Federal Ministry
for Economic Affairs
and Energy

Thailand

Biogas Policy Update 12/2015

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1. Biogas market development: Continuous support with shifting priorities

As of September 2014, biogas plants with a capacity of 311 MW were installed in Thailand. This is the result of continuous support measures for industrial scale biogas plants since the 1990s: The previous "adder scheme" (feed-in premium) as well as tax incentives and investment grants have long been established, focusing on bio waste from pig farms and agricultural production e.g. in the starch, palm oil and sugar industries.

The revised Alternative Energy Development Plan (AEDP) 2015-2036, Thailand's long-term strategy for renewable energy (RE) development, now targets an installed power generation capacity of 600 MW biogas from wastewater and manure by 2036, plus an additional 680 MW of capacity from "energy crops". Heat generation shall rise from currently 488 ktoe to 1,283 ktoe. Notably, AEDP also plans for 4,800 ton of CBG per day to be used as a substitute for fossil fuels in the transport sector.

The Department of Alternative Energy Development and Efficiency (DEDE) estimates that the remaining biogas potential for Thailand is around 4,651 MW. However, the largest share of this potential is attributed to biogas from energy crops (4,168 MW), with only about 500 MW undeveloped potential from industrial and agricultural waste, livestock farming and sewage remaining.

Since the potential for biogas from agricultural residues and waste (mainly sugar, starch, palm oil, pig and chicken manure) is highly utilized already, newer political support programs focus on the support of alternative raw materials such as energy crops or household and community waste, municipal waste-to-energy, as well as the utilization of compressed biogas (CBG) in the transport sector. Community based business models are supported in order to trigger local value creation and foster additional income for rural communities.

In the past, the Ministry of Energy has also funded pilot plantations for Napier grass cultivation in order to assess their biogas potential as energy crops.

Although a support programme for 12 biogas pilot projects with Napier grass as feedstock has been suspended in late 2014, and the targets for biogas from energy crops have been reduced from 3,000 MW to 680 MW, GIZ still expects that the Government will continue its focus on biogas in the future because of its potential for value creation in the poorer agricultural regions of the country.

In addition, the target of 4,800 ton of CBG per day shows the ambition regarding the use of bio methane. However, it remains to be seen how this target will be achieved. Currently, there are only a few biogas upgrading pilot plants installed in Thailand.

2. Relevant laws and political support

In late 2014, the previous "adder scheme" has been replaced by a Feed-In Tariff bidding system, and the Energy Regulatory Commission (ERC) announced the new regulation and rates in February.

The new FiT rate is composed of a portion fixed throughout the whole support period FIT(F) of 20 years and FIT(V) a portion that varies according to the inflation rate. In addition, premiums are granted for the use of certain fuels or project located in the three most southern provinces. Under this scheme, the total base FIT (FIT (F) + FIT (V)) currently amounts to 3.76 THB (9.6 EUR Cent) for biogas from wastewater and waste product and 5.34 THB (13.6 EUR Cent) for biogas from energy crops.

More information regarding the current feed-in tariff rates as well as the targets from the AEDP can be taken from the GIZ Renewable Energy Policy Update available here.

Table 1: Biogas FiT Rates in THB/kWh

(1EUR= 40 THB)	FiT (F)	FiT (V)	Total	Period	Bio-based fuel (8y)	Southern Provinces
Wastewater/ waste	3.76	-	**3.76**	20	0.50	0.50
Energy crops	2.79	2.55	**5.34**	20	0.50	0.50

Source: DEDE 2015

3. VSPP Bidding Process

However, this FiT rate only gives the ceiling, and projects will be awarded via a competitive bidding process. In addition, projects can not apply freely, but the allocation of capacity will be matched with the demand and capacity of the grid in each region, the so-called "RE zoning".

In a first approach in early 2015 the Government announced that only approximately 90 MW of biogas capacity will be tendered via a Very Small Power Producer (VSPP) competitive bidding process (see table below). However, the exact start of this RE bidding process is not clear, yet, since the Energy Regulatory Commission (ERC) in July postponed the announcement without a deadline.

GIZ expects that the process will only be opened after it is clear how many MW will be awarded under the Governmental Agencies and Agricultural Cooperatives 800 MW Photovoltaic programme ("Agro-Solar").

