CHAPTER 8 FORESTRY

A preliminary report on Forestry was published in January, 1968.* It contained general recommendations concerning the reform of forest policies and forest management in Vietnam, and made suggestions for the promotion of specific forest industries. Certain of the recommendations were regarded as controversial, and the report inspired some useful criticism and comment. We understand that these recommendations have since been taken under active and serious consideration by the Ministry and other interested governmental agencies.

The preliminary report has been widely distributed and additional copies can be readily supplied. In this chapter of the present report we are not repeating the conclusions we reached earlier or the arguments we used to sustain them, except to the extent necessary to explain and illuminate an account of subsequent work. The Joint Development Group believes that the conclusions presented in Working Paper No. 17 were valid ones.

Vietnam's principal interest in its timber resources in the next ten years lies in the promotion of the wood-based industries - logging, saw-milling, plywood and veneer manufacture, and wood pulp - to supply domestic and overseas markets, thus reducing imports and earning foreign exchange. The economic importance of the country's timber resources will make apparent the need for efficient administration and research, including such elements of these as forest inventories, forest protection, and reforestation and management plans. Recommendations for particular wood-based industries are presented in chapter 9 which follows immediately, and the importance of forest assets to the economies of the principal regions of Vietnam is described in Chapter 12.

Since November, 1967, the work of the Joint Development Group in Forestry has been carried out in very close cooperation with the governmental agency principally concerned, the Department of Water Resources and Forest Administration in the Ministry of Agriculture.

---

*"Preliminary Report on Forestry", Joint Development Group, Working Paper No. 17, January, 1968.

A post-war planning committee consisting of senior officers of the Department has been established, and ministerial instructions concerning collaboration with the Joint Development Group were issued. It was under the auspices of this Committee and by individual members of it that the studies described subsequently in this Chapter were actually carried out.

THE FOREST SITUATION TODAY

The following description of forest lands, which may be more comprehensive than previous descriptions applied in Vietnam, is being used:

> "All lands with a 'forest cover', that is with trees whose crowns cover more than 20 percent of the area and are not used primarily for purposes other than forestry."

In Working Paper No. 17 it was stated that there are 12 million hectares of land in Vietnam to which this description may correctly be applied. Subsequent studies made by the Joint Development Group, using a U.S. Army map showing twenty different vegetative types, confirm that this figure is approximately correct. Descriptions are available of each type of vegetation, and tables have been constructed showing their distribution province by province. Although the details may be less correct than the total figure arrived at for forest land, the study has been useful in identifying the larger areas of valuable forest in which commercial exploitation is likely to take place after the war.

About half of the total area of forest land has individual trees of sufficient size for industrial use. The country's forests are overwhelmingly tropical hardwoods, with a great variety of species, some of them worthless, but others among the world's most prized. In value and volume the most important of them belong to the dipterocarp family, a group of species with an established place in world markets. Typically these are large, dominant trees, which produce many seedlings and grow

fast, traits which simplify the management of a depterocarp forest and usually make replanting unnecessary.

The economic importance of the tropical hardwood forests of Vietnam is considered separately in this report, in chapter 12, in the context of regional development programs, but a brief description of the physical resources available is appropriate here as well.

The five northern provinces (the I Corps Tactical Zone) alone have 1,600,000 hectares of forest cover, rather uniform in that almost all is high forest with several canopies and dense undergrowth. This forest undoubtedly has large volumes of high-quality timber. However, owing to the difficulties of the topography, resulting in high logging costs, and the distance of the forest from the principal centers of population on the coast, the forests of the region have remained largely unknown and unexploited.

The five provinces of the zone traditionally imported their timber supplies from North Vietnam, and since 1954 have been doing so from the South.

Further south the seven provinces of the Central Highlands (Kontum, Pleiku, Darlac, Phu Bon, Quang Duc, Tuyen Duc and Lam Dong) have a high proportion of forested land, about four out of a total of five million hectares. In contrast to the forests further north, these forests are not uniform, five major classes presenting various problems and opportunities.

In Kontum and Quang Duc are extensive areas, about 1,800,000 hectares, of high-quality timber, but they are remote and often on difficult terrain. They are not as likely to be exploited in as early a future as the forests further south and east, and are therefore suitable for forest reserves. Of more immediate interest are 1,500,000 hectares of more open forest which forms the dominant cover of Pleiku, Phu Bon and Darlac, and of particular interest are 180,000 hectares of coniferous forest in Tuyen Duc and the neighboring provinces.

These pine forests present silvicultural problems very different from those of the tropical rain forests, but very similar to those of the south-eastern United States. Fire and grazing are two of them, and a third is how to regenerate the extensive, even-aged stands of a single species. Because of their long fibres, rapid growth and accessibility, the pine forests offer an excellent opportunity for the manufacture of sulphate pulp for domestic use and export.

Darlac, Quang Duc and Tuyen Duc have between them about 100,000 hectares of grass-land, formerly under forest, and capable, as trials have proved, of growing trees again, but probably more suitable now for development as livestock ranges. Finally, in scattered blocks there are 500,000 hectares of forest land with an undergrowth of bamboo, the largest block lying just north of Kontum city. The interest in bamboo is for paper pulp, since its fine long fibers can be used to add strength to those of the tropical hardwoods. While not as valuable as those of the conifers of Tuyen Duc, bamboo fibers have special qualities which suggest that this type of forest may eventually be a useful source of material for a pulping industry, and should be placed in reserve for that purpose.

In the six provinces of the III Corps Tactical Zone which lie nearest to Saigon, there are still 500,000 hectares of forest land, including a large block of mangrove. The hardwood forests contain some commercial timber, but the timber values of these areas are becoming less important. However, the other five provinces of the Zone lie on the Mekong Terrace, in a belt from the sea to the Cambodian frontier and northward to the Annamite range, and within this area of 2,000,000 hectares there are at least 1,500,000 hectares of high, dense forest besides smaller areas once under dense forest, but in which the state of the forest has been affected and changed by human activity. The Mekong Terrace presents the best opportunities in Vietnam for exploiting and growing tropical hardwoods. Forestry operations of all kinds are easier and cheaper than further north; the natural composition of the forest is favorable, in that there is a high proportion of species belonging to the valuable dipterocarp family.

The forest lands of Vietnam include over half a million hectares of mangrove, mostly in An Xuyen and Kien Giang provinces in the Mekong Delta and in the provinces immediately east of Saigon. The mangrove forests grow upon very poorly drained saline and acid soils, unsuitable for agriculture without costly preparation. This type of forest consists of about twenty species of trees and shrubs which form a dense tangled evergreen mass. The species are all highly specialized, and adapted only to the tidewater flats, where they stabilize the soils and gradually build up firm ground. In the westernmost part of Kien Giang and in adjacent areas of Chau Doc, there are 190,000 hectares of tram (Melaleuca) forest, and large areas of tram also occur in the Plain of Reeds. The tram is a small fast-growing tree which grows upon the higher, less saline but still flooded sites, and is widely planted by the people of the countryside.

Mangrove and tram do not produce industrial wood, but both supply excellent firewood and charcoal and have long been exploited for these products. Large quantities were formerly shipped to Saigon and Singapore, but with increasing insecurity and diminishing markets this trade has now almost ceased. Although it may eventually recover somewhat, the long-term trend will be downward, for charcoal and fuelwood are economically inferior goods, the demand for which will decline as incomes rise and other fuels become available. In this sense, neither mangrove nor tram forest presents an economic opportunity. The bark of the mangrove has been a source of tannin extract in the past, but this can no longer be thought of as an economic opportunity either. Tram, on the other hand, is greatly esteemed by rural communities, providing not only fuel but also building poles, framing and foundations for their houses, and shade.

At the present time most of the logging taking place in Vietnam is on the Mekong Terrace. Loggers are also at work on the more level portions of the Central Highlands, particularly in Tuyen Duc and Darlac provinces. Presently accessible and operable forests probably amount to only 2,500,000 hectares of the total, and it is significant that by far the greater part of the country's saw mill capacity is in the Saigon area (including Gia Dinh and Bien Hoa). In all five of the northern provinces,

despite their natural forest wealth, only two sawmills are in active operation, and they work only sporadically at that.

Two basic principles have governed forest policy in Vietnam. The first is public ownership of almost all forest land and the second is close control over exploitation. The forest laws distinguish between the forests which are now protected but can be made available at some time for farming, and those which are permanently reserved for timber. Each forest district has an allowable cut, for which logging companies bid and receive licenses. In general, policies have been cautious and restrictive; and in the result the production of the country's sawmills has never approached the country's needs for industrial wood, which are estimated at about one million cubic meters a year.

The forest situation today displays those problems which are common to developing countries in the tropics and elsewhere, and also other problems arising from the war. Among other effects, the war has made it impossible for employees of the Forestry Administration to travel in the forest and perform their regular duties of preventing trespass and enforcing cutting regulations and other conditions of licenses. In practice forest guards are now confined to their offices in provincial capitals, and for all practical purposes control over exploitation has ceased. Many of the staff of the Forestry Administration have been drafted into the Army.

The long-range effects of defoliation are not fully known. They will certainly include a loss of growth and perhaps a change of composition towards other species which may be less or more valuable. Less doubt exists regarding the effects of bombardment. Shrapnel has become a common ingredient of Vietnamese logs and can seriously lower their value, especially for export. Finally, military operations have made logging more difficult and dangerous and explain, to some extent, a production of logs far below the country's needs and the sawmills' capacity.

Another effect of the war is possibly beneficial. It has caused many people to move out of the forest toward the coast and the urban

centers. To this extent, they have cleared less forest for shifting cultivation, and this system of agriculture has had less impact on the forest than it would have done in time of peace. In the neighborhood of Ban Me Thuot, for instance, where large numbers of people have concentrated in the search for security, forest fallows are reported to be becoming shorter, and there is a growing interest in the use of fertilizers to maintain yields.

