

# GrIPP-Net News

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## Editorial

**T**he commercialisation of power projects using renewable energy will not be realised without the appropriate policies and programmes in place. In this issue, we focus on the present policy and legal aspects of renewable energy in Europe and Southeast Asia. In Europe, different national priorities and different national contexts have led to a range of different national policies to support the development of renewable energy technology and the development of a market for renewable energy. For more mature technologies, such as wind energy, policies exist aimed at the development of the market for electricity from renewable energy sources. A range of policy instruments and measures are discussed briefly in the first article.

The next article discusses the different policies and programmes initiated in selected ASEAN countries—Indonesia, Malaysia, Philippines and Thailand—to promote grid-connected renewable energy projects.

The third article deals with the most recent developments in the Clean Development Mechanism (CDM). CDM is one of the flexible mechanisms by which developed countries can reduce their greenhouse gas emissions once the Kyoto Protocol comes into effect. All ASEAN countries are non-Annex-I countries and therefore potential host countries for such greenhouse gas reducing projects.

Meanwhile, the Green IPP Network is organising the third regional workshop that will be held in the Netherlands this September. This workshop has an international focus, with a strong emphasis on organisation and financing. Registration is free. Please see details in pages 1 and 9 or visit our website. The next workshop within the Network project will be linked to the "Sustainable Energy in Asia" conference to be held in Singapore in November this year. We hope to see you in both or one of these workshops. ❖

The *GrIPP Net Newsletter*, the official publication of the Green IPP Network, is published quarterly to communicate network activities and to support the dissemination of relevant information and network results. It is provided free to network members and interested stakeholders, and can be downloaded from this site: [www.ASEM-GreenIPPnetwork.net](http://www.ASEM-GreenIPPnetwork.net). This *Newsletter* has been produced with the financial assistance of the European Community. The views expressed herein are those of the authors and can therefore in no way be taken to reflect the official opinion of the European Commission.

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## Third Regional Workshop

### Experiences of Green Independent Power Producers

#### *Approaches in the international context*

25 September 2003, Amsterdam, The Netherlands

This workshop will be a meeting place for all those interested in international investments in renewable energy. Experts on renewable energy and international energy investment, both within the European and Asian market will present their experiences.

Topics to be discussed will cover three aspects: policies and market context, project organisation and new financing opportunities, and technology and resources. Throughout the workshop, discussion sessions offer all workshop participants ample opportunity to exchange opinions on the applicability of these experiences and possible success factors in a broader context in Southeast Asia.

In the first session, presentations on developments in the European and ASEAN electricity markets and policies for renewable energy (RE) will lead to a discussion on differences and similarities of these two markets, and applicability of using policy experiences in different country contexts. In the second session, project organisation and financing of RE projects in Asia will be discussed by experts with backgrounds in commercial and development financing, project development and both energy policy and development policy. The expectations of the role of new financing methods and sources on the creation of investment opportunities for renewable energy systems will form the core of the discussion. The third session is centred around case studies on Renewable Energy investment projects. The final discussion round will give the workshop participants the opportunity to discuss the main issues that arise during the day, identifying success factors for investments in renewable energy for Southeast Asia.

The programme is shown in page 9.

For more information or to register for this workshop, please download the workshop document from [www.ASEM-GreenIPPnetwork.net](http://www.ASEM-GreenIPPnetwork.net) or contact : Cora Blankendaal, ECN Policy Studies secretariat; [blankendaal@ecn.nl](mailto:blankendaal@ecn.nl); Fax: +31 224 56 8338. ❖

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# Renewable Energy Policy in Europe

- by Ms. Annemarije L. Kooijman-van Dijk  
ECN, The Netherlands

## Introduction

Renewable energy policy in Europe is driven by a range of motivations, most importantly concern for the environment and security of energy supply, but also for reasons such as employment creation and stimulation of local industry. The different national priorities and different national contexts have led to a range of different national policies to support the development of renewable energy technology and the development of a market for renewable energy.

Whereas for new innovative technologies policies focus on R&D and demonstration projects, for more mature technologies, such as wind energy, policies are aimed at development of the market for electricity from the renewable sources. Adapting the regulatory framework to remove barriers towards the deployment of renewable energy is an essential part of all policies. A range of policy instruments and measures are briefly discussed below.

## R&D support

Direct support for research, development and demonstration is widely used to stimulate the development and market uptake of those renewable energy sources that are far from commercial implementation. Each country has its own R&D programme for renewable energy technologies. The EU itself also funds R&D activities. The 6th Framework Programme 2003-2006 has a budget of more than 700 million Euro for the promotion of renewable energy sources, and their integration into the energy system, storage, distribution and use for electricity, heat and transport.

## Subsidies on investment and fiscal measures on investment

Investment subsidies can help overcome the barrier of a high initial investment. This type of subsidy is commonly used to stimulate the sales of less economical RE technologies. Investment subsidies are usually 20-40% of eligible investment costs. Some EU countries support renewable electricity by means of the fiscal system. Such support schemes include rebates on general energy taxes, lower VAT rates and fiscal attractive depreciation schemes.

## Feed-in tariffs

Feed-in measures support the production rather than the investment. Feed-in policy schemes offer a combination of a (limited) purchase obligation plus additional measures to improve security on income: a fixed price or a fixed premium on top of the 'grey electricity' price. The levels of guaranteed prices are commonly differentiated per technology to allow for differences in cost prices.

A feature of the feed-in tariff system that is especially valued by investors, is the security it can offer on income throughout the project lifetime. This implies that the impact of a feed-in system is

largely dependent on the duration of the feed-in contracts.

