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The petrochemical industry uses petroleum-based raw materials to produce a range of basic chemical substances (upstream petrochemicals), which can then be processed further into so-called intermediate petrochemicals. These are, in turn, used to manufacture of a wide variety of industrial and consumer products such as plastics, synthetic rubbers, synthetic fibers, detergents, personal care products and adhesives. With its abundant oil and gas resources, its 210 million-plus domestic consumers, and its strategic position astride the major sea-lanes between the Pacific and Indian oceans, Indonesia should be ideally placed to host a thriving petrochemical industry. The government needs to formulate a clear and consistent policy on the petrochemical sector, and to follow through by providing a supportive operating environment. On an ongoing basis, it should consult closely with the private sector, given that this is largely where the further development of the petrochemical industry will be funded. The lack of clear government policy and poor integration with the oil and gas industry have caused the petrochemical industry to develop in a rather haphazard manner into one with numerous gaps in the production chain, whereby output of many important upstream (basic) and intermediate (semi-finished) products is insufficient to support their respective user industries. The government should involve the private sector as much as possible in building an integrated and efficient petrochemical industry. In so doing, it must provide incentives to attract investment, but must also try to ensure stability, law and order and more predictable operating conditions in the country in general.

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Technical Report

PETROCHEMICALS AND PLASTICS POLICY ANALYSIS

By Liv Tarkowska, CastleAsia

Prepared for:
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Republic of Indonesia

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1.0 EXECUTIVE SUMMARY

- The petrochemical industry uses petroleum-based raw materials to produce a range of basic chemical substances (upstream petrochemicals), which can then be processed further into so-called intermediate petrochemicals. These are, in turn, used to manufacture of a wide variety of industrial and consumer products such as plastics, synthetic rubbers, synthetic fibers, detergents, personal care products and adhesives.

- With its abundant oil and gas resources, its 210 million-plus domestic consumers, and its strategic position astride the major sea-lanes between the Pacific and Indian oceans, Indonesia should be ideally placed to host a thriving petrochemical industry.

- The government needs to formulate a clear and consistent policy on the petrochemical sector, and to follow through by providing a supportive operating environment. On an ongoing basis, it should consult closely with the private sector, given that this is largely where the further development of the petrochemical industry will be funded.

- The lack of clear government policy and poor integration with the oil and gas industry have caused the petrochemical industry to develop in a rather haphazard manner into one with numerous gaps in the production chain, whereby output of many important upstream (basic) and intermediate (semi-finished) products is insufficient to support their respective user industries.

- Feedstock issues need to be addressed. Domestic crude oil refining and gas processing facilities are currently geared towards relatively simple, low value-added fuel products. Any prospective new capacity should include the option to produce essential feedstocks such as naphtha in a cost-effective and reliable manner. This would help to make the Indonesian petrochemical industry more competitive, and stabilize the entire supply chain.

- The Indonesian petrochemical sector has been developed almost exclusively by the private sector, much of it consisting of foreign multinationals. All the facilities operating today were constructed

before Soeharto was forced out of office in 1998; it is therefore unsurprising that much of the industry was structured to benefit the former first family and its cronies though joint ventures, offtake agreements, etc.

- Physical infrastructure is poor. Realistically, the government cannot be expected to invest in any major facilities in the near future. It could, however, encourage, and give incentives for, joint investment in commercially-licensed roads, railways, ports etc. by some of the large corporations involved, e.g. the cluster of upstream / intermediate plants located at Cilegon, West Java.

- Pertamina currently produces several important petrochemicals, but has never managed to gain a reputation as an efficient and reliable supplier. As part of its move to become a commercially viable operator, Pertamina should be encouraged to increase its expertise and professionalism in this area, and to bring in foreign partners to provide transfers of technology and know-how.

- Between them, Chandra Asri and Pertamina have complete control of domestic upstream petrochemicals production. Both firms have a history of disrupted production, which has caused intermittent supply difficulties for their customers.

- Chandra Asri has a huge state-of-the-art production complex that is only being partially utilized. If the remaining three (out of four) production units were completed and put into service, Chandra Asri could become a highly efficient integrated operator, given the necessary funding and management.

- Peni (BP Chemicals) and Chandra Asri have been in talks regarding possible co-operation or even a takeover by Peni. Peni would bring more efficient management and operations and, as a foreign entity, would likely be a higher taxpayer than a domestic firm.

- TPPI's production complex in East Java is 65% completed, and construction is slated to resume soon. It will incorporate substantial capacity for light naphtha, ethylene, propylene, PE, PP, styrene, polystyrene and numerous other upstream and intermediate olefins, however the initial stage of production now appears likely to be aromatics such as benzene, toluene and xylene rather than olefins.

- Formerly protected by high tariff barriers, most of which have now been drastically reduced, the Indonesian petrochemicals industry is now facing stiff challenges from imports. This is particularly hurting producers of intermediates such as polyethylene and polypropylene. In practice, many importers are reportedly able to negotiate reduced duty rates, which is further upsetting the local market balance.

- Lower import duties should provide an incentive to local producers to increase production efficiency, improve marketing skills and expand markets, eliminate bad practices etc. In reality, this effect has yet to be seen.

- Tariffs on semi-manufactures and fabricated plastic products remain relatively high (up to 30%, typically 15-20%) on imports from MFN countries, while CEPT rates (intra-AFTA) have been slashed to 0-5%. This is particularly damaging to companies that import plastic materials in sheets, block, rods etc. from non-ASEAN countries, and manufacture goods for the local market. Export-oriented producers are, in theory, not affected as they can reclaim duty as well as VAT on exported finished products, however it does affect their cash flow as refund times vary.

- INAPLAS (the Indonesian Plastics Raw Materials Producers' Association) has recently asked the government to cut MFN import tariffs on semi-manufactures and plastic products. This would have the dual effect of helping producers of finished goods for the local market, while at the same time forcing domestic producers of plastic sheets and other semi-manufactures to become more competitive.

- Processing margins throughout the SE Asian petrochemicals industry are currently very tight compared with the US, with buyers having the upper hand on pricing. This makes investment unattractive, and amplifies the need for high efficiency in both production and raw material sourcing.

- Many multinational petrochemicals producers also trade in various related products. The fact that this is apparently a very profitable business even when core production operations are not limits the incentive for these firms to tighten up efficiency, lobby for better domestic raw materials sourcing, perform R&D, focus on training workers, etc.

- Indonesia relies to a very large extent on imported technology and machinery. There have been few attempts to develop a domestic industrial machine sector. This adds significantly to setup costs and operational downtime, and has a negative effect on competitiveness.

- Companies that import raw materials continue to be plagued by volatile and unpredictable exchange rates. Most do not hedge their currency exposure adequately, but would welcome a common facility for doing so, e.g. through the Jakarta Futures Exchange.

- Production of higher-quality finished plastic goods is largely driven by foreign principals, which contract local companies to produce export-oriented branded goods such as electronics, sports shoes and toys. The danger is that these principals could walk away, if Indonesia experiences a sudden escalation of volatility. These factories would unlikely be able to continue producing goods of the same specification on their own, as they usually lack the necessary know-how and attention to consistent quality.

- These foreign principals often require that raw materials are imported rather than sourced locally, usually because of (real or perceived) concerns about consistent quality and reliable supply. This is, unfortunately, holding back the development of a domestic supply of high-specification plastics.

- The customs service is notoriously corrupt, and appears to be co-operating with certain importers to allow the large-scale illegal or wrongly declared petrochemical imports that are now flooding the market. Recent efforts by the government to crack down on bad practices have been well received, but much more needs to be done.

- Anecdotal evidence suggests that corruption in general has become worse and more widespread now. Although multinationals tend to factor corruption and "hidden charges" into their costing, these are becoming more and more unpredictable. This is not helpful to efforts to attract investment in Indonesia.

