

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT
FOR
UPGRADING OF AICM INDUSTRIAL CHEMICALS RESEARCH
AND DEVELOPMENT EQUIPMENT
FOR
INDUSTRIAL TECHNOLOGY DEVELOPMENT INSTITUTE
IN
THE REPUBLIC OF THE PHILIPPINES**

NOVEMBER 1988

JAPAN INTERNATIONAL COOPERATION AGENCY

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BASIC DESIGN STUDY REPORT
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P R E F A C E

In response to a request from the Government of the Republic of the Philippines, the Government of Japan has decided to conduct a basic design study on the Project for Upgrading of Agri-Industrial Chemicals Research and Development Equipment for the Industrial Technology Development Institute and has entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to the Philippines a study team headed by Mr. Mitsuru Inagaki, Deputy Director, Chemical Products Division, Basic Industry Bureau, Ministry of International Trade and Industry, from July 31 to August 17, 1988.

The team had discussions on the Project with the officials concerned of the Government of the Philippines and conducted a field survey in the Bicutan area. After the team returned to Japan, further studies were made and the present report was prepared.

I hope that this report will contribute to the development of the Project and to the promotion of friendly relations between our two countries.

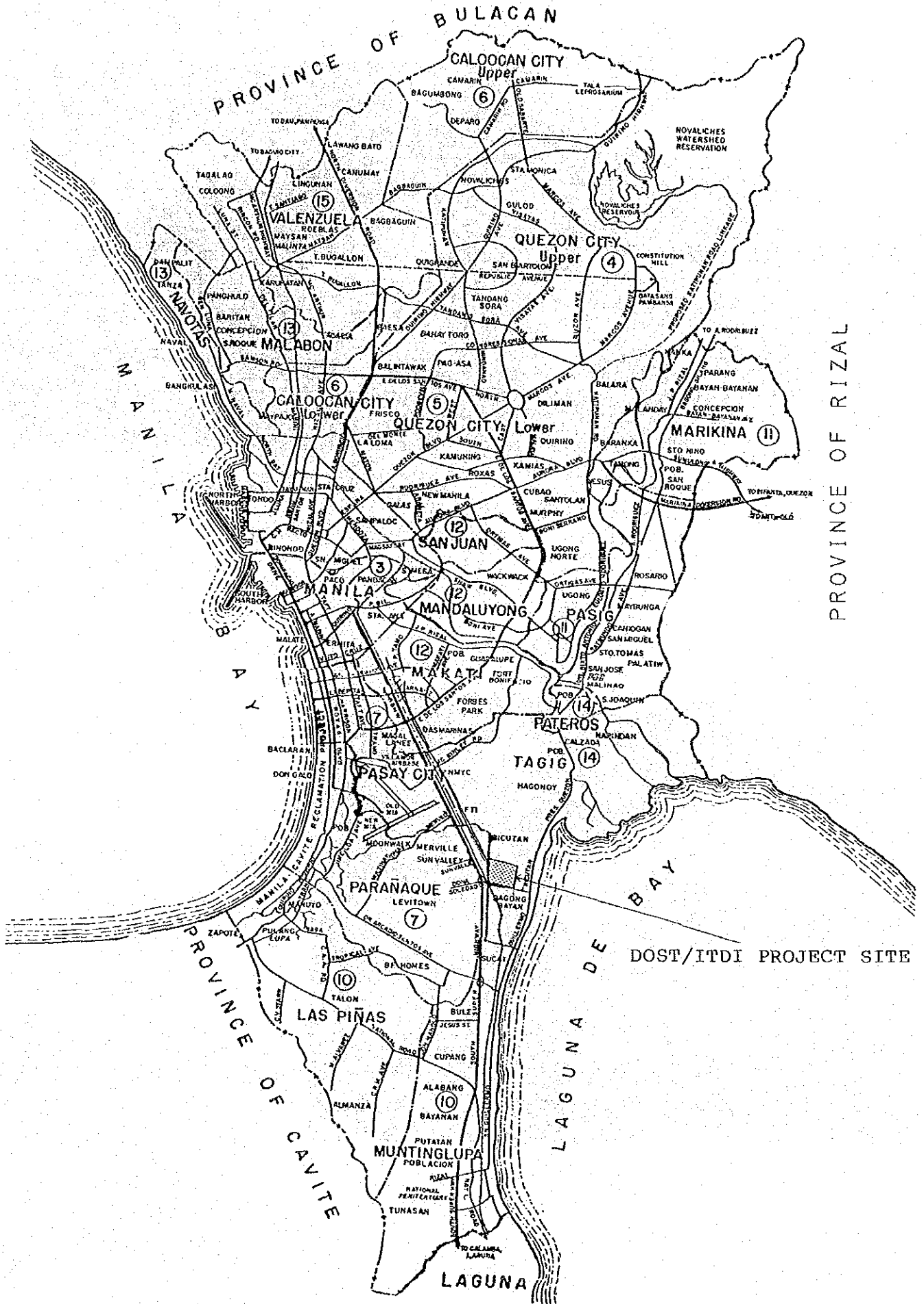
I wish to express my sincerest appreciation to the officials concerned of the Government of the Republic of the Philippines for the close cooperation they extended to the team.

