SECTION IV A TEN YEAR PROGRAM FOR INVESTMENT IN INDUSTRY

INTRODUCTION

This section focuses on what the Vietnamese manufacturing sector should look like in about ten years and an industry-by-industry strategy for attaining a strong, competitive industrial base in the 1970's. By 1978, if present population trends are maintained, Vietnam will have a population of about 24 million; and a reasonable expectation is that around that time value added in manufacturing should reach the equivalent of about US $500 million, roughly twice what it is today.

In order to facilitate the rather difficult process of forecasting the future structure of Vietnamese industry, the Joint Development Group undertook a study of the historical experience of Korea, the Philippines, Taiwan and Thailand*. Taking into account the existing structure of Vietnamese industry, the availability of resources, agricultural requirements, probable world market conditions and realistic levels of investment, and using the experience of the four countries as a guide, projections have been made of feasible levels of fixed investment and production for each sector of Vietnamese industry in 1978. In using data from the other four countries, differences in population density, climate, land characteristics, raw material availability, comparative advantage and aggregate market sizes have been taken into account.

None of the four countries studied can serve as a complete model for Vietnam. All at one time or another have adopted policies contrary to those recommended in this report. Each has shown excellent development in some sectors of industry - evidenced by rapidly increasing output and expanding exports - where appropriate policies have been followed. There have also been serious set-backs where the reverse was true; for example, the chaotic development of the fertilizer,

* A Long-Range Development Program for Manufacturing in Vietnam. Joint Development Group, Working Paper No. 41.

pulp and paper and coke sectors in Taiwan, of the pulp and paper, chemical (at least at the start), fertilizer, flour-milling and steel sectors in Korea, and of the chemical, mechanical, textile and many other sectors in the Philippines and Thailand. It is as important for Vietnam to avoid the shortcomings of other nations as it is to learn from their successes.

The strategy proposed in this report does not depend (except for investment scheduling) on when the overall level of $500 million in value added is obtained, but rather on reliable considerations of aggregate market sizes, economies of scale and production costs.

PROJECTIONS BY INDUSTRIAL SECTOR

This section presents a subsectional and product development strategy based on an analysis along the lines previously described. While it is recognized that each projection and strategy recommendation should be studied further and modified where necessary, it is suggested that each be given serious consideration in the next stages of planning.

Tables 9.8 and 9.9, appearing at the end of this chapter, present a summary of the projections and strategy recommendations and should be read in conjunction with the text that follows. The first Table indicates feasible levels of value added, value of sales and production levels for each major product category in 1978. The second Table presents the estimated total fixed investment required up to that date to reach these levels and a rough estimate of how this investment might be phased over an eight-year period. The result is a forecast of capital investment requirements in industry ranging from $108 million in 1970-1971 to $303 million in 1976-1977. The estimated total investment required in the eight-year period is $749 million, the approximate amount needed to bring value added in manufacturing beyond $500 million per annum. Once again, it should be noted that this level of output may not be achieved until later than 1978, in which case the investment estimates will be spread out over a longer period of time.

For purposes of future planning, it is felt that whether

political stability comes by 1970 or later, the essential features of this program should remain basically the same; the same mistakes need to be avoided and the same policies need to be implemented. The present illustrative design for 1978 or 1980, or whenever the value added by manufacturing in Vietnam approaches 500 million dollars, will require time to develop and implement policies and time to design for plants and markets of economic size. An early start should be made.

Manufactured Food Products (ISIC 20)

In most of those manufactured food products where substantial Vietnamese exports might be achieved in the late nineteen-seventies, economies of scale are very important. World competitiveness will depend on the costs of agricultural production, manufacturing, processing, transport and distribution, together with production and export organization and product quality and standardization. Preliminary considerations of Vietnamese climate and land quality, historical trends in processed agricultural production and exports in comparable countries, and economies of scale suggest that plant size and production costs are particularly important for the major products listed below:

Predominantly Export	Both Export & Domestic Markets	Domestic Markets
Fruit and vegetable canning (pineapples, mushrooms, vegetables, etc.)	Sugar, fats and oils Animal feeds Fish processing Monosodium glutamate	Dairy products Flour milling Starch

Major markets would be land-short areas, such as Singapore and Hong Kong, and developed countries, including particularly the U.S. and Japan.

Economies of scale appear to be less important in other manufactured food products with export potential: 1) fish sauce; 2) vegetable (soy) sauces; and 3) rice milling. However, even in these products, detailed micro-economic studies are required before exports are considered.

The development of agricultural processing is of course dependent primarily on the agricultural program considered in Chapter 7. The main purpose of this analysis of manufactured food products is to suggest where coordinated agricultural and manufacturing planning is essential.

Without proper planning, it is possible that traditional inefficiencies and proliferation of small plants will be built into flour milling, sugar processing and refining, fruit and vegetable canning and meat processing, particularly where no exports are contemplated. Inefficiency and proliferation merely increase the cost of these products to domestic consumers, the total investment requirements and the foreign exchange costs of imported capital goods. Large production units, with high labor productivity, should be the goal for these products.

An excellent start has been made in some Vietnamese food processing sectors such as dairy products. Nevertheless, considerable support is needed in the seventies for such sectors as meat processing, a comprehensive sugar program, processing of fats and oils, and animal feeds. Progress is currently being prevented by insecurity, particularly in such fields as sugar and meat products. The need now is to develop a rational approach to each subsector and to plan ahead for each crucial element.

Timing of investments is particularly difficult to estimate. It is clear that investments in such products as sugar, flour, dairy processing and meat processing should develop in units of approximately 10 million dollars each (perhaps as low as 5), but it is not possible to estimate when agricultural output and markets will permit this. Where inputs are imported as in flour milling or sugar refining, the timing of the agricultural program is of less importance. A considered estimate of the investment schedule is shown in Table 9.9.

Food technologists and product planners should acquaint themselves with historical and current developments in the four countries studied in Working Paper No. 41 especially insofar as this concerns economies of scale, production costs and major errors. Special studies are warranted of the major export markets. The future of a food processing industry in Vietnam can be bright if some of the more apparent

handicaps can be overcome and close coordination with agricultural planning can be achieved.

It can be said with some confidence that for many years the domestic market for canned food in Vietnam will be inadequate to support, by itself, a viable canning industry; and export markets must be sought. Several small canning operations exist now, but their methods are primitive and product quality is unsatisfactory*. They use imported and even second hand** cans, illustrating one of the primary requisites for establishing a canning industry in the country: the domestic manufacture of cans from imported tinplate. Already, the real or potential demand for cans in Vietnam for soft drinks, beer, oil products and dairy products may be approaching the level where the present limited can production could be expanded, and studies of this possibility are already proceeding in USAID. These studies should be coordinated with planning for the food processing industry.

The climate and soils of Vietnam permit cultivation of a wide range of vegetables and fruits which could be developed into processed exports, provided that low costs and high product quality can be achieved. (Similar opportunities exist for fish exports, and the following comments apply equally to that sector.) Nevertheless, it is the feeling of the Joint Development Group that the present level of farm prices is so high that the country could not today compete in world markets in any product area. Labor costs have little effect on the canning process itself, which is relatively capital intensive, but the cost of the raw agricultural produce is a major item in total costs and must be kept as low

* Lee Shiu, Survey Report on Development of Food Processing Industry in Vietnam, Chinese Agricultural Technical Mission, May, 1965.

** USAID Task Force on Industrial Development, Planning Paper No. 2, November 1968.

as possible*. The feasibility of the industry , therefore, will hinge on the whole structure of farm prices, and no attempt should be made to develop large food processing units until this basic problem is solved. A fuller discussion of this matter is presented in Chapter 2 of this report.

A successful export-oriented food processing industry cannot be developed without considerable assistance from overseas, and it is recommended that during 1969 one or more firms with successful experience in world markets should be engaged to undertake a preliminary design for the industry. The first, and most important, item will be an analysis of world markets for food products, followed by a detailed agricultural and industrial plan to develop those specific product lines which can be grown in Vietnam and have the greatest opportunities for success in the post-war period. At the start, the attempt should not be to develop a broad range of products, but to concentrate on high quality production of a limited number. Taiwan has been eminently successful in mushrooms, for example, last year overtaking France as the world's leading mushroom producer, just 10 years after its first exports**. There is no reason why Vietnam cannot become equally successful in selected products in future years, but it will be necessary to utilize foreign expertise if this is to be done. A series of joint ventures between Vietnamese interests and experienced foreign firms will provide the fastest route to success in this field.