- Security is a major concern within the petrochemical industry, especially for large-scale multinational operators. Issues range from operational disturbances at production sites and disrupted transportation of goods, to extortion and outright violence.

- In conclusion, the government should involve the private sector as much as possible in building an integrated and efficient petrochemical industry. In so doing, it must provide incentives to attract investment, but must also try to ensure stability, law and order and more predictable operating conditions in the country in general.

2.0 INTRODUCTION

This report examines regulatory issues and related conditions that pertain to Indonesia's petrochemical sector and its user industries further down stream. In particular, we have focused on the many measures that need to be taken to improve the efficient and equitable operation of companies engaged in producing petrochemicals and their derivatives, specifically plastics. Indonesia's changing import tariff regime and political environment are two of the major factors affecting operators in these industries.

Our findings are based on the results of interviews with around 80 companies in the petrochemical and downstream products sectors, as well as with independent industry observers, government officials, Pertamina, INAPLAS (the Indonesian Plastics Raw Materials Producers' Association) and the ASEAN Secretariat.

2.1 Industry Profile

Indonesia has a very young petrochemical industry, most of its development having taken place in the 1993-97 period. When the Asian crisis started to affect the Indonesian economy in late 1997, several petrochemical plants that were on the drawing board had to be postponed. These include projects by Fadel Muhamad's Makasar Petrosel Global, Tirtamas (TPPI), Chandra Asri, BP Chemicals (Peni) and the Salim group. To date, none of these projects has been resumed; however, negotiations aimed at restarting construction of the TPPI (Trans Pacific Petrochemical Indotama) complex in Tuban, East Java are underway.

Domestic output and consumption of the major petrochemicals fell sharply in 1998, which was a very turbulent year in Indonesia. The effects of the drastic depreciation of the rupiah were felt throughout the industry as all primary raw materials are priced in US dollars, whether imported or locally made. Those producers that rely on imports of higher value-added input products from further down the production chain suffered even more. Production and consumption both started to pick up again in 1999, and have now returned to pre-crisis levels or above. Producers continue to

be plagued by currency fluctuations, however, as most domestic finished-product sales are priced in rupiah, and the downstream users tend to have a strong bargaining position.

The capital-intensive nature of the petrochemical industry keeps barriers to entry high. It is also greatly dependent on technology and know-how, which, in Indonesia's case, are almost exclusively imported because of the severe shortage of experienced local players. This adds significantly to the cost structure and decreases competitiveness. In contrast to many other countries in the region, the petrochemical industry in this country is dominated by the private sector, much of which consists of foreign multinationals. Pertamina (the state-owned oil and gas company) is also an important upstream and intermediate producer, albeit an inefficient one. General infrastructure is poor; the government has done little to provide specific facilities such as ports, roads or railways to support the huge petrochemical plants.

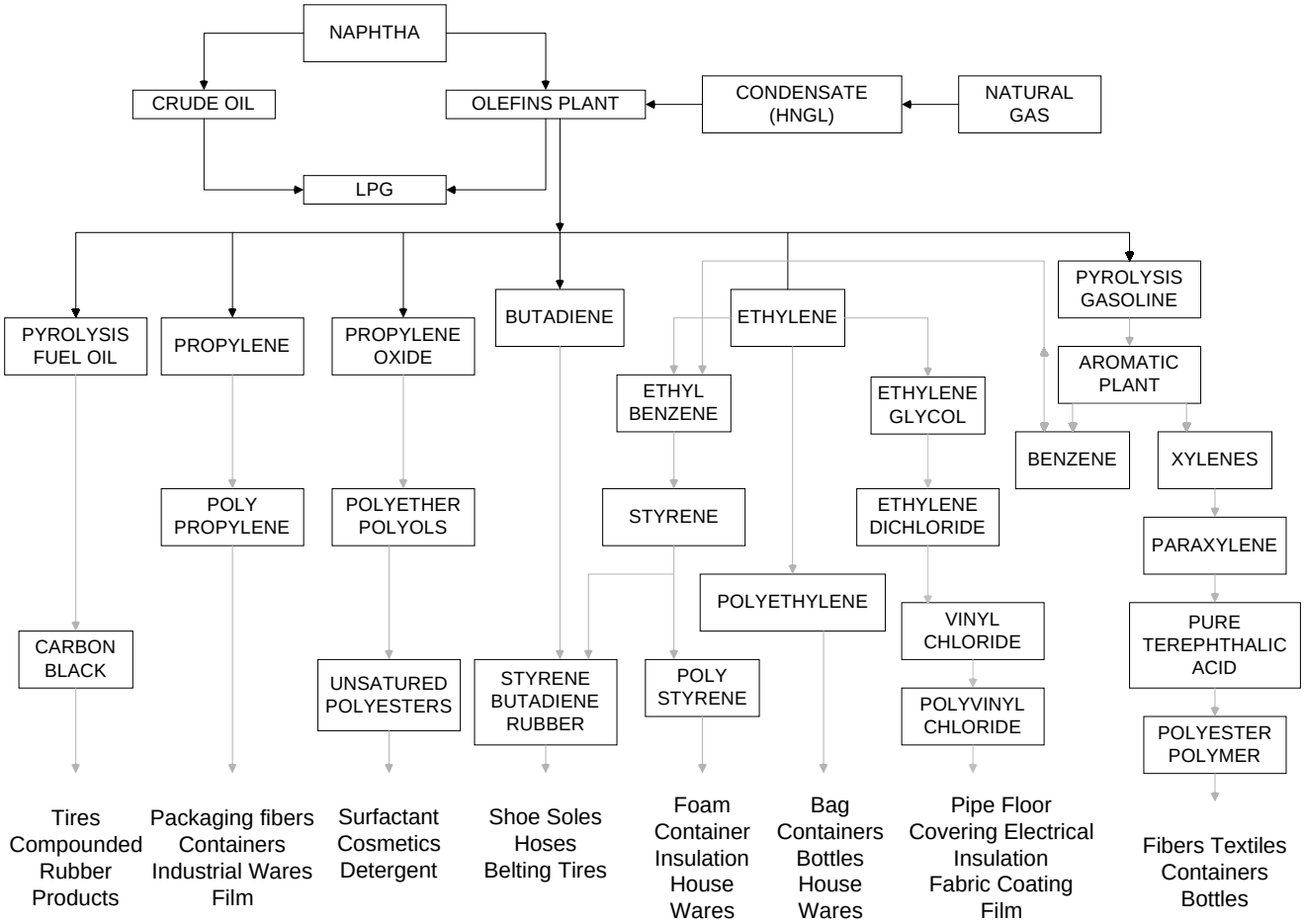
In Indonesia, this industry is also characterized by inadequate planning and a lack of consistent long-term policy on the part of the government. There is little integration with the domestic oil and gas sector, which has the potential to supply all the feedstocks required. Consequently, the petrochemical sector has developed in a rather haphazard manner into one with numerous gaps in the production chain, whereby output of many important upstream (basic) and intermediate (semi-finished) products is insufficient to support their respective user industries.

While many upstream and intermediate players are facing financial problems caused by, among other things, systemic inefficiencies and high setup costs that have yet to be recouped or depreciated, companies that use these materials to produce finished goods are faring relatively well. The plastic packaging sector, for example, is underpinned by continued buoyant consumer spending, and has enjoyed strong sales growth and a comparatively healthy level of new investment over the past few years.

Import duties on petrochemicals as well as plastics and other downstream products have been cut drastically in recent years, with mixed implications for domestic producers and users. The full implementation of AFTA (the ASEAN Free Trade Area) in 2003 means that Indonesia's intra-ASEAN import tariffs on virtually all products will range from 0% to 5%. Indonesia is, in fact, already applying these rates to most petrochemicals

and plastic products, under the so-called fast-track scheme. On other products in these sectors, tariffs will remain at a maximum of 10% until the end of 2002. Tariffs on imports from the rest of the world have also come down: duty rates for petrochemicals are broadly equal to those for AFTA-origin products, while for certain semi-manufactures, and for finished plastic goods, they are now typically 15-20%.