November, 1988

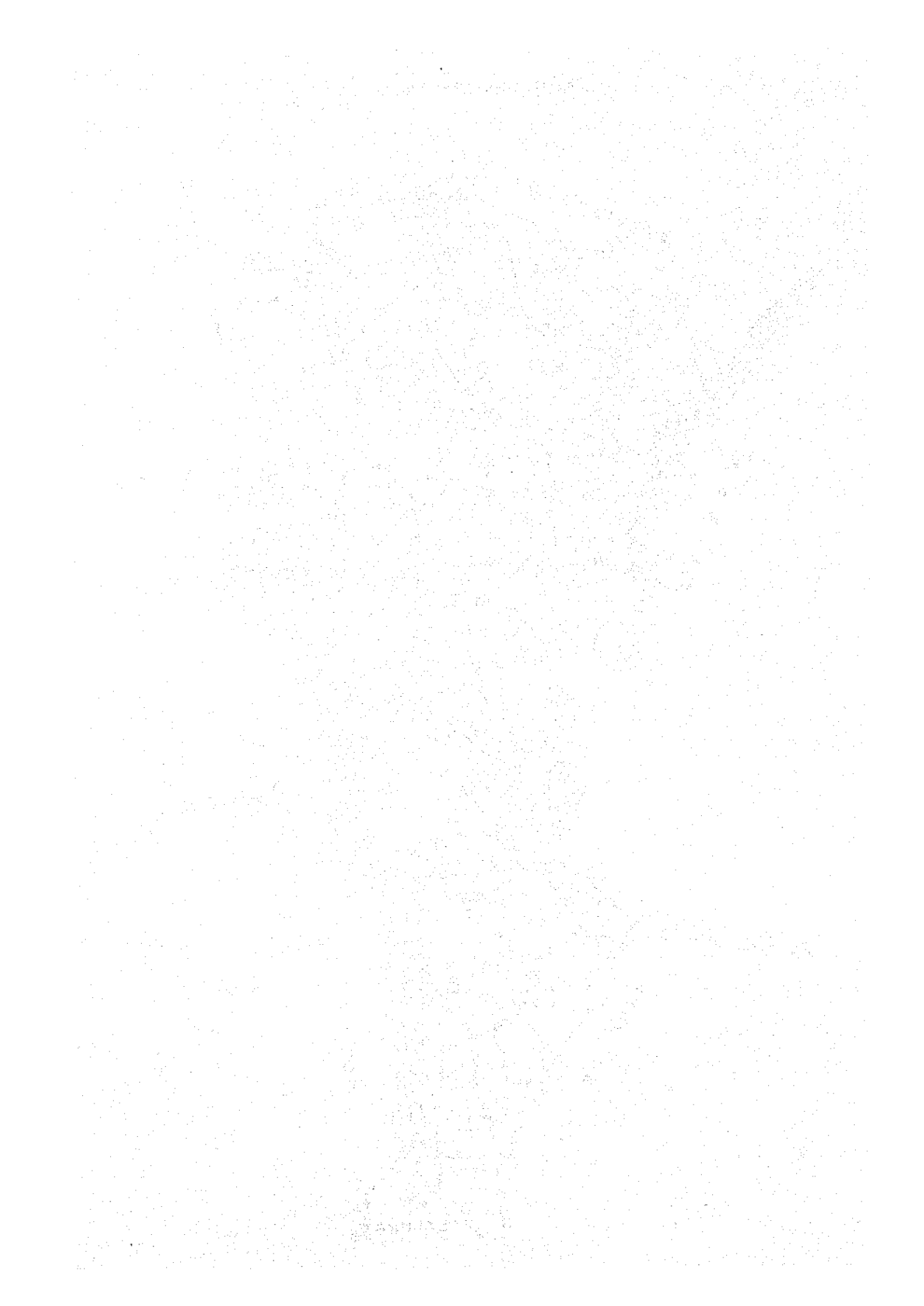


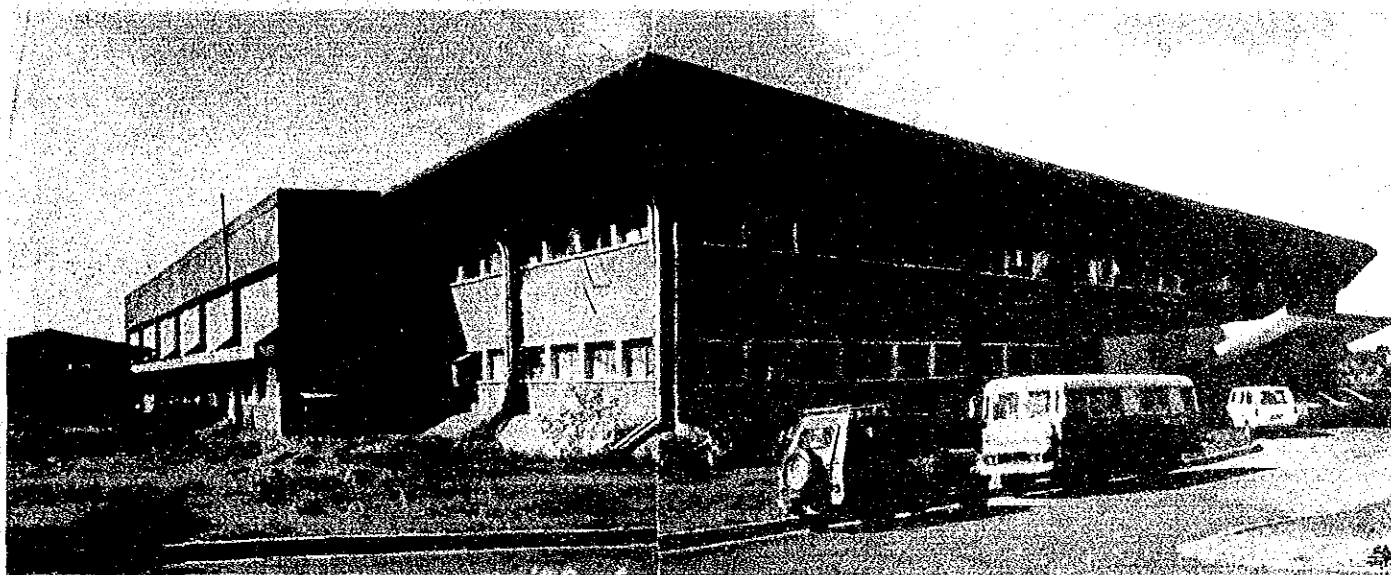
Kensuke Yanagiya
President
Japan International Cooperation Agency

