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**Vinythai:**

**A Case Study on the Establishment of a Petrochemical  
Joint Venture between a Belgian and a Thai company<sup>1</sup>**

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## 1. Introduction

The Vinythai case study focuses on the interplay of national development strategies, political forces and strategic decision making in the setting up of a joint venture between two dominant partners, who acquired much international experience. The case-study first describes the motivations of both partners to invest in the petrochemical sector in Thailand in the form of a joint venture and the process leading to the establishment of the joint venture<sup>1</sup>.

Vinythai is a Thai joint venture company set up by the Belgian Solvay Group and the Charoen Pokphand Group (C.P.) of Thailand. It was established in 1988 with the support of the Board of Investment (BOI) of Thailand to operate in the promoted intermediate and downstream petrochemical industry. The joint venture is located in the Map Ta Phut Industrial Estate in Rayong, Eastern Seaboard, at 250 km from Bangkok (see map, annex 1). The company produces the semi-finished products ethylene dichloride (EDC) and vinyl chloride monomer (VCM) on the one hand, and polyvinyl chloride (PVC), as well as its by-product caustic soda on the other hand. (see description of the products and production process, annex 2).

In this case study, special attention is given to the following questions: how does investment in the petrochemical industry fit in the strategy of the partners; why was Thailand selected by the Belgian parent company; why was a joint venture established and why was C.P. chosen as the partner? More specifically, the case shows that government policies and its incentives, timing and contacts played a crucial role in the decision to select Thailand, rather than another country in the same region.

Finally, the joint venture agreement is analysed, with special attention devoted to the specific contributions of each partner, the mission statement of the joint venture and the decision making processes.

## 2. History of the petrochemical industry in Thailand

The petrochemical industry was in Thailand established in the early 1950s by a few processing manufacturers. During the next twenty years it expanded slowly, relying mainly on imported raw materials.

Around the time natural gas and crude oil was discovered in the Gulf of Thailand in the beginning of the 1970s and as a result of the world wide oil crises in the 1970s<sup>2</sup> and the very high oil prices, natural gas extraction and separation plants were put up in Map Ta Phut in the Rayong Province (see map, annex 1). Natural gas can be used as a source of energy or as raw material in the petrochemical industry (where it gets most value-added). From the beginning, the Thai government was seeking to promote higher value added industries and to accelerate the development of its own integrated petrochemical industry in order to generate downstream industrial developments. But Thailand did not have

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<sup>1</sup> Petrochemicals, in the strict sense of the word, are chemicals that are wholly or partially derived from petroleum or natural gas.

<sup>2</sup> 1973 and 1979

a competitive advantage for the upstream petrochemical industry at the time of the discovery of natural gas, not only because the feed stock<sup>3</sup>, but also the energy is very expensive. As the country was still largely agricultural - in 1980, agriculture, hunting, forestry and fishery represented 23.4% of its GDP- and did not possess the necessary technological know how to build a petrochemical industry, it tried to attract experienced foreign investors on the basis of BOI promoted incentives and the promise of maintaining high import duties during an initial period of eight years. The petrochemical industry became even one of Thailand's top priorities in the 1980s, when major industrial sectors, mainly the automotive and electronics industries, expanded rapidly and boosted the demand for plastics.

#### **Box 1. BOI incentives and government protection**

Thailand's industrial promotion policy is mainly carried out by the Board of Investment (BOI). The BOI is empowered to grant a number of tax and non-tax incentives to local and foreign investors who undertake projects, which are in line with the government's policy. With regard to the petrochemical industry, the BOI stipulated that factories could only be located in zone 2 or 3. Promotional privileges included:

- a reduction or exemption from corporate income tax;
- an exemption of customs duties and business tax on raw material or essential supplies imported for use in production for export for a period of one year from the first importation;
- an exemption (zone 3) or 50% reduction in the rate of import duty is allowed, on all machinery that would normally be assessed at a rate of 10 percent or more (zone 2) [3]. Although Map Ta Phut is located in zone 2, Vinythai was exempted of customs duties and business tax on imported machinery [6].

In addition, high import duties on imported petrochemicals were introduced to enable the development of local petrochemical manufacturers to compete with imported products. The tariff rate on imported plastic powder was set at 40 %, while for raw materials, such as ethylene and propylene (for a description of the petrochemical production process, see annex 2), it reached 20 %. It was assumed that the tax incentives and the high tariffs would enable the investors in the petrochemical industry in Thailand to bear the huge financial costs that were needed to set up successful activities.

The first integrated petrochemical complex was established in Thailand in 1983 at the Map Ta Phut Industrial Estate, Rayong Province. It is known as the National Petrochemical Complex Phase I (commonly referred to as NPC-1) (see annex 3). It was based on the execution of the Master Plan for Natural Gas Utilisation of the Eastern Seaboard. It was designed:

- to maximise the benefits of Thailand's resources, thereby saving millions of Baht through import substitution;
- to create an economic development area and infrastructure away from the over-developed metropolis of Bangkok;
- to facilitate a much desired transfer of technology.

Among the four private companies that were selected to invest in the production of plastic or other petrochemical products of the intermediate and downstream petrochemical industry figured Thai Plastic and Chemical Plc. (TPC). TPC is a joint venture between Mitsui Asahi Caustic Soda Co., an affiliate of Thai Asahi Chemical Co. (THASCO), which is a joint venture between the Japanese based Asahi

<sup>3</sup> The feed stock is very expensive in Thailand as they need to dig very deep.

Glass Co. and the Sri Fuengfung family Group) and Thai partners, with the Sri Fuengfung family group as a silent partner. At present, the shareholding of TPC is : Thai Asahi Chemical Co. (25%); Mitsui and Co. Ltd. (11.6%); Siam Sement (19.8%); the Euarchukiati family (8.0%) and Mitsui Toatsu Chemical (6.4%). Only TPC produces the products that are of interest for this case study, namely PVC and caustic soda.

One year later, the Thai government wanted the four private companies to join forces with the state-owned Petroleum Authority of Thailand (PTT) in an upstream unit (an olefin plant operated by NPC) for the production of the raw materials ethylene and propylene (what they need in their production process, see annex 2), employing only indigenous gas feed stock. It also imposed on them to buy from NPC 73.3% of total demand of ethylene and propylene at fixed contract prices based on a "cost plus" (+ standard profit of 15%) formula. Phase I was completed in December 1989 with an investment of more than 26,000 Million Baht and the companies were granted investment privileges for a period of 8 years.

Thailand's economy was growing rapidly (see table 1 and 2 in annex 5). The growth of demand for petrochemical products, mainly coming from the construction sector, was expanding at twice the rate of GDP. In addition, there was a strong growth in the exports of finished plastic products as well. As the increased demand could not be satisfied by the production capacity of the Petrochemical Complex Phase I only, the Eastern Seaboard Development Committee proposed a BOI sponsored master plan for National Petrochemical Complex Phase II (NPC-2). It was to consist of upstream petrochemical plants and other intermediate and downstream petrochemical plants similar to those of Petrochemical Complex Phase I. It was also to be located in the same Industrial Estate (see annex 1). It was expected to have advantages over NPC-1, as it is naphtha-based. Naphtha-crackers request higher investment cost, but allow to produce a higher variety of by-products, such as benzene derivatives and C-4; while a gas-based cracker can only produce ethylene and propylene with lower investment cost. Generally the cash-cost of ethylene of a gas based cracker is more competitive compared to a naphtha cracker, the profitability of which depends strongly on the valorisation of the by-products. The price agreement between the upstream unit on the one hand, and the intermediate and downstream units on the other hand, is considered a better deal as the raw material prices are based on world market prices (75% of the total demand of ethylene and propylene had to be bought from Thai Olefins Co. (TOC) at US Gulf contract price + 10%), reflecting the realities of the global market place. This made the production more cost competitive to imported products. NPC-2, however, still limited competition, which resulted in the market remaining segmented.

The plan was approved by the government and protection was promised for another 10 years. The public bidding for promoted investment in NPC-2 was launched by the BOI in 1987, which is long before the eight years of privileged treatment promised under NPC-1 was expired. This provoked fierce protest from the companies under NPC-1; the government, however, counter-argued that the promise depended on the condition of a limited market demand. As the market demand had greatly expanded, the promotion of additional investment was justified according to the BOI. Probably because of this protest, TOC, the cracker under NPC-2, has started operation in 1995 only. However, this is still two years earlier than what was promised under NPC-1.

### 3. Process leading to the establishment of Vinythai

#### 3.1 The Solvay Group

The Solvay Group was founded by Ernest Solvay in 1863 to produce and distribute soda ash. Today still around 29% of the shares of Solvay are held by private shareholders related to the Group's founding family. The family holding company SOLVAC s.a., which is listed on the Brussels Stock Exchange, holds 25% of the shares. The Group personnel holds 1% of the shares. The remainder - 45% - is held by various private and institutional investors of which the latter category holds about 28%.

Solvay is mainly active in four different sectors, i.e.:

1. Chemicals;
2. Plastic Resins, such as High Density Polyethylene (HDPE), Polypropylene (PP) and PVC;
3. Plastic processing; and
4. Health products.

