SECTION I BACKGROUND OF THE PROJECT

CHAPTER 1 INTRODUCTION

1.1 Authority

This is the Final Report on the Feasibility Study on the Integrated Agricultural and Rural Development in Highland Area in the Republic of Indonesia (hereinafter referred to as "the Study") which was prepared in accordance with the Scope of Work (hereinafter referred to as S/W) agreed upon between the Directorate General of Food Crops and Horticulture of the Ministry of Agriculture, Government of the Republic of Indonesia (hereinafter referred to as "DGFCH") and the Japan International Cooperation Agency (hereinafter referred to as "JICA") on February 24, 1999. S/W is attached in this report as Attachment 1.

The report presents the result of the First Stage Study Work "Basic Development Plan of Eight Model Areas and Selection of Priority Model Areas" in Section II, and the result of the Second Stage Work "Integrated Agricultural and Rural Development Plan of Four Priority Model Areas" in Section III. The report consists of three volumes, namely, Main Report and Annexes and Drawings. The Annexes support the Main Report, containing the detailed data and information collected and the results of analysis of concerned sectors.

1.2 Background of the Project

Agriculture in Indonesia contributes 19% of the gross domestic product (GDP) and provides job opportunities to 45% of the total working population, playing an important role in the Indonesian economy. The governments have placed a priority on agricultural development and the development efforts have focused on increasing staple foodstuff and horticulture crops, generating employment, improving national dietary quality as well as the enhancing farmers' living standards and rural development. However, productivity of the agriculture sector is still low compared with the other sectors, and there is a large disparity between rural and urban areas. In the rural areas where more than 70% of the poor people are living, income enhancement, improvement of living conditions, and employment generation is given the high priority. Enhancement of traditional crops such as paddy, palawija is not sufficient to solve these urgent matters. It is urgently required to set up an efficient agricultural production system with crop diversification of high value added crops such as vegetables, fruit, livestock,

fisheries referring to the changing food demand structure.

According to the program of the Third Umbrella Cooperation, four regional projects representing four agro-ecosystems in Indonesia were proposed, i.e., highland area (West Java Province), irrigated area (South Sulawesi Province), rainfed area (West Nusatengara Province) and swamp area (South Kalimantan Province). The program aims to attain the enhancement of farmers living conditions by improving agriculture productivity, efficiency and sustainability, and by promoting agriculture production increase, quality improvement and crop diversification, and value added production. In highland area (West Java Province) it is proposed to set up the efficient farming system for supplying farm products to the urban areas through the introduction and extension of advanced agricultural production technologies, improvement of irrigation and rural infrastructures as well as strengthening activities of farmers organizations and post harvest.

DGFCH has been executing Gema Hortina 2003, aiming at the increase of the horticulture crop production, contribution of improvement of national dietary quality as well as the improvement of living conditions. Despite those efforts, the productivity of horticulture crops in the highland area remains low. Highland areas are blessed with appropriate cool climate, fertile soils as well as a suitable marketing location near large cities such as Jakarta and Bandung. The area will play an important role for supplying foodstuff to these adjacent large cities. But highland agriculture presently is unstable due to an insufficient irrigation system and agricultural supporting system, etc. So improvement of agricultural productivity and quality, and stable agricultural production in the dry season are urgent tasks in the highland area.

In response to the request of the Government of Indonesia, the Government of Japan decided to conduct the feasibility study on this development in the highland area. Through the preliminary investigation and the discussions between both government sides, the S/W was agreed upon, according to the which, this Study was commenced.

1.3 Scope of Work

The Scope of Work for the Study may be summarized as follows:

(1) Objectives of the Study

The objectives of the Study are:

1) To conduct the Feasibility Study for selected model areas on the

integrated agricultural and rural development in highland areas as a model for further upland agricultural development including maintenance of small scale upland irrigation facilities and farming plan to develop upland agriculture by promoting upland field cropping, and

2) To carry out, in the course of the Study, technology transfer to the Indonesian counterpart personnel concerned.