Beverage Industries (ISIC 21)

The beverage industry is already developing well and natural forces are adequate to permit a reasonable level of development in this sector through the private sector. Special incentives do not appear to be required. The major issues appear to be the timing of import substitution in inputs to the sector (malt, soft drink concentrates,

* United Nations Conference on Trade and Development, E/CONF. 46/P/8, Possibilities of Establishing Food Processing Industries in Developing Countries for Export, January 1964.

** Far Eastern Economic Review, September 26, 1968, P. 604.

hops, barley, tin cans and cork) and development of a long-range tax policy. Import content appears to equal about 15 percent of value added at market prices and 25 to 30 percent of value added at factor cost (excluding indirect taxes). Economies of scale and/or agricultural production will dictate when further import substitution will be feasible, and relatively complete domestic dependence for all inputs except tinplate should be possible by the mid-1970's. A study would appear to be required of the relative merits for the economy of different types of beverage containers (tinplate, glass, paper, etc.). Finally, it should be remembered that this sector provides a substantial source of public (national and local) revenue, and appropriate tax programs should be developed; at the present time taxes on beverages are only a moderate percentage of sales and possibly could be increased. Some of the tax proceeds of the sector might eventually be set aside for export expansion.

Tobacco Manufactures (ISIC 22)

As with beverages, the tobacco industry is well developed and serves as a major tax base. Modernization is already in progress and natural market forces should bring about steady development. In terms of the national economy, the major problem is the large dependence on imported tobacco, and the desirability of increasing domestic production of tobacco is indicated. Some exports might ultimately be contemplated.

Taxes from tobacco were about 4.7 billion piasters in 1967, a significant source of revenue to the Government. Again, a long-range tax program needs to be developed.

Textiles (ISIC 23)

In ensuring an efficient, low-cost textile industry, the crucial subsectors are cotton and synthetic spinning, weaving and finishing. The experience of Colombia, Taiwan and Korea all emphasize how important it is that the pace of the basic industry be set by a few large, efficient, automated and integrated firms which ultimately can compete in international markets.

In recent years, and particularly in 1967, considerable modernization and expansion have occurred in spinning and weaving operations. Approximately 1/7th of all new manufacturing investment in 1965-1967 took place in this sector. Continued efforts are needed to ensure the development of a competitive industry based on low input costs. Emphasis must be given to the high quality standards demanded by both Vietnamese and foreign markets. The demand of domestic markets for high quality textile goods has been illustrated clearly by the increasing competition felt from more expensive but higher quality French, Japanese and other imported goods since import restrictions were relaxed in 1966. This situation is a dramatic demonstration of the problems inherent in allowing domestic industries to build up behind protective walls: standards are bound to fall (and costs to rise) without competition from the outside, and the end result of continued protection is wastage of scarce resources.

Another problem of Vietnam's textile industry is low productivity of both capital and labor. At least one existing mill was averaging one third idle time during the first half of 1968. Obviously, the problems of the war are acutely felt, and the industry deserves much praise for what it has accomplished in recent years with so many difficulties. Nevertheless, much hard thinking is required now if a competitive industry is to be attained in the post-war period.

Particular care is required to assure competitive input costs in the synthetics sector. Capital costs per unit of output are high for the production of all major synthetic inputs, particularly for rayon, nylon, polyester, acrylic and PVC production. The suggested strategy for ultimate production of these inputs best illustrates the philosophy of this Report. Domestic production of each should be delayed until market growth permits an efficient plant size. Where market growth will permit this within a reasonable time horizon, import duties on inputs should be kept low to stimulate and speed the growth of demand. Nylon and rayon are two principal examples of where this philosophy could be successful.

It is recommended that current plans to install two nylon plants of 2.5 tons per day capacity and one 10 ton per day rayon plant be

reconsidered in light of the above comments. These particular projects should be deferred. When projected markets for, say, five years ahead are large enough, a decision should be taken to construct much larger plants than those presently contemplated. The simultaneous installation of two 2.5 tons per day nylon plants, together having only half the capacity of a single economic unit, is certainly not consistent with the recommendations of this Report, and the postponement of all three projects owing to the effects of the war has some advantages; the continuous stepwise expansion of synthetics in Korea and Taiwan actually impeded sound development of the textile sector in those countries, and Vietnam should be warned by their experience.

Production of synthetic and mixed fabrics and apparel goods in Vietnam, given the patterns of demand, should be encouraged where self-sufficiency ultimately can be achieved. Nevertheless, export expansion is also a long-range goal, and potential growth in the sector should not be compromised by premature manufacture of inputs.

Apparel and Footwear (ISIC 24)

Rising incomes will result in a steady growth in this sector, especially as regards high-quality ready-made goods. Some exports might be achieved eventually, if wages can be held to competitive levels, quality and standards maintained, the industry modernized, and export activities formalized.

Wood and Wood Products (ISIC 25)

The wood products sector is one of real potential growth, because of the abundance of raw materials (both coniferous and hardwoods). Security does not permit expansion at this time, but immediate planning is desirable. Important subsectors are hard board, particle board, plywood, veneer and sawnwood. Modern mills of economic size are required in each case, and exports could augment domestic markets and help to establish low-cost industries at an earlier date than domestic sales alone would allow. Wood-short countries such as Japan provide markets.

Major non-wood inputs to the sector such as resins (phenol-formaldehyde, urea-formaldehyde, etc.), can later be produced from imported chemicals, and eventually backward integration in resin manufacture will occur.

The importance of forestry development is described in Chapter 8, and a specific plan for the development of a plywood industry is presented in Section V.

Paper; Pulp and Paper Products (ISIC 26)

The war has prevented the development of an integrated pulp, paper and paper products industry, but considerable progress has taken place in recent years as regards paper and paper products. The crucial problems are: 1) the production of chemical and mechanical pulp for paper and newsprint; and 2) the integration of pulp and paper production. Economically sized pulp and newsprint units must produce a minimum of 100,000 tons per year, and 200,000 tons per year would be a better target if an efficient export trade is to be achieved.

Thus, in the near future, massive exports must be ensured to justify plants of economic size. Future planning strategy should aim at tying down export markets, possibly through equity investments, at avoiding installation of mills that are too small, and at providing for ultimate integration of paper and paper products manufacture with pulp facilities.

A specific proposal for the pulp industry is made in Section V.

Rubber and Rubber Products (ISIC 30)

If the natural rubber industry revives after the war, it will be easy for Vietnam to achieve almost complete self-sufficiency in natural rubber products. The natural rubber content of vehicle tires will remain high, and some product exports might be possible eventually.

Domestic markets do not appear to be large enough for the production of synthetic rubber until after 1977. Polybutadene production

from imported butadene may be feasible by about 1975, but this possibility should be re-evaluated about 1972 in the light of new technology at that time. Domestic production of fillers and chemical additives for tire production should eventually be feasible.

Chemical Manufacture (ISIC 31)

Chemical production will develop either through forward integration from raw materials (salt, limestone, petroleum, liquid petroleum gas (LPG) and petrochemicals, etc.), or, more generally, through backward integration based on imported inputs. Product prices can be held down by not manufacturing inputs too rapidly and by initiating only those projects in which imported inputs can be processed efficiently. Economies of scale are important for all chemical products, and the strategy indicated for each product area is outlined in Table 9.8.

Because of the large size of present and estimated future markets, ammonia and urea production must receive the highest priority. This subject is covered in some detail in Section V.

At a later date, when markets develop, certain chemicals can be produced from domestic raw materials at low cost, for example, soda ash, caustic soda, and ammonium nitrate explosives. Here, economies of scale are important. Market development should be encouraged through low import duties, but at the present time investments would not be justified.

Most organic chemical products, such as plastics, should be developed from imported intermediates when market sizes permit. Priority should be given to the use of low duties to encourage consumption of products such as polyvinyl chloride (PVC) for which an economic scale of operation is eventually probable.

Export potentialities are greatest in urea and mixed urea fertilizers, urea animal feed, urea-based resins, and raw material-based chemicals such as naval stores (turpentine and rosin) and fats and oils.

As far as the An Hoa ammonia plant is concerned, thought should be given to the feasibility of using the equipment for thermal power and steam generation (if it is still intact) at An Hoa. The sulfuric acid plant (if that is also still intact) is a self-sufficient one and could be located in the Saigon area for sulfuric acid production. The problem of An Hoa is considered more extensively in Section V of this chapter.

Petroleum and Coal Products (ISIC 32)

Plans for a petroleum refinery in Vietnam were started in 1964 with the formation of the Vietnam Refinery Company, shareholders being the Government of Vietnam, SOFIDIV (now the Vietnam Development Bank), Esso, Shell and Caltex. For a variety of reasons, the project as originally conceived (a 22,500-bbls.-a-day unit) has been delayed. Deteriorating security and other complications of the war have been principal reasons for this delay. It is obvious that a refinery will not be built until security improves, and in the meantime the need for a fresh look at the whole problem is evident.