Figure 1.
PETROCHEMICAL PRODUCTION TREE



Source: Chandra Asri

2.1.1 Upstream Petrochemicals

Depending on the method and equipment chosen, a variety of basic upstream petrochemicals can be produced by processing fractions of oil and gas such as naphtha, condensate, ethane or LPG. In Indonesia,

naphtha, which is obtained by refining oil, is the most commonly used feedstock at the moment. In an olefin complex, the chosen feedstock is cracked to produce ethylene, propylene and butadiene in the first instance. These substances can then be used in a multitude of processing chains of varying lengths to produce so-called intermediates, which are marketable raw materials for a wide range of end-user products. Examples of widely-used olefin-based intermediates are polyethylene, polypropylene, polystyrene, PVC, PET resins and polyester and acrylic fibers.

In an aromatics plant, derivatives of these same feedstocks are subjected to a different chemical process, resulting in the upstream products benzene, toluene and xylene. Similarly, these products can be treated in various ways to produce intermediates such as purified terephthalic acid (PTA), which is used in the production of polyester fibers and PET resins.

It is important to remember that it is possible to process the input materials by different methods and in various combinations to arrive at the desired end products; in other words, a plant or an individual production stream can be configured to achieve a specific output mix. The picture is further complicated by the fact that the production chain is commonly divided among several different producers. In this country, this condition has contributed to the general lack of integration and co-operation in the industry.

The only petrochemical facility in Indonesia that is classified as integrated is CAPC (Chandra Asri Petrochemical Complex) in Cilegon, West Java. This plant is actually only partially integrated as it relies on imported naphtha as its feedstock, in addition to which, several of its planned intermediate production units have been put on hold indefinitely. At the moment, Chandra Asri's output comprises ethylene (which it is the sole domestic producer of), propylene and polyethylene.

Together, Pertamina and Chandra Asri control the domestic production of upstream petrochemicals, but do not have sufficient capacity to supply the whole market. On top of that, both firms have a history of disrupted production, which has caused supply difficulties for their customers at times. A large proportion of Indonesia's requirements of these products have to be imported, therefore, and this raises the cost structure and decreases efficiency and supply certainty in the industry as a whole.

2.1.2 Intermediate Products

The production of intermediates is spread among a larger number of firms, most of which are foreign joint ventures. In this sub-sector, there are a number of important products that are not produced at all in Indonesia. These include butane and butadiene, which are imported and used to make other products that are also classified as intermediates, such as styrene butadiene latex, which is used in the paper industry, and styrene butadiene rubber and carbon black, which are used in tire manufacturing. Paraxylene, which is used to manufacture PTA, is another significant product that is imported in large quantities, although there is also limited domestic production. There are also many products, such as polyethylene, where certain grades have to be imported as they are not produced locally, while other grades are exported.

In general, operating conditions for the intermediates producers are difficult at the moment. Several of them are running significantly below capacity, partly because of intermittent difficulties in obtaining reliable supplies of domestically-produced raw materials from Pertamina and Chandra Asri. To make matters even worse, now that intra-ASEAN import tariffs have been slashed to 0-5%, and domestic demand is continuing to pick up in line with the broader economic recovery, the domestic intermediates producers are facing increasing competition from low-priced imports from neighboring countries. In many cases, the imported goods are actually cheaper than their local counterparts, even when shipping costs and import duties are factored in. In fact, it has been said that many importers collude with customs officials to pay duty at less than the full official rates.

Additionally, smuggled goods are increasingly commonplace in the market. Various types of customs fraud, from misdeclaration of origin or product type to under-invoicing and outright physical smuggling, are known to be widespread. According to industry sources, illegal imports of certain products such as polypropylene are even greater than official imports; this obviously means that domestic market supply is significantly larger than officially stated. Manufacturers that use intermediates such as plastics in their production are therefore able to exert considerable pricing pressure on their suppliers, and many petrochemical producers are seeing their margins suffer accordingly.

It is interesting to note that many of the firms that produce petrochemicals in Indonesia are also engaged in trading various products including, but not restricted to, the input materials they use and the products they manufacture. This is particularly true of the Japanese firms that operate here. These trading activities are reportedly very profitable even where the core production operations are not. In general, this limits the incentive for these firms to improve their production efficiency, lobby for better domestic raw materials sourcing, perform R&D, focus on training workers, etc.

Table 1.
MAJOR PETROCHEMICALS - PRODUCTION AND SUPPLY SITUATION
in '000 metric tonnes

Product	Company	2002 Production Capacity	*Planned Production Capacity*	2000 Domestic Production	2000 Imports *	2000 Exports	2000 Market Supply *
Ethylene	Chandra Asri	525					
	Total	525		473	385	76	782
	TPPI		*700*				
	PENI / Chandra Asri jv		*875*				
Propylene	Chandra Asri	240					
	Pertamina	50					
	Pertamina (EXOR-1)	180					
	Total	470		400	147	17	530
	TPPI		*380*				
	PENI / Chandra Asri jv		*400*				
Benzene	Pertamina	123					
	Total	123		100	247	0	347
	Citra Aromatics Indonesia		*250*				
	Humpuss		*160*				
	Kresna Aromatics Persada		*450*				
	TPPI		*500*				
p-Xylene	Pertamina	270					
	Total	270		270	892	0	1162
	Citra Aromatics Indonesia		*400*				
	Humpuss		*370*				
	Kresna Aromatics Persada		*450*				
	TPPI		*500*				

Product	Company	2002 Production Capacity	*Planned Production Capacity*	2000 Domestic Production	2000 Imports *	2000 Exports	2000 Market Supply *
Styrene Monomer	Styrindo Mono Indonesia	300					
	Total	300		270	33	156	148
	TPPI		*500*				
VCM	Asahimas Chemical	400					
	Satomo Indovyl Monomer	100					
	Total	500		407	74	57	425
Polyethylene	Chandra Asri (LLD/HDPE)	230					
	Chandra Asri (HDPE)	120					
	PENI (LLD/HDPE)	450					
	Total	800		555	232	140	648
	TPPI (LDPE)		*300*				
	TPPI (HDPE)		*180*				
	PENI (LDPE)		*150*				
	PENI (LLD/HDPE)		*200*				
Polypropylene	Pertamina	45					
	Polytama Propindo	180					
	Tri Polyta Indonesia	360					
	Total	585		420	260	40	640
	Polypropylene Indonesia		*200*				
	Chandra Asri		*180*				
Polystyrene/EPS	PIPI	65					
	Polychem Lindo	27					
	Polychem Lindo (EPS)	3					
	Risjad Brasali Styrindo (EPS)	15					
	Maspion Polystyrene (EPS)	8					
	Total	118		94	13	14	94
ABS/SAN	Risjad Brasali Styrindo (ABS)	15					
	Risjad Brasali Styrindo (SAN)	20					
	Total	35		32	19	21	30
PVC	Asahimas Chemical	285					
	Eastern Polymer	48					
	Satomo Indovyl Monomer	70					
	Siam Maspion Polymers	120					
	Standard Toyo Polymer	87					
	Total	610		430	21	261	190

Product	Company	2002 Production Capacity	*Planned Production Capacity*	2000 Domestic Production	2000 Imports *	2000 Exports	2000 Market Supply *
SBR/SBR Latex	BASF Indonesia (Latex)	38					
	Dow Polymers Indonesia (Latex)	30					
	Rodia Indolatex (Latex)	30					
	Sentra Sintetika (SBR)	60					
	Total	158		61	42	15	88
PTA	Amoco Mitsui PTA Indonesia	400					
	Bakrie Kasei Corp.	600					
	Pertamina	225					
	Polysindo Eka Perkasa	350					
	Polyprima Karyapersada	420					
	Total	1995		1600	50	223	1427
PET Resin (bottle grade)	Bakrie Kasei Corp.	50					
	Indorama Synthetics	79					
	Petnesia Resindo	75					
	Polypet Karyapersada	84					
	SK Keris Indonesia	55					
	Total	343		318	10	276	52

** Official figures. There are also significant illegal imports - this inflates real market supply figures*

Source: "Policy Recommendation for Indonesia's Petrochemical Industry", Professor Kunio Nakajima, July 2001

2.1.3 Downstream Products

There are at least two thousand downstream companies across Indonesia that use petrochemical-based raw materials to manufacture a wide range of industrial and consumer goods. While most petrochemical substances are made into plastics of some sort, other end-products include detergents, surfactants and personal care products, tires, adhesives, paints, synthetic fibers and textiles, coatings for paper, and even food additives.

