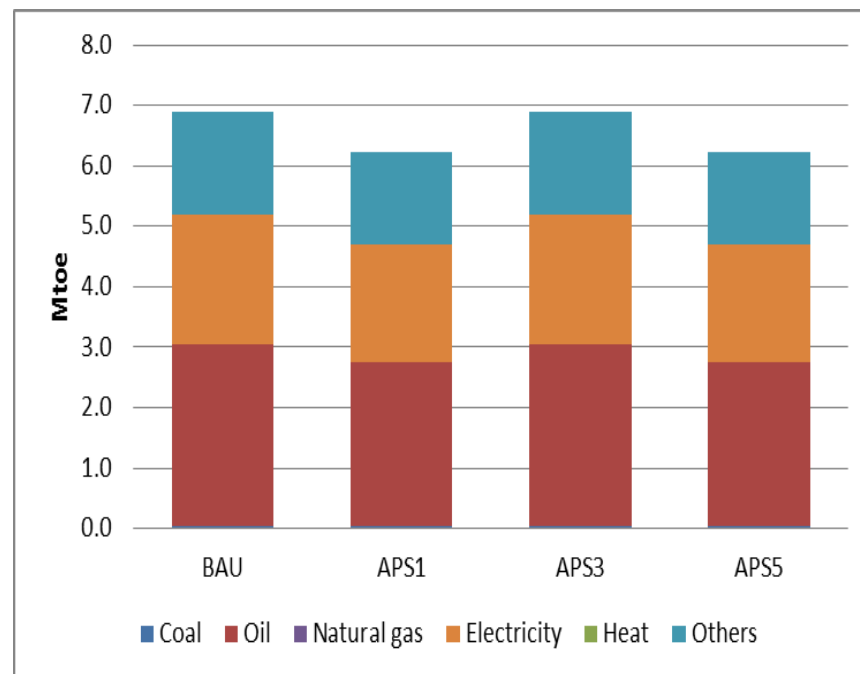


- Primary energy of Lao PDR consists of coal, oil, hydro and others. Others include biomass and exported electricity. Total primary energy supply was 2.47 MTOE in 2013 and expected to increase to 9.523 MTOE in 2040. The annual average growth rate is 5.1%. In 2040, the hydro is expected to be supplied with 4.349 MTOE which more than other as it to be shared by 45.7% .
- By carrying different APS (APS1 and APS5), the supply is expected to decrease from BAU figure to 8.842 MTOE, reduced by 0.68 MTOE and 7.1%.

Final energy demand, MTOE (2040)

By fuel

	BAU	APS1	APS3	APS5
Coal	0.037	0.033	0.037	0.033
Oil	3.018	2.727	3.018	2.727
Natural gas	-	-	-	-
Electricity	2.144	1.930	2.144	1.930
Heat	-	-	-	-
Others	1.693	1.533	1.693	1.533
Total	6.892	6.223	6.892	6.223

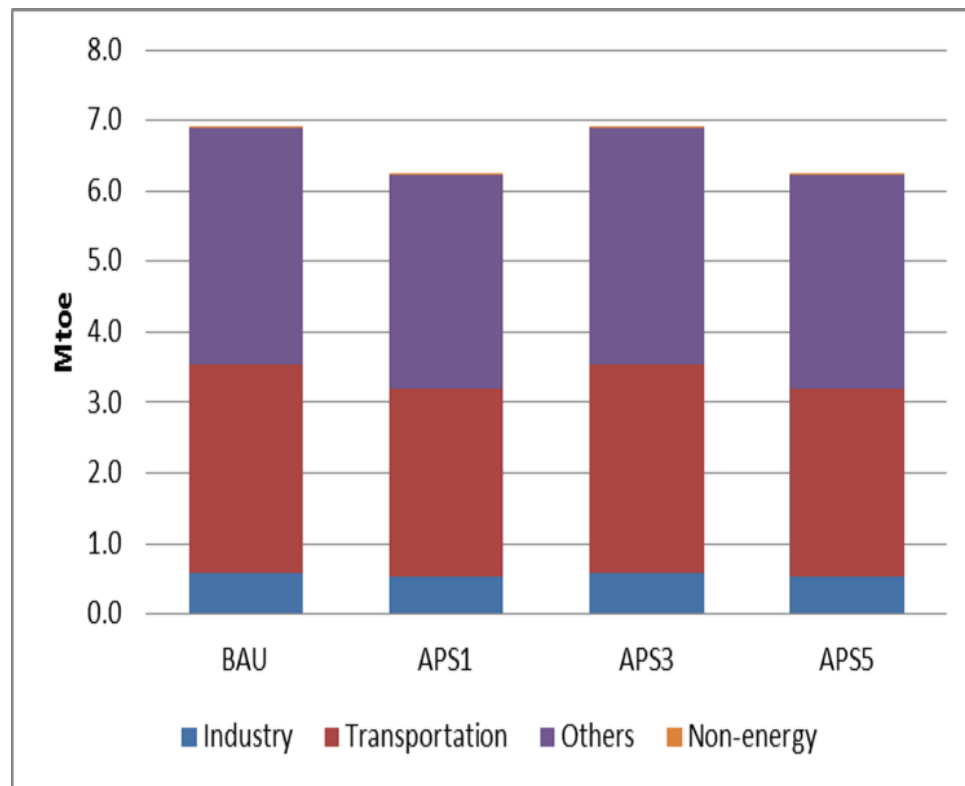


- Final energy of Laos consists of coal, oil, electricity and others (biomass).
- Total final energy demand in BAU was 6.892 MTOE and expected to decrease to 6.223 MTOE in APS1 and APS5.
- Oil is used more than other both in BAU and APS. In APS1, it is used 2.727 MTOE which has a share of 43.8% in total.

