



# Thailand's Wind Energy Status

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Ministry of Energy, THAILAND

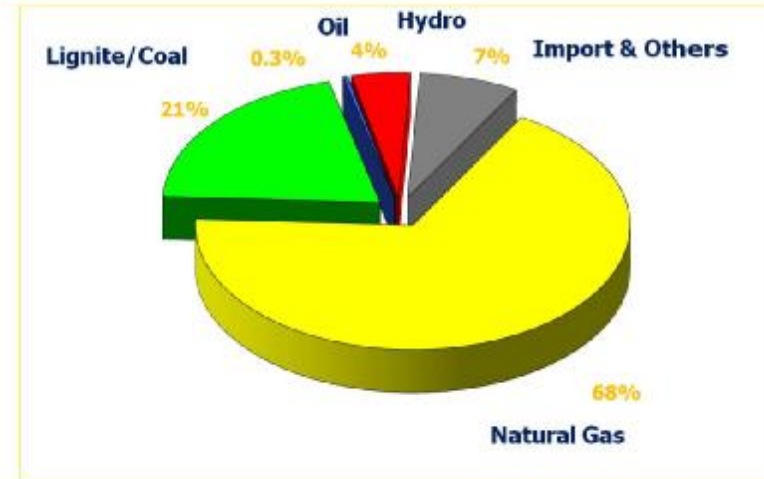
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1. Population : 67.764 Million or 15.244 Million Households
2. Electrification Rate : 98.5% or 15.015 Million Households
3. Population Connected to Grid : 14.832 Million Households
4. Solar Home System 179,461 Households
5. Another (Diesel Gen) 3,565 Households
6. Total Power Generation (2010) 163,668.30 GWH  
 (2010;4MTHS=53,564 GWH) (2011;4MTHS=52,365 GWH)

**Installed Generating Capacity  
April 2011**



**Share of Power Generation by Fuel Type  
April 2011**



## State Enterprise

EGAT : Electricity Generating Authority of Thailand

PEA : Provincial Electricity Authority

MEA : Metropolitan Electricity Authority

## Government

DEDE : Department of Alternative Energy Development and  
Efficiency

EPPO : Energy Policy and Planning Office

ERC : Energy Regulatory Commission

## Private

IPP : Independent Power Producer (>90 MW)

SPP : Small Power Producer (<90 MW)

VSPP : Vary Small Power Producer (<10 MW)

# Thailand Renewable Energy Development

Committed to the development of low-carbon society

Government Funding On R & D & D Activities

15 years RE-Development Plan

Encouraging Private-Led Investment

Target 20.3 % of RE in Total Energy Consumption By 2022

Solar + Wind

500 + 800  
= 1,300 MW

Small + Mini Hydro

320 MW

Bio Energy

Biomass	Biogas	MSW
4,000 MW	160 MW	120 MW

Biofuels

- Ethanol
- Biodiesel

20% Oil substitution

Supporting Schemes

- Feed-in Premium ("Adder") on top of regular tariff
- BOI Tax incentives scheme (8 yr. Tax holiday)
- Some direct subsidy (10-30%) on Biogas,MSW,Solar-hotwater projects
- Soft Loans for RE+EE investments
- Government Co-investing scheme ("ESCO Fund")

- Abundant Supply
- Market driven
- Pricing Strategy to promote high-RE-Fuels (E10,E20,E85 and B5)

## "Adder" : Feed-in Premiums

Fuel	Adder (B/kwh)		Adder-VSPP (US Cents/kwh)	Special adder * (B/kwh)	Supporting period (Year)
	VSPP	SPP			
<b>q</b> Biomass - Installed capacity <= 1 MW - Installed capacity > 1 MW	0.50	Bidding	1.67	1.00	7
	0.30		1.00	1.00	7
<b>q</b> Biogas (all categories of production sources) - Installed capacity <= 1 MW - Installed capacity > 1 MW	0.50	Bidding	1.67	1.00	7
	0.30		1.00	1.00	7
<b>q</b> Waste (community waste, not hazardous industrial waste, and inorganic waste) - AD & b LFG - Thermal Process	2.50	2.50	8.33	1.00	7
	3.50	3.50	11.67	1.00	7
<b>q</b> Wind power - Installed capacity <= 50 kw - Installed capacity > 50 kw	4.50		15.00	1.50	10
	3.50	3.50	11.67	1.50	10
<b>q</b> Mini and micro hydropower - capacity 50-200 kw - capacity < 50 kw	0.80	-No-	2.67	1.00	7
	1.50		5.00	1.00	7
<b>q</b> Solar power	6.50	6.50	21.67	1.50	10