SURVEYS FOR POST-WAR DEVELOPMENT

Since its establishment in November 1967, the committee on post-war development planning in the Department of Water Resources and Forestry Administration in cooperation with the Joint Development Group has devoted its attention to three specific subjects. These have one thing in common: all have some long-term economic significance, and all, if the appropriate measures are taken, can result in benefits to the economy even in existing conditions. Although major developments in the wood-based industries will have to await the end of the war, every opportunity for progress at the present time, however small, should obviously be seized. The three subjects examined are:

- Timber supplies for the Mekong Delta
- The state of the sawmilling industry
- The production and export of cinnamon

Timber Supplies for the Delta*

The Mekong Delta is the only major geographical area of Vietnam which is not heavily forested and which cannot supply its own requirements for industrial wood. The population of the Delta numbers more than six millions, and it may be expected to increase rather rapidly after the war. Current and normal demands for sawn wood alone in this region amount to about 160,000 cubic meters annually, and will increase rapidly in a period of agricultural and industrial development.

---

* The substance of this section of the report has been drawn from the report by Engineer Tran chau Lam, "Importation of Logs from Cambodia", December 1968.

The Delta already has the sawmilling capacity to supply its present needs, but in fact it does not do so. There are 60 sawmills in all, the largest concentrations being at Long Xuyen (21), Rach Gia (13), and Can Tho (10), and they have a combined capacity of 240,000 cubic meters a year. In 1967, if official statistics are correct, they received between them 12,300 cubic meters of logs, and cannot have worked at more than 5% of their capacity. At full capacity the Delta sawmills would keep 1,200 men in employment and would add VN$ 960 millions annually to the gross domestic product.

Of the log supplies which reached these sawmills in 1967, 7,000 tons came from inside Vietnam and 5,300 tons came from Cambodia. Markets for Vietnamese wood products and sources from which Vietnam might draw additional supplies to feed its wood-based industries were discussed in Working Paper 17. When, for instance, safe and passable roads can be built into Laos, Laotian logs may be expected to move eastward either for shipment through Da Nang or for processing at that place, in either case bringing benefits to the economies of both countries. From Cambodia there are two possible trade routes: one, between the provinces of Tay Ninh, Binh Long and Phuoc Long(which have some of the richest forests in Vietnam) and the border would give access to similar forest areas in Cambodia; this route is presently closed and there is no prospect of reopening it until peace returns. The second is by the Mekong and Bassac rivers into the Delta and this is how logs from Cambodia are presently arriving.

The rivers are the most important present and future routes for delivering log supplies to the sawmill industry of the Delta. In part this is owing to the natural advantages and low costs of transportation by water, and in part owing to the fact that the Delta, and especially the Trans-Bassac, is inconveniently situated with regard to Vietnam's own commercial forests. It is easier, cheaper and more certain to bring logs down the waterways from Cambodia than it is to deliver them overland by truck; and as long as there are equitable exchanges, with Vietnamese produce and manufactures moving in the other direction, it is in everybody's interest that former trade relationships should be resumed.

The frontier has been closed and the regular normal trade in logs stopped since 1963. However, four provinces, Kien Giang, Chau Doc, An Giang and Phong Dinh are still being permitted to meet their needs for sawn lumber from Cambodian log supplies, and the limited traffic which persists is being carried on without the formalities of import licenses and currency controls. This is a commendably pragmatic approach to a difficult situation. In 1968, imports from Cambodia are expected to be 10% higher than the 1967 volume of 5,300 cubic meters. The trade is not merely sanctioned, it produces revenue, since an import duty of 20% of controlled Cambodian log prices and a quarantine tax of VN$ 10 per cubic meter are being levied at the frontier.

The logs reaching Delta sawmills in this way come mostly from the Cambodian province of Kampsang Cham. The species most commonly represented are sao (Hoppea spp) and dau (Dipterocarpus spp), both very acceptable in Vietnamese markets. The logs are of consistently good quality which is not always true of Vietnamese logs originating from areas of military activity.

Cambodian log prices at the frontier and delivered to sawmills are subject to some distortion, and comparisons are difficult. Different currencies are in use at both official and free market rates: the Cambodian system of log measurement results in calculated volumes 70% greater than Vietnamese standard measurements; and though duties are levied on the basis of controlled Cambodian prices, importers claim that the prices actually paid considerably exceed the latter. However, the costs of a cubic meter of sao sold in Can Tho appears to be roughly as follows:

Cost at frontier	$VN	3,429.00
Taxes		495.00
Transportation to Can Tho		30.00
Dealers' profit (20%)		790.00
	$VN	4,744.00

Outside the four favored provinces a sawmill can only obtain a Cambodian log by arrangement with a sawmill or dealer operating inside them, and appears to pay an additional 20% mark-up for this consideration.

Inside the four provinces large consignments of logs are allocated among sawmills by lot, and no operator can know ahead of time what logs he will actually receive or what he will have to pay for them. In this complicated process the opportunities for unofficial and irregular payments are numerous.

True prices and profits are therefore almost impossible to discover, but in the case of logs reaching sawmills outside the four provinces the latter may be as high as 60% of original costs. Nevertheless, prices of Cambodian logs delivered to Delta sawmills still appear to be almost VN$ 800 cheaper per cubic meter than logs of comparable quality from domestic sources. Though the prices and profits of Cambodian logs are higher than they ought to be in the Delta, at least the trade persists, and it is believed that if the trade were liberated, so that a bigger market could be supplied, both prices and profit margins would fall. In the event the Delta sawmills would operate closer to capacity, an incentive would be provided for the operators to expand and modernize their enterprises, and the public would get sawn timber at reasonable instead of exorbitant prices.

A policy of admitting greatly increased log imports from Cambodia may appeal as a temporary measure at a time when sufficient domestic supplies are not available. We believe, for several reasons, that it would be a correct policy for the long term also, even when the Vietnamese economy is operating normally and Vietnamese forests are being more fully exploited.

First, and as mentioned above, imports of Cambodian logs will help to keep lumber prices down not only in the Delta but in Saigon as well. More mills will be established, more employment will be created and more people will buy and use wood. There will be unusual demands for lumber in the period of reconstruction after the war and it is hoped that they can be met at reasonable cost. The effects of lower prices on domestic industries will not be deleterious but beneficial, they will result in a growing market and the Vietnamese sawmilling industry will be able to grow along with it.

Second, imports of logs from Cambodia will enable the sawmilling industry to close the gap between the country's needs for sawn wood (estimated at one million cubic meters in 1967) and domestic production of saw logs (205,000 cubic meters from which 133,250 cubic meters of sawn wood were produced). In part the deficiency is being met by importation of sawn lumber from other countries. There should be no need for this when Vietnamese sawmills are idle.

Third, the case for expanding log imports in the long as well as short term rests upon Vietnam's increasing capacity to process and export manufactured goods. The Mekong Delta possesses many of the elements necessary for successful industrial development - a sound agricultural base, labor, low-cost water-borne transportation, installed capacity and established manufacturers. The sawmilling industry in the Delta lacks none of the essentials except the raw material to work with.

Finally, the more that can be done now to resume normal trading relationships between Vietnam and her neighbors, the more likely that profitable regional exchanges of goods and services will develop after the war, and the more likely that economic and political stability can be established in a southeast Asian context. For an outward-looking economy this is important.

The Vietnamese Sawmill Industry

The previous section of this chapter made recommendations concerning one aspect of the sawmilling industry in a particular region. In the course of the last year the situation and problems of the industry were reviewed as a whole and a report has been published*. The facts and proposals which follow are drawn almost entirely from this report:

Sawmilling is a relatively uncomplicated process, often the first industrial activity to appear in an area, and it leads naturally to the development of other wood-based industries. It is flexible regarding

*Engineer Le cong Tam: "Study of the Sawmilling Industry".

size of units, skills required and location. With little capital investment and simple technology, it can supply a versatile commodity which enters many parts of the economy at various levels and in various forms and can often substitute for materials which would otherwise be imported. Vietnam's needs for sawnwood are likely to grow rather steadily; and because they can be met mainly from a natural resource, this growth need not make excessive demands upon the country's holdings of foreign exchange.

At the present time sawnwood is scarce and expensive. Large volumes required for military needs have been imported, and the general public has either had to pay extremely high prices or resort to substitute, frequently inferior, materials of foreign manufacture. Neither the industry nor government policies toward the industry has yet been able to provide answers to the problems of higher demand and restricted log supply created by the war. Information on which more suitable policies might be devised has been unreliable and inadequate.

The study of sawmills undertaken in cooperation with the Joint Development Group was designed to correct this deficiency. In a first phase it covered the capital area (including Bien Hoa and Gia Dinh) and 110 operating sawmills. (There are in the same area almost as many which do not operate.) In a second phase an investigation was made of mills in 14 provinces. Specific facts, therefore, are now known about eighty per cent of the licensed sawmills in the country, representing almost the entire capacity of Vietnamese industry to process wood efficiently. On the basis of the information acquired concerning the characteristics and problems of the sawmilling industry, it is now possible to suggest ways of raising output and meeting Vietnam's needs for sawnwood.

A notable characteristic of these enterprises is their large number and small capacity, even in an industry in which small capacity is common. The country has 500 licensed sawmills and probably several hundred more that are not licensed. Of the former, only 300 are actually operating and most are doing so sporadically, Of this number, 54 are capable of sawing 300 cubic meters a month; 120 are capable of 200 cubic

meters a month; and the balance are only capable of 100 a month. The total capacity of the 300 active sawmills is 633,600 cubic meters a year.

