

## THAILAND

### 1. CDM investment climate index: regional comparison

CDM investment climate index (CDM ICI), Asia - October 2010 (excerpt)

Rank	Country	CDM ICI (max. 100 points)	Regional classification
1	Malaysia	92.6	Very good
2	Korea (Republic)	92.0	Very good
3	Cyprus	90.0	Very good
4	Thailand	85.8	Good
5	PR China	85.4	Good
...	...	...	...
64	Afghanistan	6.4	Inadequate

Source: DEG - Deutsche Investitions- und Entwicklungsgesellschaft mbH  
(For calculation method, see [www.kyoto-coaching-cologne.net](http://www.kyoto-coaching-cologne.net))

The CDM ICI measures the investment climate for CDM projects. It can range between 100 points (highest) and 0 points (lowest). Thailand ranks fourth in Asia. Due to their general climate for private investments, Malaysia, Korea (Rep.) and Cyprus record a better rating. Thanks to superior market-economy mechanisms in the CDM sector, Thailand, however, leads PR China. Worldwide, Thailand occupies eighth position in the CDM investment climate index.

### 2. General climate for foreign investments

General economic statistics 2009	
Population:	67.0 million inhabitants
Nominal GDP:	US\$ 264.0 billion
Per capita GDP:	US\$ 3,940
GDP growth (real):	-2.2% (forecast for 2010: +7.5%)
Consumer prices:	-0.8%
Goods exports:	US\$ 152.5 billion
Goods imports:	US\$ 133.8 billion
Foreign direct investments:	US\$ 5.3 billion
Foreign debt (end of 2009):	US\$ 70.0 billion
Currency reserves (end of 2009):	US\$ 111.0 billion
Exchange rates (as at 1 Nov. 2010):	EUR 1 = THB 41.05 ; US\$ 1 = THB 29.44
Country credit rating acc. to Institutional Investor (September 2010)	60.2 of 100 points (Rank 52 of 178, -1.7 points on previous year)
Corruption Perceptions Index 2010 (Transparency International):	3.5 out of 10 points (Rank 78; 10 = free of perceived corruption)

*Locational advantages:* Stable economic framework (inflation, indebtedness) in recent years, favourable business and investment climate (good placement in the Doing Business Report 2010), comparatively low wage levels, good natural conditions and agricultural resources for the use of renewable energies

*Locational disadvantages:* political uncertainty, shortage of qualified labour (engineers and technicians), intransparent bureaucracy, finance from local banks difficult to obtain

## 3. Specific climate for CDM projects

### 3.1 Ongoing CDM projects in the country

Thailand has gradually progressed to number among the leading nations in the CDM sector worldwide. With 40 projects registered at the Executive Board (EB; responsible UN body for the international approval of CDM projects) in November 2010, the Southeast Asian kingdom was among the top ten in the international ranking measured by number of projects. It still lags behind other member states in the Association of Southeast Asian Nations (ASEAN), such as Malaysia, but the rate of increase in new projects is now higher in Thailand, according to experts. The private sector has also continued to show increasing interest in CDM.

*Projects registered at the CDM Executive Board in Thailand as at November 2010*

Project category	Number of projects	Estimated annual emission reductions (1,000 t CO <sub>2</sub> e)
Methane avoidance (waste water and manure)	26	1,307
Biomass/Biogas	7	498
Landfill gas	3	195
Energy efficiency (cement industry)	3	102
Industrial gases (N <sub>2</sub> O)	1	142
<b>Total</b>	<b>40</b>	<b>2,244</b>

CO<sub>2</sub>e = carbon dioxide equivalent

Sources: UNFCCC, UNEP Risø Centre

The Thailand Greenhouse Gas Management Organisation (TGO) which functions as the Designated National Authority (DNA) and is responsible for approving projects at national level, had already approved 107 CDM projects by June 2010. By the beginning of November 2010, the number had increased to as many as 123, which could altogether save an average 8.5 million t CO<sub>2</sub>e a year. By the end of the year, about 150 projects ought to be approved, according to TGO. Altogether, it is currently appraising about 200 projects.