•Note : Special Adders for - Facilities in 3 Southern Provinces and/or Diesel-Gen. replacement on PEA system

•Base Rate = 2.60 B/kWh or 8.67 US Cents/kWh

## Private Investment

Targets Plan (2022) = 800 MW

	Proposed Power Purchase		Acceptance Power Purchase		Signed PPA and Wait for COD		Already Power Purchase	
	Cases	MW	Cases	MW	Cases	MW	Cases	MW
VSPP	3	7.10	19	26.25	15	65.034	3	0.38
SPP	10	755.00	4	280.00	3	240.00	-	-
<b>Total</b>	<b>13</b>	<b>762.10</b>	<b>23</b>	<b>306.25</b>	<b>17</b>	<b>305.034</b>	<b>3</b>	<b>0.38</b>

## Demonstration Project by Government Agency

	Planned (MW)	Under Construction (MW)	Completed (MW)	Total (MW)
DEDE	-	2	1.895	3.895
EGAT	18	-	2.7	20.7
PEA	6	-	1.75	8.75
		<b>Total</b>	<b>6.345</b>	

Isolating = 0.553 MW

Completed = 6.345 + 0.38 + 0.553 = 7.278 MW



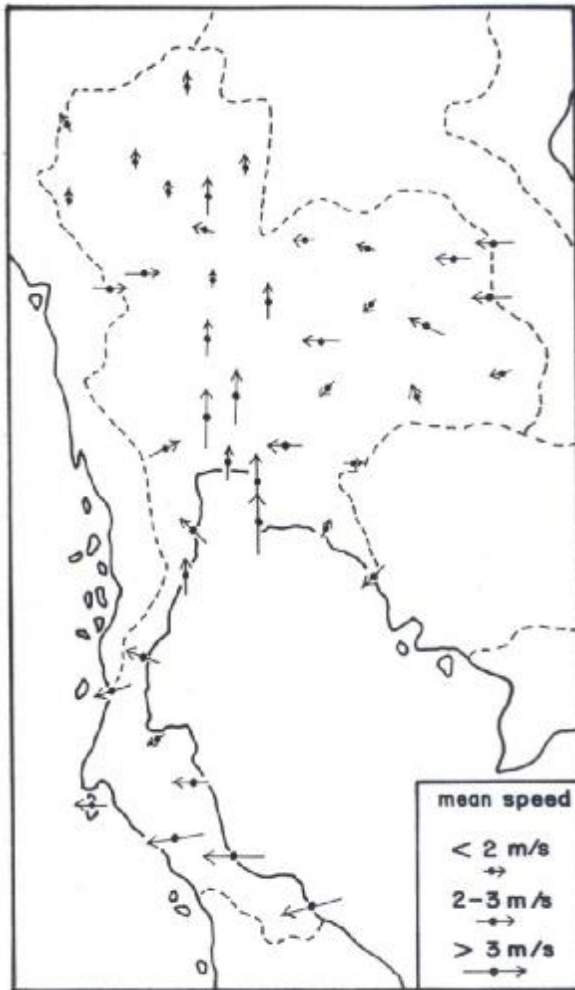
# Wind Resource Potential

# History of Thailand's Wind Map

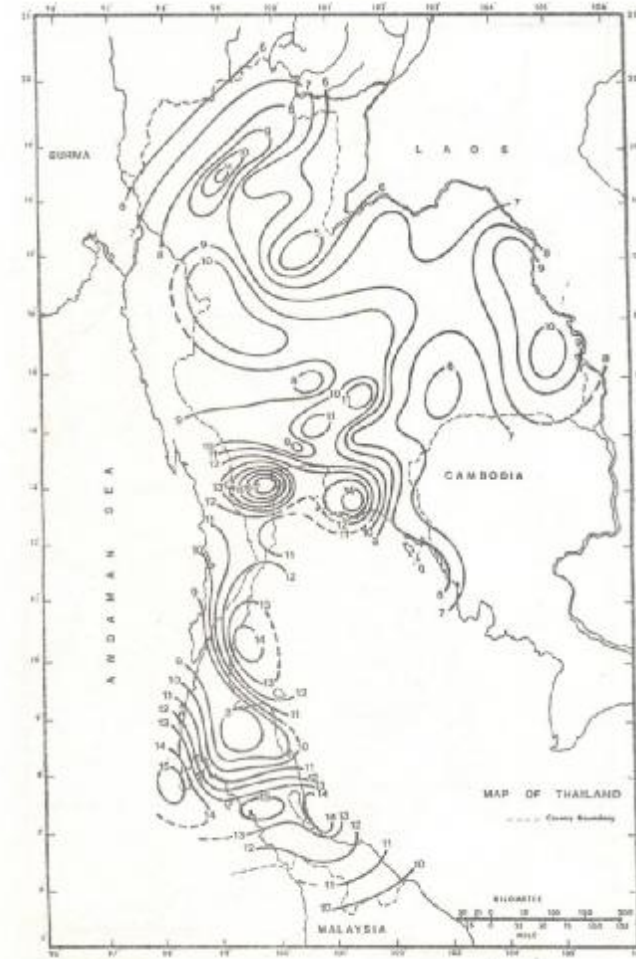
1. Asian Institute of Technology (AIT) 1981
2. King Mongkut's Institute of Technology 1984
3. Department of Alternative Energy Development and Promotion (DEDP) 2001
4. World Bank 2001
5. Department of Alternative Energy Development and Efficiency (DEDE) 2010



