OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

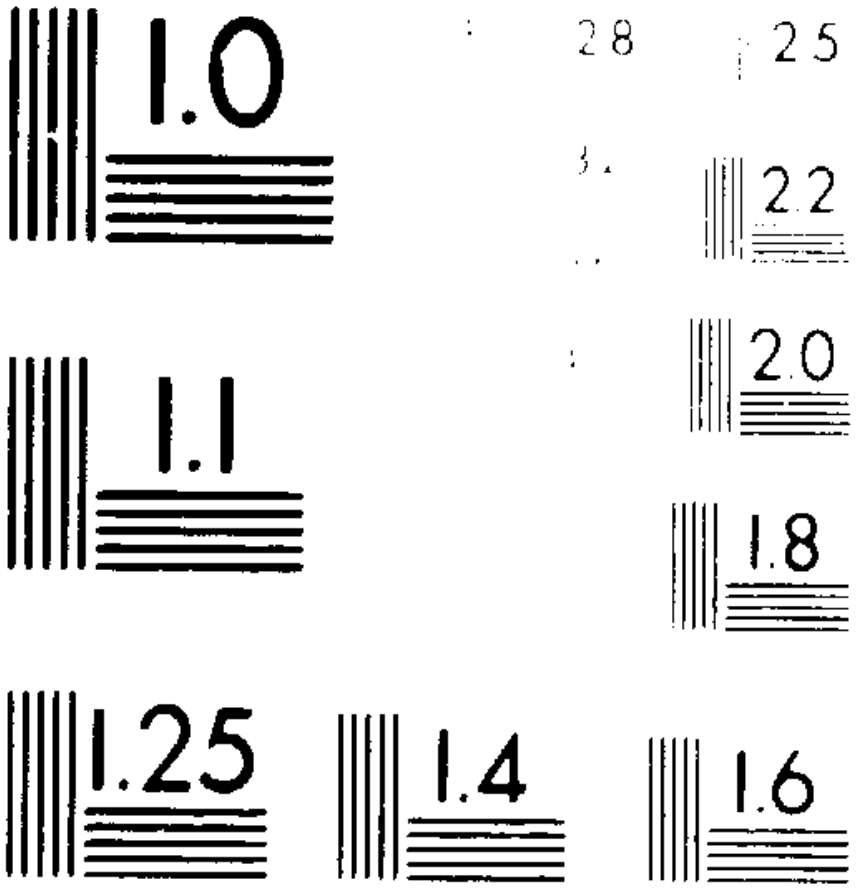
FAIR USE POLICY

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8

UNIDO Contract No 83/82/RT.Project No.DP/INS/78/003
Activity Code : DP/02/31.2.

Indonesia.

COMPREHENSIVE INVESTMENT PROFILES

NORTH SULAWESI

14153

RESEARCH CENTRE 'WALE SEA'
SAM RATULANGI UNIVERSITY

UNIDO/BKPM
July 1984.

UNDERTAKEN ON THE BASIS OF A CONTRACT BETWEEN THE
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
And
SAM RATULANGI UNIVERSITY
M A N A D O

10

UNIDO Contract No 83/82/RT.Project No.DP/INS/78/003
Activity Code : DP/02/31.2.

COMPREHENSIVE INVESTMENT PROFILES

NORTH SULAWESI

RESEARCH CENTRE 'WALE SEA'
SAM RATULANGI UNIVERSITY

UNIDO/BKPM
July 1984.

UNDERTAKEN ON THE BASIS OF A CONTRACT BETWEEN THE
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION
And
SAM RATULANGI UNIVERSITY
M A N A D O

DEPARTEMEN PENDIDIKAN DAN KEBUDAYAAN
UNIVERSITAS SAM RATULANGI MANADO.-
==========EHN==========

Dr.D.E.Sarfaty,
Team Leader,
UNIDO PROJECT No.DP/INS/78/003
UNIDO/BKPM
14 Jl. Thamrin
Jakarta.

