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Towards a New Strategy for Asia: The Example of the COGEN Programme¹

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1. Introduction

In 1994, the European Commission adopted a policy paper "Towards a new Strategy for Asia", endorsed by the European Council of Ministers to redesign its strategy towards Asia. The Commission acknowledged that trade and especially investment between the EU and Asia was still limited, compared with trade and investment between Asia and the US, and within the Asian region (especially Japan and the NICs with the rest of the Asian region). Moreover, with limited growth in Europe and growth averaging about 8 per cent in 1980-1992 in East Asia (see table 1), the EU realised that the Asian region should not be ignored. On the contrary, the Asian region should be considered as an equal business partner and strong efforts should be made "to strengthen the Union's economic presence in Asia" (Commission of the European Communities, 1994:3). Economic cooperation between the EU and Asia was therefore considered to be one of the major policy strategies towards Asia.

Table 1: Average annual growth rates of GDP, 1980-1992 (%)

East Asia	7.7	Philippines	1.2	New Zealand	1.4
China	9.1	Singapore	6.7	US	2.7
Hong Kong	6.7	Thailand	8.2	Europe and Central Asia	1.5
Indonesia	5.7	Other Pacific Countries		Latin America & Caribbean	1.8
Japan	4.1	Australia	3.1	Middle East & Northern Africa	2.2
Korea	9.4	Canada	2.8	South Asia	5.2
Malaysia	5.9	Mexico	1.5	Sub Saharan Africa	1.8

Source: World Bank (1994).

In this paper, we will analyse one of the several economic cooperation programmes between the EU and the ASEAN region, i.e. the EC-ASEAN COGEN (Cogeneration) Programme which endeavours to increase economic cooperation between the two regions in the environment-friendly energy equipment sector.

The paper will first briefly describe the economic cooperation programme of the EU towards Asia. An analysis of the potential for cooperation in the biomass energy sector in particular will follow, after which the COGEN programme will be introduced. The next part will discuss the ways COGEN uses to increase trade and investment between the EU and ASEAN. Finally, a first attempt is made to evaluate the performance and success of the COGEN programme.

2. The economic cooperation programme of the European Commission

Cooperation of the European Commission (EC) with Asia started in 1976, with a major focus on development aid. The changing economic conditions in many Asian countries during the last two decades made the EC realize that it needed to redesign its cooperation programme towards Asia. The "Guidelines for Cooperation with the Developing Countries of Asia and Latin America" warned of a "serious risk if [the Community] ignored the dynamic economies of Asia which, in view of their size or their potential for growth and technological innovation, are essential trade partners for an outward-looking Community" (Commission of the European Communities, 1990:8). The communication stressed, therefore, increasing economic cooperation with countries or regions of Asia "to serve the mutual interests of the Community and its partner countries" (Commission of the European Communi-

ties, 1990:17). Notwithstanding this advice, the majority of the EU budget for cooperation continued to be allocated to development cooperation. In 1993, for instance, only 12 % of the budget was available to be used for economic cooperation (Commission of the European Communities, 1994:6).

The new policy paper for Asia therefore stresses again the need for active economic cooperation between the EU and Asia. Several specific activities are mentioned which could increase private sector participation in the region (Commission of the European Communities, 1994:20-23):

- representations (lobbying) in Asia in order to gather information on Asian legislative and administrative regulations. The *European Business Councils*, *Joint Investment Committees* and especially *European Business Information Centres* are or will be established in many Asian countries for this purpose;
- provision of expertise and policy advice to the former state trading countries like China, Mongolia, Vietnam or Laos and encouragement to Burma and North Korea on their way to market-based economies;
- promotion of business cooperation between European and Asian companies, especially SMEs, by organizing sectoral round tables, horizontal industry-oriented training initiatives and pilot actions in the field of technological cooperation. The **COGEN programme** is one of the programmes set up for this purpose;
- establishment of better links with European business associations and Chambers, either through a European business association or through a network of existing national associations;
- enhancement of the cooperation in the fields of science and technology and research and development;
- establishment of European technology centres;
- support of investment by providing financial incentives for joint ventures and other forms of business tie-ups through the use of the ECIP-facilities¹, the European Investment Bank (EIB) or sponsoring market research and by supporting trade promotion;
- cooperation to alleviate poverty;
- enhanced cooperation in the field of environment;
- development of the market for agricultural production.

