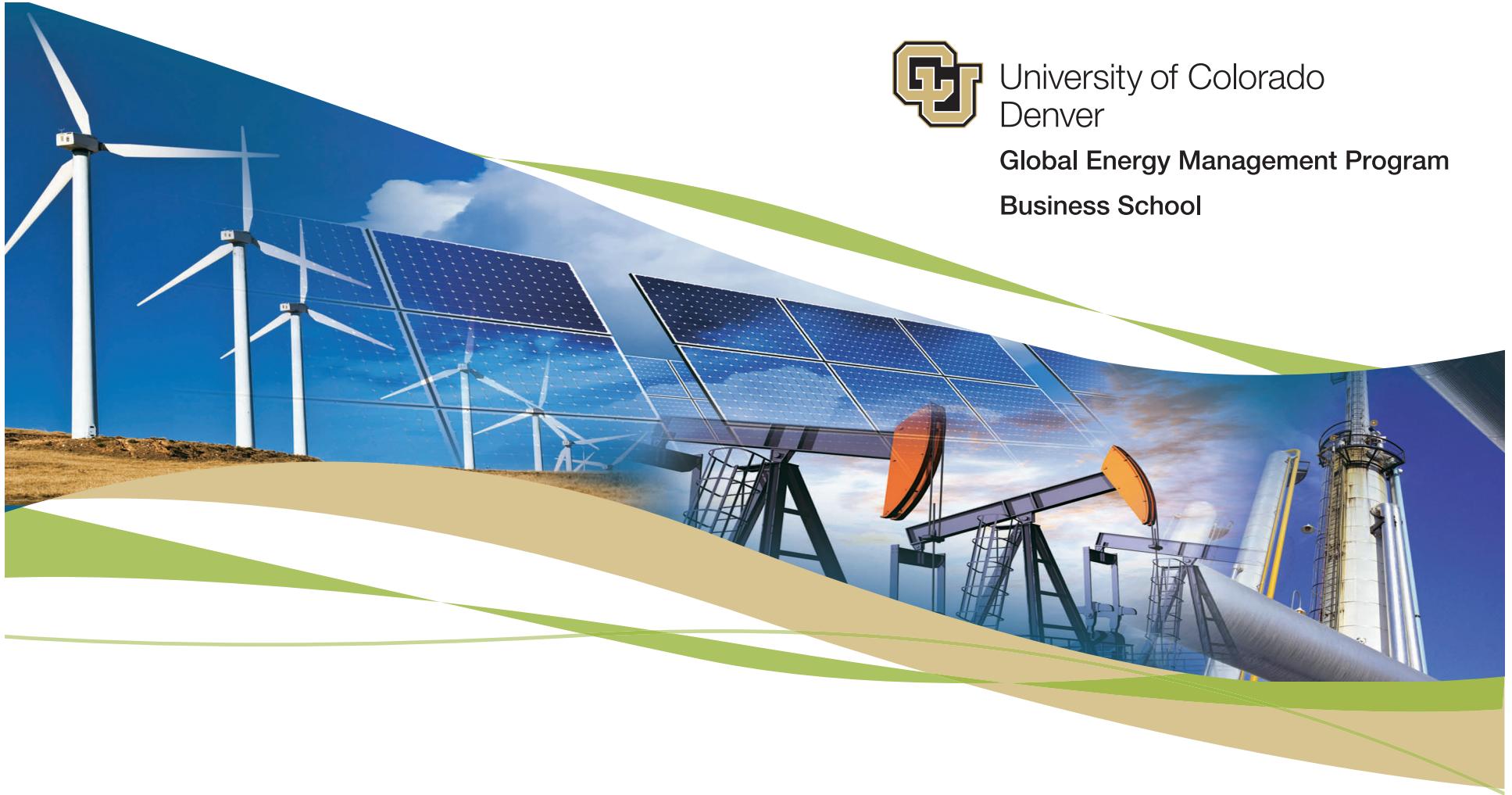




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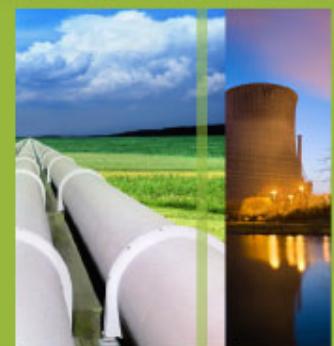
Fundamentals of Global Energy Business