Plastics such as polyethylene, polypropylene and polystyrene are used in the manufacture of countless essential everyday products for both the domestic market and for export. Roughly half of the 900-plus plastic goods manufacturers are engaged in producing packaging materials such as film and bottles. The plastic packaging sector has experienced strong growth over the past few years, thanks to a dynamic domestic market for

packaged food and beverages and other consumer products. This trend looks set to continue as disposable incomes rise, and more and more Indonesians from all walks of life come to expect some of the trappings of a "modern" urban lifestyle.

Other common uses for plastics (including artificial rubber) include shoes, pipes and hoses, plastic sheets, household products such as buckets and food containers, automotive parts, and casings for electrical and electronic equipment such as TVs, computers and refrigerators. The huge potential of the domestic plastics market is further illustrated by Indonesia's annual per-capita consumption figure of just 7kg. By way of comparison, per capita plastic consumption is 14kg in China, 20kg in Thailand, 78kg in Singapore, and 159kg in Germany.

Plastics are commonly sold as granules, liquids or pastes, and are then processed by the purchaser to produce solid materials in whatever shape and form is required. For certain applications, some materials are also sold in the form of blocks, sheets or rods, and cut to size by the users - this is common in the shoe industry, for instance.

The plastic raw materials produced in Indonesia tend to be basic substances of low to medium-upper medium quality, and consequently the user industries are, by and large, relatively unsophisticated. As mentioned previously, the Indonesian market is being inundated with imported plastics and other intermediate materials from other ASEAN countries and beyond, usually for reasons of price rather than quality. Cheap finished products are also entering the country at an increasing rate. With most CEPT (intra-ASEAN) import tariffs already as low as 0-5% and due to fall further in 2003 in some cases, and with a higher level of integration that translates into more efficient production overseas, raw materials brought in from neighboring countries are often cheaper than those produced locally. In addition, illegal imports obviously have a natural price advantage: smugglers usually pay neither duty nor VAT!

Tariffs on goods from MFN (non-ASEAN) countries have also been reduced over the past few years. Import duties on widely used intermediates such as polyethylene and polypropylene (in primary forms such as granules, liquids and pastes) are now typically 5-10%. The same substances in semi-finished forms such as sheets, blocks, rods and sticks (which are often used in the shoe industry and by smaller-scale producers

of other goods) are still subject to duties of 15-20%, while a small number of products even attract rates as high as 30%. It is reasonable to assume, however, that some importers of these goods in practice pay reduced duty rates in the way described earlier in this report. Of course, the high tariffs do not, in theory at least, present a real problem for export-oriented manufacturers of branded products such as sports shoes, toys, or casings for computers, TVs and other electronic items, as they are able to claim back import duty paid on input materials. Some firms, such as those located in bonded zones, are even exempt from paying duty, and also VAT, in the first place.

On the other hand, for companies that make goods for the local market, the high import tariffs can make imports of semi-manufactured plastic raw materials from MFN countries prohibitively expensive, particularly at times when the rupiah is especially weak. Many domestic-oriented shoe producers, which buy a large proportion of their plastic and artificial rubber raw materials in sheet and block form, have recently had problems obtaining affordable materials from overseas. There is also a shortage of equivalent products available from local producers, who often seize the opportunity to raise their prices to the same level as imports, where these are more expensive to start with.

The locally-oriented shoe companies are also losing out to vastly increased competition from cheap imported goods from other ASEAN countries, but also from China. While Chinese imports are formally dutiable at MFN rates, which are currently around 15-20%, and should therefore be more expensive than those from ASEAN countries, there have been allegations that Chinese shoe producers are dumping products on the Indonesian market. It has also been said that a large proportion of these imports could be illegal.

Conversely, the export sports shoe industry, which operates on a contract producer basis, continues to perform well. This is a fairly labor-intensive business, and has historically benefited from Indonesia's low wages. Labor costs are rising quite sharply now, however, while productivity remains poor compared with competitors such as China and Vietnam. The producers of shoes for the big international brands like Nike, Reebok and Adidas follow strict production, raw materials and quality control rules, and are subject to frequent inspection by their principals.

This is an example of a flourishing manufacturing sector that is vulnerable to a sudden escalation of national instability. If operating conditions were to become uncomfortable, due to widespread civil unrest, for instance, these principals could quite easily shift some or all of their manufacturing to another country - after all, they have very little capital invested in Indonesia. Unfortunately, many of these contract manufacturers would probably fail if they tried to continue producing goods of the same specification, as they lack the marketing skills, know-how and consistent attention to detail that is required. On the whole, Indonesian businesses have been slow to learn from their foreign principals; in other countries around Asia, many firms that started out as contract assemblers have since progressed to being successful and innovative manufacturers in their own right.

Top quality or high specification raw materials for export goods, as well as some products for domestic consumption such as automotive parts, are usually imported. This can be because of concerns about consistency of quality or supply with local materials, because the required materials are not produced in Indonesia, or simply because the foreign principals of contract producers require it. This, in turn, can be purely a function of group policy, often in order to utilize group or affiliate output from other countries, or due to a perceived, or genuine, lack of domestic product that meets the specifications. It does mean, however, that raw materials are frequently imported even where products that meet the required specifications are made locally, just because of a lack of confidence in domestic producers. In other cases, exporters say that, while they would like to support local raw material producers, they are very inefficient and therefore their output is too expensive.

The question of why Indonesia does not produce the high specification plastics that currently have to be imported, or even certain relatively simple products such as some of the grades of polystyrene that are used for TV casings, has often been raised. In response, many domestic producers say that they have never felt any real impetus to make the investments necessary to start manufacturing these materials, as they believe that the foreign principals would still prefer to source offshore. A few local companies previously had plans to upgrade their production capabilities, but had to shelve them when the Asian crisis struck.

3.0 SPECIFIC ISSUES OF CONCERN TO THE PETROCHEMICAL INDUSTRY

3.1 No Clear Petrochemicals Policy

The Indonesian government needs to formulate a clear and consistent long-term policy for the petrochemical industry. The Soeharto regime, under which the sector was first developed, appears to have had an opportunistic policy at best, while the political upheavals and frequent changes of government over the past four years have meant that attention has been directed more to "fire-fighting" than to long-term planning.

The highly capital intensive nature of this industry means that careful central planning is crucial to avoid costly mistakes, and to ensure that capacity utilization is as high as possible. It is essential that a master plan for the petrochemical industry start with the issue of raw material supply and utilization. In Indonesia's case, there is an obvious gap in the oil and gas refining and processing sector, which has always been geared towards basic fuel products. Proper integration, whereby the refineries' output more closely matches the needs of the petrochemical producers, would undoubtedly improve conditions for these firms and their customers all the way down the production chain. It is interesting to note that a few private-sector entities are looking at building oil refineries in Indonesia, e.g. the one at Pare-Pare in South Sulawesi that is expected to come on stream in 2005. There would be significant benefits in encouraging these private operators to include capacity for petrochemical feedstocks.