(2) Study Area

The Study area consists of eight model areas (1,069ha) located in five districts of West Java Province as shown in the Location Map. The model areas consist of:

Mekarjaya, Langensari, Tugumukti, Gekbrong, Cisurupan, Tanjungkarya, Mekarmukti, and Cisantana

(3) Scope of the Study

The Study will be conducted, extending over two fiscal years from September 1999 through May 2000, of which the main activities are described below.

1) First Stage Study

(a) Preparatory Work in Japan

(b) First Stage Field Investigation

- Field investigation and formulation of development plan for 8 model areas
- Preliminary selection of model implementation areas, and
- Preparation of Interim Report (draft).

(c) Home Office Work

- Finalization of Interim Report, and

(2) Second Stage Study

(a) Second Stage Field Investigation

- Feasibility study including collection of additional data/information and field investigations for selected priority model areas.
- Preparation of Draft Final Report (Draft). And

(b) Home Office Work

- Finalization of Draft Final Report, and
- Preparation of text and data for Seminar.

(3) Third Stage Study

(a) Third Stage Field Investigation

- Explanation and discussion of Draft Final Report, and

- Seminar for Transfer of Technology.

(b) Home Office Work

- Preparation of Final Report.

1.4 Field Investigation and Study

1.4.1 First Stage Study

(1) First Stage Fieldwork

The first stage fieldwork was commenced on September 19, 1999. With confirmation of the DGFCH and the Provincial Agricultural Service Office on the schedule and general approach to the Project study, the field investigation was undertaken on the agriculture, socioeconomic, and infrastructure aspects. The field investigations were carried out by the Study Team in cooperation with the counterpart personnel provided from DGFCH, Provincial Agricultural and Public Work Service Offices and District Agricultural Service Offices concerned to the model areas. The minutes of meeting of the Inception Report are provided in Attachment II.

The Study was conducted with the special attention to the transfer of technology to the counterpart personnel and the confirmation of the development needs of the beneficiaries farmers by participatory planning approach throughout the Study period. The fieldworks performed were broadly divided into three parts, namely:

a) Field investigation
   - PCM Workshop for eight model areas
   - Field investigation including farm and socioeconomic interview survey,
   - Collection of data and information including beneficiaries' wish for development through village level workshops,

b) Preparation of the basic development plan of eight model areas
   - Analysis of data and information
   - Preparation of the basic development plan of model areas.
   - Selection of priority model implementation area
   - Preparation of draft Interim Report (draft)

c) Transfer of technology
   - Village PCM workshop and preparation of PDM with attendance of the counterpart personnel from DGFCH, Provincial Agricultural Service Offices. Provincial Public Work Service Offices, District Agricultural Service Offices related to model areas.
   - On-job-training through the regular Monday and monthly meetings and

joint working with the Study Team members

The field investigations performed consist of the following works:

- Village PCM workshop for 8 model areas
- Rural society and farm household interview survey covering 500 households,
- Agricultural survey of the present activities on crop production as well as agro-related activities
- Survey of agricultural support system
- Agro-processing and marketing survey including Jakarta and Bandung markets
- Irrigation survey including inventory survey of existing irrigation and drainage facilities, discharge measurement of rivers and springs in the model areas, intake-rate measurement,
- Inventory survey of rural infrastructures for rural roads, domestic water supply facilities, and other public facilities,
- Water quality test on the irrigation and drinking water sources
- Soil and land use survey by means of aerial photo interpretation and field confirmation,
- Environmental investigation including IEE,
- Preparation of aerial topographic maps for eight model areas of about 2,200 ha on a scale of 1:2,000,
- Collection of cost data.