3. Potential for environment-friendly energy equipment in the ASEAN region

The ASEAN region is one of the fastest growing regions in the world (table 1). As a result, the need for energy has also grown at a high rate. It has averaged an increase of 7% annually since 1985 and will continue to grow at about the same rate for the coming years. Most ASEAN countries, except Brunei and perhaps Singapore, face a power shortage (EC-ASEAN COGEN programme, 1994d:14). Additional investments needed in energy equipment will be huge in the coming decade, up to USD 600 billion according to estimates of the World Bank (Asiaweek, 1996). In order to alleviate this financial burden, many ASEAN countries have encouraged the private sector to participate in the construction of new power plants. In the Philippines and other ASEAN countries, for instance, private companies can bid for BOT-(Build-Operate-Transfer) projects. In Thailand, small power producers (SPPs) can sell

¹ European Communities Investment Partners

their excess energy to the grid or other users. Of the 50 SPPs approved by the Thai government to supply power, about 20 per cent are using agricultural residues as energy source (Kositchotethana, 1996:44).

It is expected that the bulk of power in the ASEAN region will continue to come from fossil fuels like oil and coal. But the awareness of the environment and the need for sustainable economic development have increased interest in renewable energy, i.e. solar, wind, biomass, geothermal and hydroelectric energy. Biomass can be divided into *traditional* (fuelwood, charcoal, straw including rice husks, other vegetation residues and animal wastes) and *modern* (industrial wood residues, industrial bagasse, urban wastes and biofuels, including biogas and energy crops) (World Energy Council, 1994:283). In 1990, biomass (mostly traditional) contributed an estimated 12 per cent of total global energy supply. For the South East Asian and Pacific Region biomass use amounted to 30 per cent of total energy use (World Energy Council, 1994:284).

This paper will focus on the agricultural and wood residues. Energy production from those residues is rather small-scale and mainly used for own company use, but offers a solution for waste disposal. Taking into account that, on average, about 25 percent of any dry agricultural product is waste (like rice husks, coconut shells, etc.), disposal of these can be an important factor for a company to decide to use biomass energy (World Energy Council, 1994:277). Another factor that might determine the choice of biomass or other alternative energy supply is the independence from the grid, especially in countries like the Philippines, where “brown-outs” or power shortages up to 10 hours a day were not uncommon at the beginning of the 1990s.

At the national level, biomass energy can result in a lower dependence on fossil fuels, which are mainly imported and thus worsen the trade balance. In the case of Thailand, for instance, about 75 per cent of crude oil and oil products are imported. Biomass energy can also be one of the means for the ASEAN countries to address environmental concerns.

The total waste of the five main agro-industrial sectors (rice, wood, coconut, sugar and palm oil) in the ASEAN region amounted to about 100 million tons in 1990, or a potential energy equivalent of 25 million tons of oil, about the total primary energy demand in the industrial sector in ASEAN. Only about 50 % of these residues are used at the moment for heat and power generation (EC-ASEAN COGEN programme, 1994).

4. The COGEN programme

4.1 Introduction

The COGEN programme was set up in 1990 as an economic cooperation programme between the European Commission (EC) and ASEAN, coordinated by the Asian Institute of Technology (AIT, Bangkok, Thailand)², to realise the potential of the ASEAN market in the environment-friendly energy-

² Cogeneration: the combined production of heat and power.

equipment sector for European technology providers. The objective of the COGEN programme is “to accelerate the implementation of proven technologies generating heat and/or power from wood and agro-industrial residues through partnerships between European and ASEAN companies” (COGEN Special Issue, 1994:1). The objectives are thus threefold:

- a) promote *European* technology in the ASEAN region;
- b) achieve *energy cost-savings* for the end-user;
- c) promote *environment-friendly* technology and *reduction of oil dependence*.

The COGEN programme started initially as a short-term programme to investigate the potential of biomass energy. The major characteristics of the first three years of the COGEN programme, i.e. Phase I (1991-1993), can be listed as follows:

- rather technology oriented with an analysis of the biomass resources, the potential in ASEAN for European technology both at the macro- and micro-level; an analysis of potential end-users and an analysis of the available European technology;
- support of a few demonstration projects in the ASEAN-region;
- organization of the COGEN programme with 3 technical engineers at the COGEN-secretariat and the assistance of 3 technical centres in Europe;
- short-term oriented, with the maximum length of the various contracts with the COGEN-team in Phase I being 1 year, although all were extended.