In fact, these sawmills produce far below capacity. For example, in 1967 they sawed 205,000 cubic meters of logs into about 133,250 cubic meters of lumber. Their first problem then is a remarkable one, that capacity is unused (and necessarily so due to insufficient log supply) at a time when market demands are largely unsatisfied.

A second characteristic of the operating sawmills is the extreme irregularity of their operations. On a comparison of capacity and production we may assume they work one-third of the time. However, since even the inactive mills produce occasionally and a certain number of unlicensed mills are also processing logs, the actual production of the mills studied may be closer to 20% of their capacity.

The degree of mechanization is very low. In a typical mill only the head-saw works by power, with perhaps one edger and a cut-off saw. Invariably logs and sawnwood are moved by human labor. The machinery installed is almost always antiquated and poorly maintained. The motor is often an army surplus jeep motor; and other items consist of odds-and-ends put together in response to an immediate need and not well co-ordinated. The usual horizontal band saw has notable advantages, but speed is not among them. With seven workers, it can process about six cubic meters a day.

For the most part, the owners of these sawmills are small farmers and tradesmen with few resources and limited knowledge of either the technical or commercial aspects of their business. Often they are people displaced by the war from their regular occupations who have taken up sawmilling as an alternative means of livelihood. Only a few have the skill, interest and resources to become efficient producers. For this reason, although a program of financial assistance to the industry is warranted (possibly by Agricultural Development Bank loans for investment and operation), such a program should be selective as to the recipients.

At present the excessive number of mills in comparison to the supply of logs renders each an inefficient production unit. To some extent this inefficiency is concealed by currently high log prices. A sawmill profit of VN$ 1,000 a cubic meter does not appear excessive when the log itself has cost VN$ 7,500 a cubic meter and lumber costs VN$ 16,000. In fact such profit includes the hidden costs to the owner of stoppages from lack of logs and breakdown of machinery. The public is paying for this; and the workers pay too, in irregular employment and low wages. Sawmills operate so irregularly that they probably do not justify even the modest investments made in them.

The problem of log supplies was discussed in some detail in Working Paper 17. It is compounded of Viet-Cong extortion, military operations, poor roads and equipment, excessive official regulation, and irregular restraints and exactions. The weak financial position of most of the operators prevents their stocking enough logs to keep operating when deliveries are held up. They have no incentive to improve their machinery and increase the rate of output, and prefer to work slowly with the equipment on hand. If they do borrow money to purchase logs, it is at 5% interest a month. At this rate delays in deliveries can be ruinous, and there are many examples of bankruptcies as a result. When, in these circumstances, a sawmill changes hands, the new owner operates on the same disadvantageous terms. The industry needs not only logs and adequate machinery but also unencumbered equity capital. In sawmilling, working capital requirements should usually at least equal the fixed investment.

An excessive number of intermediaries are involved in the logging and sawmilling business. Between forest and mill a log may often have four or more owners and three separate licenses, and will be subjected to at least two legal taxes and possibly a number of unauthorized payments. These complications too contribute to delays in delivery and high prices.

The objective of the study described in the preceding paragraphs is clear. It is to raise the output and lower the cost of sawnwood so that it can meet the requirements arising from national reconstruction.

Because alternative materials, including wood-based panels and paper, are often more difficult to obtain than sawnwood, and because the needs for building materials will be great, a production level of one million cubic meters is a minimum target. Counting both licensed and unlicensed, operating and non-operating sawmills, Vietnam may already be approaching the capacity to achieve this output. Tay Ninh alone, for example, has 59 mills of which not one is presently operating. As stated already, the capacity of the industry has outstripped its supply of logs.

Several measures are suggested: first, a review of existing legislation concerning logging and sawmilling so as to legitimize a good many straightforward commercial and industrial activities which the law in its present state appears to prohibit: second, a reorganization of the sawmilling industry, so as to reduce the number of operating enterprises but ensure that those which do operate do so full-time. In meeting the country's demands for lumber, the industry could and should employ 4,000 men steadily, instead of offering them one day's work a week. Third, steps should be taken to encourage and assist the mills outside Saigon. The industry is well suited to operate in provincial capitals and smaller towns, and would be a useful source of employment in such places.

The most urgent problem, log production, has administrative aspects that should be dealt with at once. Procedures for licensing and taxing are cumbersome, and subject to abuse. The Ministry of Finance has already proposed that logs be measured and royalties collected at the sawmills. Both Sabah and the Ivory Coast, large and successful timber producers, follow this procedure. In Vietnam, if measurement of the logs presents difficulties the procedures can be simplified still further by having royalties collected as a production tax instead. Simultaneously we suggest the granting of credit by the Agricultural Bank to encourage the more skilled and responsible owners to keep a supply of logs on hand and to use their machinery to better advantage. Increased efficiency will justify a more liberal policy toward imports of machinery, spare parts and even logs.

Cinnamon

The cultivation of cinnamon has been examined in great detail by a member of the Committee with long forestry experience in Quang Ngai, the province responsible for the greater part of Vietnam's previously flourishing trade in cassia bark*.

Many varieties of the cinnamon tree grow in tropical Asia, and it is the bark of the Royal Cinnamon tree (Cinnamomum Lowerei, "Que" in Vietnamese) that is most esteemed and most readily accepted in American markets. The tree is a dominant component of the high tropical rain forest: it grows at a variety of elevations, from 100 to 2,500 meters, but is exacting in its other requirements, preferring temperatures not in excess of 26 degrees Centigrade a relative humidity of from 84 to 86 per cent, a rainfall of at least 2,500 millimeters spread over at least 140 days a year, and well-drained, red-yellow podzolic soils. Consequently, the area in which cinnamon occurs in Vietnam is a restricted one: the tree grows best in a zone of about 3,600 square kilometers, where the provinces of Kontum, Quang Ngai and Quang Tin meet. In this zone it is hardy, prolific and fast growing.

Highland farmers, especially those of the Cua and Sedang tribes of Quang Ngai, cultivate the trees with seemingly little special care or attention. Saleable bark is produced at three years, but quality as well as yields of bark improve with age, and at thirty years a tree may be 40 centimeters in diameter and produce about 50 kilograms of dry bark, worth about VN$ 7,500 to the producer. The possibilities of increasing production in the area best suited to the cultivation of the cinnamon tree are almost unlimited, though obviously there is a limit to the quantity of this specialized product which world markets can absorb.

Buyers bargain for standing trees, and dry, sort, clean and pack the bark. At this stage the bark is worth about US$ 2.00 a kilo f.o.b. Saigon. Enquiries made by the Joint Development Group in the United States indicate that at this sort of price the American market can absorb all the bark that Vietnam can presently produce. Our enquiries in Vietnam indicate that if exports were permitted and the

*Engineer Phan Dinh Lan: "The Production and Export of Vietnamese Cinnamon", November 1968.

traditional trade were resumed, exports would reach 1,500 tons worth US$ 3,000,000 in foreign exchange in 1969, and that by 1980 the trade would probably amount to US$ 10,000,000 a year. Such figures represent a not inconsiderable proportion of total export values in recent years, and provide an instance of support for the forecasts of exports advanced in Chapter 2 of this Report.

In fact, there is presently no trade whatever in this available and valuable commodity, and overseas buyers have been compelled to turn their attention to other sources of (reputedly inferior) supplies in Indonesia and Ceylon. Traffic in cinnamon bark was prohibited by the military authorities in 1965 on the ground that it constituted trading with the enemy, and the order then made has never been reviewed and rescinded. We recommend that it now be reviewed by the inter-ministerial committee on resource denial in order to determine whether the damage the order inflicts upon national economic and social interests may not be greater than any military purpose it may serve. The danger of Vietnam's permanently losing a profitable market to competitors in Indonesia and Ceylon is a real one, while denying a valuable cash crop outlet to these rural communities is unlikely to strengthen their allegiance to the Government of the country.

In a Working Paper which is being presented separately, some specific recommendations are made. They are that export of the bark should be permitted, possibly under certificates of origin, and export licenses issued by the representative of the Ministry of Economy in Da Nang, if some form of control is still considered desirable; that marketing cooperatives be organized to assist the producers in their dealings with buyers; that loans should be granted to producers to promote new plantings; and that an experimental station be established in Quang Ngai with a view to improving methods of cultivating the tree and preparing the bark. Finally, an investigation is needed of the feasibility of grinding the bark and distilling the essence in Vietnam instead of overseas, so as to secure for the economy the considerable added values which these operations afford.

FOREST POLICY AND FOREST TAXATION

The preceding sections of this chapter illustrate the range of economic and social factors involved in the exploitation, in the national interest, of forest resources.

With the increasing growth of commercial and industrial activity, demands upon these resources will become even heavier than they are already under the stimulation of war. The policies, laws and regulatory procedures which presently govern the forest industries were not designed to meet such demands; they were designed in an era when the products of the forest were mostly charcoal and fuelwood, and it seemed that the most desirable, and readily accepted, objective was to conserve the country's forest resources in their natural state. Today, the mere protection of natural resources from change is no longer an acceptable program; on the contrary, the forests must be turned into economically productive units, serving and supplying the most progressive sectors of Vietnamese society. Within the next ten years the country's demand for industrial wood, as a material for technically advanced industry and for international trade, will more than double. Of the three major industrial developments examined in some detail in Chapter 9 of this report, two concern the beneficial exploitation of the forest resource.