The company is organised in Regional Business Units (RBU) covering the world. All plants report to one of the 22 Strategic Business Units (SBU) in Europe.

In 1998, Solvay is considered to be a world leader in the production of soda ash (No. 1) and peroxygen (No. 1), No. 2 in the production of HDPE and No. 3 in caustic soda. It is the world's third largest PVC producer. It has five PVC production plants in Europe, two in Mercosur and one in Thailand. The total production capacity in caustic soda exceeds 2.1 million tons per year. Solvay reached total sales of more than US\$8,4 billion in 1997. The company operates over a wide geographical area and has more than 400 establishments spread out over 46 countries, with Western Europe taking up 63 percent of the company's total sales. Solvay is to be considered as a Europe oriented multinational company. The United States represents 22 percent of the total sales, Mercosur 7% and Asia and Oceania 4 percent (but this share is increasing yearly). The Group employs 34,445 workers, of which only about 609 are active in Asia [23].

#### 3.2 Solvay's interest in Asia and its first investment project in Thailand

In the middle of the 1980s, Solvay tried to increase its presence both in North America and in Asia, in order to achieve a better geographical balance and to achieve a higher growth rate in the Americas and the Asia-Pacific region. Solvay was already present in Japan with an investment in the pharmaceuticals sector, a regional business unit in Tokyo for the chemical "strontium salts" and a commercial office in Tokyo. In South Korea Solvay had entered into a joint venture with Hanwha Advanced Materials Co. Lt.<sup>4</sup> for the production of plastic components for the car industry, while it was also active in Taiwan.

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<sup>4</sup> Solvay holds a 50% stake in Hanwha Advanced Materials Co. Ltd. (HAM). HAM produces Woodstock sheets used domestically for the interior of cars, but more and more also for the export market (as a consequence of the financial crisis). It employs 38 people.

In Asia, there was a large potential for PVC products, especially because it is largely used in the construction sector. Also, the Asian region was already an export market for Solvay's European and American products. However, in accordance with its general policy since its early days Solvay followed the philosophy of "Think globally and act locally (produce locally to reduce costs and to be able to give a good customer service and support)" [5] They wanted to set up local production units in the region and were looking for investment opportunities. Solvay considered the market size for PVC big enough to justify the establishment of a joint venture, rather than to license the technology. In 1984, Solvay engaged a consultant for conducting a preparatory study on the potentials of the Asian market (excluding India) for petrochemicals. The study provided a broad overview of the situation in the various countries and concluded that the countries in South East Asia that showed the largest promise in the petrochemical industry were Indonesia, Thailand and Singapore (see tables 1-2 in annex 5). The consultant's report in the middle of the 1980s stressed the following aspects with respect to ASEAN countries:

- Indonesia's average GDP growth rate of 6.4% at that time, its large population of 180 million people (three times as high as in Thailand), the increasing importance of a middle class, an ample pool of cheap labour, no domestic PVC producer yet, a stable government and especially the vast petroleum and natural gas made it an attractive proposition for Solvay. However, the uncertainty about political favouritism, the long negotiation processes, and the relative high investment costs in Indonesia were considered as serious drawbacks.
- Thailand has limited hydrocarbon natural resources and relatively higher costs than in the neighbouring countries (no competitive advantage in upstream petrochemical industry), high electricity and higher labour costs than Indonesia. Yet it had a competitive advantage in the downstream petrochemical industry such as for instance in plastics, for which there was a growing internal demand, while there was only one PVC producer in Thailand and in the ASEAN region as a whole in the 1980s (namely Thai Plastics and Chemicals). Although Thailand's population with some 60 million people was much lower than in Indonesia, the country offers a more easy access to the emerging markets of Indochina, Burma and Southern China. Another decisive factor for Solvay was that the infrastructure to support the petrochemical industry (refineries, crackers, utilities, ...) had already been installed. Hence, huge investment costs could be avoided. In addition, Thailand, at that time, was more open towards foreign direct investment (FDI) than other ASEAN countries and wanted to use FDI as a tool to develop its economy further. It especially wanted to attract European investment in order to counter-balance the invasion of Japanese and American investors that had occurred in the previous years. Finally, Thailand's political environment was considered to be stable, especially when taking into account the country's moves towards more democracy.
- In Singapore, huge petrochemical installations were already present at the beginning of the 1980s. Already in the 1970s the Singapore government had set up a petrochemical industry to cater for the growing demand in the region. Singapore's petrochemical project was started in the early 1980s with the incorporation of an upstream company, Petrochemical Corporation of Singapore Ptd. Ltd., which was consequently followed by the investment of seven major downstream companies, manufacturing various types of petrochemicals. Although Singapore has no natural gas and petroleum resources, it is considered to hold a superior position in ASEAN's petrochemical industry as its large size plants achieve important economies of scale. Singapore also is a major

re-exporter in ASEAN as a result of its free duty port. In addition, the industry gradually has shifted towards higher value added products and has continuously automated its production processes.

- The petrochemical industry of the Philippines was the least developed among the ASEAN countries. It had many problems to develop its plastics industry, mainly because of the country's limitations in infrastructure, such as the high cost of electricity and the very poor service of its power utility company. Other problems include: red-tape in bureaucratic procedures, smuggling, a high tariff rate on resins, the lack of specific technology and the inconsistent quality of its petrochemical products.
- Malaysia had the advantage of a low production cost thanks to its abundant supply of petroleum and natural gas, but its overall capacity was rather low. The high import of resins caused large trade deficits, especially because of imports from Singapore, which supplied 99 % of Malaysia's total resin imports from ASEAN countries.

In 1984, following the results of the consultant's general survey of the ASEAN region, Solvay decided that it was time to enter the ASEAN market by setting up a joint venture in Indonesia. Consequently, Interlox (see Box 2) started negotiations with the Indonesian government. In addition, Solvay decided in 1985 to establish a regional centre for the Asia-Pacific region (including Australia), in Singapore and manned it with two representatives. The activities of the regional centre consisted in coordinating the different subsidiaries and affiliates of Solvay in Asia Pacific (from Bombay to Sydney and Tokyo) and also in further studying investment opportunities in the region. Today (1998), it coordinates the activities of 25 companies in Asia, of which 12 are joint ventures with local partners, in which Solvay holds 10 to 70 % of the shares.

### **Box 2. Interlox, Solvay and Laporte**

In the early 1990s, Interlox was the largest and most advanced hydrogen peroxide group in the world. It was established in 1970 when the interests of Solvay (Belgium) and Laporte (UK) were merged.

Laporte is the largest UK based manufacturer of speciality chemicals. The company is listed at the London Stock Exchange as the country's third largest independent chemicals business. It has operations in 25 countries through which it has developed leading market positions in a number of speciality product areas.

Total production capacity of Interlox amounted at more than 400,000 tons per year (TPY) and took place in 19 factories located in 16 countries. In 1992, an agreement between Solvay and Laporte led to the sharing out of the activities of Interlox, with the largest part (including hydrogen peroxide activities) going to Solvay, and to Solvay disposing of its 25 % stake in the equity capital of Laporte [25].

One year later, Mr. Rene Toulouse (not his real name), a senior Executive Committee Member and Administrator at Solvay<sup>5</sup>, went on a 3 weeks study and "vacation" tour to Hong Kong, Thailand, Singapore and Indonesia. Although his visit to Thailand was mainly for tourist reasons, he became very much impressed by the business opportunities offered by Thailand. Thailand's openness contrasted sharply with the problems for doing business with Indonesia where Interlox had been negotiating un-

<sup>5</sup> Mr. Toulouse is of French nationality. In 1956 he came to Belgium as an engineer to work for Solvay. In 1971, he became the Director of the Milan branch. In 1974, he became member of the Administrative Board and in 1975

successfully for two years the establishment of a joint venture. He had the impression that in Thailand, things could go much smoother.

During his stay in Thailand, Mr. Toulouse was invited at a dinner organised by the Belgian Ambassador to Thailand. There he was introduced to high ranking civil servants and policy-makers. Through the intermediary of the Ambassador, Mr. Toulouse got in touch with top-level people of the National Economic and Social Development Board (NESDB) and the BOI, as well as with Minister Korn Dabarangsi (at that time Vice-Minister of Industry).

As it happened, some four years earlier the BOI had issued to FMC an investment permit to produce hydrogen peroxide - a chemical used e.g. for the bleaching of cotton, wool and silk. FMC is a Philadelphia (USA) based chemical products group. Its hydrogen peroxide division is a major world-wide producer, which makes the company and its European production company "FMC Foret", with a leading share in the Spanish peroxigen market, a strong competitor of Solvay [24]. It appeared during the talks in Thailand that the FMC project had not materialised. In order to establish its reputation with the Thai decision makers, Solvay pledged to carry out the project that its competitor in the world market, FMC, had failed to realise.

