

THAILAND

Country at a glance

- Population: 69.1 million (2010) [1]
- Total area: 513,120 sq. km [2]
- Carbon emissions per capita: 3.59 metric tons (2010) [3]
- Energy consumption per capita: 19.8 MWh (2010) [4]
- Percentage of global carbon emissions: 0.82% (2010) [3]



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Thailand Solar Panels

This 73-megawatt solar power plant in Lopburi, central Thailand is the largest solar photovoltaic project in the world. It will be central to Thailand's efforts to generate electricity from renewable sources.

Table 1 Breakdown of energy use, electricity and heat generation, 2010

	Primary energy sourced within country		Energy imports minus exports	Primary energy used within the country ^(a)			Electricity Generation ^(b)		Heat Generation ^(c)		
	unit	ktoe	%	ktoe	ktoe	GWh	%	GWh	%	GWh	%
Coal, including brown coal & peat		5,320	8	10,713	16,362	190,291	14	30,047	19	0	0
Oil fuels		17,490	25	31,987	44,558	518,210	38	1,177	1	0	0
Natural gas		24,707	35	8,230	32,936	383,051	28	119,349	75	0	0
Nuclear		0	0	0	0	0	0	0	0	0	0
Hydroelectric		476	1	0	476	5,538	0	5,537	3	0	0
Biofuels and waste		22,564	32	32	22,605	262,893	19	3,386	2	0	0
Solar photovoltaics		2	0	0	2	20	0	20	0	0	0
Solar thermal		0	0	0	0	0	0	0	0	0	0
Tide, wave and ocean		0	0	0	0	0	0	0	0	0	0
Wind		0	0	0	0	0	0	0	0	0	0
Geothermal		2	0	0	2	20	0	2	0	0	0
Electricity (imported)		0	0	488	488	5,673	0	0	0	0	0
Sub total Renewables		23,043	33	32	23,084	268,471	20	8,945	6	0	0
Totals		70,559	100	51,450	117,429	1,365,696	100	159,518	100	0	0

Source: Based on World Energy Statistics and Balances Database 2012, "World Energy Balances." © OECD/IEA, 2012.

Notes:

Standard conversion used is 1 ktoe = 11.63 GWh

- (a) Sum of energy sourced within country, energy imports minus exports, international marine and aviation bunkers and stock change flows.
- (b) Includes all electricity generation, including any exported.
- (c) Does not include electrical heating. Includes waste heat recovery from electricity generation plants.

Table 2 Breakdown of transport fuel use, 2010

(in ktoe)	Total transport mix	%	Domestic aviation	Road	%	Rail	Pipeline transport	Domestic navigation	Non-specified (transport)
Oil products	17,370	89	0	17,210	89	83	0	78	0
Natural gas	1,462	8	0	1,462	8	0	0	0	0
Biofuels and waste	654	3	0	654	3	0	0	0	0
Electricity	6	0	0	0	0	6	0	0	0
Sub total Renewables	654	3	0	654	3	0	0	0	0
Total	19,493	100	0	19,326	100	89	0	78	0

Source: Based on World Energy Statistics and Balances Database 2012, "World Energy Balances." © OECD/IEA, 2012.

Stand on climate change

Thailand ratified the Kyoto Protocol in 2002. In 2006, the sub-committee on climate change was upgraded to become the National Climate Change Committee chaired by the Prime Minister. During the UNFCCC 2011 COP 17 in Doha, Thailand's Vice Minister of Natural Resources and Environment stated that Thailand is committed to lowering greenhouse gas emissions through innovative energy conservation and efficiency policies with the aim of reducing the country's energy intensity to 25 per cent below 2011 levels within 20 years. In addition to that, he also mentioned Thailand aims to replace 25 per cent of the energy generated by fossil fuels with green energy within the next decade [5]. The Ministry of Natural Resources and Environment is the national focal point for the UNFCCC.

National climate change programmes

As part of Thailand's Ministerial Statement at UNFCCC 2011 COP 17, the country's National Energy Policy Board approved a 20-year Energy Efficiency Development Plan (EEDP) from 2011-2030, and the 10-year Renewable and Alternative Energy Development Plan from 2012-2021. As a result of these plans, Thailand is expected to reduce 206 million tons of greenhouse gas emissions by the year 2030 [5].