The Study area covers 1,069 ha as set in S/W. Immediately after commencement of the Study the boundary of the Study area was confirmed with the counterpart personnel, village chiefs and village officers concerned by use of the preliminary sketches showing boundaries of model areas. In the middle period of the Study, aerial photos covering the Study areas were made available together with the field information from the Study Team members. Based on the information, a measurement of the Study area was carried out, showing the following findings:

- The extent of the Study area meant the net area to be cultivated except Cisurupan model area. The field survey area was larger than the Study area since the field survey was carried out to the gross area. .
- The boundary of Cisurupan model area was confirmed with the village chief and village officers concerned, and extent of the model area was smaller than the original area.
- There exist ongoing irrigation improvement projects in villages related to Cisurupan and Cisantana. Those areas were excluded from the agricultural development plan although the survey including aerial photo mapping was

conducted.

As a consequence, the extent of the Study area was changed as shown below.

Study Area	1,069 ha
Mapping Area	2,150 ha
Field Investigation Areas in the Study	
Actual survey area	1,350 ha
Irrigation development area	679 ha
Difference between the Study area and irrigation development area	390 ha

The Interim Report (draft) was prepared as the result of the First Stage Fieldwork. Through the explanation and discussion of the Interim Report (draft), the result of the study was confirmed and basically agreed upon between both parties.

(2) First Stage Home Office Work

The Study Team returned to Japan in November 1999, and prepared the basic development plan and selected the priority model areas. The Interim Report contains the result of the first stage fieldwork and home office work.

1.4.2 Second Stage Study

(1) Second Stage Fieldwork

The second stage fieldwork was carried out during the period from December 21, 1999 to February 29, 2000. Prior to the commencement of the field investigation, the explanation and discussion meeting was held on the Interim Report on December 23, 1999. In the meeting the basic development plan and the result of selection of four priority model areas, for which the Feasibility Study would be conducted, were confirmed and agreed by both parties. Further the explanation meeting on the Interim Report was held in West Java Agricultural Office in Bandung and the content of the report was understood. The minutes of meeting on the Interim Report is attached as Attachment 3.

The field investigation and study in this stage were carried out same as the previous stage in collaboration with the counterpart personnel appointed from the Department of Agriculture, West Java Province and District Agricultural Service Offices. In the Second Stage Study, to get the full understanding on the proposed plan from beneficiaries and local government officers concerned, and to reflect the beneficiary's intention into the development plan, public hearing meetings for the four model areas were held.

The general features of the Study in this stage is broadly classified into the following three items:

a) Field investigation
   - Collection of additional data and information required for preparation of detailed development plan,
   - Field investigation for the improvement plan of irrigation system and marketing system,
   - Additional interview survey on the present conditions of agriculture production and rural
   - Public hearing meeting for the beneficiaries of four priority model areas and local government offices concerned

b) Preparation of the development plan of four priority model areas
   - Analysis of data and information,
   - Preparation of the agricultural development plan,
   - Preparation of draft Final Report (draft)
   - Preparation of text and data to be used in the seminar

c) Transfer of technology
   - Public hearing meeting for four priority model areas in corroboration with the counterparts,
   - On-job-training through the regular Monday and monthly meetings and joint working with the Study Team members

The field investigations performed consisted of the following works:

1) Public hearing meetings for the beneficiaries and local government officers concerned,
2) Additional interview survey to the beneficiaries for land tenure system and farm household expenditures,
3) Present set-up of agriculture production,
4) Investigation of the existing farmers cooperative,
5) Investigation of the existing agricultural support system,
6) Investigation for improvement of rural market system
7) Survey for planning of agricultural infrastructure improvement
8) Collection of design criteria and cost data

The Study Team prepared the Draft Final Report (draft) on the basis of the result of the Second Stage Works. Through the explanation and discussion with the government officers concerned on the draft final report, the results of the second stage work was confirmed and agreed by both parties.

(2) Second Stage Home Office Work

The Study Team conducted the preparation of the development plan for four priority model areas , and the draft final report was prepared , comprising the result of the first and second stage works. In addition, the text and data for the seminar are prepared.

