



Thailand

Renewable Energy Policy Update

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1. Thailand's main energy regulatory framework: PDP, AEDP and EEDP

Thailand has specified its long-term energy planning in the Power Development Plan (PDP) 2012-2030. This document is the primary planning document regarding national electricity production. Besides the PDP, different plans exist that address the areas of energy efficiency, renewable energy and climate change, namely the Climate Change Master Plan (CCMP, 2012-2050), the Alternative Energy Development Plan (AEDP, 2012-2021) and the Energy Efficiency

Plan (EEDP, 2011-2030). AEDP and EEDP were prepared by the Ministry of Energy; AEDP developed by the Department of Alternative Energy Development and Energy Efficiency (DEDE) and EEDP by the Energy Policy and Planning Office (EPPO). The CCMP was jointly developed by the Office of Climate Change Coordination (OCCC) and the Office of Natural Resources and Environmental Policy and Planning (ONEP), both under the Ministry of Environment. In August 2014, the NEPC announced to revise the PDP in a way that it better integrate AEDP and EEDP and thus create a more comprehensive approach for integrated energy planning (see below).

2. Thailand Power Development Plan (PDP: 2015-2036)

The PDP was being revised during the second half of 2014 and started to undergo public hearings as of the beginning of 2015. The new plan sets out for up to 2036 and is based on three principles:

1. **Security:** the security of power supply, transmission system and distribution system in response to the demand of electricity to support economic and social development plan is a guiding principle. A greater variety of fuels shall be used to avoid relying too much on gas.
2. **Economy:** adjusting the electricity price to reflect the cost of energy more appropriately and ensuring an efficient energy consumption is considered to slow down the construction of new power plants and to reduce energy imports and is thus followed as a rationale for the new PDP.

3. Ecology: to reduce negative impacts on the environment and communities the new PDP aims to reduce carbon dioxide emissions per unit of electricity production by promoting electricity production from renewable energy and promote energy efficiency.

The new PDP (2015-2036) is assuming GDP growth averaging 3.94% that is slightly below the 4.41% GDP growth that was used in the previous PDP from 2010. It is also based on the assumption of increased energy efficiency and energy conservation campaigns. The new PDP aims to install an additional capacity of 57,400 MW by the end of 2036, totalling the country's electricity capacity at 70,410 MW in 21 years from now. It focuses mainly on the increase of so called "cleaner fuels" and reduce reliance on natural gas. According to the plan added capacities should mainly come from biomass, "clean coal", nuclear and importing power from neighbouring countries. The transmission system is supposed to be developed further and smart grid technologies should be implemented to support increasing shares of renewable energy. By the end of the PDP2015, the aim of policy makers is to cut natural gas to a share of 30-40% from currently 64%. The proportion of renewable energy will rise to 15-20% from the current 8%. The new plan foresees a rising share of coal and lignite, up from currently 20% to 20-25% in 2036. An unspecified amount of this capacity is supposed to be delivered as "clean coal" by carbon capture and

storage technology (which is currently at 0%). Hydro power should deliver 15-20% and a share of 0-5% is supposed to come from nuclear power. All shares mentioned refer to total electricity production.

A series of public hearing were held in the focus provinces Surat Thani, Krabi, Nakhon Si Thammarat, Chumphon and Lampang where planned power plants should be located. A general public hearing was held on 28th April 2015. The feedback from the stakeholder meetings is currently being integrated and the PDP will be proposed to the National Energy Policy Council (NEPC) on May 14th.

3. Alternative Energy Development Plan (AEDP 2015-2036)

The Alternative Energy Development Plan (AEDP) is currently being revised, however, the target of AEDP has been presented during the public hearing of the PDP. The AEDP targets an installed capacity of alternative energy at 19,635 MW in 2036 – from currently ~7,279 MW in 2014. The target for each type of renewable energy is shown in Table 1.

Table 1: AEDP Targets by 2036

Type		Waste	Biomass	Biogas	Hydro	Wind	Solar	Energy crops	Total (MW)
Current Capacity	(2014)	48	2,199	226	3,016	220	1,570	-	7,279
Target	(2036)	501	5,570	600	3,282	3,002	6,000	680	19,635

Source: http://www.eppo.go.th/PDP_hearing/PDP2015_PH_RealPresentation.pdf

This AEDP 2015 will be revised according to the following principles:

- Focus on power generation from waste, biomass and biogas as priority
- Allocation of renewable energy generation capacity according to the demand and potential in regions/provinces
- Solar and wind power to be promoted at a later stage “once the cost is competitive with the power generation from Liquefied Natural Gas (LNG)”
- Competitive bidding will be employed as a selection process for FIT application instead of first-come first-serve
- Community energy production will be encouraged to reduce fossil fuel usage
- RE consumption will increase from 8% to 20% of final energy consumption in 2036.