An example of a feed-in system that has been very successful in generating investments in renewable energy is the German system. This is a detailed system, with different tariffs developing at different rates over time to match expected technology development over eight main technology categories. For example: for electricity generation from "clean biomass" with a size between 500kW and 5 MW, the 2003 tariff of 8,95 €cent/kWh will be reduced by 1% annually for new installations commissioned. Power producers are guaranteed a certain feed-in rate for 20 years after project start.

The success of the German feed-in system in generating investments in renewable energy has greatly increased interest in feed-in systems. The disadvantage of feed-in systems is that they do not force the market to reach an optimum in cost-effective implementation or cost reduction.

## Bidding procedures

Bidding procedures can be used for investments, for subsidies or other forms of support on production (such as through feed-in-tariffs), or for other limited rights- such as sites for wind energy. Potential investors or producers have to compete for this support or right through a competitive bidding system. The criteria for judgement of the bids are set before each bidding round. For example in Spain, wind energy projects compete not only on basis of costs, but also on the basis of their technical quality, socio-economic impact, and geographic & environmental concerns.

The bidding system creates competition between suppliers, and is therefore expected to lead to a selection of cost effective projects. In order to maintain a differentiation in RE supply, the bidding may be differentiated in bands of different technologies and RE sources. This means that wind projects compete against other wind projects but not against, for example, biomass projects. The marginal accepted bid sets the price for the whole technology band.

## Renewable Portfolio Standards (RPS)/ Quotas

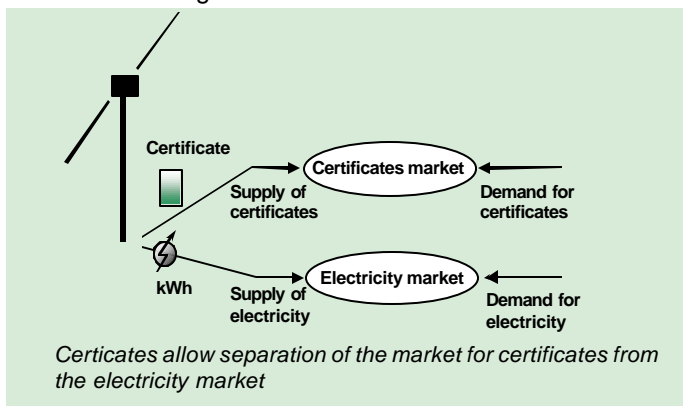
An instrument that is gaining momentum is the Quota system, or a Renewable Portfolio Standard. The government sets the framework within which the market has to produce, sell, or distribute a certain amount of energy from renewable sources. The targets may or may not specify support for individual technologies. The obligation is imposed on consumption (often through distribution companies) or production. The quota are usually tradable, making use of certificates, to allow cost effective achievement of the quota.

Countries with an RPS in place are: UK, Sweden, Belgium, and Italy. In Poland an RPS system is under development, while Denmark postponed the implementation of its RPS system in 2003.

## Certificates

Certificates by themselves are not a policy measure, but they serve as an instrument to accredit and register the production of renewable electricity and to facilitate trade. The term *green certificate* is commonly used to describe the system where separation occurs of electricity as a physical commodity, and its 'green quality' emanating from the use of renewable sources. The 'green quality' is incorporated in the green certificate, which is issued at the moment of production, and can be traded separately from the electricity.

Certificates are used in the Renewable Portfolio Standard and several other policy measures to support Renewable Energy. Demand may be voluntary, based on the customer's willingness to pay for green electricity, or the government can impose it. In the latter case, penalties are applied if the demand obligation is not met.



Governments are increasingly supporting the use of certificates to achieve renewable energy targets in a cost efficient manner: the market will select the lowest cost technologies and locations first. Policy schemes with certificates for renewable energy have been introduced recently or are under study in the Netherlands, Italy, UK, Flanders and Wallonia and Sweden. The Netherlands is the only country in the EU that has a green certificate system with voluntary demand.

According to the EC Directive on renewable energy, all EU Member States are obliged to have a system in place for 'Certificates of Origin' for all renewable energy production by end 2003. These Certificates of Origin do not have to be tradable, but it is expected that they will facilitate trade wherever national law does not forbid this.

Ahead of the formulation of these Certificates of Origin, which may be defined by each country separately, a group of stakeholders (utilities, RE industry representatives, etc.) has developed a prototype green certificate and trading system for Europe, the Renewable Energy Certificate Trading System (RECS). This system advocates a standard certificate that can be traded in ONE certificate market across Europe, whether for voluntary or obligatory markets. It is to be expected that the RECS infrastructure will be used for the 'Certificates of Origin' in countries where RECS has been established.

## Negotiated Agreements

The government can increase commitment from the private

<http://www.ASEM-GreenIPPnetwork.net>

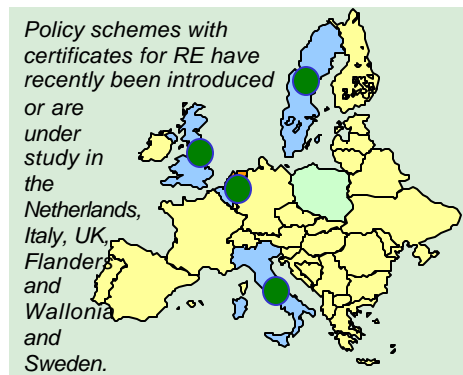
sector by reaching an agreement to achieve certain targets with the relevant sectors. In the Netherlands, the involvement of the private sector through Long Term Agreements (MJA's) is used in many policy fields. In the field of energy, the framework of the Environmental Action Plan committed all energy distribution and supply companies to stimulate energy efficiency and renewable energy. During the period of this Agreement (1991-2000) the utilities played a major role in increasing awareness and implementing local action plans for their customers, for example for insulation, high-efficiency boilers as well as the stimulation of renewables.