Dear Dr.Sarfaty,

This is to send you the 20 (twenty) copies of the report on: "Comprehensive Investment Profiles North Sulawesi". The report is the result of a study undertaken by the Team of Universitas Sam Ratulangi under the UNIDO Contract No.83/82/RT. Project No.DP/INS/78/003, jointly signed by UNIDO/BKPM and UNSRAT on 26 February, 1984 in Manado.

The report is obviously still subject to some (but hopefully not significant) changes.

I hope that you will now find the report satisfactorily.-

Manado, 29 July, 1984

W.J.Waworoentoe.
Rector

DEPARTEMEN PENDIDIKAN DAN KEBUDAYAAN

UNIVERSITAS SAM RATULANGI

Kampus UNSRAT Bahu Manado Telp. 3586, 3788, Telex 74131

COMPOSITION OF THE UNSRAT-STUDY TEAM ON FORMULATION OF COMPREHENSIVE INVESTMENT PROFILES, NORTH SULAWESI

(UNIDO Contract No 83/82/RT.Project No.DP/INS/78/003
Activiting Code : DP/02/31.2)

SUPERVISOR	:	RECTOR OF SAM RATULANGI UNIVERSITY
CONSULTANT	:	Professor W.J.Waworoentoe, MSc. Professor Dr. H. Kandou.
TEAM LEADER/EDITOR	:	Ir.L.W. Sondakh,Dip.Ag.Ec;M.Econ.

TEAM MEMBERS BY SECTORS

Macro Components (Regional Planning, Growth and Population):

Professor Drs. Max Rogi
Drs. J. Tan, M.A.
Professor Dr. H. Kandou

Resources and Sectoral Components:

Dr.Ir. J.Warouw
Dr.Ir. D.Sembel, B.Sc.
Dr.Ir. David Kaligis
Dr(vet.) A.F. Wilar
Ir. J.L. Palenewen, M.Sc.
Ir. M. Rondo, M.Sc.

Basic Needs:

Professor W.J. Waworoentoe, M.Sc.
Professor dr. P.E.A. Pangalila
dr.Ny. Waworoentoe-W
dr.Ny.Paat-R, M.Ph.

Public and Private Investment:

Drs. M. Mewengkang
Drs. Hassan Yan

RESOURCE PERSON	:	Drs. P.P. Kepel
ENGLISH EDITORS	:	Dra. J. Rompas Dra. J. Pakasi
ADMINISTRATIVE OFFICER	:	Alex Tampi, BA

Manado, 18 November, 1983
Universitas Sam Ratulangi
RECTOR,

PROFESSOR W.J. WAWOROENTOE

PREFACE

The aim of this study is to describe Investment Profiles of North Sulawesi. Such profiles have to be revealed from a comprehensive analysis on various factors required in planning and undertaking of investment projects. So, by definistion the scope of this study is extreemly wide because, various sectors and determinat of the economy , including social, environmental and also politics have to be taken into account. By definition therefore, the aim of the study should be achieved by employing various study/research methodologies at various stages of analytical steps, that fall into the so called 'systems-approach' - that reveals the cost and benefits of a project. The study team therefore, had previously considered to employ a certain kind of ' social-cost benefit' which accomodates- and links both, macro and micro analysis. However, such kind of intention had to be droped due to limitations of funds and time made available by UNIDO/BKPM.

A method employed in this study is therefore a method which is believed to have best maximized the aims/objec - tive of the study subject to the mentioned constraints. The method adopted is that one that is able to analyse - past trends of economic and investment development process, and identify the present 'state of the art' of the economy. In turn, a method is further employed to try to foresee future projected development trends so that profiles of investments possibilities can be "roughly" identified. No attemps were made to 'empirically' identify the feasibilities of possible investments indicated. The team however believed that the methods employed and works undertaken, though still subject to various short-

comings, had generally achieved the aims of the study, i.e. to describe investment profiles in North Sulawesi. The team also believed that some works have to be further undertaken in the near future so that the profiles indicated may closely matche the 'real world' investment possibilities. Based on the above view this study/report has been organized as follows.

