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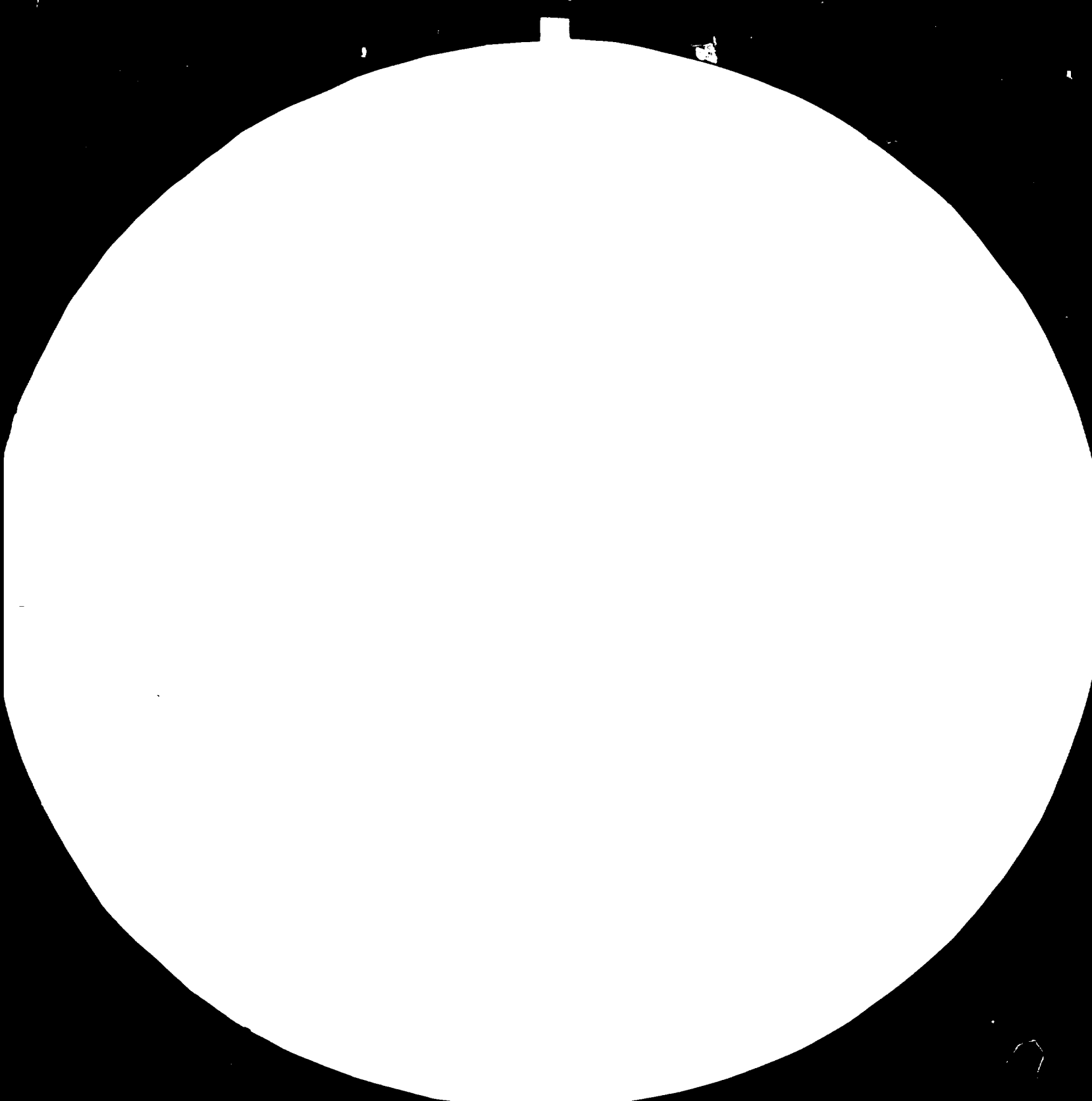
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Final Report

Indonesia.

**COMPREHENSIVE INVESTMENT PROFILES  
SOUTHEAST SULAWESI**

E.A. Mokodompit

**HALUOLEO UNIVERSITY**



September 1984

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**UNDERTAKEN ON THE BASIS OF A CONTRACT BETWEEN  
THE UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION  
and  
HALUOLEO UNIVERSITY**

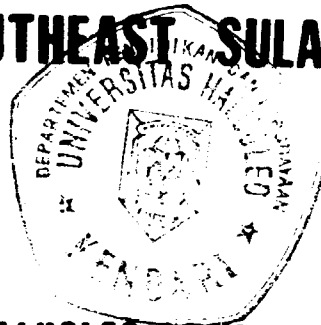


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Kendari, September 1984

Team Leader,



Uman D. Masikki.

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## SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS.

### 1.0. PLANNING, POPULATION AND ECONOMIC GROWTH.

#### 1.1. Five-Year Development Plans.

##### 1.1.1. First Five-Year Development Plan (PELITA I)

The regional developmental target for Southeast Sulawesi during Pelita I was tailored to meet local needs and conditions. It was to .."concentrate on the rehabilitation of the infrastructure in the economic sector and in other sectors of life".

The developmental target of Pelita I proved to be a short in the arm of the economic life of the province. Production went up visibly in agriculture, fisheries, plantation crops and industry. Communications and production equipment had already begun to be rehabilitated following the damage caused by the disturbances in the 50's and early 60's. Nevertheless, all the achievement of the period were small in comparison with community and development needs.

##### 1.1.2. Second Five-Year Development Plan (PELITA II).

The long term development target of Pelita II was based on the achievements of Pelita I and on local needs and conditions in Southeast Sulawesi. It was to "lay particular stress on the agricultural sector and, especially, on food crops, rejuvenation and the expanding of existing cash crops as well as

the introducing of new cash crops".

Results had generally been achieved in Pelita II, but these fell short of community and developmental needs. Available resources, like agricultural land, livestock farming, fisheries and forestry, were still not being exploited sufficiently intensively. Southeast Sulawesi depended on other regions for the supply of most of its basic goods and foodstuffs. There was an urgent need for skilled workers to assist in development. In education, more attention needed to be given to higher education, so that it could be on par with higher education in other provinces. That is to say, a state university was needed that would give people the opportunity to get a higher level of education.

Per capita income in the province went up during Pelita II from Rp 16,848 to Rp 63,385.05 (at constant prices).

### 1.1.3. Third Five-Year Development Plan (PELITA III)

The aim of Pelita III were based on the results achieved in Pelita II and on a number of source of regional potential, namely : "... to lay stress on the agricultural sector, particularly food crops, and to develop cash crops".

Even though developmental targets in Pelita III

were generally achieved, these still fell well short of community needs. Southeast Sulawesi still depended on other regions at the end of five-year period.

Rice production was still very low bearing in mind the potential area of land available for food crop cultivation. Existing irrigation still did not function as it should have. In general, it can be said that agricultural production in Southeast Sulawesi at the end of Pelita III was still low.

Transportation and the communications network were not sufficient to be able to support economic activity like production and trade. Shipping lines in Southeast Sulawesi were still uneconomical. In fact, until the end of Pelita III, air, sea and land transport did not meet community needs.

Only small scale and miscellaneous industries developed during Pelita III. Industry contributed too little to the gross regional income of Southeast Sulawesi. There were no industries as yet that could visibly boost agricultural production.

There was dearth of educational facilities from primary education through to tertiary education, resulting in an inability to accommodate all those seeking an education in schools and universities.

More serious attention needed to be paid to catering for the needs of young people. There was a shortage of

sports facilities and places to house youth activities. More trainers and youth workers were needed.

Medical facilities and specialist doctors were greatly lacking throughout Pelita III. Many people were unsure of local hospital facilities and most patients had to go to Ujung Pandang or Java for medical treatment.

In order to promote development during Pelita IV, considerable funds are needed from both public and private sources. Available resources must be exploited more intensively while not forgetting about environmental preservation and existing cultural values in the community.

Pelita IV will have to be capable of penetrating the isolation of the traditional life many people lead. Business, industries, agriculture, plantation crops and other undertakings will have to be run professionally, and must be integrated, in order to achieve common aims.

#### 1.1.4. Fourth Five-Year Development Plan (PELITA IV)

Problems still being encountered at the end of Pelita III and therefore needing to be solved during the coming Pelita IV include :

- (1) An unsatisfactory level of production and productivity in a number of sectors.
- (2) A shortage of data and information about soil

type, fertility and potential in Southeast Sulawesi.

- (3) Existing irrigation systems only partially operational; some farmers don't know how to use irrigation properly nor how to maintain technical irrigation systems.
- (4) The economic structure was disproportionately weighted in favour of agriculture, in which sector about 74,45 % of the population worked.
- (5) In terms of numbers and quality, the workforce was still not able to match the demands of development needs.
- (6) More needed to be done in terms of improving, putting in order and maintaining the quality of the regional government apparatus.
- (7) The general level of education in the Province was still low.
- (8) The communications infrastructure could not fully cope with the increase in volume of goods and passengers.
- (9) There was still a lack of community awareness about co-operatives, a shortage of available capital and lack of knowledge about how to run co-operatives.
- (10) Rural development needed to be more organized.

(11) The general level of health was still low and medical facilities were still lacking.

(12) The environment in several regions was no longer able to support production (quoted from "A Blueprint For Regional Development in Southeast Sulawesi").

In order to help achieve the national targets and aims of the Fourth Five-Year Development Plan, the specific aims and objectives of Pelita IV in Southeast Sulawesi are :

- (1) To raise the standard of living, the level of education and the welfare of the whole population in a fairer and more equal way.
- (2) To establish a firm base for future development.

#### 1.2. Population and the workforce.

In 1983, at the end of Pelita III, the population of Southeast Sulawesi was 1,033,816 people. There was a potential productive workforce (10-64 age group) about 633,769 people.

The number of people looking for work increases year by year, and it is expected that at the beginning of Pelita IV it will be about 5,289 people. It is hoped that development in the economic sector will provide work for as many jobseekers as possible, and the need for providing more jobs during Pelita IV is indeed



considered paramount. To this end, a number of general policies need to be drawn up concerning, for example, education in work skill, education that can create work, industrial development, improvement of the infrastructure, the establishment of a scale of investment priorities, finance and credit, and the choice of appropriate technology to be used.

### 1.3. Economic growth in Southeast Sulawesi.

The Gross Regional Domestic Product at 1975 prices always showed an increase from year to year. Respective increases, from 1976 to 1982, were 15.29%, 12.33 %, 5.91 % , 3.90 %, 21.4 %, 10.6 % and 15.29 %. The greatest increase was the 21.4 % increase recorded in 1980. The previous year, the lowest increase - 3.9 % - had been recorded. In individual sectors, though, the contribution figures were variable.

From the contribution of each sector over the years, it may be seen that agriculture was major contributor between 1975 and 1982, the figure never falling below 40%.

## 2.0. PRODUCTION PER SECTOR.

### 2.1. Food Crops.

#### 2.1.1. Resources Base of Agriculture.

Southeast Sulawesi may broadly be divided into two agroclimatic zones, namely (1) that lying north of the 4<sup>th</sup> parallel (4°S), which may be classed as the wet zone. The rainy season lasts 7-8 months, beginning in November and ending in July, while the dry season lasts from August until October, (2) that lying to the south of the 4<sup>th</sup> parallel, which may be classed as the dry zone, having a monthly rainfall of less than 100 mm. In this zone, the dry season runs from June to November, and the wet season lasts from December to May.

On the whole, soil in this region is dominated by yellow-red Podzolic, Mediteran, Litosol, Latosol and Alluvial soils locally, and by Regosol, particularly along river banks. In the Kolaka region yellow-red Podzolic, Latosol and Mediteran are to be found. The same soils, with the addition of Alluvial and Regosol, are to be found in the Kendari region. In islands of Muna and Buton, Mediteran and Latosol are found.

About 532,000 ha of land (approximately 13.9% of the total area of S.E.Sulawesi) could potentially

be turned over to agricultural use. From this total about 120,000 ha could be converted in to paddy-fields, and the rest, could be used for plantation crops, animal husbandry and fishing.

According to data collected in 1981, there were 66,839 ha of public plantations throughout the province of South-east Sulawesi.

To date, just 14,800 ha of permanent paddy-fields have been created. The government accordingly encouraged the construction of a number of irrigation systems in various parts of Southeast Sulawesi. It is estimated that about 16,885 ha of new paddy-fields will be created during Pelita IV, not including Wawotobi irrigation. Details are as follows :

Paddy-fields with simple irrigation : 4,105 ha; paddy-fields with medium small irrigation : 2,780 ha; and paddy-fields with special irrigation:10,000 ha.

The Wawotobi irrigation project, with a planned irrigation area of 19,125 ha is expected to be completed during Pelita IV.

#### 2.1.2. Food crops potential.

Only five food crops will be discussed - rice, corn, cassava, soybeans and sago.

### Rice

Rice production for Pelita I, II and III was respectively 241.6 tons, 136.6 tons and 608.01 tons (un-hulled rice). In 1983 production per hectare was 4.4 tons. Cultivating methods need to be improved so that per hectare productivity of paddy-fields increases. To this end, the government is encouraging use of high-yield varieties of rice as well as fertilizer and pesticides. As yet no agricultural machinery is in use in Southeast Sulawesi for purposes of land preparation.

The mass-guidance and intensification programmes (Bimas and Inmas), which are coordinated by the Southeast Sulawesi Food Crops Office, aim to stimulate the farmer to increase his skill and income.

By the end of Pelita III, Southeast Sulawesi was still not self-sufficient in rice production. This problem is being solved by the government (DOLOG) bringing in rice from other areas as well as carrying out the intensification programme.

Corn

The potential dry land area in Southeast Sulawesi is 352,704 ha. So far not all of this land has been used for cultivation.

During Pelita I, II and III, 242,300 ha, 215,800 ha and 225,847 ha respectively were planted with corn. The area harvested during the same period was 261,700 ha, 200,500 ha and 259,199 ha. The total production of corn was 201,400 tons, 165,400 tons and 280,730 tons respectively.

These production projections are based an increase of dry land under cultivation and an increase in yield per hectare. It is estimated that the area harvested in 1984 will be 68,992 ha and will produce 79,647 tons of corn or an average of 1,27 tons per hectare. In 1990 it is estimated that 73,152 ha will be harvested, producing 109,270 tons of corn or an average of 1,49 tons per hectare.

Though, it is estimated that the production of corn in 1990 will increase to 109,270 tons the trend is for rice consumption so that corn production in the future will become livestock feed.

Cassava.

During Pelita I, II and III, 110,300 ha, 114,100 ha and 110,730 ha respectively were planted with cassava. The area harvested during the same period were 105,400 ha, 107,800 ha and 141,646 ha. The total production of cassava was 17,400 tons, 739,200 tons and 1,310,896 tons.

An increased production up to 1988 is mainly based on the assumption of an increase in the total area being planted as well as a per hectare increase in yield. It is estimated that the total area harvested in 1984 will be 30,772 ha with a total production of 187,509 tons of cassava (wet tubers). In 1988 (the end of Pelita IV) the total area harvested will be 35,084 ha with a total production of 266,501 tons or an average of 7,6 tons per ha.

Cassava is a staple food that is consumed because there is not enough rice produced. Bearing in mind the amount of cassava that will be produced by the end of Pelita IV and its role as a staple food, there is the potential for an agro-industry, for instance a tapioca factory could be built.

### Soybeans

During Pelita I, II and III 1,700 ha, 5,100 ha and 10,960 ha respectively were planted with soybeans. The area harvested during the same period was 900 ha, 3,990 ha and 10,055 ha. The above figures do not include the area managed by PT Kapas Indah Indonesia in connection with PIR Kapas (Cotton Nuclear Estate).

During Pelita I, II and III the total production was 400 tons, 1,900 tons and 10,008 tons respectively. The average yield was 0.44 tons per hectare, 0.49 tons per hectare and 0.75 tons per hectare during the same period.

The improvement of cultivation methods has been carried out through the food crops intensification program run by the Food Crops Office and PT Kapas Indah Indonesia. In accordance with regional and sectoral policy, the villages that are not reached by nuclear estate of PT Kapas Indah Indonesia, are being assisted in their development by village group of the Farm Model (Pola Usaha Tani Unit Desa).

It is anticipated that production in the future will rise as the total area under production is increased and the per hectare productivity goes up. In 1984 the target is a harvested area of 5,745 ha with a total production of 5,910 tons (an average of 1.036 tons per hectare).

In order to work together more effectively on the intensification of growing soybeans, the Food Crops Office and PT Kapas Indah Indonesia will increase the total area of soybeans planted in stages so that by the end of Pelita IV there will be 100,000 ha of soybeans under cultivation.

Bearing in mind the amount of soybeans that will be produced by the end of Pelita IV, there is the potential for an agro-industry, for instance a soybeans processing factory could be built.

### S a g o

No precise information is available about the extent of sago cultivation in Southeast Sulawesi, because so far no detailed research has been conducted into sago. Available data from a survey carried out in 1952 reveal that sago covers an area of 2,365 ha, of which 1,380 ha are in the Kendari district, and 1,005 ha in the Kolaka district. About 450 kg of wet flour is obtained from each tree aged 9 - 12 years. According to farmers, an average of 20 trees per hectare are felled.

Sago marketing is restricted to Southeast Sulawesi; to date, there has been no report of trading with other regions.

Sago in Southeast Sulawesi needs to be further investigated as to its potential and the best means of exploiting it.



## 2.2. Plantation Crops

### 2.2.1. Coconuts

In 1969, a total of 21,200 ha of land was used for coconut cultivation. By 1983, the total had risen to 39,783 ha. Only 50% of the total area of coconut plantations in 1983 was productive. 12,989.77 tons, or 0.63 tons/ha/annum, were produced. 41% of the remaining plantations were as yet unproductive, since they contained old, and therefore no longer productive, plants. Production remained low because of a lack of knowledge on the part of the farmers about correct techniques for cultivating coconuts.

Efforts were made to increase production by means of pest control, rejuvenation, rehabilitation, intensification and opening-up new land. Plantations were run on the lines of project management units.

Production projections up to the year 1990 are based on the Provincial Office of Plantation Crops programme during Pelita IV of rejuvenation and land expansion as well as the intensification and rehabilitation of public owned plantations, including coconut plantations. Production in 1984 is expected to reach 12,200 tons, and an average growth rate of 9.5% per annum will mean that production in 1990

will be 20,800 tons. Coconut consumption in 1984 is expected to be 6,400 tons. This will increase annually by an average 4.5% to reach a total consumption in 1990 of 8,500 tons. Excess production in 1984 is therefore expected to be 5,600 tons. This in turn, is expected to rise annually by an average 14.5%, leading to an excess production in 1990 of 12,300 tons.

In view the excess production and need, both locally and nationally for coconut oil, it would seem highly advisable to set up a coconut oil industry. This could be situated in Kendari district, the centre of coconut production.

#### 2.2.2. Cashew nuts

There were 3,704 ha of land devoted to cashew nut cultivation in 1978. By 1983, this figure had risen to as much as 33,495 ha. Production in 1978 was 1,131 tons of cashew nuts. By 1983, the figure had risen to 4,408 tons.

Cashew nuts do not require particularly favourable soil conditions in which to grow, and may indeed be grown in arid areas. Cultivation is run on the lines of project management units.

Production projections, as in the case of coconut production projections, are based on a programme of rejuvenation, land expansion, intensification and rehabilitation.

Production in 1984 is expected to reach 7,500 tons and thereafter to rise annually by 4%, reaching a total production in 1990 of 48,160 tons. Cashew nut consumption in 1984 is expected to be 550 tons, and thereafter to grow at an annual rate of 3.4%, reaching a consumption figure in 1990 of 1,000 tons. Excess production in 1984 will therefore be 6,950 tons, rising to 47,160 tons in 1990 at an average annual rise of 4.4%.

In view of this increase in production, it would seem auspicious to build a cashew nut processing plant either in Muna or Buton, where most cashew nuts are grown.

### 2.2.3. Cacao

Land devoted to cacao cultivation grew from 107 ha in 1978 to 6,215 ha in 1983. Production rose from just 3 tons in 1978 to 1,956 tons in 1983. Average production was 1.56 tons per hectare.

Project management units are used for cacao cultivation. Work carried out includes land preparation, seedling cultivation, planting, processing and marketing. Seedlings used are of the Upper Amazon Hybrid "Bulk Cacao" variety.

Efforts to increase and rejuvenation are carried out by means of land expansion and rejuvenation, as well as by intensification and rehabilitation. Production projections up to the end of Pelita IV (1988) are

based on the above activities. It is predicted that production in 1984 will reach 3,000 tons and will thereafter increase annually at an average rate of 30%, reaching a 1988 production figure of 5,500 tons. No locally produced chocolate is consumed in South-east Sulawesi. This means that all chocolate produced is sent to other regions.

In view of the potential of cacao in Southeast Sulawesi, there is a good case for investing directly in plantations, which are run on the lines of the NES model (Nuclear Estate and Smallholders) and are themselves able to process cacao. Investment should take place in Kolaka district, where most cacao is grown.

#### 2.2.4. Cotton

Cotton has long been grown in Southeast Sulawesi. During the Japanese occupation, especially in Muna farmers grew it to obtain yarn for weaving. The first intensive cultivation of cotton took place in 1973/ 1979 with the opening of the PT Kapas Indah Indonesia cotton estate, which was run on the lines of an NES estate. Apart from the NES operation, intensification was also carried out by Plantation Crops Office. Between 1979 and 1982, a total of 6,283.48 ha of cotton estate came into being as a result of the intensification programme. NES totalled 3,775 ha. Average production was 1,420.68 tons per annum, or 706 kg/hectare/annum. The production

figure for cotton grown in the programme of intensification was 897.21 kg/ha/annum. Production between 1978 and 1982 fluctuated somewhat. The fluctuation is due largely to an unpredictable climate, and the shortage of data makes it difficult to predict climatic variations from year to year.

Land expansion by means of intensification is planned as follows :

- (1) 1984/1985 : 10,000 ha ;
- (2) 1985/1986 : 15,000 ha ;
- (3) 1986/1987 : 20,000 ha ;
- (4) 1987/1988 : 30,000 ha ;
- (5) 1988/1989 : 40,000 ha ;

Over the same period, production is expected to be 3,580 tons, 6,550 tons, 11,990 tons, 21,940 tons, and 40,000 tons.

#### 2.2.5. Sugar cane

There are plans to open sugar cane plants - in Muna and Kolaka district. A 12 ha demonstration plot was established during Pelita III, as well as 10 ha of seedling beds and a 4 ha control plot. Planned expansion in Pelita IV is 15,000 ha (1986/1987) and 20,000 ha (1987/1988).

### 2.3. Livestock

According to the data available, there was a marked increase in beef cattle population during Pelitas I II and III, exceeding the national average. The total cattle population in 1969 was 4,802 head . In 1983 it had risen to 74,107 head of cattle. Other livestock populations are on the increase also, although the figures do show some fluctuation. To complement the increase in cattle, supplies of cattle fodder are being increased and seed nurseries for grasses and plant materials have been set up. The practice of artificial insemination has begun recently.

The growth in livestock produce, especially meat and eggs, is occurring as the livestock numbers increase. Meat and egg consumption in Southeast Sulawesi is considerably below the standards set by the 1964 Seminar on Nutrition. However the consumption of meat is on the increase.

There are plenty of opportunities for expansion in the cattle industry and also for investment because there is extensive grazing land that has yet to be exploited as well as the possibility of planting top quality grasses and plant materials for cattle fodder.

The egg-laying industry experiences difficulties because food supplies for the broiler chickens cannot be guaranteed to be continuously available. Because of this problem, any further investment in the poultry industry - must be accompanied by starting up a local feed supply industry.

#### 2.4. Fisheries

There is excellent potential for fishing in Southeast Sulawesi. The total sea area is approximately 110,000 km<sup>2</sup>, total area of fresh water (rivers, lakes, reservoirs and check dams) is approximately 60,000 ha, brackish water is approximately 1,633 ha and ponds is 380 ha. There are lots of mangrove swamps along the coastline

There is large variety of fish. There have been recorded 39 different species/sub species of fish which fishermen have caught in the sea.

Most fishermen use traditional fishing equipment. Apart from fishermen, there are also a number of fishing companies. These companies deal in catching fish, freezing and trading. In 1982 there were 34 such companies registered.

There is quite a lot of aquaculture carried out in fish-ponds, dams and paddy-fields in the Kendari and Kolaka districts.

Total fish haul in 1982 for Southeast Sulawesi was 41,970 tons. 2,385.2 tons of fish was sold in the inter-island trade. Frozen fish and prawns are exported. The export trade began only recently with the provision of cold storage facilities.

There is plenty of scope for investment especially in fish processing and prawn-farming.

## 2.5. Agriculture-related

The Food Crops Office for the province of South-east Sulawesi has several seed production centres and seed nurseries under its jurisdiction. The Plantation Crops Office also runs experimental gardens and seed nurseries. The function of the seed centres and nurseries and the experimental gardens is to produce good-quality seed for farmers and carry out extension work. PT Kapas Indah Indonesia also runs a soybean seed centre to provide for the local farmers' needs. In future it is hoped that soybean seeds may be exported to other parts of Indonesia. As other related agricultural sectors expand so the seed centres and seed nurseries will need to keep on improving so they can function effectively.

Local need for agricultural lime can be met by present production. However its processing needs to be constantly monitored to ensure that the lime produced is up to standard.



## 2.6. Forestry

Forests cover an area of 2,859,545 ha which consists of 420,795 ha of protected forest, 827,115 ha of restricted production forest, 688,890 ha normal production forest and 699,383 ha of convertible production forest.

Potential production in primeval forests is 39.5 cu.m./ha and in nature teak forests is 20 cu.m./ha.

Both wood and non-wood produce is obtained from the forests. Wood may be in the form of logs or sawn wood. Up to and including 31<sup>st</sup> March 1984, there were four logging companies but these have stopped their activities because they have to conform to the decision that was made by three ministers about logging activities being combined with the plywood industry.

During Pelita I, II and III both wood and non-wood products were exported and also sold to other islands. This did not involve a large amount.

The main non-wood produce is rattan. It is hoped that Kendari's rattan processing industry will be operational in 1984.

As the forest resources are exploited, conservation and protection must be implemented. This is especially urgent because critical areas are quite large and there has not been sufficient reboisatation. As well, there is still a system of shifting cultivation which destroys the forests. In order to prevent futher destruction of the

forests, not only do we need conservation and protection of forest resources but also we need inventory of both wood and non-wood produce potential.

#### 2.7. Mineral, mining and chemical derivatives.

In Southeast Sulawesi there is asphalt, nickel, limestone and quartz.

The asphalt on Buton is mined by the State Asphalt Company (Perusahaan Asphalt Negara). It is estimated that asphalt deposits will not run out for about 250 years. The asphalt is only sold on the domestic market. Future prospects depend greatly on processing, so that high-quality asphalt may be produced which will keep pace with the latest technological advance in road construction.

Nickel is mined in Pomalaa, Kolaka district by Aneka Tambang Ltd. Nickel ore and ferro-nickel are export material. In order to improve future prospects an effort is being made to diversify production.

The biggest reserves of limestone are found in Southern Muna, but so far these have not been exploited. In other areas the limestone is being used by farmer to neutralize soil acidity.

The greatest concentration of quartz reserves are found in West Muna, Wawonii island (Kendari district) and in South Kolaka. To date, the quartz reserves remain unexploited.

In order to exploit both the limestone and quartz

reserves, it will be necessary to find out the quality and the exact size of reserves.

## 2.8. Metal working Industry

There are three kinds of metal-working industry in Southeast Sulawesi :

(1) making agricultural implements as hoes, parangs, knives, plows and harrows. Most metal-working industries that make these implements use scrap metal as their basic material and a charcoal fire for heat.

(2) making articles such as furniture and other household goods made of iron, window lattices and railings.

Iron pipes and sheets of iron are the basic materials.

(3) The brass industry which makes household articles such as pots and pans and kettles.

Goods produced are needed both locally and in other regions, however low production quality has caused consumers to buy better quality goods from other regions. The reasons for this low production quality are low skill technology, the owners' lack of managerial skills, lack of finance and rudimentary production equipment.

As time goes on, more farming equipment will be needed because of increasing activity in the farming sector. Because of this, there needs to be an improvement in the metal-working industry. Perhaps this could take the form of a workshop with the necessary machinery to make the required equipment.

## 2.9. Communication

### 2.9.1. Land Communications

Road length is increasing from year to year. However not all villages can be reached by road including some villages which are centres in food producing areas because the road conditions are so bad. Roads and bridges are always being damaged because of the heavy rainfall during the rainy season and motor vehicles take their toll, too. The number of motor vehicles increases every year. Taking into account the above factors, the local government is particularly concerned about improving the quality of the roads so that they will not be easily damaged.

### 2.9.2. Sea communications

As regards international shipping, most goods were exported rather than imported. However, for the inter-island shipping, the volume of goods unloaded was far greater than the volume of goods taken on board. The volume of shipping and the number of passengers within Southeast Sulawesi increases every year. More passengers than goods are transported by the local population, using traditional boats.

Pelita IV will bring about an increase in the volume of goods and the number of passengers for all these shipping services. The ports will need more attention to support these development trends and more ships are especially needed for sailing within Southeast Sulawesi.

### 2.9.3. Air Communications

The number of passengers that use Wolter Monginsidi Airport (at Kendari) is increasing every year. However as the number of passengers and the volume of goods transported increases so facilities need to be improved at the Airport. For the same reasons, the smaller airports at Muna and Buton will also need upgrading.

### 2.9.4. Mail and Telecommunications

Taking into account the area of Southeast Sulawesi and the distance between the capital city, Kendari and the main towns in the Kecamatan, the present number of post-offices is not satisfactory. There needs to be a Post-Office Agency (or a branch of the Post-Office) in every Kecamatan and in particular there should be an agency in the transmigration areas.

There are not enough new telephone connections available. The number of telephone lines needs to be increased.

As the use of telegrams increases, so the facilities for sending and delivering telegrams needs to be improved.

### 3.0. BASIC NEEDS

#### 3.1. Food supply and demand in the Province

According to a survey on rice in Southeast Sulawesi, approximately 75,000 tons of rice was needed in this region in 1980. However it was only possible to produce the equivalent of approximately 44 tons of rice. This means there was a shortfall of about 31,000 tons. In an effort to produce sufficient rice for our own needs in this region, during Pelita IV, methods of rice cultivation must be improved in order that per hectare productivity increases. New paddy fields must be made in order to increase the area to be harvested. The irrigation potential, that is available during Pelita IV, must be taken into account when establishing new paddy fields.

#### 3.2. Housing

In 1979, according to the statistics, the number of households in Southeast Sulawesi was as follows :

Kendari Area	-	48,000 households
Buton Area	-	57,991 households
Muna Area	-	29,160 households
Kolaka Area	-	22,130 households.

If we use the data available on the number of households in 1982 as well, we obtain a percentage increase for the areas of Kendari, Buton, Muna and Kolaka of approximately 9 %, - 3 %, 2.7 % and 9 % respectively. If the growth in the -

number of houses as the same as the number of households then the total number of houses in the whole region was 210,495.

There are also statistics about the different types of houses built. For the Kendari area including the city of Kendari it was found that there were :

20,380 houses of permanent structure (27 %)

22,645 houses with semi-permanent structure (30 %)

6,038 houses built in the traditional way (8 %)

26,419 houses built in a make-shift way (35 %).

The figures for Buton, including Bau-Bau are : permanent 15,474 houses (23 %), semi-permanent - 20,183 houses (30 %), traditional - 13,456 houses (20 %) and make-shift - 15,165 houses (27 %). For Muna, the figures are as follows : permanent - 334 houses (1 %), semi-permanent - 1,670 houses (5 %), traditional - 27,059 houses (81 %) and make-shift - 4,343 houses (13 %). Finally, the figures for Kolaka are: permanent - 686 houses (2 %), semi permanent - 1,715 houses (5 %), traditional 28,463 houses (83 %) and make-shift - 3,429 houses (10 %).

It appears that there are quite a large number a make-shift houses especially in the Kendari area. These make-shift houses do not conform to reasonable standards of sanitation and could be considered a health hazard.

### 3.3. Clothing

The basic requirement for clothing does not seem to-

be a serious problem in Southeast Sulawesi. In general, - the prices of material are well within the range of the local community. Home-woven sarungs are made in the only textile industry in Southeast Sulawesi.

#### 3.4. Electrification

The statistics available indicate that in 1963 there were 14,887 subscribers to electricity. The capacity installed in the same year was 10,313 KVA and the production of electricity was 20,717,271 KWH. The electricity sold was 13,099,896 KWH. It is evident from this data that Southeast Sulawesi needs more electricity. There is plenty of opportunity for investment in electricity and an increase in investment is necessary.

#### 3.5. Educational facilities

The average standard of education in Southeast Sulawesi is relatively low. This has a direct influence on the work skills and managerial abilities. During the Pelitas, the improvement in the facilities for formal education has been satisfactory. Now there is a need for an improvement in non formal education which has been carried out by various authorities. It is recommended that the participants in a training course in specific work skill are really working in that field. Training courses are needed in the following specific work skills : paddy-field rice-cultivation, soybean, chocolate and sugar cane cultivation, cattle breeding,



poultry raising, making fish-ponds and technical skills.

### 3.6. Potable water

Every area in Southeast Sulawesi has a potable water company, which provides the townfolk with potable water. The water provided by the Drinking Water Company is only 2% of the total needed for all of Southeast Sulawesi. Apart from the Drinking Water Company, local water needs were met by well (with and without and electric pump) and river water from springs. These supplies are not always hygienic. Village folk also need to be supplied with water by the Drinking Water Company. This is another opportunity for investment.

#### 4.0. INVESTMENT REQUIREMENT.

Both public and private investment exist in Southeast Sulawesi, and both have expanded over the years. In general, public investment is made in the public services and utility sector. This sector is, in itself, supportive of both private and public investment in other sectors. Included in this sector are : roads, electricity, water supply, housing, airports and ports, telecommunications.

In the field of public investment, priority should be placed in the following :

- (1) Construction of roads and bridges, linking towns with centres of production;
- (2) Increased electricity supplies for industry;
- (3) Port improvements, particularly at Kendari;
- (4) Increased water supplies both for the community and for industry;
- (5) Extension and improvement of the telecommunications network.

The state of investment in Southeast Sulawesi, as of 31<sup>st</sup> March 1984 was as follows.

Domestic investment :

- Number of companies : 15
- Active : 10 and not yet active : 5.
- Total investment was Rp 43,551,261,308.00
- The total workforce involved was 3,576 people

Foreign investment :

- Number of companies : 4
- Active : 2 and not yet active : 2
- Total foreign investment was Rp 57,47,351,000.00
- The total workforce involved was 952 people.

Total private investment was therefore :

Rp 22,572,091,500.00

Total workforce involved was 4,528 people.

In order to encourage investment in the province, the Southeast Sulawesi Coordinating Board for Regional investment carries out its own research into investment possibilities in a number of sectors. Potentially exploitable resources are investigated. In accordance with a Basic Pattern for Five Years of Development in Southeast Sulawesi in Pelita IV, the Coordinating Board for Regional Investment has given investors a chance to invest in sectors of high developmental potential. Up to and including 31<sup>st</sup> March 1984, there were six companies applying for permission to invest. Of the six companies, one has already been granted permission to commence operation, four more are awaiting processing of their applications, and one company has failed to satisfy the conditions laid down.

The Southeast Sulawesi Coordinating Board for Regional Investment has also drawn up a scale of

priorities for the following projects :

- |                          |                           |
|--------------------------|---------------------------|
| (1) Sugar factory        | (2) Caca plantation       |
| (3) Shrimp farm          | (4) Fish-canning industry |
| (5) Rattan processing    | (6) Cashew-nut processing |
| (7) Coconut oil industry | (8) Pearl industry        |
| (9) Quartz mining        | (10) Tapioca factory      |
- (11) Improved tourist facilities.

If existing potential in Southeast Sulawesi is taken into account, it can be seen that there are developmental possibilities in a number of sectors. The following may be considered as investment priorities :

- |                             |                       |
|-----------------------------|-----------------------|
| (1) Sugar factory ,         | in Kolaka and Muna    |
| (2) Cacao plantation,       | in Kolaka and Kendari |
| (3) Shrimp farm,            | in Kendari            |
| (4) Fish-canning industry , | in Muna or Kendari.   |
| (5) Coconut oil industry,   | in Kendari            |
| (6) Quartz mining,          | in Kendari            |
| (7) Tapioca factory,        | in Kendari or Muna    |
| (8) Rattan processing,      | in Kendari.           |

Apart from the above mentioned, there are other projects, mentioned in 1964-1970 scale of priorities for Southeast Sulawesi, like :

- Cashew-nut processing factories, in buton and Muna;

- pearl industry, in Buton
- improved tourist facilities, in all four districts.

These projects need to be further investigated as to their potential and how best to be developed.

Others projects which should be considered are :

- livestock feed factory, in Kendari
- soybean processing, in Kendari
- a workshop with the necessary machinery to make required equipment, in Kendari.

## Chapter 1

### I N T R O D U C T I O N

#### 1.1. The Background

Since the introduction of the First Five-Year Development Plan in 1969, the planning system has been gradually improved through the Second and the Third Plans. However, private investment has played only a minor role in the process of development over these periods. In the Third Plan, estimated contribution of private investment was 46 per cent which was low compared to other ASEAN countries. In the third Malaysian Plan, private investment was expected to contribute around 60 per cent of the total investment, while, in the Philippines and Thailand, the estimated contributions were about 81 per cent and 72.3 per cent, respectively.

The problem of private investment in Indonesia has become more acute, due to unequal regional distribution of investment. Over the period of 1968 - 1983, about 59 per cent of private domestic investment was located in Java. In the meantime, foreign investors preferred also to invest in Java rather than in the other islands.

Southeast Sulawesi is one of provinces, which has lagged behind in attracting either private domestic or private foreign investment. The growth of the private investment seems too low. In the last seventeen years, total private domestic investment in southeast Sulawesi was

about 1.33 per cent of the total respective investment in Indonesia.

Public investment grew to some extent in infrastructure projects, such as roads, bridges, irrigation, and power plants. The private sector, however, did not match the progress of the public sector though natural resources are still abundant in Southeast Sulawesi.

### 1.2. The need for an Investment Opportunities Study

In Southeast Sulawesi three successive five-year development plans gave some guidance as to the direction of regional development. However, the plans should put more emphasis on the problems of public investment in the national plans and also give some consideration to private investment. In other words, the regional plan should be supplemented with a more detailed plan for the private and public sectors, as a forerunner.

The need for such a plan has already been felt, particularly on the eve of the provincial fourth Five-Year Plan.

### 1.3. The Objectives of the Study

The main objective of the study is to find appropriate ways and means of developing the private and public sectors in the Province. This broad objective is supplemented by several sub-objectives :

(1) to review recent development in the public and private

- sectors in Southeast Sulawesi.
- (2) to study the major obstacles and the ways and means of overcoming them, in developing the public and private sectors.
  - (3) to assess the investment opportunities for the public and private sectors in the Province.
  - (4) to prepare a provincial public and private sectoral development program up to 1990.
  - (5) to draw up a policy recommendation for promoting public and private investment in Southeast Sulawesi.
  - (6) to make an overview of the pattern of economic development of Southeast Sulawesi since 1967 (broken up into several economic sectors)
  - (7) to make a critical review of past studies and reports on natural and economic resources in the Province to bring out factors for future investment, keeping transmigrants in view.
  - (8) to identify market potential : domestic market (demand) based on basic needs commodities and services ( food, clothing, housing, health, education, etc.), market for consumer goods by import substitution, export and inter-island markets.

The objectives are inter-related, and, as a whole, will provide a general picture of the problems and prospects of the public and private sectors in the province.



#### 1.4. Methodology

1. Collection of data from the following sources :
  - a. Statistics Office
  - b. Sectoral institutions concerned with the main problems identified, at both provincial and district level.
2. Data processing, tabulating and analysis.
3. Identifying and interpreting of analysed data.  
Making of final conclusions and recommendations.

## Chapter 2

### GENERAL FEATURES OF SOUTHEAST SULAWESI

#### 2.1. Topography

Southeast Sulawesi lies between a latitude of 3°S and 6°13'S. Its longitude is between 120°45'E and 124°06'E. Geographically it consists of two areas - the southeast peninsula of the island of Sulawesi (mainland area) and the island area. It shares a common boundary, to the north, with Central and South Sulawesi. The Banda Sea lies to the east of the Province, the Flores Sea to the south, and the Bay of Bone to the west. The land area of Southeast Sulawesi is 38,140 sq.km, and the sea area is 110,000 sq.km. The Province consists of four districts and two administrative cities. Details are given in Table 2.1. below :

Table 2.1.

#### Land area of Districts and Administrative Cities (1983)

<u>No. ! District/Administrative city!</u>	<u>Area (sq.km)</u>
1. Kendari City	161.08
2. Kendari District	16,318.92
3. Kolaka District	10,310.00
4. Bau-Bau City	210.00
5. Buton District	6,250.00
6. Muna District	4,887.00
<u>Southeast Sulawesi</u>	<u>38,140.00</u>

Source : Statistics Office, Southeast Sulawesi.

## 2.2. Climate, rainfall and rivers

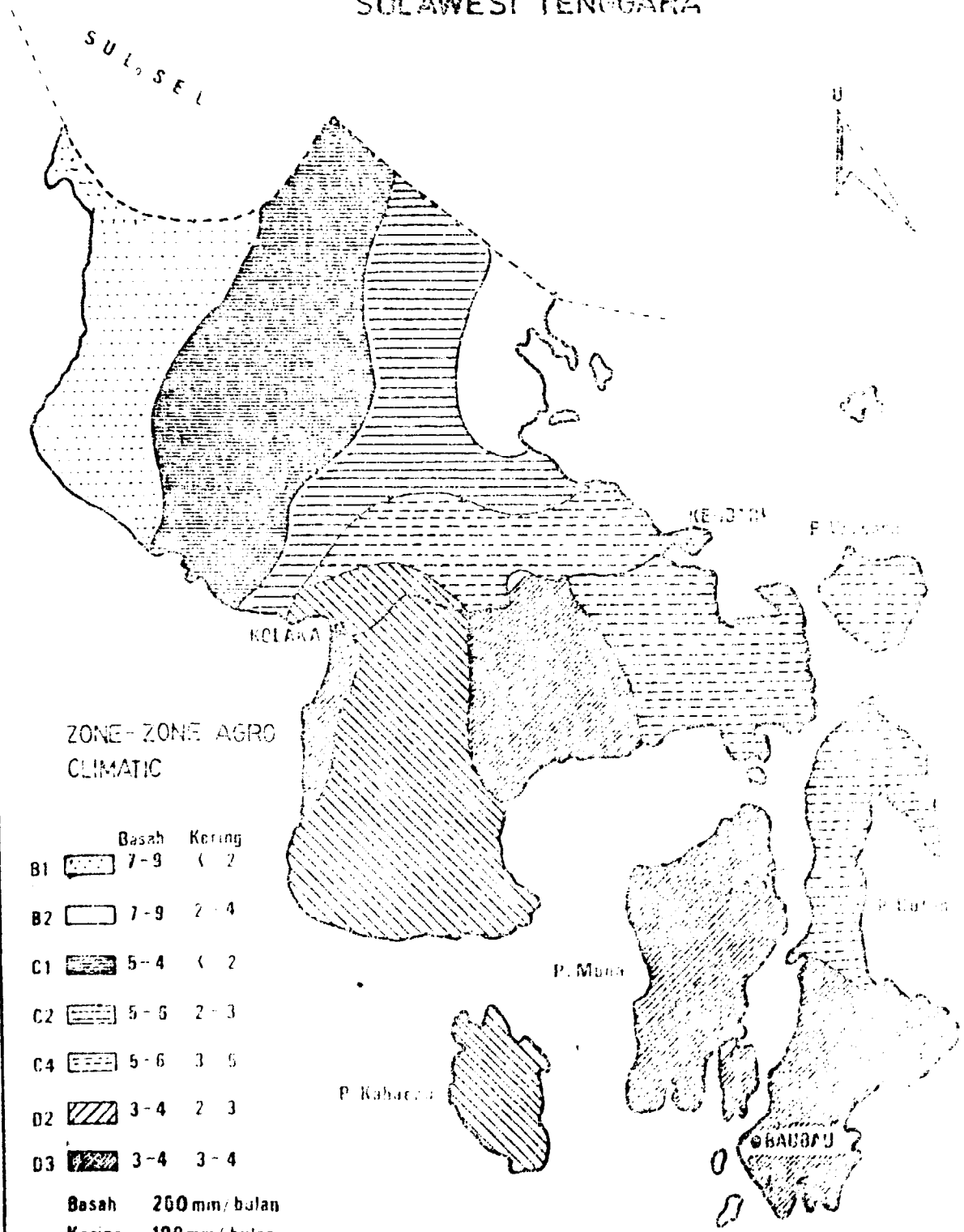
Southeast Sulawesi has a tropical climate, with a low of 19°C and high of 33.1°C. The average temperature is about 26.6°C. Rainfall can best be described in terms of wet and dry months. A wet month is one in which rainfall exceeds 200 mm, a dry month is a month in which total rainfall is less than 100 mm. According to Oldeman L.R., Southeast Sulawesi may be divided into seven agro-climatic zones, as illustrated by Figure 1. Zones D2 and D3 in the south are rather dry - three or four months are wet and two or three months are dry. Coastal zones B1 and B2 to the north are wetter - seven to nine months are wet and fewer than four months are dry. Zones C1 and C2, in the central part of the mainland peninsula, are somewhere between the two extremes, having five or six wet months and fewer than three dry months.