## The regulatory and market framework

Regulations and procedures define the framework for the development and exploitation of renewable energy projects. Examples of crucial regulations are those for construction and access to the grid, and allocation of costs. The structure of the electricity sector as whole and the regulations governing it are historically commonly focussed towards centralised electricity generation. Besides the regulatory framework, aspects of the electricity market such as the structure of the market and the attitude of the main players and customers towards renewable energy are crucial in the development of the renewable energy market.

## Final remarks

These are especially exciting times for renewable energy in Europe. The scale of implementation of renewable energy technologies is increasing fast, and can no longer be ignored as an essential part of the electricity supply. Further, the ongoing liberalization of the power markets in Europe creates



risks for renewable energy on the one hand, but offers opportunities on the other. Risks are associated with increasing competition in which renewable energy will need

to position itself. Policies need to be developed for a smooth transition of the RE sectors from a protected position (especially those technologies that are now largely supported through RD&D) into a competitive electricity market. On the other hand, new opportunities for renewable energy arise with increasing possibilities for electricity supply by independent and new parties, and sales to consumers with a free choice to select renewable energy—these opportunities must be recognised and seized now, by policy makers and market players hand in hand. ❖

## References

A.L. van Dijk. "Renewable Energy Policies and Market Developments", ECN-C—03-029

The Renewable Energy Certificate System <<http://www.recs.org>>

# Policy Instruments to Promote RE Projects Interconnected to National Grids

## The Case of Indonesia, Malaysia, Philippines and Thailand

By: Tjarinto S. Tjaroko, ASEAN Centre for Energy (ACE), Jakarta, Indonesia and Marites I. Cabrera and Thierry Lefevre, CEERD, Bangkok, Thailand

The ASEAN region has a huge potential for renewable energy (RE) such as hydro, biomass and wind. Among its member countries, Indonesia, Malaysia, Philippines and Thailand have initiated policies and programs to promote grid-connected renewable energy projects. This follows as the power sector in these countries are undergoing reforms, in addition to their policies to promote the increased use of local energy sources and enhanced energy security.

### Indonesia

In 1998, the Indonesian government issued the legislation on Small Power Generation from Renewable Energy (PSK) covering procedures for small private power generation from renewable energy interconnected to the grid of state-owned power company, PLN. The purchase tariff is negotiated between PLN and the investor. With this legislation no single RE was interconnected to the grid. However, many off-grid RE projects, mainly microhydro, were developed by private enterprises for rural electrification. The off-grid arrangements are based on the mutual benefits between the investors and the consumers, such as cooperative scheme, and affordable tariffs are applied to the consumers based on the agreement between the investor and the consumers. The investor is usually from local non-profit NGO.

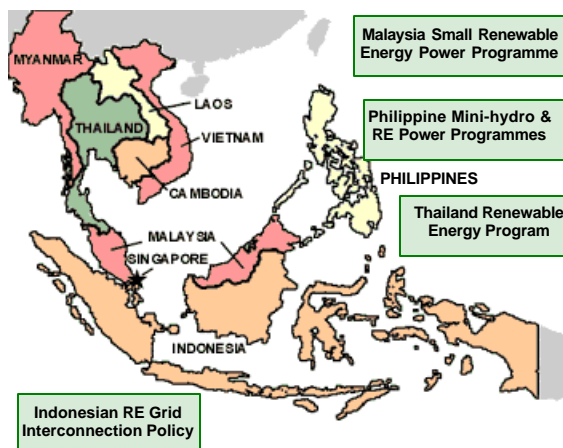
The RE policy was greatly strengthened by a new legislation issued in June 2002, in which RE power plants up to 1 MW can be interconnected with the grid\*. Institutions eligible to participate are cooperatives, private and government companies. The purchase tariffs will be calculated at 80 and 60% of PLN's announced "electricity base price" for interconnection at medium and low voltage (20kV and 220V). Since then many RE projects in the pipeline—mainly mini-hydro power plants located out of Java and Bali islands—have requested to be interconnected with the national grid. The electricity base price differs between systems in PLN's grid. The Java-Bali grid system is the most advanced and efficient compared to other grids, consequently it has the lowest electricity base price. The Indonesian government expects to have at least 20 RE projects interconnected to the grid 5 years after the issuance of the new legislation. These projects are expected not only from mini-hydro power

\* PLN is the only power utility in Indonesia. However it was unbundled recently with the establishment of subsidiaries in generation and distribution companies. So, the 2002 legislation allows private investors to directly sell electricity to distribution companies in the regions.

but also from geothermal, biomass, solar power and wind energy in view of RE potential in the country (see Table 1).

The flow of procedures for investment in the RE project as follows:

- Electricity base price announced by PLN for each region is different in accordance with the size and system applied in the region.
- Proposal submitted by investor to PLN
- Evaluation of the proposal by PLN
- Agreement letter issued by PLN to the investor
- Contract signing between PLN and the investor
- Investor requests license from the Minister of Energy and Mineral Resources
- Minister of Energy and Mineral Resources issue license to the investor
- Investor constructs RE project
- Commissioning by the certified and eligible institute for certification
- Operational certification issued by the eligible institute for certification
- Commercial operation by investor, and PLN to purchase the electricity generated from the commissioned RE project.



The Minister of Energy gives a certificate for approved projects. This certificate, which is cannot be transferred to other developer or investor, is dedicated only for an RE project that generates electricity and sells to the consumers on a business-as-usual basis for on- and off-grids. The certificate has no value and not tradable, and the government of Indonesia will not provide any financial support. The certificate is proof that the RE project scheme is allowed to sell electricity to PLN based on the announced base tariff. PLN

**Table 1: Renewable Energy Potential and Installed Capacity in Indonesia, 2003**

RE Resources	Potential	Installed Capacity (MW)
Hydro power	75,674 MW	3,854
Mini/Micro hydro	460 MW	64
Geothermal	19,658 MW	802
Biomass	49,807 MW	302
Solar power	4.8 kWh/sq.m/day (1,203 TW)	5
Wind energy	3-6 m/sec. (9,287 MW)	0.5

will not issue the certificate, but will sign a power purchase agreement contract with the investor.