LOCATION OF THE PROJECT SITE

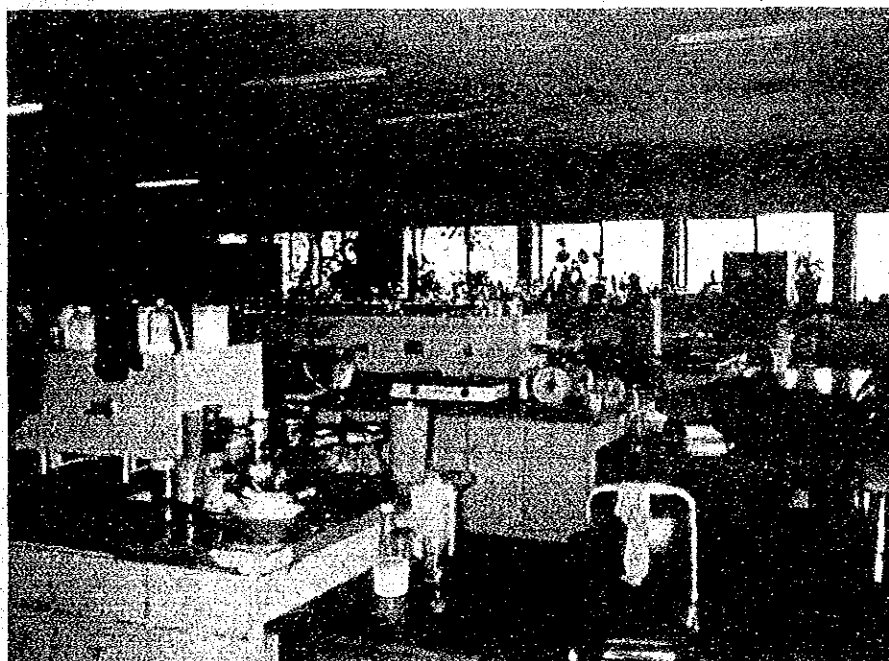


DOST/ITDI PROJECT SITE

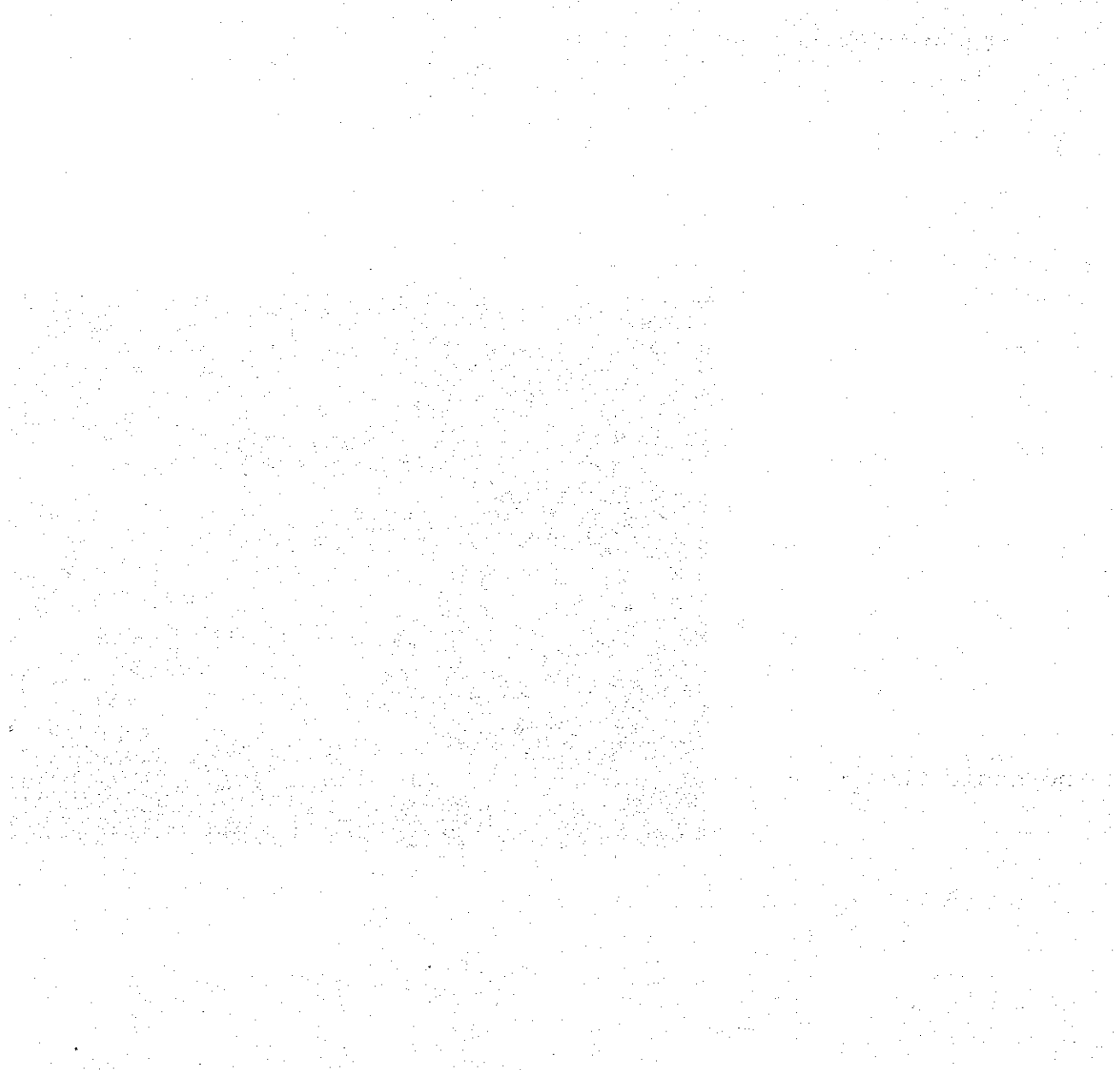


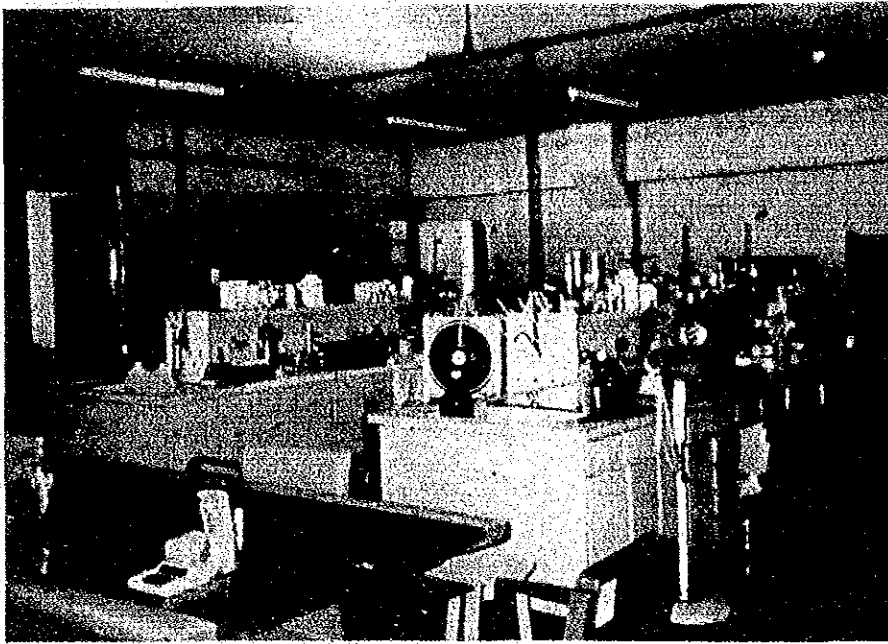


Facard for the ITDI Building



Inorganic Chemistry Lab.





Organic Chemistry Lab.

Pilot Plant for
Activated Carbon
Manufacturing
(by JICA Grant)



Process Development Lab.
(Manufacture of
Construction Material
from rice husk)

SUMMARY

S U M M A R Y

Since the inauguration of the new administration in February, 1986 two years have elapsed and during this time, the Government of the Republic of the Philippines has reviewed its economic policies and undertaken the reconstruction of the economy. Thanks to the support provided by the international economic environment during this period, a trend toward gradual improvement is evident in the Philippines economy.

That is, the negative growth rate in 1984-85 improved to a positive growth rate of 1.1% in 1986 and to 5-6% in 1987, and the agricultural service, and industrial sectors are apparently showing a basic recovery.

However, the stagnant private investment in plants and machinery, the decline in exports of primary agricultural products, and the decrease in foreign investments have brought about an external debt totalling 28.2 billion dollars, an amount more than double that at the end of 1979, and the repayment of these debts has become an obstruction to further economic growth.

On the other hand, in spite of the implementation of emergency investment in public works by the Philippine Government under the Community Employment and Development Program (CEDP), the country is having difficulty in alleviating poverty and in generating employment in the rural areas.

Under such circumstances, the Philippine Government has set a medium term target for the six year period covering 1987 to 1992 which includes:

- 1) alleviation of poverty in the rural areas,
- 2) generation of employment in the rural and urban areas,
- 3) promotion of social justice and equity, and