Michael J. Orlando

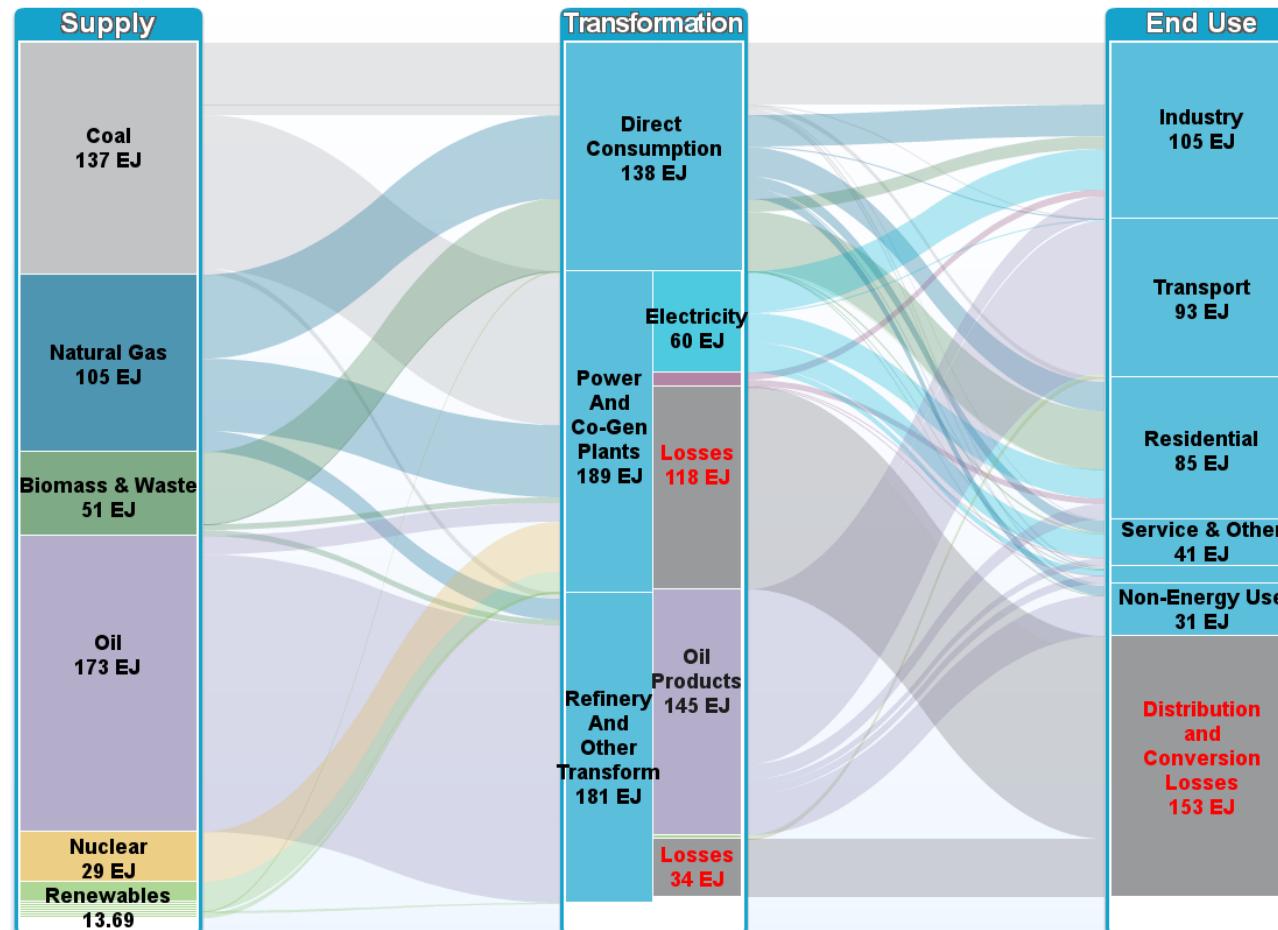
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week 2: Supply of Energy

video 3: What Primary Sources are Used to
Satisfy Demand?