Table 2: Foreseen targets (by 2017 in MW) under VSPP competitive bidding scheme

		Biomass	Biogas (wastewater/waste product)	Biogas (Energy crops)	Total (MW)	%
PEA	North	48.24	-	-	48.24	17%
	North-Eastern	-	-	-	0	0%
	South	36.23	-	-	36.23	13%
	East	49.00	4.84	-	53.84	19%
	West	40.81	10.28	34.89	85.98	31%
	Central	14.81	6.03	27.75	48.59	17%
	*3 Southern Provinces**	*36.00*	*10.00*		*46.00*	
MEA		-	-	7.54	7.54	3%
Total		**189.10**	**21.15**	**70.18**	**280.42**	**100%**
%		67%	8%	25%	100%	

Source: ERC announcement July 2015 / *Draft, expecting official announcement early 2016

4. Status quo of biogas plants in Thailand

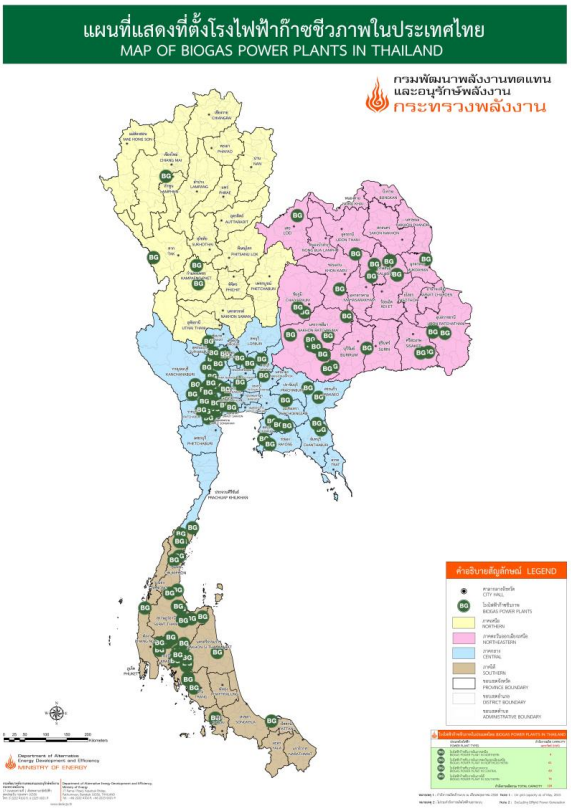
Currently, as can be seen in Table 2, the largest amount of biogas plants is installed in the livestock sector.

Table 3: Biogas Plants in Thailand

Industry sector	Number of plants	Biogas production in Mio m3/a
Pig farms (subsidy phases I-III, 1995-2010)	271	88.6
Pig farms (2008-2012)	263	74.81
Small agricultural operations	575	9.51
Slaughterhouses (pigs)	12	0.74
Slaughterhouses (poultry)	5	6.02
Cassava starch	59	385.82
Palm oil	88	211
Ethanol	21	263.05
Caoutchouc	7	2.08
Foodstuff residues	47	51.27
Catering waste from hotels etc.	80	2.28
Others	140	427.37
Total	**1,568**	**1,522.55**

*The overall number of plants might vary, since there might have been double counting of plants from different phases. In addition, plants that are not supported are not monitored.
Source: Energy Policy and Planning Office (EPPO), December 2013

In regard to regional distribution, most plants are located in the central area west of Bangkok, where many livestock farms are located and in the South, the centre of palm oil production.



Map of biogas power plants in Thailand
Source: DEDE 2015, more Info.

5. Industry Players & Events

There is no active biogas association in Thailand. However, the interests of the sector are represented in the Renewable Energy Industry Club of the Federation of Thai Industries (FTI) (more info). In addition, end-customer associations such as the Thai Tapioca Starch Association, the Thai Sugar and Bio-energy producers association or the Thai Palm Oil Crushing Mill Association have active biogas chapters.

Upcoming events:

- 1.-4.6.2016 Renewable Energy Asia, Bangkok. More Information.
- 18.-19.08.2016 Palmex Thailand, Surat Thani. More information.

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