Phase II (February 1995 - January 1997) was proposed in May 1994 to the PVD-ALA Committee of the European Commission³ and was approved by all the EU member states as the results of the fact that Phase I showed important potential for European biomass equipment suppliers in the ASEAN region. The extension of Phase I was also requested by the ASEAN Secretariat.

This paper will focus on Phase II of the COGEN programme, as at that time the more *business oriented* phase of the COGEN programme started, with active involvement of the private sector. The main purpose of Phase II is the provision of financial and technical incentives for Full Scale Demonstration Projects (FSDPs) in real conditions using European technology in ASEAN companies, in order to demonstrate the possibility for replication in other ASEAN companies.

4.2 Organisation of the COGEN programme

The COGEN programme is coordinated by the COGEN secretariat at AIT in Bangkok, Thailand. At the COGEN secretariat, a European project manager leads a team of about 10 people, consisting of technical, management and administrative staff.

In Europe, direct contacts with the equipment suppliers were subcontracted to 2 consultants: Centre de Recherches Agronomiques (CRA) in Gembloux, Belgium, for the more technical aspects, and The Enterprise Group in Brussels, Belgium, for the more business and management aspects. Both consultants work closely together.

³ The Committee on Developing Countries-Asia-Latin America

The main activities of the Enterprise Group include:

- coordination on the European side with the other consultants and the COGEN secretariat;
- updating of the inventory of the European equipment suppliers and manufacturers and marketing of the European Directory of Biomass Energy Companies;
- promotion and marketing of the COGEN programme and the opportunities in ASEAN towards potential suppliers in Europe (through seminars, study tours, reports, etc.);
- strengthening and maintaining the “COGEN Business Line”, a strategic information system about the ASEAN markets and business opportunities for partnerships between European and ASEAN companies, in order to respond to requests from interested European companies.

The main activities of CRA are, amongst others:

- operation and development of the database on European equipment suppliers and development and distribution in Europe of the European Directory of Biomass Energy Companies;
- assistance for the Enterprise Group in its contacts with the European companies;
- assistance for the Enterprise Group in the development of the COGEN Business Line;
- promotion and marketing of the COGEN programme in Europe through reports and assistance in the programmes undertaken by the COGEN secretariat and the Enterprise Group.

In each ASEAN country, country coordinators, consisting of people from both the private and public sector involved in energy management, environmental technology and industrial development, are assigned to keep close contact with the potential end-users, business partners and policy makers. The main tasks of the country coordinators are:

- develop an inventory of potential end-users, business partners and government institutions through a regularly updated database;
- increase the awareness of biomass as an energy source by maintaining close contacts with potential end-users, policy makers and others;
- dissemination of information on the COGEN programme and biomass energy in general to all relevant companies and institutions;
- dissemination of relevant information to the COGEN secretariat (trade-fairs, tenders, seminars, legal and administrative regulations, business opportunities, etc.).

There are country coordinators in all ASEAN countries, except in Brunei, for obvious reasons, and in Vietnam. As a new member of ASEAN in 1995, the European Commission decided that Vietnam was not automatically eligible for EC-cooperation. So far, only technical studies have been conducted in Vietnam, in order to ascertain potentials in the rice and sugar sector for European technology.

4.3 Selection of European equipment suppliers

The selection of relevant European equipment manufacturers for the COGEN programme was carried out in three phases. At the start of the programme, the COGEN consultants in Europe and Bangkok identified as many EU-companies as possible which were involved in biomass energy (manufacturers,

engineering companies and other institutions), amounting to more than 1,000 companies for all 12 EU-countries⁴. Subsequently, this total group of companies was divided in several sub-groups:

- a non-core of companies and institutions which are not interested in direct participation in the COGEN programme (research centres, press, etc.) [871 entries];
- a soft core of companies with high-quality, relevant technology and with interest in the COGEN programme, but not yet active in the ASEAN market [177 entries];
- a hard core of entries with high-quality, relevant technology, which are already active in the ASEAN region as well, and which have already shown a high interest in the COGEN programme (by proposing a project for assistance, by contacting the COGEN Business Line, etc.). Company profiles of this hard core are included in the COGEN directory of environment-friendly energy equipment suppliers in the EU. [69 entries].