Chapter 1 deals with, in a very brief manner, general-feature of the province, land, climate, historical development, population and the overall economy. Chapter 1 is in fact designed mainly as an introductory chapter some insights/understanding on the pattern and behaviour of the provincial economic development and its resources, are described in Chapter 2. In Chapter 2, special attention is paid on highlighting the pattern of economic development in order to see whether an economic transformation has taken places. It is also in Chapter 2 where resources potential and uses are described so that prospective investors would be able to see which and how much resources, available to attract new investments, short and/or longterm investments.

One factor determining investment decisions in population growth and distribution. Studies on population are important for two reasons. First, population as a production-factor and population as consumers determining market sizes of products yielded from an investment. So, population and man power is especially described in Chapter 3. It is in this chapter projection of population by 1990 is shown, so that growth of demand for some 'strategic goods' and services including basic needs can be estimated.

Based on the description in Chapter 1, 2 and 3, an e -

conomic outlook can therefore be made possible. The outlook is described in Chapter 4. For simplicity reason, due to the nature and scope of the study and the constraints faced, methods employed describing the outlook are limitted to the simple trend analysis. Attempts have been made to apply two kinds of forecasting methods, i.e. linear and quadratic regression trend analysis. Projections of some strategic commodities undertaken for both supply and demand sides. The demand projection was undertaken by taking into account the objectives of meeting basic needs. Not all of the (basic - needs) commodities have been empirically projected, due to lack of reliable data. The projections of these commodities were only descriti·ely undertaken.

The outlook give some insights on which commodities - are still insufficient and still to be further produced to meet basic needs, and which commodities are available for export and inter island trade. This then leads to identification of possible investments which is the subject of Chapter 5.

The study is undertaken by the team of Universitas Sam Ratulangi Manado for UNIDO/BKPM on the basis of a contract-No.: 83/82/RT.Project No. DP/INS/78/003. Activity Code: DP/02/31.2, November 1983 to February 1984.

The team wishes to express its profound gratitude to the Rector of Sam Ratulangi University, Professor W.J. Waworoentoe, M.Sc., for his generousity, wisdom, most stimulating guidances, suggestions and supervision during the period of the study.

The team leader/editor appointed for this study would-also like to express his thanks to the Rector, Professor

W.J. Waworoentoe, M.Sc, to Professor Dr. H. Kandou, Director of the University's Research Centre, and to all members of the team for their expertises, encouragements, and supports contributed during the period of the study. However, none of them should be responsible for all shortcomings and limittations of this report. Thanks are also expressed to Drs. P.P. Kepel, Director of Badan Koordinasi Penanaman Modal Daerah - (BKPMD) Sulawesi Utara, and to Ir. R. Dendeng, Head of Badan Perencanaan Pembangunan Daerah (BAPPEDA) Sulawesi Utara for their excellent helps and cooperation in achieving the objective of this study.

To Professor dr. P.E.A. Pangalila, the assistant to the Rector for Academic Affairs, Drs. J.T. Supit and Drs. J.P. Pandey and especially to dr.(vet). A.F. Wilar for their supports, the editor express his thanks.

The editor on behalf of the whole team would also like to thank those juniours but very energetic and enthusiastic research assistants who have been constantly working with full dedications for the succes of the study. They are: Drs.Ec. Jeffrey S.M.E. Rawis and Ir. Stenly Karel Pajow who did most of data analysis and projections, John Katuuk for his excellent and deligent work in drawing the figures and maps, Indrajaya and Ronny Sondakh for data preparations and scrutinisation and to Alex Tampi BA, who organised and typed this final draft, and also to Ronny Montolalu, Joseph Nangka and Dra. D. Lasut and her staffs at the research centre "Wale Sea".