Previous discussion of the project has always been based on consideration of the domestic market for petroleum, oils and lubricants (P.O.L.) with re-export only of heavy fuel oil. It is the feeling of the Joint Development Group that, in the light of growing Asian markets for which refinery capacity does not exist at present, the possibility of a larger refinery, which would export other finished products, should also be considered. The economics of a re-exporting petroleum operation, probably located at Nha Trang and combined with supertanker operation, warrants serious study.

One likely reason why this has not previously been considered feasible is the relative insecurity of Vietnam compared with other Asian locations. It is probable, nevertheless, that even for a refinery oriented solely towards the domestic market, the interested foreign companies, whose technical and financial assistance is essential, will not be able to participate until security reaches a level that would be required anyway for an export-oriented operation. The Government, therefore, would appear to have little to lose in raising its sights on this project somewhat higher than a relatively small domestically oriented refinery. If the larger unit can be achieved, the price of domestic P.O.L. will be lower.

One procedural problem which seems to have delayed the project thus far is the absence of a final decision on a site for the refinery. It is recommended that this decision be made at an early date, for, until it is, further planning will be difficult.

It should be borne in mind that refinery technology is changing rapidly, and a final decision on a refinery leading to engineering design probably will have to be delayed until it is apparent that security will allow final project implementation within a two- or three-year period.

The use of coal resources other than as fuel for thermal power appears unlikely, unless higher quality deposits are located by future exploration (see Section V).

Non-Metallic Minerals (ISIC 33)

Economies of scale in cement and flat glass production are critical. Flat glass production should be postponed until per capita income rises significantly and a broad market develops. Cement planning is probably second only to fertilizer planning in terms of priorities. A detailed long-range cement program should be developed, including clinker grinding facilities near major markets as well as facilities for production of building materials in which cement is a component. Cement plants can be added in $10 million or larger units, and clinker grinding in lower cost increments. At present, some clinker grinding is feasible, based on imported clinker, but this program should be integrated with a definitive cement production program. Improvement of the technical management of the present public cement monopoly and long-range production and market planning are both badly needed. Sale of existing capacity to the private sector (to be repaid from profits, with prices controlled by import duties) might stimulate both.

Additional exploration for non-metallic minerals is warranted, with particular emphasis on their quality.

Base Metals Manufacture (ISIC 34)

Economies of scale are critical for steel, aluminum and

copper metal production, and the development of these units should be postponed for several years. Backward integration from aluminum and copper products should and will develop slowly, with one unlikely exception - massive production of aluminum from imported bauxite or alumina.

Comparison with Korea, Taiwan and the Philippines suggests that by the time Vietnam's manufacturing value added equals $500 million (perhaps 1978), the country will be consuming about 250,000 tons per year of basic steel. This is approximately the size of a direct reduction furnace (using oil or gas as the reducing agent, rather than coal). Technological developments in direct reduction should be followed closely through about 1975, at which time an investment decision might be possible. Unless iron ore is located, ore or pellets will have to be imported, probably from Australia. Meanwhile, rolling might be developed in the early 1970's, using imported billets and skelp, but the rolling facilities will have to be designed carefully or they probably will become obsolete when an integrated mill begins to operate.

For some time, scrap will be a major source of Vietnamese steel, based on electric furnaces if cheap power is available. Scrap is an important resource in Vietnam and its use should be planned wisely. Small inefficient units should not be financed with public funds, and current plans should be postponed until a long-range plan for the metals sector is developed.

Metal Products (ISIC 35)

Care should be taken not to finance a proliferation of structural metal, wire and pipe mills. One, or, at most, two efficient and flexible producers will be needed in each category, and mills should be designed for 1978 markets. Some lines of equipment in the structural metal mills and an efficient pipe mill could be added later in the period. In any event, the structural metal mill should be integrated with rolling facilities.

Low cost metal products are essential to rapid development of all of the following sectors.

Machinery, Excluding Electrical (ISIC 36)

Production in selected lines will expand with assembly of a number of items of common usage, such as water pumps and agricultural tools. This is already occurring. Backward integration may take place as demand grows, with an increasing number of parts being manufactured domestically.

Special technical knowledge and adequate markets will both be required for complex machinery: technological assistance should come from licenses or joint ventures with foreign firms. Markets can be developed by low input duties where future manufacturing opportunities are greatest.

Detailed planning for the machinery sector could begin after 1972, including planning for production of certain consumer-durables, the production of which would not be well advised at present. As with many other sectors, high quality standards will be important.

Electrical Machinery and Equipment (ISIC 37)

Economies of scale are important for all electrical equipment and machinery not now produced in Vietnam, except for simple assembly operations. In general, for communications equipment (radios, television, telephone and switching equipment, etc.), models and makes of equipment should be limited and an assembly program developed, with backward integration into manufacture of parts as technological ability improves and markets expand. Planning for consumer durables should be deferred until the mid-1970's.

Transportation Equipment and Vehicles (ISIC 38)

Manufacture of major auto and truck components and assembly should be deferred. Detailed planning can start about 1975, although some manufacture of truck bodies, of three-wheeled trucks, and possibly of bus bodies could start at an earlier date.

Assembly and production of cars and vehicles (if limited to a few makes and models), might be contemplated by 1980. Preferably,

the makes and models of trucks and cars imported after 1969 should be limited to these makes and models, in order to facilitate component spare parts production. This will be difficult to enforce in the absence of long-range production plans, but it is most desirable to control the number of models of cars and truck and bus chassis whenever possible. Agreements with foreign manufacturers therefore should be negotiated in the early post-war years. Car imports and ultimate production might be limited in general to small cars in order to conserve foreign exchange.

Bicycles and motorcycle assembly and expanded manufacture of parts can proceed rapidly because of present demand levels; but, again, makes and models should be limited, and joint ventures should be sought.

Present ship-building capacity should be adequate for the domestic fleet, and could eventually supply ocean-going fishing vessels as well. Technical assistance will be required for the latter.

Production of railroad equipment is not contemplated. It is unlikely, on world-wide trends in countries of similar stages of growth, that railroad transportation will play a major role in the post-war era.

Miscellaneous Manufactures (ISIC 39)

As per capita incomes rise in, say, five years after the war, natural market forces will permit development of many miscellaneous products on a substantial scale (plastic household goods and toys, signs, jewelry, watch assembly and many other goods). The number of models of items such as watches needs to be limited, and this might best be done by appropriate tariff policies. Detailed planning for the sector should be initiated early in the post-war period.

Investment Summary and Schedule

The investment schedule for bringing about a manufacturing-added value exceeding $500 million at market prices is estimated to be:

	Millions of Dollars (Equivalent)
First two peacetime years	108
Second two peacetime years	164
Third two peacetime years	174
Fourth two peacetime years	303
Total	749

Details are shown in Table 9.9.

These estimates assume that substantial exports will be attained, and in this case value added in manufacturing will be about $593 million in 1978, the year chosen for the study projections. If such exports are not attained, value added will reach only $523 million by 1978, and the level of total investment during the 1970-1977 period will drop to about $641 million.

With successful development of exports foreign exchange requirements for fixed capital will total about US $443 million for the eight-year period, or, without exports, $377 million. A rough breakdown of foreign exchange requirements by subsector is included in Table 9.9.

In summary, fixed capital investment requirements for the 1970-1977 period will be as follows:

	Millions of US$	
	Domestic Markets and Exports	Domestic Market Only
Total Fixed Investment	749	641
Foreign Exchange Component	443	377
Value Added 1978 (Annual Rate)	593	523

Some first priority decisions requiring immediate attention involve large expenditures in the first two years of peace. These are concerned with the following branches of manufacturing industry:

1. Fertilizers
2. Cement
3. Textiles and apparel (selective)
4. Fruit and vegetable canning and other food products
5. Plywood manufacture
6. Pulp and paper (for investment in 1972 and 1973, but early action is desirable).
7. Fish and fish products processing.

Decisions should also be taken, as a matter of second priority, concerning:

8. Sugar production and refining
9. Meat products
10. Textiles and apparel (including synthetics)
11. Pharmaceuticals
12. Fats and oils processing
13. Flat glass manufacture
14. Initiation of an oil refinery project
15. Minor transport vehicle assembly.