Given the complexity of the petrochemical product line, and the fact that a single product such as ethylene can be processed in several different ways depending on the end-product required, it is also important that the government's policy sets out a detailed plan for the composition and utilization of the whole of the petrochemical production chain. This would help to correct the large and expensive mismatches in raw material supply, production and demand that we are seeing in Indonesia today. In this context, it is important to bear in mind that the petrochemical industry is an increasingly global business, with both supply and demand unavoidably influenced by what is happening in other countries.

A master plan for the petrochemical industry is important not only for the sector itself, but also because it supports a large number of enterprises in other industries such as packaging, textiles and fibers, garments, shoes, detergents and personal products, pharmaceuticals, paints and dyes, agrochemicals, tires, automobiles, electronics and building products. As such, a coherent petrochemicals policy would help to ensure the prosperity of a significant section of the domestic economy, and the employment of a large number of people.

Unfortunately, no matter how good an industry policy Indonesia has, it will not be truly effective in terms of attracting investment and improving conditions for existing players until the wider issues of national stability and security are resolved and producers can be assured of a basic level of operating comfort and a conducive environment for generating acceptable profits.

3.2 Poor Infrastructure

A sensible and workable petrochemical industry policy must also incorporate a plan for the improvement of Indonesia's rather patchy infrastructure, where it affects the petrochemical producers that are, after all, investing huge sums of money in industrial installations. That said, it is unrealistic to expect the government to fund any new facilities such as roads, railways, ports and jetties, power plants, water treatment units or telecommunications, under current circumstances. An alternative strategy could be to encourage joint investment by private-sector petrochemical operators in certain types of facilities, and to grant a commercial license to allow them to recoup part of their investment by charging others to use these facilities. This could, for instance, be a suitable solution to the problem of transporting goods to and from the cluster of upstream and intermediate product plants located in the Cilegon / Anyer area in West Java. Some producers here have said that they are experiencing costly delays when sending goods by road, partly because of the poor quality of certain sections of the road system, and partly because the trucks have to stop several times along the way to pay the unofficial toll fees levied by "enterprising" locals. A direct railway line between the complex and Jakarta and / or Tanjung Priok port could help to bypass these issues.

Better logistical infrastructure can also be helpful to producers by opening up new raw material procurement options, which, in turn, can be more economical. It can also allow them to sell their products in a wider range of forms to better accommodate their customers' requirements, and thereby to increase market coverage and possibly also production efficiency.

It is worth mentioning that petrochemical plants consume very large amounts of electricity; it is therefore vital that producers have constant reliable power supplies at a reasonable price. Large-scale industrial users unsurprisingly tend to have their own back-up generators as well, while some plants are run wholly on generator power, with no connection to PLN (the national power company). Asahimas Chemical, which produces caustic soda, VCM and PVC, and is located in the Cilegon / Anyer area, is actually the largest consumer of electricity in the country. According to the company's management, electrical power accounts for 60% of its total production costs.

3.3 Feedstock Issues

Presently, production at Indonesia's oil refineries and gas processing plants is heavily geared towards relatively simple, low value-added fuel products that are used within Indonesia, or that have a wide export market. This is one reason why there is little integration with the petrochemical industry. Usually, the structure of a country's petrochemical sector is determined by the current or future domestic feedstock situation, and development of the two is carefully co-ordinated by an appropriate government body. In Indonesia's case, however, the petrochemical industry has been allowed to spring up without any thought to the state of the refining sector, which is now in need of expansion. New petroleum refining or processing capacity should include the option to produce essential feedstocks such as naphtha in a cost-effective and reliable manner. The new oil and gas law, which contains provisions for the deregulation of the downstream petroleum business, should make investment in the refining sector more attractive for the private sector. This would help to make the Indonesian petrochemical industry more competitive, and stabilize the entire supply chain.

Pertamina does produce naphtha from crude oil at its Balongan refinery. Unfortunately, this product is not the correct grade for Chandra Asri's cracker, and is instead exported, or used as an octane enhancer in gasoline. Meanwhile, Chandra Asri imports a lighter grade of naphtha to use as feedstock for ethylene and propylene. This situation should be rectified when TPPI's plant in East Java comes on stream, assuming that construction does resume. According to the original plan, it will produce one million tons of light naphtha a year, along with a wide range of olefin and aromatic products.

TPPI's naphtha will reportedly be produced from natural gas condensate from the Bontang gas plant in Kalimantan, rather than from crude oil. This represents a step in the right direction, away from dependence on Indonesia's fast-dwindling oil reserves. While our known oil reserves will be depleted in less than 10 years at the current rate of production, there is enough natural gas in the country to last for at least 50 years. Gas also wins points for being far more environmentally friendly than oil. However, the infrastructure and plant investments needed to properly utilize natural gas are limiting its usage in Indonesia at present. PGN (Perusahaan Gas Negara) is responsible for building a network of pipelines to transport gas from production fields around the country, but construction has fallen seriously behind schedule. Another reason for the poor domestic utilization of gas is the government's longstanding policy of subsidizing oil-based fuels, although this is currently being phased out.

Coal is a hydrocarbon-based fuel, just as oil and gas are, and can be processed in much the same way if it is liquefied first. South Africa, for instance, has a long history of oil-from-coal use, necessitated by the oil embargoes imposed on it because of its apartheid policies. Now that apartheid has been abolished, coal is still widely used, but not so much for basic fuels as for higher value-added products such as petrochemicals. It is also utilized in petrochemical production in the United States and other countries. Indonesia's first coal liquefaction plant is currently being built in South Sumatra, however its intended usage is unclear. In the future, coal could become interesting as an alternative primary feedstock for Indonesia's petrochemical sector.

3.4 Pertamina's Role

As mentioned above, Pertamina has not been given any incentive to shift its production focus from low value-added basic fuel products that can easily be absorbed by the domestic and export markets, to raw materials for the petrochemical industry. Pertamina currently produces a number of important petrochemicals, but has never managed to gain a reputation as an efficient and reliable supplier of quality products. The firm is often said to have poor marketing abilities, and has historically also suffered from intermittent disruptions to production. In addition, it has had problems with maintaining the quality levels of some of its products. Consequently, many potential buyers are apparently avoiding all of Pertamina's petrochemical products, including its propylene and paraxylene, which are said to be top grade.

Pertamina is presently undergoing a transformation into a competitive commercial entity, and is even slated to go public in 2003. The non-fuels division, to which the five petrochemical facilities belong, is already being run as if it were a private corporation, in theory at least. In order to improve its reputation and increase its market coverage for petrochemicals, Pertamina should be encouraged to raise its expertise and professionalism in this area by bringing in foreign partners to provide transfers of technology and know-how.

The company is already planning to participate in an important new petrochemical project by taking a stake, currently thought to be 10-15%, in TPPI. That said, Pertamina's role will apparently be to supply raw materials, in the form of condensate from the Bontang gas plant, rather than to contribute in an operational sense. Moreover, many industry observers have said that, unless and until it effects a radical change of culture and/or establishes solid partnerships with more experienced foreign players, Pertamina's involvement in petrochemicals should remain limited, as it simply does not have the capability to operate in this complex sector, especially from a marketing perspective.

3.5 A Global Business

It is important to remember that the petrochemical industry in any given country is inevitably influenced by supply and demand conditions in the rest of the world, and by global trading activities and policies. Indonesia is often seen by petrochemical and derivative producers and traders around Asia and the Middle East as an ideal market onto which to offload excess output, partly thanks to its low tariff barriers, but also because of its slack customs supervision and the resultant ample opportunities for smuggling.

In the petrochemical industry, Indonesia should have a natural advantage over most of its South East Asian neighbors given its position as a major petroleum producer, in addition to its huge potential domestic market. In reality, structural problems such as poor infrastructure and planning mean that our feedstock costs are among the highest in the world, and our petrochemical producers among the least competitive. Our neighbors tend to have a better organized petrochemical sector than Indonesia does, with clear government planning and controls, higher levels of integration and infrastructure, and various incentives, including low-cost financing, offered to producers.