Final energy demand, MTOE (2040)

By sectors

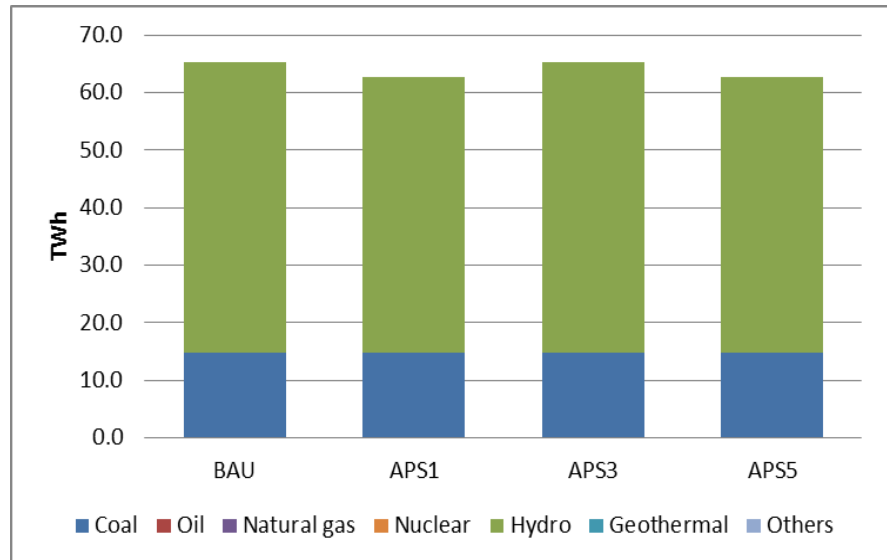
	BAU	APS1	APS3	APS5
Industry	0.571	0.524	0.571	0.524
Transportation	2.968	2.678	2.968	2.678
Others	3.348	3.016	3.348	3.016
Non-energy	0.005	0.005	0.005	0.005
Total	6.892	6.223	6.892	6.223



- This is to compare BAU with APS results. In BAU, Other still has a larger share in total energy demand which stands at 48.6%, followed by Transport stands at 43.1%.
- In BAU, total energy demand was 6.892 MTOE and decreased to 6.223 MTOE in APS1 and APS5, while it was not changed in APS3. The demand was lowered by 9.7% from BAU to APS.

Power Generation, TWh (2040)

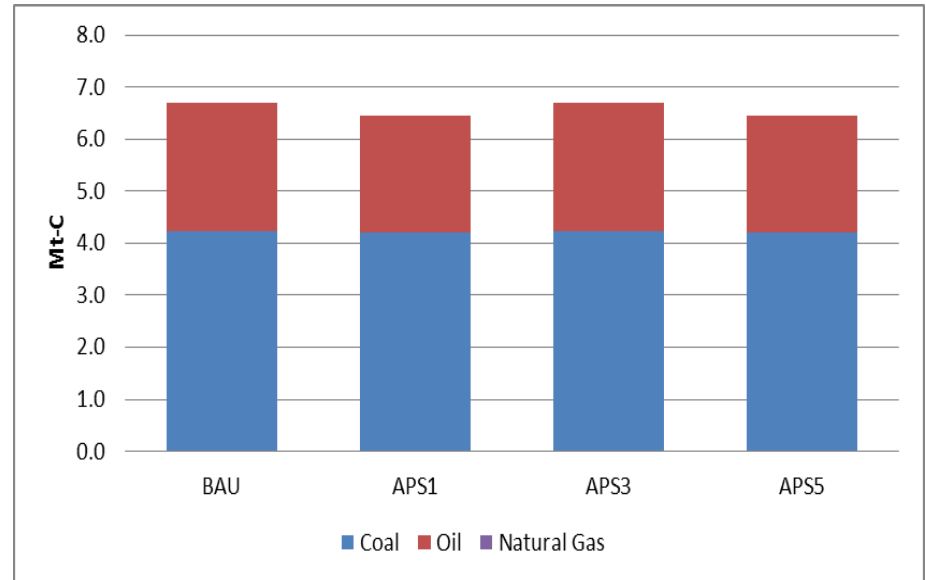
	BAU	APS1	APS3	APS5
Coal	14.717	14.717	14.717	14.717
Oil	-	-	-	-
Natural gas	-	-	-	-
Nuclear	-	-	-	-
Hydro	50.579	47.954	50.579	47.954
Geothermal	-	-	-	-
Others	-	-	-	-
Total	65.296	62.671	65.296	62.671



- In Laos, electricity is mainly produced from hydro and coal. However in 2013 all 15.51 TWh of electricity was still produced by hydro, then in 2016 the first coal fired power plant started operation. In 2040, electricity from coal is 14.717 TWh and from hydro is 50.579 TWh.
- The total electricity generation was reduced from 65.296 TWh in BAU to 62.671 TWh.

CO2 Emission, Million tons of Carbon Equivalent (2040)

	BAU	APS1	APS3	APS5
Coal	4.222	4.217	4.222	4.217
Oil	2.482	2.243	2.482	2.243
Natural Gas	-	-	-	-
Total	6.704	6.460	6.704	6.460



Green House Gas emission was reduced from 6.704 Mt-C in BAU to 6.460 Mt-C in APS1 and APS3.

Thank you for your kind attention