Important investment decisions that probably should be delayed until well into the 1970's are:

16. Basic iron and steel production

17. Synthetic fiber raw materials

18. Plastic raw materials

19. Soda ash

20. Non-ferrous metals

21. Heavy metal products

22. Heavy machinery

23. Most electrical machinery and equipment

24. Production of vehicles and vehicle components

25. A second round of sugar production and refining

26. Meat processing for export.

For the major products listed in Table 9.8 as exhibiting crucial economies of scale properties, it is important not only to prevent installation of plants that are too small, but also to design capacities for what demand will be in 5 to 6 years after a plant first goes into production, rather than for demand in the first year or two. For example, in oil refinery design it is cheaper in the average developing country to design the refinery for 7-8 years in the future (2 years construction plus 5-6 years). The exact period will depend on the interest rate and economies of scale, but the 5-6 year rule appears to be applicable for the major products listed in Table 9.8. This rule is relevant even when foreign exchange is considered as well as total cost.

It will be necessary to allow imports when investment decisions are postponed, but the overall foreign exchange cost (discounted in the long run) will invariably be less if the goal is large production units than if small plants are built and small capacity additions are frequently made. It is our conviction that if Vietnam wishes to develop a competitive economy by the end of the 1970's, the policies outlined in this chapter are the ones it should follow.

SECTION V THREE PROJECTS FOR IMMEDIATE CONSIDERATION

THE PRODUCTION OF NITROGEN FERTILIZER

Previous studies have examined this question in detail, including long-term recommendations for developing a fertilizer industry*. Our intention here is not to duplicate the works of others but to supplement them and support the case for an ammonia-urea fertilizer complex in the Mekong Delta.

It has been pointed out in the aforementioned studies that, given world prices for the finished products and raw materials, production of phosphatic and potash fertilizers in Vietnam is not justified, and these fertilizers will not be considered here.

Markets for Nitrogenous Fertilizers

Nitrogenous fertilizer distribution (and, presumably, consumption) in the 1967 and 1968 crop years totalled 54,000 mt and 62,000 (estimated) mt respectively (nitrogen content). These figures are below the 1967 TVA projections, but despite the effects of the war, are considerably higher than those of previous years. Continuing growth in nitrogen consumption is expected, with several factors contributing now and in the future to the upward trend: a) the recent opening of distribution channels and relaxation of price controls; b) the introduction of improved rice varieties, IR-8 and IR-5; c) maintenance of a favorable rice/fertilizer price ratio; and d) the establishment of a credit system by the Agricultural Development Bank (ADB) to finance the needs of the agricultural sector**.

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* J.R. Douglas, Jr., John A. Burnett, Jr., and William N. Sutherland, South Vietnam: An Evaluation of the Fertilizer Industry, TVA, 1967.

J.R. Douglas, Jr., (Follow-up Report on South Vietnam's Fertilizer Industry, TVA, 1968

** Ibid.

The 1967 TVA report projected 1972 nitrogen consumption at 130,000 mt, rising to 180,000 mt by 1977. There is every likelihood that these estimates will be exceeded, particularly in light of the proposed water control program in the Mekong Delta, the first effects of which could be felt by 1975. The addendum to the TVA report points out that fertilizer use could double or triple in a very short period of time, and the Joint Development Group shares this optimism. The 1972 and 1977 estimates therefore will be taken as minimum figures for purposes of this analysis.

Allowing four years for feasibility studies, plant construction and attainment of adequate security, it is likely to be at least 1973 before fertilizer production could begin in Vietnam. A plant should be designed to satisfy consumption estimated for about 6 years after start-up (or 1979), so that construction of a complex with a capacity of 200,000 mt of nitrogen per annum would not appear unreasonable. With urea as the source of nitrogen, an equivalent ammonia-urea complex would have a capacity of about 430,000 mt of urea per annum.

Urea Production

The 1967 TVA report recommended completion of the An Hoa - Nong Son industrial complex, which would provide a portion of nitrogen fertilizer requirements, and further recommended that consideration be given to a second ammonia-urea complex to be built in the Mekong Delta, with a capacity of 297,000 tons of urea per annum. In the 1968 TVA addendum, the Delta complex was again suggested for consideration, and a firm recommendation was made that a bulk blending and bagging facility be installed as soon as possible at Can Tho to serve as the first stage in building up a Vietnamese fertilizer industry at that location. The Joint Development Group concurs with the 1968 recommendations, but suggests that a realistic time schedule for initiating urea production, plus the previous estimates of nitrogen consumption, indicate that a much larger ammonia-urea complex should be considered; that is, about 430,000 metric tons of urea per annum. An additional reason for considering a larger complex is the fact that the future production of urea at An Hoa, for reasons that are described further below, is unlikely.

None of the above statements are meant to suggest that a smaller Delta ammonia-urea complex would not be economic. All evidence points to the contrary, as illustrated in the following Table of average production costs for different rates of return on investment and different production rates:

	Urea Production Costs (in US $ per metric ton computed from TVA Cost Estimates)		
	500 mt/day (160,000 mt/year)	700 mt/day (231,000 mt/year)	900 mt/day (297,000 mt/year)
Rate of Return*			
8%	96	76	65
12%	106	84	71
16%	116	91	76

The most recent c.i.f. price of imported fertilizer in Vietnam (without subsidies) has been $100/mt, having fallen as low as $92 in 1968. The average price on a year-round basis is not expected to go below $95. Thus, for any of the rates of return shown above, average production costs at 700 mt/day (231,000 mt/year) would be below the lowest probable import price. Consumption is expected to exceed 231,000 mt before 1972, so that the fertilizer complex should probably be economic from the very beginning (1973), even if consumption were to fall below the TVA estimates by as much as 30 percent.

In the light of post-war uncertainties and possible problems of capital availability, there may be attractions in considering implementation of the Delta complex as recommended by the TVA, that is on a scale of 297,000 tons per annum. Nevertheless, it is quite possible that future domestic demands for nitrogen will support an ammonia-urea

* Note that these rates of return are, strictly speaking, rates of profit since interest at 6% has been included in the cost figures.

complex perhaps 50 percent larger than the one presently under discussion. At the higher level of production, resulting unit costs could be significantly lower.

It is suggested, therefore, that development of the fertilizer industry proceed along the lines of the 1968 TVA recommendations, but that feasibility studies be carried out for both the 900 mt/day ammonia-urea complex and a larger complex with a capacity of 1,400 mt/day. A final decision on plant size can be made when security permits and the future market situation is clearer. Work should begin at an early date to assure minimum delay in project implementation. Plans should be carried as far as possible on paper so that construction can begin soon after security is judged to be satisfactory. There seems to be little reason to delay the feasibility assessments.

In planning there must be careful consideration given to rapidly changing fertilizer technology, and an efficient industry cannot be designed without the active participation of foreign fertilizer producers. The project can best be carried out as a joint venture between Vietnamese interests and an experienced overseas firm, with public financial participation required only to the extent that private Vietnamese capital or overseas assistance is not forthcoming. This is not to say that the Government should not play an active role in developing the industry, but merely that it should not attempt to control its operation. Decisions on production, pricing, raw material supply, etc., should be left to project management within the confines of explicit guidelines decided upon before construction between the management and the Government. This is the only way that an efficient industry can be assured.

Related to this subject is the present structure of fertilizer prices, in which urea is imported at a subsidized rate of exchange. The effective price of urea going into the distribution system therefore is artificially low and domestically produced fertilizer could not compete at this price. If the Government wishes to keep retail prices below a certain level, it should do so in the form of a subsidy to domestic producers who should not be made to compete with subsidized imports. Given an efficient industry, with unit costs lower than unsubsidized import prices, a subsidy to domestic producers would

represent a lower cost in terms of Government of Vietnam resources than the subsidy now granted to importers.

The An Hoa-Nong Son Industrial Complex

A brief account of what the project was intended to consist of is given in Chapter 12, and a much fuller account in the 1967 TVA report already quoted.

There could be no more vivid an example of the economic consequences of the war than this project, in progress, but never achieved, for almost ten years. The security situation in the An Hoa area prevents further construction at this time, but there are other reasons to question the wisdom of continuing the project even when security can be assured. The technology used is out of date. Much of the equipment, in storage for years past in Saigon, has deteriorated, and it is believed that some was actually destroyed in the enemy offensives of Tet and May, 1968. Given the present state of the war and the negotiations, the complex could not possibly be brought into production before 1970, and to do that another $17 million would have to be spent to supplement $33 million worth of existing equipment which is now ten years old and obsolete. If the complex were to go into production, its fertilizer production costs would be extremely high, more than farmers could possibly pay without greatly increased government subsidies. On an impartial review of all the facts, the project simply does not appear to be economically feasible.