4.4 ASEAN target groups

As mentioned in section 4.2., the ASEAN country coordinators have to inventory the ASEAN target groups. These include:

- potential ASEAN end-users;
- possible joint-venture and other strategic business partners (like engineering companies, financial institutions, etc.);
- policy makers;
- others (press, universities, etc...).

A total of about 3,000 entries are listed. Subsequently, a core of about 1,500 entries was selected. This core receives regular (monthly) information on the COGEN programme and other relevant topics, as well as the relevant company profiles of EU-suppliers.

4.5 Full-Scale Demonstration Projects

After identifying both the demand side in the ASEAN region for biomass energy equipment and the supply that could be offered by European manufacturers, the COGEN programme identified some niches in the biomass energy equipment in which the European suppliers are considered to have superior technology and in which they have competition from Japanese, American, local and other suppliers. These niches are:

- the rice-sector;
- the high-efficiency equipment in the sugar-sector (up to 80 bar pressure);
- the high-efficiency equipment in the palm-oil sector (up to 30 bar pressure);
- the wood-sector;
- and to a limited extent, the coconut sector.

⁴ With the inclusion of 3 more countries in the EU, namely Austria, Finland and Sweden in 1995, companies from these countries were included as well.

To promote European technology in these niches, the COGEN programme provides financial and technical assistance to implement *full scale demonstration projects* (FSDPs). FSDPs are projects on a full scale basis in ASEAN companies using proven EU-technology in the biomass-sector in order to demonstrate its technical and economic viability (COGEN Special issue, 1994:1). The COGEN programme supports these FSDPs in several ways:

- financial support on a case-by-case basis, up to 15 % of the investment cost with a ceiling of 400,000 ECU⁵ per project;
- training in Europe and ASEAN for the plant operators and the local partners in case of joint ventures;
- follow-up of the project (monitoring, advertising, etc).

The financial support to the equipment cost of the power plant for Phase I and Phase II, as well as a separate budget in 1993 for demonstration projects for Thailand, is shown in table 2.

Table 2: EC contribution to the equipment cost of FSDPs

Phase	Amount (ECU) ¹	Allocation
Phase I	400,000	2 FSDPs in ASEAN
Thailand programme	643,821	5 FSDPs only in Thailand
Phase II	2,250,000	remainder in ASEAN
TOTAL	3,293,821	

Source: COGEN, AIT, Bangkok

¹ 1 ECU $\simeq$ 1.35 USD

The financial support, or *access fee* as it is called by COGEN, is given to the European equipment manufacturer. He has, however, the obligation to deduct it from the investment cost charged to the customer. The access fee, as the word says, is a kind of compensation for the end-user to allow visits to the equipment by all interested parties, even competitors; to allow technical and economic monitoring of the plant; and to allow the dissemination of the results. Visits and information of existing projects like performance indicators are very important marketing tools to demonstrate the efficiency of biomass energy equipment from European suppliers.

During Phase II the COGEN programme has sent two calls for FSDPs to all potential interest groups (manufacturers, engineering companies, consultants, end-users, etc.). Interested companies return the standardized proposal form, signed by both the end-user and the equipment supplier, back to the COGEN-team at AIT, where all proposals are evaluated.

To be eligible for COGEN, support the project must meet several criteria:

- a proven technology;
- the use of biomass (rice, sugar, coconut, palm-oil and wood) as a fuel;
- the project must be replicable;
- the project must be compatible with the safety and environmental requirements;
- the project must be implemented in ASEAN; and
- both the end-user and the supplier must be willing to assist COGEN in the dissemination of the technology.

⁵ 1 ECU is approximately 1.35 USD.

In the first place, the proposals are checked for eligibility: technical viability, submission of complete information (necessary for the screening), no duplication of an existing FSDP, etc.... Subsequently, the actual ranking of eligible proposals is made using a quantitative analysis, serving the needs of:

- the customer: economic and technical criteria;
- the equipment supplier: replicability of the project; and
- the government: energy and environmental impact.

The customer is in the first place interested in the *profitability* of the project. In this particular case, this means the energy cost savings and the biomass residue disposal savings that can be obtained from a biomass power plant. A good parameter to evaluate a project on profitability is the *internal rate of return*.