The rainy season generally begins around January and ends in June, though rainfall in June itself is quite variable. The dry season begins in August and ends in November.

There are quite a few rivers in Southeast Sulawesi, which are potentially beneficial to agriculture, households and industry. To mention just a few :

(1) The KonaweEha River has a tributary, the Lahumbuti River. The Aopa Marsh also flows into the KonaweEha River. The name of the river changes to the Sampara Ri-

# FETA IKLIM SULAWESI TENGGARA



## ZONE-ZONE AGRO CLIMATIC

	Basah	Kering
B1	7-9	< 2
B2	7-9	2-4
C1	5-4	< 2
C2	5-6	2-3
C4	5-6	3-5
D2	3-4	2-3
D3	3-4	3-4

Basah 200 mm/bulan  
 Kering 100 mm/bulan

[Berdasarkan rata-rata jangka panjang]

Skala: 1 : 1000 000

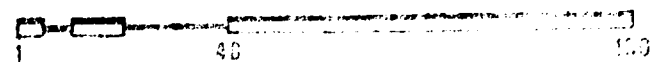


Figure 1.

SUMBER

1. L.R Oldeman and Darmiyati  
 AN Agro Climatic map of Sulawesi; Bogor, LP, 1972.

ver, before its estuary. The Lasolo River also has a tributary, the Lalindu River.

(2) Other rivers include the Paleang, Roraya and Laeya Rivers

Most rivers in the province fluctuate greatly, as far as their volume of water is concerned, between the rainy and dry seasons.

### 2.3. Geology

It can be seen (in Figure 2) from the Ujung Pandang section of the geological Map of Indonesia (scale 1 : 1, 000,000 ; 1975) that Southeast Sulawesi consists mainly of:

- coral limestone
- schistose rock
- molasse Sulawesi sarasin

Coral limestone is found in the north and south parts of the mainland peninsula and in southern Muna. The soil in the north lies above peridotite rocks, which have decomposed and formed deposits of nickel laterite. In this part of the province molasse and faulted limestone may be found.

Schistose rock is concentrated in the centre of the province and forms a tubular core spreading out to the northeast. It is visible in fault contact with surrounding rocks. In certain small areas, ultrabasic rocks surround concentrations of schistose rock. This combination

# PETA GEOLOGI SULAWESI TENGGARA

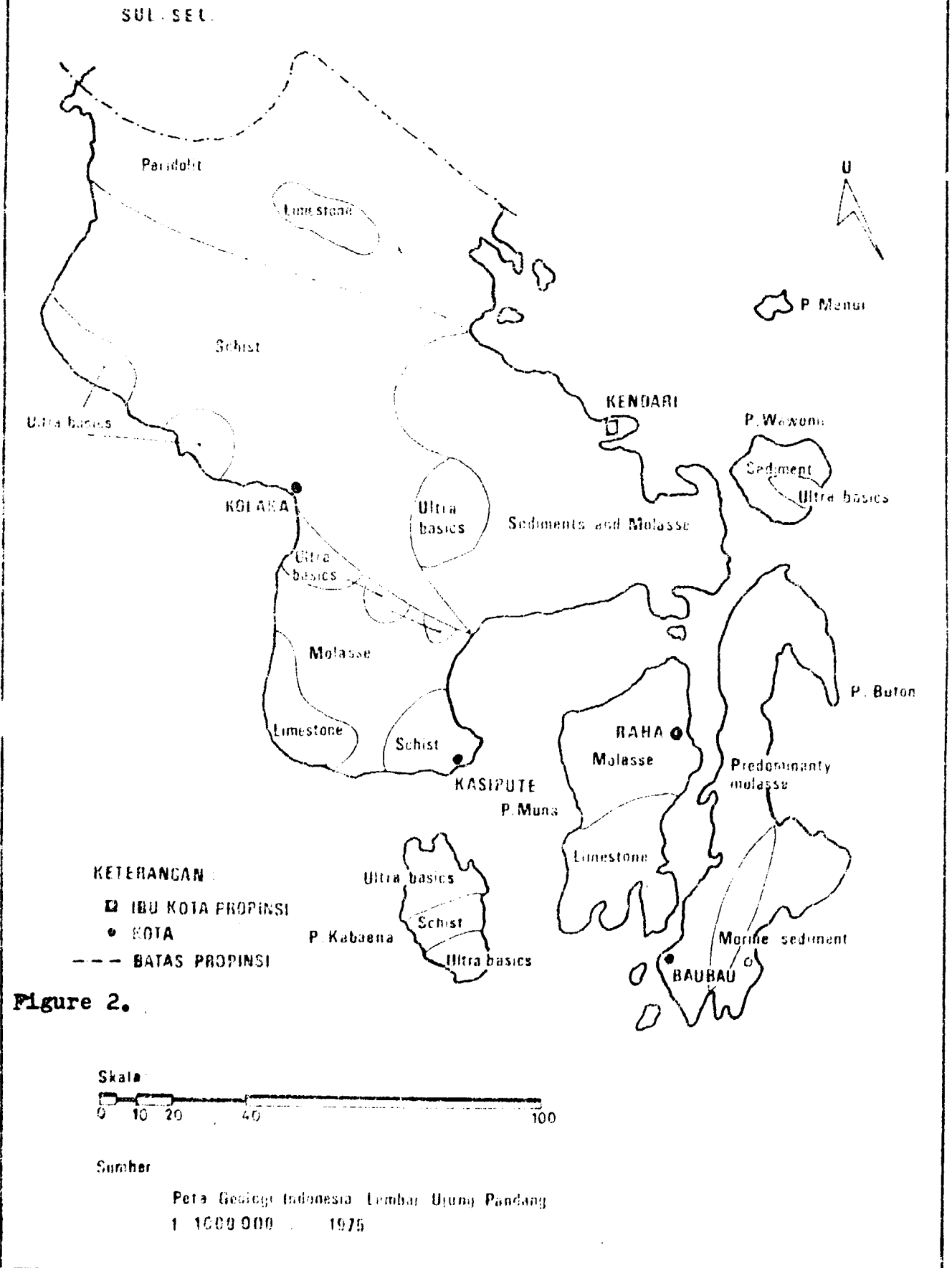


Figure 2.

of ultrabasic and schistose rock may be found around Pomalaa, at the southern tip of the mainland peninsula, and on the island of Kabaena.

Molasse Sulawesi sarasin rock spreads out to the South and east, including the northern part of Muna. Areas in which this rock is found generally have a quarternary coral limestone and molasse base, which is part of a sedimentary basin.

Buton is a special case all by itself. Its geological history is quite different from the rest of the province and the island of Sulawesi, having originated in an area to the south. Most of the island has a molasse base. In the southeast of the island is an extensive area composed of marine sediments from the tertiary era, containing asphalt, which is currently being mined.

#### 2.4. Population and manpower

The population of Southeast Sulawesi was about 1,009,538 (according to a population census taken in 1982), consisting of 496,330 males and 513,208 females, with a population density of approximately 26/km<sup>2</sup>. The population distribution in each district was as follows :

Table 2.2. Population Distribution in Southeast Sulawesi  
by District (1982)

No.!	District	Population		
		Male	Female	Total
1.	Kendari	171,879	168,562	340,441
2.	Buton	157,944	173,113	331,057
3.	Muna	84,146	94,098	178,244
4.	Kolaka	82,361	77,435	159,796
S.E.Sulawesi		496,330	513,208	1,009,538

Source : Statistics office, S.E.Sulawesi.

Censuses taken in 1961, 1971 and 1980 revealed respective populations in S.E.Sulawesi of 559,594 ; 714,120 and 942,302. The average population growth rate between the first and second censuses was 2.5%, while the rate between the second and third censuses rose to about 3.14%. Full details may be found in Table 2.3.

The population increase between 1971 and 1980 was partly attributable to the National Transmigration Programme, in which S.E.Sulawesi took a significant part. Between 1974 and 1982, a total of 70,645 people (17,116 families) transmigrated to S.E.Sulawesi (see Table 2.4).



Table 2.3.

Population in Southeast Sulawesi by District  
and Growth rate between 1961 and 1980

District	Population Census			Annual growth rate (%)	
	1961	1971	1980	1961-1971	1971-1980
Kendari	159,478	189,968	306,675	1.8	5.5
Buton	252,262	300,434	317,124	1.8	0.6
M u n a	111,766	154,024	174,057	3.2	1.4
Kolaka	35,088	69,694	144,446	7.1	8.4
Southeast Sulawesi	559,594	714,120	942,302	2.5	3.1

Source : Southeast Sulawesi Office of Statistics.

Table 2.4.

EMIGRATION IN SOVIET UNION (1970 - 1980)

No. of years	Total emigrants		Number of people		Additional emigrants		Number of people	
	Emigrants	People	Emigrants	People	Emigrants	People	Emigrants	People
1.	1,114	3,346	-	-	144	4,173	1,104	6,000
2.	1,115	3,346	-	-	114	173	133	2,113
3.	1,116	3,350	-	-	2	38	1,130	3,445
4.	1,117	3,326	-	-	103	310	102	3,090
5.	1,118	741	-	-	156	1,144	1,077	3,033
6.	1,119	4,375	-	-	100	647	1,130	3,072
7.	1,120	13,032	-	-	113	110	3,022	10,199
8.	1,121	3,010	-	-	27	130	1,034	3,024
9.	1,122	11,100	-	-	-	-	2,030	11,100
<b>Total</b>	<b>11,123</b>	<b>43,152</b>	<b>-</b>	<b>-</b>	<b>5,113</b>	<b>3,442</b>	<b>17,100</b>	<b>113,645</b>

Source: All-Union Office, unpublished.

Transmigration brought a sizeable workforce to S.E.Sulawesi to supplement the local workforce. The 1980 census revealed a total workforce of 619,685 people, or about 66% of the population of S.E.Sulawesi. Details of the working and non-working population by age group may be seen in Table 2.5.

In 1982, the number of people looking for work was 6,131, with the following educational backgrounds :

elementary school	- 289
junior high school	- 771
senior high school	- 2,405
bachelor's degree	- 278
master's degree	- 50

### 2.5. Socio-economics

Development in S.E.Sulawesi had succeeded in raising living standards and public social welfare. The economic situation, too, was better than in previous years. Health services, until now considered lacking, especially in rural areas, had gradually become available to all and had succeeded in bringing down the death rate.

TABLE 2.5.

POPULATION BY AGE-GROUP AND OCCUPATION (1960)

No	Age Group	Workforce			Total	Non-workforce			Total in S.E. Sulawesi
		Employed	Seeking work	Not yet seeking work		In fulltime education	House-wives	Others	
1.	1-14	12,616	196	353	13,165	33,911	4,103	12,377	119,066
2.	15-19	29,647	265	351	30,263	36,151	15,330	15,233	61,433
3.	20-24	35,401	596	625	36,622	3,133	27,233	3,133	73,223
4.	25-29	40,107	261	440	40,808	292	25,377	5,119	71,536
5.	30-34	32,604	301	64	32,969	46	17,000	2,031	52,714
6.	35-39	34,455	195	153	34,803	-	11,002	2,157	53,372
7.	40-44	25,751	261	87	26,099	23	11,334	2,003	40,364
8.	45-49	20,852	104	41	21,077	-	7,000	2,013	31,032
9.	50-54	15,566	69	40	15,675	-	5,000	4,160	25,000
10.	55-59	9,643	73	23	9,739	-	3,000	2,000	15,000
11.	60-64	7,343	68	-	7,411	-	3,000	4,000	15,000
12.	65+	9,450	37	-	9,487	-	3,000	14,000	27,000
13.	Not responsible.	-	-	-	-	-	-	4,000	4,000
Total		473,404	2,033	2,141	477,578	101,304	100,000	11,000	11,000

Source: Statistics Office, ...

### 2.5.1. Education

Education was gradually improved, though the general level of community education was still low. Also, the number of children of school age and university age was ever increasing, whereas school buildings and teaching staff were still limited. The situation during the 1982/1983 school year may be seen in Table 2.6. The number of classrooms for pupils and university students was still limited. The details of existing classrooms are given in Table 2.7.

There were two institutions of Higher Education :  
Haluolet University and the State Islamic Institute.  
Haluolet University offered a degree programme in four faculties, namely :

Faculty of Education

Faculty of Economics

Faculty of Politics and Sociology

Faculty of Agriculture

Apart from the degree programme, the Faculty of Education also ran a diploma programme in education to meet the need in S.E.Sulawesi and Indonesia, as a whole, for teachers.

Table 2.6.

NUMBER OF SCHOOLS, TEACHERS AND PUPILS IN S.E. SULAWESI (1960-2)

No.	Type of school	Number of schools	Number of teachers	Number of pupils	Total		
					Teachers/schools	Pupils/schools	Pupils/teachers
<b>(I) : Under the Department of Education</b>							
1.	Nursery	121	...	4,225	...	29	...
2.	Elementary	1,213	5,143	217,211	5	183	31
3.	Junior high	126	2,173	27,227	17	224	17
4.	Senior high	29	222	12,763	31	450	31
5.	Technical high	4	147	1,222	37	330	9
6.	Economic high	4	103	1,732	27	439	16
7.	Teacher training high	4	53	1,256	13	264	20
8.	Home economics high	2	41	224	20	117	6
<b>(II) : Outside the Department of Education</b>							
1.	Islamic elementary	20	123	2,123	4	73	17
2.	Islamic junior	24	213	2,227	7	93	14
3.	Islamic senior	3	15	527	13	73	6
4.	Islamic boarding school	1	13	103	10	109	11
5.							
6.	Agriculture high	1	25	210	27	210	8
7.	SPKS	1	49	113	40	113	3

Sources : Statistics Office, Southeast Sulawesi

Table 2.7.

CLASSROOMS BY SCHOOLTYPE SUBTYPE (1992)

No. District	Elementary school		Junior school		Senior school	
	State	Private	State	Private	State	Private
1. Montreal	1,559	10	641	65	115	71
2. Brome	1,610	-	100	-	80	2
3. Laval	1,110	1	100	10	40	3
4. Val-de-la	300	1	72	10	41	3
<b>Total</b>	<b>5,280</b>		<b>110</b>	<b>85</b>	<b>286</b>	<b>87</b>

Source: Superintendent Office, Laval District

### 2.5.2. Health and Family Planning

At the beginning of Pelita, the health service problem, particularly in rural areas, was keenly felt. Since Pelitas I and II, preventive and curative measures had been taken as the health service was gradually accepted by the community. The development of health service facilities may be seen in Table 2.8.

In an attempt to improve the health service in sub-district and rural areas, the Government built community health centres and subcentres in villages and outlying areas. The details of these health centres may be found in Table 2.9.

In an attempt to control population growth rate, which outstripped the growth rate of production and income, the Family Planning programme was stepped up.

In 1982 there were 60 family planning clinics spread throughout the province, with a total participatory membership of 16,840 people. Contraceptives used were the IUD (9.38%), the pill (75.4%), condom (7.35%), and various others (7.84%).



Table 2.8.

HOSPITALS AND HOSPITAL BEDS BY DISTRICT (1978-82)

No	District	Hospitals/ hospital beds	1978	1979	1980	1981	1982
1.	Baten	Hospitals	2	2	2	3	3
		Beds	62	86	88	90	74
2.	Muna	Hospitals	1	1	1	1	1
		Beds	40	40	30	35	35
3.	Kendari	Hospitals	4	5	5	5	7
		Beds	142	190	223	230	248
4.	Kolaka	Hospitals	2	2	2	2	2
		Beds	77	89	95	95	96
Total		Hospitals	10	10	10	11	13
		Beds	374	405	436	450	453

Source : Statistics Office, S.E.Sulawesi

Table 2.9.

NUMBER OF COMMUNITY HEALTH CENTRES AND SUBCENTRES  
IN S.E.SULAWESI (1982)

No	District	Number of subdistricts	Number of community health centres	Number of community health subcentres
1.	Buton	17	15	45
2.	Muna	7	7	28
3.	Kendari	15	16	25
4.	Kelaka	6	6	34

Source : Statistics Office, S.E.Sulawesi

### 2.5.3. Housing

The programme of public housing renovation and construction was successful. Since Pelita III, the Government had constructed public housing which the community could afford. By the end of 1983, 932 houses had been built by Government and Government agencies.

Environmental improvement and the provision of clean water programme had both been carried out, and the benefits were already being felt, particularly in the towns of Kendari, Bau-Bau and Kolaka.

### 2.5.4. Agriculture (Food and Plantation Crops)

About 532,000 ha of land (approximately 13.95 % of the total area of Southeast Sulawesi) could potentially be turned over to agriculture use. From this total, about 120,000 ha could be converted into paddy-fields, and the rest could be used for plantation crops, animal husbandry and fishing. Food crop production over the previous five years showed a pleasing upward trend. Wetland rice production in 1981 grew by an impressive 235.72 % over the previous year's total, and dryland rice harvests rose by 195.28 % in 1982 (Table 2.10).

Southeast Sulawesi has good potential in the plantation crops sector. Recently, cashew nuts, cocoa and cloves have done particularly well.

Table 2.10.

FOOD CROP PRODUCTION IN S.E.SULAWESI (1978-82)

(Tons)

No	C r o p	1978	1979	1980	1981	1982
1.	Wetland rice	16,884	17,029	16,770	39,531	31,358
2.	Dryland rice	16,905	18,467	16,950	22,076	43,110
3.	Corn	57,528	48,322	61,906	58,547	57,074
4.	Cassava	157,597	189,840	201,989	271,777	259,317
5.	Yams	38,409	33,420	39,663	33,409	26,519
6.	Peanuts	806	1,081	1,615	2,265	2,042
7.	Phaseolus radiatus	229	314	297	261	381
8.	Soybeans	356	1,091	986	1,445	2,658

Source : Regional Development Planning Board, S.E.Sulawesi

Table 2.11.

PLANTATION CROP PRODUCTION IN S.E.SULAWESI ( 1978- 1982 ) (tons)

No	C r o p	1978	1979	1980	1981	1982
1.	Coconuts	16,212	16,672.90	16,865.90	18,254	16,890
2.	Coffee	733	747.70	1,017	1,052	755.90
3.	Cashew nuts	1,131	1,315.90	1,315.50	1,511.50	4,302.80
4.	Cotton	1,067	1,094	671.40	2,720	1,551
5.	Sugarcane	-	48.24	21.80	24	40.10
6.	Cocoa	-	6	6.5	352.80	1,600.40
7.	Pepper	45	47.75	41.20	53.90	38.30
8.	Nutmeg	-	2.60	1.5	2.4	3.7
9.	Kapok	345	414.48	431.6	442	312.50
10.	Cloves	6	6.06	11.3	38.8	46.6

Source : Regional Development Planning Board, S.E.Sulawesi

In 1982, public estates totalled 90,987 ha. in area. Large-scale estates covered 1,363.6 ha. Details of the growth of the plantation crops sector in S.E.Sulawesi between 1978 and 1982 may be seen in Table 2.11.

#### 2.5.5. Animal Husbandry

S.E.Sulawesi has extensive grassland and good potential for livestock farming. Livestock population rose annually between 1978 and 1982, as may be seen in Table 2.12.

Table 2.12

Livestock population in S.E.Sulawesi, 1978-82

No	Unit	1978	1979	1980	1981	1982
1.	Bulky cattle	-	-	-	-	-
2.	Head cattle	13,097	26,214	41,501	57,700	73,000
3.	Water buffalo	10,039	9,217	11,011	11,120	11,100
4.	Horses	4,413	4,43	4,100	4,000	4,000
5.	Pigs	10,000	20,172	53,500	70,000	80,000
6.	Sheep	100	100	100	100	100
7.	Hens	1,000	2,143	3,270	4,400	5,500
8.	Chickens	1706,025	1747,586	1821,450	1,900,000	1,900,000
9.	Ducks	53,470	57,962	64,470	72,000	80,000

Source : Statistics Office, S.E.Sulawesi

### 2.5.6. Forestry

About 2,890,043 ha. of land (approximately 75.77% of the area of S.E.Sulawesi) was forestland. This consisted of :

protected forestland	420,795 ha.
timber forests	668,890 ha.
restricted production forest	827,115 ha.
convertible forests	699,383 ha.
nature reserves and recreation forestland	273,859.2 ha.

Some of the products of S.E.Sulawesi forestland were: teak, sandalwood, Maduca philippinensis, pericopsis, ebony, Intsiabiyuga, Pedocarpus, Hopea celebica, Vitex ,

### 2.5.7. Fishing

The sea in S.E.Sulawesi was rich in marine products, like fish, pearls, agar-agar, seaweed, and fish hauls between 1978 and 1982 showed a pleasing upward trend, as may be seen in Table 2.13 below :

Table 2.13.

FISH HARVEST IN S.E.SULAWESI 1978-1982 (in tons)

No	Type of fish	1978	1979	1980	1981	1982
1.	Salt-water	22,130	23,965	24,400	26,990	28,000
2.	Fresh-water	1,599	1,546	2,104	2,382	2,500

Source : Regional Development Planning Board, S.E.Sulawesi

Equipment used by fishermen in S.E.Sulawesi to catch fish was: seine, net, trap, rod and line. In 1981, 12,680 fishing boats and vessels were in operation.

These consisted of:     97 motor boats  
                          12,525 unmotorized boats  
                          58 motorized vessels

The most frequently-caught, and frequently-exported fish was skipjack. In 1982, skipjack exports were worth about US \$ 677,170 or Rp 667,170,000. 12,027.6 tons of skipjack were caught in 1982.

#### 2.5.8. Industry

Small-scale and miscellaneous industries were developed in S.E.Sulawesi. In 1982, 934 small-scale industries were operating. These employed a total workforce of about 6,344 people. Investment in this sector totalled Rp 3,858,982,000, which was about 47% of the total investment in industry in S.E.Sulawesi.

106 companies were registered in the miscellaneous industries sector. These employed 1,321 people. Investment totalled Rp 4,440,851,290, which was about 53% of the total figure of Rp 7,979,779,290 invested in industry in S.E.Sulawesi.

#### 2.5.9. Mining

Asphalt from Buton and nickel from Pomalaa (Kolaka district) are well-known products in this sector.



The State Asphalt Company in Buton produces about 150,000 tons of asphalt annually. Asphalt reserves are expected to last for approximately 250 years. The mine at Pomaiaa produces 3,500 tons of nickel per year. Resources here are expected to last about 100 years.

Other minerals and substances contained in the soil of S.E.Sulawesi, but yet to be exploited, are : limestone, sandstone, conglomerate, quartz and marble.

#### 2.5.10. Trade

Inter-island trade, and export and import trade increased annually in volume. Non-oil and non-gas exports from S.E.Sulawesi between 1978 and 1982 were encouraging. Exports went down in 1982, but this was because of the recession in international trade at the time. Non-oil and non-gas exports during this period are given in Table 2.14

Inter-island trade in 1982 was worth Rp 5,029,871,544. This represented a rise of 98.1% over the previous year's total of Rp 2,539,010,638. Goods traded included copra , dried fish, agar-agar, lola , teripang , whole cashew nuts shelled cashew nuts, japing-japing , and pearls.

#### 2.5.11. Communications

The remote geographical position and mountainous topography of S.E.Sulawesi meant that the transportation network could not as yet function as well as it should; which hampered economic development. Shipping lanes in S.E.Sula-

Table 2.14

Non-Oil and Non-Gas Exports in 1978 - 1982 (FOB US \$ 1,000)

No.1	Product	1978	1979	1980	1981	1982
1.	Ferro-nickel	18,326.20	22,007.63	29,405.38	24,975.96	21,536.72
2.	Nickel ore	15,959.92	14,164.86	16,785.74	26,151.04	10,666.92
3.	Timber/logs	4,519.55	4,391.33	1,973.78	875.17	-
4.	Sawn wood	143.33	79.56	269.51	-	32.32
5.	Rattan	-	-	-	-	963.76
6.	Tuna fish	-	-	-	386.73	677.17
7.	Agar-agar	2.20	-	-	-	-

Source : Statistics Office, Southeast Sulawesi

wesi were uneconomical. Docks, warehouses and loading and unloading equipment needed to be improved. Ships of more than 5,000 tons could not dock at Kendari or other ports.

Existing ports in S.E.Sulawesi were :

Kendari

Bau Bau

Raha

Kolaka (ferry terminal)

Pasar Wajo, Buton (used by the State Asphalt Company)

Pomalaa (used by the State Mining Company in Pomalaa)

In 1982 there were 199 km. of principal roads, 1,106 km. of secondary roads and 2,337 km. of other roads.

There were 16,408 motorized vehicles. The principal airport in the province was Wolter Monginsidi Airport, which was served by Fokker F-28s. Other airports were in Bau - Bau, Raha and Pomalaa. The last of these was used by the State Mining Company in Pomalaa. More work needs to be carried out at Wolter Monginsidi Airport in connection with passenger safety facilities.

#### 2.5.12. Regional income

The gross regional income in 1982 in S.E.Sulawesi was Rp 242,362,150,000 - a rise of about 30,16% (according to market prices) over the 1981 figure of Rp 186,200,750,000.

## Chapter 3

### PLANNING, POPULATION AND ECONOMIC GROWTH

#### 3.1. Five-Year Development Plans

##### 3.1.1. Southeast Sulawesi before the Five-Year Plans.

###### 3.1.1.1. Government

The province of Southeast Sulawesi came into being on April 27, 1964, with Kendari as its provincial capital. Until 1966, the existing government apparatus was seriously lacking. There was a shortage of government departments and very few self-governing bodies.

Generally speaking, local government administration was far from perfect. The political climate of the Old Order was not orientated toward development. However, since October 1966, under the leadership of the the New Order (Orde Baru) and Ampera Cabinet, priority in development has been given to the perfecting of legislative, executive and judicial bodies at both provincial and district levels.

###### 3.1.1.2. Social situation.

The effect of thirteen years of disturbances (1952 - 1965) in South and Southeast Sulawesi was still making itself felt on the people of Southeast Sulawesi as late as 1967. The properties and livelihood of many people were destroyed, razed to the ground, or had to be abandoned.

Community health was in a near tragic state. Chronic malaria and TBC were endemic to the province. Medical

facilities were woefully lacking. The death rate was on the increase and population growth was very low.

The level of education was low and facilities were still very poor.

#### 3.1.1.3. Economic situation

The economic situation at the time was very unstable. Prices fluctuated wildly and the buying power of the local people was low because their incomes, too, were low. This instability was due to the paralysis of production and trade caused by the continuing disturbances. As a result, inter-town economic links and similar links between towns and villages virtually ceased to exist.

Land, sea and air communication, as well as telecommunications, were severely restricted. Roads and bridges were in a serious state of dispair because of lack of maintenance and the continuing disturbances. Both the state and private sectors possessed very few motorized vehicles.

The "regular line" boat service to Southeast Sulawesi was in fact extremely irregular. Ships came very infrequently, which led to the province becoming even more isolated and the economic sector even more depressed. The transportation of goods and passengers was restricted, and prices became unstable. The telecommunications network was similarly restricted.

### 3.1.2. Development during Pelita I

#### 3.1.2.1. Aims and achievements

The regional developmental target for Southeast Sulawesi during Pelita I was tailored to meet local needs and conditions. It was to "...concentrate on the rehabilitation of the infrastructure in the economic sector and in other sectors of life".

The benefits of achievements of Pelita I have already begun to be felt by the people of Southeast Sulawesi.

The achievements of Pelita I were as follows :

#### - Population :

The restoration of security in 1967 had a profound influence on population growth. The population of Southeast Sulawesi at the beginning of Pelita I was 710,663. By the end of Pelita I it had grown to 757,248, with an average population density of 20 people per km<sup>2</sup>. The annual growth rate averaged 2.49%, which easily surpassed the national figure of 2.08%.

One reason for the acceleration in the population growth rate was transmigration - both Government-sponsored and spontaneous transmigration. During Pelita I, a total of 20,967 people (4,452 families) transmigrated to Southeast Sulawesi. Also, 121,093 people (22,848 families) from 79 villages were resettled in the province.

- Infrastructure :

Irrigation :

108 village irrigation systems, irrigating an area of 15,118 hectares, were already in operation during Pelita I. In addition, 9 technical irrigation systems, covering an area of 14,471 ha., were under construction.

Electricity :

Electricity was still only in limited use, and then only at nighttime. About 1,600 houses throughout the province had electricity. Power was generally produced by diesel generators of restricted capacity. Kendari did have its own electricity board - a branch of the State Electricity Company in Ujung Pandang. In other parts of the province electricity was generated under the auspices of local government.

Potable water :

By the end of Pelita I, all four districts in the province of Southeast Sulawesi had a pipe water supply, albeit limited. About 758 houses throughout the province enjoyed pipe water, which from 13 different sources.

Communications :

The total length and composition of roads in Southeast Sulawesi at the end of Pelita I was as follows :

major roads (197 km) :

- asphalt      144 km

major roads : 197 km

asphalt 144 km

gravel 45 km

dirt track 8 km

minor roads : 239 km

asphalt 25 km

gravel 164 km

dirt track 50 km

other roads : 2,494.5 km

asphalt 11 km

gravel 217 km

dirt track 2,266.5 km

Most bridges in the province were rudimentary in nature.

Ports in Southeast Sulawesi had already begun to be visited by medium-sized cargo vessels. Equipment and other dockside facilities were improved.

Flights to and from Wolter Monginsidi airport had been increased by the end of Pelita I from once or twice a week to four times a week. Runway improvements were carried out and an improved passenger terminal was built.

There was a marked improvement in telecommunications, though post office, radio, telephone, and telegraph services fell short of what was needed. There were post offices in every district, and telephone and telegraph offices in every district except Kolaka.



Land use :

Land use and layout in Southeast Sulawesi in 1974/5  
was as follows :

village sites	:	37,760 ha
paddy fields	:	2,000 ha
coconut plantations	:	35,517 ha
coffee plantations	:	1,880 ha
dry land agriculture	:	87,705 ha
dense jungle	:	2,724,000 ha
single species forestland	:	65,356 ha
arid land	:	109,840 ha
marshland/swamps	:	50,900 ha
swordgrass/scrubland	:	422,906 ha
c shifting cultivation	:	<u>594 ha</u>

Total : 3,536,458 ha (not including  
Tukang Besi islands)

- Economic sector :Agriculture :

Food crop production fluctuated during Pelita I, as  
may be seen in Tables 3.1 and 3.2.

The average production for each crop was as follows :

wetland rice	2.24 tons/ha
dryland rice	1.63 tons/ha
corn	0.77 tons/ha

Table 3.1.  
Rice and corn production during Pelita I  
 (in tons)

Year	Wetland rice	Dryland rice	Corn
1969	48,691	38,025	41,601
1970	54,388	36,113	37,370
1971	61,701	36,113	39,446
1972	38,872	30,555	39,131
1973	38,025	20,471	43,790

Source : Repelita III book, Southeast Sulawesi

Legume and tuber production during Pelita is given below :

Table 3.2.  
 Legume and tuber production during Pelita I  
 (in tons)

Year	Peanuts	Phaseolus radiatus	Soybeans	Cassava	Yams
1969	640	102	34	151,725	30,000
1970	825	167	54	138,752	27,171
1971	1,584	203	70	173,398	33,500
1972	1,028	105	106	146,766	28,832
1973	724	41	119	161,600	35,537

Source : Pelita III book, Southeast Sulawesi.

The average legume production during Pelita I was as follows :

Peanuts	: 0,6 tons/ha
Phaseolus radiata	: 0,48 tons/ha
Soybeans	: 0,51 tons/ha

Plantation crops :

Total land area in this subsector went up by approximately 10% a year during Pelita I. In 1968 there were 27,608.1 hectares. By the end of Pelita I, this figure had increased to 38,217 hectares.

Details are given below :

1968	27,608.1 ha
1969	29,566.5 ha
1970	31,901.5 ha
1971	35,579 ha
1972	37,516 ha
1973	38,217 ha

Plantation crops production during Pelita I went up in certain cases and down in others. Production figures for both the beginning and end of Pelita I may be seen in Table 3.3.

During Pelita I, intensification was carried out over an area of about 85 ha.

Details are as follows :

Coconut	70 ha
Kapok (Ceiba pentandra)	5 ha
Coffee	3 ha
Clove	3 ha
Nutmeg	1 ha
Pepper	3 ha

Table 3.3.

Plantation Crop Production in Southeast Sulawesi  
at The Beginning and End of Pelita I (in tons)

No.	Type of crop	Beginning of Pelita I	End of Pelita I
1.	Coconut	11,700	0,163
2.	Kapok (Ceiba pentandra)	86.5	397
3.	Coffee	170	510
4.	Cashew nuts	-	134
5.	Candlenuts	123	291
6.	Cotton	17	-
7.	Sugarcane	131	231
8.	Tobacco	34.6	93
9.	Pepper	2.2	30
10.	Cloves	0.1	0.5
11.	Nutmeg	0.06	1
12.	Cocoa beans	0.25	-
13.	Arengga palm	29	966

Source : Pelita II Book, Southeast Sulawesi.

Animal Husbandry :

During Pelita I, animal husbandry did not play a conspicuous part in providing either a source of animal protein or source of income for the farmer. Attempts had been made to increase the cattle population, and the population had indeed gone up by an average of 32.5% per annum. The equivalent figure for water buffalo was 9.59%.

Table 3.4.

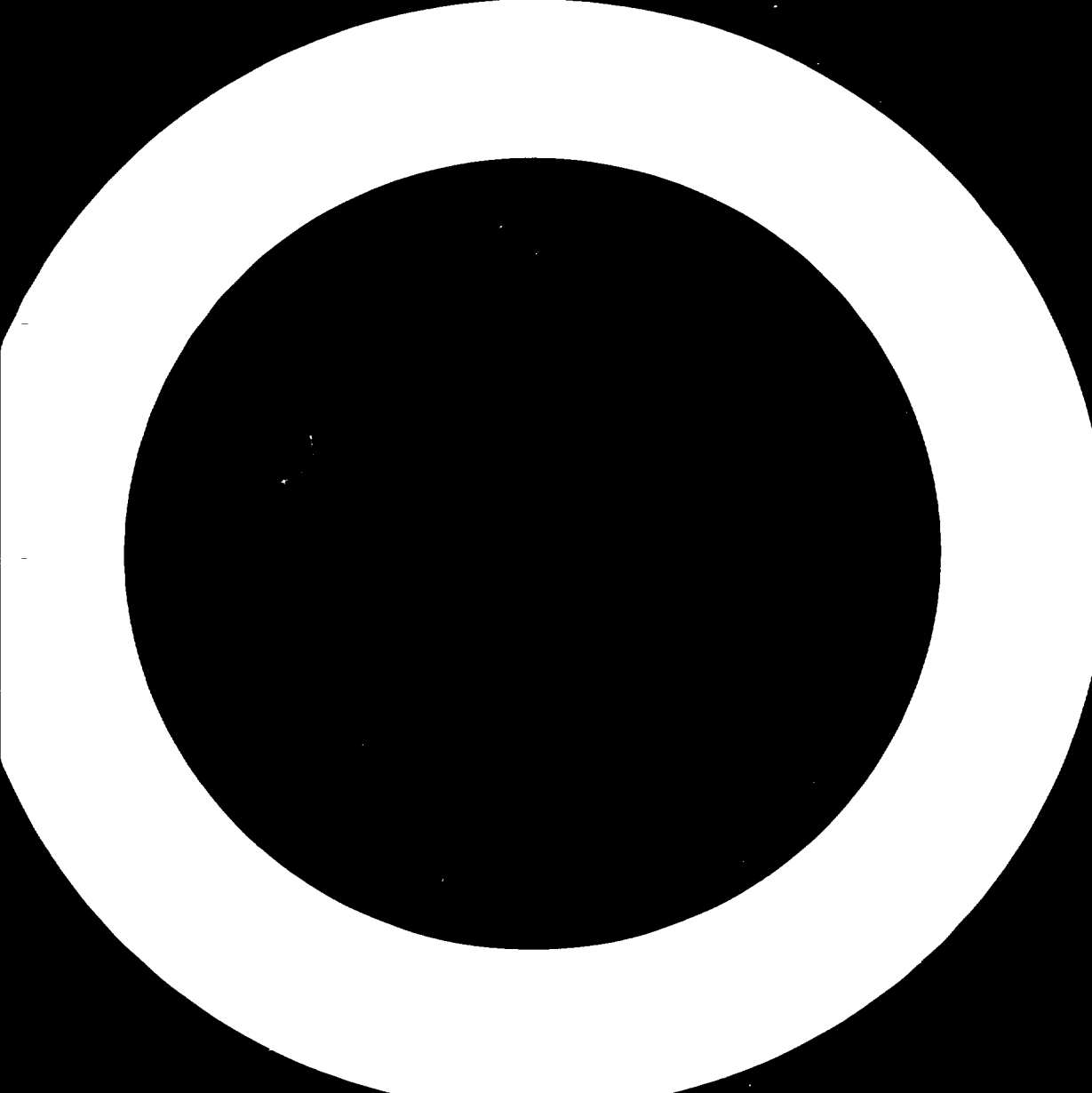
Livestock Population in Southeast Sulawesi  
at The Beginning and End of Pelita I

No.	Type of livestock	1968	1973
1.	Horses	5,950	8,415
2.	Cattle	2,788	13,976
3.	Water buffalo	9,392	11,473
4.	Goats/sheep	32,241	53,714
5.	Chickens	364,264	604,592
6.	Ducks/geese	20,218	28,564

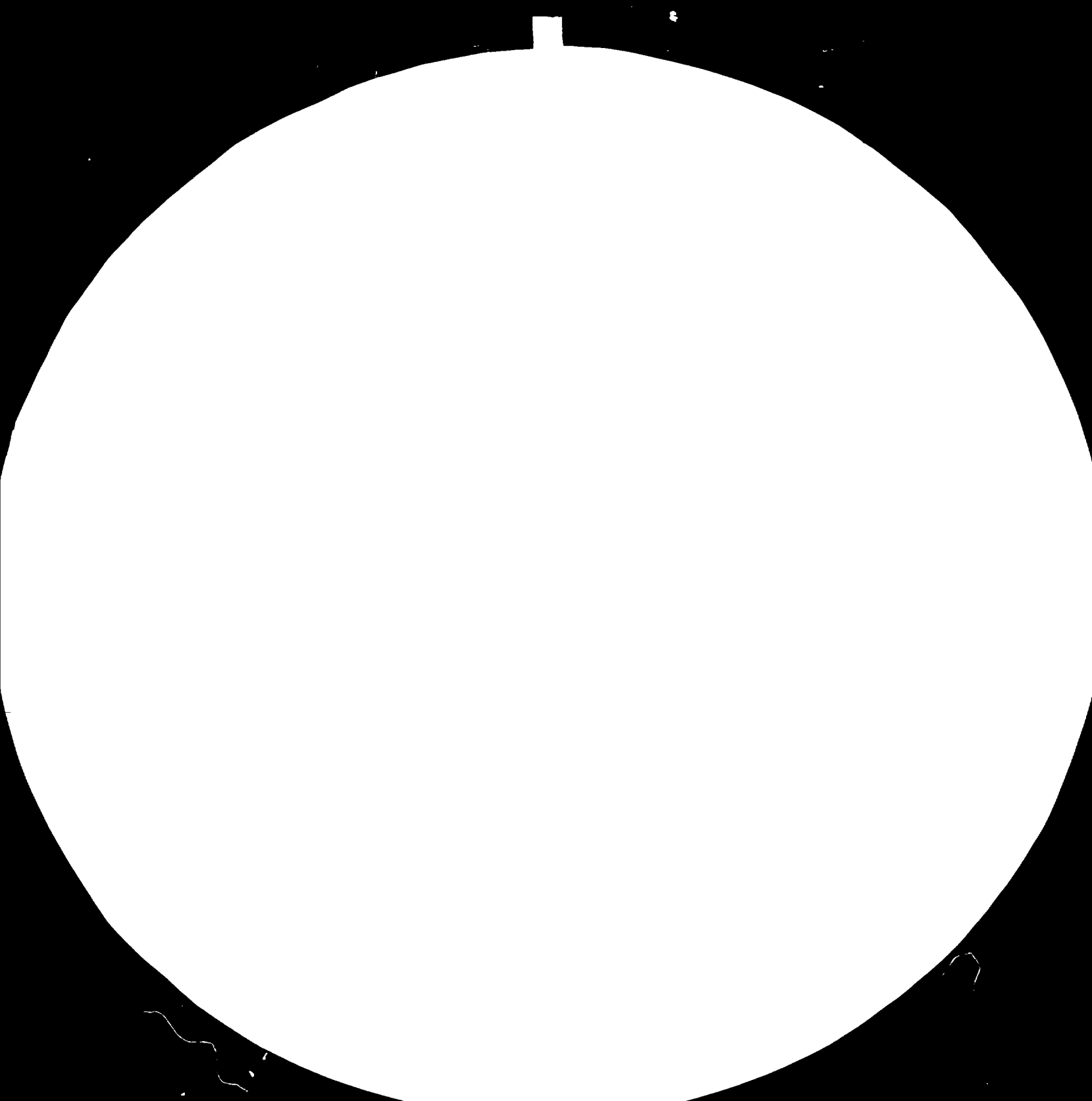
Source : Repelita II Book, Southeast Sulawesi.

Fisheries :

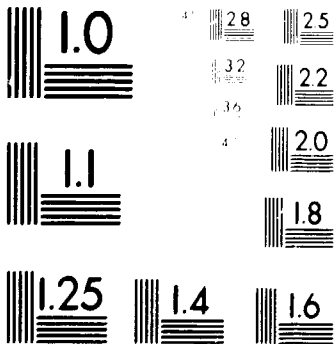
Hauls of salt-water fish rose annually by 22% during Pelita I, bringing an increase in the fisherman's income. Each family caught about 0.25 tons of fish per annum at



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MICROCOPY RESOLUTION TEST CHART  
 NATIONAL BUREAU OF STANDARDS  
 STANDARD REFERENCE MATERIAL 1010a  
 (ANSI and ISO TEST CHART No. 2)

the beginning of Pelita I. By the end of the five-year period, the figure had risen to 0.7 tons per annum. The total haul in 1968 was 6,000 tons and, in 1973, as much as 16,109 tons. The figures for fresh-water fish were 871 tons (1969) and 1,200 tons (1973).

Forestry :

There was a marked increase in teak and forest timber production during Pelita I. Royalties received in 1969 amounted to Rp 1,788,689. In 1973 the total had risen to Rp 51,183,493. The annual increase was thus in the order of 125%. Foreign currency export earnings from timber in 1973 amounted to US \$ 2,124,960. The inter-island timber trade was worth Rp 25,856,532 and the non-timber inter-island trade brought in Rp 1,053,568.50

Mining :

Asphalt mining on the island of Buton was undertaken by the State Asphalt Company over an area of 304 ha. There was virtually a four-fold increase in asphalt production during Pelita I. Production figures during Pelita I may be seen in Table 3.5.

Table 3.5.

Asphalt Production in Buton (1968-1973)

(in tons)

Year	Production
1968	31,315
1969	31,215
1970	61,483
1971	104,303
1972	115,580
1973	95,149

Source : Repelita II Book, Southeast Sulawesi.

Nickel mining in Pomalaa was carried out by Aneka Tambang Ltd. over an area of 8,999.92 ha. Nickel production and exports rose significantly during Pelita I.

In 1968 the total production of nickel was 261,273 tons and exports totalled 213,586 tons. The figures for 1973 were 867,319 tons (production) and 724,903 tons (exports)

Industry :

The industrial sector achieved the target set for it during Pelita I. Light industry achieved an average annual growth rate of 43.5%, and the equivalent figure for home industry was 26.7%. In 1968 there were just

12 light industry sites. By 1973 the number had grown to 67. In the home industry, the number of homes involved **grew** from 134 (1968) to 405 (1973).

Trade :

Trade, like other sectors, achieved an increase in volume. The most conspicuous achievement of Pelita I was that of bringing the price of staple foods and other basic goods under control. Inter-island trade and exports increased in volume.

Cooperatives :

Because of the unfortunate experience of earlier days, cooperatives did not play a major role during Pelita I. Nevertheless, the number of cooperatives increased steadily from 29 (1969) to 179 (1973). Similarly the total membership of cooperatives went up from 2,709 members (1969) to 28,848 members (1973)- an average annual growth rate of 28%. From the above it is evident that the community's attitude towards cooperatives was gradually improving.

- Social sector :

Formal education :

Pelita I saw an increase in teaching equipment and in the number of school buildings and teachers, but the

the distribution of these remained uneven, the bulk being concentrated in the cities. At the end of Pelita I there were 28 nursery schools, all of them in Kendari district. In addition, there were 720 elementary schools, with a total of approximately 102,575 pupils, 36 Islamic elementary schools, with 3,394 pupils. At the junior level, there were 48 junior high schools, with a combined total of 13,544 pupils and a combined teaching staff of 998. At the senior level, there were 6 state senior high schools, 9 economic, 4 technical, 2 home economic, 7 teacher training and 1 agricultural senior high school, with a combined total of 5,063 pupils and a combined teaching staff of 413.