- 4) attainment of sustainable economic growth.

It is also planned, with particular in respect to the relationship between the agricultural and the industrial sectors, to concentrate on the following:

- (1) In order to strengthen the policy to expand markets, measures will be taken to advance the diversification of agriculture and to improve infrastructural aspects which now are obstructing industrialization e.g. roads, so as to link the producing areas and the markets, ports and harbors, communal irrigation facilities, and post-harvest facilities.
- (2) In respect to policies relating to trade in agricultural products, measures will be taken to strengthen competitiveness in international markets through diversification of the products exported and abolishment of export duties. At the same time, measures will be taken so that factors such as import duties on goods necessary for agricultural production do not obstruct agricultural activity in the rural areas.
- (3) Measures will be taken to improve and reform the financial system in rural areas.
- (4) To expand non-agricultural employment and to increase income in the rural areas, industry will be dispersed geographically, and priority will be given to the development of labor-intensive and local indigenous materials based cottage industries.
- (5) Considerations on the industrial sector will focus on its will complementary role with regard to agriculture, and shifts from large scale industry to micro, cottage, small and medium industry, from capital-intensive industry to labor-intensive industry, and from urban-type industry to rural-type industry will be evaluated.
- (6) To achieve the above objectives, consideration will be given to dispersal of the functions of the competent government agencies to the rural areas, and centers will be established to disseminate information on markets and sources of various

goods needed for production, and to provide technology, training and other services to the entrepreneurs in rural areas.