The equipment supplier is in the first place interested in selling as much of its equipment as possible. Therefore, it is necessary that the supported FSDP is a showcase for other potential customers and that the project is easily replicable. The COGEN-team uses several parameters to quantify this aspect:

- a) *Pay-back period*: many (small) investors are primarily interested in how long it takes before they can recover the cost of their investment. The number of years it takes before the equipment is paid off is for them a major concern in evaluating a similar project. The pay-back period is therefore considered a good measure to evaluate investment behaviour. A short pay-back time will attract potential investors
- b) *Number of factories of similar capacities*: The first prerequisite for potential replication of demonstration-projects is of course the number of factories where a similar power plant *can* be installed. There will not be, for instance, many potential investors for a very large power plant. In fact, the COGEN programme is mainly focused towards the SMEs, which use their own biomass residues to produce energy. An ASEAN biomass database with a detailed inventory of all mills incl. capacity size has been established by the COGEN programme for this purpose.
- c) *Geographical and sectoral spread of FSDPs already implemented*: As a showcase for new projects, the FSDPs are aimed in each ASEAN market and in each promoted biomass sector (rice, wood, coconut, palm oil and sugar). It is important for the European equipment supplier that similar projects can be visited by potential customers in a real-life environment in the country itself. New proposals for projects not yet present in a specific sector and/or market are therefore more eligible for support. As shown in table 3, COGEN would therefore focus more towards the non-wood biomass sectors, especially in the Philippines and Indonesia, if a third phase develops.
- d) *European supplier spread*: In order to support as many different European suppliers as possible, a new proposal from a European supplier which has not yet received COGEN-support will receive a higher rating.

For the ASEAN region and governments, the first aim is to diminish the dependence on traditional fossil fuels (which are mainly imported, thus worsening the trade deficit) and to improve the environment. Two related parameters are evaluated:

- a) *Energy produced or substituted*: This measure quantifies the amount of biomass energy that will be produced by the power plant and the amount of traditional fossil fuels that could be replaced by biomass energy.
- b) *Pollution avoided*: All types of energy production cause pollution, although in different degrees, that can be quantified. Efficient biomass power plants are much more environment-friendly than traditional power plants.

It should be stressed that all of these parameters are evaluated simultaneously. An index is constructed with appropriate weights that stress the importance of all factors. This allows for a project proposal poorly evaluated on one of the three main criteria, to still be eligible for support if the evaluation on the other two criteria is excellent. This means, for instance, that a project in the rice sector in Thailand may be so economically viable that it receives a high score, even though there is already a similar project in the rice sector in that country. This explains also the concentration of FSDPs mainly in the wood sector in Malaysia and Thailand and none in the Philippines. This explains as well why a European supplier already has 3 FSDPs: it was able to submit profitable projects in different sectors in different ASEAN countries.

The aim of the demonstration projects is to have a project with European technology as a showcase in each biomass sector in each ASEAN country. All FSDPs can be visited by potential interested local users. As of July 1996, there were 16 COGEN demonstration projects which had started production or were under construction, with a total investment cost of about 60 million ECU (approximately 1.35 USD) (see table 3 and 4). One power plant is a very large project, exceeding an investment cost of 30 million ECU. Total support from the EC in all these projects taken together is about 3.3 million ECU or about 6 per cent of the total equipment cost. Two projects are not yet fully contracted, however, as the ASEAN end-user did not pay the downpayment and/or the European supplier has not submitted a bank guarantee yet (among these two is the large power plant). If not given proof of these soon, COGEN will refuse assistance and the funds can go to other projects on the waiting list⁶.

Table 3: COGEN demonstration projects as of May 1996

Sector/Country	Indonesia	Malaysia	Philippines	Singapore	Thailand	TOTAL
Rice					1	1
Sugar						
Palm Oil		1			1	2
Coconut						
Wood	3	6			4	13
TOTAL	3	7			6	16

Source: COGEN, AIT, Bangkok.

Before COGEN accepts proposals for assistance, these need to be signed by both the European equipment supplier and the ASEAN customer. Negotiations between both should therefore already be underway. This negotiation can occur in several ways:

⁶ This happened before with four projects which did not submit the necessary documents before the deadline.