An objective discussion of how present policies affect production will touch on some sensitive points, and the agency principally concerned cannot be expected to propose or approve reforms that infringe upon well established, if irregular, practices and prerogatives. Nevertheless, forest policy is a matter of significant national interest, not of the interest of a single government department. In wartime, and after the war, the over-riding purpose of the forest authorities should be to see that a valuable public resource is put to good use. In contrast to such a purpose, there is now an acute shortage of industrial wood, though all the elements of production, - material, men and machinery - are present. If this situation cannot be corrected by the agency responsible within the framework of existing laws and policies, then there is something wrong with those laws and policies, or with their application, and they ought to be changed.

Fortunately, the urgent need to revise the basic premises of existing forest policy and to make them conform to economic realities now appears to have been recognized. By direction of the Minister of Agriculture, conferences have already been held inside the Forestry Administration to decide what should be done, and it is understood that a request has been made to the United Nations Development Program for the assistance of a specialist in the subject. Proposals should be ready for consideration by the Minister and the Government in 1969. At this time we suggest only that the revision of forest laws and policies should concern not only professional foresters, but also industrialists, economists, and businessmen, and that the opinions of the latter also should be sought and taken into account before definitive recommendations are submitted to the Legislature.

Whatever new policies emerge from this activity it is certain that the management of the nation's forests after the war will demand more manpower and more specialized skills than the Forestry Administration can presently command. Management in the future will involve much more than the routine enforcement of controls, the safe-guarding of trees, and the collection of taxes. It will also involve, as examples, the highly specialized functions of carrying on silvicultural research and conducting forest inventories. In order to develop such capabilities Vietnam will have to develop adequate training facilities of its own, as well as draw upon those of its friends overseas.

Arrangements have already been made for the College of Agriculture in the University of Saigon to be assisted by the University of Florida in agricultural and forestry education. As far as forestry is concerned, it may not be easy to attract good candidates to present themselves for what has hitherto been regarded as a rather narrow and restricted field of public service. We make the recommendation that the University's Forestry School should in future provide in its curriculum not only for aspirants to the civil service but also for people whose interests lie in the development of private forest industries. We believe that in this way students of broader abilities and interests will be attracted to equip themselves for professional forest careers.

In Working Paper 17 some tentative recommendations were offered concerning specific actions to adapt forest policies and procedures to the needs of an increasingly industrialized society in the post-war period. One of these was proposed for immediate implementation - the reform of the complicated present system of taxation, in which royalties, license fees, production taxes and similar dues are levied on a variety of different occasions between the felling of a tree in the forest and the time when it reaches the consumer as sawn wood. The recommendation was that all these dues should be replaced by a single production tax charged at the sawmill, and the belief was expressed that this would encourage production without resulting in loss of public revenue. Indeed we thought a substantial increase in public revenue would be entirely possible.

The proposal was a controversial one, but there has been an exchange of views between the Ministers of Agriculture and Finance, and a decision to simplify the taxation system, at least to the extent of collecting production taxes only on the finished products of the sawmills. In addition, action has been taken to reduce the number of check points at which log trucks are inspected by the Forestry Administration, and to simplify the bidding procedures by which standing timber is now offered for sale. Licenses to cut timber are now more easily obtained than formerly, and trucks can move more easily from the forest to the sawmills. Additional action to ease previous restrictions on the industry is being considered in cooperation with military and national police authorities; and the Collector General of Taxes has proposed that charges levied at the sawmills include also timber royalties and license fees, and that employees of the Forestry Administration be posted at the sawmills to assist in supervision. If this proposal is accepted and is effective, logs which have hitherto been escaping taxation altogether will begin to pay their share.

These are all welcome steps in the right direction, but they have not thus far been effective in greatly increasing the output of industrial wood, or in preparing the way for greater needs after the war. The facts are that in the last five years the price of lumber has risen 800 per cent, and the officially recorded cut of logs has fallen from 315,000 cubic

meters to 205,000 cubic meters (in 1967). In 1968, the average monthly figure has been a little under 20,000 cubic meters, about a quarter of the country's estimated requirements. Obviously, military operations are in part responsible for this decline, but they are not by any means wholly responsible for it: existing policies of sale, taxation, and control are also responsible for the scarcity of lumber, because they have not been adjusted to wartime realities. There have been no basic changes in the forest laws since 1932, long before Vietnam achieved its independence.

PLANNING FOR FORESTRY DEVELOPMENT IN 1969

The Joint Development Group can assist in 1969, to such extent as may be desired, in the review of basic forest policies referred to in the previous part of this chapter. In addition, arrangements have been made with the Committee for Forestry Research in the Department of Water Resources and Forestry Administration for four types of investigation, all closely related to the wood-based industrial developments described in Chapter 9. These investigations may be regarded as a further step towards implementation of the projects.

1. References are made in Chapters 9 and 12 to the prospects for the manufacture of plywood (and later other wood products) in the five northern provinces. A study is planned which will evaluate the capability of the region's forests to supply these industries. Particular attention will be paid to the available quantities and location of logs suitable for the manufacture of plywood of export grades. The study will extend to logging costs, will explore methods of reducing logging costs and will define the road construction requirements for the extraction and transportation of logs from the most suitable areas. An estimate will be made of the rate at which the forests of the northern provinces can supply logs to a plywood mill at Da Nang, describing species and qualities, and the probable costs, capital and operating, of a logging operation and of transportation. A comparison will be made between these costs and the costs of supplying the mill from other regions of Vietnam or from other countries, and a log supply plan will be prepared.

2. A comprehensive program of forestry work will be established. The principal objective will be to rehabilitate the nation's forests after the neglect and damage of the war years, and to provide for the services and infrastructure necessary to meet demands upon forest resources when the war is over. Rehabilitation of the forests, it may be said, will require a great deal of manual labor and should be a valuable source of employment in the difficult transitional period.

A report is expected by the end of the year which will define the policies and strategies of post-war forestry work as a whole, and co-ordinate these with other aspects of the development program. In addition specific work schedules will be established for each of the country's 47 forest divisions: these schedules will include an account of the work to be done and of the objectives of the work, the results to be expected, and requirements in manpower, equipment and money. The district plans will indicate methods of carrying out the work, with locations, priorities and time schedules. The result will be a plan of action, ready to be put into effect, in whole or in part, whenever and wherever circumstances permit.

3. A new country-wide program is needed for the establishment and protection of a new system of forest reserves and national parks. The vegetation studies made in 1968 will be useful for this purpose, and a third project for 1969 envisages continuing land-use studies in co-operation with other services of the Ministry of Agriculture.

In a first phase the effort will be to identify, describe, and justify areas which should be kept permanently under forest to the exclusion of other uses. Examples of such areas to be investigated in this way might include the Bac Mah range southeast of Da Nang (which has possible potential for a tourist industry), two areas in the highly productive Mekong terrace, and the mangrove forests of Ca Mau and U Minh. Maps will be prepared for all areas recommended for reservation, together with programs and cost estimates for development in each case.

In a second phase, detailed management plans will be prepared for two reserved forests on the Mekong terrace, one in Tay Ninh and the other in Binh Tuy. The plans will include full descriptions, time schedules and estimates of cost to bring these forests up to full production as rapidly as possible after the war. The work in these areas, which will also serve for purposes of demonstration and research, will indicate the dimensions of the problems of forest management in the country as a whole. As suggested elsewhere in this chapter, the forests of the Mekong terrace offer the most favorable present opportunities for the intensive management of tropical hard-woods.

4. Finally, plans for reforestation will be drawn up for the pine forest areas of Tuyen Duc and the plain of Phan Rang. As a start, under joint arrangements by the Forestry Administration and the Forestry Branch of USAID's Division of Domestic Production, a training course for appropriate officers of the Forestry Administration will be provided in photo-interpretation and in the making of forest inventories. By photo-interpretation a determination will be made of where and how much reforestation will be necessary. The work will proceed concurrently with studies by an Australian expert in reforestation, whose services the Australian Government has already agreed to supply under the auspices of the Colombo Plan.

These plans for reforestation, of course, are intended to support and supply the pulp-manufacturing industry proposed in Chapter 9. They should be given a high priority in post-war forestry programs.

Successful completion of these four projects in 1969 will provide Vietnam with a firm base from which rational development of the forest industries may thereafter proceed.

It is worth emphasizing that, except for occasional assistance from visiting specialists from the United Nations, Australia and the Joint Development Group, the 1969 work program will be carried out entirely by staff of the Forestry Administration, as the 1968 program has been.

The Joint Development Group's involvement in this case has been largely to define the vital role of Forestry in the economic development of Vietnam and to suggest and encourage the most profitable lines of study. The acquisition of planning capacity in the Forestry Administration itself is probably the most valuable result to date of the Joint Development Group's forestry activities.

CHAPTER 9 INDUSTRIAL DEVELOPMENT

SECTION I THE STRUCTURE OF EXISTING INDUSTRY AND THE EFFECTS OF THE WAR

Because of the war and the inadequacy of available statistical data, it is a matter of some difficulty to obtain a clear picture of the present structure of Vietnamese industry. Only one characteristic is obvious - and that is that almost the entire manufacturing capacity of the country is concentrated in the area of Saigon and Bien Hoa. Small manufacturers and cottage industries are numerous indeed, but their total number can only be approximated. Some businesses are licensed and some operate without licenses; and of those which are licensed some make returns to the authorities and some do not.

National Institute of Statistics figures indicate that in 1960 there were 7,398 manufacturing companies in Vietnam employing 59,306 workers. About 70 percent of these companies were situated in the southern part of the country, employing 88 percent of the industrial work force. No less than 3,123 companies (42 percent of the country's total) were in Saigon - Gia Dinh - Bien Hoa, employing 36,493 (61 percent) of the workers.