In concrete terms, the government established in December of 1987 the Micro, Cottage, Small and Medium Enterprises Council (MICSMEC) led mainly by the Department of Trade and Industry together with such agencies as the Bureau of Small and Medium Business Development (BSMBD) and the Technology and Livelihood Resource Center (TLRC). The government initiated activities along the lines of the medium term development plan.

The Department of Science and Technology (DOST) is also a member of MICSMEC. The Industrial Technology Development Institute (ITDI) which represents the department is expected to develop processes for industrial projects that use agricultural resources. ITDI is recognized as the source of technology for the industrialization of the Micro, Cottage, Small and Medium Enterprises (MICSMEs) in rural areas, and at present, it conducts research on industrial processes using agricultural, forestry and fishery, as the starting material, research on industrial processes using agricultural wastes, research on secondary processed products which will increase the value-added to existing primary processed agricultural products, research on improvement of the processes of the existing Small and Medium Enterprises (SMEs), and research on quality improvement. ITDI also renders technical assistance and training to the plants, thus actively extending technical assistance to SMEs of the Philippines.

In view of the research themes and activities of the small and medium industry sector, however, the equipment being used for research is obsolete or has deteriorated, leaving little that is usable, and the equipment for pilot plant tests is also inadequate.

Under such conditions, the government formulated a project to improve ITDI (which has a long record in research of industrial applications of raw materials originating in agriculture, forestry, and fishery), to enable it to engage in further

research, particularly in the areas of agricultural chemistry and chemistry, with objectives centered on applied research instead of mere academic pursuits. The government has requested the Japanese Government to extend a grant aid to implement the project.

In response to the request, the Japanese government dispatched experts to the Philippines in March, 1988 and decided to conduct a basic design study on the project. The Japan International Cooperation Agency (JICA) subsequently sent a basic design study team to the Philippines from July 31 to August 18, 1988.

The Study Team conferred with the persons concerned of the Republic of the Philippines on the details of the request and also collected information on the project site, conditions of the related infrastructure, and on the plan. Upon its return the team prepared a final report on the Basic Design Study after analyzing and examining the results of the study and formulating plans for selection criteria, layout, maintenance, and management of the equipment.

The project comprises support for research and development relating to strengthening productive capacity, enhancing of quality, and improving the efficiency of the utilization of input in the production technology of SMEs. It also includes technical assistance and the related training, the planning of programs to establish sources of technology for the cottage type industries in the MICSMEC activities, pilot plant tests for the industrialization of the prospective technology for the cottage type industries which have completed the laboratory tests in the Institute, the improvement of the basic and screening tests for SMEs that utilize agricultural products or agricultural wastes, and considers the upgrading of the equipment required for the fulfillment of such activities.

The site of the project is in the Chemical and Mineral Division with a floor area of approximately 4,000 sq.m which is located in the Industrial Technology Development Institute having an area of approximately 1.4 ha., on the premises of the Department of Science and Technology, located at Bicutan, Taguig, Metro Manila.

The equipment plan formulated using the basic design consists of the following:

(1) Areas of the laboratories where the equipment will be installed:

1) Organic chemistry laboratory (2nd floor)	400 sq.m
2) Inorganic chemistry laboratory (2nd floor)	310 sq.m
3) Analytical equipment room (1st floor)	120 sq.m
4) Inorganic tests laboratory (1st floor)	410 sq.m
5) Oil test laboratory (1st floor)	420 sq.m
6) Process development room (1st floor)	560 sq.m
7) Training room (1st floor)	260 sq.m
8) Administrative office and others (2nd floor)	620 sq.m

(2) Description of the equipment

- 1) Equipment for pilot plant tests to follow the laboratory tests (test on cottage type manufacture of edible oils, soaps, etc.)
- 2) Equipment for research relating to the manufacture of slow-release type fertilizers using agricultural resources or agricultural wastes (this is a joint research project in technical cooperation with Japan which has continued for three years.)
- 3) Equipment for laboratory tests for industrialization of project using resources from the agriculture, forestry and fishery sectors of the Philippines (sodium silicate, silica gel, construction materials, etc.)
- 4) Equipment for research to develop processes to lend technological support to SMEs (unit operation equipment, field survey equipment, personal computers, etc.)
- 5) Equipment to collect basic data (various analytical equipment)

- 6) Other equipment for technical consultancy and training (overhead projector, slides, etc.)

The capital requirement for Philippine construction work is estimated to be approximately 14 million yen including repair of roof, partitioning, re-arrangement of electricity, water and telephones, foundation for the equipment, repair of drainage and waste water treatment facilities, purchase of furniture and implements, etc.

The period of construction of this project will be a total of 12 months after the Exchange of Notes between the two governments; this period consisting of 2 months for the detail design, 1 month for the tender and the contracts, and 9 months for fabrication and installation of the equipment.

The implementing organization of the Philippine Government will be ITDI which is a suborganization under DOST, and the Executive Committee organized in the Institute will undertake the implementation.

ITDI is the technical center for the development of processed agricultural products in the Philippines, and by engaging in such activities as the development of technology to promote cottage industries in the rural areas, assistance in upgrading quality, reinforcement of the productive capacity of the existing SMEs, and the pursuit of its own fundamental research, research on market development conducted jointly with SMEs, and the training and dissemination of technical information to SMEs, it is expected to make great contributions to the economic development of the Philippines. At the same time, the propriety of such activities in technical assistance may be fully appreciated in the light of the present conditions in the Philippines and as a project that meets the objectives of the Seventh Medium Term Development Plan which is now under way. The early implementation of the project is hence desired.