4.5.1 Direct negotiation

As discussed before, the hard core of EU-companies consists of companies that are already present in the ASEAN market through agents, sales offices or even joint-ventures with local partners. Business contacts can therefore easily be made through these channels. It is only afterwards that the COGEN programme is contacted for assistance, although before or during the negotiation process the companies are already aware of the existence of the programme.

4.5.2 Facilitation by COGEN

The COGEN programme can also facilitate contacts between potential ASEAN end-users and European equipment suppliers in various ways:

- by the dissemination of information on European biomass-energy equipment, through organising seminars and conducting pre-investment studies.
- COGEN participates regularly in local trade fairs of energy equipment, both in ASEAN and in the EU. European equipment suppliers are regularly invited to join.
- Demonstration projects supported by COGEN are regularly visited by interested end-users. A visit to the equipment in a real production environment can be an important tool to persuade other interested companies. For instance, one of the first projects in the wood sector in Malaysia is visited on average twice a month by groups of interested parties. The success of this project has also directly led to a similar project in Thailand of the same equipment supplier.

4.6 Marketing of the COGEN programme

The FSDPs form the core of Phase II of the COGEN programme. Of course, these can only be useful to promote new European technology suppliers if the marketing measures accompanying them are effective. Several marketing measures initiated by the COGEN programme have already been mentioned throughout the paper. More systematically, they can be listed as follows:

- Monitoring and visits to FSDPs: The most effective marketing measure is the showcase of successful power plants in real-life conditions. These plants are monitored by an independent team of consultants whose reports are available to potential customers⁷. Visits to the actual plants are regularly organized as well⁸, although this will become much more important when all FSDPs are in full operation⁹.
- Dissemination of information: The COGEN programme regularly publishes and distributes information on the programme, on biomass energy and biomass energy equipment and on other related environmental issues. Examples of information are the regularly published COGEN Newsletter with a printing of 15,000 copies; the Directory of Biomass Energy Companies with a printing of 2,000 copies and a publication series on "Competing in the ASEAN Biomass Energy Markets". As mentioned by the Project Manager, COGEN intends to contact all interested parties at least once

⁷ The monitoring takes place for 2 days during the commissioning of the power plant, for 1 week one month later and for another week two months later.

⁸ As mentioned before, the 15 per cent subsidy by the COGEN programme is therefore called the 'access fee'.

⁹ As of May 1996, only 5 FSDPs are in full operation.

a month through all kind of information, like the Newsletter, the Directory, invitation to a seminar, etc.

- Seminars/conferences: Regularly, the COGEN programme participates in or organizes seminars to inform a wide public about its activities. For instance, at the start of Phase II of the COGEN programme, information seminars were held in each ASEAN country. Recently, the COGEN-team organized a seminar at the Hanover Fair, Germany.
- Development of databases: During the duration of the COGEN programme, several databases have been developed and are continuously updated. These are:
 - ◊ the ASEAN biomass database, containing information on biomass production and milling capacities in ASEAN;
 - ◊ national and ASEAN databases, containing all relevant information on end-users, business partners, government-institutions and others like press, research centres, etc. All national databases are combined at AIT into an ASEAN database (see also 4.2 and 4.4);
 - ◊ the European database, containing all relevant information on European equipment suppliers and other interested companies and institutions. The hard core of this database is entered into the more extensive Directory of Biomass Energy Companies (see also 4.2 and 4.3).

Table 4: Full scale demonstration projects (as of may 1996)