# History of Thailand's Wind Map

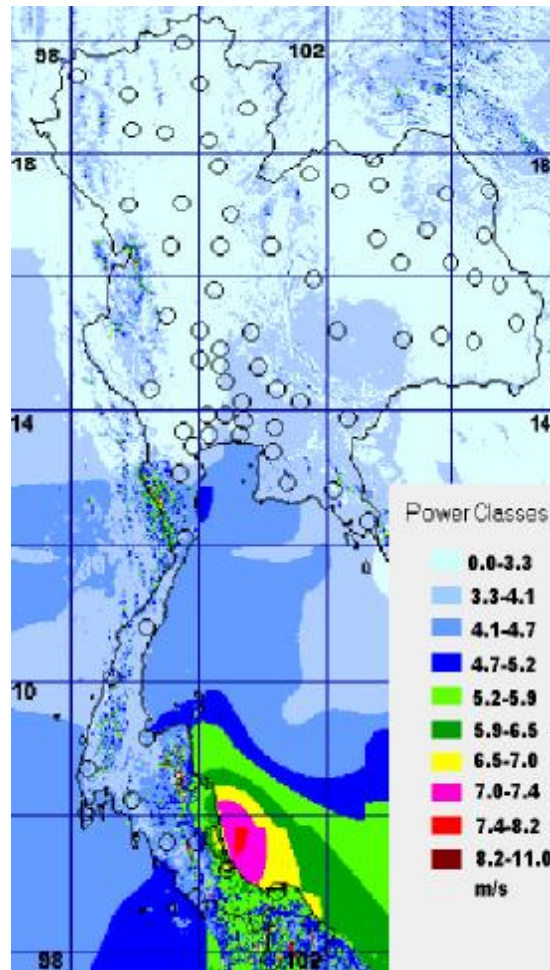


1. Asian Institute of Technology (AIT)  
Exel (1981)

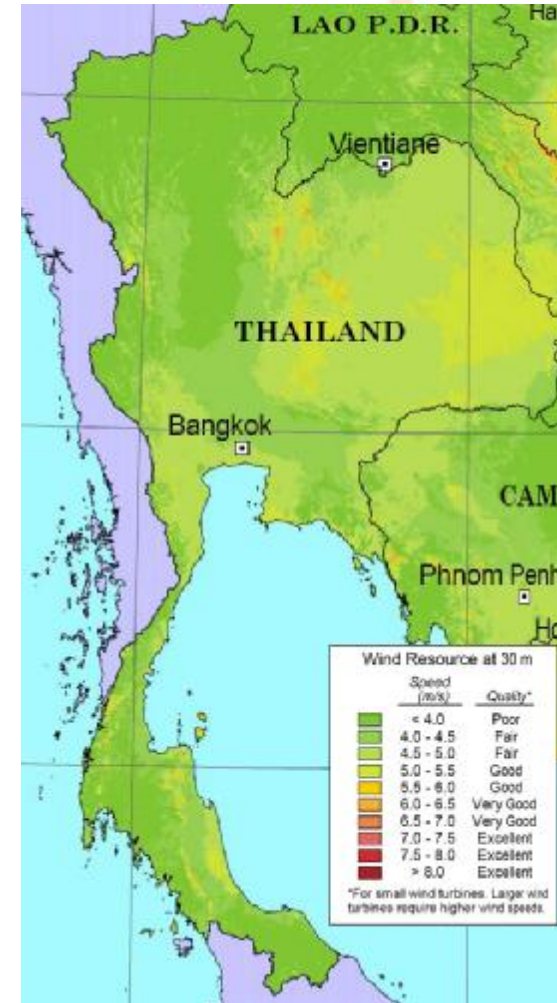


2. King Mongkut's Institute of Technology  
Suwantrakul et al. (1984)

# History of Thailand's Wind Map



3. Department of Energy Development and Promotion (DEDP)(2001) Fellow

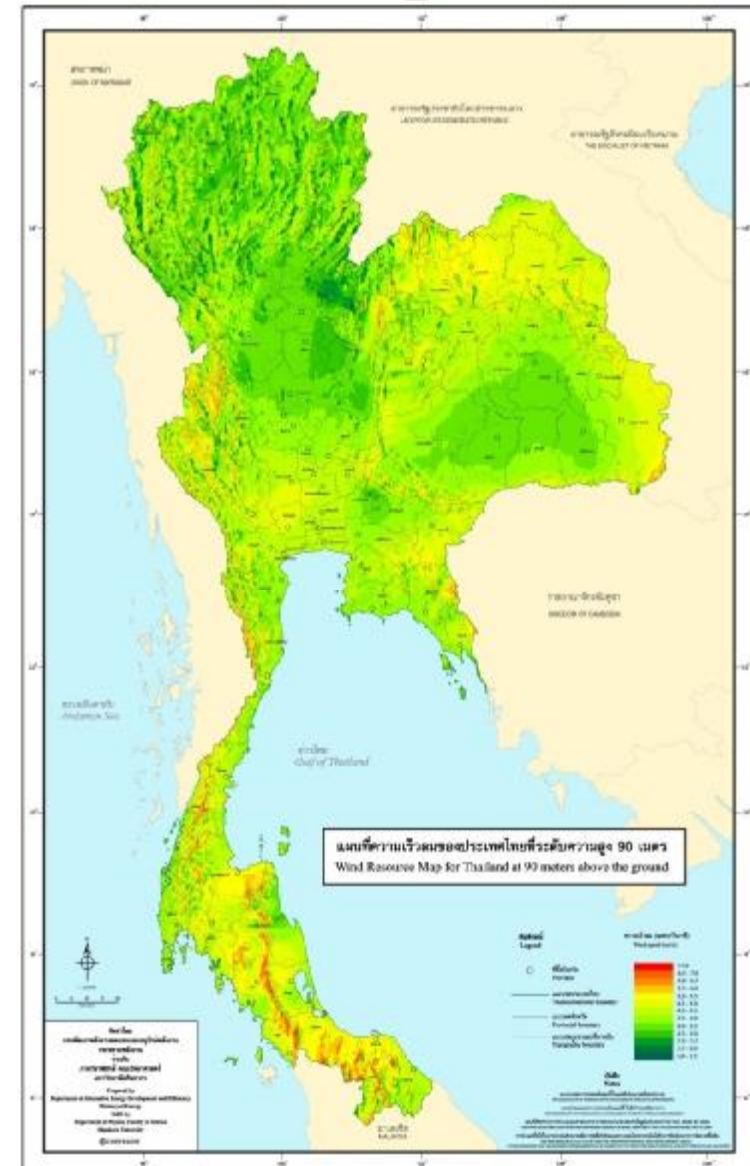


4. World Bank (2001) ; TrueWind Solutions

5. Department of Alternative Energy  
Development and Efficiency (2010)