Furthermore, impacts that are expected after the completion of the project include the following:

1. Enhancement of the quality of the private SMEs, expansion of markets and import substitution through technical support, and increase of exports
2. Improvement of income through reduction of the cost of the goods needed for production and improvement in the consumption of inputs in SMEs
3. Expansion of employment in the rural areas and increase of non-agriculture income through the establishment of cottage type small industries
4. Establishment of a self-sufficient system in the remote rural areas by building up the foodstuffs and daily necessities industries
5. Increase of macroeconomic value-added to products through the expanded usage of the resources of the agriculture, forestry sectors, and fishery and the establishment of the industries to utilize agricultural wastes

Consequently, the implementation of the project through Japanese grant aid has profound significance and the effects of the aid are expected to be remarkable.

C O N T E N T S

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PREFACE

MAP OF PHILIPPINES

OVERVIEW OF ITDI BUILDING

SUMMARY

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ABBREVIATION

BSMBD	:	Bureau of Small and Medium Business Development
CEDP	:	Community Employment and Development Programme
CFIP	:	Chamber of Furniture Industry of the Philippines
CMD	:	Chemical & Mineral Division
EIMP	:	Export Industry Modernization Programme
DOA	:	Department of Agriculture
DENR	:	Department of Environment and Natural Resources
DOST	:	Department of Science and Technology
DTI	:	Department of Trade and Industry
ITDI	:	Industrial Technology Development Institute
ITIT	:	Institute for Transfer of Industrial Technology
JICA	:	Japan International Cooperation Agency
LBP	:	Land Bank of Philippines
MICSMEC	:	Micro, Cottage, Small and Medium Enterprise Council
MCSMES	:	Micro, Cottage, Small and Medium Enterprises
NEDA	:	National Economic and Development Authority
NFA	:	National Food Authority
NMYC	:	Natural Manpower and Youth Council
PBSP	:	Philippine Business for Social Progress
PCA	:	Philippine Coconut Authority
PCCI	:	Philippine Chamber of Commerce and Industry
PCIERD	:	Philippine Council for Industry and Energy Research and Development
PCHI	:	Philippine Chamber of Handicraft Industries, Inc.
PHRDC	:	Philippine Human Resources Development Center
PCRDF	:	The Philippine Coconut Research and Development Foundation Inc.

PNB : Philippine National Bank
SMES : Small and Medium Enterprises
TLRC : Technology and Livelihood Resource Center
UNDP : United Nations Development Programme
UP : University of the Philippines

CHAPTER 1 INTRODUCTION

CHAPTER 1 INTRODUCTION

The Government of the Republic of the Philippines has, for approximately two years since the inauguration of the new administration in February, 1986, reviewed the nation's economic development and has undertaken the reconstruction of the national economy.

That is, the Government set a medium term target for the six year period covering 1987 through 1992, comprising;

- 1) alleviation of poverty in the rural areas,
- 2) generation of employment in the rural and urban areas,
- 3) promotion of equity and social justice, and
- 4) attainment of a sustainable economy.

However, for industrialization in the rural areas, considerations such as those that follow need to be addressed.

- (1) An agreement must be reached on a national system to return the benefits gained by the industrialization of the rural areas to the rural areas themselves and to the people engaged in agriculture.
- (2) Input of materials needed for production in agriculture and industry and the flow of goods among the rural areas must be satisfactory.
- (3) There must be an adequate market and supply of related services in the rural areas.
- (4) There must be sources of industrialization technology that utilize local resources (with agricultural products as basic materials) and the related technical services.
- (5) The financial system for the cottage type SMEs must be of a type that will attract investors.

With an understanding of the situation as mentioned above, the Government of the Philippines launched the Micro, Cottage, Small

and Medium Enterprises Council (MICSMEC) in November, 1987, with the objective of "establishing cottage type agricultural processing industries", consisting mainly the Department of Trade and Industry (DTI), the Department of Agriculture (DA), the Bureau of Small and Medium Business Development (BSMBD), the Technology and Livelihood Resource Center (TLRC), the National Food Authority (NFA), and the Department of Science and Technology (DOST).

In addition, the Chemical and Mineral Division (CMD), a division of the Industrial Technology Development Institute (ITDI), conducts research in various fields relating to cottage type industrialization technology which seek to be located in the rural areas, and to use indigenous materials, a few of which have reached the stage of research for practical application.

Based on the above, the Philippine Government formulated a project for upgrading the equipment of ITDI with the objective of contributing to the alleviation of the poverty-stricken strata of its people by contemplating the industrialization of cottage type agricultural processing industries and employing agricultural technologists and nonagricultural technologists in the rural areas to work as consultants on matters relating to strengthening of productive capacity, enhancement of quality, and reduction of production input for SMEs involved in the existing agricultural processing industry. It also intends to train the technical personnel of SMEs, and of other technical support services, and to supply industrialization technology that utilizes agricultural resources or agricultural wastes. Consequently the Philippines has requested the Japanese Government to extend grant aid for the project's implementation.

In response to the request, the Japanese Government sent Mr. Katsuji Ishibashi, Senior Researcher, Government Industrial Development Laboratory, Agency of Industrial Science and Technology, Ministry of International Trade and Industry, and Dr. Akio Kato, Director, Amakasu Chemical Industry Co., Ltd., to the Philippines in March, 1988 and proposed the following items to be included in the technical cooperation projects.