1.4.3 Third Stage Fieldwork

(1) Third Stage Fieldwork

The Study Team explained and discussed the contents of the Draft Final Report with Government officers concerned on March 15, 2000, and the contents of the report was confirmed and agreed by both parties. The seminars in Jakarta and Bandung were held as the transfer technology on March 15, 2000 and March 18, 2000, respectively. The minutes of meeting of the Draft Final Report is attached here in Attachment 4.

(2) Third Stage Home Office Work

The Final Report was prepared and finalized on the basis of the result of the home office works and with reference to the comments from the Ministry of Agriculture on the Draft Final Report.

The Study Team members and counterparts personnel for the Study are shown in Table 1.4.1.

CHAPTER 2 BACKGROUND OF THE PROJECT

2.1 General Economic Situation of Indonesia

Indonesia is a tropical country, situated in Southeast Asia. Agriculture is the country's economic resource base with about 172 million hectares of arable land (Baharsjah, 1994)[1/]. Of this arable land 14.4% is upland with the elevation of over 700 m above sea level. Meanwhile, Java's upland area is estimated around a quarter of its total arable land (Partohardjono, 1994; Table 2, p.19)[2/].

Since 1969, Indonesia had taken a great step in developing the country's economy through the implementation of a series of long-term development plans. Each long-term development plan was a 25-year development plan, which was divided into consecutive five medium-term (five-year) economic development plans, called 'Repelita'. The first long-term plan (called Pembangunan Jangka Panjang Tahap I; abbreviated as PJP I) was completed in 31 March 1994. It was then followed with the implementation of the second long-term plan (abbreviated as PJP II), but this plan had got disrupted as the nation has faced a complex crisis since July 1997.

Prior to the implementation of the PJP I in 1969, the condition of Indonesian economy was quite bad. The situation was indicated by such indicators as hyperinflation, staple food crisis (notably rice), high unemployment rate and high poverty rate (See Mackie, 1967)[3/]. The need for improving this economic condition had been one of the key reasons for the new order government of Indonesia to make strong commitment for carrying a series of long-term development plans since 1969.

With such strong commitment, the implementation of the first long-term development plans during the period of 1969-1994 had brought about quite good results. During this development period, the national economy had grown at the annual average rate of 7% (Solahuddin, 1999)[4/]. With such a high economic

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[1/] Baharsjah, Sjarifudin. 1994. Pembangunan Pertanian di Indonesia: Pengalaman dalam Mencapai dan Mempertahankan Swasembada Beras (Agricultural Development in Indonesia: Experience in Pursuing and Maintaining Rice Self-Sufficiency). Jakarta: Kantor Menteri Pertanian Rep. Indonesia.

[2/] Partohardjono, Soetjipto. 1994. 'Upland Agriculture in Indonesia: Recent Trends and Issue'. In J.W.T. Bottema and D.R. Stoltz (eds), Upland Agriculture in Asia. Proceeding of a Workshop Held in Bogor, Indonesia on April 6-8, 1993. Bogor: CGPRT Center; pp. 17-36.

[3/] Mackie, J.A.C. 1967. Problem of the Indonesian Inflation. New York: Modern Indonesian Project, Cornell University.

[4/] Solahuddin, Soleh. 1999. Pembangunan Pertanian Era Reformasi (Agricultural Development in Reformation Era). Jakarta: Kantor Meneteri Pertanian Rep. Indonesia.

growth rate over more than two decades, Indonesia's economic status had risen from a low income country, with the average GNP per capita of some US$ 100 in 1969 to a middle income country, with the average GNP per capita of some US$ 1,155 in 1996 (Tambunan, 1996)[5/]. This had been accompanied with a significant decline in the rate of absolute poverty, from 54.2 million persons (40.08 %) in 1976 to 25.9 million persons (13.7 %) in 1993 (Tambunan, 1996)[6/].