Global Energy Flow 2009



Source: International Energy Agency <http://www.iea.org/etp/explore> (accessed 12/17/2013)

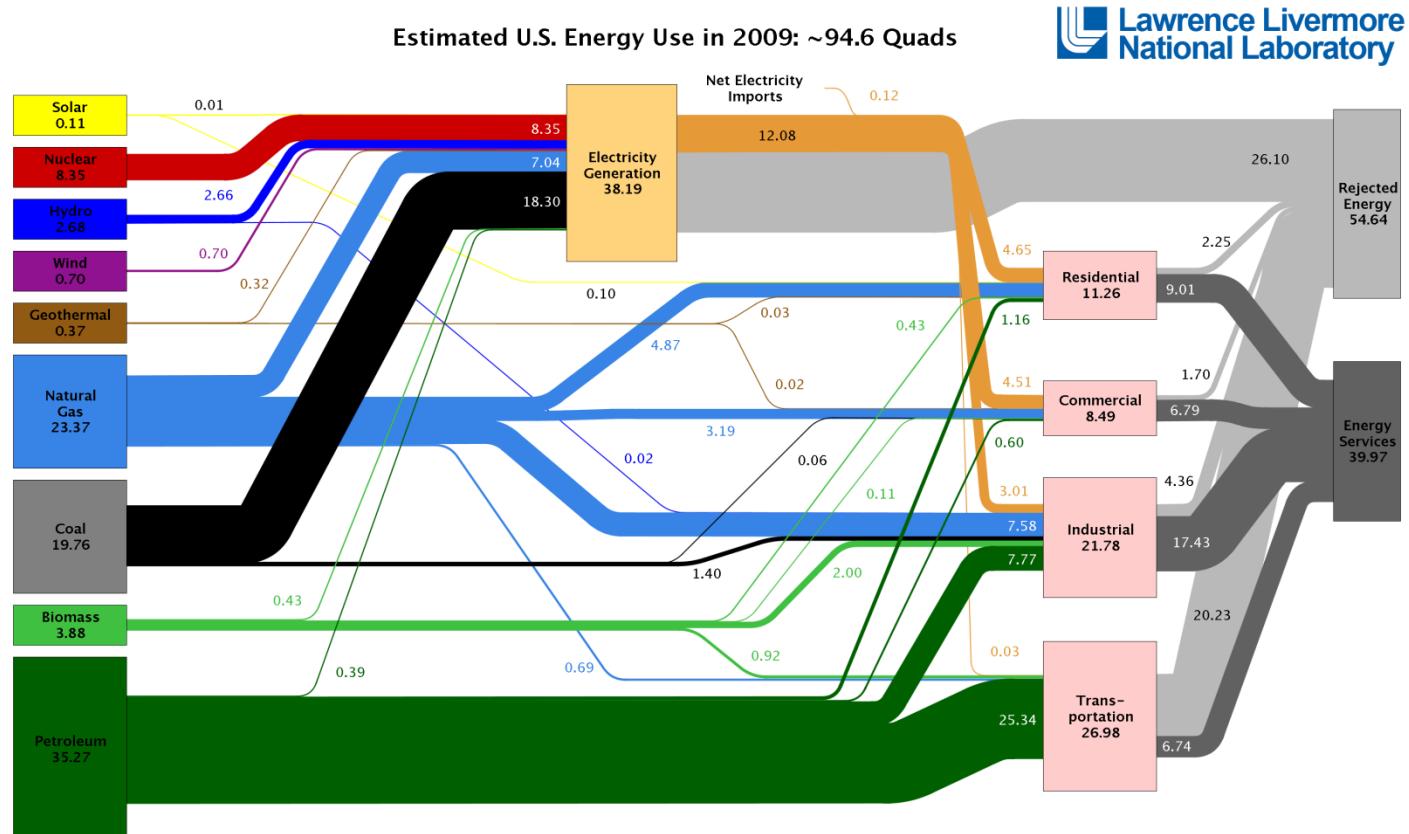
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US Energy Flow 2009 (Quadrillion BTU)