## Malaysia

Malaysia's Ministry of Energy, Communications and Multimedia is coordinating a number of activities on renewable energy for power generation. Foremost of which is the Small Renewable Energy Power Programme (SREP), which it is managing, that was launched in May 2001 with the major goal of enhancing the use of renewable energy resources for power generation. The objective of SREP is to facilitate the implementation of grid-connected renewable energy resource-based small power plants. Malaysia produces huge amounts of wastes particularly from the palm oil industry; hence, SREP is focusing on biomass for electricity generation. The target of SREP is to install and connect to the national grid a total of 500 MW from RE-based power generation plants within the framework of the Renewable Energy Power Purchase Agreement (REPPA).

REPPA is legislation issued by the Malaysian government dealing with the power purchase agreement between power utility TNB and private investors mainly for RE projects. REPPA allows independent power producers to sell electricity to the grid, and the selling price for electricity for renewable sources was capped at a ceiling of RM17 cent/kWh or 4.5 cent USD/kWh. To date, more than 60 project proposals have been approved by the Special Committee on Renewable Energy (SCORE) chaired by the Ministry of Energy Communications and Multimedia. Three of these proposals have been awarded power generation licenses.

Meanwhile, the Malaysian government through SREP introduced the Biomass Based Power Generation and Cogeneration for the Palm Oil Industry (BioGen) Project. The RM56-million project, which is funded by UNDP/GEF and the government of Malaysia, aims to reduce GHG emissions from fossil fuel-fired combustion processes through the Clean Development Mechanism (CDM). The 5-year project is being implemented in two phases. The first phase (2002-2004) is a technical assistance focusing on the removal of barriers that hinder the widespread application of biomass-based power generation and cogeneration plants. By the end of this phase, 15% of the palm oil mills in the country are expected to have initiated plans to implement biomass-based power generation or combined heat and power generation (CHP). The second phase (2005-2008) will implement an innovative financing mechanism through the Malaysian banking sector. This financing mechanism will provide special loan arrangements—e.g., lower interest rates, special grace periods and possible guarantee by the MESITA fund—for RE projects.

The Malaysia Electricity Supply Industry Trust Account (MESITA) fund has been providing financial assistance to rural electrification, energy efficiency and renewable energy projects. IPPs and Malaysian utility TNB Generation voluntarily contribute 1% of their annual audited revenue to this fund. The studies funded by MESITA include grid-connected power generation from landfill gas, photovoltaic systems and palm oil residues. The ongoing MESITA-funded RE projects coordinated and managed by the Malaysian

Energy Centre (PTM) are as follows:

- a. Six grid-connected rooftop solar PV systems undertaken by TNB Research
- b. One stand-alone hybrid diesel power generation and solar photovoltaic system at the Education and Research Centre, Endau Rompin National Park, Johore, Malaysia
- c. Ten thousand units of solar home system (SHS) for rural electrification scheme
- d. A solar water pumping system for Milky Stork Breeding at Kuala Selangor Nature Park

## Philippines

The Philippines has a number of laws and regulations promoting the commercialization of grid-connected RE power projects. The issuance in 1987 of Executive Order (EO) 215, which allows the private sector to participate in electricity production and interconnection to the national grid, paved the way for independent power producers (IPPs) and, expectedly, the commercialisation of RE power projects. In addition, the Build-Operate-Transfer (BOT) Law also allowed the government to assume undertakings specific to IPP projects. The BOT route encouraged further investments mainly by setting up a minimum level of government regulations and offering a host of incentives to investors. However, investors then were not interested in mini-hydro and RE power projects, which they found financially unattractive compared to larger conventional power projects. Further incentives were needed to attract investors.

In 1991, the mini-hydro law was enacted covering hydro projects below 10 MW. This law stipulates special incentives and privileges as well as provisions for the sale of electricity to the national grid. To serve as a vehicle for the purchase of power from mini-hydro power plants and commercialise other renewables for power generation, the government created the Renewable Energy Power Program (REPP) in 1993. REPP was designed to provide up to P750 million in financing for private power projects using solar, wind, biomass, and small hydro resources. It aimed to acquire as much as 300 MWe of capacity from renewable sources, up to 50 MW annually over a period of six years. Under the terms of this program, small (<10 MW) power plants could apply to sell electricity to the NPC at a rate negotiated in a power purchase agreement (PPA). The Department of Energy (DOE) would guarantee the purchase of power generated by REPP projects. However, NPC suspended the REPP program due to various reasons including NPC's reluctance to acquire additional take-or-pay liabilities given the pending power sector restructuring and lack of need for new capacity, the serious program design flaws that deterred serious private sector interest, etc. Only two mini-hydro projects have reached the point of accreditation and construction.

In 1997, EO 462 was enacted enabling private sector participation in the development and commercialization of ocean, solar and wind (OSW) energy resources for power generation and other energy uses. However, EO 462 has been perceived by some to raise barriers to NRE and discouraged private investment. In April 2000, EO 232 was enacted amending EO 462. Now, OSW projects below 1

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# Recent Developments in the Clean Development Mechanism

## *Relevance for policy makers in developing countries*

By: Heleen De Coninck, ECN, The Netherlands

### Introduction

The commitment of most industrialised countries to reduce worldwide greenhouse gas emissions led to agreement on the Kyoto Protocol during the third Conference of Parties to the United Nations Framework Convention on Climate Change, in 1997. Once entered into force (after the pending ratification of the Russian Federation), the Kyoto Protocol obliges ratifying industrialised countries to reduce their emissions relative to a reference year, usually 1990. These countries can do this domestically, but can also decide to purchase CO<sub>2</sub> emission reductions from abroad. If this is done in the so-called non-Annex I (mainly developing) countries, they will have to use the Clean Development Mechanism (CDM). All ASEAN countries are non-Annex-I countries and therefore potential host countries for such greenhouse gas reducing projects.