On purely economic grounds there is therefore only one possible recommendation - that a determined effort be made to see what can be salvaged. Although the great part of previous expenditures may have to be written off, an attempt could be made to renegotiate the loans made by French and German interests; and the not inconsiderable number of men who have been trained for the project - engineers, technicians and managers - will be a valuable asset to a modern fertilizer industry in a more suitable location. Some of the existing plant, to the extent that its condition permits, may have other uses. The steam plant, electrical generating equipment and transmission lines could still be used to supply power for Da Nang and the sulfuric acid plant, which is a self-contained unit, if it is intact, can be put into production elsewhere.

(If the capital costs of the sulfuric acid plant are to be written off - as they should be - it can probably operate economically.) The most likely use for the Nong Son coal, once it is secure, is as a source of thermal electric power for the northern provinces, though it must be recognized that alternative sources of possibly lower-cost power exist. For the 17 million dollars of additional investment necessary to bring the An Hoa complex into production, there certainly are several alternative, more profitable (and more beneficial to the people) uses in the I Corps Tactical Zone. Several of them are suggested in Chapter 12 of this report.

Some members of the Joint Development Group, though they subscribe to the economic arguments against proceeding with the An Hoa complex as it was originally conceived, properly represent that there are more than economic arguments to be taken into account. They are concerned by the possibility of public disappointment if the principal feature of the An Hoa complex, the fertilizer plant, is discontinued, and by the loss of employment opportunities in a region where post-war unemployment may be serious. Certainly the most strenuous efforts must be made to place in remunerative employment all workers, skilled and unskilled, who have been engaged on this project.

The choice is not an easy one. It lies between recognizing that much money may have been lost on a project initiated by a previous government which was not economically feasible (but saving as much of the investment as can be used in other, economically feasible operations), and spending additional scarce investment capital for uncertain returns on what are substantially political considerations. It is recommended that the Government consider the arguments on both sides and decide where the public interest best lies.

A PROJECT FOR MANUFACTURE AND EXPORT OF LONG-FIBER BLEACHED SULPHATE WOOD PULP

In Chapter 8 the potential of Vietnam's forest resources has been identified, and reference made to the attractive possibilities

for developing prosperous forest-based industries. It is important at this stage to identify the initial steps to be taken in a long-term program for forest exploitation yielding maximum long-term returns to the national economy.

A project which should be given immediate consideration is the development of an export-oriented pulp manufacturing industry. The attraction of the project rests on the coniferous timber resources of Vietnam and a market for wood pulp elsewhere in Asia.

Availability of Timber Resources

The timber resources for this project are the hardwood forests of Vietnam and the pine forests found principally in the province of Tuyen Duc. The area of the pine forests has been calculated from aerial photographs as 180,000 hectares (444,600 acres), and the available volume of pine wood has been calculated from ground surveys as at least five million cubic meters. The Forestry Administration of the Ministry of Agriculture and the Forestry Branch of USAID have together undertaken to study this forest again for more precise estimates of area, volume and growth. The results will be available in early 1969.

Economies of scale are most important in the manufacture of pulp: to be competitive, a mill must produce a minimum of 100,000 tons a year. Using a conversion factor of 4.5 cubic meters of wood to one ton of sulphate pulp, the mill we propose will use 450,000 cubic meters of wood a year for a production target of this order. Three-quarters of this volume or 337,500 cubic meters must be coniferous. The other quarter can be mixed tropical hardwoods, which are quite suitable for sulphate pulp and are available in ample volume.

It is important to confirm that adequate volumes of coniferous wood are available for a mill of 100,000 tons capacity. In part, this will depend on the Government's policy for the sale of timber from public lands. A pulp industry will require very large capital investment and must operate at almost full capacity continuously. The pine-wood requirements for pulp manufacture therefore must have priority over all other uses, with the possible exception of 60,000 cubic meters a year needed for treated electric transmission poles. If

available, additional coniferous timber also could be used for sawmills, but these needs can be considered secondary, particularly since other types of timber can be used for sawnwood.

The inventory now under way will be more accurate and detailed than previous studies; the expectation is that it will confirm the volumes of available coniferous wood assumed above. A period of 20 years is assumed as appropriate for depreciation and debenture retirement, coinciding with the cutting cycle of pine trees. The supplies of pine required by the project for two decades (until a new supply grows) are thus 337,500 per annum, or 6,750,000 cubic meters over 20 years. Of this quantity, 5,000,000 cubic meters are presently standing. The remaining 1,750,000 cubic meters will be derived from half the net annual increment of growth of the existing trees over 20 years. The breakdown is thus:

Hardwood	2,250,000 cubic meters
Standing Pine	5,000,000 cubic meters
Increment on Pine	1,750,000 cubic meters
Total	9,000,000 cubic meters

The apparent abundance, low cost and accessibility of this wood are important attractions to investment; it is essential that the Government carefully maintain these attractions by offering the wood on realistic terms. This subject will be covered further later in this section.

Export Markets and Investment Strategy

On available information there would appear to be little doubt that the best market for chemical pulp of Vietnamese manufacture will be in Japan, although it may be possible to identify other markets in Southeast Asia after further investigation. Because of the large investment involved in a pulp mill, and the resulting necessity to provide assured markets for the mill, it will be advantageous to provide a direct

link between Vietnamese pulp production and major export markets through equity participation by firms which are part of those markets. Given the present world market for pulp, an obvious link is with Japan.

Japan's deficit of chemical pulp was 14,000 metric tons in 1955, 299,000 tons in 1965 and will be 1,344,000 tons in 1975. That nation's 660 odd paper mills have extended themselves beyond the country's capacity to produce their basic raw material. The industry therefore is faced with the necessity to develop sources of such materials in other countries.

Natural forests and other sources of pulping material are very common in southeast Asia; but the coniferous component that yields high value, long fiber pulp covers only ten percent of these forests, and often stands in remote and scattered units. Vietnam's coniferous forest is compact and is near the coast. Moreover, the unfilled demand for paper in Malaysia, Singapore, Indonesia and the Philippines will be 430,000 tons in 1970. These countries are unlikely to become sources of pulp supplies to Japan and other importing nations.

If a pulp project can attract foreign equity capital, it will be assured a portion of the growing world markets; but if these markets are not linked directly to the project through equity participation and shared risk, it will be more difficult to guarantee that the export market will be retained throughout the life of the project.

In this situation, a pulp project provides an important opportunity for foreign assistance to be utilized effectively. The project would most suitably be organized as a joint effort by Vietnamese interests and an experienced foreign company.

Project Specifications

Because of present limitations on coniferous wood supplies, the size of the proposed mill should be limited for the present to 100,000 tons of chemical pulp a year. Its size can be increased if volumes of wood available are found to be greater than those presently estimated. A feasible distribution of production would be 60,000 tons a

year for export and the remainder for the needs of the paper manufacturing industry in Vietnam.

The volume suggested for export is considered to be the minimum likely to attract foreign participation in the project. From 60,000 tons of pulp exports, the estimated foreign exchange earnings would be 8 to 10 million dollars a year. This level of exports should be retained throughout the life of the project, and none of it diverted to domestic use as Vietnamese markets grow. Pulp consumption in Vietnam can be expected to rise to 60,000 tons per annum by 1978. These requirements can be met by 40,000 tons of sulphate pulp from the proposed mill and 20,000 tons from an increase in pulp production from rice, straw, bagasse, bamboo or hardwoods. If there are deficits they will have to be made up with importation of pulp materials until forest resources are further developed.

The proposed mill should be designed, however, in accordance with the long-term needs of the Vietnamese market, and it should be the first in a series of pulp industry investments, aimed both at exports and domestic needs. An important consideration throughout will be the need to integrate paper production with pulp. This will be considered in a feasibility study which we recommend later in this section.

Estimated capital investment in the proposed mill is $43 million, of which $35 million is in foreign exchange and the balance in local currency. Working capital is included in these estimates. Assuming equity participation in capitalization of $20 million, about $12 million might be contributed by an overseas interest and $8 million in local currency by Vietnamese sources. The balance of $23 million in debt (all foreign currency) might be financed by direct assistance from foreign governments, by the International Finance Corporation (IFC) or by other agencies.

Wood Costs for the Project

Stumpage, the sale price of standing timber, should be a market price like any other. Where the timber is Government-owned, however, no such competitive free-market price can exist. At what

price, then, should the Government dispose of this public resource?

As stated above, the foreign exchange earnings of the suggested pulp mill are estimated to be about $9 million a year on a foreign exchange investment component of $35 millions. Because of the attractiveness of long-term foreign exchange earnings from the export of its timber, the Government does not have to realize a direct net piaster income on timber sales. In these circumstances the best measure of stumpage value is the cost of replacing the timber used; that is, the cost of replanting and protecting pine plantations until they are again ready for cutting.