In 1966, 1,783 manufacturing companies and 12 electric power producers submitted returns to the Ministry of Economy and almost all were situated in the area of Saigon - Gia Dinh. The same is true of a catalogue of 1,390 manufacturers published by USAID in 1967. Although none of these investigations claim to present a total picture of the country's industrial situation, there is no doubt that they correctly reflect an over-concentration in the capital area. Today Vietnamese industry is certainly no more evenly distributed than it was in 1960: indeed, it is probably even more heavily concentrated upon Saigon and its environs, for this is where the great majority of the new businesses

opened in the last eight years have established themselves. Although more accurate data than now available are needed, it is safe to assume generally that what is known of industry in Saigon - Gia Dinh and Bien Hoa accurately reflects the state of industry in Vietnam as a whole.

STRUCTURE

Capital Investment

To gain some notion of the present industrial sector in Vietnam, the Joint Development Group's Industrial section has accumulated and analyzed information from a variety of sources. Included are capital structure, investment and employment data from the returns submitted to the Directorate of Industry by public and private agencies engaged in industrial activities; credit data, credit policies and business results from the General Federation of Industries and from the individual companies; and data on state-owned or joint state/private enterprises from the Commissioner for Public Corporations and the Director General of Budget and Foreign Aid*.

This analysis has covered more than 700 manufacturing companies, both large and small, including almost all Vietnamese manufacturers of any size and importance. It is believed that the results are properly representative of the manufacturing industry as a whole, particularly those concerning capital structure, investment, and employment. Information on production and sales is less reliable, because firm owners regularly understate these figures in order to evade taxes.

With this exception, the data presented in Table 9.1 are believed to give a reasonably accurate account of the importance and structure of the seven principal groups of industry.

The performance of those industries in groups 3, 4 and 5 in Table 9.1 are in strong contrast to each other, though all display

* The data accumulated in the course of these studies will be presented in a Working Paper to be published in early 1969.

Table 9.1

The Structure of Vietnamese Industry - 1967
(Millions of VN Piasters)

Group	Type of Industry	Capital Invested	Value of Machinery	Work Force (persons)	Sales	Remarks
1.	Food, Beverages, Tobacco	8,159	3,585	17,300	34,575	Excluding Binh Duong, Quang Ngai and small-scale sugar mills.
2.	Textiles	5,768	1,859	18,000	4,660	
3.	Paper, leather, rubber	2,758	1,233	3,650	1,506	Excluding sawmills
4.	Basic and processed chemicals	2,653	1,024	9,310	5,064	Excluding An Hoa-Nong Son complex
5.	Glass, ceramics, cement	2,562	1,449	3,960	1,405	Excluding handicrafts
6.	Mechanical and metal products	1,508	363	5,050	5,065	
7.	Electrical	520	159	3,320	990	Excluding electrical generation
	TOTAL	23,928	9,771	60,590	53,265	

Note: The figures given for the workforce exclude, in addition to those enterprises referred to in the remarks column, the large number of small business which operate without licenses and therefore are not included in official statistics. It is believed that these may employ as many as 60,000 additional persons.

approximately the same level of capital investment. The chemical industry obviously has been less affected by the war than the others. Groups 6 and 7, both demanding high technical skills in the workforce, represent the least developed of all Vietnamese industries. Nevertheless, the sales performance of the mechanical and metal products group is extraordinarily high in relation to capital investment when compared with the paper, leather, rubber, and even textile industries. There is a simple reason for this: the large volumes of consumer commodities, especially motor bicycles and scooters, imported since 1966 to flood the market with goods and counter inflation. In 1967, sales of motor bicycles and scooters totalled no less than VN $2 billions.

The most important industries in each group were as follows:

Industrial Branches 1967

Group	(Capital Investment shown in parenthesis in Millions of Piasters)
1. Food Beverages and Tobacco.	Beverages (3,500); Tobacco (2,100); Seasoning sauce (1,000); Seasoning powder (530); Sugar (180); Canned food (80).
2. Textiles	Cotton weaving and spinning (4,200); Synthetic fiber weaving (820); Jute bag weaving (230); Blanket weaving (160).
3. Paper, Leather and Rubber	Paper (2,400); Bicycle tires and inner tubes (170).
4. Basic and processed Chemicals	Pharmaceuticals (1,500); Basic chemicals (430); Plastics (390); Soap (150).

Industrial Branches 1967

Group	(Capital Investment shown in parenthesis in Millions of Piasters)
5. Glass, Ceramics, Cement.	Cement (2,000); Glass (230); Plaster and cement products (290).
6. Mechanical and Metal products.	Mechanical construction (670); Motor-bicycle assembly (160); Sewing machine assembly (200); Metal wire, nails (120); Aluminum products (60).
7. Electrical	Radio assembly (190); Electric cable (160); Batteries (50).

In terms of invested capital, the order of importance is as follows:

Cotton weaving and spinning	VN $4,200 million
Beverages	3,500 "
Paper	2,400 "
Tobacco	2,100 "
Cement and products	2,000 "
Pharmaceuticals	1,500 "

With the exception of beverages and tobacco, all of the industries in the above list have been established in Vietnam within the last ten years. Moreover, the beverages and tobacco industries, though of older foundation, have been completely re-equipped during the same period. A common characteristic of the six most important branches of industry therefore is that all have modern plant and machinery.

Another common characteristic is that all, with the single exception of the cement industry, depend for their production upon imported basic or semi-processed raw materials. Specific data on the materials used by these industries are not available, but foreign exchange

requirements can be deduced from import figures in recent years and company estimates of requirements in 1968. They are as follows:

	Millions of US $
Cotton weaving and spinning	8.0
Beverages	8.0
Paper	9.0
Tobacco	14.0
Pharmaceuticals	7.0
Total	46.0

This US $46 millions does not, of course, represent the entire foreign exchange requirements of Vietnamese industry for raw material imports but only for five of its principal branches. The Directorate of Foreign Trade in the Ministry of Economy states that total authorisations for the release of foreign exchange for importation of industrial raw materials amounted to US $69.75 millions in 1967 - about 65 percent of the total therefore being absorbed by these five branches.

Type of Enterprise

Most industrial enterprises in Vietnam have a single or family proprietor, and relatively few are partnerships. In terms of invested capital, however, the partnerships are clearly more important than businesses operated by single proprietors. (Table 9.2).

Investment is greatest in those branches in which the State participates. These include the sugar and cement industries, both with 100 percent public ownership. In the cotton, bag, paper and glass industries, there is a substantial public participation as well as private investment.

The State's total investment in industry has reached a figure of VN $5,723 millions, no less than 24.2 percent of total investment in industry at the present time*.

* Source: Director General of the Budget.

TABLE 9.2

Classification of Manufacturing Firms By Type

Industrial Group	Branch	Distribution of Capital Investment (Percent)		Distribution of Capital Investment by Sector (Percent)		
		Partnerships	Individual & Family Businesses	State Enterprises	Mixed Enterprises	Private Enterprises
Food	Beverages	99	1			100
	Tobacco	100				100
	Seasoning sauce	1	99			100
	Seasoning powder	92	8			100
	Sugar	100		100		
	Canned food	100				100
Textiles	Cotton weaving & spinning	100			42	58
	Synthetic fiber weaving	72	28			100
	Jute bag weaving	100			43	57
	Blanket weaving	100				100
Paper, leather, rubber	Paper, Tires & tubes, Shoes	99	1	51	34	15
Basic & processed chemicals	Pharmaceuticals	64	36			100
	Chemicals	100				100
	Plastics					100
	Soap	88	12			100
Glass, ceramics, Cement	Cement	100		100		
	Glass	76	24		60	40
	Plaster & cement products	71	29			100
Mechanical and Metal	Mechanical construction	100				100
	Bicycle & motor bicycle assembly	33	67			100
	Sewing machine assembly	58	42			100
	Wire, nails					100
Electrical	Radio assembly	47	53			100
	Electical cable	100				100
	Batteries		100			100

Table 9.3 provides a breakdown of investment by size for each branch of the seven principal groups of industries.

THE EFFECTS OF THE WAR ON INDUSTRY

The war has had its effect on manufacturing as it has on other forms of economic activity. Some industries have actually benefitted: the production of beverages, tobacco and canned foods, for instance, has increased considerably in the last few years.

	PRODUCTION			
Products	1958	1961	1964	1967
Beer and carbonated drinks (in hectoliters).	812,000	774,000	1,500,000	2,108,000
Tobacco (in tons)	3,400	4,232	6,071	12,400
Canned food (in cans)	(650 T)	2,800,000	3,453,000	4,767,000

On the other hand there are several branches of industry which appear to have grown rapidly between 1961 and 1965 but have fallen off since. Mainly these are branches concerned with the production of certain construction materials such as bricks and tiles, asbestos cement and roofing materials.