(1) Items related to inorganic chemistry

- 1) Process to manufacture sodium silicate from rice husk
- 2) Process to manufacture slow-release type fertilizers

(2) Items related to organic chemistry

- 1) Development of technology for expelling, extraction and purification of oils
- 2) Process to manufacture soaps
- 3) Process to manufacture derivatives of edible oils such as fatty acid, methyl esters, etc.

and as future projects for technical development at ITDI (CMD), the following were proposed and recommended:

- (1) Soil conditioner and deacidifiers from rice husk
- (2) Adsorbents for emulsified oils, etc.
- (3) Process to manufacture white carbon and colloidal silica
- (4) Process to manufacture silica for adsorbents, etc.

Subsequently the Japanese Government decided to carry out a basic design study for the project, and JICA sent its study team to the Philippines in July, 1988.

The field study for the basic design was conducted by the Study Team headed by Mr. Mitsuru Inagaki, Deputy Head, Chemical Products Division, Basic Industry Bureau, Ministry of International Trade and Industry, during the 18 day period covering July 31, 1988 through August 17, 1988.

The Study Team conferred with the persons concerned of the Philippine Government on the details of the request and investigated the conditions of the site of the project, the buildings and facilities, and prepared the minutes of discussions on the points ascertained (Refer to ANNEX-4).

This report compiles the results of the Basic Design Study relating to "the Project for Upgrading of Agro-Industrial

Chemicals Research and Development Equipment in the Republic of the Philippines", based on the results of the field survey and the analysis in Japan.

CHAPTER 2 BACKGROUND OF THE PROJECT

CHAPTER 2 BACKGROUND OF THE PROJECT

2.1 The Significance of Establishing Agro-based Industries

2.1.1 Present Status of the Philippine Economy

Since the inauguration of the new administration in February, 1986, the Philippine Government, has reviewed the economic development and has undertaken the reconstruction of the economy over the past two years. As a result, the economy shows a gradual improvement supported by the international economic environment. That is, the negative growth rate in 1984-85 improved to a positive growth of 1.1% in 1986 and to 5 - 6% in 1987 (planned), while the agricultural sector, the service sector and the industrial sector show trends of steady growth.

With respect to trade, the deficit has decreased, due to the diminution of imports brought about by the past high tariff policy, an increase in 1986 of exports mainly of non-traditional manufactured products, the decline of international interest rates, the cautious attitude of private investors, and the foreign exchange shortage which resulted in a stagnant import situation. However, as foreign investments by the U.S.A., E.C., and Japan decreased, the external debt grew to a total of \$28.2 billion by the end of 1986, double the amount at the end of 1979. The repayment of these debts has become an obstacle to economic growth.

Further, although the Community Employment and Development Program (CEDP) was implemented by the new administration as an emergency measure to generate employment, imbalances of economic growth and regional discrepancies have increased; the share of production decreased in Northern Mindanao (Region X), Eastern Visayas (Region VIII), Southern Mindanao (Region XI), and Ilocos (Region I), and underemployment rates were 50% for those engaged in agriculture or a total 43.7% in the rural areas.

Sector-wise, the agricultural sector showed a positive growth of 3.7% for the agriculture, forestry and fishery sectors overall,

representing 6.6% for rice, 8.7% for maize, 28.2% for coconut and 2.9% for fishery, thus supporting the economy in 1986. For external trade, even though the commercial fishery of tuna made a positive contribution, changes in the international environment of coconut palm and sugar, meant that exports have continued to fall since 1984, and the contribution of the agricultural sector to the trade balance has continued to decline.

As for the minerals and energy sectors, the total was a negative growth of -1.6% which breaks down as manufacturing +0.3%; mining and quarrying, +3.0%; construction -15.1%; energy, +4.0%. Main causes for this include the drastic reduction in investment in public works due to the restrained fiscal policy up to 1985, the decline of foreign investment, shortage of raw materials and intermediary products due to the shortage of foreign currency, decline of purchasing power, and deterioration and obsolescence of the production facilities of the import substitution industries. On the export side, the major products are coconut palm, electronic parts, and textiles, which showed favorable performances with growth rates over the proceeding year of 100.4%, 5%, and 20%, respectively, and on the total industry basis, the negative growth rate of 15.4% of the preceding year became a positive growth of 13.1%. On the import side, imports consisted of raw materials and intermediate goods including crude oil which represents about one-fourth of the total, accounting for 51.6%; with consumers goods at 18.9%, and capital goods at 14.9%. Differences with the preceding year, were -7.4%, +3.7%, and +9.7%, respectively, and on the total basis, -1.3%. On the other hand, as to the labor force the agricultural sector accounted for 49.3%, the industrial sector for 14.1%, and the service sector for the remaining 36.6%, over the period covering 1960 to 1980 the industrial sector showed a noticeable decrease in its labor absorbing power due to poor performance.

2.1.2 Identification of the Agro-based Sector in the Philippine Economy

The shares of agriculture, fishery and forestry sectors in the gross national product of the Republic of the Philippines by sector, were 30.0%, 23.9%, and 15.8%, respectively for the manufacturing and commercial sectors. Of these sectors, the production of the agricultural sector playing an important role was approximately 77.8 billion pesos in 1986, each of the major crops, i.e. rice, maize, coconut, and sugar cane accounting for 35.9%, 12.6%, 5.8%, and 9.8%, respectively, or approximately 64% of the total. On the other hand, the total number of agricultural households engaged in the production of these crops is 3,420 thousand with rice, maize, coconut, sugar cane crops occupying 47.1%, 22.0%, 20.07% and 1.0%, respectively, and the four combined accounting for 90% of the total. Also, the cultivated land for each of these crops amounts to 38.6%, 20.1%, 29.2% and 3.2%, respectively, with the four combined representing 91.2% of the total.

With respect to trade, exports amounted to 4,800 million pesos, out of which approximately 25% was for agricultural products or their processed goods, and imports amounted to 5,000 million pesos, consisting mainly of consumers goods, raw materials and intermediate goods. This pattern has not changed in recent years.