As Solvay was very much interested in investing in Thailand in a hydrogen peroxide production unit, Mr. Toulouse was sent back to Thailand three months later for a second visit. Although Solvay was already involved in the production of hydrogen peroxide in 18 plants in the world as part of the joint venture Interlox, it did not have a plant in South East Asia yet; as pointed out before, its attempts in establishing a joint venture in Indonesia had failed. As the price of hydrogen peroxide in the Thai market at that time was around 42-43 Baht/kg, Solvay was convinced that a relatively small plant size would be sufficient to generate profits.

Through the cooperation of the Belgian Ambassador and Miss Rapeepan Luangaramrut, Interlox obtained a similar investment permit as FMC after intense lobbying. Khun Rapeepan had previously worked for C.P. and had an excellent personal relationship with Minister Korn and his uncle Mr. Chatichai (who would later become Prime Minister), going back to her childhood. She is still the contracted lobbyist for Solvay to date and also Director and Executive Director of Vinythai.

Interlox's first joint venture in ASEAN, Peroxythai, was set up. The Thai partners were: the Siam Business Group (20% of the shares), the East Asiatic Company (12%), the Thai Military Bank (8%) and individual Thai shareholders (11%), such as e.g. the well known businessman Chote Sophonoponich. Laporte, however, later withdrew from the Interlox joint venture for unknown reasons.

Peroxythai was located in the Map Ta Phut area (see map, annex 1) and represented a total investment of 1,000 MBHT<sup>6</sup>. It had an annual capacity of 11,500 tons per year (TPY) and became the biggest producer in Thailand. Production was started in 1990. As it had been granted BOI status, it re-

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of the Executive Board, in charge of chemicals and plastics. After 38 years of service to the Group and 21 on the Executive Committee, Mr. Toulouse retired on September 30, 1995.

<sup>6</sup> 26,40 Baht = 1US\$ in 1986.



ceived several privileges. It had taken the BOI more than one year before a decision was reached, however, probably because of conflicting political pressure in favour and against the Solvay project. In a certain sense, Solvay had considered Peroxythai its first venture into Thailand to establish good relations with the Thai policy-makers, thereby preparing the way for future ventures. As a matter of fact, FMC finally got its investment project also off the ground some time later, so that by granting Solvay the investment permits, the BOI had been breaking its promises to FMC.

### 3.3 NPC-2 : Changes in Thailand's investment environment and Solvay's strategic reactions

Around the time that Solvay was lobbying the BOI to get the Peroxythai project going, Minister Korn asked Mr. Toulouse in which activities Solvay would be interested to invest in Thailand. Mr. Toulouse told the Minister that the plastics industry, such as the production of bottles, car accessories, et cetera, were being considered. However, when Minister Korn visited the Solvay Headquarters and research centre in Brussels, he advised them to invest in the intermediate and downstream petrochemical sector instead, such as the production of PVC, VCM and chlorine. He made this suggestion because Thailand intended to set up the Petrochemical Complex 2 in the Map Ta Phut Industrial Estate, and would grant investment incentives for the manufacture of these products. The Thai government also promised to continue to protect the industry for a second period of ten years by maintaining the import duties on PVC at the level of 40% and on ethylene at 20%.

Soon after the return to Thailand of the Minister, the BOI did launch in 1987 a public bidding for promoted investment in NPC-2 in the manufacturing of PVC, VCM and chlorine and Mr. Korn urged Solvay to participate in the tender.

Solvay was enthusiastic about the potential of the Map Ta Phut project. It went ahead with the project even though there were already huge installations in Singapore and in spite of the long delays it had experienced with the Interlox-project in Indonesia. The Map Ta Phut project offered interesting opportunities for the South East Asian market. That this was the second investment in the same year and in the same country did not cause any hesitation in the Solvay Group as the product was different and as only one PVC plant had been established before in Thailand. Solvay thought that there was enough room for a newcomer.

Three companies, i.e. Stauffer (from the USA), Solvay (from Belgium) and TPC (from Thailand) applied for the BOI license. As the BOI could only choose one, the competition among the applicants was quite hard.

Solvay's proposal consisted of a complete production line of EDC, VCM and PVC, for a total value of 300 million USD, that also resulted in the production of the by-product caustic soda for 100,000 tons per year (TPY). Solvay was not interested to move into the upstream petrochemical industry, though, as this is not in its core business.

The Thai competitor, TPC, applied for BOI promotion for an investment in NPC-2 for an additional PVC production line, PVC paste or emulsion (1,300 million Baht)<sup>7</sup>, and for the capacity expansion of the existing PVC production (62 million USD) on the one hand, and for extension of the chlor-alkali plant on the other hand. The application was in line with the Eastern Seaboard Development Committee's approval for a 140,000 tons-a-year investment granted to the company in NPC-1. But as the market situation for PVC at that time was not so favourable for the company to invest in a 140,000 tons facility, the project was scaled down to 60,000 tons. TPC, however, declined to invest in the manufacture of related ethylene dichloride (EDC) and to vertically integrate into VCM production. TPC was convinced it had sufficient raw materials on the one hand and on the other hand, Mr. Somchai Kongsala, TPC's Managing Director, added that he "was aware of the market limits for caustic soda<sup>8</sup> and of the current domestic supply, which would be raised by the project as a by-product", produced in the same process (namely the electrolysis of purified salt) along with chlorine. The latter is a raw material for EDC, which in turn is a raw material for VCM and PVC. TPC's caustic soda production was estimated at around 26,000 TPY, against the existing supply of 84,150 tons [10]. An insider in the industry sector explained that the supply/demand balance of all, chlorine, caustic soda, EDC and VCM, have to be integrated to assess the effects on the price of PVC. When the demand for chlorine is larger than the demand for caustic soda, the inventory of chlorine decreases quicker, which has an upward effect on its price and in turn on the production cost/unit for VCM and PVC. Once the domestic market cannot absorb the excess of caustic soda, forcing to export the excess at higher freight rate, the profits generated are at risk of decreasing or disappearing in case of an international over-supply.

TPC lobbied fiercely with the BOI in order not to grant special incentives to newcomers and to limit the support to existing projects under NPC-1 only. TPC claimed that the support had initially been promised for 8 years and that this period had not expired yet. However, the government counter-argued that the promise depended on the condition of a limited market demand. As demand had greatly expanded, the promotion of additional investors was justified according to the BOI (see above). In addition, the BOI did not want to grant TPC an exclusive license for the extension of PVC production, as it might become too dominant. It was decided to give the license to a newcomer instead in order to stimulate competition [8].

Although the American company, Stauffer, also lobbied the BOI a lot, its application was not considered as solid as Solvay's. Stauffer had been approached by the Thai Tantipipatpong Group to transfer production technology as the latter group was not yet active in the petrochemical industry. At the same time talks were held with the Taiwanese Cheng Fong Company for the transfer of know-how as well as for the export of raw materials and finished products [11].

As the Map Ta Phut project was a priority for the Thai government, the BOI made the selection in a relatively short time, i.e. in six months, contrary to the decision process with regard to Peroxythai, which had lasted much longer.

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<sup>7</sup> 26,40 Baht = 1US\$ in 1986.

<sup>8</sup> There were already many caustic soda producers in Thailand at that time, for instance Thai Asahi Chemical Co., Siam Oxy., TPC, Thai Fermentation, Chemex, ...

Solvay obtained the BOI license and the ensuing privileges for the complete production line of EDC, VCM and PVC. According to the BOI, Solvay offered better technology and better after-sales service and it had made strong commitments, as it would not only produce PVC, but the fully integrated line, starting from salt. In return, Solvay had to accept the terms laid down by the authorities, such as e.g. the curbing of production as originally proposed by Solvay to a level of only 140,000 tons of VCM a year and 130,000 tons of PVC a year. The raw material ethylene, needed for the production of VCM, was to be bought from the NPC-2 cracker, TOC<sup>9</sup>. Under NPC-2 Vinythai is allowed, however, to import VCM until the construction of its own VCM plant in a second phase. TPC complained that this was giving the Solvay project an unjustified competitive advantage, as TPC itself had not received such an advantage under NPC-1. The world price of VCM is generally lower than the price of locally produced VCM<sup>10</sup>, because the price for ethylene (the raw material for VCM, for which NPC is the sole producer) is very high on the Thai market. Still according to TPC : "In addition, Solvay can use its international network to get the cheapest source of supply by using the internal transfer pricing" and "world price fluctuations also make it difficult for the government to use tariff measures to establish equal conditions in which local producers can compete"[10].

Solvay also had to accept the BOI condition to sell 100 % of its caustic soda production on the export market as the domestic market was considered to be saturated. Later on, after repeated appeals, Solvay got permission from the BOI to sell part of its output in Thailand, however. Again, TPC regarded this as proof of political favouritism in favour of the Solvay Group.

According to the Thai Alien Business Law of 1972, for BOI promoted projects, majority ownership is restricted to Thai legal or natural persons. Foreigners are not allowed to own more than 49% of the shares of a company in Thailand, and neither to own factory ground. Solvay therefore had to look for a Thai partner. A joint venture with a local partner could also greatly enhance the national image of the new company and facilitate its market access.