This cost can be taken as 12,400 piasters per hectare, according to Vietnamese foresters who have had experience with pine plantations in Tuyen Duc province where the mill possibly would be located. About three-quarters of the cost represents planting, and the rest protection.

A conservative estimate is that the pine forests will yield 30 cubic meters of wood per hectare, so the area cut over each year will be about 12,000 hectares. For two reasons, such an area need not be replanted in its entirety. First, some land will be suitable and needed for agriculture and should be released from the public domain for that purpose. Secondly, other land will be so rough, steep, remote or infertile that no expenditure should be made in replanting it, though seed trees would be left. If 2,000 hectares a year should fall into these two classes, the area needing planting each year will be 10,000 hectares and the cost would be VN $125,000,000. A charge of 280 piasters per cubic meter of wood delivered to the mill is thereby indicated for replacement purposes (VN $125 million/450,000 cubic meters), a figure which, although somewhat high, would be reasonably competitive by international standards.

If this principle of charging for wood replacement cost is accepted, then the amount of usable wood per unit area becomes the main factor in raw material costs. Yield not only influences logging costs, but determines the area exploited and therefore the total cost of replanting. One study has indicated a usable volume of 50 cubic meters per hectare, considerably higher than the yield previously mentioned in

this chapter. Presumably the trend will be toward higher yields as artificial plantations are established. Insofar as these higher yields are found to be available, they will result in lower total costs of wood delivered to the mill. This cost is the largest single item influencing the manufacture of pulp, and offers the greatest opportunity for savings.

In exchange for cheap and plentiful wood, the Government should insist from the beginning upon standards of reforestation that will insure high survival and rapid growth through careful site selection and preparation and superior planting stock. The mean annual increment of plantations will probably reach ten cubic meters per hectare, with yields of 200 cubic meters per hectare in 20 years. On an assumed 20 percent increase in production over rated capacity, the industry will need 55,000 hectares upon which to grow wood for the second cycle of cutting. The operating company can reasonably be held responsible for physically replanting only 2,750 hectares each year. As for the remaining 7,250 hectares which will need planting each year, there are several choices. The Government might organize and finance a semi-autonomous public corporation for the purpose on the analogy of those already operating in various European and African countries, or it might entrust this responsibility to a Central Highlands Development Board as proposed in Section 3 of Chapter 12. Usually such agencies have their own budgets and their own sources of income.

Increased activity in cutting and replanting so large an area will result in radical changes in land use. Forest land will acquire value; and new opportunities will arise for employment in logging and reforestation. To encourage such activity, the Government might transfer forest to private hands under leasehold and give subsidies for growing trees. Steady and profitable outlets for available wood and the product of new plantations will create a new source of rural income and development in the private sector of the economy.

Project Summary

The project described above suggests an excellent opportunity to base an efficient pulp industry on foreign technical expertise and financial assistance. It will lead to more efficient utilization of forest resources, and thereby assure increasing production as volumes

of usable wood increase with time. The plan further proposes that the industry will have close links with the local economy. Sales of wood will create a wider base for rural prosperity, will promote higher yields of forest resources and will open possibilities for expanding other forest industries. The project will earn considerable sums of foreign exchange, and transform the presently stagnating and unproductive coniferous forest into a highly productive resource closely tied to a dynamic and efficient industry.

The main characteristics of the proposal are:

1. The project should be a joint venture between a foreign company on one side and the Vietnamese Government and industry on the other. The former would supply capital, technical knowledge and marketing assistance. The latter would supply the timber resource, buildings, operating costs and certain investment costs.

2. The price paid to the Government for timber would be sufficient to replant the forest land after cutting.

3. The local share capital would be about 40 percent.

4. Investment incentives would include free importation of machinery, exemption from income taxes during the first ten years, and guaranteed repatriation of profits to the foreign investors.

5. The product would be available for local or foreign sale in proportion to the equity capital contributed.

6. Well designed and managed, the mill would reach full production three years after start-up.

The competitive advantages of the proposed mill are low-cost wood, water and power, from which must be subtracted the costs of transporting imported chemicals and the exported product, neither of which should be excessive. Production costs can be reduced further by reducing the cost of delivered wood. If this can be kept below a maximum of $4.50 per cubic meter, the rate of return on capital probably will be satisfactory. The usable volume of coniferous wood on a given unit of

land area will be of crucial importance.

The best location for a large pulp mill may be at Da Nhim in the province of Tuyen Duc. The advantages of this site are the reservoir and hydro-electric plant nearby, the railway and highway, the surrounding coniferous forests, and the neighboring provincial capital city of Dalat.

It is believed that feasibility studies and detailed engineering design will take about two years. Construction will take another two years and approximately three further years will be needed to reach full operation. Thus, if detailed planning begins in 1970, full operation can be reached around 1977. A full seven years lead time should be used in further consideration of this project.

Implementation Strategy

It is clear that the recommended pulp manufacturing facility cannot be built until the forest areas involved become secure. Nevertheless there is a considerable amount of work that can begin immediately to ensure that actual construction can begin with minimum delay when security is achieved.

As a first step, a feasibility study should be undertaken as soon as possible by an experienced foreign firm, preferably one that is interested in participation in the project. The scope of work for the study should cover:

1. Markets; especially products, size, location, price, competition and suppliers, both domestic and foreign, present and future.

2. Materials; wood quantity, quality and costs delivered to the mill. Replanting schedules and costs. Sources and costs of chemicals and other supplies.

3. Manufacturing facilities; plant size, plant location (taking into account wood supply, transport, labor and supervision, housing, medical facilities, amenities, sources and costs of fuel and power, water supply, effluent disposal, communications and soil

conditions), process flowsheet, equipment list and specifications, labor requirements, etc.

4. Economic analysis; including an estimation of initial project costs (plant start-up expense, working capital, and inventories), and operating costs (materials, labor, supervision and management, utilities, taxes, insurance, interest and depreciation). The analysis should also include pro forma earnings, project effects on the national economy, means of financing, and a time schedule.

The cost of this study is estimated to be $50,000 and it would take four months to complete after notification to proceed. The costs might appropriately be provided by the Industrial Development Center, and the Joint Development Group could assist in the preparation of terms of reference and selection of a firm to undertake the study.

A PROJECT TO MANUFACTURE VENEER AND PLYWOOD FOR DOMESTIC USE AND EXPORT TO THE UNITED STATES

A plan for forest resource development should give primary attention to those industries which have a high gross value of output for each unit of material used and for the products of which profitable and expanding markets exist. For plywood, these output values and markets do exist; they are smaller than those for wood pulp, but are greater than those for sawnwood and other wood-based panels such as fiberboard and particle board. Compared with these other basic forest industries, the manufacture of plywood has the highest rate of capital turnover and the highest employment for each unit of material used. For Vietnam, other important criteria to consider are the investment required for each unit of labor employed and for each unit of material processed. In both cases, the investment in plywood is less than that for other panels or wood pulp.

In comparison with other technically advanced industries, a plywood industry can therefore offer high employment and high value added for a moderate investment cost. Not surprisingly, Asian and African countries have increased their shares of world plywood manufactured

from broadleaved species, and they have done so very rapidly. This tropical product has been outstandingly successful in competing for markets in European and North American countries, even where vigorous national industries exist. Examples are the large expanding industries of Gabon, Nigeria and the Philippines, which use their own timber resources; and those in Korea and Taiwan, which process logs from Sabah and the Philippines for re-export as plywood to America. In 1966 this lucrative trade earned over US $30 millions each for Korea and Taiwan.

Fifteen years ago neither country made plywood. Now, because of the inherent characteristics of the industry, and because of advantages which these countries either possessed or have been able to create and sustain, they are competing very successfully with Japanese and American products. Vietnam should be able to do the same.

Location

Because of the high unit value of the wood used relative to transportation costs from the forest areas, the plywood industry is not dependent on the presence of nearby timber supplies. The principal requisite is access to port facilities to minimize transportation costs on the finished product. Either Saigon, Nha Trang or Da Nang would be suitable locations in Vietnam. Since it is desirable to promote industrial development outside the Saigon area, and particularly desirable to foster industry in the I Corps Tactical Zone, Da Nang appears to be the first choice.