As stated above, however, there has been a noticeable decline in exports of coconut and sugar which are the main export items, due to the change in world-wide environment, because of price decline caused by excess supply, import restrictions such as aflatoxin regulation on agricultural products, etc.

Despite disparities among the regions, poverty persists in the rural areas, and the unemployment problem is conspicuous. The rate of the underemployed is 50% of those engaged in agriculture and 44% of the total rural areas, which contrasts strikingly with the 23.2% for the urban areas.

Also, approximately 60% of the total number of households are considered to be below the poverty line and the rural areas

account for two-thirds of this figure. The minimum monthly cost of living in Metro Manila is 3,282 pesos, and the average for the rural areas is 2,285 pesos. The poverty is highest in Region V (Bicol, 73.2% of the households in the region are below the poverty line) and Region VI (Western Visayas including Negros and Occidental, where 73.1% of the households are below the poverty line), and lowest in Metro Manila (44.1% are below the poverty line).

2.1.3 Development Plans of the Related Sectors

On the basis of the situation outlined above, the Philippine Government set its goals for the six year period covering 1987 -1992 comprising;

- 1) alleviation of poverty in the rural areas,
- 2) generation of employment in the rural and urban areas,
- 3) promotion of social justice and equity, and
- 4) attainment of sustainable economic growth,

and set its specific socioeconomic targets as follows:

- 1) An average 6.8% growth rate of the gross national product (GNP).
- 2) The growth rate of the agriculture, forestry, and fishery sectors shall be 5.0%, taking into account the contribution of non-traditional export products.
- 3) Stressing the auxiliary and function of the industrial sector with regard to agriculture, a shift from the previous urban, capital-intensive, large scale type industries to promotion of labor-intensive cottage type small industries is to be affected, setting the annual average growth rate at 8.8%.
- 4) Upgrading of the infrastructure in the rural areas shall be reinforced and the growth rate target of the construction industry shall be set at 16.5%.

- 5) An annual average of 750,000 new entrants to the labor market is anticipated during the development plan period. Consequently, one million employment opportunities shall be created annually so that the 10.6% unemployment rate in 1987 shall be reduced to 4.9% in 1992.
- 6) As the relative decline in the value added and employment in agriculture, forestry, and fishery sectors is inevitable, shifts to the industrial sector and the service sectors shall be promoted. In particular, an employment rate of 14.4% in the industrial sector in 1981 - 1985 shall be expanded to 16.4% in 1987 - 1992.
- 7) As the problem of alleviating poverty in the rural areas is more urgent than in the urban areas, the 63% poverty rate of 1985 shall be reduced to 48% in 1992. At the same time, the poverty rate in Metro Manila shall be reduced from 44% to 40%.

The above are the socioeconomic targets of the Philippines, which are reviewed more specifically below.

(1) Agricultural sector

Development is planned for the period of 1987 - 1992 to promote the agricultural and rural sector as follows:

- a) to enhance the income of the small farmers
- b) to increase productive capacity
- c) to effect an equitable distribution of the factors of production and the returns to production
- d) to improve self-sufficiency of food and nutrition
- e) to create agro-based employment opportunities in the rural areas, particularly for the landless rural workers and sustenance fishermen

- f) to improve the delivery system for agricultural crops, agricultural products, farm inputs, and services
- g) to expand cooperative work and agricultural organization through institutionalization

In concrete terms, efforts are to be concentrated on the three following policies:

- 1) Strengthening of the production system
 - a) In order to resolve the food problem of the growing population, the effective utilization of land, or classification of land utilization and the optimum cropping patterns shall be reviewed.
 - b) As represented by the sugarcane and coconut producing areas, measures for diversification of crops, intercropping, increase of high value-added crops shall be taken in order to establish self-sufficiency of food and to break away from dependence on the traditional export crops.
 - c) Promotion of the development and proliferation of high yield and/or high quality seeds, development of effective organic fertilizers, development of feed for livestock and poultry utilizing agricultural resources, cost reduction of supplies and equipment for agriculture, and the systematization of tax reduction measures on the government level, etc.
 - d) Long term destructive acts on the resources of agriculture, forestry and fishery of the Philippines such as plan-less development of the forestry areas, destructive fishing in the coastal areas, deficient planning of water resources, excessive input of pesticides and harmful fertilizers, shall be terminated and countermeasures for these problems shall be formulated.

2) Strengthening of market expansion policy

- a) The majority of farmers in the rural areas are engaged in cropping rice and maize, and the Government will contribute to the stabilization of the prices of these products through the National Food Authority (NFA) and promote the active entry of the private sector into the rice and maize business.
- b) Improvements shall be made in the infrastructure of factors obstructing the diversification of agriculture and industrialization in the rural areas; and farm-to-market roads, ports, communal irrigation facilities, and post-harvest facilities shall be improved. The modernization or construction of 52,000 kilometers of feeder roads and 245 feeder, secondary, and major ports shall be undertaken.
- c) The Government shall conduct supporting services to the non-traditional export products related to the development of new markets, such as financial incentives to the private sector, improvement of the market environment and research and development of post-harvest technology. Also, to maintain proper returns to production and to support the active entry of the private sector into the agricultural business, dissemination services for product and market information shall be strengthened.
- d) With respect to trade policies, diversification of export products shall be promoted and imports of food and raw materials shall be held down to the necessary minimum. Export taxes shall be abolished to increase the competitiveness against international prices and customs duties and import taxes on agricultural products shall be set at rates that will result in appropriate production for the agricultural activities in the rural areas.