Solvay wanted an active partner, not a sleeping one, but realised that not many local groups could handle such a large investment. They talked with several possible candidates. Firstly, they contacted two converters in the plastics sector: Liaksing Plastic and Sii Thep Thai. These firms were only small (Chinese) family businesses, however, that followed a different management approach than a large group, like Solvay. Also, Solvay was afraid that converters might create a conflict of interest if they would become shareholders in the producers of PVC while at the same time being consumers of PVC for the production of plastics.

Secondly, there were contacts with Thai Petrochemical Industry Public Co. Ltd. (TPI), established in 1978 and which produced already the petrochemical products Polyethylene (PE) and Polypropylene (PP) and which now wanted to start production of PVC as well. The government, however, was opposed to an agreement with TPI as it would give TPI too much influence in the sector.

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<sup>9</sup> Vinythai had signed the agreement with TOC on 16 December 1992 [6].

<sup>10</sup> On average 540 US\$ per ton if imported (US\$ 450 per ton (CIF) + 20% import duty), compared with US\$ 550 per ton if produced locally.

Thirdly, Solvay started preparatory talks with Saha Union, a Thai manufacturer and distributor of textiles and equipment<sup>11</sup>. Saha Union was interested in PVC as a raw material for its textile production. Solvay actually already signed a Memorandum of Understanding (MOU) with Saha Union. However, Solvay soon quit this particular track as Saha Union established in the sector a BOI supported joint venture with the Taiwanese group "Formosa Plastic" for the production of Pure Terephthalic Acid (PTA), another downstream product to be used in polyester and textile industry. Two joint ventures at the same time was considered to be too complicated. Moreover, the government was concerned about the possibility that Saha Union would become a too powerful player. That Saha Union was partly Taiwanese owned and thus not completely Thai owned, may also have played a role.

Finally, the government suggested to Solvay that it should find a new group - one that was not necessarily into the production of petrochemicals. It is not clear whether or not the government recommended C.P. to Solvay.

### 3.4 The Charoen Pokphand Group (C.P.) approaches Solvay

The Charoen Pokphand group has been in business since its establishment in 1921 by two brothers who had immigrated from China. Initially, the group operated an agricultural business. Currently, C.P. group is involved in industry, trading and investment and has over 250 companies in up to 20 countries, employing more than 80,000 workers world wide. Its annual turnover exceeds USD 5 billion. Its business can be divided into 9 separate groups, i.e. agricultural seed, fertilizer and chemical agriculture; agricultural industries; aquatic animal farming; international trade; wholesale and retailing; automobile business and industry; petrochemical industry; real estate development; and telecommunications. The Charoen Pokphand group had recently become involved in the petroleum industry as well after having launched a new business to undertake oil and energy operations under the name "PetroAsia International, Ltd." In Thailand, the C.P. Group, Sinopec (which is a large state enterprise involved in petroleum exploration in China) and the Petroleum Authority of Thailand (PTT) jointly established in July 1993 the PetroAsia (Thailand) Co. Ltd. [26].

Mr. Dhanin, the Chairman and CEO of C.P. approached Miss Rapeepan Luangaramrut, who represented Solvay (see above) and who had previously worked for C.P. The C.P. group intended to invest in the petrochemical sector and had been considering the take-over of a troubled activity of the Taiwanese group "Formosa Plastic". But instead of buying this particular plant, C.P. decided to start its own production of PVC plastic products like raincoats, umbrellas, etc.<sup>12</sup>. To supply this new plant, C.P. needed a lot of PVC. However, C.P. had not invested in the petrochemical sector yet and had been too late with the introduction of their application for the BOI license under NPC-2, which had finally

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<sup>11</sup> Major shareholders of Saha Union are: Saha Union Holding Co. Ltd. (16.99%), Union Capital Co. Ltd. (10%), Chathay trust Co. Ltd. (5.55%) and Thai Securities Co. Ltd. (3.15%). Its annual turnover was 11,329,307 MBHT in 1994 approximately 453,172 M US\$).

<sup>12</sup> In 1988, the BOI agreed to provide investment privileges to two petrochemical projects of the CP Group. In one project, CP initially held a 25 percent stake; Taiwanese and Indonesian investors assumed the rest. It undertook production of PVC leather and sponge leather for exports with an annual capacity of 43.846 million yards. The second project was a venture to produce soft PVC film and sheet for exports, with a capacity of 55,550 tons a year. The shareholder structure was similar to the first one.

been granted to Solvay. C.P. complained that the BOI had granted the license to a foreign company, which then started to look for a Thai partner, instead of the other way round.

C.P. was very keen on Solvay as a partner, as it offered the most advanced technology and training. C.P. even proposed to Solvay to enter into a joint initiative in China, where C.P. had a lot of influence and was extremely well integrated. It had signed a contract with the province of Hainan in September 1988, although at that time Hainan was not considered to be suitable for investment in the petrochemical industry. The island of Hainan lacked infrastructure, such as electricity, a deep-sea port and roads, but was expected to expand soon. Solvay, which was interested in expansion and had no knowledge about China at that time, was tempted by this proposal.

Solvay considered C.P. to be a good partner:

- C.P. has accumulated already much international experience and is of a size that it can meet large financial obligations;
- there is no risk of competition with Solvay on a global scale, as would have been the case with companies such as Siam Cement or TPI for instance;
- C.P. has a stronger marketing network worldwide to offer to Solvay;
- C.P. could absorb 40 to 60% of the production of the joint venture;
- C.P. has strong political power in Thailand; it would be possible to go quicker and overcome many possible legal problems.

The negotiations to set up the joint venture company went relatively smoothly. Language (English) and cultural problems during the negotiations were limited as both partners were already involved in international joint ventures elsewhere and could rely on previous experience.

## **4. Establishment of Vinythai and early operations**

As the project ranked highly on the priority list of both potential partners, negotiations focused on basic and general issues. Hence, an agreement could be reached very quickly. No detailed plan was established, nor were the specific objectives of both partners mentioned in the agreement. The agreement basically concentrated on issues such as the percentage shares in the equity and the representation at the Executive Board of the company. Licensing issues were dealt with in a separate agreement.

### **4.1 Legal status and decision making process**

Vinythai is a public company, with its own Board of Directors taking all the important decisions. The top-executives of both groups are represented on the Board. In the beginning, the Board consisted of nine members, five of whom were nominated by Solvay and four by C.P., reflecting the ownership structure (see further). In 1994, two independent Directors were appointed to answer the requirements for being listed on the Stock Exchange of Thailand in 1995. At the same time, some other Directors were invited to join the Board, bringing the total number to fourteen. The Board meetings take place every three months, according to Thai law. But as the market moves so quickly, this was considered

not frequent enough. Therefore, in 1996, an Executive Committee was created, which meets every month to analyse the market trends and opportunities, and to prepare the decisions to be proposed at the Board meetings. At those Executive Committee meetings, both partners are represented by four members each.

With regard to the differences in decision making between Solvay and C.P., Mr. Tibor Puskas (not his real name), the current Managing Director of Vinythai, explained that "as Solvay is a public listed company, the decision making process is much longer: important decisions must first be accepted at the Executive Committee level, then proposed at the Board of Directors where a consensus has to be reached". At C.P., which is owned by ethnic overseas Chinese, the decision making is concentrated in only one or two persons who decide much quicker. The Chinese decision making process in C.P. is rather informal and decisions are taken more intuitively and not necessarily based on detailed feasibility studies.

As a separate legal entity Vinythai is fully responsible for the daily operations of the company and has enough independence from both parent companies. The Belgian and Thai parent companies only intervene in strategic decisions with respect to the activities in Thailand, and more globally.

Resulting from the Joint Venture Agreement, Solvay is entitled to propose candidates for the following key-positions: Managing Director, Vice-President Marketing and Sales (as Solvay was the only partner with experience in the industry), Plant Manager (because the technical know how came from Solvay) and Deputy Vice-President Finance and Administration. Until 1997, the Vice-President Marketing and Sales was a Belgian native. This seemed not to be so obvious, as Thai customers generally want to deal with the person directly responsible, but prefer not to have to communicate in English. Now, all marketing and sales people are Thai natives.

While C.P. is entitled to propose candidates for the following key-positions : the Vice-President Finance and Administration (because of C.P.'s relationship with local banks), and the Deputy Vice-President Marketing and Sales.

## **4.2 Contribution by both partners**

Apart from its equity participation in the company, Solvay contributes the technology and know how on a licensing basis.

Solvay S.A. Belgium holds, together with Asian Stocks Investment Ltd. (owned by Solvay) the majority of Vinythai's shares (for details, see further) and provided loans to Vinythai. In addition, Solvay also procured equipment and machinery for the PVC plant and sold to Vinythai its most advanced technology to produce PVC and VCM in the world. Finally, Solvay provides technical assistance in the production and training to Thai employees of Vinythai on a regular basis.

### 4.3 C.P.

C.P. holds less shares in Vinythai than Solvay (for details, see further) and participates in the capital in a number of Vinythai's clients. C.P. also provided loans to Vinythai.