On the whole, industrial activity has increased for two principal reasons:

- the increased size of the Armed Forces and the presence of large numbers of allied troops, and

Table 9.3

Classification of Industrial Enterprises by Capital Investment

INDUSTRY		CAPITAL STRUCTURE (VN $ Mil.)				
Industrial Group and Branch	No. of Enterprises	Under 10	11-50	51-100	101-500	Above 500
I. FOOD:						
Canned food	4	2	2	-	-	-
Milk	1	-	-	1	-	-
Seasoning sauce (approx.)	400	400	-	-	-	-
Flour and confectionery	2	2	-	-	-	-
Seasoning powder and glucose	4	1	1	-	2	-
Edible oil	3	-	3	-	-	-
Alcohol and beverages	4	-	2	-	1	1
Tobacco	3	-	-	1	1	1
Sugar	1	-	-	-	-	1
II. TEXTILES (Industrial):						
Cotton spinning, weaving and dyeing	8	-	-	2	3	3
Synthetic fiber weaving	15	3	5	6	1	-
Jute	2	-	-	1	1	-
Blankets (Handicraft)	1	-	-	-	1	-
Cotton weaving	137	132	4	1	-	-

Table 9.3 (Cont'd)

INDUSTRY		CAPITAL STRUCTURE (VN $ Mil.)				
Industrial Group and Branch	No. of Enterprises	Under 10	11-50	51-100	101-500	Above 500
II. TEXTILES (Industrial): (Cont'd)						
Woolen knitwear	39	37	2	-	-	-
Socks	9	9	-	-	-	-
Knitted underwear	19	19	-	-	-	-
Elastic braids	11	11	-	-	-	-
Towels	20	20	-	-	-	-
Miscellaneous	11	11	-	-	-	-
III. WOOD, PAPER, LEATHER AND RUBBER:						
Plywood	1	-	1	-	-	-
Writing and printing paper and paperboard	7	2	1	1	1	2
Corrugated cardboard	3	-	3	-	-	-
Paper pulp	1	-	-	-	1	-
Leather products	22	21	1	-	-	-
Footwear	105	103	1	1	-	-
Tires and tubes	6	2	2	2	-	-
Tire and tube retreading	3	1	2	-	-	-
IV. CHEMICALS:						
Chemical products	4	-	1	2	1	-
Toothpaste	7	6	1	-	-	-

Table 9.3 (Cont'd)

INDUSTRY		CAPITAL STRUCTURE (VN $ Mil.)				
Industrial Group and Branch	No. of Enterprises	Under 10	11-50	51-100	101-500	Above 500
IV. CHEMICALS: (Cont'd)						
Paints	22	21	1	-	-	-
Plastics	104	97	5	2	-	-
Matches	1	-	1	-	-	-
Soap	21	19	1	1	-	-
Printing ink	5	5	-	-	-	-
Pharmaceuticals	85	60	18	5	2	-
V. GLASS, CERAMICS AND CEMENT:						
Glass	15	10	4	-	1	-
Ceramics and earthenware	5	2	3	-	-	-
Cement products	45	42	2	-	1	-
Cement	1	-	-	-	-	1
VI. METAL:						
Aluminum products	60	60	-	-	-	-
Lighters	4	4	-	-	-	-
Wire and nails	4	2	1	1	-	-
General mechanical construction	4	-	1	-	3	-
Foundries	15	11	4	-	-	-
Sewing machines	12	6	5	1	-	-
Motorbicycle and bicycle assembly	15	12	1	2	-	-

Table 9.3 (Cont'd)

INDUSTRY		CAPITAL STRUCTURE (VN $ Mil.)				
Industrial Group and Branch	No. of Enterprises	Under 10	11-50	51-100	101-500	Above 500
VI. METAL (Cont'd):						
Scooter assembly	2	-	-	2	-	-
Watch assembly	5	2	3	-	-	-
Welding rods	2	-	2	-	-	-
2- and 3-wheel vehicle accessories	11	10	1	-	-	-
VII. ELECTRICAL:						
Electric fans	3	2	1	-	-	-
Dry-cell batteries	6	4	2	-	-	-
Other batteries	2	-	2	-	-	-
Electrical fixtures	1	1	-	-	-	-
Electric wire and cable	2	-	1	-	1	-
Electric bulbs	2	2	-	-	-	-
Radio assembly	15	12	3	-	-	-
Transformers	1	-	1	-	-	-

- the movement of the rural population into and towards the cities.

In combination these factors have provided markets sufficiently large to enable most manufacturers to work to full capacity, so providing an incentive for them to invest in modern facilities in order to increase production. Until 1965 consumer purchasing power in Vietnam was low, but with the arrival of the allied forces there is no doubt that there has been a substantial increase in working class incomes. Demand for consumer non-durables and other goods has climbed to unprecedented levels as can be seen from Table 9.4, constructed from data supplied by the Department of Customs and the National Institute of Statistics.

Table 9.4

CONSUMER NON-DURABLES; PRODUCTION PLUS IMPORTS

Products (tons)	1958	1961	1964	1965	1966	1967
Sugar	67,052	95,003	92,312	101,000	139,781	179,619
Milk	15,600	20,000	26,000	29,408[a]	51,650	23,779
Wheat flour	38,352	62,905	63,966	78,706	110,011	87,072
Cotton and Rayon		12,603	12,508	15,080	16,327	NA
Synthetic fabrics		7,377	7,557	6,705	9,339	NA
Cement	284,253	367,648	512,722[b]	615,410	499,800	657,033

Notes:

(a) The Foremost Company began production at the end of 1965. Since then, its production has been as follows: in 1965, 25,766 cases; in 1966, 355,703 cases; in 1967, 343,452 cases.

(b) The Ha-Tien Cement Company began operations at the end of 1963. Annual production figures are: 1964, 75,305 tons; 1965, 189,284 tons; 1966, 141,000 tons; and 1967, 181,033 tons.

The liberal importation policy adopted in 1966 gave rise to an immediate and extraordinary increase in the volumes of certain imported commodities, but the increase was not fully sustained in 1967. There have been consistent increases, however, in some essential consumer non-durables, such as sugar, textiles, and wheat-flour. Consumption of milk products and cement, on the other hand, appears to have fluctuated considerably in the last three years.

Consumption of goods manufactured from semi-processed materials (for example plastics and pharmaceuticals) has grown very rapidly indeed (Table 9.5).

Table 9.5

FOREIGN EXCHANGE EXPENDITURE: PLASTICS AND PHARMACEUTICALS*

(Thousands of US Dollars)

	1958	1961	1964	1965	1966
Plastics	1,831	3,062	4,625	5,184	7,468
Pharmaceuticals	12,394	11,989	10,930	13,403	14,553

In the case of pharmaceuticals there has been more rapid growth than these figures indicate. Ten years ago almost the whole of the foreign exchange allocated for imports of pharmaceuticals was used for importing finished products: in 1968 half of these foreign exchange requirements was used for the purchase of raw materials for manufacture in Vietnam.

Table 9.6 sets out the percentage increases in production, taking 1962 as a base year, for those industries which appear to have benefitted substantially from the circumstances of the war.

A number of other branches of industry, on the other

* Source: USAID

TABLE 9.6

Growth of Selected Branches of Industry - I
(1962 = 100)

Branch	1963	1964	1965	1966	Remarks
Tobacco	111	120	148	171	
Beverages	120	148	182	189	
Cement	-	100	251	178	Production started late 1963.
Seasoning powder	100	288	221	478	Production started in May 1963.
Blankets	225	224	479	628	
Oxygen	120	136	172	195	
Acetylene	126	142	183	214	
Plastics	190	183	358	445	
Electric fans	152	109	182	207	
Batteries	137	118	378	691	
Radio assembly	106	127	120	265	
Scooter assembly	180	110	134	850	
Motor-Bicycle assembly	140	184	220	790	
3-wheel vehicle assembly	174	119	162	660	

(Source: National Institute of Statistics)

hand, appear to have made relatively little progress in recent years, probably because the markets in which they sell their products have become increasingly confined to the cities. They include textiles (except for blankets), rubber products, glass and ceramics, basic and processed chemicals (excluding pharmaceuticals) and seasoning sauce. Many of the companies engaged in these activities have encountered difficulties in obtaining supplies as well as in distributing their products. As can be seen from Table 9.7, where production has increased in recent years, the increase has usually been insignificant or unsustained.

Table 9.7

GROWTH OF SELECTED BRANCHES OF INDUSTRY - II

(1962 = 100)

Branch	1963	1964	1965	1966
Nuoc Nam (fish sauce)	105	94	112	132
Seasoning sauce	112	130	105	92
Cotton spinning	102	178	163	186
Cotton weaving	189	168	173	190
Rayon weaving	171	122	207	185
Bicycle inner tubes	208	354	248	182
Glass	101	128	117	129
Ceramics	120	110	87	88
Soap	88	84	104	112
Paint	98	107	148	108

Finally there are a number of branches of industry on which the effects of the war have been definitely depressing. These are concerned with the production of ethyl alcohol, jute bags, cane sugar, pulp and paper, vegetable oils, natural silk and coal.

Production of ethyl alcohol, for instance, has fallen off sharply purely as an effect of the fall in rice production. In comparison with the 1965 figures it fell by 10 percent in 1966 and by a further 34 percent in 1967.

Cane sugar is another casualty: production in small cottage industries was at an average annual level of 35,000 tons in 1962 -1965, dropped to 24,000 tons in 1966 and to 10,000 tons in 1967. The output of the Hiep Hoa sugar refinery, 13,000 tons in 1961, was only 1,900 tons in 1966.

Most of the raw materials for the paper industry are imported and production increased steadily through 1966: but then the shortage of such local materials as bagasse and rice straw, began to be felt; COBOGIDO, a newly established pulp milling enterprise, could operate only sporadically, and this in part was responsible for a drop in the production of its paper-making affiliate, COGIDO, which continued into 1968. In all three cases cited the ill fortunes of these industries were direct results of the insecurity of the countryside and the consequent fall in farm production of rice and sugar cane.

Vegetable oil and silk manufacturing have been affected similarly. Taking 1962 as the base year for vegetable oil, the production index was less than half in the following years except for a brief recovery in 1965:

1962	1963	1964	1965	1966
100	43	37	54	45

The natural silk manufacturing industry is in a similar situation. In part it depends on imported supplies and in part on domestic sources for its raw materials. In the early years of the war production increased steadily, but 1966 figures were only 50 percent of the previous year's and in 1967 and 1968 the position of the industry continued to deteriorate, the principal cause being the shortage of local silk.