Finally, my wholehearted gratitude goes to my wife, Kartini, for her support and encouragement throughout this period of hard working and uncertainty, to my children Frank

and Angeline Pingkan who provided stimulus and other healthy distraction, and to my parents who provided invalueable moral support.

Manado, July, 1984
Team Leader/Editor,

Lucky Sondakh
Vice Director/Secretary
Pusat Penelitian UNSRAT

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SUMMARY OF MAJOR FINDINGS

1. The Past trends of economic development in the province proved to be quite satisfactory. However, concerns for future development cannot be completely ignored. The economy grew at a decreasing rate without significant economic transformation. The share of the agricultural sector to GDRP (Gross Domestic Regional Products) remained constant over the past 15 years, i.e, above 40 per cent. Furthermore, the proportion of labour force employed within the agricultural sector remains over than 60 per cent during the past 15 years. Therefore, if the present trend of economic growth continues in the Fourth - FYDP (Five - Year Development Plan), one could not expect the economy to grow (in terms of GDRP) more than 5 per cent per annum.

2. Economic growth in the near future would be more chalenging not only due to the shortage of funds for public investments (i.e, due to the shortage in oil revenue), but likewise, due to the needs to undertake a more egalitarian development policies dealing with provision of employment and basic needs. It has been estimated that during the Fourth FYDP, the employment rate would amount to an addition of 40 000 over the present amount and, 20 per cent of the population are likely to live below the poverty line.

3. The economic outlook and challenges described above express the needs for increases in public and private investments. To overcome the additional unemployment mentioned above, no less than Rp 200 billion additional investments would be required for the whole Fourth -FYDP. Part of this investment is meant to be channeled to reforestation amonting to Rp 40 billion and, to the completion of tertziary cannals for the existing irrigation.

The present public investment in the province amounts to Rp 140 billion per annum, i.e 1.51 per cent of the total development budget of Indonesia, in 1983/1984. Such a pro - portion is more or less similar to the proportion of popula- tion of North Sulawesi, i.e. 2.1 million of the 150 million of the total population in Indonesia. For the challenges to be confidently met, at least annual total development bud- get required is approximately Rp 175 billion. These amounts are below the capacity of the province to finance and hence, external sources need to be acquired while internal resour- ces must be more efficiently utilised.

4. There are two main categories of investment pro- jects, public and private investment projects. The former is funded through public funds and the latter is through pri - vate funds. Most investments undertaken in the province deal with public investments. Those deal with the private invest ments are very few. During the past three-FYDP the amount of private domestic investments reached no more than Rp 33 billion while that of foreign investments, reached no more than Rp 283 billion. To set an example, private invest ments in 1983 were at the most 2.61 per cent of the total - investment in the province. This figure includes the social self-help projects. From the macro level point of view , in the last 17 years the total private domestic investments in the province was about 0.7 per cent, whilst the total private foreign investment achieved, was only 1.0 per cent of the total investments in Indonesia. The proportion is therefore far lower than the proportion of the population of the province, being 1.3 per cent of the total population in Indonesia. It can therefore be concluded that the roles of private investments in the province is still very low.

5. The relatively low rate of private investments in the province is unlikely attributed to unavailability of re sources but more likely to several reasons as follows :

i) Severe competition and high degree of uncertainty (and therefore risk) in the world market of newly initiated - export commodities as well as imported - substituted commodities; ii) limitted market; iii) relatively high 'overhead cost' and; iv) deep penetration of products from multinational companies.

6. The poor infrastructure quality is illustrated by the inadequacy of irrigation dams and tertiary cannals to irrigate potential areas of rice fields consisting of 35,000 ha, poor road conditions and inadequacy and irregularities of sea transportation (within and between the province and the rest of the world). The limitation of market is due to the relatively small population size within the province and, high transportation costs from North Sulawesi to the densely-populated islands, in particular Java. The status of Bitung Port not considered as the main one is also an important factor contributing for the limitted market.