The manufacture of plywood is labor intensive compared with other primary forest industries; an annual processing capacity of a thousand cubic meters of wood employs seven persons. The plywood mill we propose will process 40,000 cubic meters of logs per year and should be thoroughly competitive with other producers. The resulting employment of about 280 people, while not spectacular, would represent a highly productive use of labor in the surplus labor situation of the northern provinces. More important, a plywood industry would foster the development of logging and tertiary wood-using industries which would absorb significant numbers of additional workers. It is as a nucleus from which other industries will develop that plywood

manufacture is particularly attractive for Da Nang. The total employment provided should, evenutally, amount to at least 1,000 jobs.

The success of Taiwan and Korea rests in part upon the use of veneer log cores for joinery and the making of furniture parts. Da Nang will soon have 300,000 people, and offers a ready market for products that do not enter the export trade. The availability of plywood and residues will stimulate building and other wood-using industries.

The Market for Plywood

Although a Vietnamese plywood industry can be aimed at worldwide markets, the most attractive outlet will be the United States. The United States market for plywood has grown very fast in recent years, outstripping the ability of U.S. producers to satisfy growing demand. The result has been a market for imported plywood that has been growing at the rate of 14 percent per annum since 1960. In 1965, the United States Forest Service pointed out* that since 1947-1948 plywood purchases from abroad have multiplied fortyfold, and that rapidly increasing imports of hardwood plywood can be expected in coming decades. The increase from 1965 to 1966 bore out this prediction: 180,000 cubic meters coming mainly from Asia**.

By 1975 it is expected that net U.S. imports of hardwood, plywood and sawnwood will amount to about 5-1/2 million cubic meters, more than twice the average annual imports of 1960-1962. At the present time - in sharp contrast to the trade to Europe and Japan - practically all these imports enter as plywood and veneer rather than as logs, despite a substantial tariff (20 percent) on these finished products***.

Most of the recent increase in U.S. plywood imports has come from Asia. The composition of Asian supplies, however, has changed considerably. Japan's share of U.S. plywood imports in 1960

* W. C. Siegel and C. Row: Research Paper SO-17, U.S. Hardwood Imports Grow as World Supplies Expand. New Orleans, 1965.

** Yearbook of Forest Products - 1967, FAO Rome, 1968, Table D-14, P. 115.

*** Wood: World Trends and Prospects, Basic study No. 16, FAO Rome, 1967, P. 118.

was 49 percent but dropped to 26 percent by 1966. During the same period, the shares of Taiwan and Korea rose from almost nothing to 9.5 percent and 11.3 percent respectively. The share of the Philippines varied between 11 percent and 17 percent during the period, and showed the greatest tendency to follow fluctuations in the U.S. market.

The most difficult competition for Vietnamese plywood exports to the U.S. will come from Taiwan and Korea, both of whom have developed efficient, low-cost industries and aggressive marketing techniques. Nevertheless, there is no reason why Vietnam cannot gain a foothold in this lucrative market (and others) if it concentrates on producing a high quality, low-cost product .

Log Supplies

An obvious reason for developing a plywood industry in Vietnam is, of course, the desirability of putting the nation's forest resources into productive use.

From recent photo-interpretation, the five northern provinces are estimated to have the following areas of multi-canopied forest:

Name of Province	Area of Forest (hectares)
Quang Tri	201,125
Thua Thien	311,985
Quang Nam	404,050
Quang Tin	342,775
Quang Ngai	307,725
Total	1,567,660

It has also been estimated, on Food and Agricultural Organization (FAO) descriptions of "old growth" forests in Southeast Asia*

* Ibid., P. 46.

that these areas may yield volumes of commercially usable wood as high as 100 to 150 cubic meters per hectare.

If the FAO estimate is even approximately correct and has any pertinence to the forest stands of the I Corps Zone, then there can be no doubt whatever of the capacity of regional forest resources to supply a plywood mill of the size suggested. Over a depreciation period of 15 years, the timber used by the proposed mill will amount to 600,000 cubic meters. In all probability the I Corps Zone can eventually support a plywood industry far larger than the one proposed, and this should be given consideration as planning proceeds.

The above comments apply to long-term development of a plywood industry. In the short term it would be hazardous to plan an export-oriented plywood industry based on domestic logs alone; the war has caused disruption in the forest areas, resulting in extremely high logging costs, particularly in the northern provinces where logging costs are further increased by a rugged and difficult terrain. Throughout the country logging costs are now so high and so uncertain that most Vietnamese sawmills are not operating at all or are doing so at only a fraction of their capacity.

The cost of wood is usually 60 percent of the finished cost of plywood, and a viable industry cannot be built on high-cost timber only sporadically available from domestic sources. Nevertheless, it would be a mistake to postpone development of the industry until security is achieved. It is in the interests of Vietnam to gain an early foothold in the growing U.S. market, and it is desirable to promote early development of industry in the I Corps zone to alleviate the unemployment which may occur there in the early post-war years.

A short-term solution lies in importing logs to overcome the uncertainties of domestic log supplies. Like Japan, Korea and Taiwan, Vietnam can import logs from elsewhere in Southeast Asia and convert them into plywood for export to the United States and other countries. One of the fastest growing segments of international trade in forest products follows precisely this pattern. Logs are reported to be available in Vietnam from Sabah for $55 (VN $6,500) per cubic meter and from Cambodia for even less. This compares with a present

delivered cost in Saigon of logs from Tay Ninh province at $63-$68 (VN $7,500-$8,000) per cubic meter and with even higher costs in the I Corps zone. The price advantages of imported logs at this time can be used by Vietnam to stimulate its own industry. Additional advantages of importing logs are those of steady supply at uniform prices and quality, freeing a mill from the uncertainties of procurement at home. These uncertainties may continue for some time after a cease-fire.

Another advantage in the solution suggested is the possibility of commodity exchanges with Malaysia, and especially with Sabah. In 1967, Malaysia imported 390,000 tons of rice for nearly $50 million. If Vietnam is to export rice, it can do so most conveniently to nearby countries which offer something in exchange. Sabah needs rice and has wood that it cannot process. Both countries would gain from an exchange.

It should be emphasized that the proposal to use imported logs is only a short-term measure and will not prejudice later development of national forest resources. Using imported logs is the only way that an internationally competitive plywood industry can be developed in the early post-war years. After a transition period of (say) five years, as security is restored, roads are built and logging machinery put to work, a mill at Da Nang should draw its log supplies more and more from the Annamite Range and other parts of Vietnam. Eventually, the industry can be expected to be able to use domestic logs almost exclusively; in the meantime, an important industry will have been established during the critical period of post-war development.

Project Specification and Implementation

Initially, the mill might be designed to process 40,000 cubic meters of logs per year into 20,000 cubic meters of plywood, with room for expansion as and when conditions permit. The required investment should be no more than $2 million and the project is entirely suitable to be undertaken by private Vietnamese capital, with assistance from development banking sources.

A study of the timber resources of the I Corps zone, including information on present logging conditions and the rate at which

the delivery of logs can be expanded under peacetime conditions, will be started early in 1969 (see Chapter 8). The Commissioner for Development of the I Corps zone has been informed of this potential project and is supplying information concerning power supplies, labor, harbor facilities, local equity participation and other pertinent matters. The Imported Hardwood Plywood Association in San Francisco has been asked to supply data on markets and prices in the United States. Possible markets in other countries will be investigated. If the results of these enquiries are favorable, as they are expected to be, a consulting engineering firm should be retained to make a feasibility study. The scope of work for the study will be similar to that suggested in the previous section for the wood pulp industry.

As with the pulp study, it is recommended that the Industrial Development Center should finance this study. The Joint Development Group can assist in defining the scope of work and selecting an appropriate consultant, and will continue to help in other aspects of planning the project.

Action of various kinds by the Government will be necessary to attract private investment for the project and ensure its success. Investors obviously should be granted the usual tax advantages, and additional incentives may be desirable to promote industrial development in the northern provinces. In the case of the plywood mill, there are some particular recommendations for consideration:

- most importantly, duty-free importation of logs and other materials at Da Nang until domestic log supplies and costs become competitive with imports.

- administrative action to facilitate the development of the logging industry.

- an inventory of the forests of the I Corps zone to confirm the long-term supply prospects, and

- the development of the infrastructure to meet industrial needs for power, harbor facilities and roads.

SECTION VI THE INSTITUTIONAL SETTING FOR INDUSTRIAL DEVELOPMENT

THE ROLE OF GOVERNMENT

While it is not proper to base forecasts of future demand for industrial goods on the war-distorted consumption patterns of recent years, it is similarly inappropriate to extrapolate the existing institutional structure into the post-war period. The present structure has evolved through a difficult war-time period and has been forced to adapt to the abnormal economic and political conditions that the war has created. The result of these conditions has been a highly bureaucratic set of Government controls and regulations that should diminish in pervasiveness as the conditions that have fostered them disappear. This will not happen without considerable effort on the part of Government and industry to re-examine and alter the existing institutional and regulatory environment in terms of the overall development philosophy adopted for the post-war period.