The production of petrochemicals in Asia and the Middle East will increase dramatically over the next few years as several new plants, most of them olefins units, come on stream. Several of these facilities will be located in China, where the petrochemical sector is still expanding rapidly, aided by heavy investment by foreign multinationals. Saudi Arabia has unbeatably low feedstock prices; thanks to its geology, ethane is usually obtained as a "free" by-product when oil is pumped from the ground. Unlike Indonesia, Saudi Arabia has the pipelines and other infrastructure in place to utilize its ethane, and has largely built its petrochemical industry around this low-cost input product. Closer to home, Malaysia also has a significant amount of very economically-priced ethane that is used in petrochemical production, although that country also uses naphtha. Conditions in important producer and consumer nations further afield also have to be considered. For instance, the US market is expected to show an upturn as the economy continues to improve. Its supply situation is already rather tight, and it is likely to remain a large net import market for the foreseeable future, notably for aromatics.

3.6 China

Within Asia, China exerts the greatest influence on the regional supply / demand picture. It already has a large domestic petrochemical market, but is still in a sizeable net import position. Although significant capacity will come on stream in the next few years, dynamic demand growth is expected to keep import needs high. This should represent an ideal opportunity for countries such as Indonesia to export products to a fast growing nearby market.

Ironically, China is currently seen as a threat by many manufacturers operating in Indonesia, not least in petrochemicals and its downstream sectors. In certain labor-intensive downstream industries such as shoes, and synthetic fibers, textiles and garments, this country does certainly risk losing production to China, where worker productivity is markedly better even when its higher labor costs are factored in, and where corruption, although present, is seen as less of a burden. This is equally true in other industries that use petrochemical products, such as electronics, household appliances and construction materials. On the whole, factories there tend to be run more efficiently than in this country, and with more assurance that law and order will be upheld in the event of civil unrest or any other disruption. China's infrastructure also tends to be superior to ours, at least in the areas where large private-sector investments have been made in industrial installations, such as in the SEDZs (Special Economic Development Zones).

The Chinese government offers a range of incentives to investors, and has managed to attract a high level of foreign investment over the past few years, some of it undoubtedly at the expense of competing countries such as Indonesia. The petrochemical sector, for instance, has been named one of four state pillar industries and is accorded special status. Nevertheless, it is interesting to note that many high-profile multinationals, for instance the large sports shoe and toy companies, have retained extensive export-oriented contract or proprietary manufacturing in Indonesia, even while increasing their presence in China. This appears to be case of not putting too many eggs in one basket; China is still perceived as somewhat less than stable, particularly in light of the (probably) imminent generational change in the national leadership.

3.7 Chandra Asri

Together with Pertamina, Chandra Asri controls domestic production of all of the most basic (upstream) petrochemical products, and is the only producer of ethylene in the country. The full utilization of its facilities has, however, been held back by its severe financial problems, which are now in the process of being resolved through a somewhat controversial debt restructuring deal. With only one of its four operating units in service, Chandra Asri's production is still limited to ethylene, propylene and polyethylene.

Chandra Asri commenced production in May 1995, following a construction hiatus of two years. This reportedly caused the cost of the complex to escalate by approximately US$ 500 million due to currency fluctuations affecting its yen-denominated loans, extra interest expenditure and lost revenue (the company finally entered the market when petrochemical prices had already slumped following a price spike). US$ 500 million worth of capital equipment was then stripped from the original plan; nonetheless, financing obtained for the project exceeded the original estimate by over US$ 400 million. This has led to widespread allegations that construction costs were marked up. In 1996, the government imposed a 25% import tariff on ethylene, in order to protect Chandra Asri. This was later cut to 10%, and has now come down to 0%, so it is fair to say that the firm no longer enjoys any protection.

The company plays a vital role in the production chain, and indeed in the national economy, with thousands of downstream manufacturers ultimately relying on it for their raw material needs. This, coupled with the fact that a huge investment has been made and not yet recouped, makes it important that Chandra Asri is able to maximize its operating potential from now on. Having to import naphtha for feedstock use is a considerable burden that will be shed once TPPI finally becomes operational and starts producing light naphtha. The debt workout will substantially reduce the company's interest expense in that it converts a large proportion of its debt into equity, which will allow it to retain income to use for capacity expansion and other efficiency measures.

It is likely that the full advantage of Chandra Asri's restructuring would be easier to realize if a joint venture or even a merger with Peni (BP

Chemicals) were to take place. The two companies have been discussing various options for co-operation for some time now, and have been specifically considering a joint venture that would substantially increase Chandra Asri's output of ethylene and propylene. The new oil and gas law, given its focus on deregulation, would make it easier for such an alliance to be set up. Peni, or another established multinational for that matter, would bring several benefits to Chandra Asri in the event of a close tie-up. The combined company would have access to more capital to fund capacity expansion and the completion of at least some of its planned production units; it would have a more professional, experienced and "clean" management; it could tap into Peni's extensive international marketing networks; and as a "real" foreign entity as well as a profitable concern, it would probably be a higher taxpayer than Chandra Asri would if operating alone on the same basis.

Peni, for its part, would gain access to Chandra Asri's extensive (existing and potential) production facilities. It would be particularly valuable for Peni to gain control of Chandra Asri's ethylene output, given that it uses this material in its own polyethylene production. Both companies currently produce polyethylene, and would have a combined monopoly over domestic production if they were to join forces. However, this situation will only be temporary if TPPI becomes operational in the next couple of years as planned. The government would, therefore, be unwise to disallow a joint venture or merger on this basis; indeed, Indonesia's anti-monopoly laws are more flexible now, and are no longer applied solely on the basis of market share.

3.8 TPPI

When Trans Pacific Petrochemical Indotama (TPPI) opens for business and starts producing polyethylene, there would no longer be a domestic supply monopoly on this product, in any case. TPPI, which was originally majority-owned by the Tirtamas group, is currently also being restructured and is awaiting the go-ahead to resume construction of its petrochemical complex in Tuban, East Java. The plant, which is already 65% completed, will feature Indonesia's second naphtha cracker, and will manufacture a range of intermediate olefins. In addition, it will produce the light grade of naphtha presently being imported by Chandra Asri, plus other basic materials such as kerosene and diesel fuel, and will have an

aromatics unit as well. A large number of the gaps in the domestic production picture will thus be filled in, once all TPPI's units are up and running. Not least of these is paraxylene, which is currently being imported in large quantities. In addition, TPPI will help to ease the supply constraints presently facing the intermediates producers, which now have to rely on Chandra Asri, Pertamina and overseas producers for their basic raw material needs. However, the scope of TPPI's initial production remains unclear, and it appears likely that the aromatics complex might be the first to be put into service. The timing of the project itself is also still undecided.

3.9 VAT and Duty Regulations

There are a number of rules, regulations and incentive schemes concerning VAT and import duty, which affect the petrochemical industry and its downstream users. Some of these schemes, especially those that have caused problems due to overlap or misuse, have now been phased out, but numerous inconsistencies remain. The regulations that concern export-oriented producers are based on three separate laws: law no. 11/1994 on VAT and luxury tax exemptions for imported goods, law no. 10/1995 on import duty exemptions and restitutions, and law no. 11/1995 on import duty exemptions.

However, the advent of AFTA and the universal trend towards lower import tariffs mean that these incentives are becoming redundant, at least where import duties are concerned. For example, new petrochemical plants, as well as capacity expansions of at least 30%, are entitled to pay duty of 5% on raw material imports for the first two years of operation - this is now equivalent to, and in many cases even higher than, the prevailing "normal" duty rates. The following table sets out the conditions currently applicable in different production situations, and the regulations that govern them.