Although they have been severely depressed by the war, the above industries have not completely ceased to function and there is

still some production. This is not true of the An Hoa-Nong Son industrial complex, which today is not operating at all. In 1965 and 1966 production of coal at Nong Son was only 2 percent of planned output, and for the last two years the mine has been inactive. The record since 1956, in tons of coal produced, has been as follows:

1956	2,101	1962	77,000
1957	12,366	1963	104,090
1958	20,080	1964	76,955
1959	19,929	1965	2,511
1960	27,310	1966	3,000
1961	57,351		

SECTION II INDUSTRIAL RECOVERY IN THE EARLY POSTWAR PERIOD

As has been seen in the previous section, over the last 10 years only a few industries, principally producers of consumer non-durables, have been able to develop and expand with little or no adverse effects from the war. Others - timber, paper, leather, rubber, glass, ceramics, mechanical and electrical, etc., have encountered considerable difficulties in this period, particularly in the last 3 years . These difficulties are mainly related to raw material supplies, credit, manpower, and marketing and distribution.

Several important existing industries have recently suffered considerable damage and destruction resulting in a drop in their productive capacity.

These difficulties will have to be overcome if the nation's industrial base is to be rebuilt and the capacity of existing industrial installations is to be restored.

The length of the period of recovery will depend on the type of industry, official policies towards industry and the drive and spirit of the manufacturers themselves. If all goes well, this period could be as short as three years. During this period the main efforts would be directed to:

(a) complete reconstruction and repair of industrial installations destroyed or damaged by the war.

(b) bringing into production presently half-completed projects such as the Quang Ngai sugarmill (which would take at least 2 years), and

(c) the revival of industries depressed by the war.

These should be the three priority activities during the recovery period.

THE RECONSTRUCTION OF DAMAGED INSTALLATIONS

The two Viet Cong offensives of 1968 inflicted damage on a number of industrial installations in Saigon and its suburbs. From documents submitted to the General Federation of Industrialists and the Ministry of Economy by firm owners, total damage has been estimated at $VN 5 billion. Hardest hit was the textile industry, (estimated damage, $VN 4 billion), and next the paper and food industries, ($VN 206 million and $VN 134 million respectively). Fourteen other industries reported losses and damage of varying amounts up to $VN 100 million. It is improbable that in all cases the actual damage suffered was as extensive as the manufacturers have reported, but it certainly was significant in the textile industry, the production capacity of which dropped by 30 percent.

Some companies have started to repair their installations, but most are awaiting assistance from the Government. The Reconstruction and War-Risk Insurance funds will permit a few manufacturers to start reconstruction shortly, and it is assumed that the work will continue until completion. In many cases, however, there will be an inclination to defer reconstruction until peace is assured.

According to the Credit Service of the Industrial Development Center, up to September 1968, a total of $VN 1,131,100,000 in Reconstruction Funds had been issued in loans for replacement and repair of buildings, machinery and equipment and for importation of raw materials lost in the 1968 offensives. The funds have been provided by USAID and the national budget, and a balance of $VN 1,048,900,000 was still available for distribution as of September 30, 1968.

PARTLY COMPLETED PROJECTS

These are of two types: those in which implementation has actually started but has been held up, and those which have been approved but have not actually been started.

With the exception of the An Hoa- Nong Son Industrial Complex, there is no reason why the projects of the first type should not be resumed and carried to completion once peace is restored. In the Bien Hoa area there are several cases in which the factory buildings were constructed some time ago but mechanical facilities have not yet been purchased and installed. For two large projects, the Quang Ngai Sugar

Company and the An Hoa industrial complex, machinery and equipment have been purchased but because of security conditions have not yet been assembled and installed. As a general rule (again excepting the An Hoa enterprise),almost all partly completed projects could be finished and put into production within a period of 12 to 18 months from the end of the war.

In addition to three large publicly owned enterprises (Quang Ngai, Binh Duong and An Hoa), there are 27 privately financed projects that were approved in the years 1965, 1966 and 1967 and are still in various stages of completion. They represent a total planned capital investment of $VN 3,574 millions.

In 18 of these 27 cases investors have carried the work to a point at which they have been able to apply for foreign exchange to finance importation of machinery and equipment, and there is some hope that these projects will be completed in 1969. Together these 18 projects represent a capital investment of $VN 1,650 million or 46 percent of that of all uncompleted private projects. The remaining nine are less advanced and have gone no further at present than preparation of invitations to bid. Of these the most important of the nine are the Vietnam Sugar Company's refinery project (over $VN 900 millions) and VIKYNO's agricultural machinery project (over $VN 500 millions). These may take another two years - after peace returns - to come into production.

Two years after peace is restored, therefore, is the maximum period for the completion of all industrial projects, public and private, on which work has already started, excepting the An Hoa - Non Son industrial complex which is a far more difficult problem and will be considered separately in Section V below.

Projects of the second type, which have been approved but in which no steps whatever have been taken towards implementation, must also be taken into account. A good many investments approved in principle by the Ministry of Economy or authorized by the Investment Commission as long as two or three years ago are still entirely on paper. There are three probable reasons for this:

- Intensification of the war has resulted in reduced confidence on the part of private investors;

- Though some of the projects may be profitable, stiff competition is expected within certain industrial branches. In some cases, approval has been given to as many as seven different projects of precisely the same type at precisely the same time. In an uncertain market situation, the short-term prospects for a multiplicity of identical projects are far from promising;

- The 1966 devaluation of the piaster increased investment costs beyond the expectations of some investors at the time approval was sought. This, of course, applies particularly to the projects proposed in 1965 and early 1966.

Lack of data prevents an estimate of the exact number of projects which have received approval in principle from the Ministry of Economy but have not been carried further. Many must have been abandoned. Some indication can be found in the figures showing authorizations issued by the Investment Commission:

	1965	1966	1967	Total
1. Investment Authorizations				
- number	16	24	43	83
- capital investment (in $VN millions)	600	1,131	7,129	8,860
2. Projects not yet realized				
- number	2	8	8	18
- capital investment (in $VN millions)	99	459	1,524	2,082

Given suitable credit policies and appropriate incentives after the war, it is our belief that many of the appropriate companies which have deferred their investment decisions will resume these projects and carry them out.

THE REVIVAL OF DEPRESSED INDUSTRIES

A great deal of existing Vietnamese industrial capacity was installed during the war in areas where security has been good. It has taken advantage of growing consumer markets and government assistance; and, during the early war years at least, a large number of these new enterprises made good progress. Since 1965, however, there has been a reversal in many cases. Since the offensive of Tet 1968, some businessmen appear to have lost their confidence; industrial enterprises, as well as public services, have lost skilled labor to the draft; and, perhaps most significant of all, some Vietnamese enterprises have not been able to face the competition of a flood of imported goods admitted to control inflation.

Some of the depressed industries rely on the rural areas for the supply of their raw materials and have been deprived of these supplies by the military situation. Examples are cane sugar, vegetable oil, silk and coal. We may assume that with peace, supplies of raw materials will be resumed reasonably early.

Cane sugar and natural silk deserve considerable attention. The former will save foreign exchange, the latter will earn it. Both employ a large work force and will absorb some of the surplus labor in the countryside in the post-war period. Both have been deprived of their sources of raw material by present insecurity in the rural areas.

In 1967 sugar consumption in Vietnam was approximately 180,000 tons but only a very small part of this came from local cane. Most of it, approximately 170,000 tons, consisted of imported raw and refined sugar. Only two cane sugar mills have actually been installed (Hiep Hoa and Vinh Phu), and both are small. In addition, some sugar is produced in family operations of a cottage industry character. As the fighting has grown fiercer, many sugar cane plantations have been destroyed and at present production of cane is severely limited.

The Quang Ngai, Binh Duong and Bien Hoa mills and refineries all should come into production within a reasonable delay after the end of the war. Special attention must be given to supplies of cane. From 1958 to 1966 the cane producing area consisted of about 30,000 hectares, remaining more or less constant during the period. Produc-

tion yields, however, always have been low. The world average is 5.5 tons of sugar per cultivated hectare, but in Vietnam average yields have been less than half of that, with only 2.5 tons per hectare. Improved cultivation methods might easily increase production two or three-fold. If, in the first years of peace, all of the refinery projects are carried out, and yields can be increased, sugar production, including the output of the small family producers, might exceed 200,000 tons per annum. Production of this order would result in very substantial savings of foreign exchange.

As for the silk industry, before World War II, there were about 5,500 hectares in Central and Southern Vietnam devoted to the cultivation of mulberries. Because of the present conflict only one-fifth of that area is still being so used, and yearly production is only 30 tons of silk. A hectare of mulberry bushes can be made to yield approximately 500 kgs. of silk, so to meet the country's current demand for silk (2,000 tons per annum), a minimum of 4,000 hectares would have to be cultivated.

Even at currently high silk prices, world markets could absorb an additional 40 million dollars worth of silk a year. In the re-establishment of this industry, it therefore is important that the export possibilities be taken into account. Some Japanese interests have recently mentioned the possibility of their providing assistance for silk production in Vietnam.

There have been previous plans to develop the silk industry but because of the war they have not been implemented. When security is restored, both Central Vietnam and the highlands will be suitable for this kind of development. Mulberries grow quickly, and the industry does not require a large capital investment. For farmers, the breeding of silk worms can be quite a lucrative activity.

Other branches of industry among those now depressed may fairly put the blame on the free importation policy introduced in 1966. These include small textile firms and those engaged in the manufacture of spare parts and accessories for sewing machines, motorbicycles and two and three-wheel scooters.

