



Shifting to alternative energy

**The energy
transformation**

Industry focus

January 2020

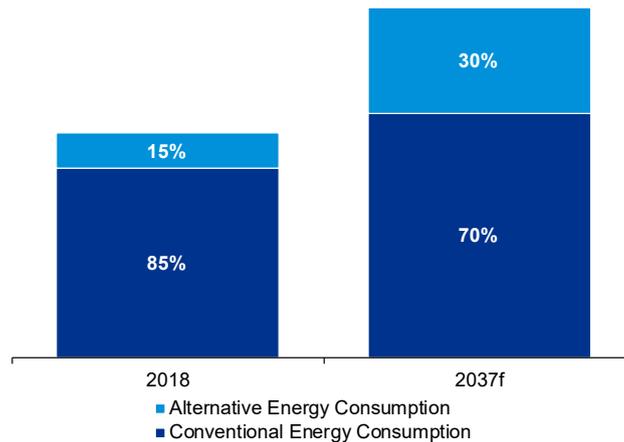
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Thailand's alternative energy sources

Thailand's energy consumption has been rising over the past decade as the population and economy has expanded, requiring the necessity of finding suitable and sufficient resources to meet increasing demand. Technological innovation and a favorable environmental policy are factors that are shaping Thailand's energy supply and transforming the country's energy landscape.

Thailand's final energy consumption by type (ktoe¹)



Thailand has committed to increase its use of alternative energy in order to drive the economy, strengthen energy security and support environmental sustainability. The Alternative Energy and Development Plan (AEDP) has been put in place in order to leverage and develop the sector. The country targets the percentage of its alternative energy consumption to increase from 15% in 2018 to 30% in 2037. According to AEDP2015, this change will reduce the use of fossil fuels by 39,388 ktoe, amounting to a THB590 billion reduction; and emission of greenhouse gas will be reduced by approximately 140 million tonnes of carbon dioxide equivalents (tCO₂e).

¹ktoe refers to the tonne of oil equivalent

Source: Department of Alternative Energy Development and Efficiency. Alternative Energy and Development Plan (AEDP 2015). Energy Efficiency Plan & Alternative Energy Development Plan. Energy Symposium 2019.

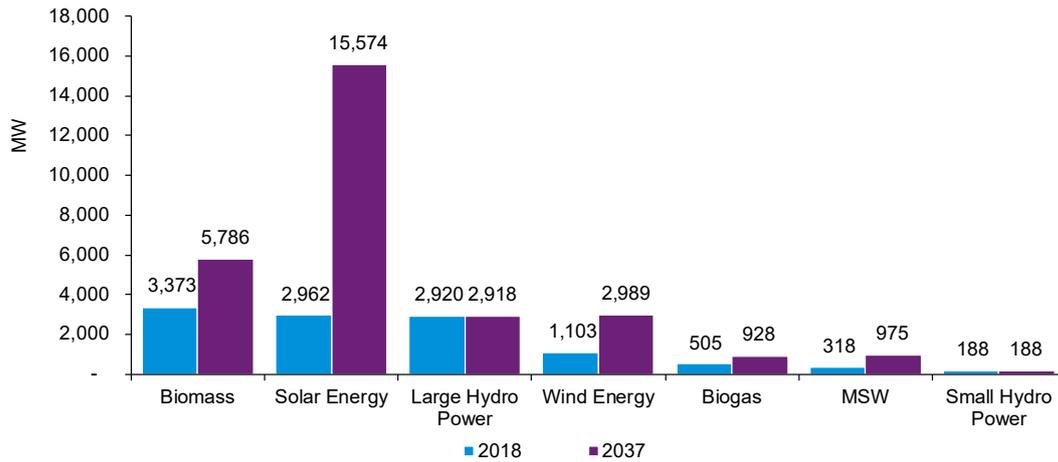
“Thailand’s government has committed efforts toward renewable energy to strengthen the country’s sustainable energy supply. The development of new technologies and the increase of efficiencies combined with lower operating cost have attracted new entrants who are starting to incorporate renewable solutions, making wider investments and growing for the sector. The future of alternative energy has high potential.”

Tidarat Chimluang

Partner, Head of Industrial Markets
KPMG in Thailand



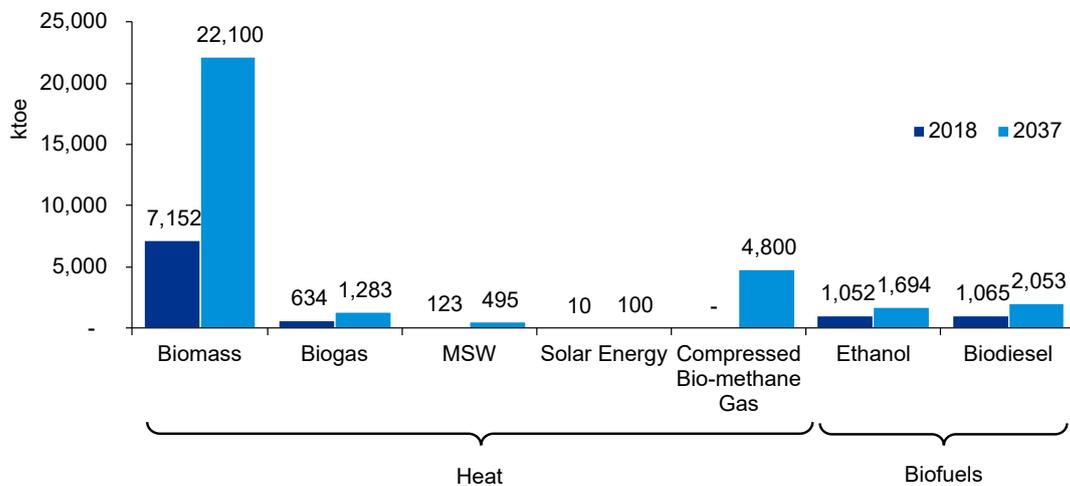
2018 actual and 2037 target alternative energy used in power generation supply² (MW³)