Table 2
VAT AND DUTY OBLIGATIONS

	Value Added Tax (VAT)	Import Duty*
Imported raw materials **Finished goods sold locally**	Charged	Charged
Imported raw materials **Finished goods exported:** a. Outside of the Bonded Zone Area	Charged, with a restitution facility for holders of an Export Producer License (Minister of Finance Decree no. 615/1997)	Charged, with a restitution facility for holders of an Export Producer License (Minister of Finance Decree no. 615/1997)
b. In the Bonded Zone Area	Not charged (Government Regulation no. 33/1996)	Not charged (Government Regulation no. 33/1996)
Local raw materials **Finished goods exported:** a. Outside the Bonded Zone Area	Charged, with a restitution facility for holders of an Export Producer License (Minister of Finance Decree no. 615/1997)	
b. In the Bonded Zone Area	Not charged (Government Regulation no. 33/1996)	
Local raw materials **Finished goods sold locally**	Charged.	

** virtually all imports from ASEAN countries are now dutiable at 0-5%; products currently dutiable at up to 10% will fall to these levels in 2003*

Source: CastleAsia

In cases where producers are allowed to claim back import duty paid, it appears that there are considerable variations in the experiences of different companies (where there is no restitution facility for VAT, it is factored in to pricing, and thereby passed on to the next party in the consumption chain). As a general rule, restitution times seem to be relatively short for large-scale producers, at one to two months. In contrast, some smaller companies complain about having to wait for several months to receive reimbursement, while others say that they do not use the drawback facilities they are eligible for because the process is too bureaucratic. It is quite possible that some of the differences have arisen because larger operators tend to maintain better relationships with the relevant authorities, and have more accurate knowledge of the paperwork requirements.

The IP (importir produsen) scheme, which was introduced in 1996, allowed certain export-oriented producers (both in and outside bonded

zones) to import a number of specific raw materials without having to pay duty upfront. The facility was widely misused, however, and the imported raw materials were often sold on to other users and did not end up in exported products. This has hurt domestic producers of equivalent raw materials and upset the market balance by increasing import levels unnecessarily. The IP facility is being phased out and, within the petrochemical sector, only applies to polypropylene in granular form now.

Another facility that was set up to benefit export industries was the Bapeksta scheme, which allowed exporters both in and outside the bonded zones to claim back import duty on raw materials after their finished products had been exported, as long as this was done within six months of the import date. One problem with this scheme was that the Bapeksta authority (Badan Pemberian Fasilitas Ekspor dan Pengolahan Data Keuangan) did not have the expertise to determine whether the quantity of input materials corresponded accurately with the quantity of goods declared for export, which left the potential for abuse wide open. Bapeksta was disbanded in July 2001, and the customs service took over the responsibility for checking the producers' reports and approving their drawback applications. Unfortunately, the customs authority is no more qualified to do this than Bapeksta was, especially where specialized products are concerned, and abuse of these and other drawback facilities remains rife.

A further scheme that has now been abolished was that governed by Minister of Finance Decree no. 548/1997, which provided an accelerated VAT and luxury tax restitution process for certain exporters. The facility covered raw materials and supporting services, not only imported but also those purchased locally, and was ostensibly established to promote the competitiveness of Indonesian exports. However, the regulation proved to be ineffective when some of the companies that used the facility actually only produced export goods for the first year or so, and then switched their output to the local market, or started trading the imported materials instead.

Certain export-oriented manufacturers that are exempt from paying VAT and duty on raw materials have stated that they often have excess production, cancelled orders or substandard items that they would like to be able to sell or even give away locally, for instance to staff or within the immediate community. To do this, they would have to pay the VAT and

duty, and this often raises the costs to above the local affordability level, making it unviable to sell these goods locally. In many cases, the producer therefore ends up having to dispose of the products, e.g. by burning them.

3.10 Tariff Barriers: Falling Fast

As described earlier, Indonesia has been aggressively cutting import duties over the past few years, both from fellow AFTA (ASEAN Free Trade Area) countries, and from the rest of the world. Indonesia now has the lowest CEPT (intra-AFTA) import tariffs of all the ASEAN countries, with the exception of Singapore, and is actually ahead of the official schedule. In general, domestic petrochemical producers, who are often not as efficient as they could be, are facing increased competition from imported goods, both official and unofficial. The downstream users are consequently able to put price pressure on their suppliers by using the low-priced imports as bargaining tools.

Some companies, including petrochemical producers, have asked the government to raise tariffs again on certain products for a limited period to give domestic producers a chance to become more efficient. This could be allowed under AFTA rules if it can be proven that it is justified, however it appears unlikely that it will go ahead. In contrast, some plastic intermediates producers are asking that MFN import tariffs on semi-manufactures and finished products, which are still as high as 15-20%, be reduced to bring them into line with the 0-5% rates levied on AFTA-origin products. This would reduce protection for domestic producers of semi-manufactures such as plastic sheets and blocks, and force them to become more competitive, and would also help firms that use these products to manufacture certain finished goods, such as shoes, for the local market.

3.11 Smuggling and Related Bad Practices

By virtue of its geography, Indonesia has always been a smugglers' paradise. The traditional form of smuggling, which entails landing illicit cargoes in the dead of night, still exists, but has now been joined by a more insidious "sanctioned" variety that appears to involve individuals from the importing firms, shipping companies, port management companies, customs service and various levels of government, among others. Under-

invoicing is another variant of smuggling that is also becoming more prevalent, which has prompted calls for the reintroduction of pre-shipment inspection of imports.

Other voices have suggested that it would be better to concentrate on raising the level of professionalism in the Indonesian customs inspection service. Another common type of administrative (as opposed to physical) smuggling occurs because the customs officials lack the experience, expertise or inclination to properly inspect and value the products being imported, or even to determine what they are. This leads to widespread abuse of the facilities for reimbursement of import duties on raw materials for goods that are later exported, for instance. The customs inspectors simply do not know how much of the input product is needed to produce the quantity of goods exported. A crooked importer can thereby bring in extra quantities of raw materials free of duty, and sell them in the local market, often below the market rate, which upsets the market for domestic producers of these or equivalent products. This has apparently been happening across a range of industries since the customs service took over the inspection function from Sucofindo in August 2001.

Yet another type of smuggling occurs when companies that import raw materials for export production purposes, and claim duty and VAT exemptions or restitutions, actually sell their finished items on the local market, or simply sell the raw materials on to another user. The frequency and seriousness of these different types of smuggling and customs fraud have increased since the start of the economic crisis, and can be seen as a manifestation of the disregard for authority that is becoming increasingly rampant in Indonesia. All illegal or unofficial imports is damaging to those firms that conduct legitimate trading, as well as to domestic producers, and must be curbed as quickly as possible. The government has recently made some efforts to crack down on the perpetrators, but much more remains to be done.

3.12 Regional Autonomy

Indonesia has been operating a system of regional autonomy since January 2001, but there are still many kinks to be ironed out. Notably, the division of authority between the central government and the regional and local administrations remains unclear in many cases. This causes problems for

companies, for example when commercial licenses are issued by one authority, only to be overruled by another, or where overlapping fees are levied by different levels of government. Other challenges are presented by new provinces whose administrative structure is still evolving, such as Banten, which hosts several petrochemical plants around Cilegon and Anyer.

Another issue that is relevant to the petrochemical industry concerns the rights and responsibilities of the regional administrations versus the central government over oil and gas exploration, processing and sales. It is important that these questions are resolved, in order to ensure that producers wishing to purchase feedstocks and other raw materials have certainty of stable supply in their chosen areas of operation, and are able to sign legally binding contracts with suppliers.

3.13 Law and Order Issues

Many manufacturers, including those in the petrochemical and related sectors, now regard labor issues and civil unrest as the major problems they encounter when operating in Indonesia. Legal certainty has also become a key concern in the wake of a number of high-profile cases involving foreign companies, and also in light of the new system of regional autonomy. In many instances, labor issues can be resolved in a peaceful and equitable manner, of course. In others, however, trade unions, workers and the wider community are simply testing the boundaries of their new-found freedom of organization to make demands that lead to acts of obstruction, sabotage and even violence when they are not met by the employers. These issues are related to the breakdown of respect for the authorities and the resultant deterioration of general security, that have become part and parcel of the broader political changes the country has been undergoing since 1998.