*Projects approved by the Thai DNA as at November 2010*

<b>Project category</b>	<b>Number of projects</b>	<b>Estimated annual emission reductions (1,000 t CO<sub>2</sub>e)</b>	<b>Share in estimated annual emission reductions (in %)</b>
<b>Methane avoidance</b>	<b>77</b>	<b>4,489.5</b>	<b>52.7</b>
Waste water	71	3,928.4	46.1
Manure	5	160.7	1.9
Other	1	397.5	4.7
<b>Biomass</b>	<b>18</b>	<b>928.7</b>	<b>10.9</b>
<b>Energy efficiency</b>	<b>12</b>	<b>1,746.7</b>	<b>20.5</b>
Cement industry (waste heat recovery)	9	464.1	5.4
Industrial processes	2	863.0	10.1
Cogeneration	1	419.6	4.9
<b>Landfill gas</b>	<b>8</b>	<b>1,016.3</b>	<b>11.9</b>
<b>Hydropower</b>	<b>5</b>	<b>187.9</b>	<b>2.2</b>
<b>Solar energy (photovoltaics)</b>	<b>2</b>	<b>5.3</b>	<b>0.1</b>
<b>Industrial gases (N<sub>2</sub>O)</b>	<b>1</b>	<b>142.4</b>	<b>1.7</b>
<b>Total</b>	<b>123</b>	<b>8,516.9</b>	<b>100</b>

Source: TGO

At about 60%, the biogas sector (methane avoidance) accounts for the bulk of CDM projects approved by the DNA, largely implemented in palmoil and starch production. TGO attaches priority to promoting projects in energy. Here, it includes projects in energy generation (use of renewable energies and biofuels), for improving energy efficiency (in power generation, in buildings, etc.), in the environmental sector (energy generation from or biological degradation of waste), in the transport sector and for the reduction of greenhouse gases in industrial processes.

Experts see good CDM prospects in agriculture, food, palmoil and starch production, waste processing and some other branches of industry, in particular plastics, tobacco, cement, steel and textile production. According to information from representatives of TGO, technology from Germany is in keen demand here.

In future, the market will increasingly develop in the direction of Programmes of Activities (PoA), which bundle several small projects that would not be worth implementing separately. The World Bank is already engaged in this area with a biogas project in Chiang Mai.

While about 95% of the projects submitted to TGO are approved, problems frequently arise in Thailand in technical implementation. As sector representatives report, the project executing agencies seek to purchase the components themselves and then assemble them on their own. These CDM projects frequently fail, however during validation or verification. If the volume is large enough, an attempt is made to raise the technical standard by means of a new investment. European companies able to implement appropriate solutions and technologies as

all-inclusive packages then often get engaged. Meanwhile, experts in Thailand see a slow shift of attitude towards applying integrated systems and high-tech solutions from the outset.

The Thai CDM market is not, however, quite as good as it appears to be. Experts in the sector criticise that Certified Emission Reductions (CERs) have only been issued so far for two of the approved projects. The problems cited in this connection are the complicated monitoring procedures, especially in bio-energy projects that predominate in Thailand, and changes in technology. In the view of insiders, the disparate quality of project developers also poses an additional hurdle to more rapid progress.

Prospective purchasers of emission certificates generated in Thailand come from all over the world. It is a coveted market. Companies from Germany are primarily interested in getting involved as partners or investors at an early project stage to be able to obtain the certificates more favourably later on. However, Japanese companies are now reportedly able to put together more attractive packages in this area. On the Thai supply side, most projects generate small volumes of emission certificates. Competition for the few with a large CER volume each year is accordingly keen.

### **3.2 Quality of Designated National Authority (DNA)**

The Thailand Greenhouse Gas Management Organisation (TGO) was appointed as DNA in 2007. It is responsible for administrative activities and coordination in connection with the implementation of CDM projects in Thailand. TGO is attached to the Thai Ministry of Natural Resources and Environment (MoNRE).

The TGO Board decides on the approval of projects. It comprises five representatives each from public institutions, including the environment ministry, and from the private sector. The five private-sector experts consist of representatives from energy, forestry, industry, technology and administration. The chairperson of the board is appointed by the Thai cabinet. The Letter of Approval (LoA) is issued by TGO.