Source: LLNL 2010. Data is based on DOE/EIA-0384(2009), August 2010. If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports flows for non-thermal resources (i.e., hydro, wind and solar) in BTU-equivalent values by assuming a typical fossil fuel plant "heat rate." The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. End use efficiency is estimated as 80% for the residential, commercial and industrial sectors, and as 25% for the transportation sector. Totals may not equal sum of components due to independent rounding. LLNL-MI-410527

Source: Lawrence Livermore National Laboratory <https://flowcharts.llnl.gov/> (accessed 12/17/2013)

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Energy Source – World vs. US

	-- Supply % --		Transformation -- to Electrical % --	
	<u>World</u>	<u>US</u>	<u>World</u>	<u>US</u>
coal	27	21	48	48
oil	34	37	6	1
nat. gas	21	25	22	18
nuclear	6	9	15	22
renewable	13	8	9	11
- <i>biomass</i>	10	4	2	1
- <i>other</i>	3	4	7	10



Energy End Use – World vs. US

	-- Industry % --		-- Transportation % --		-- Residential % --	
	<u>World</u>	<u>US</u>	<u>World</u>	<u>US</u>	<u>World</u>	<u>US</u>
coal	34	6	0	-	4	-
oil	13*	36	96*	94	10*	10
nat. gas	18	35	1	3	20	43
renewable	7	9	2	3	40	4
- biomass	7	9	2	3	40	4
- other	-	-	-	-	0	0
electricity	27	14	1	0	25	41

* note: assumes all Refinery and other Transform = oil

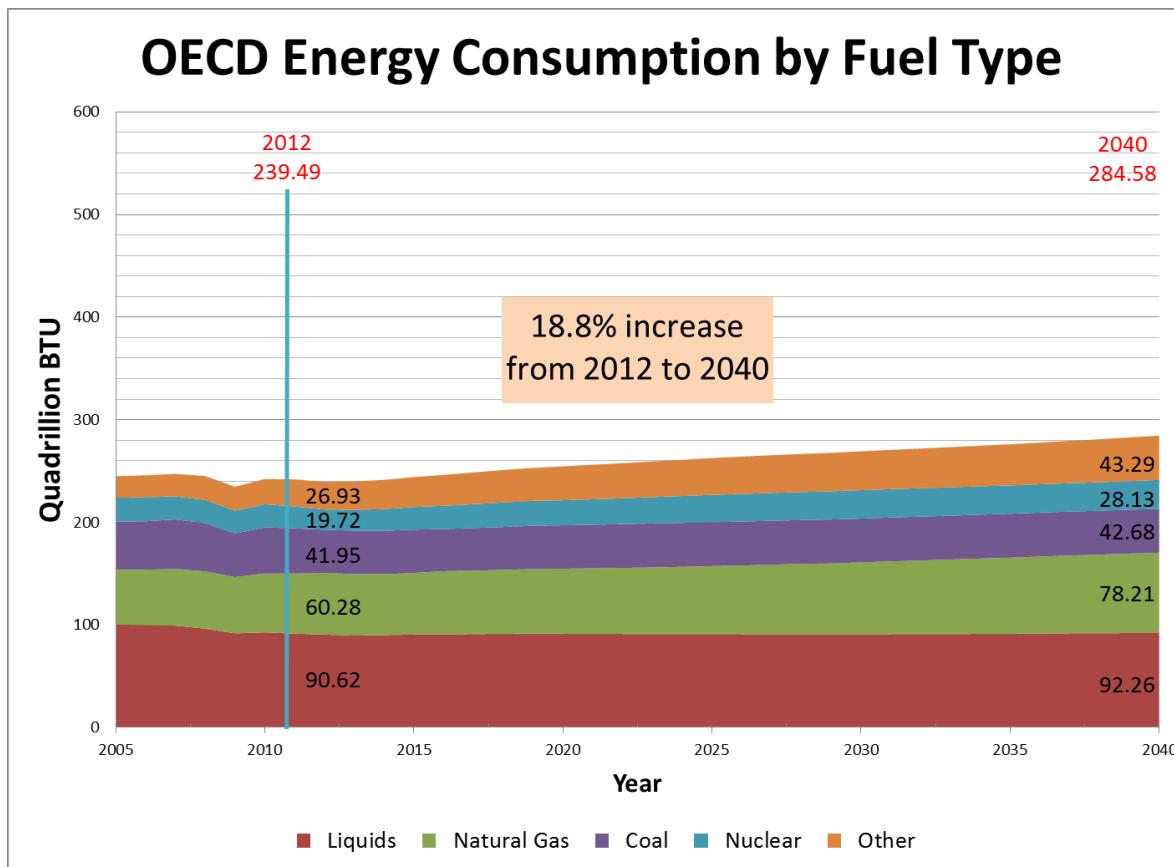
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Primary Energy Consumption - OECD