Number Project	Biomass Sector	ASEAN country of investment	European contractor	Investment cost (ECU) ¹	EC-support (ECU)	Call for projects
21	Wood	Malaysia	Aalborg Sunrod (Den)	1,662,000	249,300	Phase I
29	Wood	Malaysia	Vyncke (Be)	1,343,000	150,700	Phase I
31	Wood	Thailand	TVM (It)	295,000	44,250	Thailand FSDPs only
32	Wood	Thailand	Ecologia Filtrazione (It)	155,000	23,250	Thailand FSDPs only
33	Paper	Thailand	Nadrowski (Ge)	88,000	13,200	Thailand FSDPs only
34	Rice	Thailand	Bertrams Konus (Ger)	3,332,347	280,290	Thailand FSDPs only
36A	Wood	Thailand	Vyncke (Be)	823,999	123,600	Thailand FSDPs only
36B	Wood	Thailand	Nadrowski (Ger)	1,061,539	159,231	Thailand FSDPs only
45A	Wood	Malaysia	Babcock Energy (UK)	1,852,010	138,800	Phase II
45B	Wood	Malaysia	Siemens (Ger)	3,106,253	232,800	Phase II
45C	Wood	Malaysia	SHW (Ger)	277,535	20,800	Phase II
45D	Wood	Malaysia	Maier (Ger)	101,407	7,600	Phase II
48	Wood	Indonesia	Aalborg Sunrod (Den)	1,211,851	181,778	Phase II
50	Wood	Malaysia	Nordfab (Den)	208,184	31,228	Phase II
65A	Palm Oil	Malaysia	Babcock Energy (UK)	408,632	61,303	Phase II
65B	Palm Oil	Malaysia	Nadrowski (Ger)	116,602	17,482	Phase II
68A	Wood	Malaysia	Sunds Defibrator (Swe)	4,094,685	383,680	Phase II
68B	Wood	Malaysia	Nordfab (Den)	170,612	16,230	Phase II
69	Rubber	Malaysia	DWS (Be)	1,212,947	171,230	Phase II
73	Wood	Indonesia	Blohm+Voss (Ger)	3,590,580	400,000	Phase II
75 p	Wood	Indonesia	Company X (Den)	2,295,916	344,387	Phase II
97 p	Palm Oil	Thailand	Company Y (FR)	31,515,667	242,592	Phase II
TOTAL				58,923,766	3,293,821	

Note: Projects consisting of various parts (A-B...) are non turn-key projects. The names of the European companies of the last two projects are not disclosed as negotiations are still going on.

Source: COGEN, AIT, Bangkok

¹ 1 ECU $\approx$ 1.35 USD

4.7 The COGEN Business Line

All information related to (biomass) energy and other environmental issues involving European and/or ASEAN companies, institutions and governments has been gathered under one strategic information system, called the *COGEN Business Line*. By collecting and disseminating information to all potential

ASEAN customers and EU suppliers, the COGEN programme not only is aiming at increasing the sales of European equipment and technology, but at promoting joint ventures and other strategic business alliances between European and ASEAN partners, like local suppliers, turnkey plant suppliers, engineering companies. By tying up with a local partner, European companies can establish a long-term presence in the ASEAN market.

Under the COGEN Business Line, several activities can be grouped, some of which have already been mentioned under the marketing measures:

- the collection and dissemination of all kinds of information which can influence the company's and the government's decisionmaking;
- pre-investment studies, free of charge, for interested end-users for specific European biomass equipment. As of May 1996, 50 companies have requested this service;
- matchmaking service: The Enterprise Group can assist European companies in selecting and contacting a suitable partner in ASEAN. Although full details are not available yet, it is estimated that the COGEN programme has assisted so far in the establishment of about 20 partnerships.

5. Evaluation of the COGEN programme

Has the COGEN programme facilitated the entry of European suppliers into the biomass energy equipment sector?

The performance of the COGEN programme should be evaluated on a short-term and long-term basis.

5.1 Short term

The EC provides a maximum grant of 15 per cent of the total equipment cost up to 400,000 ECU (approximately 1.35 USD) per project. This means that at least 85 per cent of the European equipment is paid for by the ASEAN end-user. The EC supports therefore a maximum of 1/6 of the total investment cost. As some demonstration projects were so large that they exceeded the ceiling for financial assistance of 400,000 ECU, while other projects received less than a 15 per cent subsidy (the last approved projects of each phase had to be satisfied with the remainder of the budget), the actual average financial assistance is only 6 per cent. This percentage increases, however, to 11 per cent if one neglects one very large power project. The limited assistance by the EC demonstrates the emphasis of the COGEN programme as an *economic* cooperation programme, endeavouring to increase *private* business between the EU and ASEAN. Financial subsidies are provided in order to give European companies a competitive edge to enter the ASEAN market but are kept as low as possible in order not to distort the market. With a purchase of about 60 million ECU of European equipment, it seems that business cooperation has been successful so far indeed. The ultimate aim, however, is to increase business between both regions without any EC-support at all.

