

WCA INSIGHTS SERIES 2015

Southeast Energy Asia Outlook 2015

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The International Energy Agency today released the Southeast Energy Asia Outlook 2015

The report highlights that the power sector is fundamental to the energy outlook for Southeast Asia, and that within it, coal is emerging as the fuel of choice due to its relative abundance and affordability in the region. Coal demand will expand at the fastest rate among all energy sources and reach 440 Mtce in 2040, a level comparable to India today.

The publication analyses energy demand and production trends in Southeast Asia, with special focus on power generation in the region through to 2040. Separate chapters also focus on the Malaysian energy mix and a thematic analysis on key issues that will shape the future of Southeast Asia's energy mix.

Southeast Asia's energy landscape is set for major change

Energy demand

Driven by economic and demographic change, Southeast Asia's energy demand has increased by more than 50% between 2000 and 2013. Demand is projected to grow by 80% from today to just under 1100 Mtoe in 2040, driven by a regional economy that will triple and a population that will grow by a quarter to 760 million.

By 2040, coal will overtake oil to become the largest fuel in the regional energy mix. The report suggests that while the position of modern renewables (wind, water, hydro and geothermal) will grow, the decline of biomass will result in the share of renewables declining from 26 to 21%.

Table 2.1 ▶ Primary energy demand in Southeast Asia (Mtoe)

	1990	2013	2020	2040	Shares		CAAGR*
					2013	2040	2013-2040
Fossil fuels	131	437	547	838	74%	78%	2.4%
Coal	13	91	151	309	15%	29%	4.6%
Gas	30	133	149	220	22%	21%	1.9%
Oil	89	213	247	309	36%	29%	1.4%
Nuclear	-	-	-	8	-	1%	n/a
Renewables	102	156	169	223	26%	21%	1.3%
Hydro	2	9	10	22	2%	2%	3.1%
Bioenergy	93	122	127	134	21%	13%	0.4%
Other **	7	25	32	67	4%	6%	3.8%
Total	233	594	716	1 070	100%	100%	2.2%

*Compound average annual growth rate. **Includes solar PV, wind, and geothermal.

Electricity demand

To meet the increase in demand, 400 GW of power generation capacity – roughly equal to the combined installed capacity of Japan and Korea today – will be added across the region between now and 2040, of which 40% is coal-fired. The IEA projects the share of coal in power generation to rise from 32% to 50%; gas will experience the opposite trend declining from current levels of 44% to 22%. The report attributes the rise in coal to economic factors, abundant supplies and the need for rapid electrification with Indonesia, Malaysia and Thailand expected to lead growth.

Table 2.2 ▶ Electricity generation by fuel in Southeast Asia (TWh)

	1990	2013	2020	2040	Shares		CAAGR*
					2013	2040	2013-2040
Fossil fuels	120	648	925	1 699	82%	77%	3.6%
Coal	28	255	482	1 097	32%	50%	5.6%
Gas	26	349	406	578	44%	26%	1.9%
Oil	66	45	36	24	6%	1%	-2.2%
Nuclear	-	-	-	32	-	1%	n.a.
Renewables	34	141	180	481	18%	22%	4.7%
Hydro	27	110	119	255	14%	12%	3.2%
Geothermal	7	19	27	58	2%	3%	4.2%
Bioenergy	1	10	22	75	1%	3%	7.7%
Other**	-	2	12	93	0%	4%	16.0%
Total	154	789	1 104	2 212	100%	100%	3.9%

*Compound average annual growth rate. **Includes wind and solar PV.

Efficiency rates

Given the projected growth of coal, the report calls for the deployment of more efficient coal-fired power plants. In 2014, subcritical technologies represented more than 90% of installed coal-fired capacity driven by lower upfront costs and shorter lead times. The IEA notes that while efficiency is projected to improve from current levels of 33% to 35% by 2040 more must be done to encourage adoption of high-efficiency, low-emission technologies. The paper also analyses potential funding opportunities for the deployment of HELE technology. To assuage the loss of support from international financial institutions, such as the World Bank Group, the IEA suggests that Chinese government initiatives, banks and equipment manufacturers may fill the void.

Rising imports sharpen focus on economic and security aspects of energy use

Over the next three decades, the IEA projects constrained growth in the oil and gas sectors as low prices limit investment and the most prolific fields begin to decline, especially in Thailand and Indonesia.

Conversely, the region will remain a net coal exporter and a 'cornerstone' of global supply, although much output will be directed towards satisfying regional demand. Since 2000, Southeast Asia's coal output expanded by a factor of five from 83 Mtce to 450 Mtce, driven by rising demand from China and India.

Over the last decade, Indonesia's coal production has increased rapidly with an average growth rate of 15% per year. Under the IEA's New Policies Scenario, Indonesia's coal production will continue to rise, albeit at a more moderate pace, rising from 401 Mtce to 600 Mtce by 2040.

As the second largest coal producer in Southeast Asia, Vietnam produced 33 Mtce of coal in 2013. Through to 2040, the IEA projects domestic coal demand to increase to such a level that by 2020 Vietnam will switch from an exporter of coal to an importer.

Thailand and the Philippines are also identified as significant demand growth areas.

Ongoing changes for Malaysia's energy sector

Malaysia, the third largest economy in the region, will almost double its energy demand between today and 2040. Fossil fuels will continue to satisfy demand

responsible for 90% of the energy mix through to 2040; coal demand will increase by a factor of three to become the primary fuel in the country's energy mix. The report reiterates the opportunities that HELE technologies provide in driving a secure and sustainable energy mix. .

Key issues shaping the future of Southeast Asia's energy system

The IEA encourages greater integration of the region's electricity network to enhance energy security, encourage efficiency and drive development of high cost or remote resources.

Policy makers will have a significant role to play in attracting and mobilising energy investment for the region. The IEA forecasts that \$2.5 trillion of cumulative investment in energy supply is required through to 2040, with an extra \$420 billion need to improve energy efficiency.

The report commends the considerable progress to resolve energy poverty in the region since its last edition in 2013, noting universal or near universal access in Brunei Darussalam, Malaysia, Singapore, Thailand and Viet Nam. The IEA, however, considers more progress is required in clean cooking and transitioning away from the traditional use of biomass.

Finally, the IEA notes that the region has made much progress in reducing subsidies for fossil fuels, but recommends further progress. In order to achieve durable reform the paper recommends: get the pricing mechanism right; implement reforms in steps; manage the effects and consult and communicate at all stages.

WCA commentary:

The *Southeast Asia Energy Outlook* key messages are in line with those of the World Coal Association. We support the IEA's assessment that coal will be critical to driving economic development and energy access for the region over the coming decades, noting its role in Chinese industrialisation and urbanisation. Moreover, we are actively engaging with regional stakeholders to encourage the deployment of HELE technologies across the region, including promoting the PACE concept to international finance institutions, such as the New Development Bank.

World Coal Association
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