In practice, the collapse of law and order is leading to increased, and less predictable, costs for operators, even where there is no outright danger to facilities or staff. Players in the petrochemical industry have cited unofficial road charges, highly variable port charges, increasing payments demanded by corrupt officials at various levels, and delays that arise as a result of all the above, as examples of "new" costs that are affecting their profitability and their ability to budget accurately.

It is clear that the government must make a concerted effort to resolve the security situation in the country as quickly as possible. To a large extent, this will only be possible if we have a strong and stable central administration that can accommodate the aspirations of the regions and create a comfortable and predictable investment and operating climate. It will prove difficult to attract substantial foreign direct investment otherwise, no matter how lucrative the incentives offered.

3.14 Poor Human Resources Development

Finding, training and retaining skilled workers is a perennial problem in Indonesia, and is often encountered in the petrochemical industry, which is a young industry where adherence to standards is essential. Individual companies do train their staff, but there is no independent accredited training facility. Large operators such as Chandra Asri and Peni function as training grounds for workers, who are often poached by competitors once they are qualified and experienced. PPT Migas, Pertamina's training school in central Java, has been planning to offer training courses for petrochemical technicians, but has not yet been able to do so due to a lack of funds. Here is a clear opportunity for the private sector to step in: for instance, a consortium of large operators could open their own facility for training and certification.

3.15 Little Attention to Research and Development

In line with its generally poor focus on education and innovation, Indonesia has historically had only limited resources for research and development. Among other things, this has led to an unusually high level of reliance on imported technology and machinery, and few attempts to develop a domestic industrial machine sector. In a highly specialized and capital-intensive sector such as petrochemicals, virtually all machinery and technical equipment, as well as spare parts, has to be imported, which adds significantly to setup and operating costs, and to downtime when repairs are carried out.

4.0 RECOMMENDATIONS FOR ACTION

- The government must take action to establish a clear and consistent long-term policy on the petrochemical industry as soon as reasonably possible, and back it up with a supportive operating environment. The petrochemical industry supports thousands of companies in numerous downstream sectors, and ultimately affects the employment of a large number of people around the country.

- The petrochemical industry policy should be formulated in consultation with the private sector, and channels for ongoing dialog should remain open thereafter. In general terms, the private sector should continue to be heavily involved in the development of the sector, given its ability to contribute both funding and expertise.

- Before even a well-planned industrial policy can be effective, national stability, law and order and legal certainty must be improved, however. Security is commonly cited as the single largest problem for petrochemical operators at present.

- Integration needs to be addressed in the petrochemical industry policy. There are numerous mismatches in the production / consumption / trading picture that require urgent attention. For instance, there is a local shortage of basic upstream materials, while there is significant overcapacity in many products further down stream.

- Indonesia's infrastructure needs to be improved. The government should encourage the private sector to fund as much of its development as possible. Aside from private developers, the major petrochemical industry players could become joint investors in roads, railways, ports etc. Importantly, these facilities should be granted commercial licenses so that the investment can be recouped over time.

- Feedstock issues also need to be resolved. Additional oil refining capacity will be needed over the next few years, and part of this capacity should be directed towards the production of naphtha and other petrochemical feedstocks. Again, the private sector should play a major role.

- In the medium term, natural gas, and maybe also coal, should be prioritized as a raw material for petrochemical feedstocks to reduce the heavy dependence on oil. PGN (Perusahaan Gas Negara) needs to build more gas pipelines, in line with its schedule of commitments; this a major factor holding back the wider use of natural gas in the country.

- Pertamina needs to improve its reputation and expertise in the petrochemical business. The best way to do this is to enter into joint ventures or other alliances with prominent foreign firms, on a fixed-term knowledge and technology transfer basis.

- Now that a restructuring agreement for Chandra Asri has been reached, it would make sense to look at ways to optimize the use of this plant. One solution would be for the government to sell a stake, for instance to Peni, which has already been in talks with Chandra Asri regarding a merger or joint venture.

- TPPI should be brought on stream as quickly as possible. This plant will have the capacity to produce a multitude of products, including the light grade naphtha needed by Chandra Asri (and in TPPI's own naphtha cracker, presumably), which is currently being imported. TPPI will also produce paraxylene, which is presently imported in huge quantities.

- The prevailing duty and VAT incentives need to be reviewed to help prevent misuse, which damages those producers that play by the rules. Also, the duty incentives are becoming redundant now that import tariffs have been reduced across the board, and are really only effective vis-a-vis certain MFN rates.

- The possibility of reducing MFN import tariffs on semi-manufactures and plastic products should be examined. This would have the dual effect of helping producers of finished goods for the local market, while at the same time forcing domestic producers of plastic sheets and other semi-manufactures to become more competitive.

- The government could consider offering limited-term incentives for startups to encourage new investment in the petrochemical sector. Industry players have suggested that machinery and raw materials imports be exempt from duty and VAT during the first two years of

operation. This could replace the current system of reduced import duties on raw materials for startups and capacity expansions.

- The government needs to take urgent measures to minimize corruption, collusion and other illegal practices in the customs service. Large-scale customs fraud and outright smuggling are being conducted with the involvement of customs officers and other government employees, and are highly damaging to the domestic petrochemical industry and to legitimate traders.

- The customs service also appears to be incapable of performing inspections and valuations on technical goods such as petrochemicals. This is contributing to customs fraud, and to the flooding of the market with illegal imports. The government should appoint an independent company to provide these services again, possibly for an interim period while the local customs service undergoes a change of culture.

- Reinstating the pre-shipment inspection scheme for imports would cut costs for importers by minimizing the illegal levies demanded in Indonesian ports, and the attendant delays that incur additional charges. It would also greatly benefit the domestic producers by raising the official import levies and duties charged to the "proper" levels and make imported products less competitive.

- Several issues connected with regional autonomy remain to be clarified. Specifically, rights and obligations over petroleum production, processing and marketing, and also the granting of commercial licenses, need to be determined.

- The general capability level of local producers needs to be raised, along with market confidence in local products. Among other things, this would help to minimize the import of certain high-specification products that also are, or could be, made locally, primarily for use in the manufacture of branded export goods.

- Indonesian companies must start to take better advantage of the learning period they are exposed to when they act as contract manufacturers for foreign principals, or joint venture partners to foreign companies. In order to be successful in this type of technology, skills and know-how transfer, Indonesian companies need to pay much greater attention to rigorous quality standards, administrative and

production efficiency, marketing and promotion, etc. in order to succeed on their own, however.

- Volatile exchange rates present significant problems for importers of raw materials etc., who need simple and reliable hedging options. The government should move to approve the trading of currency futures on the Jakarta Futures Exchange, and issue guidelines to help companies use these facilities.

- Indonesia's low emphasis on research and development is partly responsible for the absence of a proper domestic machine industry. The government should encourage the private sector to conduct and sponsor more R&D activities so that dependence on imported technology and know-how can be reduced, and domestic interest and expertise in the sectors can increase. It could also help to introduce the concept of transferring and sharing technology and know-how among public and private, or foreign and domestic, players in the industry. Additionally, the government could provide incentives for R&D as part of new project developments or expansions to existing facilities.

- To improve human resources development in the petrochemical sector, PPT Migas should be given the funds necessary start running the training courses it has been planning to offer to technicians, operators etc. in the petrochemical industry.

- Private-sector players should also be encouraged to open independent training and accreditation facilities for petrochemical industry staff.

- Worker productivity needs to be improved, particularly in the face of increasing domestic wages and the heightened competition from China, which has higher wage costs, but also markedly higher productivity.