7. The relatively high 'overhead cost' is also aggravated by difficulties faced by prospective investors in acrucing industrial site/land combined with a time-consuming and uncertain procedures in obtaining investment licenses. The difficulties are paramount especially when dealing with licences for foreign investments, (i.e.1980). From 1980, on wards some improvements in investment procedures have been intensively undertaken by the goverment - of Indonesia through the establishment of an institution dealing with investment promotion and control, called BKPM (Coordinating Board for Investments).

8. In a more general and fundamental analysis however , it can easily be agreed that the lack of domestic private investments and slow rate of growth in domestic

private investments are mainly due to'lack of competitiveness'. The 'lack of competitiveness' is deeply rooted to - one of the several consequences of adopting or accepting the 'market economic system'. More and more imported goods appear to have been supplied into the province by multinational companies. Supermarkets in Manado and in a number - of towns in the province have been growing at an alarming rate as most of the goods and items sold are imported. Furthermore, people in North Sulawesi express a relatively higher preference for imported goods.

9. The absence of competitiveness is far marked in export investments. The province is a high cost economy area where most industries are infant industries. Therefore , there are vague possibilities for the province to initiate export of manufactured goods. The world and national mar - kets are subject to risk, imperfect competition, and res - trictive trading policies of the industrialised countries. These factors form obstacles for the province to expand or to enggage in export activities. The difficulties are - further aggravated by the fact that potential export pro - ducts are exported via the main ports thus weakening the - competitiveness due to relatively high transport and port handling costs. The opening of the Sam Ratulangi Airport - and the Bitung Port as an international airport and main- port respectively would partly solve the problem.

10. Difficulties in enggaging in the 'outward looking - strategy' may lead to the growing of acceptance of the 'inward looking strategy'. One rationale of the choice of the 'inward looking strategy' is that deepening penetra - tion of multinational and/or transnational companies in various strata of the economy. Supermarkets in the provin ce have been growing in numbers distributing primarily

imported goods rather than locally produced goods. The penetration, make consumers better off in the short run but worse off in the long run. In the short run the consumers would enjoy cheaper prices at the expence of weakening resilience in the long run. Further reasons for favoring the 'inward looking strategy' is, less difficulties in identifying investments areas and, a goverment would have access of capacity to exercise protection for the 'imported substituted commodities'. The choice of the 'inward looking strategy' is by no means free from any shortcomings. In the long run, the protection of infant industries may result in dampening overall productivity growth, inhibit employment, excess capacity, slow down industrial development, discriminate against agriculture, discourage export, provoke persistent balance of payment difficulties, and aggravated inequalities and income distribution (Donges, Stecher and Wolter, 1983).

11. The two strategies described above can be further decomposed into various sub-strategies, i.e. labour vs capital intensive traditional vs modern investments. This study makes an attempt to make a clear-cut on selecting the most prefarable strategy or sub-strategies.

Selection of these strategies/sub-strategies can be made only after resources available to be processed either for substitiiting imported goods or for export have been identified.

12. The province posses various kinds of resources which are potential for investments. In the agricultural sector, the corresponding strategic products are: coconut, through replanting and intensification; corn and pulses through wider practices of intercropping, rice production through improvement in irrigation systems, and swine, cattle, and

poultry production. In the forestry sub-sector, the strategic investments may open in production of wood housing, handicraft and furniture. In the marine subsector, the strategic commodities are skypjack, eastern little tunas, scads, trevalies, anchovies, frigatescale etc. For tourism, the province has a 'taman laut' (sea garden) 'Bunaken', several historical places, wild animals attractives for tourist, and social attractions. In the mining sectors, the province appear to have sufficient energy resources, i.e. geothermal and hydropower energy. Several kinds of mines are also reported sufficiently available such as sulphur, iron sands, cuprum, copper and to some extent gold and silver.