### CDM: not a panacea

CDM can be beneficial for developing countries. Direct benefits could comprise of an increased flow of investment, transfer of environmentally benign technologies and a contribution to sustainable development in the non-Annex-I country. Associated benefits can vary depending on the circumstances. The projects may well lead to enhanced local economic development, to reduction of local air pollutants, and to capacity building among the local workers and enterprises.

However, CDM is not a panacea. Carefully designing the projects in order to attract real direct foreign investment is a task of the host country. Attracting investments that really facilitate technology or knowledge transfer does not go without saying. Most projects that are currently submitted to the CDM Executive Board for approval are implementing technologies that are well known in the host countries. Moreover, the project developer is often a local energy company, in stead of a foreign project developer, who would bring new technologies to the country. In many cases, also the extra cash flow is only the cash flow of the CDM credits. The host country can determine the requirements for contributions to sustainable development of the CDM project and can in this way influence the type of projects executed in the country.

### Institutional structure and capacity building

The first requirement for a country to host a CDM project is the accession or ratification of the Kyoto Protocol. In Table 1, the countries that have done so are listed. It is remarkable that several countries with a large potential in green independent power producers (and therefore possibly for CDM projects) have not yet finished the ratification process.

In order to implement only the most beneficial and in climate mitigation terms the most effective projects, a strong

**Table 1: Status of Kyoto Protocol ratification in ASEAN countries<sup>1</sup>**

ASEAN country	Ratification/Accession date Kyoto Protocol
Cambodia	22/08/02
Indonesia	Not ratified yet
Laos	06/02/03
Malaysia	04/09/02
Myanmar*	-
Philippines	Not ratified yet
Singapore*	-
Thailand	28/08/02
Vietnam	25/09/02

\* Not listed under the UNFCCC overview of countries that have signed the Kyoto Protocol

<sup>1</sup> The countries that are signatory to the Kyoto Protocol can be found on <http://unfccc.int/resource/kpstats.pdf>.

institution in the host country is essential. During the past years, in many countries, extensive capacity building programmes have been executed to achieve a higher degree of awareness and experience with flexible mechanisms. Several programmes have been implemented in Southeast Asia. For instance, the Japanese Ministry of Foreign Affairs has a programme in place for Asia, including the countries Indonesia, the Philippines, Malaysia, Thailand and Vietnam. The Asian Development Bank has been active, the Norwegian, Dutch and Danish governments have invested in capacity for CDM in several countries, including Southeast Asia, and the UNEP Energy Unit is funding CDM capacity building activities in Cambodia, the Philippines and Vietnam. The EU has been funding projects under its Fifth Framework Programme, and the World Bank's Prototype Carbon Fund has an associated capacity building programme with workshops, and manuals, which are available on its Internet site.

These programmes undoubtedly contribute to the likeliness of CDM projects in the country, even though not all programmes are focussed on establishing an improved institutional structure. Some programmes aim at the full establishment of a CDM unit in the relevant ministry of the host country, others don't go beyond organising a workshop aimed at raising awareness in government and the private sector.

### Requirements for the host country

Apart from ratifying the Kyoto Protocol, a host country is much helped by having a CDM unit in place. This unit can contact potential investors and can co-ordinate which projects are preferred. It can also establish the sustainability requirements that are determined by the host country and can inform project developers and stakeholders on the opportunities in CDM. This unit could also give advice to the

project developer on the additionality and baseline methodology criteria that the CDM Executive Board has established.

Requirements for the host country from the UNFCCC are limited to the appointing of a Designated National Authority registered with the UNFCCC\*. Of the Southeast Asian countries, only Malaysia has registered a DNA, at its Ministry of Science, Technology and the Environment. In addition, the programmes usually have their own requirements. A Memorandum of Understanding (MoU) with the buying country or the purchasing programme is common practice, and Letters of Endorsement (from host country to PCF) or Letters of Project Approval (from host country to project entity) are usually required to legally formalise the agreement.

### Revenues from CDM

The revenues of CDM are highly dependent on the type of project and the location. Obviously, if the revenues from Certified Emission Reductions (CERs) contribute much to the total investment costs, the project type becomes more attractive for application for CERs. As is demonstrated in Table 2, this is particularly the case for fuel switch and gas capture projects.

**Table 2: Indicative estimates of contribution carbon credits to project investment costs**

Technology	Contribution to investment costs (%)
Solar Home Systems	0,5-2*
Wind energy	5-15*
Energy efficiency	10-30*
Biomass energy	15-30*
Fuel switch	30-70*
Gas capture/landfill gas	50-100*

\* Based on a 10-year lifetime, 5 hours per day production, 4,5 euro/tCO<sub>2</sub>-eq and an emission factor of 0,9 kgCO<sub>2</sub>/kWh, which is the emission factor recommended in the small-scale procedures from the CDM EB

\* Based on five-year crediting period and 4,5 euro/tCO<sub>2</sub>-eq.