Source: US EIA 2013 International Energy Outlook (Table A2)

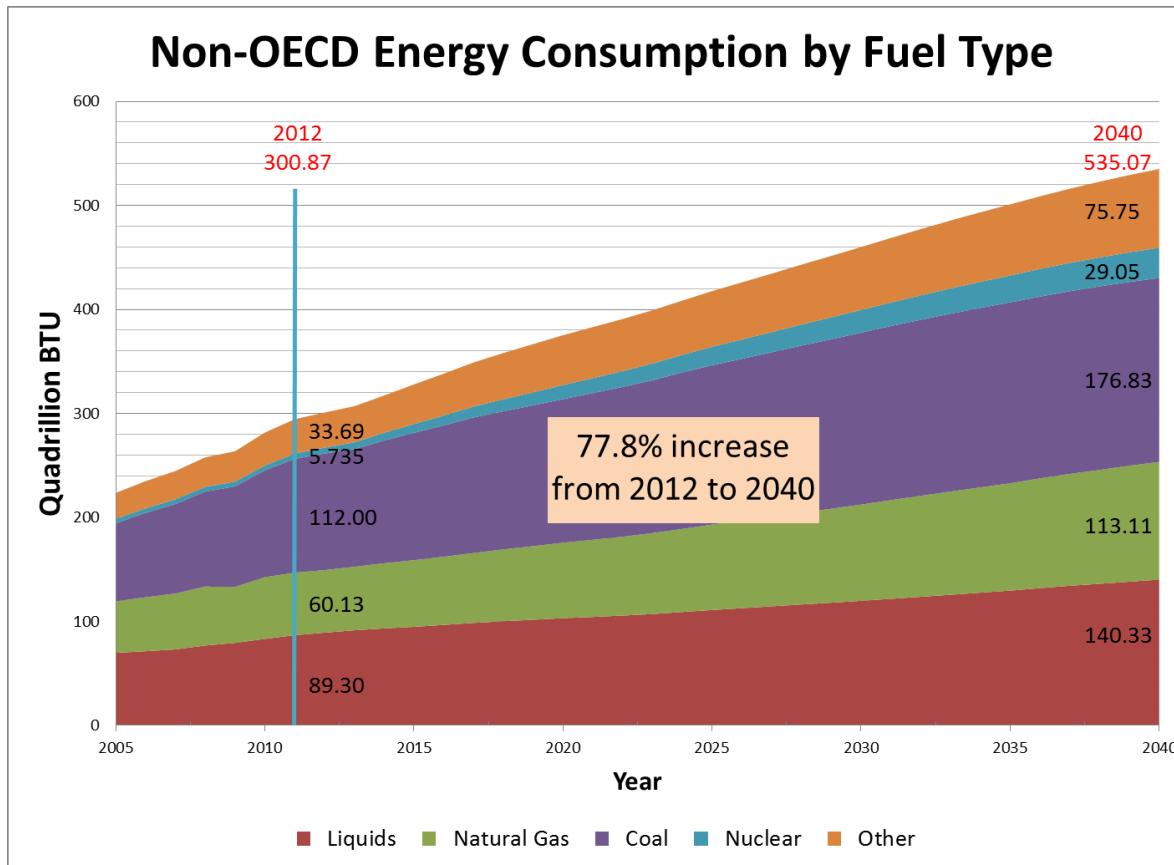
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Primary Energy Consumption - non-OECD