13. Possible further investments besides those shown in Appendixes A.7 to A.3 and Figure A_1, identified for better use of the resources on the basis of the economic outlook described in Chapter 2 to 5 are summarised bellow:

(i) Coconut-based industries[1)]

- Coconut replanting and intensification of approximately 150,000 ha throughout the province which cost approximately $ 1000/ha for replanting and $ 250/ha for intensification via a number of programs such as SCDP (Small holder Coconut Development Program).
- Processing of coconut by products such as trunks, coir, husks (fibre) and activated carbon prosessing plants.
- Processing of copra into refined coconut oil, soap, detergent, and possibly lubrication oil.

(ii) Other Agricultural-based industries[2)]

- Intensification of farm (including landunder coconut palms) for rice, corn and pulses to support agro processing plants (animal feed manufacturers, corn oil, various high content of protein vegetable foods, etc) in Bolaang Mongondow and Gorontalo.

1) As shown in Appendix A.3 and Figure A1, there are 106 farm estates in North Sulawesi
2) See Appendix A for the existing farm estates
3) In Bolaang Mongondow and in Gorontalo. These estates can be a "Nucleus" for the replanting program (see Sondakh, 1983)

-Integrated ginger and 'garlic' industries,either on farm estates on small farm

-Vanilla production by commercial oriented small-farmers

-Integrated sugar industries in Marisa plain Gorontalo

-(Palm) alcohol refinery plants in Minahasa

-Integrated poultry and livestock industries (poultry breeding, growing and slaughtering; and animal feed production plant)

(iii) Marine based industries

-Fish canning processing plants along the important fishing ports in the coastal areas of the province (Bitung, Tumpaan, Amurang, Labuan Uki, Gorontalo etc)

-Integrated fishing industries in Aertembaga, Labuan Uki and Gorontalo (Ports, boats, cold storage, etc). The province requires additional 368 boats of the capacity of 130 ton

-Shrimp catching, an the area of 2000 ha of 'hutan bakau' for tambak. This requires investment on breeding and rearing especially in the south east coastal areas of the province

-Motorisation of the traditional fisherman via - specific fish development programs

(iv) Forestry based industries

-Only 11 percent of the resources have been utilised and therefor investments are open in:

.Hardboard manufacturing palnts in Bolaang Mongondow and Gorontalo

.Sawmill (veneer plywood)

.Furniture plants

.Handicrafts from various valuable woods such as 'Mayu Hitam' (dyospiros celebica), 'Linggua' (Pterocarpus indicus)

(v) Mining based industries

-Integrated ceramics industries in Langowan,Minahasa

-Pumice, in Mt Soputan and Batuangus, Minahasa

-Terras in Minahasa

-Sulphur refining plants in Mt Soputan and Mahawu and Batukulo in Minahasa

-Gold and silver mining; Marisa plain, Mt Agone , Paguat in Gorontalo; Kotabunan and Dumoga in Bolaang Mongondow, and Ratatotok and Tumpaan in Minahasa

-Cuprum exploration in Gorontalo (Molosipat, Popayato, Bonepante and Tapadaa)

-Iron sands exploration in Minahasa (Bangka islands and in Bolaang Mongondow (Bolaang))

-Nickel in the western coastal area of Minahasa , and Talaud islands

-Portland cement factory in Lolak Bolaang Mongondow and mining of cement raw materials in Wori and Ratatotok Minahasa

-Geothermal exploration in Lahendong (30 Mw - 100 Mw) and in Ambang (30 Mw) and Tompaso (60 Mw)

-Tapping of energy sources from rivers, i.e. the Poigar River of approximately 15 Mw and others 15 small rivers throughout the province

(vi) Other industrial products

-Spare parts for transportations means

-Production of basic farm household equipments and tools

-Production of imported substituted commodities especially processed food, drinks, textiles and garments,

(vii) Investment in the traditional sector

-For small farmers and artisan, are in handcrafts, furniture, different kinds of cottage industries, and production of different kind of products through intercropping.