The sudden emergence of a currency crisis in July 1997 had then dramatically changed the economic situations in Indonesia. This unexpected crisis had severely hit the national economy and caused the remarkable achievements during the PJP I to nearly all disappear within a very brief period of time. The national economy's growth rate suddenly dropped to the level of minus 13.6% in 1998 (Tambunan, 1998)[7/]. This had been followed with a dramatic decline in GNP per capita to be US$ 425.8 in 1998 (Tambunan, 1998)[8/] which caused Indonesia's economic status to return to its previous status of low income country.

The crisis' impacts on unemployment and poverty are also quite dramatic. The unemployment level was estimated to be 13.7 million persons (14.8 %) in 1998 (ILO, 1999)[9/] while the absolute poverty level was 49.5 million people (23.6 %) in 1998 (Kompas, August 18, 1999). The inflation rate became increased too, i.e. 80 % in 1998 (ILO, 1999)[10/].

However, in some terms, especially unemployment and poverty levels, the condition of the rural community was worsened more than that of the urban society. This was partly due to the fact that a significant number of the previously urban residents, who lost jobs and suffered lost income, had entered into the agricultural community. Their return to rural areas had then made the rural unemployment and poverty conditions which were already badly affected by the crisis become even more severely (Tambunan, 1999)[11/].

While the Indonesia's economy has been predicted to improve by the year 2000

[5/] Tambunan, Tulus. 1996. Perekonomian Indonesia (Indonesia's Economy). Jakarta: Ghalia Indonesia.

[6/] Tambunan, Tulus. 1996. Op. Cit.

[7/] Tambunan, Tulus. 1998. Krisis Ekonomi dan Masa Depan Reformasi (Economic Crisis and The Future of Reformation). Jakarta: Lembaga Penerbit Fakultas Ekonomi Universitas Indonesia.

[8/] Tambunan, Tulus . 1998. Op. Cit.

[9/] ILO (International Labour Organization), 1999. Employment Challenges of the Indonesian Economic Crisis. Jakarta: ILO Office.

[10/] ILO. 1999. Op cit.

[11/] Tambunan, Mangara. 1999. 'Economic Crisis Induced Unemployment: Can Agricultural and Rural Economy Play as the Save Haven?'. A Paper Presented on International Seminar on Agricultural Sector During the Turbulence of Economic Crisis

(National Development Plan Agency of the Republic of Indonesia, 1999)[12/], much hard work is still required to stabilize the national economy. While solving many other problems are also important, the provision of jobs and income for those unemployed and poor people, especially those who live in the rural areas needs to be placed as the first priority.

A new government has just been inaugurated. It has not made any publication of its own economic development program. But, in 'Garis-Garis Besar Haluan Negara' (abbreviated GBHN) or the General Guideline for the National Development, the MPR (People Consultative Body) has already determined various fields or issues of economy that the government has to focus in its economic development.

In addition, some principles that the government has to follow in the programs implementation have been also set. The principles include such matters as (a) the promotion of free market mechanism, (b) the promotion of healthy and fair competition, (c) the promotion of economic justice, (d) the promotion of public transparency and (e) the development of national economic competitiveness in any economic development program (See Tap MPR Nomor IV/MPR/1999 Tentang GBHN Tahun 1999-2004).

The government had managed to get control over various critical economic problems. Various policy measures had been launched and they were apparently focused on three fields of economic problems. The first area of public policy target was the stabilization of macro-economic environment required for making a better ground for the operation of the national economy. Another field of the target was the relief of current economic hardships faced by poor people and this included such programs as the "social safety net program", and the middle and small-scale business empowerment program. The third field of the target was making the national economy move forward. The agricultural development program was one of the most significant public policy in this area.

2.2 Agricultural Development Policies and Program

Toward the end of 1998, the government launched the program of 'Gerakan Mandiri Peningkatan Produksi' (literally means Self-Reliant Movement for Agricultural Production Increase). The program was a broad one with multi-objectives and was composed of four subprograms.