Finally, there were three centres of higher education - Haluoleo University, which was private, a branch of the Ujung Pandang Alaudin Islamic Institute, and a branch of the Ujung Pandang Institute of Education and Teacher Training. The combined total of students was 1,384.

#### Non-formal Education :

During Pelita I there was no non-formal education. Attempts to set up non-formal education were still at an exploratory stage.

#### Health and Family Planning :

By the end of Pelita I, medical facilities had improved markedly, but the distribution of such facilities

was still uneven.

TABLE 3.6  
MEDICAL FACILITIES IN 1969 and 1974

Type of facility	1970	1974
Community health centres	-	33
Public hospitals	7	17
Special hospital	1	1
Polyclinics	28	19
Mother & child welfare clinics	16	15
Drugstores	-	2
Hospital beds	772	455

Source : Repelita II book, Southeast Sulawesi

The improvement in medical facilities was matched by an increase in the number of doctors, from 9 in 1969 to 27 in 1974. A number of diseases - like malaria, TB, smallpox, leprosy and yaws were gradually being brought under control.

In the family planning program, seven family planning clinics were opened during Pelita I.

#### Housing and potable water

Housing was gradually altered to meet new sanitary and health requirements as well as to contribute to the physical attractiveness of the urban surroundings.

Rural housing still needs to be improved - a simple house that came up to the required standards of sanitation and health needed to be designed.

The availability of drinking water both in towns and villages still left much to be desired.

### 3.1.2.2. Problems encountered in Pelita I

Amongst the problems encountered that would have to be solved in later Pelitas were :

#### (a) Under-population and uneven population distribution

Under-population and uneven population distribution have meant that rich natural land and sea resources have not been exploited as much as they should have been. Approximately 400,000 ha. of land, ideal for livestock farming, is still waiting to be exploited, and another 160,000 ha. of alluvial soil and other suitable land for agriculture has yet to be turned to good use.

#### (b) The ultra-conservative mentality of the population

The community as a whole is unaware of the benefits of modern technology and advances in knowledge. In addition, certain small communities in particular areas still cling to age-old practices, which greatly damage their future livelihood, like a reluctance to use fertilizer; shifting cultivation, traditional surus and many more besides.

#### (c) Lack of a communications network

The rehabilitation work carried out on roads and

bridges during Pelita I fell short of the demands of ever-increasing developmental needs. Air and sea communications were still unable to cope with the rapid increase in volume of goods and passengers being transported.

d. Lack of production equipment and infrastructure

This was caused by regional difficulties and the low standard of living of the local community. In addition to this, the low level of education and lack of business know-how on the part of the local population made it hard for them to accept, let alone take advantage of, modern technological innovations in the economic and production sectors.

A conspicuous result of this lack of production equipment & infrastructure was the low-level of production in agriculture, estate crops, fisheries and livestock farming, meaning that local needs were not met.

The cooperative and industrial trade sector was still too small. Too little was produced and too few people were aware of its capabilities.

(e) The low level of education and skill

Education increased during Pelita I, but not sufficiently to meet community needs. All levels of education, but especially tertiary education, suffered from a dearth of facilities. There were 121,319 children of elementary school age who just could not be accommodated in schools. Using Pelita standards, this meant there was a shortage



of 3,033 classrooms, equivalent to 506 elementary schools of 6 classrooms per school, and that, in addition to this, 619 extra teachers were needed. In junior and senior high school there was a serious shortage of teaching staff and equipment. Furthermore, schools were often distant or difficult to reach because of poor roads and infrequent transport. The low level of income meant that many parents could not afford to send their children to school.

(f) Shortage of social facilities

Being such a young province, Southeast Sulawesi had few social facilities. What facilities it had were unevenly distributed, the majority being situated in town and cities.

(1) Medical facilities.

At the end of Pelita I there were only 27 doctors, of whom one was a dental surgeon. Hospitals were restricted to the provincial and district capitals, and only one hospital bed was available per 1,928 people. Diseases like malaria, TBC and leprosy were rife, and yet the provision of drugs fell a long way short of what was needed. Furthermore, sanitary facilities in towns, and especially in villages, were totally insignificant. Many villages used rivers for washing in and as a source of drinking water and, in certain villages, even rain water was used as drinking water. The fact was that environmental sanitation left much to be desired.

(2) Social welfare facilities

There was little provision for places of entertainment and recreation, as would have been desirable. It can therefore be said that on the whole the community was not really aware of the meaning of free time or how to use what free time they had.

(3) Sport and facilities for young people

The only sports hall was situated in the provincial capital and the only stadium (and a modest one at that) was situated in Kolaka, capital of Kolaka district. Local sporting achievements fell far short of national achievements because of a shortage of professional coaches. There were also too few orphanages and no buildings that could house youth activities.

(4) Religious facilities

There were not enough places of worship, like mosques, churches and temples. Many places of worship were very small and, in rural areas, largely makeshift in appearance.

(5) Communication facilities

Information and social communications channels, newspapers, magazines and films fell far short of what was needed.

### 3.1.2.3. An evaluation of Pelita I

The developmental target of Pelita I proved to be a shot in the arm for the economic life of the province. Production went up visibly in agriculture, fisheries, estate crops and industry. Communications and production equipment had already begun to be rehabilitated following the damage caused by the disturbances in the 50's and early 60's.

Nevertheless, all the achievements of the period were small in comparison with community and development needs. What we need to do now is to exploit more fully our available natural resources methodically and continuously, so that the fruits of our labour may truly be put to the best possible use by the people of Indonesia as a whole. Long term methodical and continuous development seems, therefore, to be the way to achieve the national aims, as set down in the state manifesto.

### 3.1.3. 2nd Five-Year Development Plan (Pelita II)

The long term development target of Pelita II was based on the achievements of Pelita I and on local needs and conditions in Southeast Sulawesi. It was to ....

" .... lay particular stress on the agricultural sector and, especially, on food crops, rejuvenation and the expanding of existing cash crops as well as the introducing of new cash crops."

A programme of development (Repelita II) was drawn up with the purpose of achieving this target in Southeast Sulawesi. Then a scale of priorities was established, based on an assessment of urgent regional needs, and a number of individual programmes of development were selected in accordance with this scale of priorities, namely :

- to increase rural development, including amongst other things, the systematic organizing of village resettlement areas, the drawing up of a blueprint for transmigration, the management of resettlement villages, and the improving of rural administration and facilities.
- to increase and expand maintenance and rehabilitation work and to improve the quality and total number of roads and bridges, as well as port, airport and telecommunications facilities.
- to increase agricultural production, with particular

emphasis on food crop production.

- to increase and expand the systemization of land division, involving regional and urban administration, land use, planning, regional research and a planned system of agrarianism.
- to increase the role of non-government and private concerns, with particular emphasis on expanding and developing cooperatives which extended bank credit and on improving marketing.
- to expand and direct development areas with a new type of strict management.
- to perfect an improved code of planning.

3.1.3.1. The achievements of Pelita II were as follows :

(a) Food crops

Rice and corn production during Pelita II may be seen in the table below :

Table 3.7 RICE AND CORN PRODUCTION DURING PELITA II  
(In tons)

Year	Wetland rice	Dryland rice	Corn
1974	31,525	16,356	18,580
1975	23,032	25,692	33,663
1976	27,789	27,755	30,405
1977	24,318	27,580	45,771
1978	-	-	-

Source : Repelita III book, Southeast Sulawesi.

The average production of rice and corn during Pelita II was :

wetland rice	2.00 tons/ha.
dryland rice	1.43 tons/ha.
corn	0.83 tons/ha.

Legume production increased annually throughout the course of Pelita II. Results are shown in the table below :

Table 3.8. LEGUME PRODUCTION DURING PELITA II  
(In tons)

Year	Peanuts	Phaseolus radiatus	Soybeans
1974	531	138	205
1975	456	108	260
1976	421	115	712
1977	763	215	373
1978	-	-	-

Source : Repelita III book, Southeast Sulawesi.

Average annual legume production was :

peanuts	0.57 tons/ha.
phas.radiatus	0.50 tons/ha.
soybeans	0.49 tons/ha.

Cassava and yam production also went up during Pelita II:

Table 3.9. CASSAVA AND YAM PRODUCTION DURING PELITA II  
(In tons)

Year	Cassava	Yams
1974	150,026	25,559
1975	132,318	20,996
1976	156,194	33,024
1977	155,149	35,972
1978	-	-

Source : Repelita III book, Southeast Sulawesi.

Horticultural production in Southeast Sulawesi was conspicuous during Pelita II. 24,546 tons of fruit and 35,900 tons of vegetables were produced in 1977. A number of vegetables like cabbages, brassica napus and shallots were beginning to emerge.

(b) Animal husbandry

Livestock farming grew rapidly during Pelita II and played an ever more important role in the lives of the farming population. The increase in livestock population may be seen in the table below :

TABLE 3.10 LIVESTOCK POPULATION DURING PELITA II

Year	Cattle	WaterBufl.	Horses	Goats	Chickens	Ducks
1974	15,600	12,873	8,830	56,463	604,003	30,500
1975	17,940	14,418	9,227	59,321	791,104	32,213
1976	21,702	15,456	10,332	67,226	938,880	34,530
1977	24,673	9,860	7,975	41,742	616,067	29,640
1978	-	-	-	-	-	-

Source : Repelita III book, Southeast Sulawesi.



(c) Estate crops

A number of estate crops - like coconuts, kapok, coffee, cloves and cashew nuts - were developed in South-east Sulawesi. Coconut production at the beginning of Pelita II was 14,853 tons. It fell slightly to 14,200 tons at the end of the five-year period. Similarly, kapok production fell slightly from 396 tons to 392 tons, and coffee production fell from 772 tons to 627 tons. On the other hand, clove production went up from 1 ton to 2.4 tons and cashew nut production rose significantly from 96.5 tons to 223.5 tons.

(d) Fisheries

Hauls of salt-water fish increased very satisfactorily during Pelita II from 14,914 tons to 32,609 tons at the end of the five-year period. This increase was largely attributable to the motorizing of fishing boats and vessels. The average annual increase was 40.56%. Hauls of fresh-water fish also rose from 331.9 tons to 2,161 tons.

(e) Forestry

30,000 ha. of reforestation was carried out during Pelita II. Teak production went up from 200.3 tons at the beginning of the five-year period to 344.2 tons in 1976. Forest timber production increased even more dra-

matically from 171 tons to 992 tons over the same period, and rattan production went up from 829.3 tons to 1,682.8 tons.

(f) Industry

Industry developed promisingly during Pelita II. There were 658 industries or industrial firms in 1974, and by 1977 this number had grown to 903 industries, employing a total of 4,747 people. Industry in 1974 was worth Rp 376,998.125 million and, in 1977, Rp 993,466.78 million. Industrial investment amounted to Rp 613,654.40 million in 1974 and Rp 1,072,600.2 million in 1977.

(g) Mining and energy

Asphalt

Production during Pelita II fluctuated according to production capacity and the state of the Asphalt Company's finances.

Nickel

Nickel production went up during Pelita II. Production, however, depended very much on the demand from abroad.

Electricity

There was a marked improvement in Pelita II over Pelita I. Power was available for longer periods every day, wattage was increased and district electricity offices

were better organized as a result of being upgraded in status. In addition, a programme of extending electricity facilities to villages had been started in the middle of Pelita II, though the situation still left much to be desired. Each district had two diesel generators with a combined power of 6,467 KVA.

(h) Communications

Land Communications

Roads and bridges were still well below the required standard. A total of 3,056.01 km of roads and 2,679.75 m of bridges were repaired or built during Pelita II.

In 1978 there were 456 trucks, 118 buses, 450 public taxis, 3,764 motorbikes, 296 jeeps and 78 other motor vehicles.

Sea Communications

The ports in each of the four district capitals had been expanded and improved and were now operating satisfactorily, as were two special ports - Banabungi port in Pasar Wajo, Buton, which was for asphalt, and Pomalaa port in Kolaka district, which was for nickel. In the port of Kendari, in 1978, 35,233,652 tons of goods were unloaded and 11,956,241 tons of goods were loaded. 1,384 passengers disembarked at the port and 192 passengers embarked.

### Air Communications

There were four airports in Southeast Sulawesi. The principal one was Wolter Monginsidi Airport in Kendari. In addition, there were three small airports - Botoambari (Bau-Bau), Sugi Manuru (Raha) and Pomalaa airports. 16,570 passengers boarded aircrafts at Wolter Monginsidi airport during 1978 and 15,932 passengers disembarked. The frequency of flights during Pelita II went up by about 45.6 % a year, passenger flow increased on average by 40.36 % a year and baggage went up 32.2 %. Planes used were Fokker F- 27, Twin Otter and Hercules.

### Post and Telecommunications

The outstanding development in telecommunications during Pelita II was the building of the nationwide Palapa communications satellite, telegraph and radio transmitter/receiver, all of which have been operating since Pelita II. An automatic telephone exchange was still in the process of being completed. Apart from developments in telecommunications, post offices were also built in every subdistrict throughout the province.

### Trade and Cooperatives

The trade and cooperatives sector had already contributed, albeit modestly, to economic growth in

southeast Sulawesi. Export and import trade went up. In 1977 exports in Southeast Sulawesi totalled US\$ 50,100.8 and imports totalled US\$ 52.7. In previous years totals had been much smaller. Exports consisted of wood and nickel, and imports of cement (an incidental import). Inter-island trade was also on the increase. Most basic goods and foodstuffs, like rice, sugar, textiles and fuel, had to be brought in from other areas. With this continuous flow of goods into and out of the province, a close watch had to be kept to ensure that prices remained stable.

Cooperatives grew on average by 10.7 % during Pelita II. Village cooperatives, in particular, were developed during this period.

#### Manpower and Transmigration

In 1978, at the end of Pelita II, the population of Southeast Sulawesi was 844,498. There was a potential productive workforce of about 543,265 people, consisting of an actual workforce of 326,828 people and a non-workforce of 216,437 people. During Pelita II 199 volunteer workers throughout the province were involved in helping with village and rural administration.

During Pelita II, 35,929 people (8,574 families) transmigrated to Southeast Sulawesi.

### Public Housing

Since 1976 attempts had been made to restore public housing. It was felt that housing, clean water and health needs had yet to be fulfilled. A total of 90 houses had been restored by the end of 1977.

### Religion

More religious information was made available. In addition, more places of worship were built. In 1976 there were 801 mosques, 233 village mosques, 4 mushalla, 76 Protestant churches, 2 Catholic churches and 9 Hindu Temples. The percentage for each religion was as follows :

Islam	98.0 %
Protestant	1.1 %
Catholic	0.53 %
Hindu	0.31 %
Other religions.	0.06 %

### Education and Youth

By the end of Pelita II about 85.3 % of children of elementary school age could be accommodated in schools in the province. 85.1 % of those who completed elementary school went on to junior high school, and 84.3% of these eventually went on to senior high school. In 1977 there were 792 elementary schools, with about

116,686 pupils and 3,075 classrooms. There were 77 Junior high schools, with 18,576 pupils and 766 teachers. Nearly every subdistrict had a senior high school in its main town. There were 20 senior high schools, with about 7,346 pupils and 172 teachers in 1977.

At the end of Pelita II there were still three centres of higher education, with a total of 2,210 students. At Haluoleo University, which was still private, nine houses for lecturers and extra buildings had been constructed.

For the first time, the needs of young people were beginning to be catered for in the form of increased sports activities, voluntary social work, scouting and more youth organizations.

### 3.1.3.2. Problems Encountered

#### Food crops

- Existing irrigation did not function well
- Crop pests and diseases had not been fully overcome.
- Marketing of agricultural produce was hampered by the poor state of the communications infrastructure.
- The limited workforce did not match the potential of this sector
- Agricultural equipment was often expensive, and therefore out of the farmer's reach.

#### Animal husbandry

- The livestock population was too low in view of the potential of this sector
- Livestock farmers owned very few animals, so breeding was difficult.
- Livestock diseases had not been overcome and many animals fell victim to such diseases.
- Processing and marketing facilities of livestock produce were still greatly limited.

#### Estate crops

- Not enough was known about soil potential, so it was difficult to select the right crop to grow
- Intensification was rarely carried out, so production remained low
- There was a shortage of capital



- There was a decrease in the farmer's enthusiasm to plant and to tend crops planted, especially coconuts.

### Fisheries

- Existing landing facilities were not being used properly
- Fishing equipment was still severely limited
- Fishing businesses suffered from lack of funds and poor management
- There was limited availability of freshwater fish spawn
- The credit system was not supportive
- The marketing chain was too long, causing the fisherman to receive a very low price for his fish.

### Forestry

- There was a land use organizational problem concerning the siting of transmigration and resettlement areas and the opening-up of new land for agriculture
- There was the problem of land falling into a critical condition because of the damage caused by shifting cultivation and timber processing by holders of timber exploitation rights.

### Irrigation

- Many obstacles were encountered in the construction of tertiary irrigation channels and the creation of new paddy fields

- The level of skill of the community was still low on the whole, and so available rice growing facilities were not fully taken advantage of.

#### Industry

- Industry was concentrated in urban areas, so work could generally be found only there
- Existing industries were orientated exclusively to the market place
- The climate for starting up a new venture was not favourable
- Industrialists had limited financial resources, a lack of management ability, a shortage of skilled workers, amongst other things ... all of which inhibited industrial development
- Limited equipment and infrastructure
- There was a lack of awareness about regional potential.

#### Mining and Energy

- The development of asphalt mining production and transportation
- There was no record of natural and mineral wealth
- The problem of walking the tightrope of environmental control and mining exploitation and development
- The supply of electricity was still limited
- The cost of providing an electricity supply was still relatively high.

### Communications

- The state of the infrastructure (roads) was still poor
- Most roads had an earth surface
- Ports were being made shallow by erosion
- Air passenger safety facilities at airport were still limited.

### Trade and Cooperatives

- There was a shortage of transport for trade purposes
- Ships only occasionally docked to load and unload cargo
- Storage facilities were unsatisfactory
- Business know-how and capital were limited, and the trade climate was not favourable
- Cooperatives were not well run.

### Manpower and Transmigration

- Population distribution was uneven, so it was impossible to achieve effective productivity of the workforce.
- The female workforce had yet to be mobilized effectively
- The provision of settlements was slow
- There was no land use planning or maps for determining the siting of transmigration areas
- Communications equipment was limited
- Irrigation still left much to be desired.

### Housing

- Land use administration was haphazard
- Many sources of clean water had not yet been tapped
- Environmental health was not good.

### Religion

- Places of worship were mostly makeshift in appearance.
- There were not enough people involved in making religious information available.

### Education and Youth

- There was a shortage of education facilities
- There was a shortage of teachers
- Many pupils could still not be accommodated in schools
- Distribution of schools was uneven.
- There was a shortage of sports equipment.
- There were no coaches/trainers
- The level of community knowledge was still low.

### 3.1.3.3. An Evaluation of Pelita II

Results had generally been achieved in Pelita II , but these fell short of community and developmental needs. Available resources, like agricultural land, livestock farming, fisheries and forestry, were still not being exploited sufficiently intensively.

Southeast Sulawesi depended on other regions for the supply of most of its basic goods and foodstuffs. There was an urgent need for skilled workers to assist in development. In education, more attention needed to be given to higher education, so that it could be on a par with higher education in other provinces. That is to say , a state university was needed that would give people the opportunity to get a higher level of education.

Natural resources like forests needed to be exploited in a more balanced way without destroying the environment.

Per capita income in the province went up during Pelita II from Rp 16,848 to Rp 63,385.05 (at constant prices).

#### 3.1.4. Third Five-Year Development Plan (Pelita III)

The aims of Pelita III were based on the results achieved in Pelita II and on a number of sources of regional potential, namely :

" .. To lay stress on the agricultural sector, particularly food crops, and to develop cash crops".

Those sectors supporting the attainment of these aims included :

- Business development
- Natural resources exploitation and the environment
- Agriculture and irrigation
- Food and nutrition
- Industry
- Mining and Industry
- Communication and tourism
- Trade and cooperatives
- Public housing
- Religion
- Education and youth
- National culture
- Science, technology and research
- Health, social welfare and the role of women
- Population and family planning
- Regional, rural and urban development
- Law

- Security and public order
- Information, the press and social communication
- The government apparatus

Pelita III went according to plan, although a number of targets were not fully achieved because of certain unavoidable obstacles.

#### 3.1.4.1. The Achievements of Pelita III

##### Business development

Most entrepreneurs came from low income groups. However, they played only a minor economic role and were therefore worthy of attention in Pelita III. Lack of capital was one problem they faced. During Pelita III credit and capital supplied by banks was encouraging. Small investment credit grew from Rp. 747,000,000 (1979) to Rp. 3,434,005,000 (1982) and permanent working capital credit grew from Rp. 594,000,000 (1979) to Rp. 7,153,553,000 (1982). Other credit totalled Rp. 14,867,487,000 at the end of 1982.

Apart from financial support, operating licences were made easier to obtain and several licences which hitherto had encumbered attempts to start up businesses were scrapped. Both the Southeast Sulawesi regional office of the Department of Trade and local government organized training, upgrading and consultation via the lo-

cal university for the benefit of the low-income entrepreneurial sector. In addition, small industries were given similar assistance through the Department of Trade's small industry training & guidance project. Also the regional cooperative office organized constant training and consultation sessions as part of a programme to increase the role played by cooperatives in the economic life of the local population.

The results achieved in this sector were pleasing and business showed an upturn.

#### Natural resources exploitation and the environment

Serious attention was paid during Felita III to exploitation of natural resources and preservation of the environment. Unlicensed tree felling, hunting and shifting cultivation were progressively brought under control and stopped. Removal of coral, sand and shingle and other environmental tampering was strictly controlled so as not to destroy the ecosystem. Reforestation and replanting of land in a critical state was carried out.

#### Agriculture and irrigation

##### (a) Food crops

In order to achieve food crop self-sufficiency in



Southeast Sulawesi, attempts were made during Pelita III to raise production by means of agricultural intensification, extensification and diversification. However, rice production during Pelita III still fell short of local needs and large quantities continued to be imported from outside Southeast Sulawesi.

(b) Animal husbandry

This consisted mainly of livestock subsistence farming, whereby the farmer employed traditional methods to raise the few animals he owned and was able to supplement his income a little. Nevertheless, during Pelita III the livestock population increased significantly, as may be seen below :

- cattle	:	26,023 (1978)	60,14 (1982)
- water buffalo	:	8,840 (1978)	11,920 (1982)
- horses	:	1,735 (1978)	6,300 (1982)
- goats	:	34,145 (1978)	69,063 (1982)
- chickens	:	689,058 (1978)	1,366,059 (1982)

Despite this pleasing increase in population, however, production still fell well short of local needs.

(c) Plantation crops

There were three types of plantations :

- Public plantations (which were traditionally

managed and relatively small in area),

- Private large-scale plantations
- Joint-venture private large-scale plantations.

The expansion of public plantation crops during Pelita III may be seen in the table below :

Table 3.11. Public Plantation expansion (1978-1982)  
(Ha)

No.!	C r o p	!	1978	!	1979	!	1980	!	1981	!	1982
1.!	Coconuts	!	33,594	!	33,594	!	137,133	!	141,811	!	150,355
2.!	Coffee	!	4,213	!	4,211	!	1,509	!	1,509	!	2,701
3.!	Kapok	!	2,379	!	2,373	!	3,051	!	3,303	!	4,947
4.!	Pepper	!	253	!	253	!	271	!	271	!	270
5.!	Nutmeg	!	231	!	231	!	255	!	271	!	176
6.!	Cloves	!	1,226	!	1,227	!	2,578	!	3,104	!	4,747
7.!	Areca nuts	!	784	!	785	!	759	!	772	!	-
8.!	Cashew nuts	!	3,704	!	3,704	!	5,297	!	9,233	!	23,041
9.!	Candle nuts	!	568	!	565	!	647	!	668	!	912
10.!	Sugar cane	!	289	!	289	!	158	!	169	!	65
11.!	Tobacco	!	347	!	348	!	227	!	236	!	104
12.!	Cocoa beans	!	107	!	107	!	2,651	!	3,638	!	5,316
13.!	Arenga palm	!	53	!	54	!	1,966	!	2,056	!	1,494
T O T A L		!	48,248	!	48,246	!	159,347	!	165,699	!	190,987

Source : Plantation Crops Office, Southeast Sulawesi.

Over a period of four years, total plantation crop acreage increased by about 58.52 %, in other words , by about 22.15 % per annum. Public plantation crop production may be seen in the table below :

Table 3.12 Public Plantation Crop Production (in tons)  
1978 - 1981

No.	C r o p	1978	1979	1980	1981	1982
1.	Coconuts	16,112	16,755	17,000	17,000	17,000
2.	Coffee	733	745	1,317	1,317	1,317
3.	Kapok	345	425	451	451	451
4.	Pepper	45	45	42	42	42
5.	Nutmeg	2	2	4	4	4
6.	Cloves	6	6	11	19	17
7.	Areca nuts	100	102	98	101	-
8.	Cashew nuts	1,131	1,316	1,290	1,212	4,303
9.	Candle nuts	112	218	210	111	203
10.	Sugarcane	77	2	23	24	40
11.	Tobacco	151	85	88	102	33
12.	Cocoa beans	3	3	7	353	1,600
13.	Arenga palm	13	29	51	68	40
14.	Cotton	30	9	9	23	22

Source : Statistics office, Southeast Sulawesi.

Large-scale plantation crop acreage in 1982 was as follows :

- Cotton : 800 ha
- Coconuts : 1,363.6 ha

Production achieved was as follows :

- Cotton : 25 tons
- Coconuts : 511 tons

If we look at the above expansion in plantation-crop production, it may be seen that coconuts, coffee, cloves, cotton, cashew nuts and cocoa beans all have exciting prospects for the future.

#### (d) Fisheries

Salt-water fishing grounds in Southeast Sulawesi extend over an area of about 110,000 square kilometers, and have a potential of 0.80 tons of fish/sq.km./year. Fresh-water fishing covers about 9,000 ha with a potential haul of 0.20 tons/ha/year.

During Pelita III, the Government tried in a number of ways to increase hauls in Southeast Sulawesi. Fishermen were greatly assisted during the five-year period - credit was lent through the small investment credit and permanent working capital credit programmes, operating licences were more easily obtainable, motor-boats and improved fishing gear were provided, guidance

and training were given. During Pelita III the number of fishing boats and vessels went up from 10,444 to 12,630—a total increase of 21.41% or annual increase of about 5.35%

In 1978, 38,792 tons of salt-water fish were caught. This figure fell to 27,420 tons in 1981. The figures for dried fish were 4,564 tons (1978) and 4,746 tons (1981), and the total haul of fresh-water fish was 2,186 tons (1978) and 1,661 tons (1981). Fishing gear used was net and line, net, seine and trap. Both salt and fresh-water hauls may be seen in Table 3.16 in chapter II.

#### (e) Forestry

About 2,889,043 ha of forestland, or 1% of the total land mass of the province, covered Southeast Sulawesi. Produce obtained from forest included teakwood, palay, sandalwood, banyan, ebony, rattan and resin.

Table 3.13. Forest Produce During Pelita III (in tons)  
(1978 - 1982)

Year	Rattan	Charcoal	Resin	Firewood	Bamboo	Bark
1978	4,200	417	39	174,217	5,000	40
1979	4,605	420	40	179,557	5,000	40
1980	4,197	450	42	250,500	5,000	40
1981	2,785	450	42	250,500	5,000	40
1982	6,168	-	11	-	-	-

Source : Statistics office, Southeast Sulawesi.

### Food and nutrition

Food and improved nutrition was part of a programme during Pelita III to assist the development of the entire Indonesian nation.

Staple foods in Southeast Sulawesi were rice, corn, sago and tubers. Up to the end of Pelita III (1982/1983) most people in Southeast Sulawesi were still not getting enough animal proteins like meat and eggs because not enough was being produced to meet community needs.

### Industry

The total number of companies and amount of investment showed a yearly increase throughout Pelita III, which was an encouraging sign for future industry in the province.

Details are given below :

Table 3.14 Expansion of industry and the Industrial Workforce 1978 - 1982.

Year	Type of industry		Workforce	
	Miscellaneous	Small-scale	Miscellaneous	Small-scale
1978	9	928	200	5,056
1979	13	951	381	5,900
1980	27	1,057	618	6,554
1981	38	1,112	709	6,819
1982	106	934	1,321	6,344

Source : Regional Development Planning Board, S.E. Sulawesi.

Investment and production showed an annual increase during Pelita III, as may be seen below :

Table 3.15 Investment and Production Growth in Southeast Sulawesi 1978 - 1982.

( Units of 1,000 )

Year	Investment		Production	
	Miscellaneous Industry	Smallscale Industry	Miscellaneous Industry	Small-scale Industry
1978	457,000	1,292,310	554,060	1,577,596
1979	804,500	954,463	627,122	1,430,000
1980	989,778	1,208,926	1,130,751	2,930,000
1981	3,596,442	2,938,992	1,140,130	4,152,441
1982	4,440,851	3,858,982	2,350,250	5,217,226

Source : Regional Development Planning Board, Southeast Sulawesi.

### Mining and Energy

Asphalt and nickel were mined in Southeast Sulawesi during Pelita III. Apart from efforts made to increase production during this period, attempts were also made to create new jobs for the local community. Production figures for asphalt and nickel during Pelita III may be seen below :

Table 3.16 Asphalt and Nickel Production 1978-1982

Year	Asphalt (tons)		Nickel (tons)	
	Brosken	Gruis	Ore	Ferro-nickel
1978	151,351	4,465	1,256,550	4,419
1979	170,000	90,805	679,419	4,000
1980	190,000	173,018	747,458	4,506
1981	-	279,490	617,779	4,703
1982	-	330,842	721,117	5,046

Source : Statistics office, Southeast Sulawesi.

Pelita III saw an increase in the spread of electricity :

Table 3.17. Electricity Production and Distribution in KWH, 1978 - 1982

Year	Elect. produced	Elect. sold	Excess production
1978	14,644,800	4,325,187	10,319,613
1979	14,644,800	5,773,838	8,870,962
1980	15,393,600	7,070,000	8,323,600
1981	16,315,200	9,522,000	6,763,200
1982	18,446,400	11,666,572	6,779,828

Source : Statistics office, Southeast Sulawesi.



The number of users of electricity went up annually. There were about 4,274 users in 1978. By 1982 this number had risen to about 13,366 users with an available capacity of 8,900 KVA. Details of the increased number of users of electricity may be seen below :

Table 3.18 Number of Subscribers and Capacity Provided 1978 - 1982.

Year	Number of Subscribers	Capacity Provided (KVA)
1978	4,274	2,745
1979	6,372	4,128
1980	8,747	5,751
1981	10,970	7,205
1982	13,366	8,900

Source : Statistics office, Southeast Sulawesi.

Potable water had already begun to become available in towns, but the capacity provided was well below what was needed. In 1982, about 601,561 M<sup>3</sup> of potable water was consumed. This brought in a total of Rp. 72,719,000. Village water sources, however, were still in need of attention in the next five-year development plan. Firewood too, because of its widespread use in villages as a source of energy, needs to have special attention paid to it in the future.

Communications

(a) Land Communications

Roads and bridges continued to be below the required standard during Pelita III. The development of roads during the five-year period may be seen below :

Table 3.19. Length of Roads in Southeast Sulawesi  
in Km, 1978-1982

Year	Principal roads		Secondary roads		Other roads	
	Asphalt	Dirt track	Asphalt	Dirt track	Asphalt	Dirt track
1978	197	-	94	145	138	2,005
1979	197	-	94	145	138	2,005
1980	199	-	177	229	336	1,444
1981	199	-	198	208	374	1,383
1982	199	-	215	291	374	1,408

Source : Statistics office, Southeast Sulawesi.

There was a rapid increase in motorized vehicles during Pelita III, the figure going up from 8,149 (1978) to 16,408 (1982).

The Kolaka-Bajoe ferry linking Southeast Sulawesi and South Sulawesi was nearing completion.

(b) Sea Communications

Dockside facilities were improved during Pelita III

to help speed up the process of loading and unloading ships. Detail about the volume of goods and passengers carried during Felita III may be seen in the table below :

Table 3.20. Growth in the Volume of Cargo and Passenger Trade by Vessel, 1979-1982.

Type of Vessel	Year	Number of Vessel	DWT	Cargo (tons)		Passenger	
				Unloaded	Loaded	Disembark- ing.	Embark- ing.
Ocean- going	1979	50	1,363,505	1,579	562,425	-	-
	1980	50	785,858	158,690	486,673	-	-
	1981	35	414,811	187,383	11,927	27	-
	1982	42	866,792	121,520	421,086	12	-
Inter- island	1979	221	343,330	163,326	19,683	473	-
	1980	329	435,345	164,722	19,749	4,860	7,660
	1981	203	547,811	167,383	11,827	5,983	3,120
	1982	522	2,265,060	1216,797	5,551	739	8,095
Local	1979	1,378	327,839	72,568	23,374	7,001	-
	1980	1,966	303,780	25,460	10,699	25,157	123,052
	1981	2,745	475,747	16,243	5,852	141,967	135,826
	1982	9,042	1,597,918	1193,404	8,487	127,461	179,756
Public (Unmo- torized)	1979	-	-	-	-	-	-
	1980	2,625	153,318	22,160	11,467	130,839	135,854
	1981	305	24,906	7,512	2,452	7	-
	1982	839	184,434	22,947	12,982	129,834	128,900
Ferry	1979	150	193,182	1,553	781,740	138,469	138,513
	1980	212	311,037	4,169	2,629	150,481	148,491
	1981	342	358,544	7,741	4,272	154,000	-
	1982	160	244,754	4,608	999	122,954	124,288

Source : Statistics office, Southeast Sulawesi.

(c) Air Communications

Wolter Monginsidi Airport was the principal airport in Southeast Sulawesi. Fokkers (F-27) landed there. The other airports were smaller. During Pelita III improvements were carried out at Wolter Monginsidi airport. The volume of air traffic and passengers transported to and from Wolter Monginsidi Airport during Pelita III was as follows :

Table 3.21. Growth in Air Traffic and Passenger Transportation at Wolter Monginsidi Airport ,  
1978 - 1982

Year !	Air Traffic !		Passengers		
	! Arrivals & Departures !	! Disembarking !	! Boarding !	! Transit !	
1978 !	318	!	17,412 !	17,790 !	1,526
1979 !	585	!	14,978 !	17,756 !	600
1980 !	1,073	!	18,864 !	20,752 !	1,897
1981 !	973	!	19,904 !	24,363 !	200
1982 !	1,006	!	22,171 !	25,045 !	980

Source : Statistics office, Southeast Sulawesi.

(d) Postal Service

There was a welcome growth in postal services during Pelita III. Almost every sub-district had its own post-office. In 1982 an average of 2,293 letters were sent every day and 2,420 letters were received.

(e) Telephone and Telegraph service

Kendari, as provincial capital, already had an automatic telephone service, bringing it into closer contact with other cities in Indonesia and with a number of cities overseas. During Pelita III, the telephone network was further extended to meet local requirements and the telegraph service was improved, so that there would be an inexpensive alternative means of long-distance communication apart from the telephone.

(f) Tourism

There was little development in this sector during Pelita III. However, there were places just as interesting to visit in Southeast Sulawesi as in other regions of Indonesia, like :

- Wolio Castle (Muton)
- Bubakala Palace (Muton)
- Coastal Scenery (Kendari)
- Adu Kuda (Mina)
- Hot-water Spring (Kolaka)

(g) Trade and Cooperatives

The outstanding achievement in this sector was the starting-up of inter-island trade and the exporting of goods from Southeast Sulawesi. Traders from low-income groups and cooperatives continued to receive attention.

During Felita III about 30 entrepreneurs were given training, guidance and advice by the Department of Trade and Cooperatives in a joint operation with the local University.

Non-oil and gas exports from Southeast Sulawesi were as follows :

- 1978	=	US \$	38,951,200
- 1979	=	US \$	40,643,380
- 1980	=	US \$	48,434,410
- 1981	=	US \$	52,388,900
- 1982	=	US \$	33,876,890

Commodities exported were nickel, timber, rattan, fish, and seaweed.

Inter-island trade was worth :

- 1981	=	₹.	2,539,010,083
- 1982	=	₹.	5,029,871,544

Commodities traded with other islands included copper, rattan, fish, agar-agar, lola, tripang, coffee, soybeans, japing-japing, cloves, cashewnuts, timber, cotton, pearls and cocoa beans.

The number of village cooperatives grew from 77 (1976) to 123 (1982). Other cooperatives also incre-

ased in number, from 228 (1976) to 233 (1982). Village cooperatives made a trade profit in 1978 of Rp 8,446,067. In 1982 this figure went up to Rp. 15,922,107. The profit made by other cooperatives went up from Rp 5,912,449 to Rp. 82,064,189 in 1982. It was therefore evident that cooperatives were playing an increasingly significant part in the development of Southeast Sulawesi.

#### (h) Manpower and Transmigration

Population and age distribution determined the total available workforce. It was recognized that the total number of skilled workers in Southeast Sulawesi was still low. The census of 1980 showed that the workforce totalled approximately 619,685 people. This total included some school children and housewives. On the whole the level of education was still low.

Up to the financial year 1982/1983, 11,472 families (48,914 people) transmigrated to Southeast Sulawesi from West, Central and East Java, Yogyakarta, Bali, West Nusa Tenggara and South Sulawesi.

#### (i) Public Housing

In order to meet ever-increasing housing needs, the Government attempted to build cheap public housing during Pelita III. The number of houses built during this period was 747 houses. The Social Department was

also involved in building cheap houses - for people always on the move, and the Department of Transmigration, too, built houses to accommodate all the transmigrants.

(j) Education and Youth

Education developed very well during Felita III, and educational facilities continued to improve. All schools and universities grew in size and more teachers were taken on. However, the improvement in facilities was still not able to match the rapidly increasing numbers of school children seeking higher levels of education.

Table 3.22.

The Growth of Schools, Teachers and Pupils  
1978/1979 - 1982/1983

Type of School	Number of Schools	Number of Teachers	Number of Pupils	Average		
				Teachers per School	Pupils per School	Pupils per Teacher
<b>Elementary</b>						
1978/1979	939	3,834	138,628	4	148	36
1979/1980	939	4,680	156,906	5	167	34
1980/1981	1,091	5,353	174,916	5	160	33
1981/1982	1,193	5,688	190,840	5	160	34
1982/1983	1,313	6,843	214,661	5	163	31
<b>Junior high</b>						
1978/1979	78	885	20,621	11	264	23
1979/1980	86	1,133	22,264	13	259	20
1980/1981	81	1,205	26,792	15	331	22
1981/1982	87	1,601	31,242	18	359	20
1982/1983	126	2,178	37,037	17	294	17

(Continued) .....



Type of School	Number of Schools	Number of Teachers	Number of Pupils	Average		
				Teachers per School	Pupils per School	Pupils per Teacher
Continued ..	..	..	..	..	..	..
Senior high	1	1	1	1	1	1
1978/1979	30	672	9,269	23	309	14
1979/1980	17	520	10,345	31	609	20
1980/1981	29	664	12,386	23	427	19
1981/1982	31	736	14,475	24	467	20
1982/1983	43	966	17,125	22	398	18

Source : Regional Office of the Department of Education and Cultural Affairs, Southeast Sulawesi.

Non-formal and out-of-school education also improved, though supporting facilities like sports facilities and buildings were lacking. Southeast Sulawesi was just beginning to be put on the sports map of Indonesia and even on the world map of sport, through the efforts of youth and sport organizations. Scouting activities, too, were being developed at all levels of education.

#### (k) Health and Family Planning

Health services were just beginning to have an impact on the community. Both the quality and quantity of medical facilities was increased. In 1978 there were ten

hospitals spread over 4 districts. By 1982 this number had increased to 13 hospitals :

- Buton district : 3 hospitals
- M u n a district : 1 hospital
- Kendari district : 7 hospitals
- Koiaka district : 2 hospitals

In an effort to improve rural health services , community health centres and auxiliary health centres were constructed. In 1978 there were 109 health centres. By 1982 there were 179 health centres. In 1982 there were two specialist doctors, 57 general practitioners, 7 dentists, 78 midwives, 294 nurses and 743 other people involved in medicine.

Family Planning services and information were increased in an effort to improve family planning in Southeast Sulawesi. In 1982 there were 60 family planning clinics and about 16,840 participants. Contraceptive devices included the coil, contraceptive pill, and condom. 75.43 % of all participants used the pill.

#### (1) Investment

Domestic investment in Southeast Sulawesi up to the end of Pelita III totalled Rp 46,967,310,683.50 and foreign investment totalled Rp.6,946,684,750. This investment went into fishing, sawmills, plantation crops, sailing, mining and electricity.

Table 3.23. The Growth of Domestic Investment  
In Southeast Sulawesi 1982-1983.

No.!	Name of Company !	Location !	Type of !	Work- !	Capital(₦)
!	!	!	Company !	force !	!
1.!	PT. PERKEN !	Mata, Ken !	Fishing !	152 !	868468595 !
!	!	dari. !	!	!	!
2.!	PT. DARMA SAMUDRA !	Langiba- !	Fishing !	500 !	4161570150 !
!	FISHING INDUSTRY !	jo, Kdi !	!	!	!
3.!	PT. MINA FAJAR !	Kendari !	Fishing !	213 !	3417530000 !
!	RAHARJA !	!	!	!	!
4.!	PT. CAKBLANG PITU !	Kendari !	Fishing !	68 !	6800000000 !
5.!	PT. MARANNU BIN- !	Wolo, Ko- !	Sawmill !	250 !	1472000000 !
!	PANG KEJORA !	laka. !	Industry !	!	!
6.!	PT. ANGKUTAN LE- !	Sultra !	Sailing !	115 !	1062250000 !
!	PAS PANTAI !	!	!	!	!
7.!	PT. SEA HORSE !	Sultra !	Sailing !	203 !	1797780000 !
!	TAWING SHIPPING !	!	!	!	!
8.!	PT. HASIL BUMI !	Kolaka !	Timber !	- !	9712900000 !
!	INDONESIA !	Utara !	!	!	!
9.!	PT. GEMINI TIMBER !	Wolo, KO- !	Timber !	96 !	999168302 !
!	JACK !	laka !	!	!	!
10.!	PT. GOLA MOMAMI !	Unaaha, !	Plantati- !	131 !	2436389150 !
!	!	Kendari !	on crops !	!	!
11.!	PT. ANEKA TAM- !	Pomalaa, !	Mining !	676 !	14240154637 !
!	BANG !	Kolaka !	!	!	!
12.!	PT. PERUM LISTRIK !	Sultra !	Electri- !	- !	- !
!	!	!	city !	!	!
! T O T A L !					!2414 !46967310684 !

Source : Statistics office, Southeast Sulawesi.

Table 3.24. The Growth of Foreign Investment  
In Southeast Sulawesi 1982/1983.

Name of Company	Location	Type of Company	Workforce	Capital (Rp)	
				Foreign	Indonesian
PT. KAPAS	Pungga-	Cotton	107	1743000000	1162000000
INDAH IN-	luku,	Estate			3610499413 <sup>+) </sup>
DONESIA.					
PT. DWI	Raha,	Sawmill	75	125000000	62500000
MUTZUMI	Muna			(US\$ 200000)	(US\$ 100000)
					375000000 <sup>+) </sup>
					(US\$ 600000)
PT.INDONE-	-	Fishing	186	500000000	-
SEA-CADANA!				(US\$ 800000)	
SEA-FOOD					
PT. TARA	-	Fishing	483	4578648750	-
FOSRA				(US\$ 7325838)	
TOTAL				16946648750	9290306913

Note : +) Loan.

### 3.1.4.2. Problems encountered.

#### 1. Business Expansion

- Lack of experience and know-how on the part of entrepreneurs concerning the way to run a business.
- Lack of marketing outlets for products, because of a local shortage of consumers. Unsatisfactory transportation. No effective network of marketing information for entrepreneurs from low-income groups.

#### 2. Exploitation of Natural Resources and the Environment

- Unsatisfactory housing and living conditions, especially in villages
- Shortage of workers
- Unsatisfactory environmental health
- Shortage of skilled manpower
- Urban and rural administration left much to be desired.

#### 3. Agriculture and Irrigation

##### (a) Food crops

- not all existing irrigation functioned properly
- marketing of agricultural produce did not work well because of a poor communications network.
- low-production achieved
- Existing agricultural land not used effectively.

(b) Animal husbandry

- Livestock population low in comparison with available land
- Livestock diseases still not fully under control
- Livestock farming still on a small scale.

(c) Plantation crops

- Land capability still not fully understood, so it was difficult to know which crop was best to plant.
- Low productivity, on the whole
- Lack of capital with which to carry out more intensive and larger-scale farming.