Thailand's power sector currently relies mostly on natural gas. However, the government aims to shift its power generation away from fossil fuel source with forecast numbers from the Department of Alternative Energy Development and Efficiency showing that the proportion of electricity consumption from alternative energy will increase significantly.

The target has been set in AEDP2018, with the aim that within 2037, the percentage of electricity consumption from alternative energy will be 32.9%, mainly driven by solar energy.

2018 actual and 2037 target of alternative heat and biofuels supply (ktoe)



According to AEDP2018, alternative sources for heat will increase from 23.3% in 2018 to 39.1% in 2037 while biofuels will increase from 6.4% to 10.8%. The use of biomass is expected to increase due to strong government support and the commissioning of projects that utilize agricultural products.

In the transportation sector, there will only be slight increase in ethanol and biodiesel due to changing trends of future energy consumption for transport; it is projected to shift away from natural fuels to electricity.

²Contract capacity

³MW refers to Megawatt

Source: Energy Efficiency Plan & Alternative Energy Development Plan. Energy Symposium 2019.

Department of Alternative Energy Development and Efficiency. Energy Statistics. (2019)

To increase the usage of renewable energy, it is vital for policy makers to implement sustainable energy policies and infrastructure.

Subsidies

The government plays an important role in driving the growth of renewable energy by issuing measures to sustain the country's energy security, economy and ecology. FitchSolutions states Feed-in tariffs (FiTs) have been reaffirmed for new renewable projects in order to boost growth. Additionally, peer-to-peer (P2P) private electricity trading in rural areas is allowed, which is in line with the government's goal to decentralize power generation and encourage participation from local communities and smaller companies.

Infrastructure

Supporting the growth of renewable energy requires well-prepared infrastructure. FitchSolutions sees Thailand have a well-developed transmission and distribution (T&D) network which makes the country suited for integrating new renewable energy generation into the system. The development of Smart Grids Network has been launched in order to accelerate the country's smart energy network which enables efficient electricity network, reliable and environmentally friendly electricity generation with greater integration of renewable energy sources.

Strong diversification in Thailand's energy generation

Alternative energy	Trends	Electricity	Heat	Biofuels
Solar energy	Operating costs have been falling, stimulating a steady growth. Thailand has potential for solar investment; thus, solar farms are a main driver for alternative energy usage.	/	/	
Wind energy	Slow and limited growth for wind power given the varying topography.	/		
Small hydro Power	With a small portion in generating power, it is crucial in controlling irrigation for agriculture.	/		
Large hydro Power	Limited growth in investments as mega projects will be carried out by the public sector.	/		
Biomass	It is set to be one of the main players in alternative resources as it is made from agricultural byproducts, which are plentiful due to Thailand's large agricultural industry.	/	/	
Biogas	Biogas is derived from livestock byproducts. Despite Thailand's livestock industry, large investments for biogas is limited due to available access of livestock byproducts.	/	/	
Municipal solid waste (MSW)	MSW is an attempt to solve problems with waste disposal by converting it into energy. Government measures support local communities running their own small plants.	/	/	
Compressed bio-methane gas (CBG)	CBG is the upgraded biogas into a form of NGV which can be used for heating applications and transportation. It continues to slowly grow as there is limited biogas production.		/	/
Ethanol	Limited growth due to changing trends of future energy consumption for transportation.			/
Biodiesel				/

Source: Energy Policy and Planning office (EPPO) Ministry of Energy. Power Development Plan (PDP2018).
Fitch Solutions. Thailand Renewable Report Q4 2019.
Krungsri Research. Thailand Industry Outlook 2019-21 Power Generation. (2019)

“Organizations in the energy industry are focusing on extensive capital investment, whether diversification or expanding renewable energy generation.

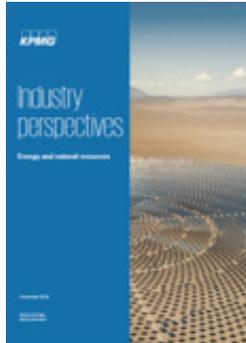
Despite favorable government policies, it is possible but challenging for developers to manage risks of trade regime, particularly for those of commercial and investment scale. Alongside high technological risks, financial costs and strong commercial competition from established, low-cost products are also factors challenging investors.”

Natthaphong Tantichattanon

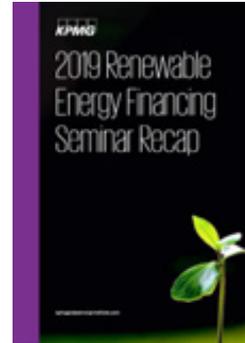
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