The stated investment policy of the Government "focuses its central aim on stimulating the expansion of private enterprises and encouraging the growth of necessity goods and export goods industries."* This desire to stimulate private investment requires the adoption of specific policies which will effectively utilize the particular talents which the private sector can offer to the development process. Not the least of these is the readily apparent entrepreneurial spirit and ability of the present business community.

Two basic elements of future Government policy towards industrial development in the private sector are suggested:

1. Promotion of industry, including establishment of investment priorities, creation of a proper physical environment for

* Industrial Development Center, Establishing an Industrial Undertaking in Vietnam, 1967.

spreading investment throughout the country (industrial estates, infrastructure investments, etc.), dissemination of information and promotion of feasibility studies for priority industries, creation of a favorable environment for foreign investment, institutional support for exports, etc.; and

2. Support of industry, including financial support for small and medium industry in which adequate private investment is not forthcoming, stimulation of growth in capital markets, and initial financial support for private development banking institutions.

A third possible element of government policy has not been mentioned - "Control and regulation of industry." This omission has been deliberate, but is not meant to imply that the Government should not be the prime mover in guiding the industrial development process. It should; but this can be accomplished through the two elements already mentioned. Control and regulation of industry, as a deliberate Government objective, can only result in the reduction of incentives for the private sector and of necessary investment from overseas. It would inevitably grow in relative importance at the expense of the other two objectives, and this is exactly what appears to have happened in the last few years.

Today, a private investor is subjected to a complicated series of procedures in order to gain approval and investment privileges for his project. He must seek approval, via innumerable forms, for virtually every detail of the project, including sources of capital, operating and technical procedures (from people who probably know much less about his proposed operation than he does), raw material sources, economic and financial justification, and so on. When and if the project is implemented, he must submit to additional supervision and control from Government agencies. Bureaucratic interference of this sort discourages investments and sometimes prevents them from being made, seriously inhibiting the growth of the industrial sector. This is in conflict with the stated goal of Government support for private investment, and the system should be changed accordingly.

Within the context of a comprehensive set of national development goals, detailed supervision and control of industry is

unwarranted. In addition, such activities absorb a large number of scarce and valuable people who could be used more effectively in industry itself or in development banking institutions.

INSTITUTIONAL REQUIREMENTS

The Industrial Development Center (IDC) can and should serve as the arm of Government in promotion and support of industrial development. One basic change in its present makeup would appear to be warranted: at present, IDC serves as the Secretariat for the Investment Commission, the body charged with judging the merits of a particular project for the granting of investment privileges, including tax exemption. In this capacity, the IDC becomes deeply involved in the regulatory and control procedures described above. It is our impression that these activities engage many of the most valuable IDC employees at the expense of their more proper functions, which are industrial promotion and support activities.

It is recommended, therefore, that the Investment Commission be abolished and replaced by a comprehensive and detailed list of priority industries which will receive investment privileges. After preliminary review, if it is judged that a project fits within this list of priorities, then it should automatically be granted these privileges. The IDC should be concerned with the details of only those projects which have applied to it for direct financial assistance. All other projects, in which no IDC or Government money will be directly involved, should be allowed to proceed toward implementation without further IDC scrutiny, within the structure of a reasonable set of import regulations. Private investors should be allowed to undertake their own assessments of risk and economic feasibility, without any involvement of the Government in these matters.

The responsibilities recommended for IDC, therefore, are:

1. Establishment of the priority areas of industrial development along the lines of the program recommended in Section IV; and continuing review and modification of the priorities to suit changing economic circumstances;

2. Preliminary review of those projects which have applied for investment privileges, and the granting of those privileges to projects judged to fit within the investment priorities. This is a process which should not require the detailed scrutiny carried out at present, and it should demand no more than one man-week of IDC activity for any one project;

3. Direct investment of minority shares (preferably non-voting) or debt in small or medium industries judged to be important but not sufficiently attractive to secure sufficient levels of private capital. Within the context of reasonable assistance agreements, control of these enterprises should be left in the hands of private management, with technical assistance from IDC as and if required;

4. Undertaking , with overseas technical assistance as required, feasibility studies for priority projects which have not yet been initiated by private industry; and dissemination of the results of these studies to private investors;

5. Establishment and operation of industrial estates until such time as the private sector is willing and able to finance this excellent mechanism for fostering industrial development in various parts of the country;

6. Investment of Government money in large, strategically important projects which require further capital to supplement private domestic and foreign investment. IDC participation should be in the form of non-voting equity or debt, and management control should rest in the hands of the private interests (within, of course, mutually agreed guidelines established at the inception of the project).

It is further recommended that IDC serve as the arm of government for administering post-war assistance to the industrial sector from possible consortiums of overseas governments and private investors. Such consortiums would be particularly valuable in the post-war period, and it is important that their efforts on behalf of the reconstruction of Vietnamese industry be carried out with maximum effect on the private sector.

Support to the private sector in the form of capital and technical assistance should be channeled through a viable private development bank, the rudiments of which exist today in the Vietnam Development Bank (formerly SOFIDIV). Such an organization should serve as the primary mechanism for carrying out major capital investment. It should be designed in the form of development banks which have proved successful in other parts of the world. An example is the Pakistan Industrial Credit and Investment Corporation (PICIC), a private organization which has served as the primary means of assisting medium and large-scale industry in Pakistan. As with PICIC, a Vietnamese industrial development bank should serve ultimately as a channel for private foreign investment and assistance from such sources as the International Finance Corporation and the Asian Development Bank. By 1964, seven years after its founding, a full two-thirds ($50 millions) of the net worth of PICIC was in the form of overseas capital, all of which had been put to work in the Pakistan industrial sector. This pattern could be followed with equal success in Vietnam.

The development bank should be responsible for developing markets for private capital, channeling domestic and foreign investment into Vietnamese industry, and providing technical and management assistance to those industries in which it has invested. All of this must be done with a view towards establishing priorities for investment (through investment privileges granted by the Government), but the bank management must be reasonably free to pursue those projects which provide an adequate return to itself and private investors. The bank should be entrepreneurial in nature and free to invest in the full range of industrial activities, both large and small.

It is recommended that in its initial stages a full-time advisor be obtained; someone who has managed a successful development bank elsewhere in the world. During the same period, the Government should provide the bank with enough funds to get it started, possibly through a low interest loan from overseas. The Government should guarantee bonds of the development bank. The bank's goal within a few years should be self-sufficiency, with no further need for direct government assistance.

Both IDC and a private development bank (the VDB or its

successors) will require competent and experienced staffs. These can be built up only with significant levels of assistance from overseas. A pool of such assistance exists already in the large AID/Industry staff in Vietnam. It would be highly advantageous if many of these professionals could be assigned to work directly with the two Vietnamese development organizations instead of working in separate offices. Care should be taken, of course, not to saturate the Vietnamese organizations, but, at the same time, close working relationships would maximize the effectiveness of the U.S. industrial assistance effort. The same pattern could be followed with direct management assistance to private industry.

FOREIGN INVESTMENT

For all industrial sectors and products in which economies of scale have been listed as "crucial" or "important" in Table 9.8, and for all sectors with export possibilities, foreign investment (through joint ventures, licensing, etc.) undoubtedly will be required to provide technical, managerial and export marketing know-how. Purely local ownership cannot lead to a high level of world competitiveness. This is apparent from the experience of Korea and Taiwan, where foreign participation has resulted in significant manufacturing gains and increasing competitiveness in world markets.

It probably is not feasible to expect significant new foreign investment until real peace comes to Vietnam. For this reason, special incentives may be needed to induce the entry of foreign know-how in this interim period. This might be handled selectively by management participation without equity, with an option to purchase stock at a later date, but should be limited to projects where economies of scale are favorable.

One potential problem in attracting foreign investment is Article 22 of the Constitution of Vietnam which says that "workers have the right to choose representatives to participate in the management of business enterprises, especially in matters concerning wages and conditions of work..."* As it is commonly interpreted, and from the point

*Unofficial English translation; emphasis supplied.

of view of potential foreign investors, this provision indicates a highly undesirable relationship between management and labor. Management must have the right and ability to make decisions on production levels, competitive pricing, capital investment, production methods, etc., all of which affect labor directly or indirectly. To ensure that this constitutional provision does not frighten off needed foreign investment (and domestic investment for that matter), it should be made clear in the required implementing legislation that labor has the right to organize and bargain collectively with management to influence management decisions, but not the right of direct participation in those management decisions.