For the DNA to approve a project, it must meet sustainable development criteria in terms of natural resources and environmental indicators, social factors, development and technology transfer aspects as well as economic indicators, which TGO appraises using a points system. Depending on project type, an Environmental Impact Assessment (EIA) is necessary; otherwise TGO requires an Initial Environmental Evaluation (IEE). Both must be submitted together with the Project Design Document (PDD), which does not have to be validated. Further information on the approval process and the requisite documents are available on the TGO website.

Experts in the sector praise the development of TGO to date. It is very active and operates quite professionally, though still not at a comparable standard to the DNA in India, for example. A point of criticism is that TGO has tended to see itself more as a marketing instrument and less as a supervisory authority. The appraisal procedures have generally speeded up tangibly in recent years. TGO specifies a maximum of 180 days as the project approval term at national level, which is long in comparison to other countries (60 days being the usual maximum deadline). TGO charges administrative fees for the approval procedure, depending on project size.

For projects that save less than 15,000 tCO<sub>2</sub>e a year, TGO charges THB 75,000 (approx. EUR 1,800), for all the others, THB 10 per tCO<sub>2</sub>e (about EUR 0.24), but not exceeding THB 900,000 (approx. EUR 21,900) per project.

### 3.3 Local consultants, validators and verifiers

About 30 consultants and project developers are engaged in the Thai CDM sector, according to experts. Almost all the 'big players' are represented locally as well as the well-known international test agencies that function as Designated Operational Entities (DOE), such as TÜV Rheinland, TÜV Nord, TÜV Süd, DNV or the SGS group. Activities primarily comprise energy and biogas projects. The Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH is assisting the Management System Certification Institute (MASCI institute), a local facility for ISO certification and other standards, to register as the first Thai DOE.

### 3.4 Local legal requirements for CDM projects and taxation aspects

In 1999, Thailand signed the Kyoto Protocol and finally ratified it on 28 August 2002. With the implementation of TGO as DNA in 2007, the legal and institutional framework was established for administering CDM projects through the adoption of the Royal Decree Thailand Greenhouse Gas Management Organisation (Public Organisation) establishment B.E. 2550 (2007). The specific background and further information on this can be found on the TGO website.

In Thailand, revenue from CERs is subject to a regular corporation tax of 30%. However, enterprises can be exempted from this via national investment promotion. In this case, no taxes are imposed on CERs, either. Last extended to 2012, the Board of Investment's funding programme for sustainable development also supports investments in power generation from renewable energies. According to TGO, general tax relief may well be introduced soon for CERs.

### 3.5 CDM partnership agreements (Memorandum of Understanding)

Thailand cooperates with various countries in climate issues, with Japan in particular and increasingly also the European Union (EU) playing a major role. Together with Germany, the country launched the German-Thai Climate Initiative in spring 2009. Under the programme that runs until 2012, the Federal Ministry of the Environment, Nature Conservation and Reactor Safety supports Thailand with EUR 2.2 million for planning and implementing the strategy on climate change and greenhouse gas abatement.

By 2011, GTZ and other partner organisations will implement several projects, including palm oil production, energy efficiency in medium-sized enterprises and climate protection in tourism worth a total of almost another EUR 8 million. GTZ is otherwise heavily engaged in the Thai CDM sector and is currently implementing a number of measures.

### 3.6 Opportunities for CDM projects in the energy sector

Thailand is looking to step up its commitment to climate protection and progressively play a spearheading role in Southeast Asia. CDM projects in the energy sector are attested very good prospects. Energy and fuel consumption is still regarded as the major cause of greenhouse gases in Thailand. In the second half of 2010, Thailand introduced a uniform grid emission factor (0.5812 t CO<sub>2</sub>/MWh in general, 0.5980 t CO<sub>2</sub>/MWh for windpower and solar projects,

further information available from TGO), which is seen as a major step forward for the future development of the national CDM market.

Climate protection is one of the main reasons for the Alternative Energy Development Plan (AEDP) adopted by the government in 2009. It provides for increasing the share of renewable energies in primary energy consumption to 20% by 2022. Thailand is relying on biomass in particular, but also on biogas, biofuels, windpower, solar energy and small-scale hydropower.