Source: US EIA 2013 International Energy Outlook (Table A2)

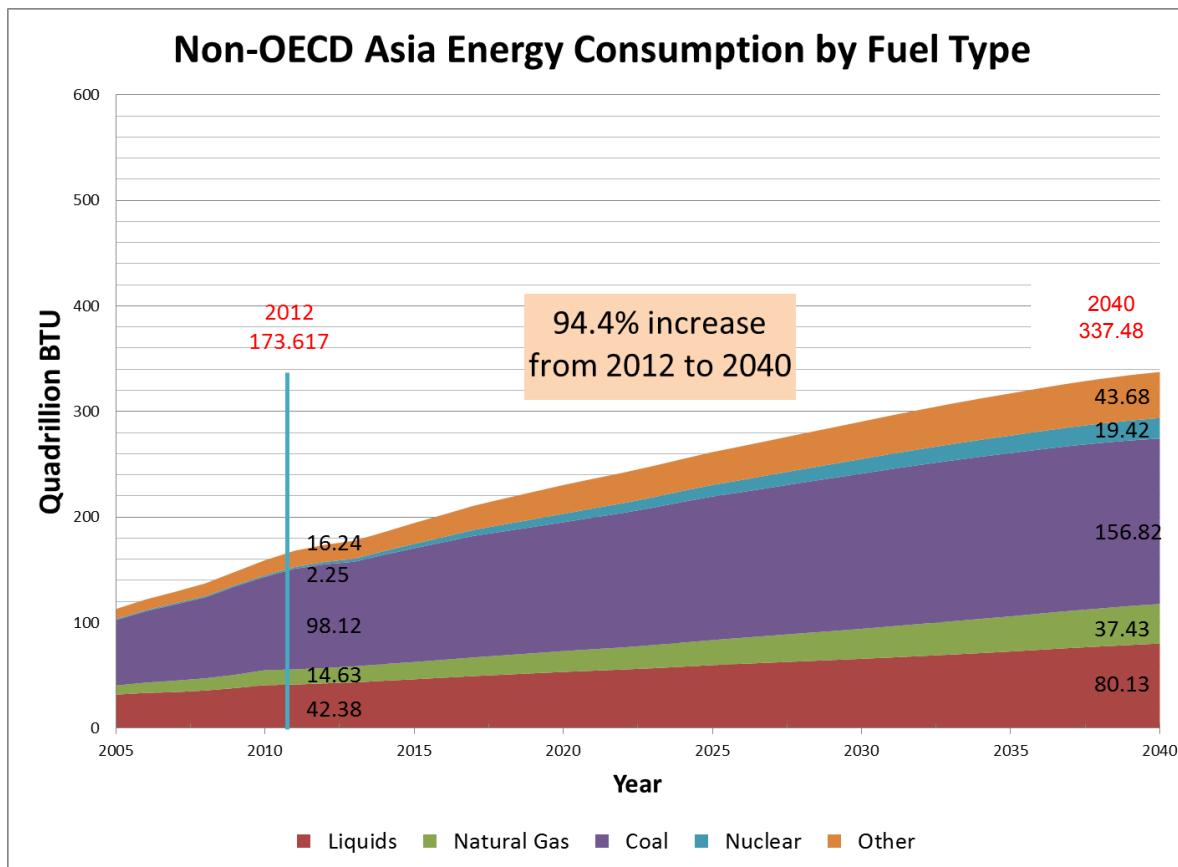
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Primary Energy Cons - non-OECD Asia



Source: US EIA 2013 International Energy Outlook (Table A2)

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