Small scale textile manufacture is not likely to flourish even when peace is restored. Many small textile companies have now gone out of production. Because of their labor-intensive character and their suitability for establishment in rural areas, handicraft activities in textiles were at one time encouraged and assisted by the Government. However, because of the primitive equipment used, the

quality of finished products often was very inferior. This is essentially a non-competitive activity and it can be only a matter of time before the whole of Vietnamese textile manufacture is in relatively large, properly organized industrial operations. People now involved in small textile enterprises (for instance unbleached cotton fabrics and mosquito netting) might be helped into other activities with better prospects, such as silk-worm breeding and natural silk production.

On the other hand, workshops manufacturing parts and accessories for assembly industries should develop fairly rapidly, helping the establishment of a viable mechanical industry in Vietnam. Taking into account all the foreign exchange spent on importing scooters, motorbicycles and sewing machines in the last three years, efficient assembly operations and the manufacture of parts in Vietnam are not only desirable but essential. Recent import figures are as follows:

	1965	1966	1968
	---In'000s of $US---		
Sewing machines	983	3,880	5,431
2 and 3-wheel scooters	3,421	14,216	3,034
Motorbicycles	3,337	20,229	20,172

(Source: Foreign Trade Directorate)

Before June, 1966, there was a steady expansion of domestic manufacture of parts and accessories for these types of goods, although most of the companies engaged in these activities were small and the quality of their products was not the best. Domestically manufactured parts accounted, in fact, for a rather high percentage of the total f.o.b. price of each finished unit, ranging from 15 percent of the total for scooters to 30 percent for sewing machines and motorbicycles.

To revive this branch of industry and to ensure that it operates efficiently, two conditions appear to be necessary. First, the small and scattered firms engaged in assembly activities should be persuaded to regroup themselves into a few large companies. Financing, either by the Vietnam Development Bank (formerly SOFIDIV) or by private investors, could be influential in this development. Secondly, importation should be restricted to a limited number of types of scooters, and the foreign manufacturers concerned should be asked

to provide technical assistance for domestic assembly of their products and domestic manufacture of an increasing number of parts.

If the existing assembly industries can be improved, then this branch of industry should, eventually, be able to expand into assembly and manufacture of parts for refrigerators, air-conditioners, household appliances and other consumer durables. Promotion of such labor-intensive industries will increase Vietnamese resources in technical skills and play an important role in early post-war development.

SECTION III
A LONG-RANGE STRATEGY FOR DEVELOPMENT OF VIETNAMESE INDUSTRY

The previous sections of this chapter have examined in some detail the present structure of the Vietnamese manufacturing sector and the difficulties which it faces in the initial post-war years. Although these problems are the most obvious today, there are other longer-range problems which must be anticipated in order to assure a logical and proper pattern of industrial growth during the next ten years. It is suggested in this section and those to follow that several important decisions should be made in 1969 to foster this logical development of the industrial sector.

Most of the present policies affecting industry have been designed in a wartime situation which has added innumerable complications to the normally difficult problems of development. Despite the considerable efforts of the GVN and US assistance programs, policy planning has, by necessity, been aimed at ameliorating the more immediate problems, and little time has been available to consider policies which should be adopted in the post-war period. It is felt strongly that the approaches towards industrial development characterizing efforts since 1965 are unlikely to produce the desired long-term results, even though (at least before the Tet offensive) in the short run they have tended to accelerate manufacturing growth. The proper mix of fiscal, monetary, tariff, interest, savings and financing policies must be identified at an early date and employed effectively in the coming period, or a high cost industrial structure undoubtedly will result.

Even these efforts will not automatically produce a competitive industrial structure, for the path of development in the seventies will be difficult indeed. Appropriate policy is a necessary but not sufficient condition for growth. It must be supplemented by unsparing efforts in the public and private sectors in order to become effective.

Two general routes for the future are open to Vietnamese manufacturing: 1) high protection, leading to high production costs,

inefficient use of resources and, ultimately, stagnation; or 2) development in the key sectors of efficient, relatively capital-intensive industries which are based on relatively high labor productivity and low input costs and are more or less competitive internationally.

The first approach characterizes past development in the Philippines and most of the Latin American economies. The second path is now being followed by several rapidly growing countries, including Japan, Taiwan, Israel, Hong Kong and, most spectacularly in recent years, Korea, a country which has successfully surmounted many of the problems which face Vietnam. This particular choice will be up to the policy makers, not the entrepreneurs, be they foreign or national. Based on present knowledge of past development experience, one can only urge strongly that the Government of Vietnam give serious consideration to the second alternative. While this path will be difficult to follow at times, and many compromises will have to be made, it is still the right goal.

The major conclusions which emerge from the Joint Development Group's study of future Vietnamese manufacturing and its relationship to the rest of the Vietnamese economy are:

1. Highest priority should be placed on the production of inputs to the agriculture sector at the lowest possible price to the farmer, and production should be delayed (or in rare cases subsidized) until such time as markets build up to a point where production can be attained at or below the c.i.f. import price without duty. Within the agricultural sector, preference must be granted to products which will tend to lower production costs of potential or actual agricultural exports.

2. Production of most major basic commodities should be permitted only when production costs can, or will in a reasonable period of time, approach world competitive prices (without duties). This will in general require: a) large economical plant sizes; b) low material input costs; c) realistic interest rates; d) appropriate tariff policies to stimulate rapid market growth prior to plant operation; e) adequate financing; f) tax incentives; g) adequate technical know-how and managerial capabilities (often available only from abroad through joint ventures, etc.); h) clearly defined and realistic investment policies; and i) careful sectoral

planning, preferably through joint efforts of the public and private sectors.

3. Within the manufacturing sector, priority should be placed on: a) the product categories in which costs can be reduced to the point where exports can be expanded rapidly; and b) institutionalization of the export process.

4. Industrial promotion and financial assistance efforts can and should be selective. In some sectors, such as handicrafts and refugee-based textile and apparel production, a labor intensive approach will be necessary initially. Thus a dualistic attitude toward manufacturing must emerge. Different incentives will be needed for the low productivity and high productivity sectors. Nevertheless, the simple principle must emerge that whatever is worth doing at all in the manufacturing sector is worth doing well. Furthermore, policies should be developed whenever possible that will automatically permit the private sector to work toward solutions that are in the mutual interest of the national economy, the private sector and the individual segments of the society.

5. Entrepreneurship should be encouraged, provided with technical assistance where necessary and desired, and aided through joint ventures with foreign firms, but the process must be guided wisely to avoid excesses. The tools are already available for program implementation, but difficulties remain in the planning process itself.

There is no reason why the disadvantages resulting from the present insecurity cannot be used to advantage in the early planning process. In particular, the fact that the private sector has tended to defer investment decisions, while highly undesirable on the whole, has served in numerous cases to postpone certain unwise investments, particularly those which would have resulted in uneconomic plants that could only hinder early post-war development. The postponement of these investments now allows them to be reassessed in light of new forecasts for the post-war period and a fresh definition of investment goals. With investment at a virtual standstill, this is the time to re-examine past plans and adapt them to future requirements. It is the objective of this Report to assist that process.

The most obvious tendency of past industrial development in Vietnam has been towards a proliferation of small plants which, if faced with the free entry of competing imports, could not survive. The argument invariably heard from entrepreneurs, and public officials in favor of these small plants, is the foreign exchange savings that can be achieved from them.

It should be noted that Vietnam does not have a short-run foreign exchange problem, but it does have a massive one in the long run. From the experience of far too many developing countries, it can be said with considerable certainty that the small plant philosophy, based on profitability at high protection levels, is invariably going to lead to greater long-run foreign exchange costs. In fact, many of the small plants now under consideration are notably capital intensive, with large foreign exchange requirements for equipment and manufacturing inputs. It is entirely possible that the net effect of their postponement could be an additional reduction in short-term foreign exchange costs. At any rate, a primary objective of industrial development must be growth in foreign exchange earnings through efficient import substitution and exports. The small plant philosophy is at variance with this objective.

A second failing in previous industrial planning is the tendency for project analyses to be conducted in narrow financial terms instead of in terms of broader economic considerations. For most projects, the price of competing imports is taken as the price paid in the Vietnamese market, including import duties and taxes. This artificially high price is then taken as the upper price limit for the locally produced item, and the viability of the project is judged on the basis of the excessive revenues which result. The result, of course, is a viability assessment which has no relationship whatever to international standards of production efficiency. Such practices must stop if high cost industries are to be avoided.

As recommended in the previous section for assembly industries, one way to avoid construction of small plants is to discourage excessive numbers of competing units from being started in any one industrial sector, each separately uneconomic but which together might form an economic operation. An example is the production of nylon in Vietnam from imported caprolactum, for which two plants are now in

the planning stage, each with a production capacity of 2.5 tons of nylon per day. The minimum economic plant size for nylon production is 10 tons per day, so that even together these plants could not result in a single unit which could be competitive with imported nylon. The most appropriate path for this industry to follow would be to postpone investment in both projects and let the market for nylon develop until it reaches the size where a single minimum economic unit can be supported. To do otherwise can only result in higher input costs to the textile sector, which already labors under a high cost structure.

The objection usually raised to the construction of only one plant is that monopolistic control will result. This can be prevented by a flexible and realistic import policy, through which the actuality or threat of import competition can prevent monopolistic pricing and other excesses.

In summary, the following major items of strategy are recommended for long-term development of industry:

1. Production of key items should be postponed until future markets (say in 5 or 6 years) can justify economically sized plants;

2. Imports should be permitted at relatively low duties to develop markets for those products which in future can be manufactured at low cost; and

3. These low duties should be continued after domestic production begins to insure low-cost and quality production by domestic plants.

The overall objective should be to adopt those policies and incentives which can assure the installation of the right plants at the right time, a process far more complicated than it sounds. The following sections will examine the product areas in which this strategy can have the greatest impact, and the institutional structure which will be required to carry it forward.