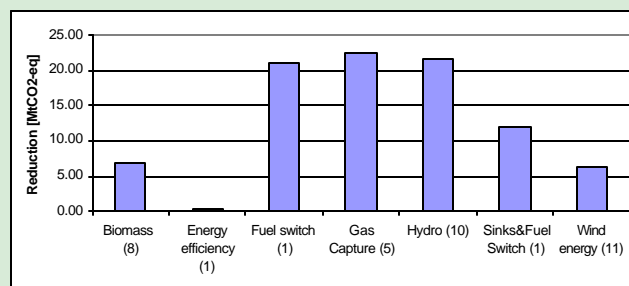
Source: De Coninck and Van der Linden, 2003, *Journal of Energy and Environment*, accepted

As can be concluded from Figure 1, the number of projects in gas capture and fuel switch is not large, but the emission reduction (and therefore the revenues from CERs) is relatively big. The financial attractiveness of certain technologies under CDM is not the only incentive to implement a project. Barriers that apply to relatively new technologies (such as in some energy efficiency measures) also determine the number of projects implemented. Relatively well developed technologies, such as wind and hydro energy, succeed in contracting a large number of projects in the full CDM portfolio, but vary much in achieved emission reductions.

### Demand for Certified Emission Reductions

The volume of the known contracted credits to date is dominated by the Dutch CERUPT programme and the World Bank's Prototype Carbon Fund (PCF)\*. The Dutch tender

closed in 2001 and will most probably not be reopened. The PCF is still open for projects. In the meantime, several programmes have emerged. The Japanese government intends to purchase CERs from Southeast Asia and there is an Asia Carbon Fund being established which aims at purchasing 200 000 tCO<sub>2</sub>-eq per year. In addition, the Finnish



**Figure 1: Total greenhouse gas reduction per technology of CDM projects. The number of evaluated projects of each technology is indicated between brackets**

Source of figure: De Coninck and Van der Linden, 2003, *Journal of Energy and Environment*, accepted.

government has opened a tender for small-scale CDM activities.

### Latest developments of projects in the ASEAN Region

A recent study identified the location of the first 100 Mt CO<sub>2</sub> contracted or applied for under the CDM and only found 2 projects located in the ASEAN region – both of them in Thailand#. The Methodology Panel of the CDM Executive Board (CDM EB), however, has received new baseline methodologies for 3 projects in Thailand and one in Malaysia.

Of the three methodologies submitted to the Meth Panel of the CDM EB for different compounds of the same project in Thailand, non have been approved by the EB, mainly on the basis of the lack of an indication whether the project is additional, i.e., why the project is not the baseline. The Project Design Document (PDD) and the methodology for the Malaysian biogas project were incomplete and have not been taken into consideration by the Meth Panel yet.\*\*

### Concluding and summarising remarks

The Clean Development Mechanism is moving quickly into operation and has started to establish its first projects. The demand for CERs is rising quickly, with several countries already active on the carbon market in developing countries. To maximise the benefits of CDM for the host country in terms of foreign investment, sustainable development, and transfer of environmental benign technologies, the host country should have appropriate institutional capacity.

Despite extensive capacity building projects, the ASEAN

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# Coninck, H.C., de, and Linden, N., van der, (ECN Petten (Netherlands)): *An overview of carbon transaction: General characteristics and specific peculiarities*. ECN-C—03-022, Petten March 2003

\*\* See Draft Report of the Sixth meeting of the Methodologies Panel, July 2003, available on <http://cdm.unfccc.int>.

\* See Modalities and procedures for the CDM, Annex Decision 17/CP.7, article 29. To be found on <http://cdm.unfccc.int/DNA>

## RECENT DEVELOPMENTS IN CDM ..... continued from page 7

countries have not yet implemented projects that could convince the body of the UNFCCC responsible for approval of the projects (the CDM Executive Board). All baseline methodologies and Project Design Documents submitted to the CDM EB have not been approved or not even been taken into consideration.

In general, it seems that more work needs to be done to

**i n c r e a s e** understanding of the CDM procedures in the Southeast Asian countries. The interest to participate in CDM appears to be strong and good chances exist for the enhancement of

green independent power producers for CDM, if in the institutions there is knowledge and capacity to make CDM work for local enterprises. ❖

### More information

Prototype Carbon Fund: [www.prototypecarbonfund.org](http://www.prototypecarbonfund.org)

Finnish JI/CDM Pilot Programme: <http://global.finland.fi/english/projects/cdm/projects.html>

**Table 3: CDM projects in ASEAN region that have proposed methodologies to the CDM Executive Board**

Project name	ASEAN Host County	Purchasing Country	Total Emission Reduction [tCO <sub>2</sub> -eq]
Felda Lepar Hilir Palm Oil Mill Biogas project	Malaysia	Japan	271 000
AT biopower rice husk : replacing grid electricity	Thailand	Japan*	2 800 000
AT biopower rice husk: displacement of steam	Thailand	Japan*	
AT biopower rice husk project: methane avoidance	Thailand	Japan*	

\*The emission reductions of these three methodologies add up to one number

## POLICY INSTRUMENTS TO PROMOTE .. continued from page 5

MWe of rated capacity, in private lands and in lands and offshore areas of the public domain, are considered to be private power projects and not subject to production sharing requirements.

Aside from mini-hydro power projects, grid-connected projects on wind energy are also currently underway. Two projects on wind energy—the 42-MW wind farm in Ilocos Norte and the 600-kW wind project in Batan Island, Batanes province—are under different stages of development.

### Thailand

Thailand actively supports and is at the forefront in the commercialisation of grid-connected RE as part of its overall goal of developing its indigenous energy resources.

In 1992, the Thai government launched the small power purchase (SPP) programme to promote the utilization of RE projects interconnected to the grid. As of November 2002, SPPs using renewable energy have been selling 178 MW of electricity to the national grid. The Energy Conservation Promotion Fund (Encon fund)— which has supported RE projects by providing grants for project plan preparation, project management as well as financial assistance for investment since 1995—has awarded 31 SPP proposals with a total capacity 511 MW, of which 300 MW will be interconnected to the grid in 2005.