(d) Fishing

- Equipment still rudimentary and limited in quality and quantity
- Marketing chain still very long, so fishermen and fish-farmers received a low-price for their fish. Moreover, the base selling price would be very high if marketing were to be extended to include inter-island and export trade, since there was a free delivery clause written in.
- Limited capital available.

(e) Forestry

- The problem of land use administration for forest reorganization, transmigration siting, village resettlement and agricultural land was still unsolved.
- Large areas in critical condition, and swordgrass.

#### 4. Food and Nutrition

- Lack of knowledge, particularly in villages, about healthy and nutritious foods.
- Too little practical guidance was given.
- Offices and institutions did not work together effectively and for the common good.

#### 5. Industry

- Most industry was concentrated in towns, whereas most people lived in villages.
- Unfavourable climate for industry.
- Managerial, financial, marketing and general ability lacking.
- Limited equipment and infrastructure hampered the setting-up of new industries.
- Regional potential was not fully understood, so it was hard to establish a priority of industries to be set up.

#### 6. Mining and Energy

- There was no official record of natural resources and minerals
- There was no definition of what balance there should be between environmental protection and mining exploitation.
- Available electricity fell short of community needs.

- The cost of supplying electricity and drinking water to the consumer was too high, as was the rate paid by the consumer
- Limited clean water was available.

(7) Communications

- Roads and public bridges were still not up to standard.
- Shortage of asphalt roads.
- The shallowing of ports and lack of facilities to speed up loading and unloading vessels.
- Limited dockside facilities.
- Unsatisfactory passenger safety arrangements at Wolter Monginsidi Airport.
- The airport could only handle Fokker F-28s.
- Limited telephone network.

(8) Trade and Cooperatives

- Shortage of warehouse space for backing up trade.
- Unsatisfactory equipment and infrastructure.
- Ignorance on the part of the community about the benefits of cooperatives.
- Shortage of capital for cooperatives, which relied on members depositing their money there.
- There was no model formula for running cooperatives, which could be applied to cooperatives in Southeast Sulawesi.



(9) Manpower and Transmigration

- There was a large productive workforce not being used effectively.
- Sparse population widely scattered.
- There were delays and problems encountered in working land available for transmigration and settlement areas.

(10) Public Housing

- Land use administration was haphazard.
- Rural public housing construction was carried out without paying due heed to health and environmental requirements.
- Low income prevented most people from building houses.
- The down-payment on public housing and installments paid thereafter were felt to be too high for people of average income to be able to afford.

(11) Education and Youth

- Shortage of buildings, teachers and other educational facilities.
- Unequal distribution of teachers and buildings.
- Shortage of sports facilities.
- Shortage of trainers.

(12) Health and Family Planning

- Shortage of medical staff and facilities, particularly in rural areas.
- Shortage of medical equipment for operations and specialist doctors.
- Unequal population distribution.
- Large numbers of couples of child-bearing age.
- Local population growth exceeded the national average.

(13) Investment

- Lack of motivation to indulge in large-scale investment.
- Unfavourable climate for starting up a business.
- Many investment opportunities not taken up.
- No written data or record of economic potential.
- No research had been properly conducted in how to invest more efficiently.

(14) Regional Income

- Per capita income still low.
- Different sectors contributed different amounts towards income (c. 74% came from agriculture).

### 3.1.4.3. Evaluation of Pelita III

Even though developmental targets in Pelita III were generally achieved, these still fell well short of community needs. Southeast Sulawesi still depended on other regions at the end of the five-year period. Rice, sugar, kerosene, flour, soap and various other goods still had to be imported.

Rice production was still very low bearing in mind the potential area of land available for food crop cultivation. Existing irrigation still did not function as it should have. In general, it can be said that agricultural production in Southeast Sulawesi at the end of Pelita III was still low.

Transportation and the communications network were not sufficient to be able to support economic activity like production and trade. Shipping lines in Southeast Sulawesi were still uneconomical. In fact, until the end of Pelita III, air, sea and land transport did not meet community needs.

Only small-scale and miscellaneous industries developed during Pelita III. Industry contributed too little to the gross regional income of Southeast Sulawesi. There were no industries as yet that could visibly boost agricultural production.

There was a dearth of educational facilities from primary education through to tertiary education, resulting in an inability to accommodate all those seeking an education in schools and universities.

More serious attention in later years needed to be paid to catering for the needs of the people. There was a shortage of sports facilities and places to house youth activities. More trainers and youth workers were needed.

Medical facilities and specialist doctors were greatly lacking throughout Pelita III. Many people were unsure of local hospital facilities, and most patients had to go to Ujung Pandang or Java for medical treatment.

In order to promote development during Pelita IV, considerable funds are needed from both public and private sources. Available resources must be exploited more intensively while not forgetting about environmental preservation and existing cultural values in the community.

Pelita IV will have to be capable of penetrating the isolation of the traditional life many people lead. Business, industries, agriculture, plantation crops and other undertakings will have to be run professionally, and must be integrated, in order to achieve common aims.

### 3.1.5. Fourth Five-Year Development Plan (Pelita IV)

#### 3.1.5.1. Problems

Problems still being encountered at the end of Pelita III and therefore needing to be solved during the coming Pelita IV include :

- (1) An unsatisfactory level of production and productivity in a number of sectors.
- (2) A shortage of data and information about soil type, fertility and potential in Southeast Sulawesi.
- (3) Existing irrigation systems only partially operational; some farmers don't know how to use irrigation properly nor how to maintain technical irrigation systems.
- (4) The economic structure was disproportionately weighted in favour of agriculture, in which sector about 74,45 % of the population worked.
- (5) In terms of number and quality, the workforce was still not able to match the demands of development needs.
- (6) More needed to be done in terms of improving, putting in order and maintaining the quality of the regional government apparatus.
- (7) The general level of education in the Province was still low.

- (8) The communications infrastructure could not fully cope with the increase in volume of goods and passengers.
- (9) There was still a lack of community awareness about co-operatives, a shortage of available capital and lack of knowledge about how to run co-operatives.
- (10) Rural development needed to be more organized.
- (11) The general level of health was still low and medical facilities were still lacking.
- (12) The environment in several regions was no longer able to support production (quoted from A blueprint For Regional Development in Southeast Sulawesi)

#### 3.1.5.2. Aims and objectives

In order to help achieve the national targets and aims of the Fourth Five-Year Development Plan, the specific aims and objectives of Pelita IV in Southeast Sulawesi are :

- (1) To raise the standard of living, the level of education and the welfare of the whole population in a fairer and more equal way.
- (2) To establish a firm base for future development.

The above aims may be expressed in a more concrete way, as follows :

- (1) To raise production and productivity in those sectors working towards the raising of per capita income.
- (2) To create as many jobs as possible, both in public and private enterprise.
- (3) To increase the contribution of the non-agricultural sector to regional income.
- (4) To facilitate development through improvement of such supporting facilities as communications, storage, availability of capital and work skills.
- (5) To achieve equality of development and developmental results for all levels of society throughout Southeast Sulawesi.

In order to achieve the aims of development more rapidly and more completely, a regional policy was established during Pelita III. The same policy will be continued throughout the course of Pelita IV.

#### 3.1.5.3. Development Targets

During Pelita IV Southeast Sulawesi will see a continuing and augmenting of a developmental trilogy, namely - equality of development and results leading to the creation of social justice for all people; rapid economic growth; and healthy and dynamic national stability. These elements of the development trilogy are inter-connected and accordingly need to be developed in such a way that

each progressively strengthens the other. As far as the first element of the development trilogy is concerned—namely that of equality of development and results, increased attention will be paid to eight separate and distinct equalities, so that social justice as a whole may be given pride of place in Pelita IV.

The eight equalities are :

- equality of meeting the basic needs of most people, particularly food, clothing and housing.
- equality of opportunity of obtaining an education and health services.
- equality of distribution of income.
- equality of work opportunity.
- equality of business opportunity.
- equality of participation in development, particularly for women and the younger generation.
- equality of development distribution throughout Southeast Sulawesi.
- equality of opportunity of obtaining justice.

With increased healthy and dynamic national stability in the political, social and economic sectors, these eight equalities will be more easily achieved.

Instability will hamper development. Accordingly, the targets of Pelita IV development in Southeast Sulawesi must be based on the development trilogy, as follows :



- Agriculture

- (a) Production must be increased in order to raise farmer income, meet the needs of industry, boost exports and create new jobs. This target can be achieved through a programme of intensification, extensification, diversification and rehabilitation.
- (b) Food production must be increased with the aim of achieving self-sufficiency. This may be done in several ways - by carrying out a special operation, by turning unirrigated land to agricultural use, improving post-harvest processing, and marketing produce.
- (c) Livestock production must be raised to meet the need for animal protein and to match the expanding agricultural workforce. The private sector should be expanded.
- (d) Public estate crop production must be increased by improving those Project Management Units dealing with crops that showed promise during Pelita III.
- (e) Fish hauls must be increased by adopting and improving traditional fishing methods. Aquaculture will be increased.
- (f) Development in the forestry sector means re-

habilitating land in a critical state and preserving natural resources by means of a programme of reforestation and afforestation

(g) Irrigation, roads and bridges will continue to be built in order to support agricultural development.

(h) Agricultural extension work and education will be increased.

Gross rice production during Pelita III went up by an average of 10.63 % per annum from 49,689 tons in 1978 to 74,435 tons in 1982. Despite this increase, rice productivity per hectare remained extremely low - the figure in 1982 was 19.94 quintals/ha, which was almost the same as the 1978 figure of 19.92 quintals/ha.

If the 1982 gross rice production figure of 74,435 tons is converted to the net figure (after removing plant debris and milling), the figure becomes 38,706 tons. If we then add the total quantity of rice imported from other regions by the Southeast Sulawesi logistics depot (19,654 tons), the figure becomes 58,360 tons. From this we can obtain the annual per capita rice consumption figure of 61.87 kg, which is a daily per capita total of 171.89 grams. It is intended during Pelita IV that this figure will be raised annually by 9.73 %, thus reaching a total daily consumption of 300 grams by the end of the same Five-Year

#### Development Plan.

Corn production went up from 57,528 tons in 1978 to 60,476 tons in 1980, but then fell to 55,229 tons in 1982. This fluctuation was due to unscientific methods of cultivation. However, it is intended that corn production will be increased during Pelita IV to meet public staple food requirements.

Cassava production went up from 157,597 tons in 1978 to 196,245 tons in 1982 - an annual average rise of 5.64 %. It is hoped that production will continue to rise throughout Pelita IV.

Soybean production fluctuated during Pelita III. From 1978 to 1982, consecutive totals obtained were 356 tons, 1,091 tons, 889 tons, 1,424 tons and 327 tons. This fluctuation was due to the fact that farmers had only just been introduced to this new food. However, it is intended that soybeans will be grown on a large scale during Pelita IV using the NES system (Nuclear Estate and Smallholders).

Vegetable production went up from 165,101 quintals in 1980 to 190,248 quintals in 1982, an annual average increase of 7.34%. It is hoped that production will increase by 10.69% annually throughout Pelita IV, reaching a total production of 350,000 quintals by the end of the five-year period. Fruit production went up from 255,564 quintals in 1980 to 567,573 quintals in 1982, an annual average increase of 47.03%. It is hoped that the same rate of increased

production will be maintained throughout Pelita IV, leading to a production figure of 6,218,149.25 quintals by the end of the five-year period.

Cattle production went up from 26,097 in 1978 to 60,147 in 1982 - an annual average increase of 23.21%. This increase must at the very least be maintained until the end of Pelita IV merely to satisfy animal protein consumption requirements; which means a population of 210,421 cattle by the end of the five-year period. However, cattle do not only serve as an extra source animal protein, but also as livelihood for the expanding workforce, especially in the agricultural sector. For this reason, a two-fold increase is needed, meaning a cattle population of 420,842 by the end of Pelita IV.

Water buffalo population went up from 8,837 in 1978 to 11,929 in 1982, an annual average increase of 7.78 %. This increase will, it is hoped, be maintained throughout Pelita IV, leading to a population of 18,699 water buffalo by the end of the five-year period.

Freerange chicken population went up from 706,625 in 1978 to 1,145,646 in 1982 - an annual average increase of 12.85 %. It is hoped that the same rate of increase will be maintained throughout Pelita IV, leading to a population of 2,366,246 freerange chickens by the end of the five-year period. In the meantime, the relatively new ready-

to-cook chicken industry will be expanded.

Duck population went up from 53,470 in 1978 to 84,024 in 1982 - an annual average increase of 11.96 %. This rate of increase will, it is hoped, be maintained throughout Pelita IV, leading to population of 165,493 ducks by the end of the five-year period.

Goat population went up from 30,406 in 1978 to 49,005 in 1982 - an annual average increase of 15.76 %. It is hoped that this rate of increase will be maintained throughout Pelita IV, leading to a population of 166,187 goats by the end of the five-year period.

Fresh fish production in 1979 was 40,978 tons. This figure fell to 25,416 tons in 1980 and rose to 29,081 tons in 1981 - an overall annual average decline of 18.71 %. The sharp fall in production in 1980 was caused by the decision to abolish the tiger seine (pukat harimau) method of fishing. However, in order to meet fish protein requirements, it is intended that fish hauls should increase annually by about 20 % during Pelita IV, leading to a total haul of 104,202 tons of fish by the end of the five-year period. This increase will be accompanied by the use of appropriate technology to raise the fisherman's income.

#### - Industry

(a) Industrial development policy aims to increase production, raise income and create jobs in order.

to bring about a more evenly-balanced economic structure in Southeast Sulawesi.

- (b) Industrial development must be linked to agricultural development. In other words, the establishment of new industries in Southeast-Sulawesi is a result of the expansion of industries handling agricultural produce.
- (c) The organizing and developing of small - scale and handicraft industries will receive more serious attention, particularly in the matter of raising quality of production and thereby creating a larger market for goods produced.
- (d) A more favourable business climate must be created.

In carrying out industrial development, appropriate types of industry and appropriate locations, fitting in with regional development priorities and needs, will be selected, so that these industries will really be of benefit and will play an important part in solving urgent problems in the areas in question.

As part of an effort to support increased production, increased income and development for all, a number of projects will be set up to improve communication facilities and services. These projects will primarily be located in areas where production is centered, areas of high-

potential and isolated areas.

- Communications

- (a) An integrated transport system will be created to speed up transportation and make it more efficient.
- (b) Land, sea and air communications will continue to be improved, especially in areas of production and marketing centres.
- (c) Telecommunications and post office development will concentrate on extending the network and improving the quality of both urban and rural services.

In the case of sea communications, additional wharves and docking areas will be built at strategic sites in coastal areas. In addition, measures will be taken to improve safety facilities for all shipping.

In the case of land communications, transport will be increased. Buses will serve villages in areas of high potential. Car ferries will ply between Kolaka and BajoE, Torobulu and Tampo, Waara and Bau-Bau, which will mean that it will be possible to travel overland from Kendari to Bau-Bau and on to remote areas as well. In this way, communications between Kendari and district and sub-district towns and even villages will become good. Development in one area will be felt in other areas, and-

vice versa. Equality of development will thus be achieved during Pelita IV and, at the same time, transportation will become more speedy and efficient.

- Trade

- (a) Efforts to raise economic production must be accompanied by increased control of trading and business administration in order to speed up the movement of goods.
- (b) Trading systems and the climate in which trading takes place must be improved.
- (c) Increased attention will be paid to improving the ability, dedication and sense of responsibility of entrepreneurs and contractors, since they, too, have a role to play in development.

Inter-regional trade will increase and regional income will go up. Also, consumers and producers will be able to get the goods they need at relatively low prices. With the increase in number of businesses and, thus, production, the increase in income and consumption, jobs, too, will increase. Improved marketing and trading will greatly assist regional development efforts.

- Cooperatives

- (a) Cooperatives, and in particular village cooperatives, will play a more important role and become more influential.



- (b) Extension-work and education in cooperatives will be increased with a view to improving managing skills.

Cooperatives will contribute more to economic development in a number of sectors and will operate over a larger area. This increased importance and improved performance whereby the emphasis is placed on initiative and self-help, alongside improved skills, managerial ability and capital provided by members, will ensure that cooperatives really do become a vehicle for increasing the welfare of great numbers of people.

Cooperatives will be organized in such a way that members play an increasingly important role. In addition, primary cooperatives, especially village cooperatives, will be given special facilities to enable them to compete more effectively, though they will not be permitted to become monopolies. In order that cooperatives become more integrated in the community, cooperative education will be increased in both formal and non-formal educational establishments.

- Manpower

- (a) There will be more job opportunities and equal job opportunities for all, in accordance with developmental needs.
- (b) Income will be increased. Working regulations and conditions, industrial relations and health-

considerations will all receive extra attention from the Government with a view to their improvement.

(c) Education and upgrading of work skills will be increased with a view to creating an educated and skilled workforce.

The workforce in 1980 totalled 278,170 people, of which 273,494 people (98.32 %) were actually employed, and the remaining 4,676 (1.68 %) were looking for work. The number of people looking for work will increase year by year, and it is expected that at the beginning of Pelita IV about 5,289 people will be in such a position. By the end of the five-year period this total will have risen to about 7,786 people. It is hoped that development in the economic sector will provide work for as many jobseekers as possible, and the need for providing more jobs during Pelita IV is indeed considered paramount. To this end, a number of general policies need to be drawn up concerning, for example, education in work skills, education that can create work, industrial development, improvement of the infrastructure, the establishment of a scale of investment priorities, finance and credit, and the choice of appropriate technology to be used. In addition, as part of the effort to create more work, a special programme will be set up which, amongst other things, will provide more

aid for development and labour-intensive projects in villages.

- Transmigration

- (a) Existing settlements will receive increased attention and guidance, with a view to the attainment of village self-sufficiency.
- (b) The transmigration programme will continue, with a view to opening-up new areas of high potential hitherto not set foot on.

Transmigration to Southeast Sulawesi will continue to be encouraged and supported, not only as means of solving the population problem but also very much as a means of increasing human and manpower resources and thereby assisting regional development. It is therefore hoped that planned economic growth during Pelita IV will take place.

- Mining

- (a) Production will be increased and new importance will be given to increased exploitation of existing mines.
- (b) Attention will be given to seeking out and exploiting hidden potential, so that income is increased and more jobs are created.

In 1980 the Mining sector contributed significantly to gross regional income, namely 12.15 %. The workforce totalled 3,142. In Pelita IV it is hoped that an even

higher contribution will be made, so that a more balanced economic structure is achieved in Southeast Sulawesi. Accordingly, production will be increased and efforts will be made to seek out new markets for mining products.

- Energy

- (a) Emphasis will be placed on improving electricity supplies, now that electricity is regarded as a basic need both for individual consumers and for industry.
- (b) The possibility of exploiting village energy resources will be looked into.

- Exploitation of natural resources and the environment

- (a) Natural resources like soil, water, flora and fauna will be investigated and a list will be drawn up with a view to assessing their potential for assisting development.
- (b) Development will continue whilst paying heed to preserving the harmony and delicate balance of the environment.

- Education

- (a) Efforts will be made to increase the number of pupils and students that can be accommodated in primary and secondary schools and in universities and colleges.

- (b) Attention will be paid to improving the quality of education. To this end, teachers will be better trained.
- (c) Vocational education and courses in various skills will be increased to meet the demand for a workforce capable of assisting development.
- (d) Non-formal education will be increased.
- (e) Sport and physical education will be increased.
- (f) In order to preserve regional culture and contribute to the growth of national culture, art education (including music and dance) will continue to be given.

Since Pelitas I, II and III, numbers of schools, teachers and pupils have continued to grow annually. In 1978/1979, there were 939 elementary schools. Four years later this figure had grown to 1,313 - an annual average increase of 8.74 %. Over the same period, the number of teachers increased from 5,834 to 6,843 - an annual increase of 15.58 %. Finally the number of pupils increased from 138,528 to 214,661 - an annual average increase of 11.55 %.

Junior high schools also increased in number, from 78 in 1978/1989 to 126 in 1982/1983 - an annual average increase of 12.74 %. The number of teachers rose, over the same period, from 885 to 2,178 - an average annual increase of 25.25 %. The number of pupils increased from 20,621 to

37,073 - an average annual increase of 15.77 %.

In 1978/1979 there were 30 senior high schools. Four years later this figure had risen to 43 - an average annual increase of 9.42 %. Over the same period, the number of teachers increased from 672 to 966 - an annual average increase of 9.5 %. The number of pupils rose from 9,269 to 17,125 - an annual increase of 16.59 %.

The ratio of pupils to teachers during Pelita III was 34 : 1 in elementary schools, 20 : 1 in junior high schools, and 18 : 1 in senior high schools. At the beginning of Pelita IV there were, it was estimated, 237,500 elementary school pupils, of which 84 % are aged between 7 to 12 years old and the remainder either over-age or under-age. Compulsory education has just come into effect. In order to give an education to elementary school pupils of all ages and to carry out a programme of compulsory education, to role of small schools, adult literacy programmes, and special schools (schools for the physically and mentally handicaped) will increase.

In order to cope with the increase in numbers of elementary school pupils, an extra 5,331 teachers 596 schools and 550 classrooms will be needed. In addition, rooms should be made available for library space and books obtained. Tables and chairs will be needed for pupils, also sports equipment and various items of miscellaneous.

equipment.

A number of rooms will be needed for non-academic activities like handicraft, and so on. During Pelita IV emphasis in elementary education will be placed on compulsory education, raising the quality of education, equal and increased opportunity to study, more efficient and effective management of education and the development of the school as a centre of culture.

At the beginning of Pelita IV there will be an extra 8,261 junior high school pupils, for whom an extra 275 teachers will be needed. The present figure of 50 % acceptance in junior high schools of pupils successfully completing elementary school will rise to 90 % by the end of Pelita IV. During the Five-Year period, an extra 46,761 pupils will be accepted by junior high schools. 40 new schools and 730 new classrooms will be needed. 120 rooms will have to be renovated for classroom use, 75 rooms will be needed for library use and 50 rooms for school science laboratories. 1,951 extra teachers will be required - 1,751 teachers for state schools, and the remainder for private schools. Schools will be provided with the junior high school national curriculum, individual subject curricula, textbooks, library books, maths equipment, non-academic subject equipment, sports, music and other equipment.

In senior high schools, the present acceptance figure of 92.6 % of pupils successfully completing junior high school will rise to 95 % by the end of Pelita IV. The number of pupils will increase during the same period from 14,992 to 30,821 - an increase of 17,697 pupils over the course of five years. To cope with this increase, 12 new schools, each containing 9 classrooms, will be needed. In addition, 334 extra classrooms and 1,060 teachers will be required. Textbooks, libraries, equipment for vocational training, laboratories, rooms for practical work and other equipment will also be needed.

During Pelita IV, technical and vocational senior high schools will concentrate on increasing the quality and relevance of subjects studied for regional developmental needs. During Pelita IV there will be an extra 3,150 pupils in such schools. The acceptance figure of those pupils successfully completing junior high school will rise from 19,7 % to 23,7 % by the end of the five-year period. An extra 209 teachers will be needed (89 for technical high schools, 72 for economic high schools and 48 for home economics high schools). Bearing in mind the fact that Southeast Sulawesi is an area with quite a high agricultural potential, it is planned that secondary education in agricultural technology will be given during Pelita IV.



- Youth

Youth will continue to be educated with a view to producing the leaders of tomorrow; leaders to bear the yoke of developmental responsibility and leaders to carry on the national struggle, living by the Five Principles and the 1945 constitution. Youth activities and organizations will include scouting, the National Committee for Indonesian youth, "Karang Taruna", school clubs and organizations, sports clubs and organizations. Many new facilities will be provided. Also, the role of young people in development will be increased by involving the younger generation in development work.

Young people will be encouraged to become involved in private enterprise development, including small - scale industry, home industry and volunteering. In addition, young people will be encouraged to take a greater part in agricultural development and rural development. They will be encouraged to become the young leaders of cooperative development and to work in the field of agricultural extension.

Young people will also be encouraged to take a greater part in spreading practical information about ways of improving nutrition. They will also take part in exploring ways of improving and changing people's diet.

It is also hoped in the realm of family planning that

the young mothers of tomorrow will pioneer a programme of family welfare. And it is further hoped that youth will be involved in nature and environmental conservation through organizations like nature lovers and tree-planting groups, amongst others.

- Health

- (a) Environmental hygiene will be improved, leading to better health.
- (b) Rural and urban medical facilities will be improved
- (c) More doctors and nurses will be provided, particularly in specialist fields.
- (d) Medical services will be improved and an effort will be made to keep them inexpensive.

During Pelita III a number of programmes were set-up in the medical sector. Results have often been encouraging. The control of malaria programme succeeded in reducing cases reported to 10.13 %. By the end of Pelita IV it is hoped that the figure will have fallen to 1.83 %. The incidence of microfilaria rate, at present an average 15.45% may be reduced by treatment to 3.19 %. The average annual increase in cases reported of people being bitten by dogs is 16.15 %, however the death rate of rabies has fallen to 0,41 %. The TB control programme has been successful, with 85,1 % of cases reported recovering fully. Although many cases of cholera and gastro enteritis were

still being reported during Pelita III, the death rate has been kept down. In 1982 the death rate in the field was 9.92 % and, in hospitals, 3.009 %.

Results have been satisfactory considering the lack of medical facilities, but further improvements are still needed. The number of hospitals between 1978 and 1982 rose from 10 to only 13 - an increase of 6.78%. The number of hospital beds rose over the same period from 374 to 450 - an increase of 4.73 % per annum. The ratio of hospital beds to people in 1982 was 0,45 hospital bed per 1,000 inhabitants. There were 45 community health centres, which was enough for all the existing subdistricts. The number of subcentres rose from 67 in 1979 to 132. In 1982 there were 67 doctors registered - 3 specialists, 57 general practitioners and 7 dentists. The ratio of doctors to people was 0.07 doctors per 1,000 inhabitants. The total number of medical staff, including doctors, was 743. Of these, 436 (58.68 %) were paramedics and one (0,13 %) was a radiologist.

In 1982, tuberculosis of the lungs was the most common infectious disease, with 7,885 cases reported (98.62%). In addition, 110 cases of cholera were reported (1.38 %). No cases of eltor were reported. The number of babies given BCG immunisation rose from 1,548 in 1979 to 11,406 in 1982, an average annual increase of 94.54 %.

In Pelita IV it is hoped that every D - class and C - class community health centre and hospital will possess its own laboratory. Community health centres must be equipped to carry out simple pathological and microbiological examination. D - class hospitals must, in addition to the above, also be equipped to carry out serological, immunological and toxicological examination. C - class hospitals must be equipped to carry out all of the above-mentioned and, in addition, cytological examination. Such hospitals must also be able to look after their own medical equipment and to service equipment belonging to D - class community health centres and hospitals.

During Pelita IV, improvements will be carried out at three district hospitals, bringing them up to D 2 standard, with 100 beds. The Provincial Hospital will be brought up to C 2 standard, with 250 beds. A D-class hospital (Kendari District Hospital) will be built in Unaaha with World Bank assistance.

Southeast Sulawesi is a malarial area. As part of a programme of prevention and control of malaria, 620,000 blood samples will be collected and examined during the course of Pelita IV. The same number of people will receive treatment for the disease, and 1,535,000 houses will be sprayed.

In addition, health education will be stepped up in a number of ways, including more information about health being made available and increased community participation and self-help in the health sector.

An effort will be made to improve both the quantity and quality of medical staff, with a view to providing more equal health service facilities for the community. Efforts will also be made to improve teams responsible for health education and training programmes, within the guidelines already set down, obtain more information from such programmes, provide sufficient staff for educational planning and supervision, and assess health education and training programmes.

- Population and family planning

- (a) The population age structure pyramid will be changed so as to be more in keeping with median age increase. Population and manpower distribution will be made more equal. Transmigration will continue to be used as a source of population growth, particularly in areas of promising potential.
- (b) Efforts will be made to reduce the birth and the death rates by means of increased use of contraceptives and improved health.
- (c) Efforts will be made to educate the community about the benefits of planning to have a small family.

(d) Population education will be increased. It will be aimed particularly at the younger generation.

Family planning in Pelita IV will aim to reduce the birth rate (CBR) to 22 o/oo, leading to a population growth of 1.3 %, if it is assumed that the death rate (CDR) will be 9 o/oo. In order for this aim to be realized, the family planning programme will have to recruit an extra 130,000 members over the five-year period. 23,000 people will have to become members in the first year, and thereafter there will have to be an annual growth in membership of 7.75%.

As well as seeking out members in new areas serious attention must be paid to education and guidance of members. At the beginning of Pelita IV there will be 25,000 active participants in family planning. This number will increase to 56,000 by the end of the five-year period. The level of prevalence will be 36 %.

- Housing and settlements

- (a) Simple houses will continue to be built and renovation of rural housing will continue to be carried out.
- (b) Attention will be given to improving the area surrounding settlements in the future.
- (c) Urban and rural clean water supplies will continue to be provided.

During Pelita III, attention was paid to public hous-

ing needs. Urban housing was provided by a programme of state housing construction, and needs were gradually met. Rural housing needs, including improved hygiene, were gradually met through a programme of housing renovation. Connected to this, too, was the programme of village resettlement, in which housing was given serious attention. Between 1979 and 1983, the village resettlement programme provided 747 houses in healthy, pollution - free surroundings. The programmes of urban state housing construction and rural housing renovation will continue during Pelita IV.

### 3.2. Population and workforce

Both population and the workforce are dominant factors in a country or region's development. For this reason, it is very important to be able to estimate future population and the future workforce. A population census is carried out once every ten years in Indonesia. The census takes three factors into account :

- (1) The fertility factor (birth rate)
- (2) The mortality factor (death rate)
- (3) The migration factor (population migration)

In order to be able to predict future population, the above-mentioned factors have been taken into consideration. The rate of population growth has been set at

3.14 % - this is the official rate for Southeast Sulawesi. A census was taken in 1980, so the figures for 1980 are real, whereas the figures from 1981 - 1990 are projected figures, as may be seen in Table 3.25.

The figures may be arranged into two distinct groups - workforce and non-workforce - by using the criterion of age classification. On the other hand, population growth is fixed at 3.14 %, irrespective of age. The criteria used by the Central Bureau of Statistics, Jakarta, for distinguishing workforce, from non-workforce are as follows :

0 - 9 age group - children

10 - 64 age group - productive workforce

65 + age group - non-productive workforce.

In accordance with the above classification, workforce statistics are as in Table 3.26. It can be seen from the table that the productive workforce made up an average 63 % of the total workforce, children averaged 34 % of the total, and the remaining non-productive workforce averaged just 3 % of the total workforce.



Table 3.25

Estimated population in Southeast Sulawesi (1981 - 1990)

Age (Years)	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
0 - 4	164,116	169,204	174,449	179,857	185,433	191,181	197,108	203,218	209,518	216,013	222,709
5 - 9	156,909	161,773	166,788	171,958	177,289	182,785	188,451	194,293	200,317	206,526	212,929
10 - 14	122,952	126,764	130,694	134,745	138,922	143,229	147,669	152,247	156,966	161,832	166,849
15 - 19	92,472	95,339	98,295	101,342	104,483	107,722	111,062	114,505	118,054	121,714	125,287
20 - 24	77,915	80,330	82,820	85,388	88,035	90,764	93,577	96,478	99,469	102,552	105,731
25 - 29	70,311	72,491	74,738	77,055	79,444	81,907	84,446	87,063	89,762	92,545	95,414
30 - 34	62,750	64,695	66,701	68,768	70,900	73,098	75,364	77,700	80,109	82,592	85,153
35 - 39	54,006	55,680	57,406	59,186	61,020	62,912	64,862	66,872	68,946	71,084	73,287
40 - 44	37,187	38,340	39,529	40,754	42,017	43,320	44,663	46,047	47,475	48,946	50,464
45 - 49	27,529	28,392	29,262	30,169	31,104	32,068	33,063	34,088	35,144	36,234	37,357
50 - 54	22,022	22,705	23,409	24,135	24,883	25,654	26,449	27,269	28,115	28,986	29,885
55 - 59	13,749	14,175	14,614	15,067	15,535	16,017	16,513	17,024	17,552	18,096	18,657
60 - 64	15,657	16,142	16,643	17,159	17,691	18,239	18,804	19,387	19,988	20,608	21,247
65 - 69	9,268	9,555	9,852	10,157	10,472	10,796	11,131	11,476	11,872	12,199	12,578
70 -	16,494	17,005	17,532	18,076	18,636	19,214	19,810	20,424	21,057	21,710	22,383
<b>T o t a l</b>	<b>943,337</b>	<b>972,500</b>	<b>1,001,732</b>	<b>1,033,815</b>	<b>1,065,864</b>	<b>1,098,505</b>	<b>1,132,972</b>	<b>1,168,092</b>	<b>1,204,304</b>	<b>1,241,637</b>	<b>1,280,130</b>

Source : Projected figures

1980 Population Census, Southeast Sulawesi Statistics office.

Table 3.26.

The projected workforce in Southeast Sulawesi (1980 - 1990).

Year	Age group			Total
	0 - 9	10 - 64	65 +	
1980	321,625	596,550	25,762	943,337
1981	330,977	615,043	26,560	972,580
1982	341,237	634,111	27,384	1,002,732
1983	351,815	653,768	28,233	1,033,816
1984	362,722	674,034	29,108	1,065,864
1985	373,966	694,929	30,010	1,098,905
1986	385,559	716,472	30,941	1,132,972
1987	397,511	738,681	31,900	1,168,092
1988	409,835	761,500	32,889	1,204,304
1989	422,539	785,189	33,909	1,241,637
1990	435,638	809,531	34,531	1,280,130

Source : adapted from table 3.26.

Rate of Growth : 3.1 %

### 3.3. Economic growth in Southeast Sulawesi

An important indicator of economic growth in every region is the Gross Regional Domestic Product. Therefore, in order to assess the rate of economic growth in Southeast Sulawesi, we must perforce know the Gross Regional Domestic Product of Southeast Sulawesi.

We may define " product " in two ways :

- (1) Product at constant prices
- (2) Product at current prices

" Product at constant prices " means changes in income which arise from changes in people's purchasing power. " Product at current prices " means changes in income caused by the value of the national monetary unit going down.

In presenting economic data about Southeast Sulawesi, both types of product must be taken into consideration. Basically, when calculated at constant prices , product follows the pattern established by the Central Bureau of Statistics, Jakarta, when it was decreed that the year 1975 should be used as a year for determining price norms.

The Gross Regional Domestic Product of Southeast Sulawesi is made up from eleven contributing sectors, which may be grouped into three principal sectors :

- (1) Agriculture
- (2) Industry
- (3) Service industries

In order that the contribution of each sector may be known, each will be considered separately. In this way, too, the growth rate of each sector may easily be established.

In the following table, data about the Gross Regional Domestic Product at 1975 prices are given.

It can be seen from Table 3.27 that the contribution made by each sector increased annually. In absolute terms, the figures went up, but not in the same proportion as the Gross Regional Domestic Product. This can be shown clearly by studying the product distribution percentage value of each sector. It can be seen that this didn't always go up, but also went down in certain years. The Gross Regional Domestic Product, on the other hand, always showed an increase from year to year. Respective increases, from 1976 to 1982, were 15.29 %, 12.33 %, 9.91 %, 3.90 %, 21.46, 10.62 % and 15.29 %. In individual sectors, through, the figures were variable.

The greatest increase in the Gross Regional Domestic Product was the 21.46 % increase recorded in 1980. The previous year, the lowest increase - 3.90 % - had been recorded.

Details of individual sector distribution percentages are given in Table 3.28. By looking at the Table 3.28 percentages, income distribution in each sec-

Table 3.27.

The Gross Regional Domestic Product of Southeast Sulawesi, by sector, at 1975 prices (Rp. million)

No.	S e c t o r	1975	1976	1977	1978	1979	1980	1981	1982
1.	Agriculture, Livestock, Forestry, Fisheries	16,980.95	19,745.67	21,819.28	23,292.58	24,908.19	27,808.95	32,689.75	36,741.55
2.	Mining and Excavation	7,892.17	9,867.00	11,480.83	9,379.64	8,727.78	8,195.49	6,746.39	7,844.34
3.	Industry	534.66	531.30	533.12	542.08	595.48	632.90	974.15	1,303.21
4.	Electricity and Drinking water	44.45	62.91	70.18	85.48	99.07	177.08	209.56	234.06
5.	Construction	516.15	554.35	558.57	567.23	617.61	1,804.94	1,889.98	1,940.40
6.	Restaurants, Trade and Hotels	4,384.84	5,032.89	5,436.62	5,942.48	7,669.76	7,153.12	8,142.77	8,696.76
7.	Transport and Communications	1,525.65	1,743.07	2,464.71	3,448.75	3,802.47	4,658.88	5,696.22	7,114.79
8.	Banks and Financial Institutions	50.23	117.33	229.17	321.73	436.30	569.83	827.17	1,017.13
9.	House rental	1,667.54	1,801.85	1,815.44	1,843.79	2,092.17	2,090.15	2,218.91	2,965.85
10.	Government	4,919.75	4,976.85	5,471.06	6,800.58	7,051.66	13,561.90	14,367.55	17,214.85
11.	Service Industries	274.86	299.81	338.30	353.48	382.72	474.17	496.28	540.69
Gross Regional Domestic Product		38,791,25	44,733,03	50,217,23	52,577,82	56,383,21	67,127,46	74,253,33	85,613,28

Source : Southeast Sulawesi Census and Statistics Office.

Table 3.28

Gross Regional Domestic Income percentages in Southeast Sulawesi, by sector, at 1975 prices (%).

No.1	S e c t o r	1975	1976	1977	1978	1979	1980	1981	1982
1.	Agriculture, Livestock, Forestry, Fisheries	34.78	44.14	43.45	44.30	44.18	41.43	44.02	42.92
2.	Mining and Exavation	20.35	22.06	22.86	17.84	15.48	12.21	9.08	9.16
3.	Industry	1.38	1.19	1.06	1.03	1.06	0.94	1.31	1.52
4.	Electricity and Drinking water	0.12	0.14	0.14	0.16	0.18	0.26	0.28	0.27
5.	Construction	11.37	11.25	10.82	11.30	13.60	10.66	10.97	10.16
6.	Restaurants, Trade and Hotels	1.33	1.24	1.11	1.03	1.10	2.09	2.55	2.27
7.	Transport and Communications	3.93	3.30	4.91	6.56	6.74	6.94	7.67	8.31
8.	Bank and Financial Institutions	0.13	0.26	0.47	0.62	0.77	0.85	1.11	1.19
9.	House rental	4.30	4.03	3.62	3.51	3.71	3.11	2.99	3.46
10.	Government	12.67	11.12	10.89	12.93	12.51	20.20	19.35	20.11
11.	Service Industries	0.71	0.07	0.67	0.60	0.68	0.71	0.67	0.63

Source : Adapted from Table 3.28

tor is easy to calculate, as is the contribution made by each sector over the years.

From Table 3.28, it may be seen that agriculture was a major contributor between 1976 and 1978, the figure never falling below 40%. In the eleven sectors mentioned above are grouped into three principal sectors, the figures (percentage contribution) become :

Agriculture	43.71 %
Industry	29.94 %
Service Industries	26.35 %

The tendency in the above sectors, over the last three years, has been that agriculture has maintained its growth rate, industry has declined and service industries have expanded.

As a comparison, the Gross Regional Domestic Product figures at current prices will now be given. The eleven contributory sectors remain the same.

It can be seen from Table 3.29 that the growth in 1976, 1977 and 1978 in the agricultural sector was very modest in comparison with other years.

In absolute terms the figures in the agriculture sector went up, but not in the same proportion as the Gross Regional Domestic Product. In the other sectors, figures went up as well.

Table 3.29

The Gross Regional Domestic Income of Southeast Sulawesi, by sector, at current prices  
(Rp.millions)

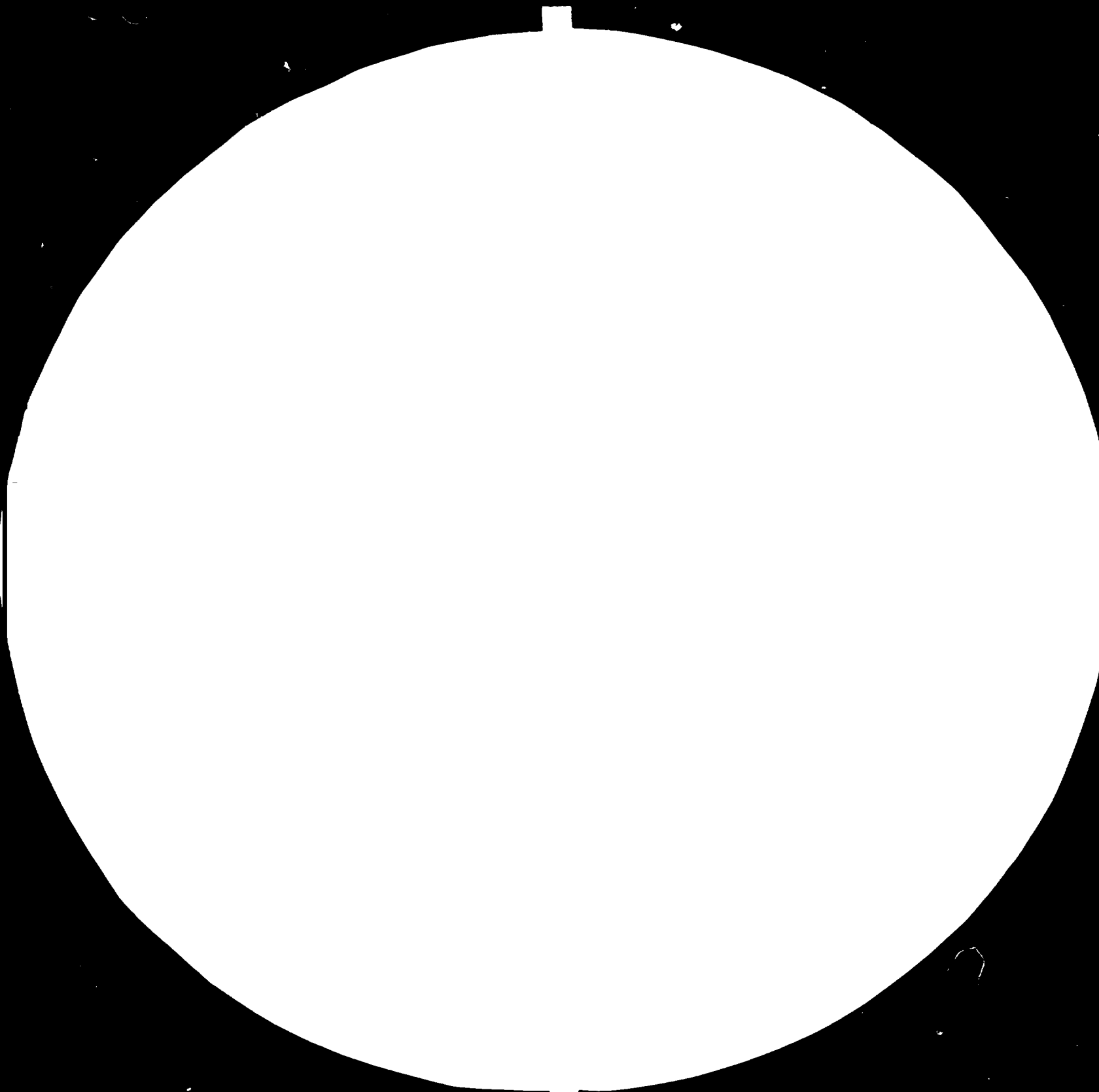
No.1	S e c t o r	1 9 7 5	1 9 7 6	1 9 7 7	1 9 7 8	1 9 7 9	1 9 8 0	1 9 8 1	1 9 8 2
1.	Agriculture, Livestock, Forestry, Fisheries	16,980.95	21,824.16	25,311.77	29,755.75	39,024.04	64,376.69	88,977.18	14,481.66
2.	Mining and Exavation	7,892.17	17,727.51	22,065.91	18,796.27	15,114.01	18,955.64	19,040.33	21,787.23
3.	Industry	534.66	617.71	636.24	686.25	965.84	941.81	1,869.05	2,457.71
4.	Electricity and Drinking Water	44.45	76.20	91.43	121.86	153.22	175.77	233.29	452.20
5.	Construction	516.15	573.45	489.99	937.16	1,912.12	5,811.52	6,739.54	7,462.63
6.	Trade, Hotels and Restaurants	4,384.84	5,789.63	7,376.29	8,919.41	11,242.82	16,703.29	21,018.89	27,871.85
7.	Transport and Communications	1,525.65	1,994.34	2,283.66	4,373.05	7,207.45	10,787.27	15,380.51	23,879.22
8.	Banks and Financial Institutions	50.23	134.55	271.61	404.39	574.93	1,311.41	1,834.61	2,593.54
9.	House rental	1,677.54	2,406.24	2,535.70	2,614.85	3,356.89	3,652.58	6,195.11	11,235.66
10.	Government	4,919.75	5,707.46	6,484.29	8,547.68	9,727.76	19,525.87	24,058.02	28,816.03
11.	Service Industries	274.86	349.16	414.17	447.97	501.21	582.33	730.28	1,324.42
Gross Regional Domestic Income		38,801.25	57,264.81	69,361.06	78,604.51	89,631.19	142,824.58	186,065.81	242,362.