At the beginning, Solvay's position was clearly dominant, as most "Director" positions were occupied by people from Solvay. In addition, a large number of Belgian expatriates were sent over, of which 44 at the management level. This strong influence of expatriates was not very much appreciated by some managers appointed by C.P. However, it was agreed that the expatriates would be gradually replaced by local people as soon as their training abroad (not only at Solvay Belgium, but also in Solvay's companies in France and Germany) was completed. On their return the trainees were asked to sign a long term contract with Vinythai to make sure that their skills were preserved. It was also one of the BOI conditions that the Thai managers should outnumber the foreign managers after a certain period. However, the replacement of expatriates by locals was only agreed orally : it had not been included as such in the contract - and the decision when to replace was solely left with Solvay. In 1997, the number of foreign managers was further reduced to 9. It is planned that some key positions will be kept for a longer period: due to high staff turn-over and lack of trained, highly skilled and experienced staff, the replacement of the expatriates is much slower than originally expected.

Presently (1998), at the management level there are only two expatriates left (namely, the general manager and the deputy finance manager) and 7 at the plant level.

### 4.4 Finance and ownership structure

The debt to equity ratio Vinythai wants to maintain is 70% loans / 30% equity or 2.33:1 (which is the equivalent of 1.54:1, before the devaluation of the Baht in July 1997).

As Solvay was providing the technologies, much attention was given to an agreement concerning the ownership structure: Solvay wanted to be the dominant shareholder, but was not allowed under the Thai Alien Business Law of 1972 to have more than 49% of the shares. Therefore, Solvay decided to nominate Thai minority shareholders to represent the remainder of its shares and soon an agreement was reached on the following ownership structure:

Solvay	49%
CT Petrochemicals Co <sup>13</sup> (100% owned by the C.P. Group)	45%
Thai minority shareholders	6%

In 1991, the structure changed a little as the C.P. Group wanted to be represented directly as well, instead of through its subsidiary only, but the overall shares of C.P. remained the same. In addition, the banks as well had insisted on having C.P. as a direct shareholder of Vinythai. Another explanation for this restructuring might also be fiscal.

The new structure became as follows:

Solvay	49%
C.P.	20%
CT	25%
Thai minority shareholders	6%

Finally, also the BOI condition that not less than 20% of the equity stock should be sold at the Stock Exchange of Thailand (SET) within five years after the operation started, was included in the agreement.

#### 4.5 Duration

The duration of the joint venture agreement was unlimited

Under these terms Vinythai was established in December 1988 with an initial registered capital of Baht 1,000,000 divided into 10,000 ordinary shares with a par value of Baht 100 per share. For the Solvay Group, Vinythai is considered to be the flagship of the Regional Business Unit for PVC in Asia. It operates in a different chemical branch than Peroxythai, Solvay's first investment in Thailand and maintains no commercial relations with the latter; although future cooperation is not excluded. Mr. Pierre Moro (not his real name) became the first managing director. He studied chemical engineering in Italy and business administration at Harvard and had extensive management experience in several Asian countries. However, he left Vinythai after only one year to become the Asia Pacific Regional general manager of Solvay in Singapore. He was succeeded by Mr. Powel Pavlich (not his real name)<sup>14</sup>, who would stay at Vinythai for 5 years i.e. until his retirement.

In March 1989, Vinythai received its special status from the Thai government, through the BOI. On November 8, 1989, Vinythai signed two PVC Technology Agreements. The PVC technology was purchased from Solvay, that had been put into competition with other suppliers. The technology is transferred on a licensing basis and is to be paid within 10 years (see further). Solvay's major concern regarding the technology transfer was the fact that at the time of negotiation Thailand had not yet signed the agreement for the protection of intellectual property rights.

- The first License Agreement between Vinythai and Solvay was about PVC. Under this agreement, Solvay granted Vinythai the right to use licensed PVC technology in the construction and the operation of Vinythai's plant and to sell its PVC anywhere in the world, i.e. except in Western Europe, Brazil and North America, as these markets were already served by Solvay. The licensed technology consists of the processes developed or acquired by Solvay for the production of PVC from vinyl chloride in suspension and emulsion. Vinythai does not have the right to transfer or sublicense the rights to a third party. Vinythai agreed to pay Solvay royalties of 1.4 percent of the Net Sales Value of PVC made on or before (1) the 10th anniversary of the Start-Up Date, or (2) the accrual of royalties equivalent to maximum US Dollars 12,000,000 in 1990 (calculated by applying a compound reduction rate of ten percent per calendar year). Solvay agreed to bear all withholding taxes on the above payments [6].

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<sup>13</sup> CT Petrochemicals Co. Ltd is a subsidiary of the CP Group (100%) and has an agency agreement with Vinythai for the appointment of agents for distribution abroad.

<sup>14</sup> Mr. Pavlich had studied engineering in Belgium and had been working in Brazil for Solvay for about 20 years. Coming from such a straight-forward culture as Brazil where he had lived for so many years, his adaptation to the Thai culture, which is characterised by indirectness, was not all that easy. These intercultural communication problems were somehow unexpected for Solvay, as its contacts with the Thais at a higher level, both in the Thai government, NESDB, BOI, etc., as in the CP Group, had been rather smooth. Of course at the plant level the misunderstandings were often of a different nature.



- The second technology agreement was about on-going Know-How and Support for PVC between Vinythai and Solvay. In this agreement, Solvay agreed to provide Vinythai with technical assistance to operate the Complex and to give customers support. It also agreed to keep Vinythai informed of all new developments (including major developments and breakthroughs) relating to its know-how, its marketing information and its technical service information. For the supply of this information, Vinythai agreed to pay to Solvay during the continuance of this Agreement a running royalty computed at the rate of 1 percent of the net value for all products. There is no ceiling on this part [6].

In 1989 negotiations also started for the financing of the project (integrated PVC/VCM/EDC production line). The project financing was very complicated: no less than 17 banks were involved, among which two in-house banks of the Solvay Group - namely the Banque Indosuez and the headquarters in Brussels of the Generale Bank - and 5 Thai banks, together with the International Finance Corporation (IFC), the merchant banking arm of the World Bank, because no single bank was prepared to commit such a huge amount. The IFC, which specialises in the funding of projects in the private sector, is the biggest lender and the leader in the project financing. It is very conservative, avoids risks, is slow in taking decisions and requested an independent party to study the feasibility. Many studies were made, because in the period 1991-1993 the world PVC market was depressed, partly as a consequence of the Gulf War in 1991<sup>15</sup>. In addition, there was the world-wide recession that lasted until 1993, first in the USA and Western Europe, and stagnation in Japan and the continuing collapse of the former Soviet Union. These factors slowed down the demand and resulted in an over-supply. Furthermore, there was a dramatic volatility in the PVC plastic world market, because of a shortage in raw material caused by accidents in the Exxon and Shell plants during July and August 1994 respectively. The uncertainty caused by all of these factors and also by the bloody military reaction against pro-democracy demonstrations in Bangkok in 1992 (Black May Event) and the financial difficulties of the Thai Olefins Comp. Ltd. (TOC), the cracker under NPC-2 of which Vinythai had been more or less forced to become shareholder<sup>16</sup>, made Vinythai to delay the start of the second phase (VCM/EDC plant) to some extent. Moreover, as the completion of the whole project was a condition for the conclusion of the project finance, the latter also became postponed. In the meantime, in addition to several capital increases (see table 3 in annex 5), short-term loans (monthly roll-over or every 3-6 months) were agreed for the start and operation of phase 1. This financing encountered no major problems and came soon forward. The definitive loan package was finally concluded in September 1994. It amounted to US\$ 276 Million (not including the US\$ 80 Million of subordinated loans). It was used, partly to pay back the short-term loans and partly to make the additional investment for the VCM and Electrolysis plant. But a large part of the finance of the construction of the VCM plant came from funds mobilised via the stock market, as Vinythai had offered in December 1994 53 million new ordinary shares at 10 Baht par (+ premium of 25 Baht) for sale to the public [6] and [27].

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<sup>15</sup> And historically, the petrochemical industry shows a cycle of 7-8 years.

<sup>16</sup> Although the government was told that investing in a domestic cracker was not very viable, because of the high cost of naphta, it nevertheless insisted on having a complete package in Thailand and asked the intermediate and downstream companies under NPC-2 to take part in the investment cost. Although Vinythai did not believe in the viability of the investment either, it nevertheless became a minor shareholder of TOC (5%) on August 28, 1989, as it saw that all other companies in the sector complied with the request as well.

In July 1992, the PVC plant was started on a trial basis and was opened officially in October of the same year. It became the eighth PVC plant for the Solvay Group and the first in Asia, after six plants had already been set up in Europe<sup>17</sup> and one in Brazil.

## 5. Conclusions and recommendations

The case study tentatively shows that Solvay's decision to invest in Thailand was at least to some extent, the result of coincidence. Mr. René Toulouse, as a member of the Executive Board of Solvay, had been deeply disappointed by the lack of progress of the negotiations in Indonesia. During his tourist visit to Thailand and through the mediation of the Belgian Ambassador in Bangkok, he was brought in contact with some high-ranked decision-makers and politicians, who were instrumental in shifting Solvay's attention to Thailand as an attractive alternative entry of South East Asia.