- Energy conservation plays a pivotal role in the EEDP, where energy conservation is mainly achieved through reducing expendable use of energy and improving energy efficiency. The target of this plan is to reduce final energy consumption by 20% in 2030 compared to 2005 levels [6]. Some cross-sector measures include:
 - Enforcing the Energy Conservation Promotion Act (ENCON Act)
 - Enforcing Minimum Energy Performance Standards (MEPS) for equipment and appliances
 - Financial support to subsidize energy savings achieved in the various sectors
 - Supporting the operation of energy services companies (ESCO)
- The 10-year Alternative Energy Development Plan sets to increase the share of renewable and alternative energy to 25% by 2021. This would be mainly achieved by reducing oil import dependence, strengthening domestic energy security and promote integrated green energy utilization in communities [7].

Some of the key features of a five year (2012 – 2016) Pollution Management Plan include: reducing and controlling pollution emissions from the various sectors, prioritizing pollution problems, applying the "polluter pays principle" (PPP) concept and to allow various agencies to implement a pollution management system that will be governed by law enforcement, regulations and codes of practice [8].

Residential-Commercial Sector:

- Under the EEDP, the Ministerial Regulation on Building Design for Energy Conservation will be enforced from 2011. Various energy efficiency labelling efforts will also be carried out [6].

Industrial Sector [6]:

- Under the EEDP, specific energy consumption (SEC) standards for production processes will be enforced. Preparation will begin in 2016. Operations are expected to start by 2020.
- The SEC database was developed in 2011 and an evaluation is expected to be done by 2016.
- Promote R&D on high energy efficiency equipment with large markets and manufacturing bases.

Transport sector:

- A Mass Transit Development Plan is being implemented in the Bangkok metropolitan region. This system is expected to cover a total distance of 495 kilometres within the next two decades. Preliminary studies show that one of the lines could reduce CO₂ emissions by more than 25,000 tons [9].
- Travel demand management will be exercised with the promotion of increased public transport utilization. Preparatory work began in 2011 and implementation is expected by 2016 [6].
- Applications of tax measures to pave the way for market transformation are being formulated [6].

Energy Sector:

- As part of the new Alternative Energy Development Plan, Thailand aims to increase bioethanol consumption to 9.0ml/day. The effort will be actualized by introducing strategic plans to both the supply and demand side. Some of the plans include [7]:
 - Improving the yield of existing feedstock
 - Termination of Octane 91 regular gasoline in Oct 2012
 - Subsidized E20 gasohol from State Oil Fund
- The department of Alternative Energy Development and Efficiency targets installation of 1200 megawatts (MW) of wind power by 2021 compared to 7.28 MW of wind power in 2012 [10]. The focus will be to develop small-scale wind energy projects for the community and mainly for agricultural usage.
- Pa Luai Green Island; established in 2011 will be the first “Green Island” in Thailand. It is expected to reduce 250 tons of carbon emissions per year [11]. This initiative will be beneficial to the community living on the island and aims to be a role model for sustainable living.

Ministries involved in climate change/energy policy making:

Ministries involved	Web links
Office of Natural Resource and Environmental Policy and Planning	www.onep.go.th/
Ministry of Energy	www.energy.go.th/?q=en/
Department of Environmental Quality Promotion	www.deqp.go.th
Meteorological Department (Climatological Centre)	www.tmd.go.th
Pollution Control Department (Ministry of Natural Resources and Environment)	www.pcd.go.th/indexeng.cfm
Department of Alternative Energy Development and Efficiency	www.dede.go.th/dede/

Education institutes involved in climate change/energy policy making:

Education Institutes involved	Web links
Energy Policy and Planning Office: Energy Think-Tank	www.eppo.go.th/tank/index.html
Thailand Research Fund	www.measwatch.org
Thailand Environment Institute Foundation	www.tei.or.th/

References

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- [4] World Energy Statistics and Balances database 2012, "World Energy Balances." © OECD/IEA, 2012.
- [5] Pithaya Pookaman, "Statement by Thailand at the high-level segment of COP17." 08-Dec-2011.
- [6] Ministry of Energy, "Thailand 20-Year Energy Efficiency Development Plan (2011-2030)." Ministry of Energy, 2011.
- [7] John Wade, "GAIN Report Thailand Biofuels Annual 2012," USDA Foreign Agricultural Service, TH2064, 2012.
- [8] Pollution Control Department, "Thailand State of Pollution Report 2011," Ministry of Natural Resources and Environment, 2012.
- [9] "Thailand's Second National Communication under the UNFCCC," Office of Natural and Environmental Policy and Planning; Ministry of Natural Resources and Environment, 2011.
- [10] Twarath Sutabut; Deputy Director-General, "Update on Wind Energy Developments in Thailand," ADB, Manila Philippines, 2012.
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