Source : Southeast Sulawesi Census and Statistics Office.



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MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS  
STANDARD REFERENCE MATERIAL 1010a  
(ANSI and ISO TEST CHART No. 2)

The greatest increase in the Gross Regional Domestic Product - 39.25 % - was recorded in 1960. The next greatest increase was the 30.24 % recorded in 1952.

Percentage contributions of each sector towards the Gross Regional Domestic Product, at current prices, are given in Table 3.30.

Table 3.30

Gross Regional Domestic Income percentages in Southeast Sulawesi, by sector, at current prices  
(%)

No.	Sector	1975	1976	1977	1978	1979	1980	1981	1982
1.	Agriculture, Livestock, Forestry, Fisheries	43.74	40.92	37.21	39.36	43.51	45.07	47.82	47.24
2.	Mining and Excavation	20.40	27.52	31.81	24.86	16.85	13.27	10.23	8.99
3.	Industry	1.38	1.13	0.92	0.91	0.97	0.65	1.00	1.01
4.	Electricity and Drinking water	0.11	0.13	0.13	0.16	0.17	0.12	0.13	0.19
5.	Construction	1.33	1.06	1.23	1.24	2.13	4.07	3.62	3.08
6.	Trade, Hotels and Restaurants	11.28	10.60	10.63	11.80	12.54	11.69	11.90	11.50
7.	Transport and Communications	3.93	3.66	4.07	5.78	8.24	7.56	8.27	9.65
8.	Banks and Financial Institutions	0.13	0.25	0.39	0.53	0.64	0.92	0.95	1.07
9.	House rental	4.37	4.52	3.45	3.46	3.74	2.97	3.23	4.64
10.	Government	12.47	10.47	9.31	11.31	10.95	13.60	12.53	11.39
11.	Service Industries	0.71	0.64	0.51	0.59	0.50	0.40	0.35	0.54

Source : Adapted from Table 3.29.

Chapter 4  
PRODUCTION PER SECTOR

4.1. Food Crops

4.1.1. Resource bases of Agriculture.

4.1.1.1. Climate.

Climatic data play a vital part in regional development, since no agricultural venture can be undertaken without first taking due consideration of such data.

Southeast Sulawesi may broadly be divided into two agro-climatic zones, namely (1) that lying north of the 4<sup>th</sup> parallel (4°S), which may be classed as the wet zone. The rainy season lasts 7-9 months, beginning in November and ending in July, while the dry season lasts from August until October, (2) that lying to the south of the 4<sup>th</sup> parallel, which may be classed as the dry zone, having a monthly rainfall of less than 100 mm. In this zone, the dry season runs from June to November, and the wet season last from December to May. Some months may be extremely dry.

Since the number of weather stations in the Province is limited to just a few locations, it is not possible to give a complete picture of the climate. The total rainfall of a number of sites at varying altitudes is given below, in Table 4.1.

The annual rainfall on the west coast of mainland Southeast Sulawesi is about 2.000 mm. By using the Oldeman

Table 4.1.  
Total rainfall at 16 weather-stations  
in Southeast Sulawesi

No.!	Weather-station	! Length of time ! records kept (years)	! Altitude ! ( m )	! Rainfall ! (mm)
1.	Tambarona	10	550	2562
2.	Bungku	25	-	2022
3.	Salabangka	25	20	2637
4.	Sanggota	7	-	2103
5.	Wawotobi	18	35	1792
6.	Kendari	33	10	1600
7.	Tobea besar	24	3	1506
8.	R a h a	31	5	1621
9.	Tampunobale	5	430	1974
10.	Kolaka	35	-	2053
11.	Mowewe	22	224	1865
12.	Mala-mala	5	-	2569
13.	Larona	14	300	2959
14.	Soroako	24	400	2737
15.	Kawata	14	200	3013
16.	W a t u	33	5	2959

Source : Land survey of the Roraya, Tinanggea, Alangga, Palangga, Longkowale area, Southeast Sulawesi (Soil Research Institute, Bogor, 1979).

and Darmiyati method, a clear picture of rainfall distribution in different areas of Southeast Sulawesi may be obtained (see figure 1)

As well as rainfall, temperature plays a significant role, particularly in regard to evaporation and biological activity. The monthly temperature in Southeast Sulawesi varies between a low of  $19^{\circ}\text{C}$  and a high of  $33.1^{\circ}\text{C}$ .

#### 4.1.1.2. Hydrology and water management.

The level of water in the soil and river water surface fluctuation are determined by the hydrological cycle of the region in question and by the regional ecosystem of the river current. Besides giving information about water accumulation in soil, a knowledge of the water level also enables one to predict "run off" from the soil to rivers. The amount of water which accumulates and the quantity of "run off" depend very much on rainfall and rain intensity. According to Oldeman and Darmiyati's classification of the climate in 1977, the rainy season runs from December to July, and the dry season from August until November every year. There will therefore be a surplus of water in December to satisfy a plant's need for water, for December is also the month when rice and other crops are planted. If the rainy season is late, as is sometimes the case, there is generally still enough surplus water to permit planting twice annually.



#### 4.1.1.3. Soil and its uses

Land is paramount in agricultural development in Southeast Sulawesi, and extensive land is still available for use in such development (see figure 3). On the whole, soil in this region is dominated by yellow-red Podzolic, Mediteran, Litosol, Latosol and Alluvial soils locally, and by Regosol, particularly along river banks. In the Kolaka region yellow-red Podzolic, Latosol and Mediteran are to be found. The same soils, with the addition of Alluvial and Regosol, are to be found in the Kendari region. In islands of Muna and Buton, Mediteran and Latosol are found.

Southeast Sulawesi consists of two distinct areas - the mainland area and island area. The topography of the province is hilly or mountainous, in general. Only the central area is flat or undulating and marshy. The flat or slighting undulating areas are ideal for agricultural development.

According to a report by the Southeast Sulawesi Regional Development Planning Board in 1979, the extent of land which may be used for agricultural development is as given below in Table 4.2.

It can be seen from the table that the majority of potential land is forestland. According to the Sulawesi Regional Development Study, carried out in 1978, a total area of 532,500 ha of land is potentially exploitable and, from a topographical point of view, between 450,000 and

500,000 ha could, it has been estimated, be used for agricultural purposes.

Table 4.2.

Potential Land Area For Agricultural Development  
in Southeast Sulawesi

No.!	Potential land and sea use	! A r e a (ha)
1.	Food crops/livestock farming	518,898
2.	Plantation crops	41,537
3.	Salt-water fishing	11,000,000
4.	Fresh-water fishing	60,000
5.	Forestry	2,166,000

Source : Southeast Sulawesi Regional Development  
Planning Board, 1979.

4.1.1.4. Irrigation

In 1980 the Southeast Sulawesi Food Crops Office recorded that 37,000 ha of land could be made into paddy-fields. To date, just 14,800 ha (about 40%) of permanent paddy-fields have been created. It is evident therefore that a lot of land is still waiting to be exploited.

Most existing paddy-fields get water from village irrigation systems. The rest are fed by semi-technical irrigation systems. Since 1972, 4,700 ha of paddy-fields have been irrigated by semi-technical systems, maintained under the national Five-Year Development Plans.

When Southeast Sulawesi started accepting transmigrants, a new area of agricultural production was opened up. The Government accordingly encouraged the construction of a number of irrigation systems in various parts of Southeast Sulawesi. The Wawotobi irrigation project, with a planned irrigation area of 19,125 ha was given financial support by the E.E.C., Asian Development Bank and Islamic Bank. The project is expected to be completed during Pelita IV (1984-1989). When it has been completed and is fully operational alongside semi-technical and village irrigation systems throughout the province, it will be fulfilling the role that was originally intended for it, and then Southeast Sulawesi will not only become rich in food, but also the people will benefit and per capita income will be raised.

#### 4.1.2. Food crops potential.

Only five food crops will be discussed -rice, corn, cassava, soybeans and sago. Details concerning increased production of these crops are given below.

##### 4.1.2.1. Rice

##### Increase in land area :

According to figures collected in 1983 (definitive figures in the Southeast Sulawesi Food Crops Office Annual Report), about 22,953 ha of land was used for rice cultivation, including semi-technical and rainfed irrigation.

The increase in land area during Pelitas I, II dan III was respectively, 134,100 ha, 78,000 ha and 73,283 ha.

The increase in area harvested during the same period was 108,100 ha, 65,700 ha and 65,000 ha. Most paddy-fields were situated in Kolaka and Kendari districts; very few indeed were situated in Muna and Buton. Upland rice, on the other hand, was found in Kendari, Muna and Buton, but very little could be found in Kolaka district. We shall say no more about upland rice, however, bearing in mind its negative aspect vis-a-vis land conservation and environmental preservation.

It is estimated that about 16,885 ha of new paddy fields will be created during Pelita IV.

Details are as follows:

Paddy-fields with simple irrigation : 4,105 ha; paddy-fields with medium-small irrigation : 2,780 ha; paddy-fields with special irrigation: 10,000 ha. Further details about the creation of new paddy-fields may be found in Appendix 1.

- Increase in production

Rice production figures in Southeast Sulawesi are a matter of some dispute. Figures produced have often been at variance with each other, depending on their source and the method of compilation. Figures compiled by the Southeast Sulawesi Food Crops Office in 1983 showed

a respective production in Pelitas I, II and III of 241.6 tons, 136.6 tons and 608,01 tons. Estimated rice production and area of land harvested between 1983 and 1990 can be found in Appendix 2.

- Rice consumption

A population growth of 3.14% per annum is expected in Southeast Sulawesi between 1983 and 1990. This high growth rate means that there will be a call for extra food, both rice and non-rice. A survey of staple foods in Southeast Sulawesi indicated that the regional rice requirement in 1980 would be about 75,000 tons, whereas the province is actually capable of producing only about 44,000 tons. This means that, ever since Pelita I, rice has had to be brought in from other regions.

To overcome this deficiency in food, particularly in rice, an attempt must be made to improve cultivating methods so that per hectare productivity of paddy-fields goes up. In this way, satisfactory rice production will be achieved with guaranteed results.

- Improvement of rice cultivation method

It was stated above that rice production achieved by farmers in Southeast Sulawesi was well below the national production figure. This is understandable, bearing in mind low soil fertility and the very few farmers using agricultural technology. However, the problem of low production

must be solved. Increased production must be directed towards achieving self-sufficiency in food, which is one of the targets of industrialisation that, it is predicted, will be achieved during Pelita IV. The Government is accordingly encouraging efforts to increase and safeguard production in the following ways :

Use of high-yield varieties :

Ever-increasing numbers of farmers in Southeast Sulawesi are using high-yield varieties, both national varieties and new varieties resistant to the brown planthopper. In 1982, 12,975 ha (91.77% of land planted with rice) were planted with high-yield varieties. These were distributed via the mass guidance and intensification programmes, experimental plots and seed centres easily accessible to farmers, between 1979 and 1982.

Details of the extent of high-yield varieties planted between 1979 and 1982, based on data from the Food Crops Office annual report, may be found in Table 4.3.

The predicted use of high-yield varieties between 1983 and 1990 may be found in Appendix 3.

Use of Fertilizer and Pesticide :

Fertilizer and pesticide use is an integral part of growing high-yield varieties. The use of fertilizer by farmers in Southeast Sulawesi is only at the urging of Bimas (mass guidance programme), and pesticides, like other

forms of treatment, are still not used satisfactorily. Use of fertilizer and pesticide, according to the latest report from the Food Crops Office, is as in Table 4.4.

Table 4.3.

Area Planted With High-Yield Varieties of Rice  
in Southeast Sulawesi (1979-1982)

Year	Area planted (ha)	Area planted with high-yield, varieties (ha)	% planted with high-yield
1979	14,007	10,082	71.98
1980	14,504	12,520	86.32
1981	15,449	12,720	82.77
1982	14,139	12,975	91.77

Source : Southeast Sulawesi Food Crops Office, 1983.

Estimated quantities of fertilizer and other treatments used between 1983 and 1990 may be found in Appendix 4.

Table 4.4.

Quantity and Type of Fertilizer/Pesticide Used  
in Southeast Sulawesi (1980-1983)

Year	Urea (tons)	TSP (tons)	KCl (tons)	Insecticide (tons)	Rodenticide (tons)
1980/81	2,090	750	-	33,000	1,250
1981/82	2,525	962.5	-	27,000	25,000
1982/83	2,800	1,800	-	43,000	28,000

Source : Southeast Sulawesi Food Crops Office, 1983.

Use of machinery/agricultural equipment :

As yet no agricultural machinery is in use in South-east Sulawesi for purposes of land preparation. As a matter of fact, though, land here is in general eminently suited to machinery being used on it. Tractors, for example, could save time, manpower and expense, and could also increase rice productivity. In 1981 and 1982 there was an increase in the number of hullers used from 214 to 225. There are, in fact, enough hullers at present to meet local needs, but their distribution needs to be more equal.

Apart from agricultural mechanization and hullers, threshers and dryers are also needed. The estimated requirement of both of these pieces of equipment between 1983 and 1990 is given in Appendices 5 and 6.

- Infrastructure

The raising of production, at an individual level, is carried out by means of the mass guidance and mass intensification programmes. Basically, these programmes aim to stimulate the farmer to increase his skill and income. In order for the programmes to be carried out, in each village there are a number of field extension workers who pass on their knowledge directly to the farmers. There will also be a branch of the People's Bank of Indonesia (BRI) to handle the lending of credit. A retailer's/village store deals with production needs and a village cooperative handles pro-



duct processing and marketing. As well as the four above mentioned facilities, a number of institutions are set up with the goal of creating farmers who are dynamic, flexible and productive. However, the Food Crops Office has reported that the institutions in question are still not operating effectively.

To date, existing institutions that are of direct service to the farmer are :

- 6 rice seed centres
- 2 seed centres for secondary crops
- 1 horticultural seed centre
- 1 centralized horticultural estate
- 12 branches of People's Bank of Indonesia
- 9 post observation centres
- 1 protection brigade

In order to help the above institutions operate effectively, it is predicted that 30 agricultural extension offices, 390 extension zones and 3,120 farmer groups and group zones will be established during the course of Pelita IV.

#### 4.1.2.2. Secondary crops

In areas where there is no irrigation, secondary crops, like corn, cassava and soybeans, are the principle source of income for the farmer. Such crops may also be planted in paddy-fields at the end of the rainy season. The potential

for growing secondary crops on dry land is set out in Table 4.5., below :

Table 4.5.

Potential dry land area in Southeast Sulawesi  
(ha)

District	Unirrigated land/estates	Unirrigated fields	Small private estates and gardens	Total
Kendari	75,900	39,644	13,994	129,538
Kolaka	40,008	18,185	6,495	64,688
Baton	36,203	15,108	7,126	58,437
M u n a	63,375	26,448	10,218	100,041
T o t a l :	215,486	99,385	37,883	352,704

Source : Southeast Sulawesi Food Crops Office, 1983.

A land survey conducted by the Soil Research Institute, Bogor, in 1983, revealed that there are an estimated 125,000 ha of dry land on the mainland peninsula of Southeast Sulawesi, which could be used for secondary crops cultivation (see figure 3). If the potential land is adapted by the Provincial Government, then the planned target of 100,000 ha specially reserved for soybean cultivation will definitely be achieved before the end of Pelita IV.

- Increase in land area

Details of the growth in area of secondary crops planted and harvested during Pelitas I, II and III are given in Table 4.6.

Table 4.6  
Area Planted and Area Harvested for Secondary Crops : Corn, Cassava and Soybeans  
in Southeast Sulawesi during Pelita I, II and III  
 ( ha )

Type of Crop	Area Planted			Area Harvested		
	Pelita I 1969/1974	Pelita II 1974/1979	Pelita III 1979/1984	Pelita I 1969/1974	Pelita II 1974/1979	Pelita III 1979/1984
Corn	242,300	215,800	225,847	261,700	200,500	269,199
Cassava	110,300	114,100	110,730	105,400	107,800	141,646
Soybeans #)	1,700	5,100	10,969	900	3,900	10,055

#) not including soybeans grown by PT Kapas Indah Indonesia

Source : Southeast Sulawesi Food Crops Office, 1984

Most corn and cassava is grown in Buton and Muna, where they are the principal foods. Only a little is grown in Kolaka and Kendari district. Most soybeans, however, are cultivated in Kendari district, though, from the beginning of Pelita IV, the crops will have spread to all parts of the Province. The estimated area of land harvested for these three crops, from 1983 to 1990, is given in Appendix 7.

- Increase in Production

Details of secondary crops production and average yield per hectare during Pelitas I, II and III may be found in Table 4.7.

It should be realized that these secondary crops are basic material for industry and characteristically grow on dry land. There is a far better opportunity for growing a number of commodities on dry land than in paddy-fields.

Earlier, details were given about available land in Southeast Sulawesi for crop cultivation. There are good possibilities for secondary crop cultivation, and an estimation, of land area harvested, production and productivity for such crops, from 1983 to 1990, is given in Appendix 8.

Since 1980, intensification has been used in the development of soybean cultivation. In addition, the idea

Table 4.7.

Secondary crop production and average yield per hectare  
in Southeast Sulawesi During Pelitas I, II and III

(tons)

Type of crop	Pelita I		Pelita II		Pelita III	
	Production <sup>⊙</sup>	Average yield/ha	Production <sup>⊙</sup>	Average yield/ha	Production <sup>⊙</sup>	Average yield/ha
Corn	201,400	1,86	168,400	0,84	280.720	1,04
Cassava	772,400	7,32	739,200	6,86	1,310.896	9,25
Soybeans	400	0,44	1,900	0,49	10.008	0,78

⊙ Corn = dry corn

Cassava = wet tubers

Soybeans = dry beans

Source : Southeast Sulawesi Food Crops Office, 1983.

of a nuclear estate has been tried out, with PT Kapas Indah Indonesia playing the part of foster parent. In Pelita IV, details of proposed nuclear estate development of rice, secondary crops and horticulture may be found in Appendix 11.

#### 4.1.2.3. S a g o

Sago has long been cultivated in a number of areas in Indonesia, and is a staple food in the Moluccas, Irian Jaya, and supplementary food in part of South and Southeast Sulawesi. In addition, sago is a basic material for industry and as much should be developed.

In Southeast Sulawesi, sago flour is mixed with water and given the name Sinonggi.

It is difficult to state what the potential area of land for sago cultivation is, nationally speaking. However, the Food Crops Office of Southeast Sulawesi has reported, that some 7,500 ha of land in the Province could be use for sago cultivation. The land in question is situated in marshy, wet areas and near rivers in Kendari and Kolaka district. Another survey, carried out in 1982, estimated that 23,000 ha could be use for sago cultivation.

Bearing in mind that sago is one part of the national food programme of which the Government is attempting to organize effective management, problems concerning sago and its potential production may be analysed as follows:

- The Ecosystem of Sago

Sago belongs to the Palmae family, genus Metroxylon. In Southeast Sulawesi it grows in marshy land, along side rivers and wild in forests. The sago palm grows amidst up to dozens of offshoots. It multiplies after two to three years, when a new cluster of sago palm and offshoots is formed. Sago can be harvested after seven or eight years and even up to an age of fifteen years. The sago palm blooms only once, at an advanced age, and henceforth produces no more sago flour.

- Cultivation methods

It is not necessary to carry out land preparation of the area to be planted; it is enough to clear the surrounding area of bushes and shrubbery. Some sago grows wild in Southeast Sulawesi. Seeds should be planted in marshy land at irregular intervals. Seeds used should be shoots, aged one or two years, from a sago palm of good quality. Surrounding land should be kept clear to enable good growth and to make processing easier later on. In general, no pest control measures are necessary.

- Potential area and production

No precise information is available about the extent of sago cultivation in Southeast Sulawesi, because so far no detailed research has been conducted into sago. Available

data from a survey carried out in 1982 reveal that sago covers an area of 2,388 ha, of which 1,380 ha are in Kendari district, and 1,008 ha are in Kolaka district. About 450 kg of wet flour is obtained from each tree aged 9 - 12 years. According to farmers, an average of 20 trees per hectare are felled. However, productivity depends on soil fertility, the surroundings, closeness of planting and even on the method of obtaining the sago flour. To date, the only recorded production figure is just 67.99 tons of wet sago, with an annual consumption of 41.68 tons. This production figure would be much lower, if we use the estimated figure of 2,388 ha of land, planted with an average of 20 trees per hectare, each producing 450 kg of wet sago flour ( $2,388 \times 20 \times 450 \text{ kg} = 21,492 \text{ tons of wet sago flour}$ )

- Consumption and marketing of sago

A survey carried out in 1982 revealed that the average annual per capita consumption of sago in rural and urban areas of Kendari district and Kolaka district was, respectively, 166.7 kg and 64.48 kg. If the average of these two figures is taken, a total of 115.6 kg or 0.115 tons per capita per year is reached. The total population of the two districts in 1982 was 499,482. Assuming that just 10% of the population at the time ate sago rather than rice, a total consumption of 5,744.05 tons is obtained, which means an excess production of 15,747.95 tons per annum.



Sago marketing is restricted to Southeast Sulawesi; to date, there has been no report of trading with other regions. In view of the estimated production surplus, it seems wise to invest in the creation of new recipes incorporating sago, which will be acceptable to the local palate.

#### 4.2. Plantation Crops

##### 4.2.1. Plantation crop land area

According to data collected in 1981, there were 66,839 ha of public plantations throughout the province of Southeast Sulawesi (see figure 4). A number of crops were grown. In addition, there were private large-scale plantations, growing cotton and coconuts. The average public plantation family small-holding was 1 - 1.5 ha.

Smallholdings were integrated into one project management unit per village. New technology was used. In areas where project management units had not yet been adopted, plantations were run on traditional lines with assistance given in the form of seedlings, fertilizer and other forms of treatment.

Those plantation crops which are to be developed and whose future prospects are to be assessed are coconuts, cashew nuts, cocoa beans, cotton and sugar cane. Potential expansion of each of these crops is as follows.

#### 4.2.2. Coconuts

##### 4.2.2.1. Land expansion

According to the Southeast Sulawesi Plantation Crop Office's 1983 report, there were 39,783 ha of public coconut plantations, of which 19,782 ha were productive, 16,301 ha were not yet productive and 3,700 ha unproductive (old and/or damaged coconuts were produced). 637 ha of land had just been planted and 1,363.5 ha of land in Muna district were privately-owned coconut estates.

The expansion of public coconut plantations from 1969-1983 may be seen in Table 4.8., below. The figures reveal that, by 1983, there was an increase in land area of 87.65%. This increase in land area was due in part to new land being used for coconut cultivation and in part to a programme of plant rejuvenation carried out spontaneously by farmers and by the regional Plantation Crops Office via project management units.

##### 4.2.2.2. Production

Centres of coconut production in Southeast Sulawesi in 1983 could be found in all four districts in the Province. It can be seen in Table 4.9. below that the total area of public plantations was 39,783 ha, and that total production was 12,989.77 tons. It can also be seen that coconut crops were uneven in composition, with a total of only about 50% of coconut palms productive (productivity was

0.63 tons/ha/annum). 41% of palms were not yet productive and the remaining 9% produced coconuts of unsatisfactory quality.

Table 4.8.

Expansion of Public Coconut Plantations  
in Southeast Sulawesi (1969-1983)

Year	Area (ha)	Number of palms <sup>*)</sup>
1969	21,200	3,180,000
1970	23,334	3,500,100
1971	26,527	3,979,050
1972	28,110	4,216,500
1973	28,766	4,314,900
1974	29,528	4,429,200
1975	30,500	4,575,000
1976	31,260	4,689,000
1977	32,063	4,809,450
1978	33,624	5,039,100
1979	33,427	5,014,050
1980	35,135	5,270,250
1981	35,616	5,432,400
1982	38,233	5,734,950
1983	39,783	5,967,450

<sup>\*)</sup> based on an estimated 150 palms/ha

Source : Southeast Sulawesi Plantation Crops  
Office, 1983.

Table 4.9.

Composition, Area and Productivity of Public Coconut Plantations in Southeast Sulawesi, 1983

District	Productive palms (ha)	Unproductive palms (ha)	Old/damaged palms (ha)	Total area (ha)	Production (tons)	Average Productivity (tons/ha)
Kendari	7,017	8,122	2,721	17,860	7,000.45	1,01
Kolaka	3,411	1,424	534	5,369	2,520.12	0,74
Muna	4,053	2,902	30	6,985	2,208.07	0,54
Buton	5,301	3,853	415	9,569	1,171.13	0,22
<b>Total</b>	<b>19,782</b>	<b>16,301</b>	<b>3,700</b>	<b>39,783</b>	<b>12,989.77</b>	<b>0,66</b>

Source : Plantation Crops Office, Southeast Sulawesi, 1983.

The low productivity (see Table 4.9.) is caused not only by uneven plant age composition, but also by a lack of knowledge on the part of the farmer of correct cultivation methods and by extensive damage caused by wild boar, a local pest.

Estimated production figures (1984-1990) may be found in Appendix 12.

#### 4.2.2.3. Cultivation methods

As was stated earlier, coconut cultivation in this region requires careful attention, not only because of increased demand for coconuts, but also because of the problem of old coconut palms and low productivity.

Development in the plantation crops sector has been tailored to fit in with regional potential and the programme of regional development.

Two principal targets have been established :

- (1) To organize and develop public coconut plantations by means of Project Management Units.
- (2) To organize and develop large-scale state and private coconut plantations by means of Nuclear Estate and Smallholders.

Ever since the first Five-Year Development Plan, public coconut plantations have concentrated on increasing production of existing coconut palms by carrying out a programme of pest and disease control. In addition, efforts have been

made to raise production by opening up new land for coconut cultivation, plant rejuvenation, rehabilitation, intensification and diversification.

On the basis of information obtained from the Southeast Sulawesi Plantation Crops Office, developments in the public coconut plantation sector are as follows :

- Seedling provision and land expansion :

Seedlings are obtained from parent palms which have already been surveyed. Since the 1979/80 financial year, imported hybrid coconut seedlings have been made available. Details of the provision of hybrid seedlings during Pelitas I, II and III may be found in Tables 4.10, 4.11, 4.12 below. These seedlings were made available with the use of funds from national and local budget and CESS.

It can be seen from Tables 4.10, 4.11 and 4.12 that 915,000 local variety seedlings and 209,375 hybrid seedlings were made available. If 45% and 90% respectively of these types of seedling can be available for distribution, it is estimated that the number of coconut palms in Southeast Sulawesi (local and hybrid) will by now have reached a total of 411,437 palms throughout the Province. These palms will contribute to the expansion of the sector and to the rejuvenation of old and unproductive palms.

According to the 1983 annual report of the Plantation Crops Office, 1,994,000 seedlings were made avail-

Provision of coconut seedlings (funded by cess)  
in Southeast Sulawesi (1969/1970 - 1974/1975)

Year	Number of seedlings (local varieties)
1969/1970	200.000
1970/1971	2.000
1971/1972	25.000
1972/1973	100.000
1973/1974	100.000
1974/1975	100.000
<b>T o t a l</b>	<b>527.000</b>

Table 4.11

Provision of coconut seedlings (funded by the national budget)  
in Southeast Sulawesi (1970/1971 - 1982/1983)

Year	Seedlings (local varieties)	Seedlings (hybrid varieties)
1970/1971	50.000	-
1971/1972	50.000	-
1972/1973	50.000	-
1973/1974	35.000	-
1974/1975	#)	-
1975/1976	210.000	-
1976/1977	20.000	-
1977/1978	84.000	-
1978/1979	60.000	-
1979/1980	34.000	-
1980/1981	-	55.000
1981/1982	-	125.000
1982/1983	-	29.375
<b>T o t a l</b>	<b>593.000</b>	<b>209.375</b>

#) No data.

Table 4.12

Provision of coconut seedlings (funded by the local budget)  
in Southeast Sulawesi 1979 - 1983

Y e a r	Seedlings
1979/1980	90,000
1980/1981	90,000
1981/1982	100,000
1982/1983	32,000
T o t a l	312,000

Source : 1982 annual report, Southeast  
 Sulawesi Estate Crops Office



able during Pelitas I, II and III. (funded by National and local budgets, and by CESS). Assuming that 60% of these seedlings were planted and grew normally, the area of land devoted to coconut cultivation may already have expanded by 4,665 ha, not including expansion caused by farmer's individual efforts. In fact, there are still extensive areas of land available for expanding both public and private coconut plantations.

- Rejuvenation/Rehabilitation

In 1983, productive land totalled 19,782 ha ( 51% of the total land area), and non-productive land ( because of old and damaged palms) totalled 3,700 ha ( 9% of the total land area) - see Table 4.9.

Rejuvenation is carried out by planting a new plant beneath the old one. The old palm is gradually cut down as the young palm takes over. Rejuvenation and rehabilitation was started during the 1979/80 and 1980/81 financial years with financial assistance from the Export Crop Rehabilitation Development Project. The work carried out also involved counselling farmers in matters like plant care, fertilizing and marketing, amongst other things.

Since Pelita II, public coconut plantations have been run on Project Management Unit lines, with the Head of the Plantation Crops Office acting as Project Head, assisted by a manager and several members of staff.

Project Management Unit are run intensively, starting with land preparation, seedling provision, planting, processing and marketing ( including farmer and family upgrading in farming skills ).

To date, seven Project Management Units, covering an area of 3,000 ha, have been set up in Southeast Sulawesi. Each has an annual rejuvenation target of 300 ha. This means that, over the next ten years, it is hoped that 21,000 ha of rejuvenation will be carried out. As for seedling provision, both local variety, specially-selected seedlings and high-yield hybrid seedlings, producing about 15,000 coconuts / ha / year at an age of 9 years and above, are being used.

The estimated rehabilitation/intensification area for both public plantations and large-scale private estates (1984-1990) may be found in Appendices 13,14 and 15.

#### 4.2.3. Cashew nuts

##### 4.2.3.1. Land expansion

Cashew nuts do not require particularly favourable soil conditions and can indeed grow well in acid areas, with an annual rainfall of less than 100 mm. This means that the plant can tolerate soil which is low in nutrients and can even thrive on barren chalkland.

In Southeast Sulawesi, cashew nuts are one public plantation crop that has attracted a fair amount of attention because of their guaranteed price, which is more favourable than that of other crops. It appears that cashew nuts, from the technical point of view (climate and soil requirements) and the social point of view, are eminently suited to this region, and many farmers have begun to grow them.

In Pelita IV, cashew nuts will come second only to coconuts in term of land area. Land expansion (1978-1982) figures may be found in Table 4.13. below.

Table 4.13

Land expansion and growth of productivity  
(1978 - 1982) in Southeast Sulawesi

Year	Area (ha)	Number of plants (trees)	Production <sup>o</sup> (tons)	Productivity (tons/ha)
1978	3,704	755,616	1,131	0,31
1979	3,704	755,616	1,361	0,35
1980	5,997	1,223,388	1,290	0,21
1981	9,233	1,883,532	1,512	0,16
1982	28,041	5,720,364	4,303	0,15
1983	33,495	6,832,980	4,408,18	0,13

<sup>o</sup>) = dry nuts

Source : Southeast Sulawesi Plantation Crops Office,

It can be seen in Table 4.13 that land area increased from 3,704 ha in 1978 to 33,494 ha, six years later. This represents a growth of 804%, despite ever-falling productivity, caused by increase in area of young, non-productive plants and by climatic deviation.

#### 4.2.3.2. Production

Most cashew nuts are grown in the district of Buton and Muna. A small amount may be found in Kendari district. A description of plant age composition, production and distribution in 1983 is given in Table 4.14.

It can be seen from Table 3.14. that there was a total productive land area of 7,591 ha, or 22.66% of the total land area. Average production was 0.58 tons/ha.

Cashew nut cultivation methods in Southeast Sulawesi are handled by the Public Plantation Crops Office. From the same office, developments in the cashew nut sector may be described as follows :

##### - Seedling provision and land expansion

250,000 cashew nut seedlings were made available in the financial year of 1973/1974.

Table 4.14

Cashew nut age composition and distribution  
in Southeast Sulawesi (1983)

District	Productive trees	Unproductive trees	Old/damaged (trees)	Area (ha)	Production (tons)	Average productivity (tons)
Kendari	225	1,365	22	1,642	468.96	2.08
Kolaka	-	-	-	-	-	-
Muna	2,457	11,258	-	14,805	1,850.21	0.72
Buton	4,786	11,733	26	16,545	2,121	0.44
<b>Total</b>	<b>7,468</b>	<b>24,356</b>	<b>48</b>	<b>32,992</b>	<b>4,440.17</b>	<b>3.24</b>

Source : Southeast Sulawesi Plantation Crops Office, 1983.

Land expansion between the beginning of Pelita II and 1981 reached an area of 9,233 ha (under the auspices of the Public Plantation Crops Office ) and 37,077 ha (under the Regreening Office).

Efforts have been made to raise production in the short-term by means of an intensification demonstration plot and cashew nut demonstration plot, each 160 ha in area. Also, an intensification plot and intensification expansion control plot, each of 30 ha, have been established. Intensive management of productive cashew nut plants has also been carried out over an area of 1,600 ha.

- Development program

In order to increase cashew nut farmer's income and welfare, development efforts have been centred in areas with known potential. A cashew nut Project Management Unit has been set up. The Head of this Unit, assisted by several members of staff, handle land preparation, seedling provision, planting, processing and product marketing. Farming skills are passed on by means of training courses and information.

Two Project Management Units for cashew nuts were set up during Pelita III. These are the biggest in Buton and Muna districts. Funds for this project were made available from the national budget. In determining where these units should be located, the plant environment situation, socio-

economic situation and several other relevant factors were taken into consideration.

#### 4.2.4. Cocoa beans

Cocoa beans are a particularly promising plantation crop for the future since chocolate is becoming more and more widely-used as a flavourer and as a food in its own right. In addition, chocolate is used by a number of industries.

From the technical point of view, cocoa beans are different from cashew nuts, which can grow in various types of soil, including poor quality soil and acid conditions. Cocoa beans, on the other hand, depend on a favourable climate and on soil being rich in organic matter and minerals.

Cocoa beans are principally grown in Kolaka district. They thrive at an altitude of 10-300 m, and require an evenly distributed rainfall of more than 1,500 mm per annum. Air temperature should be  $24^{\circ}$  -  $28^{\circ}$ C and relative humidity above 80%.

Details about land expansion, plant age composition and cocoa bean production in Southeast Sulawesi are as follows:

##### 4.2.4.1. Land expansion

According to the 1983 annual report of the Southeast Sulawesi Plantation Crops Office, there were 6,215 ha of

land devoted to cocoa bean cultivation, of which 4,975 ha were productive. All of this land was public-owned. Details of land expansion (1978 - 1983) may be found in Table 4.15., below.

Table 4.15.

Land Expansion of Cacao in Southeast Sulawesi  
(1978-1983)

Year !	A r e a (ha)	! Number of plants (trees)
1978	107	16,692
1979	107	16,692
1980	2,657	414,492
1981	3,658	570,648
1982	5,316	829,296
1983	6,215	969,540

Source : Southeast Sulawesi Plantation  
Crops Office, 1983.

It can be seen from Table 4.15. that land area increased from 107 ha in 1978 to 6,215 ha, six years later. This represents a growth of 5,708.41%, or annual average growth of 951.4%.

#### 4.2.4.2. Production growth

Production, as was stated above, is centred in Kolaka district. Details about production growth and plant age



composition over a period of six years may be found in Table 4.16. below.

It can be seen from Table 4.16. that production of cocoa beans in 1978 was only 3 tons. However, six years later production had already reached 1,956 tons.

Estimated production ( 1984 - 1990 ) may be found in Appendix 16.

#### 4.2.4.3. Cultivation methods

Cultivation in Southeast Sulawesi is carried out both on an individual basis and a collective basis, the latter in the form of Project Management Units. In the fourth year of Pelita III (1982/1983), a Project Management Unit for cacao was set up in Kolaka district. It handled land preparation, seedling provision, planting, processing and product marketing. In order to speed up the process of transfer of technology, training courses were held continuously.

According to information from the Plantation Crops Office, cacao seedlings planted are of the "Bulk Cacao" Upper Amazon hybrid variety, since productivity is high and cultivation relatively simple. Under Project Management Units, land has expanded by 374.4 ha. Estimated land expansion, rejuvenation and rehabilitation/intensification of public cacao plantations (1984 - 1990) may be found in Appendices 17 and 18

Tabel 4.16

Production growth and plant age composition of productive  
and Non-productive Cacao plants (1978-1983)

Y e a r	! Non-productive plants (ha)	! Productive plants(ha)	! Production (tons)	! Productivity (tons/ha)
1978	96	11	3	0.27
1979	96	11	3	0.27
1980	2,077	574	7	0.012
1981	2,581	1,077	535	0.33
1982	4,431	885	1,000	1.81
1983	4,975	1,239	1,956	1.58

Source : Southeast Sulawesi Plantation Crops Office 1983 .

#### 4.2.5. Cotton

In Southeast Sulawesi, cotton has been a familiar sight for approximately forty years, especially in Muna district. Intensive cultivation, however, began as recently as 1978 / 1979 and will in future be modelled on the Public Cotton Intensification system. In addition, the Government has pioneered an experimental Nuclear Estate and Smallholders unit, set up by PT Kapas Indah Indonesia.

##### 4.2.5.1. Land expansion and production

Data from the Southeast Sulawesi Plantation Crops Office reveals that during Pelita III (until 1982/1983) 6,283.48 ha of planting were carried out by the Public Cotton Intensification system, and 3,775 ha of planting were carried out by the Nuclear Estate and Smallholders system. In other words, this represents a respective annual planting area of only 1,257.7 ha and 755 ha.

Cotton production growth during Pelita III (1978-1982) may be found in Table 4.17.

It can be seen from Table 4.17. that average cotton production was 1,420.68 tons a year. If this figure is divided by the total land area devoted to cotton growing, a productivity figure of about 706 kg /ha is obtained. This is much lower than the Public Cotton Intensification <sup>/figure</sup> in the 1978/79-1980/81 planting seasons. Low production is due in part to unreliable and unpredictable weather conditions and in part

to the susceptibility of varieties planted to pests and diseases.

Predicted land expansion and production (1984-1990) for both systems of cultivation may be found in Appendices 19 and 20, Table 4.17

Cotton Production in Southeast Sulawesi  
(1978-1982)

Year	Production (tons)	Additional information
1978	1,067	Average production was 1,420.68 tons a year. Production achieved via 6 Project Management Units ( 4 in Kendari district, 2 in Muna district).
1979	1,094	
1980	671.4	
1981	2,720	
1982	1,551	

Source : Southeast Sulawesi Regional Planning Board, 1983.

4.2.6. Sugarcane

This is a promising plantation crop in Southeast Sulawesi. Sugarcane can go a long way towards meeting local sugar needs.

During Pelita III a 12-ha-demonstration plot was set up for Java sugar development. Also, a 10 ha seedling demonstration plot and a 4-ha control plot were set up.

Two sugar factories are to be opened during Pelita IV at Ladongi (Kolaka district) and Kambara (Muna district). Data from the Southeast Sulawesi Plantation Crops Office shows that the factories are planned for 1984 and 1986. The planned area for the 1984/1985 financial year is 20,000 ha, and 15,000 ha for the following year.

#### 4.3. Livestock Farming.

There are two categories of livestock farmer in Southeast Sulawesi, especially beef cattle farmer -the farmer who sets up his own business, and the farmer who receives credit assistance from the Government. Numbers of livestock owned by farmers vary enormously, from a single animal to dozens of animals. A special programme of credit assistance has been introduced for farmers with 5 - 20 animals, in which it is hoped farmers will set up beef cattle "mini ranches". It is also hoped that independent farmers will set up similar beef cattle enterprises. The practice of artificial insemination using frozen semen was begun at the end of 1983 and the first animals to be born are expected in July 1984. Animal fodder, like grass and plant materials, are available in abundance, since there is extensive grazing land which has yet to be exploited. (see Figure 5). The local Livestock Office assists in the matter of increasing supplies of animal fodder by distributing seeds of top quality grasses and plant materials to

farmers. In addition, the Livestock Office has set up seed nurseries for grasses and plant materials in every district, especially in Kendari district.

In Southeast Sulawesi, the use of concentrate is restricted to poultry. This type of food is both a human and poultry requirement. Prices are high and products, like bran, are still not readily available in sufficient quantity or quality.

Livestock population (1969 - 83) and estimated population (1984 - 90) are given in Tables 4.18 and 4.19 below.

It can be seen from the data that there was a marked increase in beef cattle population during Pelitas I, II and III, exceeding the national average. In view of these encouraging figures and the extensive grazing land available, there seems to be every reason for expanding the cattle industry in Southeast Sulawesi, both from the food source point of view and that of increasing farmer income and expanding the workforce.

To turn to the broiler chicken industry-the egg-laying industry was begun in earnest in 1979, and, throughout Pelita III, an impressive rate of growth of about 90% was recorded. One intractable problem encountered is that of transportation from Jakarta to Kendari, in which a transit stop must be made at Ujung Pandang. It is impossible to guarantee that livestock transported will reach its final

Table 4.18.

Livestock Population and Average Increase per Annum  
in Southeast Sulawesi (1969-1983)

Year	Cattle	Water Buffalo	Poultry		
			Freerange chickens	Broiler chickens	Ducks
1969	4,802	5,444	439,695	-	11,156
1970	5,441	7,058	483,384	-	13,569
1971	5,048	7,730	526,885	-	16,864
1972	8,147	8,602	579,804	-	24,823
1973	9,991	8,738	615,585	-	33,680
<b>Average increase during Pelita I (%)</b>					
	20.45	7.98	8.97	-	28.56
1974	11,736	9,403	617,210	-	39,989
1975	13,015	9,158	638,698	-	43,326
1976	18,253	9,216	732,198	-	45,886
1977	23,566	6,940	654,223	-	49,077
1978	26,097	8,839	706,625	-	53,470
<b>Average increase during Pelita II (%)</b>					
	22.75	-1.86	3.87	-	7.51
1979	32,314	9,317	747,589	2,450	57,862
1980	41,098	10,041	821,458	4,500	64,470
1981	50,726	10,135	900,232	8,137	72,666
1982	60,147	11,929	1,366,059	23,325	84,024
1983*)	74,107	12,857	1,610,720	25,656	94,073
<b>Average increase during Pelita III(%)</b>					
	23.10	8.55	22.28	90.29	12.93

\*) provisional figures.

Source : Southeast Sulawesi Livestock Office.

Table 4.19.  
Estimated Livestock Population in Southeast Sulawesi  
(1984-1990)

Year	! Cattle !	Water Buffalo !	Poultry		
			! Freerange ! chickens !	! Broiler ! chickens!	! Ducks
1984	107,935	13,857	1,899,200	28,223	105,324
1985	144,500	14,935	2,239,347	31,046	117,921
1986	193,693	16,097	2,640,414	34,150	132,025
1987	259,471	17,350	3,113,312	37,565	147,815
1988	347,580	18,700	3,670,906	41,321	165,493
1989	465,618	20,155	4,294,960	45,453	185,286
1990	623,741	21,723	5,064,187	49,998	207,446
Annual rate of increase (%)	33.96	7.78	17.91	10.0	11.96

destination within a single day. Nor can livestock food supplies, like bran and corn, be guaranteed to be continuously available. In Southeast Sulawesi there are to date no poultry food producers. This means that food for broiler chickens has to be brought in from Ujung Pandang and Surabaya.

#### 4.3.1. Livestock produce

Meat production may be estimated on the basis of numbers of cattle, water buffalo and goats slaughtered (including an estimation of unrecorded slaughterings) and on



estimated poultry production. Figures (1977-82) in South - east Sulawesi may be found in Table 4.20 below. Details of

Table 4.20.  
Livestock Slaughtered in Southeast Sulawesi  
(1977-1982)

! Year !	Cattle !	Water ! Buffalo !	Goats !	Poultry !
1977	943	748	2,755	552,825
1978	1,066	742	2,605	597,382
1979	1,060	842	2,888	443,844
1980	1,639	1,046	2,749	698,849
1981	1,893	1,115	3,868	770,174
1982	2,269	928	4,557	966,931

Source : Southeast Sulawesi in figures,  
1982/1983.-

Details of livestock produce (1969-1983) and projected live- stock produce (1984-1990) in Southeast Sulawesi may be found in Tables 4.21 and 4.22.

The growth in livestock produce has been primarily in meat, in accordance with increased demand. This increase in demand has, in turn, been caused by population growth and increased buying power. The egg industry has developed en- couragingly, though local needs are not being fully met, with the result that a certain amount of eggs still has to be brought in from South Sulawesi.

Table 4.21.  
Livestock Produce in Southeast Sulawesi  
1969-1983 (tons)

Year	Meat	Eggs
1969	499.788	143.114
1970	518.783	170.559
1971	564.155	242.801
1972	636.590	248.782
1973	714.882	297.867
<b>Average increase during Pelita I (%)</b>		
	12.31	20.93
1974	749.676	333.189
1975	822.156	353.450
1976	916.104	387.899
1977	931.340	399.146
1978	1,004.952	1,283.637
<b>Average increase during Pelita II (%)</b>		
	8.17	60.07
1979	1,094.983	512.730
1980	1,290.953	555.958
1981	1,420.760	651.181
1982	1,736.406	1,090.301
1983	1,989.169	1,168.593
<b>Average increase during Pelita III (%)</b>		
	16.17	25.04

Source : Southeast Sulawesi Livestock Office,  
 1983.