The case study also convincingly shows that during the time of the establishment of Vinythai (late 1980s) political lobbying for foreign investment and for BOI support in Thailand was still very important. The original BOI policy during the major part of the 1980s, of granting exclusive rights and protection to "firstcomers" increasingly created inconsistencies with Thailand's policy by the end of the decade, of attracting also "newcomers".

As political lobbying was an important step for the Belgian group Solvay in penetrating Thailand, other considerations than purely micro-economic ones influenced the strategic decision-making. It is true that Solvay's choice of partner C.P. was largely determined by various non-political strategic factors, such as C.P.'s large size (that can meet large financial obligations), strong marketing network worldwide, and international experience in addition to no risk of competition with Solvay on a global scale. On the other hand, however, C.P.'s political influence in Thailand was also an important consideration, in addition to the by the government promised protection of the industry during ten years (political factors). Moreover, one should not forget either that Solvay's Peroxythai project in Thailand was basically inspired to impress their supporters in Thailand's government and political class.

It is clear that strategic decisions should be based on a thorough assessment of the political environment in the host country. At this stage, Solvay's approach seems to have been appropriate during the late 1980s and early 1990s. Since then, Thailand's first phase of industrial development came to an end and foreign investment policies changed considerably. Also investment promotion policies are under permanent revision as a result of Thailand's commitments made during the Uruguay Round and the creation of the ASEAN Free Trade Area. It therefore remains to be seen whether Solvay's strategy would have led to a similar outcome at the end of the 1990s and whether the rents obtained from political lobbying are still of the same order of magnitude.

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<sup>17</sup> After the closure of the PVC plant in Austria in 1994, five plants are in operation in Europe (Belgium, Germany, Italy, France and Spain) in 1998.

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  - Oral communication by the Managing Director of TPC, May 1998.
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**List of abbreviations used in the case study****Organisations**

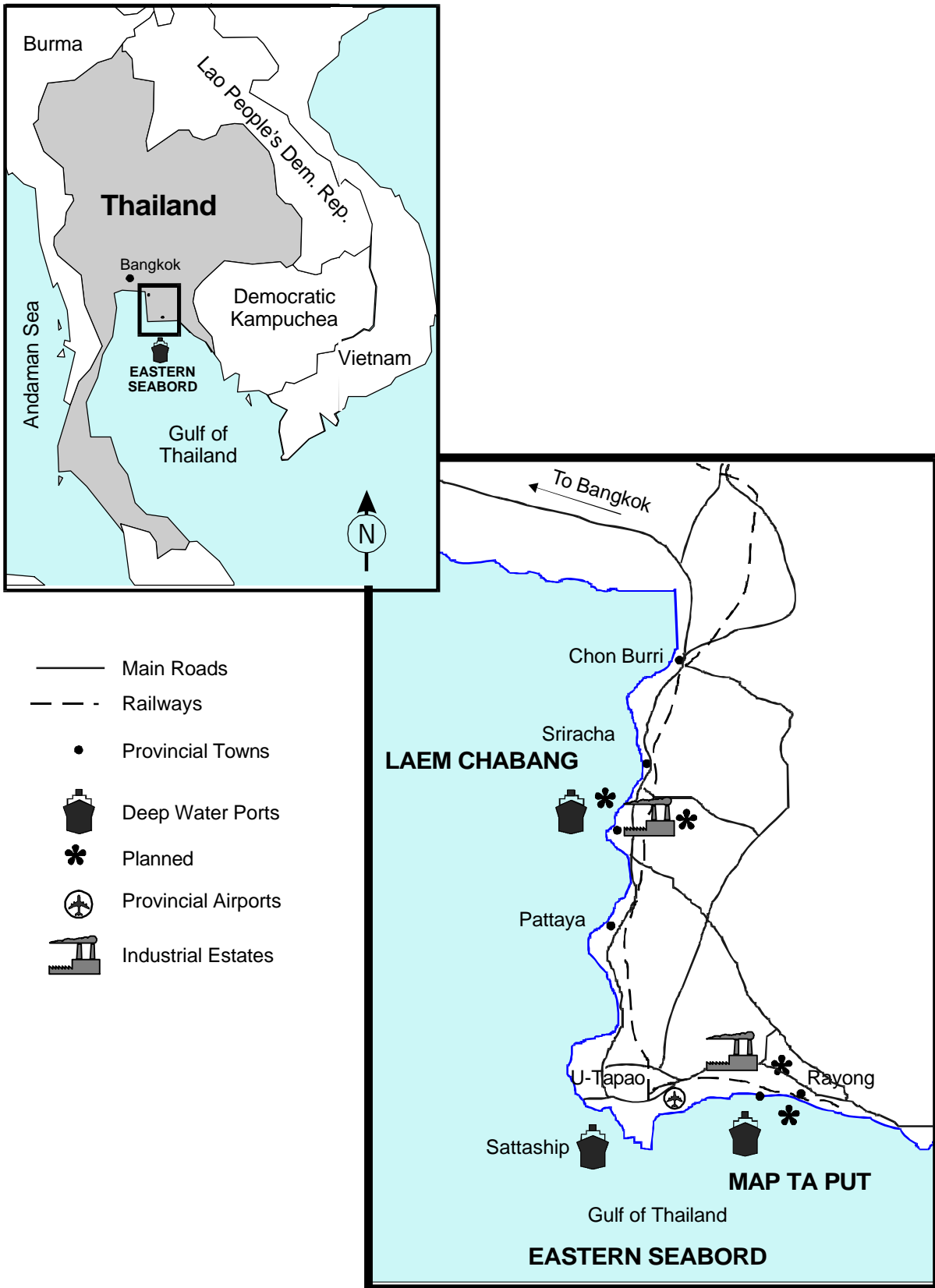
ASEAN	Association of South East Asian Nations
BOI	Board of Investment
CP	Charoen Pokphand Group
ICF	International Finance Corporation
NPC	National Petrochemical Complex
TOC	Thai Olefins Company Ltd.
TPC	Thai Plastics and Chemical Plc.
TPE	Thai Polyethylene Co. Ltd.
TPI	Thai Petrochemical Industry Public Co. Ltd.

**Petrochemicals**

EDC	Ethylene Dichloride
HDPE	High Density Polyethylene, a plastic resin composed of atoms of carbon and hydrogen
PE	Polyethylene
PP	Poly Propylene, a plastic resin composed of atoms of carbon and hydrogen
PTA	Pure Terephthalic Acid
PVC	Poly Vinyl Chloride
VCM	Vinyl Chloride Monomer

### Annex 1

## Location of Eastern Seaboard – Map Ta Phut Industrial Estate



## Annex 2

### Description of the products and the production process

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PVC is categorised as a hydrocarbon made up of vinyl chloride monomer (VCM), which is processed from the primary raw materials of salt, electricity and ethylene as follows:

1. The most basic raw materials supplied by the (upstream) petroleum refineries or natural gas companies are LPG, natural gas, naphtha, liquid distillate, distillate from special cracking processes, and selected or isomerised cyclic fractions for aromatic. These undergo a first transformation into monomers such as ethylene and propylene (which are categorised as olefins);
2. purified salt is dissolved in water and electrolysed and gives chlorine and caustic soda;
3. ethylene and chlorine are reacted to produce ethylene dichloride (EDC);
4. this then moves onto a cracking process that yields VCM, a primary raw material for PVC (intermediate);
5. VCM undergoes polymerisation into PVC (downstream);
6. this then becomes raw material for production of plastics and synthetics for further industrial use.

PVC can be divided into 2 categories:

1. PVC suspension, which appears in powder form. When processed, it is strong, durable and has a long life. PVC suspension is used primarily in manufacturing goods such as water pipes, electric wire insulation, tubes, films and sheets, water bottles, records and document folders, etc.
2. PVC emulsion, which generally appears in powder form. When it is processed, PVC emulsion is tough and elastic. It is used for the production of floor tiles, leather coating material, artificial leather, sheets, car accessories (dashboard, door seats), toys.

Its general qualities are resistance, durability and high flexibility and is as such replacing more and more traditional materials.

The by-product, caustic soda (also called sodium hydroxide), can be divided in solution form (92% of the users) and flake form (8 percent of the users). The solution form is used in industries such as the confectionery manufacturing industry, vegetable oil, chemical solution, textile, mono sodium glutamate, detergent, paper, etc. It can be produced either by causticising soda ash, or by the process of electrolysis. In view of its scope for diversification, electrolysis gradually came to replace the causticisation units.

Soda ash (also called sodium carbonate) is an alkali produced from common salt, ammonia, carbon dioxide (CO<sub>2</sub>) and lime. Soda ash and derivatives are used in the composition of glass, detergents and plastics and in the purification of industrial emissions, neutralisation of acidity in water, and the manufacture of medicines and foodstuffs.

High Density Polyethylene (HDPE) is a polymeric synthetic resin made by the polymerisation of ethylene. Due to its toughness and high impact strength, it is used to produce durable products, such as plastic rope, fishing nets, oil tanks, containers and bags for hot food.