[12/] National Development Planning Agency of the Republic of Indonesia. Looking to the Future of the Indonesian Economy: See Annex to this main report for detail

The objectives included (a) the acceleration of production of various crops, animal products and fisheries, (b) the generation of substantial jobs and income for the poor, (c) the increase of export revenues through the exportation of agricultural products, (d) the facilitation of diversification of food dietary which had been relied much on rice since a long-time ago, (e) the development of national food security and (f) the improvement of farmers' independency capacity and power to operate their farming business in the most possible efficient way and to improve their product competitiveness. To achieve this purpose, under the program the government also would provide various technical and financial assistance including such provisions as subsidized credit package (KUT), the development of production infrastructures and facilities, and the improvement of market accessibility (Solahuddin, 1999)[13/].

In contrast to the other sectors, the agricultural sector appeared able to survive the crisis. The sector was still able to grow at a positive, but minor rate. The agriculture sector is expected to take an important role in recovery from the present economic condition. The newly elected government has decided to continue the implementation of existing agricultural development plan, i.e. the 'Gerakan Mandiri ' (abbreviated as 'Gema').

The program consisted of four subprograms, namely (Solahuddin, 1999)[14/]:

(1) 'Gema Palagung 2001' program: This is the program designed for the purpose of increasing the production of rice, soybean, and corn with the target of achieving self-sufficiency by the year 2001.
(2) 'Gema Proteina 2001' program: This program is set to increase the production of animal products until the year 2001.
(3) 'Gema Hortina 2003' program: The program deals with the acceleration of production of tropical horticultural products including vegetables. The program targets to achieve the national production of equivalent to US$ 10 billion and the export of horticultural products of equivalent to US$ 600 million by the year 2003.
(4) 'Protekan 2003' program: The program is set to the increase of foreign currency revenues from the exportation of fishery products with the total revenue target of US$ 10 billion in 2003.

Details about area, production, and production value targets per annum for each

[13/] Solahuddin, Soleh. 1999. Op cit.

[14/] Solahuddin, Soleh. 1999. Op cit.

subprogram during their implementation period are provided in Annex VIII.

The acceleration of the production of agricultural products is shared by all of its subprograms. Despite the remarkable attempts for the maintenance of self-sufficiency in rice, which was first achieved in 1984, Indonesia often imported rice to meet the domestic demand whenever its domestic production was not sufficient. The failure of domestic production induced by El-Nino drought had made Indonesia face serious rice food shortages in 1997 and 1998. Under the current budget crisis, it would be logically impossible to rely on the food imports to cope with this staple food shortage. The establishment of the 'Gema Palagung 2001' program which aims at the achievement of self-sufficiency in rice, soybeans and corn by the year 2001 could, therefore, be rationalized from these perspectives.

The 'Gema Hortina 2003' program is a five-year program, extending from the year 1999 to the year 2003. The program includes four groups of horticulture, i.e. (a) vegetables, (b) fruits, (c) flowers, and (d) medicine crops. The vegetable group consists of potatoes, cabbages, chilies, red onion, tomatoes, and mushrooms. The government designed two kinds of models for the development of vegetables under this program. The first one is called 'Penumbuhan Sentra'. This model is for the purpose of developing a new center for horticultural production. This is done by expansion of the production of horticulture onto unutilized land and increase of cultivation index of horticultural farming.

The other model is called 'Pemantapan Sentra'. This model concerns with the improvement of productivity of horticultural farming. This is achieved in four parts. First is development of pre-harvest technology including development of new seed varieties, practices of efficient fertilizers and irrigation water, and development of cultivation management. Second is development of after-harvest technology, including development of quality standard system, and packaging system. Third is development of market accessibility through development of market information system, and development of agribusiness center unit. Fourth is development of institutions, i.e. development of units of supplying farmers' needs for farming inputs and packaging, development of business group, and development of commodity networking.