Table 4.22.  
Estimated Livestock produce in Southeast Sulawesi  
1984 - 1990 (tons)

Year	M e a t	E g g s
1984	2,241.953	1,246.885
1985	2,643.336	1,365.412
1986	2,870.976	1,495.406
1987	3,206.520	1,637.990
1988	3,647.318	1,794.395
1989	4,120.740	1,964.863
1990	4,655.611	2,151.524

Source : Southeast Sulawesi Livestock Office.

Other livestock produce, like animal skins and bones, can be calculated from numbers of cattle and water buffalo slaughtered, but no figures are as yet available and there is no leather industry. At present, such produce is sent primarily to Surabaya. Similarly, there are no data for milk production, since to date there is no fresh milk in Southeast Sulawesi, and only processed milk is consumed.

#### 4.3.2. Consumption

Meat and egg consumption in Southeast Sulawesi has been going up annually. Figures (1969-83) may be found in Table 4.23, and projected consumption (1984-90) is given in

Table 4.23.

Meat and egg consumption in Southeast Sulawesi  
1969 - 1983 (kg/capita/year)

Year	Meat	Eggs
1969	0.66	0.21
1970	0.73	0.24
1971	0.79	0.34
1972	0.87	0.34
1973	0.96	0.40
<hr/>		
Average increase Pelita I ( % )	9.83	18.37
<hr/>		
1974	0.99	0.44
1975	1.07	0.46
1976	1.11	0.47
1977	1.12	0.48
1978	1.19	0.52
<hr/>		
Average increase Pelita II ( % )	5.00	4.29
<hr/>		
1979	1.26	0.59
1980	1.37	0.59
1981	1.44	0.66
1982	1.72	1.08
1983	1.74	1.13
<hr/>		
Average increase Pelita - III ( % )	8.61	20.02

Source : Southeast Sulawesi Livestock Office,  
1983.

Table 4.24.

Table 4.24.

Estimated meat and egg consumption  
in Southeast Sulawesi 1984 - 1990.  
(kg/capita/year)

Year	Meat	Eggs
1984	2.08	1.16
1985	2.30	1.23
1986	2.50	1.30
1987	2.72	1.39
1988	3.00	1.47
1989	3.27	1.56
1990	3.57	1.65
Rate of increase (%/year)	9.60	6.08

Source : Southeast Sulawesi Livestock Office.

It can be seen from Table 4.23, that meat and egg consumption in 1983 was, respectively, 1,74 kg/capita/year and 1,13 kg/capita/year. These figures are considerably below the standards set by the 1968 Seminar on Nutrition - namely, 8,1 kg/capita/year for meat and 2,2 kg/capita/year for eggs. Even taking into consideration the projected annual increase of 9,6% in meat consumption and 6,08 % in egg consumption, up to the year 1990, the figures will still fall

well below the standard set, by the Seminar on Nutrition.

#### 4.4. Fisheries.

Southeast Sulawesi consists of two areas - a mainland area and an island area, occupying respectively 70,26% and 29,74% of the total land area of the Province. The total sea area is approximately 110.000 km<sup>2</sup> and aquaculture is carried out over an area of about 23.000 ha. Fishing grounds include ; the Flores Sea, the Bay of Bone and the north-eastern part of the Banda Sea. All of the above have excellent potential for fishing.

Most fishing is still carried out using traditional methods. This means that available resources are still not being properly exploited.

Some of the fish caught off the coast of Southeast Sulawesi are :

- Ponyfish (Leiognathus spp)
- Giant catfish (Arius thalassinus)
- Slender lizardfish (Sanrida elongata)
- Goldband goatfish (Upeneus spp)
- Blotched grunt (Pomadourys maculatus)
- Red snapper (Lutjanus malabacurus)
- Blecker's grouper (Epinephelus bleckeri)
- Redspotted emperor (Lethrinus lentjan)
- Giant perch (Lates calcarifer)
- Threadfin bream (Nemipterus spp)

Yellow-tail (*Caesio cryther*)  
Amoy croaker (*Argyrosomus amoyensis*)  
Maclot's shark (*Carcharias macloti*)  
Stingray (*Dasyatis sephen*)  
Black pomfret (*Formio niger*)  
Silver pomfret (*Pomus argenteus*)  
Obtuse barracuda (*Sphyraena obtusata*)  
Sead mackerel (*Decapterus rucellii*)  
Yellowstripe trevally (*Selaroides leptalepis*)  
Longfin trevally (*Carangoides ciliarus*)  
Hardtail sead (*Megalaspis cordyla*)  
Slender leatherskin (*Chorinemus tol*)  
Rainbow runner (*Elagatis bipinnulatus*)  
Flying fish (*Cypsilurus spp*)  
Mullet (*Valamugil speigleri*)  
Giant threadfin (*Eleutheronema tetradactylum*)  
Garfish (*Hemiramphus far*)  
Anchovy (*Stolephorus indicus*)  
Rainbow sardine (*Dussumieria acuta*)  
Fringescale sardine (*Sardinella fimbriata*)  
Indonesian oil sardine (*Sardinella longiceps*)  
Wolf herring (*Chirocentrus darab*)  
Tolishad (*Hilsa toli*)  
Mackerel (*Rastrelliger spp*)  
Spanish mackerel (*Scomberomorus guttatus*)

Smallhead hairtail (*Trichiurus savala*)

Bigeyed tuna (*Thunnus obesus*)

Skipjack tuna (*Katsuwonus pelamis*)

Eastern little tuna (*Euthynnys spp*)

- Sources :
1. Dahlan, M.G. 1981. Thesis. Faculty of Hasanuddin University, Ujung Pandang 124 pp.
  2. Unar, M. 1980. Species of Salt - Water Fish with Economic Potential. Salt-Water Fish Research Institute, Agricultural Research and Development Board, Department of Agriculture, Jakarta.
  3. Anonymous. 1979. Introduction and Guide to Fishing Resources. Part 1. Directorate General of Fisheries, Department of Agriculture, Jakarta. 98 pp.

Apart from fish, a number of crustaceans, like shrimps, lobsters and crabs, and a number of molluscs like squids, cuttlefish and oysters are caught.

Turtles, too are caught. Available data show that the most frequently-caught fish are skipjack and shrimps, and both of these have actually been exported to other countries. Other fish are caught principally for local consumption and, occasionally, for inter-island trade. The fish trade includes fresh fish, dried fish, live fish spawn, dried squid and cuttlefish fish, shrimps and lobsters.

Most fishermen use traditional fishing equipment. As



a result, productivity is generally low. Details of equipment used may be seen below.

Table 4.25.

Fishing Equipment used by fishermen  
in Southeast Sulawesi (1981)

No.!	Type of Equipment	District				Total
		Buton!	Muna!	Kolaka!	Kendari!	
1.	Seine	286	403	59	6	754
2.	Eye net	1,357	333	1,222	312	3,224
3.	Trap	280	52	477	444	853
4.	Lift net	849	830	275	294	2,248
5.	Rod and line	3,714	317	908	996	5,935
6.	Others	384	-	-	-	384

Source : Southeast Sulawesi Fisheries Office.

It can be seen from Table 4.25 that, in 1981, the most popular method of fishing was rod and line, especially in Buton district.

Details of fishing boats used may be found in Table 4.26, below.

It can be seen from Table 4.26 that most fishermen still used unmotorized fishing vessels. These boats were rudimentary in nature and depended on favourable weather conditions in order to be able to operate. Fishing centres and ports in Southeast Sulawesi are as follows :

Buton district - Mawasangka, Wolio, Lasalimu and

- Wangi-Wangi subdistrict.
- Muna district - Katobu, Ereke and Tiworo Island subdistrict.
- Kendari district - Kendari, Lainea, Soropia, Torobulu, Lasolo and Tinanggea subdistrict.

Table 4.26.

Fishing boats and vessels used  
in Southeast Sulawesi (1969-1981)

Year	Type of boat/vessel		
	Boat	Motor boat	Motorized ship
1969	20,736	-	-
1970	18,297	-	-
1971	19,608	-	-
1972	20,616	-	-
1973	13,931	10	7
1974	14,574	88	1
1975	14,410	94	6
1976	7,360	122	6
1977	7,369	124	6
1978	10,390	92	12
1979	11,652	77	24
1980	11,831	85	71
1981	12,525	97	58

Source : Southeast Sulawesi Fisheries office

Apart from fishermen, there are also a number of fishing companies. These companies deal in catching fish, freezing and trading. Details of registered companies appear in Table 4.27, below.

Table 4.27

Location and type of fishing companies  
in Southeast Sulawesi (1982)

Location	Total	Type of company	Field of operation
Buton	8	Private	Trading of fishery products
Muna	1	Private	Fish paste (terasi)
Kendari	9	Private	Catching/freezing fish
	2	Limited	Freezing fish
Kolaka	13	Private	Catching/freezing fish
	1	Limited	Freezing fish

It can be seen from Table 4.27, that there were only 34 fishing companies in Southeast Sulawesi, mostly privately-owned. Entrepreneurs operated on a very modest scale because of a lack of capital, skill and technology. Up to the time of writing of this report, there was no domestic or foreign investment in the fishing industry in Southeast Sulawesi. In Buton and Muna districts, not one company operated in the field of catching fish; this, despite the known potential of the region, was left entirely to local fisher-

men with their traditional methods.

Apart from local fish consumption, a certain amount of fish caught was used for inter-island trade and export. Details may be found in Table 4.28, below.

Table 4.28.

The inter-island trade, in fish  
in Southeast Sulawesi (1969 - 1983)

Year	Volume (tons)
1969	-
1970	3,471.0
1971	4,457.0
1972	5,028.2
1973	3,161.0
1974	4,104.0
1975	4,634.0
1976	4,898.0
1977	4,379.0
1978	2,506.8
1979	2,511.0
1980	2,515.6
1981	1,766.6
1982	2,385.2
1983	1,689.8

Source : Southeast Sulawesi Fisheries  
Office

It can be seen from the above table that, in recent

years, there has been a decline in inter-island trade. This is borne out by the fact that anchovies, which had previously been sold as dried fish, are now being sold locally by fishermen as bait for catching skipjack, and furthermore are being sold at a higher price than that formerly fetched by dried anchovies. The same is true for shrimps, an ingredient of terasi (shrimp paste), which are now being sold locally by fishermen, as soon as they are caught, for subsequent export abroad.

Export data for fish were first recorded in 1981. Figures for skipjack and shrimp exports to a number of countries may be found in Table 4.29. below.

Table 4.29.  
Skipjack and Shrimp Exports (1981 - 1983)  
from Southeast Sulawesi

Year	Type of fish	Volume (kg)	Destination
1981	Dried Bonito	29,400	Japan
1981	Frozen Skipjack and Yellowfin	904,712	USA and Japan
1981	Dried Bonito	4,000	Japan
	Frozen Skipjack and Yellowfin	1,261,657	Japan and USA
1983	Frozen Skipjack and Yellowfin	3,215,000	Japan and Thailand
	Frozen Shrimps	6,501.66	Japan
	Frozen Tuna	112,903	Japan

Source : Southeast Sulawesi Fisheries Office.

It can be seen from Table 4.29, that frozen fish and frozen shrimps are the principal exports, and that the U.S.A., Japan and Thailand are the principal markets.

Demand from abroad is still somewhat unpredictable because of a lack of effective processing in Southeast Sulawesi. After fish is landed, it must be put into cold storage before being exported. Unfortunately, the only cold storage facilities in the Province are situated in Kendari and Kolaka districts.

Projected skipjack and shrimp exports from Southeast Sulawesi may be seen in Table 4.30, below.

Table 4.30

Projected Skipjack and Shrimp exports  
from Southeast Sulawesi (1983 - 1990)

Year	Production (tons)	
	Skipjack	Shrimps
1983	3,000	10
1984	3,300	15
1985	3,630	25
1986	3,993	60
1987	4,392	125
1988	4,831	200
1989	5,314	275
1990	5,845	325

Source : Southeast Sulawesi Fisheries  
Office

Projected totals were reached by taking into account both linear regression and a number of factors able

to stimulate export growth.

Various overheads are incurred by fishermen and fishing businesses in this region. These may best be explained in accordance with the status of the fisherman :

1). Boat-hiring fishermen.

Most fishermen in Southeast Sulawesi belong to this group. Not only boats, but equipment, too, is hired. Overheads include boat hire, equipment hire, lighting, life-saving equipment, food whilst at sea, tax and preservatives.

2). Boat-owning fishermen.

The second largest group. Overheads include equipment, lighting, life-saving equipment, food whilst at sea, tax and preservatives.

3). Motor boat-owning fishermen.

Latest statistics reveal that 0,29% of all fishermen fall into this category, Overheads include equipment, fuel and lubricant, wages, life-saving equipment, lighting, food whilst at sea, tax and preservatives.

4). Ship-owning fishermen.

0,17% of all fishermen fall into this category, which is classed as fishing industry. Overheads include equipment, fuel and lubricant, life-saving equipment, lighting, food, tax, preservatives and wages. Fishermen in this category often pay wages to just a few crew members who are hired on a temporary, profit-sharing basis.

5). Working fishermen.

These fishermen are employed on ships to catch fish and their livelihoods depend on how much fish they manage to catch, since hauls are divided amongst crew members. Statistics are not available because fishermen in Southeast Sulawesi don't as a rule keep an account of payments made. Fishermen in this region are traditional by nature and live on a day-to-day basis, just managing to get by, and not wishing to invest in new equipment or in other ways.

Details of fish hauls in Southeast Sulawesi (1969-82) are given in Table 4.31 below.

Available data reveal that most fish is caught in Buton district. The truth of this is borne out by the fact that there are more fishermen in Buton district than elsewhere and that fishing grounds in that district are more extensive than in other districts.

Projected fish hauls in Southeast Sulawesi up to the beginning of Pelita V (1983-90) are given in Table 4.32 below

Projected totals in the above table were reached by taking into account both linear regression and a number of factors able to stimulate production growth.



Table 4.31.  
Fish hauls in Southeast Sulawesi (1969 - 1982)

Year	!	Production (tons)
1969		7,000
1970		15,473
1971		16,000
1972		18,254
1973		16,109
1974		14,914
1975		18,628
1976		18,937
1977		19,562
1978		22,074
1979		20,970
1980		22,530
1981		39,656
1982		41,970

Source : Southeast Sulawesi Fisheries Office

Table 4.32.

Projected fish hauls in Southeast Sulawesi  
(1969 - 1982)

Year	!	Production (tons)
1983		46,170
1984		50,500
1985		52,450
1986		52,700
1987		54,130
1988		64,103
1989		64,103
1990		67,300

Source : Southeast Sulawesi Fisheries Office

Data about fresh-water fishing and aquacultura in Southeast Sulawesi are given in Table 4.33 below.

It can be seen from Table 4.33 that Kendari and Kolaka districts have good fresh-water fishing and aquaculture potential. The truth of this borne out by the fact that there is extensive land and also a number of significant rivers in both districts. Muna and Buton, on the other hand, are island districts, and local inhabitants are not particularly interested in fresh-water fishing and aquaculture.

Table 4.33.

Area devoted to aquaculture in Southeast Sulawesi  
(1969 - 1982)

Year	Area (ha)				Total area
	Buton	Muna	Kendari	Kolaka	
1969	-	-	-	-	-
1970	-	-	-	-	-
1971	-	-	-	-	-
1972	140	35	861	570	1,706
1973	140	35	774	509	1,485
1974	133	84	2,102	2,506	4,858
1975	133	55	485	208	861
1976	104	7	2,204	446	767
1977	104	71	210	504	8,225
1978	37	-	344	139	313
1979	104	75	344	846	1,369
1980	90	75	250	332	777
1981	90	-	400	362	852
1982	-	-	-	-	-

- No available data

Source : Southeast Sulawesi Fisheries Office.

The total area of water in 1983 in the fresh-water and aquaculture sector was about 60,000 sq.km. Aquaculture was carried out principally in fish-ponds, paddy-fields, rivers and other waters.

Details of fresh-water fish production in Southeast Sulawesi may be found in Table 4.34, below.

Table 4.34

Fresh-water fish production  
in Southeast Sulawesi (1969 - 1982)

Year	Production (tons)
1969	871
1970	823
1971	819
1972	1,620
1973	1,186
1974	832
1975	836
1976	763
1977	1,445
1978	1,535
1979	1,491
1980	2,349
1981	1,928
1982	313

Source : Southeast Sulawesi Fisheries  
Office

Available data reveal that most fresh-water fish is produced in Kendari and Kolaka district.

Projected fresh-water fish production for Southeast Sulawesi is given in Table 4.35, below.

Table 4.35

Projected fresh-water fish production  
in Southeast Sulawesi (1983 - 1990)

Year	! Projected Production (tons)
1983	2,470
1984	3,110
1985	3,450
1986	4,100
1987	4,620
1988	5,420
1989	7,588
1990	10,623

Source : Southeast Sulawesi Fisheries  
Office

#### 4.5. Agriculture - related industries

This refers to industries producing seeds, fertilizers, boxes, animal feed and pharmaceuticals , amongst other things . Of these industries, only seed production and agricultural lime can be considered here .

There are a number of seed production centres and seednurseries, which come under the jurisdiction of the Food Crops Office :

- (1) Lambuya seed centre (Kendari district). Founded in 1968 as a rice seed production centre . Area 9.64 ha .
- (2) Balandete seed centre (Kolaka district). Founded in 1960 as a rice seed production centre. Area - 11 ha .
- (3) Barangka seed centre (Buton district). Founded in 1967 as a rice seed production centre . Area - 5.4 ha

The work of seed centres is to produce good quality rice seeds in bulk for later distribution to farmers . Another aspect of the work of seed centres is to test rice seeds sent from outside for their ability to adapt to local conditions and to test methods of cultivation as well as possible on existing rice seed. Yet another function of seed centres is to carry out agricultural extension.

Seed nurseries which fall under the jurisdiction of the Food Crops Office are :

- (1) Amoitc seed nursery (Kendari district). Founded in 1969 as a horticultural seed nursery for-fruit. Area - 10.90 ha
- (2) Punggaluku seed nursery (Kendari district). Founded in 1971 as a rice seed nursery . Area 5.87 ha
- (3) Andonuhu seed nursery (Kendari district). Founded in 1975 as a horticultural seed nursery. Area - 1.50 ha

(4) Lasehao seed nursery (Muna district). Founded in 1953 as a secondary crop seed nursery .

Area - 10.50 ha

(5) Kaongke-ongkea seed nursery (Buton district) .

Founded in 1952 as a horticultural seed centre.

Area - 5 ha

The function of seed nurseries is almost the same as that of seed production centres - namely, to produce good-quality seed for farmers and carry out extension work .

The Plantation Crops Office runs experimental gardens whose function is to act as a demonstration centre for farmers in the neighbourhood and to produce good quality seed for the future. See below for details :

Table 4.36. Experimental gardens run by the Plantation Crops Office (1982)

Name of garden	Location (district)	Area (ha)	Type of crop	Age
Kebun Induk Andonuhu	Kendari	4	Coconuts	8
Kebun Pembibitan Powatu	Kendari	4	Cloves and Coconuts	-
Kebun Induk Wawolemo	Kendari	4	Cloves and Nutmeg	10
Kebun Induk Lada Lambuya	Kendari	2	Pepper	8
Kebun Induk Lada Simbune dan Wundulako	Kolaka	6	Pepper	4
Kebun Induk Walembe nowite	Muna	8	Coconuts	10
Lambuya coconut Demonstration Plot	Kendari	4	Hybrid Coconuts	4

Source : Southeast Sulawesi Plantation Crops Office, 1982

Unfortunately, no data are as yet available from any of the above seed centres, nurseries or gardens. There is, however, Government investment in all of them.

Finally, a mention should be made of the soybean seed centre run by PT Kapas Indah Indonesia . Seed there is produced for nuclear estate and smallholder use. Cold storage facilities, with a capacity of 300 tons, are available for storings the seeds . There are plans to increase soybean seed production during Pelita IV so that local needs may be met and soybeans may even be exported to other parts of Indonesia. It is hoped that, within three years, 400,000 ha . of land cultivated with soy beans, outside Southeast Sulawesi, will receive seed from PT Kapas Indah Indonesia .

Agricultural lime is produced by PT Berdikari, Kendari, at a mill in Porobulu (Kendari district). At present production is geared to meet local needs, only. Raw material used is Dolomite limestone .



#### 4.6. Forestry

##### 4.6.1. Forestland

Forests cover an area of 2,884,143 ha or about 75,77% of the total area of Southeast Sulawesi (3,814,000 ha).

In accordance with the Programme of Forest Protection, Promotion and Administration (see Figure 6), forests have been divided into a number of categories, as follows :

Table 4.37

Types of Forest and area in Southeast Sulawesi (1980)

Type of Forest	Area (ha)	% Total land area
Nature reserve Forest	275,519.2	7.1%
Protected Forest	420,795	11.0%
Restricted production Forest	827,115	21.6%
Production Forest (normal)	688,890	17.5%
Convertible production Forest	699,383	18.5%

Production Forest cover 2,195,385.3 ha. These consist of primeval Forest (2,175,169.20 ha), nature teak forest (26,723,49 ha) and culture teak forest (17,041,39 ha).

Included in restricted production forest are mangrove

trees, which are found in most coastal areas in Southeast Sulawesi .

The area involved is estimated to be 50,000 ha, though this figure doesn't include mangrove trees outside jurisdicted areas .

Production Forest distribution data are given in Table 4.38, below .

Table 4.38

Production Forest in Southeast Sulawesi,  
by district (ha)

District	Normal pro- duction fo- rest	Restricted production forest	Convertib- le product- ion forest	T o t a l
Kendari	330,000	333,326	293,374	956,700
Kolaka	148,500	321,975	125,875	596,350
Buton	136,525	145,880	200,750	483,155
M u n a	53,865.8	25,934	79,384	159,183.8
T o t a l	668,890.8	827,115	699,383	2,195,388.8

Source : Southeast Sulawesi Forestry Office, 1983

#### 4.6.2. Forest Production

Both wood and non-wood produce is involved .  
Wood may either be in the form of logs or sawn wood,

either teak or wood from primeval forests . In addition, mangrove wood is also used. Potential production in primeval forests is 39.5 cu.m/ha. In nature teak forests, the figure is 20 cu.m/ha, but no figures are available for culture teak forests. Concerning the Maximum Annual Allowable Cut, there is as yet no hard-and-fast rule, but a spokesman from the Regional Office of the Department of Forestry explained that, as a rule, production potential and production life are the determining factors . Primeval forests have a production life of about 35 years and nature teak forests are productive for about 60 years. MAAC is calculated on the basis of 80 % exploitation of a given area of forest. Thus , MAAC is :

$$= \frac{0.80 \times \text{area of forest} \times \text{potential forest}}{\text{production life}} \quad \text{cu.m./annum}$$

If this formula is used, then MAAC for normal production forest (primeval) in each district is :

(1) kendari	- 297,974 cu.m./annum
(2) Kolaka	- 134,074 cu.m./annum
(3) Buton	- 123,262 cu.m./annum
(4) Muna	- <u>48,632 cu.m./annum</u>
total	603,911 cu.m./annum

MAAC for nature teak forest is 7,126 cu.m./annum .

Types of wood from primeval forests (already

Table 4.39  
Forest produce (1969 - 1983)

Pelita	Year	Teak (cu.m.)		Primeval (cu.m.)		Total (cu.m.)	Non-wood (tons)				
		Logs	Sawn wood	Logs	Sawn wood		Rattan	Resin	Bark	Candlenut	
I	1969-1970	-	-	1,381.51	-	1,381.51	-	-	-	-	-
	1970-1971	9,001.672	19.2110	911.191	249.716	10,181.79	249,716	-	-	-	-
	1971-1972	16,222.041	43.1550	402.672	54.858	16,722.726	1,508,165	-	-	-	-
	1972-1973	25,288.037	252.8470	1,372.484	114.4360	27,027.804	1,277,846	-	-	-	-
	1973-1974	59,240.889	200.2020	3,920.207	170.6400	63,531.938	829,331	-	-	-	-
T o t a l		109,752.639	515.9150	7,998.064	589.6500	118,845.768	3,865,050	-	-	-	-
II	1974-1975	31,171.104	295.4280	8,616.5	722.5050	40,805.557	610,958	20	-	-	-
	1975-1976	31,120.842	123.0280	6,327.02	991.8280	38,562.718	1,682,752	17,150	-	-	-
	1976-1977	31,070.516	787.1470	50,776.221	6,684.5650	89,318.449	1,038,627	4	1.320	-	-
	1977-1978	48,143.352	1,424.4648	31,871.384	6,346.9419	87,786.141	3,070,397	6,800	-	-	-
	1978-1979	22,594.313	361.6788	22,880.832	3,054.6455	48,891.468	1,599,050	-	0.630	-	-
T o t a l		164,100.127	2,911.7466	120,471.977	17,800.4854	305,364.333	8,001,784	47,950	1.950	-	-
III	1979-1980	15,198.091	2,090.6242	43,705.502	5,402.505	66,397.1222	2,886.860	12,200	-	-	-
	1980-1981	4,788.210	1,218.0268	52,570.9856	6,733.1088	65,310.3312	1,698.436	0,600	4	-	-
	1981-1982	7,323.341	910.1246	16,202.57	12,242.6178	34,768.0534	6,437.609	12,900	26,300	5,340	-
	1982-1983	8,152.046	934.9239	5,500.09	10,090.7825	24,767.8424	6,168.51	3,100	11,340	-	-
	1983-1984	10,056.94	779.4298	9,590.305	6,083.2885	28,510.4633	2,588.405	89.45	2,150	1	-
T o t a l		45,518.628	5,933.1293	127,779.752	42,552.9020	221,794.4125	19,579.88	12,825	45.84	6,340	-
Overall total		319,371.394	524,759.8759	256,239.793	650,093.388	645,994.5135	31,446.722	177.2	53.79	6,340	-

Source : Annual Report, 1982/1983, in Southeast Sulawesi.

mentioned in Ch. 2/2.5.6.) include sandalwood, MaduCha and Pericopsis. Non-wood produce includes rattan, resin and bark. Forest production figures (1969-1983) are given in table 4.39, .

Up to and including 31<sup>st</sup> March 1984, domestic investment in forest exploitation, both by permanent and temporary letter of agreement, was as follows :

Table 4.40

Domestic Investment (Forest exploration)  
in Southeast Sulawesi

Name of Company	!location!	Type of-company	!Work force	! Investment (Rp)
PT. Maranu Bintang Kejora	Wolo, Kolaka	Sawmill	250	1,472,000,000.00
PT. Hasil Bumi-Indonesia	Kolaka-Utara	Timber	-	1,552,507,000.00
PT. Gemini Timber Jack Corporation	Wolo, Kolaka	Timber	90	2,384,895,000.00
T o t a l				5,409,402,000.-

Source : Southeast Sulawesi Coordinating Body for Regional Investment, 1984 .

Foreign investment came from PT. Dwi Mutzumi, who run a sawmill in Raha, Muna district. The level of investment involved was Rp 373,500,000.

As yet, there is no plywood industry . Only sawn-wood is produced .

#### 4.6.3. Forest Produce Trade

The trade includes foreign exports and an inter-island trade .

##### 4.6.3.1. Exports

Types of wood exported include :

- (1) Teak (logs and sawn wood)
- (2) Various types of primeval wood (logs and sawn wood)
- (3) Agatis
- (4) Ebony
- (5) Mangrove
- (6) Kuku

Rattan, which is classed as non-wood, is also exported . Forest produce exports (1964-1982) are given in Appendices 21a, 21b and 21c.

Details about export destinations and types of wood and-rattan exported (1978-1982) are given in Table 4.11 .

It can be seen from the tabel below that log exports have declined since the peak export year of 1978 .

Sawn wood exports went up in 1979, but then declined.

However, the Southeast Sulawesi Forestry Office has since reported that 1982/1983 sawn wood exports are up : and it has been reported that rattan exports for the

Table 4.41

Forest Produce Exports From Southeast Sulawesi (1978 - 1982),  
by country of Destination

NO.	Country of destination	Produce	1978	1979	1980	1981	1982
1.	Japan	Logs	2,504.93	880.00	1,431.31	805.33	-
		Sawn wood	114.76	79.56	269.51	-	-
2.	Taiwan	Logs	1,320.37	3,054.91	542.47	69.84	821.93
		Rottan	-	-	-	-	1,308
3.	Netherlands	Sawn wood	-	8,784.98	-	-	32.32
4.	Spain	Logs	540.22	323.65	-	-	-
5.	Singapore	Logs	149.03	-	-	-	-
		Sawn wood	28.57	-	-	-	-
6.	South Korea	Logs	-	132.77	-	-	-
		Sawn wood	-	28.57	-	-	-
7.	Hongkong	Rottan	-	-	-	-	310
T o t a l		Logs	4,514.55	4,391.33	1,973.78	875.17	821.93
		Sawn wood	143.33	8,828.54	269.51	-	-
		Rottan	-	-	-	-	1,618

Wood (in cu.m)  
Rottan (in ton)

Source : Southeast Sulawesi Regional Office of the Department of Trade, 1983 .

same year are also up.

Figures for exports (1982/1983) may be found in Appendix 22.

#### 4.6.3.2. Inter-island trade

The inter-island trade is handled by the Forest Administration Unit, which is based in all four districts in Southeast Sulawesi .

Commodities traded include : rattan, primeval forest wood, other woods, bark, teak logs, sawn teak, sandalwood.

In 1982/1983 , 12,946.31 cu.m of wood and 1,754.303 tons of rattan were traded with Ujung Pandang, Denpasar, Kupang, Jakarta, Surabaya, Manado and Palu. The greatest volume of trade came from the Forest Transportation Unit in Muna - 8,064.86 cu.m. ( including 6,744.74 cu.m. of teak logs), and the bulk of inter-island trade was conducted with Ujung Pandang ( 1,576.303 tons of rattan and 9,129.3 cu.m of wood).

Details of the 1982/1983 inter-island trade are given in Appendix 23.

#### 4.6.4. Conservation and Protection

Steps which have been taken to preserve and protect forest resources are :



- 1) Banning or strict control of the export of logs (teak and good quality primeval forest logs), by decree of the Director General of Forestry, Miscellaneous Industries, Domestic Trade and Foreign Trade (1980). Since 1981, exports of logs have declined (see table 3)
- 2) Reforestation and afforestation . There is an annual budget for this .
- 3) Prevention of damage caused by shifting cultivation, through a programme of resettlement .
- 4) Prevention of forest fires. This is handled by the Forest Administration Unit in each district .
- 5) Prevention of unauthorized removal of forest produce especially wood and rattan . This is handled by wardens from the Southeast Sulawesi Forestry Office.

#### 4.7. Mineral, Mining and Chemical Derivatives.

##### 4.7.1. Resource base.

The following will be dealt with :

- (1) Asphalt, found in South Buton
- (2) Nickel, found in Kolaka district
- (3) Limestone, found in South Muna
- (4) Quartz, found on Wawonii Island, Kendari district; West Muna and South Kolaka.

##### 4.7.2. Asphalt mining.

Asphalt deposits are found in the southern part of Buton Island, over an area of about 25,000 ha, consisting of 19 fields, like Lawele, Kabongka, Winto, Wariti and Waisu, to name but a few. Two of these fields contain considerable amounts of asphalt deposits - Lawele, according to a 1961 Pacific Consultants estimate, contains 100 million tons of deposits. Kabongka, according to Cameron McNamara Consultants 1980 estimate, contains 60 million tons. To date, only one field has been mined - Kabongka - over an area of 304,36 ha. Mining started there in 1926.

Asphalt mining is undertaken by the State Asphalt Company, which is situated in Banabungi, Buton. The production process is as follows :

- (1) Stripping of top soil or limestone, using a bulldozer or explosives.
- (2) Ripping of the layer of asphalt, using a bull-

dozer, or, if this is inadequate, by boring followed by blasting.

- (3) The asphalt obtained by ripping is sifted and the sifted undersizes are subsequently taken by dump truck (c. 20 ton pay load) to the crushing plant to be blended, so that a homogeneous bitumen content is obtained.
- (4) Asphalt obtained by blasting is taken by dump truck (20 ton pay load) to the crusher to be crushed into the following dimensions :
  - fine (max. 10 mm)
  - medium size (10 - 20 mm)
  - over size (20+ mm)
- (5) Asphalt fragments which have been blended with sifted asphalt are taken to the stock yard at Banabungi by dump truck (c. 15 ton pay load).
- (6) The asphalt is taken by conveyor belt and loaded on to ships for distribution to all parts of Indonesia.

Asphalt production (1978-82) has already been given in Chapter 3 (see Table 3.16). It is estimated that asphalt deposits will not run out for about 250 years.

Asphalt is only sold to the domestic market. Future prospects depend greatly on processing, so that high-quality asphalt may be produced which will keep pace with the

latest technological advances in road construction.

#### 4.7.3. Nickel mining.

Nickel mining in Pomalaa, Kolaka district, is carried out by Aneka Tambang Ltd. Open pit mining and the Elkem process are used.

First of all, trees and bushes are cleared by bulldozer. Then, stripping takes place; also using a bulldozer. However, the top soil isn't merely discarded, but rather is kept for purposes of regreening at a later stage. Next, nickel ore is excavated by power shovel, which automatically loads the ore on to a dump truck. The dump truck then transports the ore to the stock yard. Because of the varying quality of ore obtained from different mines, careful blending must take place of ore of differing quality, so that the desired export quality is obtained.

At present, nickel mining is carried out in several areas to the north of Pomalaa and its surrounding area, and also to the south (Tanjung Lape, Batu Kilat and Tanjung Pakar). In each area a loading dock has been constructed, where nickel ore can be loaded on to barges. These barges are towed by tugs to ocean-going ships moored about 1½ miles from the shore. Because of the distance that the tugs must cover to reach the ships, factors like wind, waves and rain can greatly affect the speed at which loading takes place.

In the early years (1961-83), loading capacity was limited to about 700 M.T/day. During loading, samples are taken at regular intervals to be analyzed at the laboratory in Pomalaa. In this way, consistency of quality may be achieved. To date, most nickel ore exports are sent to Japan.

If all the principal equipment at the ferro-nickel factory is in normal working order, the factory should be able to process 350,000 tons of wet ore per year (250,000 tons of dry ore). Ore containing 1.8% nickel will produce 20,000 tons of ferro-nickel, containing 20 % nickel or 4,000 tons of nickel.

Nickel production (1978-82) is given in Chapter III (see Table 3.16). Nickel ore and ferro-nickel are export material. According to data from the provincial office of the Department of Industry, exports of nickel ore and ferro-nickel to Japan in 1982 were 349,913.3 tons (nickel ore) and 18,670.2 tons (ferro-nickel). These, respectively, were worth US \$ 10,666,917.82 and US \$ 21,536,722.04.

In an effort to diversify production, so as not to rely too heavily on nickel ore exports or on oil as a source of energy, steps are being taken to enlarge the existing factory, and a hydroelectric plant is to be built on the same site, by the banks of the River Larona Hilir. A factory-enlargement study was carried out in mid - 1979

by Kaiser, and a hydroelectric plant feasibility study was carried out the following year by Bechtel. Both studies reached very positive conclusions. Aneka Tambang's own experiences in constructing and starting up its existing plant, in early 1981, were used in the feasibility studies.

The conclusion reached was that the project was indeed highly feasible. Construction work would be carried out in two stages, leading to an ultimate capacity of 135 Mw for the hydroelectric plant and a 300% increase in capacity for the integrated factory. Ferro-nickel production would rise to 16,000 M.T. per annum and water would replace oil as the principal source of energy. In addition, the new electricity produced would open up the possibility, of developing new ferroalloy industries, like the production of ferro-silicon, and the local community would also benefit from the increased availability of electricity.

The total workforce at the Pomalaa nickel mine was 2,036 (in July 1982).

#### 4.7.4. Limestone.

Limestone can be found in many areas of Southeast-Sulawesi, but is especially found in Southern Muna, as can be seen from the geological map in Chapter II. To date, limestone is only used by the local population for construction work, in the form of lime. Recently, though, it has begun to be used extensively by farmers to neutralize soil acidity.

#### 4.7.5. Quartz.

The greatest concentrations of quartz reserves are found in West Muna and on Wawonii Island (Kendari district). Reserves there are estimated at one million tons. In South Kolaka, estimated reserves are 700,000 tons.

The Laboratory for Chemical Research at the Department of Industry, Ujung Pandang, examined a quartz sample, originating from Wawonii Island, in January 1980.

It was found that the silicon dioxide content ( $\text{SiO}_2$ ) was 97.35%.

To date, the quartz reserves remain unexploited.

#### 4.8. Metal-Working Industries.

##### 4.8.1. Resource base.

The metal-working industry makes a number of agricultural implements, like sickles, parangs, adzes, knives, plows and harrows. It also makes hammers, and ships anchors. Most metal-working industries in Southeast Sulawesi use secondhand metal or scrap metal as basic material, in the form of bars or plate. The resulting quality of goods produced leaves much to be desired, and so locally-produced goods are not able to compete effectively with goods from other regions and from abroad. Charcoal is used as a source of energy.

Other articles made include furniture and household articles made of iron, window lattices and railings. Iron pipes and wire are needed as basic material. Calcium carbide ( $\text{CaC}_2$ ) and oxygen ( $\text{O}_2$ ) are needed for welding purposes.

The brass industry makes household articles like pots and pans. Basic materials required are brass and aluminium, wax, charcoal and fire-wood.

#### 4.8.2. Existing metal-working industries.

Most metal-working industries are situated in Kendari, the provincial capital. There is a shortage of data, but, from available statistics, it can be concluded that good progress has been achieved since 1981, in common with the general development picture in Southeast Sulawesi and Kendari, in particular. A transmigration project has also been set up in Southeast Sulawesi.

However, there are still very few metal-working industries in the province, and most of the existing ones are home industries with limited capital resources. Ownership is entirely in the hands of Indonesian citizens. To date, no foreign investors have been tempted by this sector, since it is not considered particularly profitable. Goods produced are sold locally, since they are unable to compete with goods from other regions, where capital resources are relatively large. Conventional technology is used,



and so production levels remain low.

The following problems are being faced :

- (1) Owners of metal-working industries generally come from a low income background. Their knowledge of work and managerial skill is limited.
- (2) Production levels are low, because conventional technology is used. Production depends heavily on orders placed (mostly from farmers, for agricultural implements). Because of limited production equipment, it is predicted that production can only be raised by a maximum of 15-20%.
- (3) Marketing. Goods produced are sold directly to customers, themselves, or to traders and shopkeepers. A cash payment must be made in advance, because the metal-worker needs money for buying raw materials. Undoubtedly, the metal-worker loses out in the long run, because the purchaser will try and knock down the price as far as possible.. At the same time, the metal - worker depends on orders for his livelihood.
- (4) Technology. Conventional, low skill technology is used, causing:
  - quality to be difficult to improve. This results in locally-produced goods being unable to compete with goods from other regions.

- uneven quality of goods produced.
- work to take a relatively long time to complete. This, in turn, adversely affects net profits.

(5) Production costs are quite high because of limited technology and production capacity. Net profits are therefore low.

(6) Production equipment is rudimentary, and so there is little investment in new equipment.

(7) Entrepreneurs have little knowledge of credit problems. Therefore, they are unable to use investment credit from banks wisely in order to expand their businesses.

#### 4.8.3. Potential prospects

##### (a). Metal-working.

Although it is expected that production will increase and local demand will be met, low production quality has caused consumers to buy better quality goods from other regions, and even from abroad. Low quality results not only from conventional technology used, but also from the uneven quality of raw material (scrap metal). It is thought that sufficient raw material exists to meet the needs of metal-workers.

##### (b). Metal construction/furniture.

Low work skill is the factor principally affecting

production quality. Few workers are capable of designing products which can appeal to the varying tastes of consumers.

(c). Brass-working.

This has been carried out for hundreds of years in Buton district. Some products have been replaced by better products, but productivity remains low and the quality of goods produced is still not as high as that of goods from other regions. Product diversification has yet to be achieved, because of the absence of a good designer. Goods produced are sold locally, in the Moluccas and in East Nusa Tenggara.

4.9. Communications.

Introduction.

Communications plays an important part in national development. Without communications, development is severely hampered. Since all sorts of activities take place in different locations, according to where people live, it stands to reason that communications is absolutely necessary. As development takes place, so specialization increases, which makes it all the more important for communications both on a local basis and with the outside world.

Communications in Southeast Sulawesi includes :

- (1) Land communications
- (2) Sea communications
- (3) Air communications
- (4) Post and telecommunications

#### 4.9.1. Land communications.

Land communication are important for pedestrians animals, motorized vehicles and unmotorized vehicles. Roads enable us to travel about more easily and to go where we want to go. With the development that has taken place in motor vehicle technology, it is easy to appreciate the importance of roads nowadays. Asphalt, too, has made great strides in its development and is instrumental in improving the quality of roads for motor vehicle.

##### 4.9.1.1. Length of roads.

There are three grades of road in Southeast Sulawesi principal, secondary and minor. Road lengths(1978-82) are given below.

It can be seen from the table that road lengths, especially that of secondary and minor roads, increased from year to year.

Table 4.42

Increase in road length in Southeast Sulawesi  
1978-1982 (km)

End of year	Road length			Total length
	Principal	Secondary	Minor	
1978	197	239	2,141	2,577
1979	197	239	2,141	2,577
1980	199	1,106	2,251	2,585
1981	199	1,106	2,337	3,642
1982	199	1,106	2,357	3,642

Source : Southeast Sulawesi Office of Statistics.

4.9.1.2. Road quality

Road quality is determined by the materials used in road construction. There are five grades of road - class I - class V. In Southeast Sulawesi, there are class III, III A and IV roads. These were built with money from local and national budgets. Class V roads, however, are found in villages, on the whole, and these were built as a result of communal effort by respective village communities.

Class III roads have an asphalt surface, class III A are gravel roads and class IV have a hardened earth surface. Details of length of each class of road are given below.

Table 4.43

Length of principal, secondary and minor roads, according  
to surface material (1978 - 1982) - in km.

End of year	Principal roads		Secondary roads		Minor roads		Total	
	Asphalt	non-asphalt	asphalt	non-asphalt	asphalt	non-asphalt	asphalt	non-asphalt
1978	197	-	94	145	136	2,005	427	2,150
1979	197	-	94	145	136	2,005	427	2,150
1980	199	-	177	929	336	1,944	712	2,139
1981	199	-	198	908	374	1,963	771	2,814
1982	199	-	215	891	374	1,963	783	2,854

Source : Southeast Sulawesi Office of Statistics.

At the end of 1982 road surfaces consisted of 21.6% asphalt, 56.2% gravel and 22.2% earth. The total length of roads was 3,642 km. Details are given below ;

Table 4.44

Road length, according to quality, at the end of 1982

Road Surface	Principal roads	Secondary roads	Minor roads	Total
Asphalt	199	215	374	788
Gravel	-	780	1,267	2,047
Earth	-	111	696	807

Source : Southeast Sulawesi Office of Statistics.

In their use as thoroughfares, roads are susceptible to damage of varying degrees during the course of the rainy season. Details are given below of road conditions at the end of 1982 ;

Table 4.45

Road condition in Southeast Sulawesi

Road condition	Principal roads	Secondary roads	Minor roads	Total
Good	157	68	320	545
Moderate	42	410	1,078	1,530
Unsatisfactory	-	528	928	1,456
Bad	-	100	11	111
T o t a l	199	1,106	2,337	3,642

Source : Southeast Sulawesi Office of Statistics

It can be calculated from the above table that road conditions at the end of 1982, in percentage terms, were as follow - good (15%), moderate (42%), unsatisfactory (40%), bad (3%).

#### 4.9.1.3. Vehicles.

Speed and efficiency of transport and communications is determined by the type and quality of vehicle used. Greater numbers of vehicles make it possible to reach greater numbers of areas. Details of vehicles in Southeast Sulawesi over the last few years are given below.

Table 4.46  
Types of motor vehicles in Southeast Sulawesi  
(1978-1982)

Type of vehicle!	1978	1979	1980	1981	1982
Saloon car	109	97	156	170	179
Station wagon	-	-	-	-	39
J e e p	384	355	546	694	791
Minibus	74	116	215	311	406
Pick up	596	769	944	1,476	1,934
Ambulance	8	9	17	12	18
Forklift	-	6	8	-	10
Truck	706	748	909	1,240	1,522
Tractor	30	36	71	96	86
Motorcycle	6,253	6,809	7,832	9,622	11,423
Fire engine	5	4	4	-	-
Tanker	4	14	18	-	-
<b>Total</b>	<b>8,169</b>	<b>8,963</b>	<b>10,720</b>	<b>13,621</b>	<b>16,408</b>

Source : Southeast Sulawesi Highway Traffic Inspectorate.



It can be seen from the above table that there was an annual increase in the volume of traffic. The increases recorded were-10% (1979), 19.6% (1980), 27.1% (1981) and 20.5% (1982).