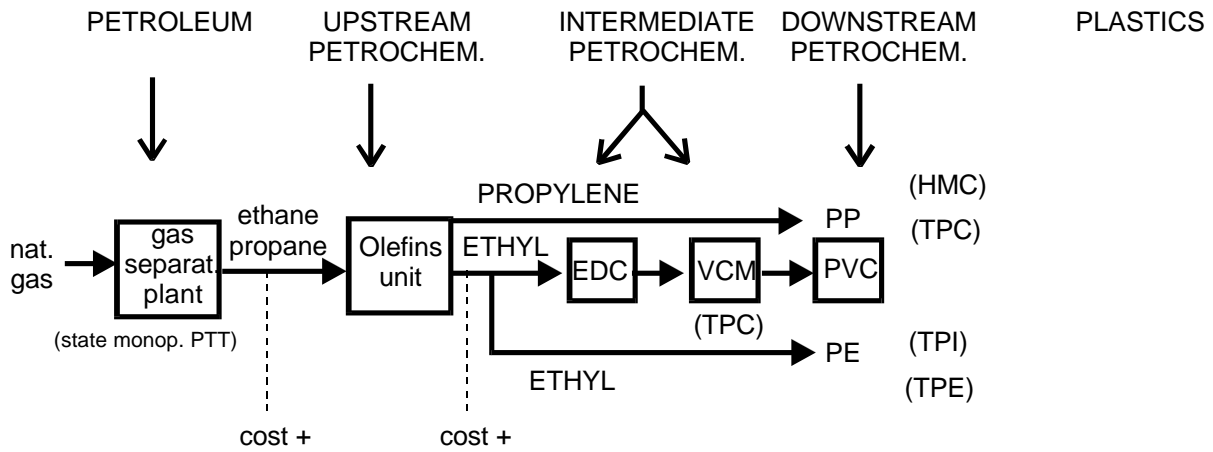
Naphtha is one of several liquids made from petroleum or coal tar. It is used in cleaning fluid, fuel mixtures and solvents, as well as rubber paints and varnishes.

Polypropylene (PP) is a polymerised propylene. It is a very light, highly resistant, durable, thermoplastic resin, used to produce plastic nets, fertiliser bags, mats, batteries, toys, kitchenware, office equipment, cables.

### Annex 3

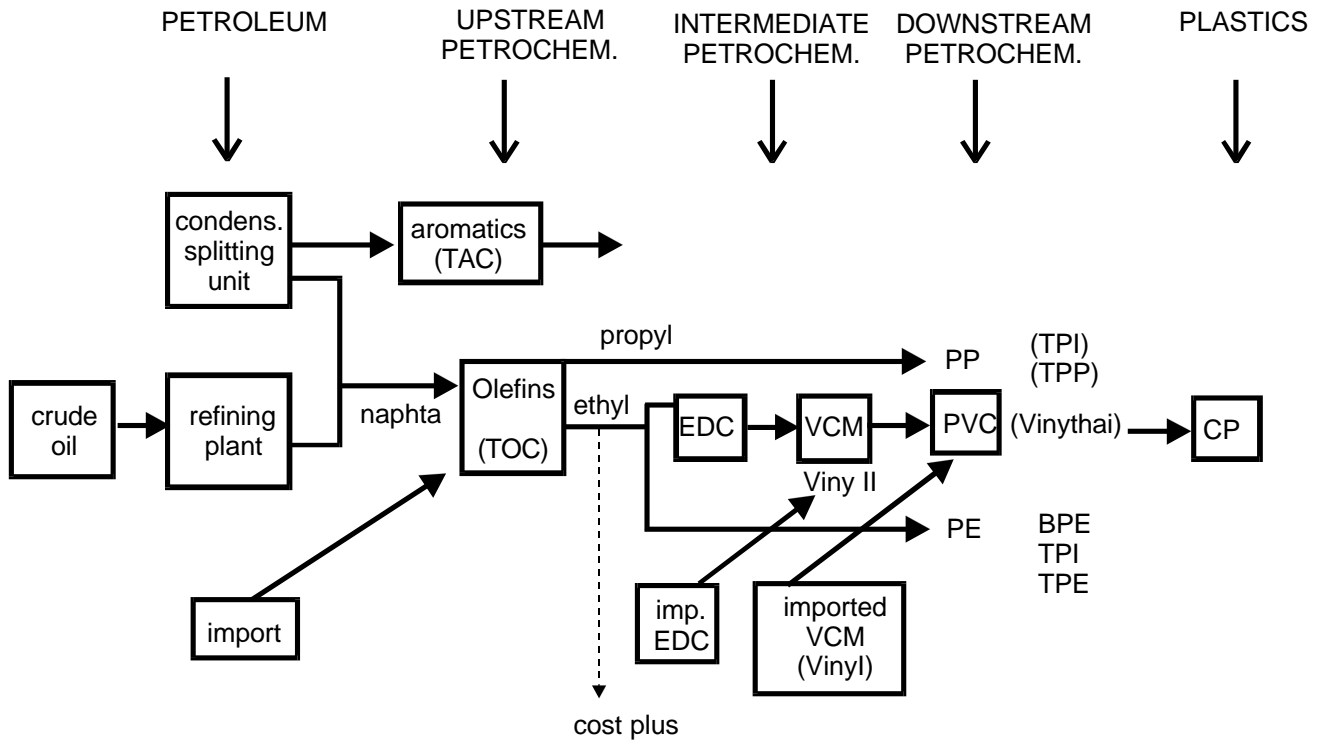
### NPC-1 (1983)

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Downstream companies were forced to buy from NPC 73.3% of total demand of ethyl and propyl at fixed contract prices based on a "cost plus" (standard profit of 15%) formula, which made them more expensive than imports.

## Annex 4 NPC-2 (1984)



Intermediate and downstream forced to buy from TOC 75% of total demand of propyl and ethyl at prices based on world prices (US Gulf Contract Price) + 10%.



## Annex 5

**Table 1: Growth Rate of GDP (per cent per annum)**

	1985	1986	1987	1988
Indonesia	2.5	5.9	4.9	5.7
Singapore	-1.6	1.8	9.4	4.0
Malaysia	-1.0	1.2	5.2	8.9
Philippines	-4.3	1.4	4.7	6.3
Thailand	3.5	4.5	9.5	13.2

Source: Asian Development Outlook 1991, Asian Development Bank, Philippines, April 1991

**Table 2: Growth Rate of Per Capita GDP (per cent per annum)**

	1985	1986	1987	1988
Indonesia	0.6	3.7	2.8	3.6
Singapore	-2.8	0.7	8.6	1.1
Malaysia	-3.6	-1.5	2.5	6.3
Philippines	-6.6	-1.0	2.2	3.8
Thailand	1.6	2.6	6.4	11.3

Source: Asian Development Outlook 1991, Asian Development Bank, Philippines, April 1991

**Table 3: History of the increase in Registered Capital (since incorporation)**

Date/Month/Year of registration of amendments to the Memorandum of Association	Amount of the Registered Capital increased (decreased)	Registered Capital after increase	Paid-up Capital	Reason for increase (decrease) of Registered Capital	Allocation ratio and offer price of new shares
27 December 1988	1	1	1	for establishment Vinythai	par value of Baht 100 each
14 February 1989					shares were split from par value of Baht 100 to Baht 10 each
24 March 1989	57	58	58	for construction PVC plant	Allotted to existing shareholders at the ratio of 1:57 at par value of Baht 10 each
14 November 1989	200	258	258	for construction PVC plant	Allotted to existing shareholders at the ratio of 1:3:45 at par value of Baht 10 each
27 August 1990	157	415	415	for construction PVC plant	Allotted to existing shareholders at the ratio of 1:0:61 at par value of Baht 10 each
26 February 1991	858	1,273	1,273	for construction PVC plant	Allotted to existing shareholders at the ratio of 1:2:07 at par value of Baht 10 each
17 October 1991	1,289.25	2,562.25	1,595.32	for construction PVC plant	Allotted to existing shareholders at the ratio of 1:1:01 at par value of Baht 10 each
8 July 1992		2,562.25	2,562.25	100 percent fully paid	
6 October 1994	530	3,092.25	3,092.25	for construction VCM and electrolysis plants and repayments of Bridge loans	Offer for sale to the public par value thereof is Baht 10 each + premium of 25 Baht
June 1996	3012.25	6024.5	6022.97	for repayments subordinated loans from major shareholders for improvement the overall financial structure of the company	Offer for sale to the existing shareholders at par value 10 Baht / share

Source: Vinythai

# Tutorial Notes



## Teaching Notes

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### 1. Synopsis

During the 1970s and 1980s, Thailand's industrial policy focussed heavily on the development of a domestic petrochemical industry. Therefore, the Board of Investment policy consisted in granting exclusive rights to "firstcomers", which by the end of the 1980s became increasingly inconsistent with the need for additional foreign direct investment in that sector.