To further support the use of RE for electricity generation, the Thai government has approved regulations for the purchase of power by distribution companies from small renewable energy power producers generating less than 1 MW capacity per unit. This regulations allow for net metering arrangements and simplified procedures to minimize the costs of connecting the generators to the distribution systems. ❖

## References

10th Annual Meeting of New and Renewable Sources of Energy Sub-sector Network (NRSE-SSN), ASEAN held in Manila, Philippines on 27-30 May 2003

Energy Policy and Planning Office, Thailand <<http://www.eppo.go.th/power/pw-spp-purchpower-E.html>>

Roxas, F. "The Importance and the Changing Role of the Independent Power Producers (IPPs) in the Proposed Competitive Power Market in the Philippines", *Proc. Clean and Efficient Use of Fossil Energy for Power Generation* (Bangkok, Thailand, Oct. 30-Nov. 3, 2000). <[http://apec-egcfe.fossil.energy.gov/Thai%20Seminar\\_2000/8-4-1%20Roxas\\_Paper.pdf](http://apec-egcfe.fossil.energy.gov/Thai%20Seminar_2000/8-4-1%20Roxas_Paper.pdf)>

Terrado, E., C. Rovero, J. Weingart and D. Hertzmark. *Strengthening the Non-Conventional and Rural Energy Development Program in the Philippines: A Policy Framework and Action Plan*. A report for UNDP/World Bank ESMAP. New York, August 2001. <<http://www.worldbank.org/html/fpd/esmap/publication/243-01philippines.html>> (12 December 2002).

### **YOU ARE INVITED!**

#### **International Green IPP Expert Forum Discussion**

One of the upcoming activities of the Green IPP Network is a discussion between international experts on renewable energy investments. Hot topics and discussion points have been brought forward by experts in the fields of organisation and finance, policy and markets, RE technology and potentials. This discussion will take place in August 2003 on the Green IPP network website. Network members can also participate by email. The results of the discussion will be presented at the workshop in the Netherlands in September. If you are interested to join this discussion, please register as a network member (free of charge) at:

<http://www.asem-greenippnetwork.net>

## Third Regional GriPP-Net Workshop

### Experiences of Green Independent Power Producers

#### *Approaches in the international context*

25 September 2003, Amsterdam, The Netherlands

#### WORKSHOP PROGRAMME

9:00- 9:30      **REGISTRATION**

#### Opening

9:30      Opening, presentation web-discussion results  
*Mr. Dominik Möst, IIP Karlsruhe*

#### Session 1: Policies and market context for green IPPs

9:50      Overview of developments in the SEA electricity market and policies - impacts on green IPPs  
*Dr. Guillermo R. Balce, Executive Director, ACE*

10:10      Overview of developments in the European electricity market and policies - impacts on green IPPs  
*Mr. Emiel van Sambeek, Researcher RNE, ECN*

10:30      Discussion: Europe versus SEA, identification of main differences and similarities

10:50      **COFFEE BREAK**

#### Session 2: Project organisation and financing structures

11:10      Experiences with financing project structures  
*Mr. Daan Dijk, Manager, Sustainable Energy & Environmental Markets, Rabobank*

11:30      Renewable energy for electrification: integrating options in planning tools based on the cases of Laos, Cambodia and Vietnam and the role of CDM in project financing  
*Ms. Anjali Shanker, Director, IED*

11:50      Investing in Renewable Energy projects, experiences at ADB  
*Dr. Pim Kieskamp, freelance international consultant, sustainable energy & climate change, former ADB Renewable Energy and Climate Change Specialist*

12:10      Possibilities of the EC-ASEAN Energy Facility (EAEF) Programme  
*Mr. Pekka Skytta (EC Coordinator, EAEF) and Mr. Tjarinto S. Tjaroko (ASEAN Co-Director), Indonesia*

12:30      **LUNCH**

#### Session 2 continued: Project organisation and financing structures

13:30      The role of Post Johannesburg Agreements in stimulating renewable energy investments through Public Private Partnerships  
*Mr. Paul Hassing, Head, Climate Change & Energy Division, Netherlands Ministry of Foreign Affairs (DGIS DML/KM)*

13:50      Discussion: challenges and chances for project organisation and financing of RE projects in ASEAN

#### Session 3: IPP experiences

<http://www.ASEM-GreenIPPnetwork.net>

## Calendar of Events

#### Power Generation World 2003

18 - 20 August 2003, Sydney Convention & Exhibition Centre, Sydney, Australia

URL: [http://www.powergenerationworld.com/2003/powergen\\_AU/index.asp?&T1=9/4/2003&T1=9/4/2003](http://www.powergenerationworld.com/2003/powergen_AU/index.asp?&T1=9/4/2003&T1=9/4/2003)

#### 3rd Regional GriPP-Net Workshop: Experiences of Green Independent Power Producers—Approaches in the international context

Please see workshop announcement and programme in pages 1 and 9 of this newsletter

#### Windpower Course for Developing Countries

25 August - 26 September 2003, Shangri-La Hotel, Singapore

E-mail: [sven.ruin@af.se](mailto:sven.ruin@af.se), [www.af.se](http://www.af.se)

#### BIOENERGY 2002: International Nordic Bioenergy Conference and Exhibition

02 - 05 September 2003; Jyvaskyla Paviljonki, Jyvaskyla Fair and Congress Centre - Finland

URL: <http://www.caddet-re.org/events/display.php?id=2189>

#### Power-Gen Asia

23 - 25 September 2003; Ho Chi Minh City, Vietnam

URL: <http://www.powergenasia.com/>

#### Power Generation World Korea 2003

29 September - 01 October 2003; The Westin, Chosun, Seoul, Korea

URL: [http://www.powergenerationworld.com/2003/pgwk\\_KR](http://www.powergenerationworld.com/2003/pgwk_KR)

#### Electric Indonesia 2003: The 11th Electric Indonesia Series of Power Generation, Electronics and Electrical Equipment Exhibitions Incorporating