#### 4.9.2. Sea communications.

Sea communications in Southeast Sulawesi play an important role in view of the fact that the majority of villages and subdistricts in the province are coastal.

A number of different types of sailings take place :

- (1) Ocean - going
- (2) Inter - island
- (3) Local
- (4) Public
- (5) Ferries
- (6) Special ;
  - PAN Banabungi (asphalt)
  - PN Aneka Tambang Pomalaa (nickel)
  - PN Pertamina (fuel)

##### 4.9.2.1. Ocean - going services.

This category covers international sailings, both to and from Indonesia. Ships are large, and carry exports and imports. Kendari is the only port in Southeast Sulawesi to be able to accommodate ships in this category. Details of sailings are given below ;

Table 4.47

The growth in ocean - going shipping (1979-1982)

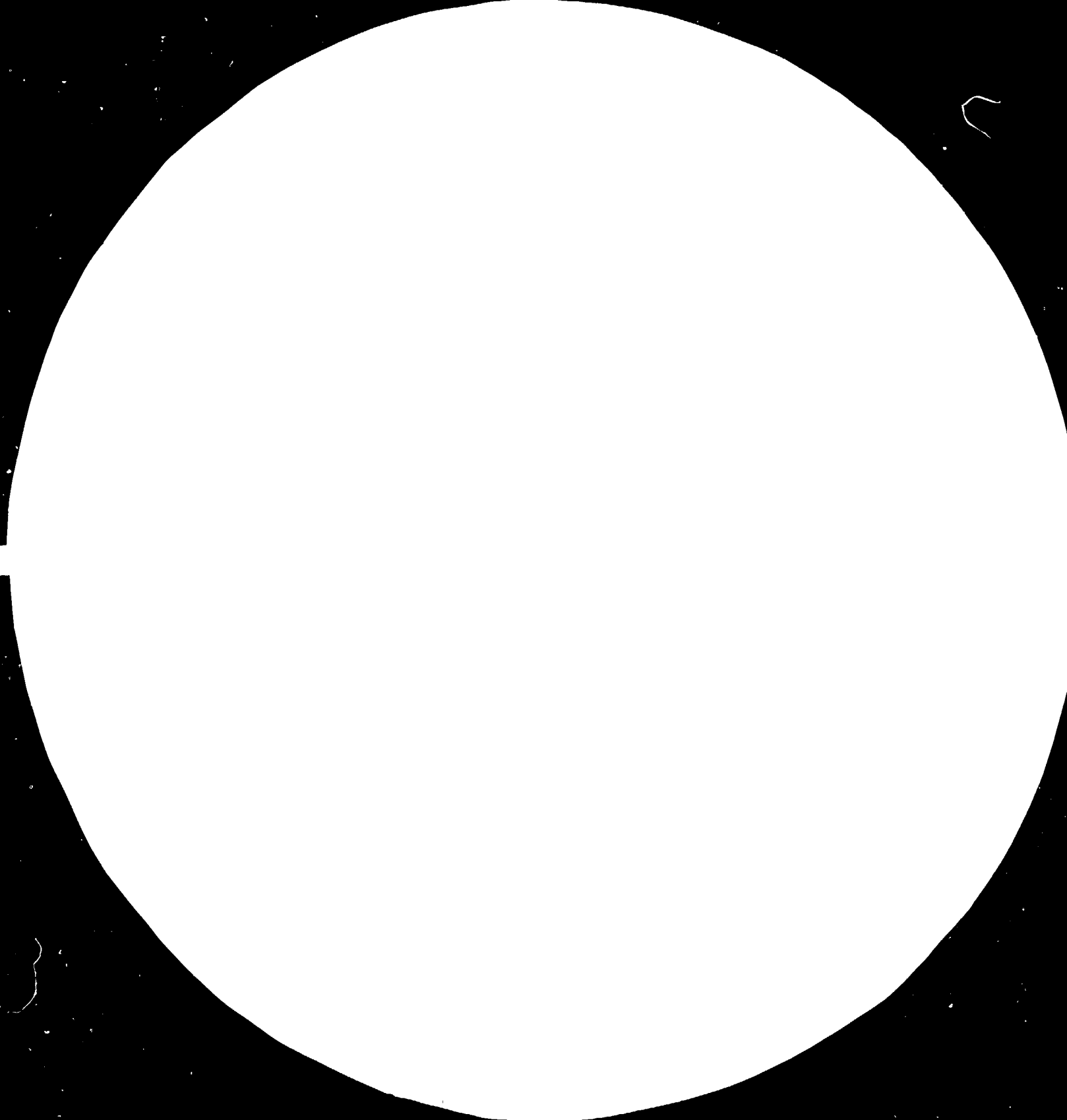
Year	Number of ships	DWT	Cargo (tons)		Passengers	
			Unloaded	Loaded	Disembarking	Embarking
1979	50	1,363,505	1,579	562,425	-	-
1980	50	785,858	58,690	486,673	-	-
1981	35	414,811	67,383	11,927	27	-
1982	42	866,792	21,520	421,086	12	-

Source : Southeast Sulawesi Office of Statistics.

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4



MICROCOPY RESOLUTION TEST CHART

NATIONAL BUREAU OF STANDARDS  
STANDARD REFERENCE MATERIAL 1010a  
(ANSI and ISO TEST CHART No. 2)

It can be seen from the above table that ocean-going shipping transported goods rather than passengers, and that most goods were exported rather than imported. Up to 1982, 95% of goods transported were exports and only 5% were imports.

#### 4.9.2.2. Inter-island services.

This category covers domestic, inter-island sailings to other parts of Indonesia. All principal district parts (Kendari, Kolaka, Raha and Bau-Bau) are involved in such sailings. Details are given below : (see Table 4.48)

It can be seen from the above table that, at the end of 1982, the volume of shipping increased by 157%, goods unloaded went up by 221%. On the other hand, goods taken on board fell by 53%, compared to the previous year. Most goods unloaded came from Jakarta, Surabaya and Ujung Pandang; they included cement, corrugated-iron, glass, plywood and stationery, amongst others.

#### 4.9.2.3. Local services.

This category covers sailings within Southeast Sulawesi. Details are given below : (see Table 4.49).

It can be seen from the table that there was a considerable rise in the volume of shipping at the end of 1982 (229%). Accordingly, goods unloaded increased by 166% and passengers embarking by 121%. In view of this rapid

Table 4.48

The growth in inter-island shipping (1979 - 1982)

Year	Number of ships	DWT	Cargo (tons)		Passengers	
			Unloaded	Loaded	Disembarking	Embarking
1979	221	343,330	63,326	19,683	473	-
1980	329	435,345	64,722	19,749	4,860	7,660
1981	203	547,811	67,383	11,827	5,983	3,120
1982	522	2,265,060	216,797	5,551	739	8,095

Source : Southeast Sulawesi Office of Statistics

Table 4.49.

The growth in local shipping (1979 - 1982)

Year	Number of ships	DWT	Cargo (tons)		Passengers	
			Unloaded	Loaded	Disembarking	Embarking
1979	1,829	327,839	72,568	23,374	7,001	-
1980	1,966	303,780	25,460	10,699	25,157	23,502
1981	2,745	475,747	16,243	5,852	41,967	35,826
1982	9,042	1,597,918	193,404	8,467	27,239	79,355

Source : Southeast Sulawesi Office of Statistics

development, more ships are needed.

#### 4.9.2.4. Public services.

This category covers the transportation of goods and passengers by the local population, using traditional boats. Such services are found throughout Southeast Sulawesi. Details are given below : (see Table 4.10)

It can be seen from the above table that, at the end of 1982, numbers of passengers transported were relatively high.

#### 4.9.2.5. Ferries.

The only ferry service operating in Southeast Sulawesi is that between Kolaka and Bajoe in South Sulawesi. This ferry is both a passenger and cargo ferry. Two ships are in operation, though one or the other is frequently out of commission. Details of sailings are given below :

It can be seen from the table that, on the whole, only one ship operated continuously, because, had both ships been continuously in operation, the number of sailings would have been about 365 a year.

Apart from the Kolaka-Bajoe ferry, improvements need to be carried on the ferry service linking Kendari with Raha and Bau-Bau.



Table 4.50  
The growth in public shipping (1980 - 1982)

Year	Number of vessels	DWT	Cargo (tons)		Passengers	
			Unloaded	Loaded	Disembarking	Embarking
1980	2,625	153,318	22,160	11,467	30,839	35,854
1981	305	24,906	7,512	2,452	7	-
1982	839	184,434	22,947	12,982	29,834	28,900

Source . Southeast Sulawesi Office of Statistics

Table 4.51  
The growth in Ferry Services (1979 - 1982)

Year	Number of Sailings	DWT	Cargo (tons)		Passenger	
			Unloaded	Loaded	Disembarking	Embarking
1979	150	193,182	1,553	781,740	38,460	38,513
1980	212	311,037	4,160	2,629	50,481	48,491
1981	342	358,544	7,741	4,272	54,000	-
1982	160	244,754	4,608	999	22,954	24,208

Source : Southeast Sulawesi Office of Statistics

4.9.2.6. Special services.

This category covers the transportation of asphalt from Banabungi, nickel from Pomalaa and fuel to all four districts in Southeast Sulawesi. Details of sailings are given below :

Table 4.52  
The growth of special shipping

Year	Number of Sailings	DWT	Goods (tons)	
			Unloaded	Loaded
<u>PAN Banabungi</u>				
1981	99	534,929	-	270,925
1982	174	981,315	-	6,215
<u>PN Aneka Tambang</u>				
1979	40	1,209,022	9,135	537,548
1980	50	785,857	-	529,305
1981	37	360,928	57,397	318,368
1982	74	997,953	-	389,679
<u>PN Pertamina</u>				
1979	242	343,007	171,511	-
1980	172	160,863	28,485	3,254
1981	123	131,431	58,775	-
1982	149	297,881	62,348	-

Source : Southeast Sulawesi Office of Statistics

It can be seen from the above table that PAN Bana-bungi only loads goods, PN Aneka Tambang both loads and unloads goods, and PN Pertamina also loads and unloads goods.

#### 4.9.2.7. Pelita III infrastructure target.

Details may be found in the table, below :

If the achievement of Pelita III (see above) are set against the growth in shipping, it is clear that still more improvements and extra facilities will be needed during Pelita IV to cope with and support present development trends in Southeast Sulawesi. More docks and warehouse space are needed so that ocean-going and inter-island ships can dock here and so that the export/import trade can function properly. At present, unloading and loading is done manually, which means that each ship is moored for a relatively long period of time.

It can also be seen from Table 4.53 below that the Port of Kendari received more attention than other ports. This is bound to be the case, bearing in mind the fact that Kendari is the provincial capital. However, during Pelita IV, it is intended that other ports will receive increased attention.

Table 4.53.

Planned targets during Pelita III

No.	Work planned		Volume	Location		
				District	Sub-district	Village
1.	Construction of concrete wharf to replace wooden wharf		1,331.2 Sq.m.	Kendari	Kendari	Kendari
2.	Warehouse yard construction		500 Sq.m.	Kendari	Kendari	Kendari
3.	Concrete wharf		1,999 Sq.m.	Kendari	Kendari	Kendari
4.	Construction of wooden jetty on concrete supports		500 Sq.m.	M u n a	Katobu	R a h a
5.	Installation of mercury lamp in dock work area		22 points	Kendari	Kendari	Kendari
6.	Fencing of dock work area		480 m.	Kendari	Kendari	Kendari
7.	Construction of quayside terminal		300 Sq.m.	Kendari	Kendari	Kendari
8.	Construction of quayside loading area and road		3,500 Sq.m.	Kendari	Kendari	Kendari
9.	Pier rehabilitation work		372 Sq.m.	Buton	Wolio	
10.	Electricity installation		10 points	M u n a	Katobu	R a h a
11.	Dredging work		75,000 Cu.m.	Kendari	Kendari	Kendari
12.	Construction of quayside loading area and road		2,900 Sq.m.	Kendari	Kendari	Kendari
13.	Construction of quayside loading area (incomplete)		2,200 Sq.m.	Kendari	Kendari	Kendari

Source : Port of Kendari Authority

#### 4.9.3. Air communications.

Each district in Southeast Sulawesi has its own airport. The airport at Kendari (Wolter Monginsidi) can accommodate Fokker F-28s, whereas the other airports can only accommodate Twin Otters.

##### 4.9.3.1. Infrastructure.

The type and size of plane able to land at an airport depends on existing facilities and the infrastructure at that airport. Details of the facilities at Wolter Monginsidi Airport, Kendari, are given below :

Facilities in the other airport are obviously limited, since the airports themselves are of secondary importance. This, however, does not prevent improvements from being carried out.

##### 4.9.3.2. Types of Airline

A number of planes are able to use Wolter Monginsidi Airport. These include :

###### (1) Civil aircraft

- Fokker - F28
- Casa
- Cessna
- Twin Otter

The route flown is Ujung Pandang-Kendari-Ujung Pandang, except for Twin Otters, which fly to Muna,

Table 4.54.

The infrastructure at Wolter Mongingsidi Airport (1983)

Type of Facility	Unit of Measurement	Size/Length/ Quantity
Runway	Sq.m.	541,941
Taxi way	Sq.m.	1,725
Shoulders	Sq.m.	10,100
Overrun	Sq.m.	210,000
Closed drainage	m.	2,500
Open drainage	m.	3,300
Marking	Sq.m.	4,000
Approach transitional	Sq.m.	450,000
Turning area	Sq.m.	3,000
Operation building	Sq.m.	1,204
Office	Sq.m.	280
Service road	m.	7,537
Terminal	Sq.m.	760
Antenna	-	4
T o w e r	-	1

Source : Air communications, Kendari

Buton and Pomalaa.

(2) Airforce planes.

- Hercules C.130
- Several types of Hally
- Fokker 27
- Sky Hawle (Fighter)
- FSE (Fighter)

The route flown is Jakarta-Ambon Ujung Pandang-Manado-Banjarmasin-Kendari (and vice versa).

4.9.3.3. Air traffic and freight.

Air traffic growth is given in Table 4,5 below. It can be seen that numbers of passengers carried showed an increase over the years. The fall in the number of passengers boarding aircrafts in 1983 was caused by the unusually long wet season which, apart from causing the cancellation of a number of flights, also dissuaded many people from flying. Apart from passengers, freight and mail are also carried. The increase in freight carried was 75% (unloaded) and 16% (loaded). The increase in mail carried was 17% (unloaded) and 23% (loaded).

Table 4.55  
Air traffic at Wolter Mongingsidi Airport (1976 - 1983)

Year	Aircraft Movement	Passengers			Baggage (kg)		Cargo (kg)		Mail (kg)	
		Arr.	Transit	Dep.	Unloaded	Loaded	Unloaded	Loaded	Unloaded	Loaded
1976	746	10,689	1,050	10,422	180,197	215,994	92,775	29,342	15,118	6,210
1977	1398	15,965	2,718	16,622	223,211	175,478	144,667	31,171	28,743	11,871
1978	1396	17,781	1,642	18,191	266,725	170,053	130,826	32,991	30,958	10,678
1979	1120	11,457	788	11,902	163,820	103,321	78,847	26,775	20,312	10,144
1980	2024	19,011	303	21,001	198,356	201,903	113,336	47,301	20,611	15,100
1981	1978	17,341	237	22,802	193,888	162,018	115,395	37,690	16,695	27,417
1982	2002	22,671	960	25,045	237,590	166,461	249,585	42,714	36,478	15,959
1983	1674	28,285	250	20,965	112,963	140,159	433,115	49,309	42,745	19,026

Source : Air communication, Kendari



#### 4.9.4. Post and Telecommunications

##### 4.9.4.1. Letters and packages

The postal delivery service is carried out by the Kendari Post office in conjunction with 13 sub post offices situated in various location throughout Southeast Sulawesi. The postal delivery service handles letters, first and second class delivery, official post and printed matter. Island mail and mail from abroad are handled. Details of mail sent and received are given below :

Table 4.56.

#### Mail sent and received during 1982

Type of mail	S e n t		R e c e i v e d	
	Inland	Abroad	Inland	Abroad
1 <sup>st</sup> class	258,292	-	216,079	-
2 <sup>nd</sup> class	204,245	5,960	329,016	9,150
Official	327,000	-	298,300	-
Printed matter/ newspapers	8,960	-	27,950	6,550
<b>T o t a l</b>	<b>825,497</b>	<b>5,960</b>	<b>871,345</b>	<b>15,700</b>

Southeast Sulawesi Office of Statistics

Figures for sub post offices are given below :

Table 4.57.

Inland and foreign money orders sent and received  
by a number of Post Offices (1982)

Post office	S e n t		R e c e i v e d	
	Inland	Abroad	Inland	Abroad
Kendari	13,468	-	3,219	43
Ambaipua	449	-	150	-
Wawotobi	834	-	482	2
Rate - rate	230	-	171	-
Punggaluku	166	-	203	-
Kolaka	1,951	-	682	6
R a h a	2,025	-	573	29
Bau - bau	1,774	-	1,359	52
Bana bungi	318	-	109	-
Moramo	52	-	123	-
Tinanggea	88	-	219	1
Pomalaa	1,054	-	79	-
Kendari lama	424	-	-	-
Lambuya	8	-	-	-
<b>T o t a l</b>	<b>22,841</b>	<b>-</b>	<b>7,373</b>	<b>133</b>

Source : Southeast Sulawesi Office of Statistics

It can be seen from Table 4.57 above that there is still a shortage of post offices, bearing in mind the

area of Southeast Sulawesi. It is hoped that there will be a sub post office in every subdistrict, particularly in transmigration areas. The target is to build twenty-five additional post offices by 1990.

#### 4.9.4.2. Telecommunications.

Telecommunications can be defined as long-range communications, as the exchange of information between two different places. Information exchange can take place by voice, by writing and by picture transmission. The most primitive form of telecommunications known is by smoke signal, drum and other forms of signal. Some of these are still practised in rural areas. The latest system is by telephone, telegraph, radio and television. Both systems have the same aim to exchange information at a distance, without needing to come into direct contact. The only difference is the type of equipment used.

##### (1) Telephone

In Southeast Sulawesi, the only automatic telephone exchange is in Kendari, enabling subscribers to come into direct connection with a number of cities throughout Indonesia. Details about the spread of the telephone network throughout Southeast Sulawesi are given below :

Table 4.58

Number of Telephones in Southeast Sulawesi  
(1978-1982)

District!	Number of subscribers/year					Total
	! 1978 !	! 1979 !	! 1980 !	! 1981 !	! 1982 !	
Kendari	475	503	691	850	920	3,439
Buton	-	-	-	-	26	26
Muna	-	-	-	-	29	29
Kolaka	-	-	-	-	27	27
<b>Total :</b>	<b>475</b>	<b>503</b>	<b>691</b>	<b>850</b>	<b>1,002</b>	<b>3,521</b>

Source : Southeast Sulawesi Office of Statistics.

It is clear from the above table that there are not enough telephones to satisfy demand, particularly in Buton and Muna. It is hoped, therefore, that the network will be extended in the future.

#### 4.9.4.2.2. Telegram

The growth in number of telegrams and received is charted below.

Telegrams are a relatively inexpensive means of communication, For this reason, it is important to extend and improve the service.

Table 4.59

Numbers of telegrams in Southeast Sulawesi  
(1978-1982)

Year	Telegrams sent		Telegrams received		Total
	Inland	Abroad	Inland	Abroad	
1978	53,819	96	47,707	36	101,658
1979	49,205	168	52,325	-	111,778
1980	41,576	81	35,844	12	77,513
1981	51,337	104	41,133	31	92,705
1982	54,097	111	48,314	70	102,592

Source : Southeast Sulawesi Office of Statistics.

## Chapter 5

### BASIC NEEDS

#### 5.1. Food Supply and Demand in the Province.

Nowadays, corn, cassava and sago have all but ceased to be regarded as staple food by the people of Southeast Sulawesi. In the past, these foods were widespread, but rice has gradually taken over as the principal staple food.

Food crop production was discussed at length in Chapter 4, as was fish and meat, as a source of protein. Protein requirements are met in Southeast Sulawesi by fish consumption, alone, which it has been estimated, averages 30 kg/capita/annum, whereas the national average is just 10 kg/capita/annum. Average meat consumption was also given in the same chapter.

Rice consumption will now be discussed. Gross rice production (upland and lowland rice) in 1982 was 74,468 tons (see Chapter 2 Table 2.10). The net figure was 35,745 tons. In 1982, the population of Southeast Sulawesi was 1,002,732. This means that there was enough rice for a per capita annual consumption figure of 36 kg, or 100 g of rice per person per day. As it happens, an additional 19,654 tons of rice were brought in by the Southeast Sulawesi Logistics Depot, meaning that the rice consumption figure for 1982 was, in fact, 55.25 kg/capita/annum, or 153g/capita/diem. It is hoped that daily rice consumption at

the end of Pelita IV will have reached 300 g. This, however, will require a rice production figure of 384,039 tons. It is obvious that local production cannot possibly satisfy demand for rice in the future. So, rice will have to continue to be brought in from outside and other staple foods will have to be eaten as well. This won't, of course, prevent foods like corn, cassava and sago from being used as raw material for industry, since increased purchasing power has enabled people to buy rice.

## 5.2 Housing

Housing is a basic human need . When new housing is built, whether urban or rural, environmental considerations must be taken into account in order that the necessary facilities and infrastructure may be provided. Relevant facilities include administrative, educational, health, social service, religious, cultural, sports and recreational facilities, amongst others. The infrastructure includes communication, drainage, power lines, and others besides.

### 5.2.1. Housing Situation

There are three patterns of housing in Southeast Sulawesi :

- 1) housing built in clusters
- 2) housing built in rows
- 3) scattered housing

Housing built in clusters is found in all the major towns in the Province and in some of the smaller towns, as well .

Housing built in rows is found in many smaller towns, in villages built by main roads, in coastal villages and island villages . Scattered housing is found in isolated villages and in various other places. Such housing often occurs when a person builds a house within easy reach of the place where he earns his living . In cases like this,



not much attention is paid to environmental considerations.

In Southeast Sulawesi, 44 % of housing is built in clusters, 46 % is built in rows, and 10 % is scattered . The approximate number of houses in the Province is 187,488

#### 5.2.2. Types of housing

There are four types of housing in Southeast Sulawesi :

1. Private (self-built)
2. State and Non-state (hire-purchase)
3. Transmigration
4. Settlement

##### 5.2.2.1. Private housing

This type of housing is built by individuals and is based on what the individual can afford . In towns, this is particularly the case . However, in villages, people usually get together to build a house. The number of houses in this category in 1983 was as follows :

- Kendari and Kendari district	- 48.962 houses(77 %)
- Bau-bau and Buton district	- 62.628 houses(98,7%)
- Muna district	- 30.673 houses(96,8%)
- Kolaka district	- 27.177 houses(94 %)
<hr/>	
- Southeast Sulawesi	-169.440 houses(90,3%)

### 5.2.2.2 State and Non-State housing

This modest type of housing is built by the National Housing Company Ltd. and by private contractors, and is subsequently sold to the public free of charge. Payment is made in installments over a fixed period of time. Ownership eventually passes to the buyer when full payment has been made. The number of houses in this category in 1983 is given in the table, below.

Table 5.1

#### Number of State and Non-State houses

Location	Total	state	Non-state
Kendari	582	282	300
Bau-bau	250	250	-
Pomalaa (Kolaka)	100	-	100
<b>T o t a l</b>	<b>932</b>	<b>532</b>	<b>400</b>

Sources : National Housing Company Ltd. New Pedati and other private contractors.

It can be seen from the above table that State and Non-State housing makes up 0.5% of all housing in South east Sulawesi. The figures for each location are :

1. Kendari - 0,92 % of the housing in Kendari and Kendari district

2. Bau-bau - 0.4 % of the housing in Bau-bau and-  
Buton district

3. Pomalaa - 0.35% of the housing Kolaka district

Three types of house are built-D.36 (State housing),  
T.54 and T.70 (Non-state housing). The former is semi-  
detached; the latter two are detached .

#### 5.2.2.3. Transmigration housing

This type of housing is built by the Department of  
Transmigration for the use of transmigrants . A number of  
additional facilities are provided, as well as an adequate  
infrastructure. In addition, transmigrants are given suffi-  
cient land for them to be able to earn a living. The basic in-  
frastructure provided includes a road, water supply, sani-  
tation and drainage .

Additional facilities include education, health, shops, ad-  
ministration, public services, religion and sport .

By 1983, in Southeast Sulawesi, 17,116 houses had been  
built for 70,645 transmigrants. This total includes Gover-  
ment-assisted transmigration (14,893 houses for 62,163  
transmigrants) and spontaneous transmigration (2,223 hous-  
es for 8,482 transmigrants) . Spontaneous transmigration -  
means self-financed transmigration, in which the Gover-  
ment only plays an organizational role .

This type of housing made up 9.13 % of all housing in 1985. Individual figures for each district were :

1. Kendari district - 13,989 houses (22.08 % )
2. Buton district - 539 houses ( 0.9 % )
3. Muna district - 1,000 houses ( 3.2 % )
4. Kolaka district - 1,588 houses ( 6 % )

Totals in this category are assessed on a " head of household " basis, since each head of household receives one house .

#### 5.2.2.4. Settlement housing

This type of housing is built by the Social Department and the Rural Development Department . It is intended for people living in isolated areas, so that they may be able to communicate with one another. This system of construction is almost the same as that of transmigration housing .

#### 5.2.3. Housing Construction

Housing may be classified according to the building material used, as follows :

1. Permanent
2. Semi-permanent
3. Traditional
4. Emergency

Number of houses in each category may be ascertained

by reading the reports submitted after the conducting of field surveys on :

- a. Southeast Sulawesi Rural Housing Renovation Project (1983/1984)
- b. Southeast Sulawesi Land Use and Administration Improvement Project (1984/1985)

#### 5.2.3.1. Permanent housing

This type of housing has a foundation , masonry-walls, cement or tiled floor and corrugated iron roofing. The basic construction remains the same, even if parts are added on . The type of house is found in all the larger towns in the Province. It makes up 27 % of all housing in Kendari and Kendari district, 23 % in Bau-bau and Buton-district, 1 % in Muna district and 2 % in Kolaka district.

#### 5.2.2.2. Semi-Permanent housing

This type of housing has a foundation; part-masonry, part-wooden or plywood walls; corrugated-iron or thatched roof and earth floor. It is more changeable in nature than permanent housing, though its design was planned before building commenced. The cost factor probably determined that it was semi-permanent. Numbers of houses in each district (in percentage terms) are :

- Kendari and Kendari district (30 %)
- Bau-bau and Buton district (30 %)
- Muna district ( 5 %)

- Kolaka district ( 5 % )

#### 5.2.3.3. Traditional housing

Construction of this type of housing varies from region to region but, on the whole, specially treated-wood is used, either permanent or temporary in nature .  
Numbers of houses in each district (in percentage terms)-  
are :

- Kendari and Kendari district ( 8 %)
- Bau-bau and Buton district (20 %)
- Muna district (81 %)
- Kolaka district (83 %)

#### 5.2.3.4. Emergency housing

There are two types of emergency housing :

1. No foundation, wooden walls (boards), earth floor and corrugated-iron roof
2. No foundation, Gamacca or woven bamboo walls, thatched roof and earth floor .

Numbers, of houses in each district (in percentage terms) are :

- Kendari and Kendari district (35 %)
- Bau-bau and Buton district (27 %)
- Muna district (13 %)
- Kolaka district (10 %)

On the basis of the field survey reports , mentioned

previously, a complete picture of types of house construction throughout Southeast Sulawesi may now be given:

Table 5.2

House construction by district (1983 - 1984)

No.!	Type of construction	Kendari/! Kendari	Bau-bau/! Buton	Muna	! Kolaka
1.	Permanent	27 %	23 %	1 %	2 %
2.	Semi-permanent	30 %	30 %	5 %	5 %
3.	Traditional	8 %	20 %	81 %	83 %
4.	Emergency	35 %	27 %	13 %	10 %

5.2.4. Provision of material

Material used in house construction is obtainable from within Southeast Sulawesi and from outside the province. Material obtained locally is as follows :

- coral, rocks and boulders
- gravel
- various types of sand
- lime
- various types and grades of wood
- gamacca / woven bamboo
- roof thatching

Material obtained from outside Southeast Sulawesi is :

- cement (especially Tonosa cement)

- various types of iron
- various types of nails
- plywood
- corrugated -iron roofing
- shingle roofing
- paint

Material from the above sources can be obtained in a number of ways :

- independently
- through mutual self-help (gotong royong)
- by lottery
- through local cooperatives (repayment by installments)

Material obtained locally is usually obtained in one of the first three ways. Material obtained from outside-Southeast Sulawesi is usually obtained independently, by lottery, or through local cooperatives .



### 5.2.5 Housing growth

According to the 1979 annual statistics of South-east Sulawesi, the number of households in each district of the Province was as follows :

Kendari	- 48,900
Buton	- 57,991
Muna	- 29,160
Kolaka	- 22,130

By 1982, the totals were as follows :

Kendari	- 63,533
Buton	- 63,417
Muna	- 31,673
Kolaka	- 28,865

If the above figures are used as a basis for estimating future growth, the approximate annual rates are as follows :

Kendari	- 9 %
Buton	- 3 %
Muna	- 2.7 %
Kolaka	- 9 %

If it is assumed that the growth in numbers of households is identical to the growth in number of houses, then it is possible to predict the figures for the latter up to 1990 . See Table 5.3 below :

Table 5.3.  
Estimated numbers of houses in Southeast Sulawesi  
 (1982-1990)

Year	Number of houses by district				Total
	Kendari	Buton	Muna	Kolaka	
1982	63,533	63,417	31,673	28,865	187,488
1983	69,250	65,319	32,528	31,426	198,523
1984	75,482	67,278	33,406	34,293	210,459
1985	82,275	69,296	34,307	37,379	223,257
1986	89,679	71,374	35,233	40,743	237,029
1987	97,750	73,515	36,184	44,409	251,858
1988	106,547	75,720	37,160	48,405	267,832
1989	116,136	77,991	38,163	52,761	285,051
1990	126,588	80,330	39,193	57,509	303,620

It can be seen from the above table that the total number of houses in Southeast Sulawesi is expected to reach 303,620 by 1990. District totals are expected to be as follows :

Kendari	- 126,588
Buton	- 80,330
Muna	- 39,143
Kolaka	- 57,509

The above totals cover all types of housing in the

Province .

#### 5.2.6. Material requirement

After examination of the different types of housing and house construction in Southeast Sulawesi, it seems that semi-permanent T-54 houses are most worth developing for the community as a whole . Not only is this type of house relatively cheap to build, but it's also easily converted into a permanent house . T-54 houses have a guest room, dining room, kitchen and 3 bedrooms .

Details of estimated quantity of materials required for construction of a T-54 semi-permanent house are given below :

Table 5.4.  
Estimated quantity of materials required for construction  
of semi-permanent T-54 house

Type of material	Unit of measurement	Volume	Source
Cement	sack	110	Imported
Rock/coral	cu.m.	21	Local
Sand	cu.m.	48	Local
Gravel	cu.m.	12	Local
Wood (Grade II )	cu.m.	3	Local
Wood (Grade III )	cu.m.	5	Local
Concrete iron	kg.	220	Imported
Concrete wire	kg.	2	Imported
Nails	kg.	20	Imported
Nuts,bolts,ironware etc	kg.	15	Imported
Corrugated iron (6')	Length	90	Imported
Zinc	Length	3	Imported
Bricks	-	2,700	Local
Gamacca 60/120	piece	75	Local
Lime	cu.m.	2	Local

### 5.3. Clothing.

In the book, Southeast Sulawesi Trade in Figures, there is a mention of textiles - namely, coarse textile and coarse batik. In 1982, 82,943 rolls of textile and 41,666 articles of batik were recorded. It is therefore clear that ready-to wear clothing is included in the figures, though no mention of this is made in the book. For this reason, it is difficult to assess clothing requirements.

The only textile industry in Southeast Sulawesi is that of home - woven sarongs. Since material is relatively cheap, prices are well within range of the local community.

### 5.4. Educational facilities.

There has been an improvement in educational facilities over the years. This was described in Chapter 3. In the same chapter future educational needs were assessed in the face of rising population, so no more need be said here about formal education.

The field of non-formal education is closely linked to development in all sectors. It is a fact that general levels of skill in Southeast Sulawesi remain low. So whenever a business concern needs skilled manpower, a training course in specific work skills must be held, if local people are to be employed. To give an example-if a shrimp

farm is to be set up, a course must be held in shrimp breeding for all those involved (this is the system used in Nuclear Estate and Smallholders). Apart from training in work skills, management training is also needed.

#### 5.5. Potable water and Health care.

##### 5.5.1. Potable water.

Potable water is water fit for drinking, cooking and other household needs.

Water is a basic requirement in people's lives. It is needed for most day-to-day activities. Water is also needed by agriculture, industry, companies, government, offices, social organizations, households, and more besides

The amount of water needed by each household is influenced by the size and structure of the household in question, by its members, social standing, by knowledge of water use and by availability of water.

During Pelitas I and II, local water needs were met by well, river and rain-water, though these were not always hygienic or, indeed, in plentiful supply.

##### 5.5.2. Provision of potable water.

Amongst Government-backed ventures to provide potable water, one of the foremost was the Potable Water Company (PAM), which provided townsfolk with potable water. Village folk were given assistance through a programme of public well and hand pump provision. The Potable

Water Company already operates in all four districts in the Province, though very much in a limited capacity. Even in Kendari, the provincial capital, the water supply is limited. In the wet season, the flow rate is 30-40 litres per second, but in the dry season this falls to only 5-10 litres per second. To date, only 500 households have a pipe water supply.

In addition to pipe water, clean water from the River Pohara is pumped to 2,000 households. Data concerning water distribution and usage can be found in the table below :

It can be seen from Table 5.5 that most water is used by households (43.9 %), followed by shops, businesses and industry (26.2 %), Government offices (15%), public places (7.3%) and places of worship (5.2%). The amount of water used by other places is insignificant.

If the Potable Water Company is considered to be the only reliable source of potable water in Southeast-Sulawesi, then at present only 2% of local potable water needs are actually being met.

### 5.5.3. Potable water requirement target.

Both urban and rural potable water supplies must be able to meet household needs. To this end, a number of conditions have been laid down, as follows :

- (1) Minimum household capacity is 100 litres/person/

Table 5.5

Distribution and usage of drinking water in 1982

Place of distribution	Volume by district(cu.m.)				Total Volume(cu.m.)
	Buton	Muna	Kendari	Kolaka	
House holds	128,450	28,160	141,120	54,330	352,060
Hotels/tourist sites	2,000	-	2,880	2,400	7,280
Social/hospitals	725	2,400	1,440	3,955	8,520
Places of work-ship	830	35,000	1,080	3,426	41,372
Public	34,500	24,000	-	-	58,500
Businesses/shops /industry	36,000	50,400	77,760	45,600	209,760
Government Offices	22,000	5,000	1,980	91,500	120,480
others	255	2.440	894	-	3,589
<b>T o t a l</b>	<b>224,760</b>	<b>148,400</b>	<b>227,154</b>	<b>201,247</b>	<b>801,561</b>

Source : District office, Potable Water Company, South east Sulawesi .



day, or 36 cu.m/person/year

(2) Minimum premises capacity is 60 litres/person/day.

(3) Minimum public faucet capacity is 30 litres/person/day.

Details of the estimated potable water requirement in the face of continuous population growth are given in the table, below :

Table 5.6

Estimated drinking water requirements  
in Southeast Sulawesi (for households)

Year	Population *	Volume required (cu.m. /year)
1983	1,046,890	37,688,040
1984	1,085,624	39,082,464
1985	1,125,792	40,528,512
1986	1,167,446	42,028,056
1987	1,210,641	43,583,076
1988	1,255,434	45,195,624
1989	1,301,885	46,867,860
1990	1,350,054	48,601,944

In order to meet the estimated fairly considerable future potable water need, mentioned above, other methods

of water supply will have to be used - pumping, simple distilling, and wells passed as fit for potable water, to mention just a few. The Potable Water Company, it is estimated, will have to supply about 20 % of the total public water requirement, assuming that other methods of supply are available. It is also estimated that, with the increase in per capita income, ever-increasing numbers of people will be able to afford their own private potable water supply, whether by use of well or pump.

The target that will have to be met by the Potable Water Company, up to the year 1990, is given in the table below.

Table 5.7

Estimated drinking water requirement to be supplied  
by the Southeast Sulawesi Potable Water Company

Year	Population	Drinking water requirement
1983	1,046,890	7,537,608
1984	1,085,624	7,816,492
1985	1,125,792	8,105,702
1986	1,167,446	8,405,611
1987	1,210,641	8,716,615
1988	1,255,434	9,039,124
1989	1,301,885	9,373,572
1990	1,350,054	9,720,388

This was discussed in Chapter 3 (Pelita IV). The conclusion reached was that facilities are still lacking. However, progress is being made in the field of disease control and eradication.

## 5.6. Electrification.

### 5.6.1. Introduction.

Electricity is an important requirement, albeit not basic, in people's lives. Technological development has led to electricity having other uses, apart from lighting electrical motors and industrial machinery, for example, communications instruments, household appliances, and many others.

In 1977, the Electricity Company, which had hitherto operated in South Sulawesi, began to operate in Kendari, the capital of Southeast Sulawesi. In the other main towns in the Province, however, electricity was directly under local Government control. It was not until the end of the same year that the State Electricity Company (PLN) took over the running of electricity in all four major towns in Southeast Sulawesi.

The principal branch of PLN is situated in Kendari. The remaining branches and sub-branches are situated in the provinces. Details are as follows :

- |                |                |
|----------------|----------------|
| (1) Kendari    | ( Branch )     |
| (2) Wawotobi   | } Sub-branches |
| (3) Punggaluku |                |
| (4) Unaaha     |                |
| (5) Tinanggea  |                |
| (6) Pohara     |                |
| (7) Kolaka     | ( Branch )     |

- |                  |   |                  |
|------------------|---|------------------|
| (8) Wundulako    | } | ( Sub-branches ) |
| (9) Lasusua      |   |                  |
| (10) Rate-Rate   |   |                  |
| (11) Bau-Bau     |   | ( Branch )       |
| (12) Wangi-Wangi | } | ( Sub-branches ) |
| (13) Mawasangka  |   |                  |
| (14) Kasipute    |   |                  |
| (15) Pasar Wajo  |   |                  |
| (16) Raha        |   | ( Branch )       |
| (17) Ereke       |   | ( Sub-branch )   |

PLN sub-branches are responsible for rural electrification, which will spread to all sub-district main towns in South-east Sulawesi.

#### 5.6.2. Diesel generator installation.

PLN electricity generators used throughout the Province are diesel generators (PLTD), which have two different outputs - 6.3 Kv and 380/220 volts

##### (1) Diesel generators with an output of 6.3 K.V.

These generators must be used in conjunction with a transformer, so that the voltage is suitable for consumer appliances-generally 380/220 volts.

##### (2) Diesel generators with an output of 380/220 v.

These generators are already suited to most consumer appliances, so a transformer is not needed, except in the special circumstances at Wawotobi and Unaha, where

where the two sub-branches are interconnected by one network and a transformer is needed.

Details about diesel generators are given below :

Table 5.8.

Diesel generator installation up to 1984

3 Ø; 0 Hz; 0.8 PF

NO.!	Location	! District!	Year	!Voltage output	!Projected! output(kw)	! Actual ! output(kw)
1.	Kendari Kota	Kendari	1978	6,3 KV	248	200
2.	Kendari Kota	Kendari	1978	6,3 KV	248	200
3.	Kendari Kota	Kendari	1978	380 V	660	455
4.	Kendari Kota	Kendari	1978	6,3 KV	536	475
5.	Kendari Kota	Kendari	1978	6,3 KV	536	475
6.	Kendari Kota	Kendari	1978	6,3 KV	536	475
7.	Kendari Kota	Kendari	1978	380 V	220	140
8.	Kendari Kota	Kendari	1982	380 V	220	189
9.	Kendari Kota	Kendari	1982	380 V	100	90
10.	Bau - bau	Buton	1978	6,3 KV	336	330
11.	Bau - bau	Buton	1978	6,3 KV	336	330
12.	Bau - bau	Buton	1981	380 V	80	50
13.	Bau - bau	Buton	1981	380 V	220	160
14.	R a h a	Muna	1978	380 V	120	50
15.	R a h a	Muna	1978	6,3 KV	336	330
16.	R a h a	Muna	1978	6,3 KV	336	330
17.	Kolaka	Kolaka	1978	6,3 KV	336	320
18.	Kolaka	Kolaka	1978	6,3 KV	336	320
19.	Wangi-wangi	Buton	1981	380 V	100	95
20.	Wawotobi	Kendari	1980	380 V	100	100
21.	Wundulako	Kolaka	1981	380 V	80	-*)
22.	Punggaluku	Kendari	1980	380 V	40	40
23.	Unaaha	Kendari	1982	380 V	100	100
24.	Tinanggea	Kendari	1982	380 V	40	40
25.	Mawasangka	Buton	1982	380 V	100	100
26.	Lasusua	Kolaka	1982	380 V	100	100
27.	Rate - rate	Kolaka	1984	380 V	100	100**)
28.	P o h a r a	Kendari	1984	380 V	100	100**)
29.	Pasar Wajo	Buton	1984	380 V	100	100**)

Source : P L N Kendari .

\*) Not in operation Awaiting spare parts

\*\*\*) Not yet operational newly installed.

It can be seen from the table below that one generator is not in operation (Wundulako), since it is awaiting spare parts. Furthermore, three newly - installed generators (Rate-Rate, Pohara, Pasar Wajo) are not yet operational.

### 5.6.3. Transformer installation.

There are two types of transformer :

#### (1) Step-up transformers.

These transformers raise voltage - in the case of one Kendari transformer, from 6.3 Kv to 20 Kv; at Pasar Wajo, from 380 v to 6 Kv; and at Wawotobi and Unaaha from 380 v to 20 Kv.

#### (2) Step-down transformers.

These transformers reduce voltage - in the case of two Kendari transformers, from 20 KV to 380 V and from 6.3 KV to 380 KV.

Details about transformers installed by PLN are given below : (Table 5.9)

It can be seen from the above table that that 4 step-up transformers (3 0) and 3 step-up transformers (1 0) have been installed. Also, 106 step-down transformers (3 0) have been installed. There are step-down transformers at Wundulako because of the interconnection with Kolaka. The same is true of Unaaha, which is interconnected to Wawotobi.

Table 5.9  
Numbers of transformers up to 1984

No.!	Location	Voltage conversion	Minimum Capacity	Total (phase)	Type
1.	Kendari	6.3 KV-20KV	2 x 500 KVA	3	Step-up
2.	Kendari	20 KV-380 KV	23 x 50 KVA	3	Step-down
		6.3 KV-380 V	20x100 KVA 7 x 160 KVA 1 x 260 KVA 1 x 200 KVA 1 x 315 KVA		
3.	Bau-Bau	6,3KV-380V	1 x 160 KVA 8 x 100 KVA 8 x 50 KVA	3	Step-down
4.	R a h a	6,3KV-380V	4 x 100 KVA 10x50 KVA	3	Step-down
5.	Kolaka	6,3KV-280V	3 x 160 KVA 1 x 100 KVA 6 x 50 KVA	3	Step-down
6.	Unaaha	380V-20 KV	3 x 500 KVA	1	Step-up *)
7.	Unaaha	20 KV-380 V	4 x 50 KVA	3	Stepdown
8.	Wawotobi	380V-20 KV	1 x 160 KVA	3	Step-up **)
9.	Wawotobi	20 KV - 380V	1 x 160 KVA 1 x 50 KVA	3	Step-down
10.	Wangi-Wangi	380V - 6 KV	1 x 200 KVA	3	Step-up
11.	Wangi-Wangi	6 KV - 380 V	2 x 50 KVA	3	Step-down
12.	Wundulako	6,3 KV-380 V	2 x 50 KVA	3	Step-down ***)
13.	Pasar Wajo	380 V - 6 KV	1 x 200 KVA	3	Step-up
14.	Pasar Wajo	6 KV - 380 V	2 x 100 KVA	3	Step-down

- \*) Interconnected to Wawotobi  
 \*\*) Interconnected to Unaaha  
 \*\*\*) Interconnected to Kolaka

Source : PLN Kendari



#### 5.6.4. Electricity network

The electricity network handles transmission and distribution :

##### (1) Transmission..

PLN transmission is categorized as medium - tension transmission, because the voltage only reaches 20 KV. The network is in general overhead, but also underground.

##### (2) Distribution.

The network with a tension of 380 / 220 V extends directly to individual consumers. This network is wholly overhead, with two distribution systems- from a step-down transformer, and directly from the generator. The extent of the PLN network, up to 1984, is shown in Table 5.10. below.