The case study describes the establishment of Vinythai, a joint venture between Solvay, a world renowned Belgian company in the petrochemical sector, and the C.P. Group, a dominant Thai company, the core activities of which are in agrobusiness. Both partners are presented. The case study shows that Solvay's decision to invest in Thailand was, at least to some extent, the result of coincidence, i.e. a tourist visit to Thailand of one of Solvay's Executive Board members, although also strategic considerations were at play.

The relationship between the Vinythai project and the start of Thailand's National Petrochemical Complex-II is thoroughly investigated. It is shown that in the late 1980s, at the time of negotiations and the establishment of the joint venture, political lobbying for foreign investment and for Board of Investment support was still very important. Solvay's choice of the C.P. Group was, however, largely determined by various non-political strategic factors, such as C.P.'s large size, its strong marketing network and its international experience.

### 2. Target audience

The case-study is to be used in teaching, particularly in graduate level courses on International Strategic Management, International Business Operations, Environment of International Business and International Trade Policy. The case-study is also particularly suited for special courses on Asia-Europe business relations, and for business training programmes on this topic.

### 3. Teaching objectives

The major teaching objective is to provide students and trainees analytical insight in the strategic decision making processes of internationally operating companies, particularly regarding the establishment of joint ventures and transfer of technology.

## 4. Key issues

1. Analysis of investment opportunities and threats in the petrochemical sector in Thailand at the time when Solvay made a preparatory study for investment in the petrochemical sector in the region, i.e. in 1984.

### Opportunities

- Big market size as Thailand had a high GDP growth rate and as the growth of demand for petrochemical products, mainly coming from the construction sector, was expanding at twice the rate of GDP. In addition, Thailand has a fairly large population (60 million people).
- Strategic location – export basis. Thailand offers an easy access to the emerging markets of Indochina, Burma and Southern China.
- Politics. Stable political environment and moves towards democracy on the one hand and government promotion measures to attract investment on the other hand. Thailand at that time was more open towards foreign direct investment (FDI) than other ASEAN countries and wanted to use FDI as a tool to develop its economy further. The country especially wanted to attract European investment in order to counter-balance the invasion of Japanese and American investors that had occurred in the previous years.
- Existing supporting infrastructure (refineries, crackers, utilities). Huge investment costs could be avoided.

### Threats

Production factors: labour, raw materials and capital.

- Labour: This is not a very decisive factor as the petrochemical industry is not a labour intensive industry. However, on the demand side, labour costs in the plastics sector are much higher than in other countries in the region. This made the plastics sector shift to neighbouring countries, resulting in reduced local demand for petrochemical products.  
Further problems included the difficulty of finding highly skilled labour in Thailand, with good professional experience and sufficient proficiency in English, and the large rate of job rotation as a result of a low loyalty to the company. Competitors in the sector succeeded in attracting some of the Solvay-trained engineers by offering higher wages or higher positions. Other workers have left the company and moved to more secure sectors, because of the overall problems in the petrochemical sector, thus causing a shortage of engineers in the petrochemical sector, which in turn led to a sharp increase in salaries of 15-20% per year. As a result, the gap between unskilled and skilled labour in Thailand became 1:15, compared with a 1:3 ratio in Europe.
- Raw materials. The largest problem that the industry faces is the high costs of utilities and raw materials. Raw materials for the petrochemical industry in Thailand cost significantly more than the average price of world competitors. During the past four years, the gas price in the country (indexed on the monopoly state owned PTT prices) has jumped by more than 40% and is four times higher than in the USA and also much higher than in Indonesia and Malaysia; raw water has increased by 70% and electricity costs (monopoly by state-owned EGAT) by 24%. Electricity to make one kilogram of plastic before the outbreak of the Asian crisis,

costed only 0.75-0.80 Baht in Indonesia compared with 1.80-2.50 Baht in Thailand. The ethylene price provided by Thai Olefins (TOC) is higher than the world price, because of the losses TOC is making. The TOC ethylene prices are around 15 % higher than the US Gulf Coast Price. Finally, also the salt price is six times higher than in other countries that are major producers.

- Capital

During the time of the feasibility study, access to capital was not considered a problem for Solvay. During the operational phase, the project financing encountered a great deal of reluctance from the 17 banks involved, however, because in the period 1991-1993 the world PVC market was depressed, partly as a consequence of the Gulf War in 1991. The International Finance Corporation (IFC), the merchant banking arm of the World Bank, therefore requested many feasibility studies to be made by an independent party before authorising the go-ahead of the lending. In addition, there was the worldwide recession that lasted until 1993, first in the USA and Western Europe, and stagnation in Japan and the continuing collapse of the former Soviet Union. These factors slowed down the demand and resulted in an over-supply. Furthermore, there was a dramatic volatility in the PVC plastic world market, because of a shortage in raw material caused by accidents in the Exxon and Shell plants during July and August 1994 respectively. The uncertainty caused by all of these factors and also by the bloody military reaction against pro-democracy demonstrations in Bangkok in 1992 (Black May Event) and the financial difficulties of the Thai Olefins Comp. Ltd. (TOC), the cracker under NPC-2 of which Vinythai had been more or less forced to become shareholder, made Vinythai to delay the start of the second phase (VCM/EDC plant) to some extent. As the completion of the whole project was a condition for the conclusion of the project finance, the latter also became postponed.

## 2. Can CP be considered a good partner for Solvay?

### **In general: partner selection procedure for international joint ventures**

In general, firms seem to utilise, either implicitly or explicitly, a two-tiered screening process. First, they evaluate prospective partners for complementarity on task-related dimensions, i.e., critical success factors, competitive position, and difficulty of internal development. Examples of these variables include patents, financing, trademarks, technically skilled personnel, marketing and distribution systems, etc. For instance, market access is viewed as one of the most important critical success factors, particularly within the context of a local or regional target market. However, firms should seek partners not only embodying marketing-related capabilities, but also a given minimum level of technology-related capability.

If one or more prospects satisfies the screening requirements for complementarity on task-related dimensions, they generally are also screened for their ability to satisfy partner-related dimensions. The determination of complementarity on partner-related dimensions appears to be a more complex endeavour. Partner-related criteria may include such variables as national or corporate culture of a partner, compatibility of and trust between partners' top managers, and the size or corporate structure of a partner.

Source: Geringer, Michael J., *Joint Venture Partner Selection: Strategies for Developed Countries*, Quorum, New York, 1988.

### For Vinythai

- Are the contributions of both partners complementary?

The contributions of both partners can be considered complementary: Solvay contributes the technology and know how on a licensing basis and CP's contribution can be found in its strong political power, contacts with local banks and broad international marketing network.

There were some deferring ideas, however, in the beginning, concerning the appointment of a marketing manager. The initial marketing manager was of Belgian nationality who came from the Solvay company and through who Solvay transferred the marketing knowledge. Thailand was considered as one of the markets in Solvay's international marketing network and the product as a commodity (standardised product) that can be marketed similarly anywhere in the world. The deputy marketing manager did not agree with this policy. His vision is that the one who knows the culture and speaks the local language should be appointed marketing manager.

- Do both partners share the same objectives?

Initially, the objectives of both partners were long-term. With the financial crisis in Asia, however, CP reprioritised its business operations and announced that it wanted to go back to its agribusiness roots. The future involvement of CP in Vinythai is therefore uncertain.

- Compatibility?

◇ The size and international experience can be considered compatible. Both are large companies that can meet large financial obligations and both have been involved in international joint ventures before, which explains why cultural and language problems were limited during the negotiations. CP was therefore considered a more suitable partner than Liaksing Plastic and Sii Thep Thai, which are only small family businesses, that followed a different management approach than a large group, like Solvay.

◇ With CP there was no risk of competition with Solvay on a global scale, as would have been the case with companies such as Siam Cement or TPI for instance. Neither was there a risk of conflict of interest, as could have been the case with converters such as Liaksing Plastic and Sii Thep Thai, being on the same time shareholder in the producer of PVC and consumer of PVC. The problem with Saha Union was its involvement in the establishment of another joint venture around the same time, which would most probably have made things too complicated.

◇ Decision-making: some differences can be detected here. Solvay is a public listed company in which the decision making process is much longer: important decisions must first be accepted at the Executive Committee level, then proposed at the Board of Directors where a consensus has to be reached. At CP, which is owned by ethnic overseas Chinese, the decision making is concentrated in the hands of only one or two persons who decide much quicker. The Chinese decision making process in CP, is rather informal and decisions are taken more intuitively and not necessarily based on detailed feasibility studies.

- Has the technology successfully been transferred from Solvay to Vinythai?
  - ◇ Plan

The machinery was delivered by Solvay and Belgian engineers sent to Thailand in the starting-up phase. In the meantime, Thai engineers were trained abroad (not only at Solvay Belgium, but also in Solvay's companies in France and Germany), as well as in Thailand, so that they are prepared for replacing the expatriates.
  - ◇ However, it might take longer than expected

Due to high staff turn-over and lack of trained, highly skilled and experienced staff, the replacement of the expatriates is much slower than originally expected. In 1998, there were two expatriates left at the management level and 7 at the plant level.