4. Renewable Energy Support: Feed-in Tariff replaces Adder Tariff

On 22th October 2014 NEPC acknowledged the principle for employing a new feed-in tariff (FIT) developed by Ministry of Energy which replaces the former adder program that has been in place since several years. The full policy for the FIT for Very Small Power Producer (VSPP) of less than 10 MW installed capacity was approved by NEPC on 15th December 2014 (find the [original document here](#)). MoE explained the introduction of the FIT for VSPP in a first step because of the limited transmission system.

The new FIT will be granted for 20 years, an exception being power systems fuelled by landfill gas which will receive support for 10 years only. The FIT rates differ greatly on power plant size and fuel types and different bonuses are being granted for certain systems.

The new FIT is composed of three components: $FIT = FIT(F) + FIT(V) + FIT \text{ Premium}$.

FIT(F) is a portion of the remuneration that is fixed throughout the whole support period, while FIT(V) is a portion that varies according to the inflation rate. Variable portions are applicable only for certain technologies for which the feedstock price is considered to be volatile such as for biomass and biogas from energy crops as well as waste-to-energy projects (excluding landfill gas projects). The FIT(V) rates were fixed for projects which dispatch electricity to the grid in 2017 (FIT(V2017)), after that the FIT(V) will be revised on an annual basis in accordance with the core inflation to reflect actual feedstock costs. The last component is the FIT Premium which again is split into two categories:

- one is an additional FIT granted to promote the use of the certain renewable fuels and which is granted for the first 8 years of project lifetime
- the other one is a premium which is granted for the whole project duration for VSPPs located in three southern border provinces and four districts of Songkha province (i.e. Chana, Thepa, Saba Yoi and Na Thawi).

The selection of applications for projects will change from “first-come, first-serve” to a competitive bidding system. To this end, the suggested FITs will only serve as ceiling for the proposals made. Power producers are requested to make a competitive offer, not exceeding this ceiling. The most cost-competitive offers will be selected until the quota is reached. Currently, the new FIT rules only apply to projects for which PPAs were signed but did not yet sell electricity to the grid as well as for projects accepted in 2014 (even if the PPA was not yet signed). Such projects are able to change support scheme from the Adder to the new FIT by entering into the process announced by ERC¹.

The projects that applied for a PPA but have not been accepted yet can also receive FiT support, however, these projects will be selected under the competitive bidding system. Currently, there is no room for new applications.

The quota or target for the certain areas are being determined by Ministry of Energy in cooperation with EGAT/PEA and MEA. This should allow EGAT to improve the transmission system and to be able to support the increase of electricity from renewable energy in the future and open calls for more projects.

The FIT rates favour smaller size systems (less than 1 MW) which is in line with the government direction to promote renewable energy uptake in communities. It also corresponds with the guidelines for AEDP (2015-2036), which would focus on waste-to-energy, biomass and biogas as a priority.

¹Find here the [announcement from ERC](#) and its [amendment no.1](#) and [amendment no.2](#)

Table 2: Overview of FIT

	FiT(F) (1 € = 37 Baht) Baht/kWh	FiT (V2017) Baht/kWh	Total calculated FiT Baht/kWh	Period of support Years	FiT Premium	
					For Bio-Energy (8 years) Baht/kWh	Southern Provinces ¹ (project lifetime) Baht/kWh
1. Waste (e.g. incineration, gasification)						
Capacity ≤ 1 MW	3.13	3.21	6.34	20	0.70	0.50
Capacity > 1-3MW	2.61	3.21	5.82	20	0.70	0.50
Capacity > 3 MW	2.39	2.69	5.08	20	0.70	0.50
2. Waste (landfill gas)						
	5.60	-	5.60	10	-	0.50
3) Biomass						
Capacity ≤ 1MW	3.13	2.21	5.34	20	0.50	0.50
Capacity > 1 to 3MW	2.61	2.21	4.82	20	0.40	0.50
Capacity > 3MW	2.39	1.85	4.24	20	0.30	0.50
4) Biogas (from wastewater / waste products)						
	3.76	-	3.76	20	0.50	0.50
5) Biogas (from energy crops)						
	2.79	2.55	5.34	20	0.50	0.50
6) Hydro power						
Capacity ≤ 200 kW	4.90	-	4.90	20	-	0.50
7) Wind power						
	6.06	-	6.06	20	-	0.50

¹ Yala, Pattani, Narathiwat and 4 districts in Songkla province (i.e. Chana, Thepa, Saba Yoi and Na Thawi)

Source: <http://www.erc.or.th/ERCWeb2/Front/Law/LawDetail.aspx?sectionID=1&CatId=1&SubId=27&rid=327&muid=24&prid=25>

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