Table 5,10

The length of the electricity network, by tension  
in Southeast Sulawesi, up to 1984

No.!	Location	Length, according to tension (Km)!		
		20 KV	6 KV	380/220 V ! #)
1.	Kendari City	4.72	35.3	16.26
2.	Bau-Bau	-	13.85	25.56
3.	Raha	-	16.93	33.91
4.	Kolaka	-	16.44	33.50
5.	Wangi-wangi	-	1.84	4.15
6.	Wundulako	-	1.576	1.6
7.	Wawotobi	11.4	-	5.96
8.	Unaaha	6.05	-	3.02
9.	Punggaluku	-	-	2.76
10.	Tinanggea	-	-	2.68
11.	Lasusua	-	-	2.48
12.	Mawasangka	-	-	3.89
13.	Pohara	-	-	2.19
14.	Pasar Wajo	-	2.49	6.0
15.	Rate-Rate	-	-	3.12
T o t a l :		22.17	88.426	192.08

#) There is a 50 m underground network (20 KV)  
& network ( 6 KV)

Source : PLN Kendari.

It can be seen from the above table that, up to 1984  
the electricity network was as follow :

- |   |  |
|---|--|
| <p>(1) <u>Overhead network</u></p> <p>(a) 20 KV (22.17 km)</p> <p>(b) 6 KV (88.426 km)</p> <p>(c) 380/220 V (192.08 km)</p> | <p>(2) <u>Underground network</u></p> <p>(a) 20 KV (0.05 km)</p> <p>(b) 6 KV (0,45 km)</p> |
|---|--|

### 5.6.5. Electricity usage

Electricity is used for the following :

(1) Production, (2) Lighting, (3) Government departments and office, (4) Households, (5) Social uses, (6) State and private companies, (7) Public needs, (8) Other.

Details about numbers of subscribers may be found in the following table :

Table 5.11

Number of Subscribers, Production and Electricity sold in Southeast Sulawesi (1978-July 1983)

Year	Number of subscribers	Capacity (Kv A)	Production (KWH)	Electricity (KWH)
1978	4.274	2.745	14.644.800	4.325.187
1979	6.372	4.128	14.644.800	5.773.838
1980	8.747	5.751	15.393.600	7.070.000
1981	10.970	7.205	16.315.200	9.552.000
1982	13.366	8.900	18.466.400	11.666.572
1983	14.987	10.313	20.717.271	13.099.696

Source : P L N Kendari.

It can be seen from the above table that the number of subscribers showed an annual increase. This was because of increased community awareness about the importance of electricity in every day life and also because of the growth in numbers of electrical instruments and appliances.

Most subscribers were household users of electricity (82.8%). Other subscribers were :

(1) State and private companies	( 92.1 % )
(2) P u b l i c	( 3.5 % )
(3) Government departments & offices	( 2.2 % )
(4) S o c i a l	( 1.8 % )
(5) O t h e r	( 0.2 % )
(6) Production	( 0.1 % )
(7) Street lighting	( 0.1 % )

Nevertheless, the number of subscribers each year depended on the available capacity from P L N.

Details of subscriber growth percentages and capacity are given in Table 5.12. below.

Table 5.12. Subscriber growth percentages and available capacity ( 1978 - 83 )

Year	Subscribers		Capacity	
	Percentage growth	Increase in numbers	Percentage increase	Increase ( KVA )
1979	49.1 %	2,098	50.4 %	1,383
1980	37.3 %	2,375	39.3 %	1,623
1981	25.4 %	2,223	25.3 %	1,494
1982	21.8 %	2,396	23.5 %	1,695
1983	12.1 %	1,621	15.9 %	1,413

N.B. Not including Rate-Rate, Pohara and Pasar Majo, nor 1984 subscribers.

It can be seen from the above table that subscriber growth percentages fell from year to year, but that the

number of subscribers continued to rise. The fall in both subscriber and capacity percentages in 1983 was caused by the fact that no generators were installed during that year (see Table 5.12). On the other hand, since PLN installed more generators, transformers and power lines in 1982 the number of subscribers increased significantly, and the biggest annual increase in capacity was recorded.

If PLN were to continue to develop the network on the lines of 1982 (see above), particularly with a view to developing industry and extending rural electrification, it is estimated that there would be an average annual increase of about 2,142 subscribers and 1,513 KVA capacity. In this way, it is possible to predict numbers of subscribers and capacity up to the year 1990.

Table 5.13. Estimated numbers of subscribers and capacity up to the year 1990.

Year	Number of subscribers	Capacity ( K v A )
1978	4,274	2,745
1979	6,372	4,128
1980	8,747	5,751
1981	10,970	7,205
1982	13,366	8,900
1983	14,987	10,313
1984	17,129	11,826
1985	19,271	13,339
1986	21,413	14,852
1987	23,555	16,365
1988	25,697	17,878
1989	27,839	19,391
1990	29,981	20,904

## Chapter 6

### INVESTMENT REQUIREMENT

#### 6.1. Potential resources for possible future investment.

It must first be recognized that choice of investment in Southeast Sulawesi should be made bearing in mind the Government's policy of laying particular emphasis on the agricultural and industrial development sectors, because of their vital contribution to regional and national development. Many potential regional resources in Southeast Sulawesi, in which investment could be made, are mentioned in Chapter IV, to which the reader is invited to refer.

#### 6.2. Choice of investment strategies.

##### 6.2.1. Investment strategies.

The choice of investment strategies in Southeast Sulawesi cannot be made without reference to A Basic Plan for Development in Southeast Sulawesi. In addition, the Scale of Priorities, published by the Coordinating Board of Investment in Jakarta, must be taken into consideration, as must regional potential. In this way, the regional Investment Coordinating Board is able to draw up a programme of activities and targets to be achieved. The following programme has already been drawn up :

##### I. Short-term programme (1984/5)

The following eleven investment project have been proposed :

- (1) Sugar factory
- (2) Cacao plantation
- (3) Shrimp form
- (4) Fish-canning industry
- (5) Rattan processing
- (6) Cashew nut processing factory
- (7) Frying fat industry
- (8) Pearl industry development
- (9) Quartz mining
- (10) Tapioca factory
- (11) Improvement of tourist facilities

## II. Medium-term programme (Pelita IV)

The following targets have been set :

- (1) Increased food crop production
- (2) Increased plantation crop production
- (3) Increased fish production
- (4) Increased forestry production
- (5) Increased livestock production
- (6) Increased industrial production (including miscellaneous and small-scale industries which, broadly speaking, process agricultural produce).

## III. Long-term programme.

In the long-term it is hoped that by channelling present investment to the construction and development of appropriate supportive facilities, new investors may be



attracted in the future. To this end, investment will be made in the economic development sector, in particular, though other sectors will not be neglected.

#### 6.2.2. Investment assessment

In assessing investment possibilities, two important aspects must be taken into consideration :

##### 6.2.2.1. Financial aspect.

In making any financial analysis, investment returns are a primary consideration. There should be continuous returns over a long period of time, benefitting the following parties :

- farmers
- businessmen
- private companies
- Government
- the community

The state can invest in a project that will yield satisfactory returns within a period of 20 years. However, private investment is usually made on the basis of making a net profit within a period of 5 years.

##### 6.2.2.2. Economic aspect.

In making any economic analysis, the overall result, productivity and profit from all sources used are taken into consideration. It is also taken into account whether a project will generally aid economic development and raise

living standards. It is hoped that, in any investment made there will be both economic and social returns. On the whole, projects of this nature are Government-sponsored.

### 6.2.3. Investment planning criteria.

A number of factors are taken into consideration :

#### 6.2.3.1. Intensity factor.

This refers to a project's ability to create jobs for local people investment channelled those sectors capable of absorbing available man-power, at a number of levels, in Southeast Sulawesi.

#### 6.2.3.2. The Foreign Exchange Benefits.

Investment will be made in a project that is able to boost foreign currency reserves, particularly non-oil and non-gas exports. Potential commodities are listed in previous chapters.

#### 6.2.3.3. Preservation of natural resources and the environment.

Both central and local Government have advised that projects should neither pollute the environment nor endanger limited natural resources. Projects should, for the sake of everyone, pay heed to environmental considerations like soil, water, agricultural resources in general, and energy. Projects should also take account of natural resources suitable for exploitation in the long-term. Finally projects should be aware of the conflicting interests of exploitation of natural resources and environmental preservation.

#### 6.2.3.4. Backward linkage or forward linkage.

An important aspect of assessing investment possibilities is whether a project can, in turn, create a new project, whether investment can attract new investment, either by backward or forward linkage. By looking at the potential of regional resources, it is possible to see where investment can best be made. As far as economic development is concerned, investment possibilities in sectors with good potential can be assessed by looking at the development prospects of each sector. These may be found in previous chapters.

#### 6.3. The growth of investment.

Both public and private investment exist in Southeast Sulawesi, and both have expanded over the years. The growth of public and private investment is described over the following pages.

##### 6.3.1. Public investment.

In general, public investment is made in the public services and utility sector. This sector is, in itself, supportive of both private and public investment in other sectors. Included in this sector are :

- roads
- electricity
- water supply (household and industry)
- housing

- airports and ports
- telecommunications

#### 6.3.1.1. Roads.

Attention is given both to maintenance of the existing network of roads and bridges and to the construction of new roads and bridges in areas of agricultural potential and other potential. Work is undertaken by the Bina Marga department at the Southeast Sulawesi regional office of the Department of Public Works. Details of roads under the jurisdiction of local government are as follows:

##### 6.3.1.1.1. Road status.

- Principal roads . . . . .	196.70 km
- Secondary/minor roads . . . . .	1,091.30 km
	1,288 km

##### 6.3.1.1.2. Road function.

- Arterial roads . . . . .	173.00 km
- Feeder roads . . . . .	724.00 km
- Local roads . . . . .	381.00 km
	1,288 km

##### 6.3.1.1.3. Bridges.

Total length of bridges . . . . .	6,612 m
- Concrete . . . . .	2,112 m
- Steel-frame . . . . .	853 m
- Semi-permanent . . . . .	422 m
- Wooden/emergency . . . . .	3,225 m
	6,612 m

#### 6.3.1.1.4. Funding.

Funding for road and bridge construction in Southeast Sulawesi is derived from two sources :

- National budget (APBN).....	Rp 13,395,176,000
- Local budget (APBD) .....	Rp 9,004,925,000
	<u>Rp 22,400,101,000</u>

The break-down of both budgets is given in the following tables :

It can be seen from the tables that central Government provided 55% of the funds used for road and bridge maintenance and construction; local Government provided 45 % of the funds. The following road and bridge improvements are planned for Pelita IV :

It can be seen from the above table that a budget of Rp 13,220,000,000 will be needed for road and bridge maintenance and improvement up to the year 1989.

Rp 4,520,000,000 will be needed for road maintenance and repair. Rp 8,700,000,000 will be needed for bridge improvement and construction.

#### 6.3.1.2. Electricity.

Investment in electricity is designed to improve both urban and rural services to the community at large. In addition, as part of the programme of industrial development in Southeast Sulawesi, electricity services to industry will be improved so that needs may be met. It is predicted

that demand for electricity will increase at an ever faster rate. Predicted needs up to the year 1990 are as follows : (see below)

6.3.1.2.1. Control.

Electricity in Southeast Sulawesi is operated by the Kendari branch of the State Electricity Company (PLN). On the basis of an interview conducted with a PLN spokesman, it may be stated that there were three major consumers of electricity over the period 1978 - 31<sup>st</sup> March 1984 :

- households . . . . .	50 %
- Government offices etc . . . . .	30 %
- industry . . . . .	20 %
	<hr/> 100 %

6.3.1.2.2. Funding.

Most funds come from the State Electricity Company, itself. So, investment depends on local needs. Up to 31<sup>st</sup> March 1984, the total investment in electricity in Southeast Sulawesi amounted to Rp 517,904,610. This consisted of:

- household requirements . . . . .	Rp 258,952,305
- street lighting . . . . .	Rp 155,371,383
- industry . . . . .	Rp 103,580,922
	<hr/> Rp 517,904,610

Based on the figures from Table (see above), funds needed will be Rp 665,000,000. This total only covers improved services, in terms of quantity and quality. It does not cover development investment.

### 6.3.1.3. Water supply.

Investment is designed to provide drinking water for members of the community and water for industry.

#### 6.3.1.3.1. Provision of drinking water.

There are a number of available sources that can be used by the community at large in Southeast Sulawesi :

- springs
- wells (pumped)
- wells (hand-drawn)
- pipe water
- rain water

The daily water requirement in Southeast Sulawesi is about 972,000 cu.m/day. The daily capacity of each of the above sources (approximate figures) is :

- springs	. . . . .	388,800 cu.m
- wells (pumped)	. . . . .	48,600 cu.m
- wells (hand-drawn)	. . . . .	243,000 cu.m
- pipe water	. . . . .	194,400 cu.m
- rain water	. . . . .	97,200 cu.m
		<hr/>
		972,000 cu.m

The above figures (water requirement) are based on an estimated per capita daily requirement of 0,75 - 1 cu.m of water.

It is estimated that approximately 10 % of the population of Southeast Sulawesi depend on rain water as their only source of water, since there are no nearby springs.

These figures give us some cause for concern. It is also evident from the above figures that most people still depend on water from springs and hand-drawn from wells. Bearing in mind the important role played by forests in maintaining constant supplies of spring and well water, there is a strong case for investing in reforestation and afforestation programmes, and thus indirectly boosting natural water supply.

#### 6.3.1.3.2. Water for industry.

It is best for water in this category to be provided by the Drinking Water Company (pipe water) so that continuity, reliability and sufficient quantities of water are guaranteed. At present, only limited supplies of pipe water are available. This means that many industries, particularly small-scale and miscellaneous industries, rely on pumped water. However, there is a good case for expanding pipe-water supplies, since this will encourage local industry to invest in areas of high potential. Industry is, in any case, likely to expand in Southeast Sulawesi, so this another reason for improving pipe-water supplies.

The existence of a number of springs and rivers in Southeast Sulawesi opens up the possibility of constructing dams. This will help meet present paddy-field irrigation needs and will create the opportunity of opening-up new paddy fields, so that rice production in Southeast Sulawesi



may be increased.

#### 6.3.1.4. Housing.

Details about housing developments in Southeast Sulawesi may be found in Chapter V.

#### 6.3.1.5. Airports and ports.

##### 6.3.1.5.1. Airports.

There are four airports in Southeast Sulawesi, one in each district. The principal airport is Wolter Monginsidi Airport, Kendari.

The other three airports are relatively small. The airport in Pomalaa serves Aneka Tambang (Ltd) nickel mine, but also serves Kolaka district. All four airports are operating satisfactorily. General improvements were carried out at Wolter Monginsidi airport during Pelita III. However, there are no plans for further improvement for any of the airports during Pelita IV.

A number of planes - F27s, as well as Hercules and other transport planes-are able to use Wolter Monginsidi Airport. Small planes can also land there. At any one time, 2 - 3 large planes (F27s or F28s) and several small planes can be accommodated at the airport. There are up to 9 flights a week (Garuda F28) from Wolter Monginsidi Airport and airforce transport planes call there regularly twice a month. It is thought that flight frequency will have to be increased in years to come to cope with

passenger demand.

#### 6.3.1.5.2. Ports.

Apart from two special ports - at Banabungi, Buton (for asphalt) and Pomalaa, Kolaka (for nickel) - there are just four ports in Southeast Sulawesi, which is the very minimum needed. The physical situation of the four ports in question - Kendari, Kolaka, Raha and Bau-Bau - can be seen on the attached map. Further details about each port are given below :

##### A. Kolaka.

###### (a) Physical situation.

- concrete wharf . . . . . 400 x 3.5 m
- water depth . . . . . c.3 m
- capacity . . . . . max 200 tons

###### (b) Cargo / Passenger movement.

Despite the obvious limitations of the port, daily loading and unloading work carries on. Details are given below :

Up to the time of writing this report, improvements are still being carried out at the port of Kolaka. When the improvement work has been completed, it is hoped that the port will be in a position to cope with the increasing volume of cargo and passengers.

##### B. Kendari.

###### (a) Physical situation.

- capacity . . . . .	5,000 tons
- depth (before dredging) . . . . .	7 m
- concrete wharf (before improvement work) . . . . .	16 m
- wooden jetty . . . . .	94 m
- quay . . . . .	70 x 20 m

(b) Cargo / passenger movement.

Details are given below :

It can be seen from the above table that cargo unloaded at Kendari increased in volume, but that cargo loaded fell in volume over the same period. The reason for this is that Kendari serves as a terminal for all goods originating from outside Southeast Sulawesi. On the other hand, exports are sent from other ports, as well as Kendari. In addition, the export trade is relatively new. Nevertheless, it is hoped that the volume of goods exported will rise in future years.

C. R a n a.

(a) Physical situation.

- wooden jetty with concrete supports, capacity . . . . .	500 tons
- jetty area . . . . .	34.7 x 10.6 m
- water depth . . . . .	c. 5 m

(b) Cargo / passenger movement.

Details are given below:

It can be seen from the above table that the volume of cargo and shipping is modest, in keeping with the size of the port. Exports from Raha go via Buton.

D. Buton.

(a) Physical situation.

- wooden jetty with concrete supports . . . . .	16 x 14 m
- capacity . . . . .	1,000 tons
- earth filling in . . . . .	20 x 10 m
- water depth . . . . .	7 m

(b) Cargo / passenger movement.

Details are given below :

It can be seen from the above table that the port of Bau-Bau has an important part to play in certain types of cargo movement.

In conclusion, it is clear that, bearing in mind the growing movement of cargo (both imports of basic goods and exports), there is a need to carry out improvements at all four ports. However, before any investment can be made, more exploratory work, in the form of a feasibility study, needs to be carried out.

6.3.1.6. Telecommunications.

Efforts will be made to extend the telecommunications network and to improve the quality of service provide. It is intended that the network will extend to rural areas.

More details may be found in Chapter 4/4.9.

To meet local needs, the network will be extended during Pelita IV (see Chapter 4/4.9.)

The investment situation is similar to that of electricity. That is to say, both are run by limited companies which, themselves, are responsible for investing in future development, on the basis of local demand. The income derived from investment made (investment returns) enables further investment to be made.

It can therefore be concluded that, in the field of public investment, priority should be placed in the following :

- (1) Construction of roads and bridges, linking towns with centres of production.
- (2) Increased electricity supplies for industry.
- (3) Port improvements, particularly at Kendari.
- (4) Increased water supplies both for the community and for industry.
- (5) Extension and improvement of the telecommunications network.

### 6.3.2. Private investment.

The state of investment in Southeast Sulawesi, as of 31<sup>st</sup> March 1984 was as follows :

#### 6.3.2.1. Domestic investment.

Number of companies . . . . . 15

- active companies . . . . . 10
- not-yet-active . . . . . 5

The following companies were active :

No	Name of company	Level of investment(Rp)
1	PT. Aneka Tambang Pomalaa	10,848,988,000.00
2	PT. Hasil Bumi Indonesia BM	1,552,507,823.00
3	PT. Marannu Bintang Kejora	1,472,000,000.00
4	PT. PUSKUD Kendari	2,600,000,000.00
5	PT. P e r k e n	1,157,000,000.00
6	PT. Dharma Samudera Fishing Industries	4,161,570,000.00
7	PT. P e r t u n i	7,439,102,000.00
8	PT. Mina Fajar Raharja	3,417,530,000.00
9	PT. K o p a d r i	1,702,800,000.00
10	PT. Perum Listrik	517,904,000.00
T o t a l		34,879,401,823.00

Source : Southeast Sulawesi Coordinating Board for Regional Investment, 1984.

The following companies were not-yet-active :

No	Name of company	Level of Investment (Rp)
1	PT. Gemini Timber Jack Corporation	2,384,895,000.00
2	PT. Angkutan Lepas Pantai	1,062,250,000.00
3	PT. Sea Horse Towing Shipping	1,795,780,000.00
4	PT. Cakalang Pitu	3,488,749,000.00
5	PT. Gola Momani	4,945,000,000.00
T o t a l		13,676,674,000.00

Source : Southeast Sulawesi Coordinating Board for Regional Investment, 1984.

Total domestic investment was therefore Rp 48,551,261,308.

The total workforce involved was 3,876 people.

6.3.2.2. Foreign investment.

Number of companies . . . . . 4

Active companies . . . . . 2

Not-yet-active . . . . . 2

Active companies were :

No !	Name of company	! Level of investment(Rp)
1	PT. Kapas Indah Indonesia	15,000,000,000.00
2	PT. Dwi Mutzumi	373,500,000.00
!	T o t a l	! 15,373,500,000.00

Source : Southeast Sulawesi Coordinating Board for Regional Investment, 1984.

Not-yet-active companies were :

No !	Name of company	! Level of investment(Rp)
1	PT. Indonesia Canada Sea Food	4,188,847,000.00
2 !	PT. Tara Forsa	10,465,483,000.00
!	T o t a l	! 14,654,330,000.00

Source : Southeast Sulawesi Coordinating Board for Regional Investment, 1984.

Total foreign investment was therefore Rp 30,027,830,000.

The total workforce involved was 952 people.

Total private investment was therefore :

(1) Domestic (15 companies) . . .Rp 48,551,261,308

(2) Foreign ( 4 companies ) ..... Rp 30,027,820,000

Rp 78,579,091,308

The total workforce involved was :

(1) Domestic investment . . . . .	3,876	people.
(2) Foreign investment . . . . .	952	people.
	<u>4,828</u>	people.

in order to encourage investment in the Province, the Southeast Sulawesi Coordinating Board for Investment carries out its own research into investment possibilities in a number of sectors. Potentially exploitable resources are investigated. In accordance with a Basic Pattern for Five Years of Development in Southeast Sulawesi in Pelita IV (1984/5 - 1988/9), the Coordinating board for Regional Investment has given investors a chance to invest in sectors of high developmental potential. Up to and including 31<sup>st</sup> March 1984, those companies applying for permission to invest were :

1. Domestic investment.

No	Name of Company	Field of operation	Location
1	PT. KOPADRI	Transport	Kendari
2	PT. Anandonia	Hybrid coconut Plantation	Unaaha, Kendari
3	PT. Alirta Harapan Agro	Tapioca Factory	Moramo, Kendari
4	PT. Tikolo Agriculture	Paper processing factory	Kolono, Kendari
5	CV. Rusa Mas	Shrimp farm	Kendari



## 2. Foreign investment

No.!	Name of company !	Field of operation !	Location
1.	The West Pacific Fishery	fisheries	Tiworo/Kencari

Source : Southeast Sulawesi Coordinating Board for Regional Investment, 1984 of the six companies listed above, one has already been granted permission to commence operations, four more are awaiting processing of their applications and one company has failed to satisfy the conditions laid down .

The Southeast Sulawesi Coordinating Board for Regional Investment has also drawn up a scale of priorities for the following investment projects : (Table 6.22)

If the above projects are put into their correct sectors, the distribution of projects becomes :

1. Food crops - 1 project
2. Plantation crops -- 4 projects
3. Forestry - 1 project
4. Fisheries - 3 projects
5. Mining/excavations - 1 project
6. Service industries - 1 project

11 projects

Table 6.1.

An Investment scale priorities in Southeast Sulawesi

( 1983/1984- 1989/1990)

No.	Field of operatin	Location	Capacity	Available land
1.	Sugar factory	Kolaka	PGB	14,300 ha
		Muna	PGM	
2.	Cacao Plantation	Kolaka	-	extensive
		Kendari	-	3,600 ha
3.	Shrimp farm	Kendari	3,000 tons	30,000 ha
4.	Fishing canning	Kendari	-	-
5.	Rattan processing	Kendari	6,168 tons/ annum	640,000 ha
6.	Cashew-nut processing	Buton/Muna	600,000 Kg/ annum	30,000 ha
7.	Coconut oil industry	Kendari	500 tons kop- ra/month	2 ha
8.	Pearl industry	Buton	100,000 pearl/ annum	250 mill.
9.	Quartz mining	Kendari	-	extensive
		Muna	-	extensive
		Kolaka	-	extensive
10.	Tapioca factory	Kendari	-	1,000 ha
		Muna	-	1,000 ha
11.	Improved tourist facilities	Kendari	100 rooms	
		Kolaka	100 rooms	
		Muna	100 rooms	
		Buton	100 rooms	

Source : Southeast Sulawesi Regional Planning Board, 1984  
(adopted).

### 6.3.3. Estimated investment

As was stated previously, development funding is either by means of public or private investment . 75 % of development during Pelita III was Government-funded, and the rest was privately-funded. Details are as follows :

#### 1. Government investment

- a. Development funds from the national budget for sectoral development
- b. Presidential initiation
- c. Net Provincial income
- d. Net district income
- e. Foreign aid

#### 2. Private investment

- a. Domestic and foreign investment
- b. Bank credit (state and private banks)
- c. Individual investment

In order to predict investment needs up to the end of Pelita IV, total investment needs up to Pelita III- must first be known . The following table sets out total investment made at the end of Pelita III (1983/1984) :

Table 6.2

Total Investment at the end of Pelita III (1983/1984)

Type of investment	Total (Rp 1,000,000 s)
<u>1. Government investment</u>	
a. Development funds - (national budget)	41,379,355,700 .-
b. Presidential initiation	29,060,246,000 .-
c. Net Provincial income	250,000,000 .-
d. Net district income	1,135,650,000 .-
e. Foreign aid	7,192,898,172 .-
<u>2. Private Investment</u>	
a. Domestic/foreign - investment	4,302,800,000 .-
c. Bank credit	2,441,000,000 .-
d. Individual investment	19,642,262,000 .-
<b>T o t a l</b>	<b>105,404,211,872 .-</b>

Source : Pelita IV book, Southeast Sulawesi

Investment needs for Pelita IV can be estimated by taking Gross Regional Income and Incremental Capital Output Ratio (ICOR) figures into consideration. The following table predicts Gross Regional Income, additional regional income and additional investment during Pelita IV.

Gross regional income figures were drawn-up previously . A figure of Rp.114,336,640,000 was hoped for at the beginning of Pelita IV (1984) .

This figure , it was predicted, would then grow at an annual rate of 7.5 % to reach Rp 176,476,650,000 in 1990 with additional investment totalling Rp 34,176,500,000 .

If additional investment is added to total investment at the end of Pelita III, then the 1984 figure for investment needs for Pelita IV is reached .

Other figures are given below :

Table 6.3.

Estimated investment needs during Pelita IV (Rp 1,000,000 )

Year	Additional investment	Pelita IV investment needs
1983	-	105,404.74
1984	20,261.53	125,665.74
1985	15,281.09	140,946.83
1986	17,327.28	158,344.11
1987	20,282.24	178,626.35
1988	24,990.68	203,617.03
1989	31,792.17	245,409.20

Source : Pelita IV book, Southeast Sulawesi

It can be calculated from the above table that total investment needs during Pelita IV will be Rp 2,609,260,000 . The annual growth rate throughout the five-year period is 14.32 %, meaning that investment needs by 1990 will have risen to Rp 1,191,910,906,000 .

It is clear, then, that efforts will have to be made to encourage investors to invest their money in Southeast Sulawesi .

During Pelita IV the Government is to encourage both domestic and foreign investment in a number of sectors-like :

1. Food crops
2. Plantation crops
3. Fisheries
4. Livestock
5. Forestry
6. Industry
7. Mining

It is hoped that private investment will play an important role in the future . At the end of Pelita III, domestic investment only contributed 4.08 % of total investment. It is hoped that a 15 % contribution (Rp156,391,389,000) will be made by the end of Pelita IV ( 1989 ). If this figure can be realized, then domestic investment in 1990 will amount to Rp 179,850,097,300 .

#### 6.4. Recommendation

If existing potential in Southeast Sulawesi is taken into account, it can be seen that there are developmental possibilities in a number of sectors .

The following may be considered as investment priorities:

No.!	Field of operation !	Location !	Available Land
1.	Sugar factory	Kolaka Muna	14,300 ha 5,000 ha
2.	Cacao plantation	Kolaka Kendari	extensive 3,600 ha
3.	Shrimp farm	Kendari	30,000 ha
4.	Fish-canning industry	Kendari	20,000 ha
5.	Cocunut oil industry	Kendari	extensive
6.	Quartz mining	Kendari	extensive
7.	Tapioca factory	Kendari	extensive
8.	Rattan processing	Kendari	640,000 ha

Apart from the above mentioned, there are other projects, mentioned in the 1984-1990 scale of priorities for South-east Sulawesi, like :

- cashew-nut processing factories, in Buton and Muna
- pearl industry, in Buton
- improved tourist facilities, in all four districts

These projects need to be further investigated as to their potential and how best to be developed.

Other projects which should be considered are (1) livestock feed factory, in Kendari; (2) soybean processing, in Kendari; (3) a workshop with the necessary machinery to make required equipment, in Kendari.

## Appendix 1.

Estimated creation of new paddy-fields during Pelita IV  
in Southeast Sulawesi (1984-1989)

Year	New paddy-fields (ha)			total
	simple irrigation <sup>1)</sup>	medium-small irrigation <sup>2)</sup>	special irrigation <sup>3)</sup>	
1984/1985	833	480	2,000	3,313
1985/1986	838	450	2,000	3,338
1986/1987	970	720	2,000	3,690
1987/1988	862	529	2,000	3,391
1988/1989	552	601	2,000	3,153
Total	4,105	2,780	10,000 <sup>4)</sup>	16,885

Source : Operational policy for food crop development and Pelita IV Mass Guidance Management unit (1984/1985-1988/1989)

- 1) Simple irrigation : Kind of irrigation is made for medium technical, generally its dam from "brencong" (= kind of dam made from wire is filled with stones to protect water of the river to irrigate paddy-fields) without debit controller and measurer; generally the area over 200 ha. The management (preparation, safeguarding and exploitation) by government. The safeguarding od exploitation network is the farmer's responsibility.
- 2) Medium-small irrigation : Kind of irrigation made more advanced than simple irrigation. permanent dam its network is filled with debit controller and measurer for a rightfull water division.
- 3) Special irrigation/Technical irrigation : Full technical irrigation with permanent dam is filled with debit controller and measurer and other facilities to support the exploitation and good safeguarding.
- 4) not including the Wawotobi project.



## Appendix 2.

Estimated rice production, area harvested and per hectare productivity (1983-- 1990)

Year	Area harvested (ha)	Rice production* (tons)	Productivity *) (tons/ha)
1983	12,321	34,665	-
1984	38,600	49,400	1,280
1985	39,700	52,000	1,310
1986	40,100	53,700	1,39
1987	40,500	55,500	1,370
1988	40,800	57,200	1,402
1989	54,420	78,909	1,45
1990	58,400	89,352	1,52

Source : Operational policy for food crop development and Pelita IV mass guidance management unit (1984/1985 - 1989/1990)

\*) = hulled rice.

## Appendix 3.

Estimated high-yield rice variety seed requirement (1983 - 1990)

Year	Requirement (tons)	Year	Requirement (tons)
1983	249.4	1984	126
1985	132	1986	160
1987	236	1988	386
1989	675	1990	714

Source : Operational policy for food crop development and Pelita IV mass guidance management unit (1984/1985 - 1989/1990)

## Appendix 4.

Estimated quantity and type of fertilizer for rice cultivation in Southeast Sulawesi (1983 - 1990)

Year	Type of simple fertilizer			Type of compound Fertilizer		
	Urea	TSP	KCl	ZA	NPK	
1983	2,800	1,800	-	-	-	
1984	5,680	1,296.6	311	141	21	
1985	5,944	1,356.8	325	148	22	
1986	5,330	1,216.8	292	133	20	
1987	8,242	1,881.4	451	205	30	
1988	17,396	3,971.8	952	433	64	
1989	85,166	19,418	4,660	2,097	377	
1990	104,320	23,785	5,708	2,568	462	

Source : Operational policy for food crop development and Pelita IV mass guidance management Unit (1984/1985 - 1989/1990)

## Appendix 5.

Estimated thresher requirement (1983-1990)

Year	Requirement	Year	Requirement
1983	-	1984	69
1985	72	1986	75
1987	77	1988	80
1989	85	1990	89

Source : Operational policy for food crop development and Pelita IV mass guidance management unit (1984/1985-1989/1990).

## Appendix 6.

Estimated dryer requirement (1983 - 1990)

Year	Requirement	Year	requirement
1983	-	1984	10
1985	11	1986	11
1987	12	1988	12
1989	14	1990	16

Source : Operational policy for food crop development and Pelita IV mass guidance management unit (1984/1985-1989/1990).

## Appendix 7.

Estimated expansion of area harvested of secondary crops  
1983-1990 in Southeast Sulawesi (ha)

Year	Corn	Cassava	Soybeans
1983	-	-	-
1984	62,592	30,772	5,745
1985	65,184	31,850	6,885
1986	67,872	32,928	7,800
1987	70,560	34,006	8,565
1988	72,152	35,048	9,475
1989	76,078	36,136	10,498
1990	79,121	38,304	11,642

Source : Operational policy for food crop development and Pelita IV mass guidance management unit (1984/1985-1989/1990).

## Appendix 8.

Estimated area of cassava ha vested (1984-1988)

Year	Area (ha)	Production (tons)	Average Productivity
1983	-	-	-
1984	30,772	188,509	74
1985	31,850	237,989	75
1986	32,928	247,498	75
1987	34,006	256,993	76
1988	35,084	266,501	76

Source : Operational Policy for Food Crop Development and Mass Guidance Programme Control Unit Repelita IV (1984/1985 - 1989/1990)

## Appendix 9.

Estimated area of corn harvested

Year	Area (ha)	Production (ha)	Average productivity
1983	-	-	-
1984	62,592	79,647	12.72
1985	65,184	85,540	13.12
1986	67,872	92,823	13.12
1987	70,560	99,468	14.10
1988	73,152	109,270	14.94

Source : Operational policy for food crop development and Pelita IV mass guidance management unit (1984/1985 - 1989/1990)

## Appendix 10.

Estimated area of soybeans harvested

Year	Area (ha)	Production (ha)	Average productivity
1983	-	-	-
1984	5,745	5,910	10.25
1985	6,885	7,402	10.75
1986	7,800	9,019	11.56
1987	8,565	10,762	12.56
1988	9,475	12,630	13.33

Source : Operational policy for food crop development and Pelita IV mass guidance management unit (1984/1985-1989/1990).

## Appendix 11.

Food crop nuclear estates and smallholders planned for Pelita IV  
(rice, secondary crops, horticulture)

Year	Total	Area (ha)
1983	-	-
1984	1	500
1985	1	700
1986	1	900
1987	1	1,400
1988	2	1,500

Source : Operational policy for food crops development and mass guidance programme control unit, Repelita IV (1984/1985 - 1989/1990).

## Appendix 12

Estimated coconut production, consumption and export figures  
in Southeast Sulawesi (1984 - 1990)

Year	Production	Consumption	Exports
1984	12,200	6,400	5,800
1985	13,400	6,700	6,700
1986	14,600	7,000	7,600
1987	16,000	7,300	8,700
1988	17,600	7,700	9,900
1989	-	-	-
1990	-	-	-
Annual rate of increase (%)	9.5	4.5	14.5

Source : Southeast Sulawesi Plantation Crops Office, 1984.

## Appendix 13

Estimated expansion and rejuvenation area of public coconut  
estates in Southeast Sulawesi (1984 - 1990)

Year	Area (ha)
1984/1985	1,450
1985/1986	1,550
1986/1987	1,600
1987/1988	1,650
1988/1989	1,700
1989/1990	-
<b>T o t a l</b>	<b>7,950</b>

Source : Southeast Sulawesi Plantation Crops Office, 1984.

## Appendix 14.

Planned Rehabilitation/Intensification area public coconut in  
Southeast Sulawesi (1984 - 1990)

Year	!	Area (ha)
1984/1985		200
1985/1986		500
1986/1987		940
1987/1988		1,150
1988/1989		1,315
1989/1990		-
T o t a l		4,095

Source : Southeast Sulawesi Plantation Crops Office, 1984.

## Appendix 15.

Planned Rehabilitation/Intensification area of private large-  
scale coconut in Southeast Sulawesi (1984 - 1990)

Year	!	Area (ha)
1984/1985		400
1985/1986		400
1986/1987		500
1987/1988		520
1988/1989		500
1989/1990		-
T o t a l		2,320

Source : Southeast Sulawesi Plantation Crops Office, 1984.



## Appendix 16

Estimated cocoa production, consumption and exports in Southeast-  
Sulawesi ( 1984 - 1985 )

Year	Production (tons)	Consumption (tons)	Exports(tons)
1984	3,000	-	3,000
1985	3,900	-	3,900
1986	5,070	-	5,070
1987	6,500	-	6,500
1988	8,500	-	8,500
1989	-	-	-
1990	-	-	-
Annual rate of increase (%)	30.00	-	30.00

Source : Southeast Sulawesi Plantation Crops Office, 1984.

## Appendix 17

Planned cocoa bean expansion and rejuvenation in Southeast Sulawesi  
(1984 - 1990)

Year	!	Area (ha)
1984/1985		1,950
1985/1986		2,400
1986/1987		2,750
1987/1988		3,000
1988/1989		3,100
1989/1990		-
T o t a l		13,200

Source : Southeast Sulawesi Plantation Crops Office, 1984.

## Appendix 18

Planned cocoa bean Rehabilitation and Intensification in Southeast  
Sulawesi (1984 - 1990)

Year	!	Area (ha)
1984/1985		-
1985/1986		-
1986/1987		500
1987/1988		750
1988/1989		1,000
1989/1990		-
T o t a l		2,250

Source : Southeast Sulawesi Plantation Crops Office, 1984.

## Appendix 19

Planned cotton expansion and production in Southeast Sulawesi  
(1984/1985-1988/1989)

Year	Area (ha)	Production (tons)
1984/1985	23,500	3,580
1985/1986	26,500	6,550
1986/1987	30,500	11,990
1987/1988	35,500	21,940
1988/1989	40,000	40,000

Source : Southeast Sulawesi Plantation Crops Office, 1984  
 PT Kapas Indah Indonesia.

## Appendix 20

Planned cotton rehabilitation/intensification in S.E. Sulawesi  
(1984/1985-1988/1989)

Year	Area (ha)
1984/1985	10,000
1985/1986	15,000
1986/1987	20,000
1987/1988	30,000
1988/1989	40,000

Source : Southeast Sulawesi Plantation Crops Office,  
 1984.

Appendix 21.a

Forest Produce Export (Teak) during Pelitas I, II and III

Pelita	Year	Logs (Cu.m.)	Export Earn-ings (US.\$)	Sawn wood (Cu.m.)	Export Earn-ings (US.\$)	Total Exports	Total Earnings (US. \$)
I	1969-1970	-	-	-	-	-	-
	1970-1971	3,506.41	80,250	-	-	3,506.41	80,250
	1971-1972	6,045.274	148,313.99	-	-	6,045.274	148,313.99
	1972-1973	16,625.190	582,031.12	-	-	16,625.190	582,031.12
	1973-1974	47,705.087	2,124,960.19	-	-	42,705.087	2,124,960.19
T o t a l		73,908.971	2,935,550.30	-	-	73,908.971	2,935,550.30
II	1974-1975	16,349.086	1,233,540.05	-	-	16,349.086	1,233,640.06
	1975-1976	21,626.457	1,595,626.93	-	-	21,626.457	1,595,626.93
	1976-1977	20,566.613	1,497,386.83	191.1060	52,495	20,757.719	1,549,881.373
	1977-1978	25,673.735	4,562,898.93	207.2218	38,035.57	35,880.9508	4,600,934.40
	1978-1979	17,360.283	2,877,680.97	234.2649	11,089.32	17,603.5479	2,990,770.29
T o t a l		111,876.174	11,767,233.51	641.5927	101,629.89	112,217.7607	11,970,856.053
III	1979-1980	13,800.198	3,585,900.72	76.1148	35,353.53	13,876.3128	3,620,754.25
	1980-1981	-	-	50.6638	20,065.52	50.6638	20,665.52
	1981-1982	-	-	-	-	-	-
	1982-1983	-	-	359.1115	143,644.84	359,1115	143,644.84
	1983-1984	-	-	1,029.9185	487,497.83	1,209,9185	487,497.83
T o t a l		13,800.198	3,585,900.72	1,505.8086	686,561.72	15,496,0066	4,272,462.44
Overall total		199,585.343	18,288,684.53	1,147.1013	788,191.61	135,104,6644	19,178,868.793

Source : Annual Report, 1982/1983 in Southeast Sulawesi.

## Appendix 2].b

Forest Produce Export (Primeval Forest Wood) during Pelita I, II and III

Pelita	Year	Logs (cu.m)	Export Earn-ings (US.\$)	Sawn wood (cu.m.)	Export Earn-ings (US.\$)	Total Exports	Total Earnings (US.\$)
I	1969-1970	-	-	-	-	-	-
	1970-1971	11.88	5,545.87	-	-	11.88	5,545.87
	1971-1972	-	-	-	-	-	-
	1972-1973	-	-	-	-	-	-
	1973-1974	2,217.975	53,842.36	-	-	2,217.975	53,842.36
T o t a l		2,219.855	59,398.23	-	-	2,219.885	59,398.23
II	1974-1975	6,905.14	189,127.57	-	-	6,905.14	189,127.57
	1975-1976	-	-	-	-	-	-
	1976-1977	11,260.35	224,698.34	-	-	11,260.35	224,698.34
	1977-1978	35.33	4,285.20	28.0232	1,737.57	63.3582	6,024.77
	1978-1979	268.868	1,728,397.21	10,0985	18,977.93	278.9665	1,747,374.14
T o t a l		17,469.688	2,146,511.32	38.1267	20,715.50	18,524.8147	2,167,224.82
III	1979-1980	40,024.837	2,552,287.98	290.2780	114,928.57	40,314.915	2,667,216.55
	1980-1981	39,051.037	1,455,010.07	396.8927	138,912.28	39,447.9297	1,583,922.35
	1981-1982	6,001.58	269,349.20	-	-	6,001.58	269,349.35
	1982-1983	-	-	20.364	7,127.40	20.364	7,121.40
	1983-1984	-	-	-	-	-	-
T o t a l		85,077.454	4,277,347.25	707.5347	259,968.25	85,785.4887	4,627,616.65
Overall Total		104,767.027	6,483,256.80	745.6614	280,683.75	106,530.1884	6,854,239.70

Source : Annual Report, 1982/1983 in Southeast Sulawesi.

## Appendix 21.c

Forest Produce Export Mangrove  
during Pelita I, II and III

Pelita	Year	Logs (cu.m)	Export Earnings (US \$)
I	1969-1970	-	-
	1970-1971	-	-
	1971-1972	-	-
	1972-1973	-	-
	1973-1974	-	-
Total		-	-
II	1974-1975	-	-
	1975-1976	-	-
	1976-1977	-	-
	1977-1978	2,872.50	25,652.50
	1978-1979	5,000.023	35,000.-
Total		7,872.523	60,825.50
III	1979-1980	-	-
	1980-1981	-	-
	1981-1982	2,910.009	69,840
	1982-1983	-	-
	1983-1984	-	-
Total		2,910.009	69,840
Overall total		10,782.532	130,665.50

Source : Annual Report, 1982/1983 in Southeast Sulawesi .

Appendix 22

Forest produce exports from Southeast Sulaesi (1982-1983)

District	Country of destination	Sawn teak		Rattan		T o t a l		
		Volume (cu.m.)	Earnings (US\$)	Volume (tons)	Earnings (US\$)	Volume (cu.m.)	Volume (tons)	Earnings (US\$)
Kendari	Hongkong Taiwan	-	-	1,713	998,580	-	1,713	998,580
Kolaka	-	-	-	-	-	-	-	-
Muna	Japan	359.1115	143,644.60	-	-	359.1115	-	143,644.60
Buton	-	-	-	-	-	-	-	-
<b>T o t a l</b>		359.1115	143,644.60	1,713	998,580	359.1115	1,713	1,142,224.60

S o u r c e ; 1982/1983 Annual report, Southeast Sulawesi Forestry Office .

## Appendix 23

Forest Produce Inter-Island Trade (1982/1983)

No.!	Type of Produce !	Forest Administration Unit				
		Kendari	Kolaka	Muna	Buton	Total !
1.	Teak logs (cu.m.)	-	-	6,744.742	10.022	6,754,764
2.	Sawn teak (cu.m.)	-	-	841.784 6	49.193	887,5334
3.	Primeval wood logs (cu.m.)	-	16.8	7586.5266	56.215	16.8
4.	Sawn wood (primeval)cu.m.	1,137.2748	1,935.4177	364.5297	1,089.5450	4,526.7672
5.	Rattan (tons)	1598.3	-	113.803	42.20	1,754.303
6.	Kalopan bark (cu.m.)	6	-	-	-	6
	Wood (cu.m.)	2,741.5748	1,952.2177	8,064.85993	1,187.96	12,946.31 13,946.618
	Rattan (tons)	-	-	-	-	1,754.303

Source : Annual report, 1982/1983, Southeast Sulawesi Forestry office .



Port of destination							
!Ujungpandang!	Palu	! Manado	! Surabaya	! Jakarta	! Kupang	! Denpasar	!
5,856.944	-	-	-	848.01	-	49.76	6754.764
335.5334	0.1880	0.5277	271.8162	0.1525	208.9565	70.8033	887.9776
16.8	-	-	-	-	-	-	16.8
2,920.978	-	-	-	-	1,605.7842	-	4,526.7672
1,576.303	-	-	93	-	85	-	1754.303
-	-	-	6	-	-	-	6
9,129.297 10,706.6084 15,76.303	0.1880	0.5277	370.8162	848.1625	1,899.7457	120.5633	13,946.618

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