Besides tax relief, direct subsidies and other incentives, Thailand has introduced a feed-in rate (adder) for renewable energies. This is paid to very small power producers, VSPP (< 10 MW), and small power producers, SPP (10 to 90 MW), in addition to the purchase price for seven and ten years respectively, if they feed their electricity into the grid. Due to the unexpected keen demand, the bonus for solar electricity of initially THB 8 per kWh was suspended (currently about 19.5 eurocents). The other rates range between THB 0.30 per kWh (about 0.7 eurocents) and THB 5.50 per kWh (about 13.4 eurocents), depending on segment, size and location. SPP projects for biomass and biogas are awarded via bidding procedures.

Private power producers generate about 54% of electricity in the country, with the government Electricity Generating Authority of Thailand (EGAT) accounting for the remaining 46%. Further information on renewable energies in Thailand is available in English on the website of the Department of Alternative Energy Development and Efficiency ([www.dede.go.th](http://www.dede.go.th)) and the Energy Policy and Planning Office ([www.eppo.go.th](http://www.eppo.go.th)). Experts in the sector see supply opportunities for German companies in windpower and above all biogas and biomass power stations. In CDM measures, feed-in rates could pose a problem when providing proof of additionality.

In energy-efficiency promotion, Thailand is still lagging behind international developments. CDM projects in energy efficiency have not yet got off to a proper start, with the exception of some projects in cement processing. For the future, however, the segment affords enormous potential, according to expert opinion.

### Energy and environmental data

	Thailand	Asia <sup>1)</sup>	OECD
Primary energy supply (Mtoe 2009)	112.9		
of which from renewable energy sources	approx. 12%		
Electricity consumption (TWh 2009)	135.2		
of which from renewable energy sources	approx. 7%		
CO <sub>2</sub> emissions from fuel combustion (Mt, 2007)	229.47		
Electricity consumption/capita (kWh/capita, 2008)	2,079	719	8,486
CO <sub>2</sub> /Primary energy supply (t of CO <sub>2</sub> /toe, 2008)	2.14	2.14	2.33
CO <sub>2</sub> per capita (t of CO <sub>2</sub> per capita 2008)	3.41	1.38	10.61
CO <sub>2</sub> /GDP (kg of CO <sub>2</sub> /US\$, purchase power parity 2000; 2008)	0.41	0.35	0.38

1) Without PR China; 2) Primarily hydropower (about 4.5%)

Sources: IEA, Department of Alternative Energy Development and Efficiency - Ministry of Energy

## 3.7 Finance facilities for CDM projects

DEG - Deutsche Investitions - und Entwicklungsgesellschaft mbH has been engaged for decades in Thailand providing long-term investment finance for private enterprises (long-term loans, mezzanine finance and equity contributions). The finance is supplied in line with market conditions. In particular, DEG has financed investments in projects for the use of renewable energies. Through its climate protection network, Kyoto Coaching Cologne (KCC), it can also assist its customers and partners with specific know-how for the CDM registration procedure. Added to this, DEG can cofinance pre-investment or support measures of relevance to climate protection through so-called technical assistance (TA) with up to EUR 200,000. This must, however, form part of a DEG finance project. The Carbon Fund of the Kreditanstalt für Wiederaufbau (KfW) can provide funds for project preparation measures (e.g. preparing PDDs, validation) via the subsequent purchase of CERs, make advance payments for certificates or provide banks with its CER purchase contracts as collateral.

## 4 Recap

Thailand has a large CDM potential, since greenhouse gas emissions are increasing rapidly due to ongoing economic growth and rising energy demand per capita. The Thai economy is likely to grow by about 7% in 2010 and GDP growth rates of about 5% are predicted for subsequent years. The government is intent on improving the national climate balance and is pursuing this with various measures. CDM projects also contribute to this. In the estimate of TGO, the energy sector affords good opportunities in particular.

On the other hand, economic development in Thailand has been impeded for years by political uncertainties, which recently culminated in violent demonstrations in the capital Bangkok in the spring of 2010, resulting in several deaths. As another side-effect of the unstable situation, key economic policy reforms have proved difficult to implement. This continuing stalemate may have an adverse impact on Thailand's environmental and climate protection policy.

If Thailand is not afflicted by larger economic or political crises in the near future, the Southeast Asian country could develop into a major location for CDM projects in the medium term.

## 5 Advice/Service

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