*Silpakorn University  
With Karlsruhe University*

**Potential: Wind Speed 4.4 -6.4 m/sec  
Approx. 1,600 MW**





# Map of Wind Mast



Wind station at 40 m height



Wind station at 90 m height

## Totally

- 45 wind stations at 40 m height
- 53 wind stations at 90 m height



# Electrical Generation





## EGAT Wind Energy Project

Laem Promthep ,Phuket  
150 kW x 1 Set



Lumthaklong, Nakorn Ratchasima  
1.25 MW x 2 Sets & 50 kW x 1 Set



# DEDE Wind Energy Demonstration Project



Rama IX Pond ,Pathumthani



5 kW x 5 Sets

250 kW



1.5 MW





## UNDER CONSTRUCTION & PLAN PROJECT (Complete in 2014)

DEDE = 2.025 MW

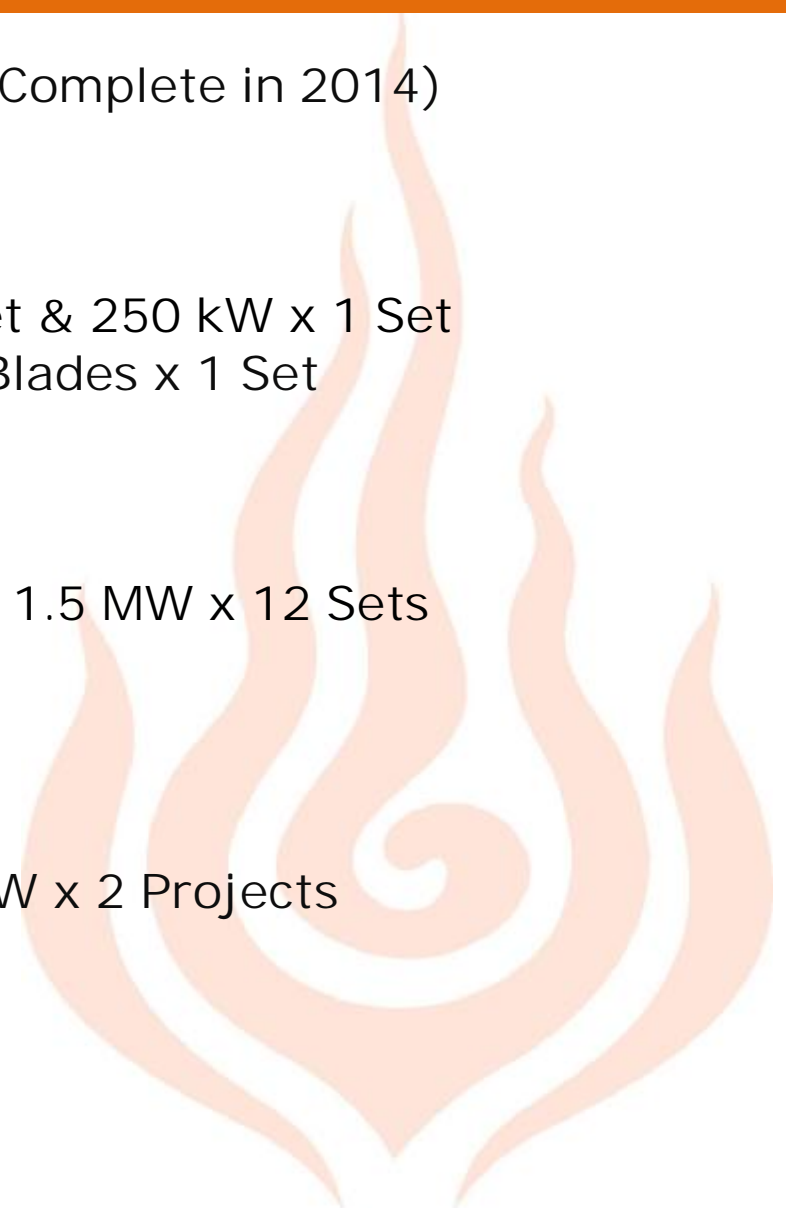
- Laemtachi, Pattani 1.5 MW x 1 Set & 250 kW x 1 Set
- Sa-Muang, Shiang-Mai 275 kW 2 Blades x 1 Set

EGAT = 18 MW

- Lumthaklong, Nakorn Ratchasima 1.5 MW x 12 Sets

PRIVATE (Signed PPA) = 240 MW

- Kao-Kor, Pechchaboon 60 MW
- Huai-Bong, Nakhonrajasima 90 MW x 2 Projects



Thank You For Your Attention

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