All programs have an objective to increase food production in the near future. This appears partly as a response to the current food dietary problems which include both quantity and quality aspects. In general, the current levels of quantity and quality of Indonesian diet are still below the 'norma pola pangan harapan' (abbr. norma PPH), (literally meaning, the national recommended ideal

norm of daily calorie consumption). This is because the Indonesian diet consists mostly of rice.

Food consumption diversification has been a long-standing issue in Indonesia. It has been, in fact, an integral part of the national food security system as the 1996 Food Security Law determines. Therefore, Indonesia is presently facing the challenge of improving both the quantity and the quality of individual daily food intake. Meanwhile, according to the 'norma PPH', 85% of individual daily food calorie intake should be of crop products, including vegetables and fruits (Purwoto, Hartoyo and Suryana, 1998)[15/].

Clearly, the key to solve the present quantity and quality food intake problems that Indonesia faces is the development of crop agriculture. Given the dimension of problems which involve not merely quantity, but also quality, the agricultural development should not be concentrated on rice farming. More over, the 'norma PPH' of daily food intake could only be attained through the diversification of food consumption. This implies that the development of agriculture should be also designed to support the diversification of food consumption to enable the Indonesians to reach the 'norma PPH' of daily food intake pattern. The design of the ongoing program of 'Gema' which covers a broad variety of food crops apparently fitted with such agricultural development requirement.

Another reason for development of horticultural agriculture is the government's recent decision to promote the consumption of vegetables and fruits by Indonesians to achieve the FAO recommended level of 65 kgs per capita per annum. If successful, this would raise the national demand for vegetables and fruits significantly (Solahuddin, 1999)[16/]. It had identified the tendency of increased vegetable and fruit consumption by both rural and urban households (Purwoto, Hartoyo and Suryana, 1998)[17/]. Further reason to boost the production of horticultural products, especially vegetables, was the tendency of its exports to grow over the recent years (Purwoto, Hartoyo and Suryana, 1998)[18/]. The increase of vegetable export revenue is required to meet the government's need for foreign revenues. The need has become increasingly serious in recent years

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[15/] Purwoto, Adreng, Sri Hartoyo and Achmad Suryana. 1998. 'Penawaran, Permintaan dan Konsumsi Pangan Nabati di Indonesia' (Supply, Demand and Consumption of Crop Food in Indonesia). In Widyakarya Nasional Pangan dan Gizi VI Tahun 1998. Jakarta: Lembaga Ilmu Pengetahuan Indonesia; pp. 541-596.

[16/] Solahuddin, Soleh. 1999. Op cit.

[17/] Purwoto, Adreng, Sri Hartoyo and Achmad Suryana. 1998. Op cit.

[18/] Purwoto, Adreng , Sri Hartoyo and Achmad Suryana. 1998. Op cit.

(Tambunan, 1998)[19/].

2.3 Some Fundamental Issues on Highland Development

The current crisis, which has rapidly worsened unemployment and poverty conditions, has intensified population pressure on the occupation of Java's highland area for agriculture. Meanwhile, the government attention on the development of highland agriculture has been widely considered insufficient. To developing the highland agriculture for the current needs for expanding employment opportunity and income for the poor of Java, the following fundamental issues requires attention, especially from the government. In order to accelerate the development of the highland agriculture, sufficient efforts from the government are required to overcome these problems.

(1) Soil Erosion and Resources Degradation

Highland agriculture is confronted with several multi-dimensional biophysical constraints such as low soil fertility, soil fragility, highly sloping terrain and low water holding capacity. Thus the highland area is very susceptible to soil erosion and resource degradation. As a result the productivity of highland farming is not only relatively low, but also highly variable and less sustainable. Thus, the development of highland area for intensive agriculture is confronted with the issues of land productivity, stability, and sustainability.