#### Power Indonesia 2003, Elenex Indonesia 2003, and Renewable Energy Indonesia 2003

01 - 04 October 2003; Jakarta International Exhibition Centre Kemayoran, Jakarta, Indonesia

URL: <http://www.pamerindo.com/2003/ele03exh.htm>

#### Asia Pacific Power Forum 2003

14 - 16 October 2003, Swissotel, Beijing, China

URL: <http://www.marcusevans.com/appower>

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14:20      Implementing a 40-MW wind energy project in the Philippines  
*PNOC, Philippines*

14:40      Pilot project for rural electrification using renewable energy in Xinjiang, China  
*Christophe Nappes project manager, EDF*

15:00      **COFFEE BREAK**

15:20      Experiences of a Dutch IPP investing in Asia

15:50      **Discussion**

#### Session 4: Discussion

16:00      Applicability of these experiences and possible success factors for Southeast Asia

17:00      **End of the workshop** ❖

## In the News

### **MALAYSIA: Foster Wheeler Plans RM50-million Biomass IPP in Perlis**

Finland's power producing company Foster Wheeler Group has agreed in principle to set up a RM50mil biomass-based energy plant in Kangar, Perlis. The company is scheduled to sign an agreement in December to set up a 10-MW independent power plant (IPP) in the state. The plant would procure raw materials for energy conversion from the state's agriculture sector, particularly from the production of rice (hulls and stalks). Tenaga Nasional Bhd, Malaysia's national power company, has reportedly given its blessings for the biomass energy project, and it is expected to buy electricity from Foster Wheeler's plant in Kangar.

Source: *The Star (Malaysia)*, 17 July 2003

### **THAILAND: Yala to Get Biomass-fired Power Plant**

Gulf Electric Plc, a private electricity producer and supplier, is set to establish a Bt1.5 billion, 20-MW biomass-fueled power plant in the southern province of Yala in July. The Electricity Generating Authority of Thailand (EGAT) has recently signed a power purchase agreement with Yala Green Co. Ltd., an affiliate firm of Gulf Electric and the biomass power plant operator. Under this agreement, Yala Green will supply electricity produced from the plant to EGAT through the Provincial Electricity Authority's system.

Source: *Business Day*, 10 June 2003

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### **CALENDAR OF EVENTS** ..... continued from page 9

#### **4th International Workshop on Large-Scale Integration of Wind Power & Transmission Networks for Offshore Wind Farms, + ELTRA Day**

20 - 21 October 2003; Billund, Denmark

URL: <http://www.ekc.kth.se/workshop/offshore>

#### **Hydro 2003 International Conference and Exhibition (The Way Forward for Hydropower)**

03 - 06 November 2003; Hotel Croatia, (Cavtat) Dubrovnik Riviera, Croatia

URL: [http://www.hydropower-dams.com/hd\\_29\\_0.htm](http://www.hydropower-dams.com/hd_29_0.htm)

#### **Sustainable Energy in Asia 2003 Incorporating Green IPP Workshop on the Policy and Regulatory Framework for Green IPP Market Development - Private Sector Experiences and Call for Action**

18 - 20 November 2003; Raffles City Convention and Exhibition Centre, Singapore

URL: <http://www.sustainableenergyasia.com>; <http://energyefficiencyasia.com>

#### **World Wind Energy Conference - Renewable Energy Exhibition 2003**

23 - 26 November 2003; Cape Town, South Africa

URL: <http://www.caddet-re.org/events/display.php?id=2279>

#### **Power Generation World Europe 2003**

24 - 27 November 2003; Royal Garden Hotel, London

URL: [http://www.powergenerationworld.com/2003/pg\\_UK/](http://www.powergenerationworld.com/2003/pg_UK/)

## Interesting Websites

### **UNIDO: Climate Change/Kyoto Protocol Activities**

<http://www.unido.org/en/doc/3941>

This page provides access to the Climate Change/Kyoto Protocol-related activities undertaken by UNIDO. UNIDO has published guides that provide details on the industrial sectors of selected countries as well as the institutional and organizational mechanisms that shape their CDM processes. The industrial sector is considered to have considerable mitigation potential and are likely to become central to CDM activities. In addition, up-to-date lists of ongoing projects together with contact addresses of project sponsors and developers are presented.

The available reports in this website include:

- CDM Investor Guide: Brazil;
- CDM Investor Guide: South Africa;
- Report on experience from motor systems project in China: efficient industrial energy systems;
- UNIDO/MRI Forum 'CDM and Kyoto Protocol: Opportunities for Japan in Asia';
- Reports of ASEAN project on industry and CDM — study on financing large-scale industrial CDM projects; study on financing small-scale industrial CDM projects; background studies from Indonesia, Malaysia, the Philippines, Thailand and Vietnam. Report of Second Project EGM, Bangkok, Thailand;
- Capacity Building for CDM projects in Industry, Brazil Workshop.

For further information on the guides and other reports, please contact [m.ploutakhina@unido.org](mailto:m.ploutakhina@unido.org).

### **CDM Brazil**

<http://www.cdmbrasil.com.br>

The site presents Brazilian projects from various sectors, which are designed to apply for Emission Reduction Certificates (ERCs). The page was set up by the German Chamber of Commerce in Brazil.

The homepage is open to project owners / developers, who are invited to present their projects in the media at no costs. Institutions and companies looking for investment opportunities have also free access to the site. Besides, companies can also obtain a pre-check on their projects or other consulting services, provided in cooperation with the Brazilian company ECOINVEST, specialized in this activity. The site is also supported by TÜV Süddeutschland.

In the near future, the German Chamber also plans to include in this homepage other projects, identified by other Latin American German Chambers.

The German Chamber is presently looking for sponsors. For further information please contact: [mambiente@ahkbrasil.com](mailto:mambiente@ahkbrasil.com)