Of course, it is possible that the projects carried out between the European supplier and the ASEAN end-user would have been done anyway, even without the support by COGEN. In this case, one could argue that the financial assistance of the EC was unnecessary. Although this may be true for the project itself, the benefits of the project as a showcase for other projects and the achieved multiplication effect justify the use of EC-money to a great extent.

On the other hand, some of the 16 FSDPs were awarded to the same European equipment suppliers. For instance, Nadrowski, a German supplier, has already been awarded three FSDPs, while three other European suppliers each received EC-support for two FSDPs. Even though in the selection of FSDPs there is a parameter limiting the presence of a specific European equipment supplier in too many projects, is it acceptable for public EC-funds to provide subsidies to the same European companies two or even three times?

5.2 Long term

The best way to assess the COGEN programme from a long-term perspective is to see how many new European projects have started in the ASEAN markets by replication of the demonstration projects, or other ways. As mentioned before, the demonstration projects can be visited by all interested parties. High-quality projects, in real life conditions, are the best way to convince potential new customers of their effectiveness and efficiency in terms of energy source and waste disposal. However, as of now, only 5 of the 16 demonstration projects are in full operation. Their impact is therefore difficult to measure. If the COGEN programme is prolonged, making full marketing use of the existing projects will be one of the most important actions.

Difficult to measure, but equally or even more important, is the increased awareness generated through the COGEN programme for biomass energy in general and European technology in this sector in particular. By the regular dissemination of information to a large group of business people, government officials and media (15,000 entries and more) and the availability of a strategic information system, it is at least certain that the COGEN programme was able to reach an increasing number of people, many of whom had limited knowledge about the potential of biomass energy. The decision of the customer to actually use biomass energy depends, however, mainly on the *quality* of the (European) biomass equipment technology.

6. Future direction of the COGEN programme

6.1 Short term

The COGEN programme is an economic cooperation programme, aiming to increase business cooperation between European and ASEAN companies. The primary tool to achieve this is to increase awareness of European technology. The FSDPs and the accompanying marketing measures are the major instruments of the programme. As of now, 16 projects have already received financial support. However, a complete sectoral and geographical spread has not been fully achieved yet, as no projects

have been selected in the sugar and coconut sectors and only one project in the rice sector. Likewise, there are no FSDPs yet in the Philippines and in Singapore, while there are only 3 in Indonesia. Although providing more subsidies to many new FSDPs in a next phase would not be acceptable, as too many supported power plants will distort the market, it would be worthwhile to have at least one FSDP in each biomass sector and in each ASEAN country. If there are sufficient FSDPs, the next phase of the COGEN programme should then mainly benefit from these existing demonstration projects marketing tools to promote European technology. Once in full production, the power plants should be regularly visited; information on the performance of the plants should be widely disseminated, etc. So far, this cannot be done at a maximum efficiency level as only 5 out of 16 projects have started full production. Alternatively, in the short term, COGEN should concentrate on making sure that the other 11 projects actually materialize.

Another short-term perspective for the COGEN programme is that the European Commission will soon give the green light to expand the support of demonstration projects to Vietnam. Technical studies by the COGEN-team have already been made and have shown there is potential in the rice and sugar sector for European equipment suppliers.

In the meantime, COGEN should continue its matchmaking services through the COGEN Business Line, as joint ventures and other strategic partnerships between ASEAN and European companies will ensure long-term relationships and business cooperation between the two regions.

6.2 Medium term

Meanwhile, the COGEN programme is also researching new possibilities to expand into other environmentally friendly types of energy to be used in different industries. The acquired expertise in the biomass energy sector could be useful for other environment friendly energy. In general, the COGEN "methodology" could be easily applied to similar small and medium sized private power producers. Programme-expansion could, for instance, go to power plants making use of environment-friendly energy like *natural gas* and *clean coal*. Natural gas is easily available in ASEAN and both types of energy are competitive and environmentally clean. An additional advantage of expanding to these energies is that the types of industries which could benefit are not restricted to the agro-industries, but could be expanded to other sectors using a lot of energy like the ceramic industry, the metallurgic industry, etc.

Practically, the COGEN databases could be relatively easily expanded to these industries and energy equipment, using the same methodology. Moreover, many European equipment suppliers, able to produce the equipment for biomass, can produce similar equipment for the natural gas and clean coal as well, especially as the equipment is meant for the same power production capacity (<50 MW). Expanding the European database of equipment suppliers should therefore not be too difficult.

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