(2) Practice of Exploitative Traditional Farming System

The problems of land productivity, stability, and sustainability in the highland agriculture are often aggravated by the practice of exploitative traditional farming system without an adequate measure for soil and environmental conservation. As a consequence, both farmers and their highland resources become more impoverished from time to time. Improved farming practice through the modernization of farming production technology is required to improve this situation. The new technology must integrate both productivity-improvement and resource-conservation needs into farming practice. This critical requirement highlights the importance that the government mobilizes sufficient efforts for the development of highland production technology and to assist highland farmers in using the newly developed technology of production.

(3) Lack of Transportation Means

In contrast with that on its low land area, the provision of infrastructures, notably

[19/] Tambunan, Tulus. 1998. Op cit.

road and irrigation facilities, in the highland area of Java are very insufficient. The development of a road network is critical in improving the highland farmers' accessibility to markets both in terms of inputs and outputs. This development could also significantly reduce the cost of transportation. The size and scope of economic activities would substantially increase as the highland agriculture becomes developed. The spread of use of the new production technology would lead to the intensification and extensification of the highland agriculture. As a result, there would be a substantial increase in the amount of farm outputs and inputs which would need transportation. In addition, other activities in the highland and nearby areas, including urban areas would get expanded as the substantial income generated from the modernised highland spreads throughout the economy.

(4) The Need for Standardisation of Horticulture Products

Up to now, a system of product quality and quantity standardization for vegetables has not been developed. Meanwhile, modern market transactions require standardization of products. Product standardization is especially critical when products are sent to overseas markets whereby there is a significant lag of time between the date of signing the contract and its completion.

(5) The Need for Post Harvest Processing Facilities

Agricultural products are naturally perishable especially for vegetables. Nevertheless, the high perishable nature of vegetables is often a crucial factor in making them not marketable to distant markets. Through processing, product perishability could be improved so that it reduces the loss of product quantity and quality in their transportation and distribution, and also enhances its market opportunity. Another benefit that could be gained from the development of processing facilities is that by converting fresh agricultural products into more developed products, the producers will obtain more value from their products and hence, improve their family income. The processing activity also has a positive effect on job opportunity in the local area.

(6) The Need for Production Credit Scheme

The intensification of highland agriculture with the use of the new production technology together with its modern input components means that the operation of highland farming requires much larger amount of cash capitals than before. Since Java's highland farmers are, in general, poor with an average farming operation of less than 0.5 ha, the possibility that these farmers could get such cash required capital would be very low. Thus, for making the highland development program successfully, an operational credit scheme for highland farming must be

innovated.

(7) The Need for Land Certification Program

The improvement of farming practice on the highland agriculture through the use of the new production technology clearly has the implication for the improvement of production capacity of the highland agricultural area. The process of this productive capacity improvement is, however, a long-term process which requires a substantial amount of investment. This costly investment could be recouped in the form of productivity gain over a long period of time.

Logically, the farmers are only willing to make such a costly investment on agricultural land if they have exclusive rights over the land that they are operating. However, some highland farming plots are without secured formal rights (official certificates). So it is important for the government to provide land registration and certification if the highland agricultural development program is to be implemented successfully. In addition, this certification could improve the highland farmers' access to the formal credit market. The certified plots of land can now be used as credit collateral (Hayami, 1994). This would enhance the opportunity of poor highland farmers to participate in the modernisation program of highland agriculture.

(8) The Need for Strengthening of Farmers' Institutions

The development of highland agriculture is essentially the transformation of traditional farming practice into modern-commercial farming business. The modern farming business requires farmers to closely cooperate in the fields of both production and marketing so as not to loose the opportunity to obtain a maximum income gain from their modern farming. This cooperation will be facilitated by various farming institutions such as the institution of farmers group, that of irrigation water users group and that of farmers cooperative.

While these institutions have existed in most highland communities for some period of time, it has been now widely known that in general they are not well–functioning. Accordingly, the immediate task for the government is to provide sufficient efforts to assist for the strengthening or the development of these institutions to make them become an effective means in promoting the highland development.