Most of the possible investments identified above would depend on various kinds of public investments to attract a investments of the private sectors. The public investments are

(i) Completion of the trans Sulawesi Roads as soon of possible, an improvements of the Bitung ports and Labuan Uki,

(ii) Implement a kind of NES program in promoting coconut rejuvenation programs

(iii) Reforestation and regreening in Gorontalo and Bolaang Mongondow,

(iv) Expansion on investments on irrigation dams must be undertaken to tap the presently untapped water resources thorughout the province and, encourage farmers through P3K to maintain tertziary - cannals,

(v) Speed up the existing coconut replanting and intensification program whilst at the same time a policy on maintaining a certain level of 'floor-price of copra' must be formulated i.e. 1 Kg of copra is equal is equal to 1 kg of rice,

(VI) Increase the public investments in improving strategic fishing ports in Bitung and Dhago in Sangir Talaud to enable integrated fishing industries to take places,

(VII) Improve the ports of Bitung to allow the province to overcome its problem of the absence of economy of scale, and become a centre of interislands and international trade,

(VIII) Increase public funds for Universitas Sam Ratulangi and IKIP Negeri Manado to enable them to conduct researchs in finding better technologies and methods, and to train young people (in cooperation with related government institutions) for any possible employments,

(IX) Increase investments relating to provision of basic needs especially:

- -Provision of potable water throughout the province either via PAM (Perusahaan Air Minum) as via special aids for village developments
- -Implementation of the present rural electrification program,
- -Encouraging the undertaking of cement production to enable poor households to improve their houses and living primaries condition,
- -Improving shooling fasciilities especially in the backward area in Sangir Talaud, Gorontalo and Bolaang Mongondow,
- -Encouraging young doctors to work in rural areas for improvement in health condition.

(x) Allocate funds for researchs and feasibility studies for the potensial development

Chapter 1

INTRODUCTION

1.1. General Feature of North Sulawesi

North Sulawesi is one of the 27 provinces of Indonesia. As shown on the Map (Figure 1.1), it is in the northern part of Indonesia, i.e. between latitude 0° 31' N and 4° 30' and longitudes 121° and 127° E. The province covers a land area of 27.515 square kilometers and consists of four Kabupatens (regencies), two municipalities and one administrative area, the port of Bitung. The four Kabupatens are based on the major ethnic groups. Kabupaten and municipality of Gorontalo are mainly inhabited by Gorontalese, Kabupaten Bolaang Mongondow by Mongondowese, Kabupaten Minahasa by Minahasan and Kabupaten Sangihe and Talaud by Sangirese.

The distribution of land area and population in the four Kabupatens, two Municipalities and the Administrative area is shown in Table 1.1, and that of climate is shown in Figure 1.2.[2]

It can be seen from the table that relatively high population density are in urban areas (Manado and Gorontalo), as well as in rural areas in Kabupaten Minahasa and Sangir Talaud. There are a number of reasons for the high population density in Minahasa and Sangir Talaud. Firstly the land is relatively more fertile in comparison to the lands in other sub-regions. Secondly, it is closer to the port of Bitung, one of the maritim centers for East Indonesia. The relatively more fertile land in Minahasa is due to soil enrichment as the result of volcanic eruptions.[1]

---

[1] There are 12 volcanoes in Minahasa, three of them are concidered active, i.e. Mount Soputan, Lokon and Mahawu. In Sangihe Talaud Islands, there are eight volcanoes, two of them are quite active, i.e. Mount Awu and Karangetan.

[2] As shown in Figure 1.2, Minahasa is relatively wet and Bolaang Mongondow and especially Gorontalo is relatively dry.

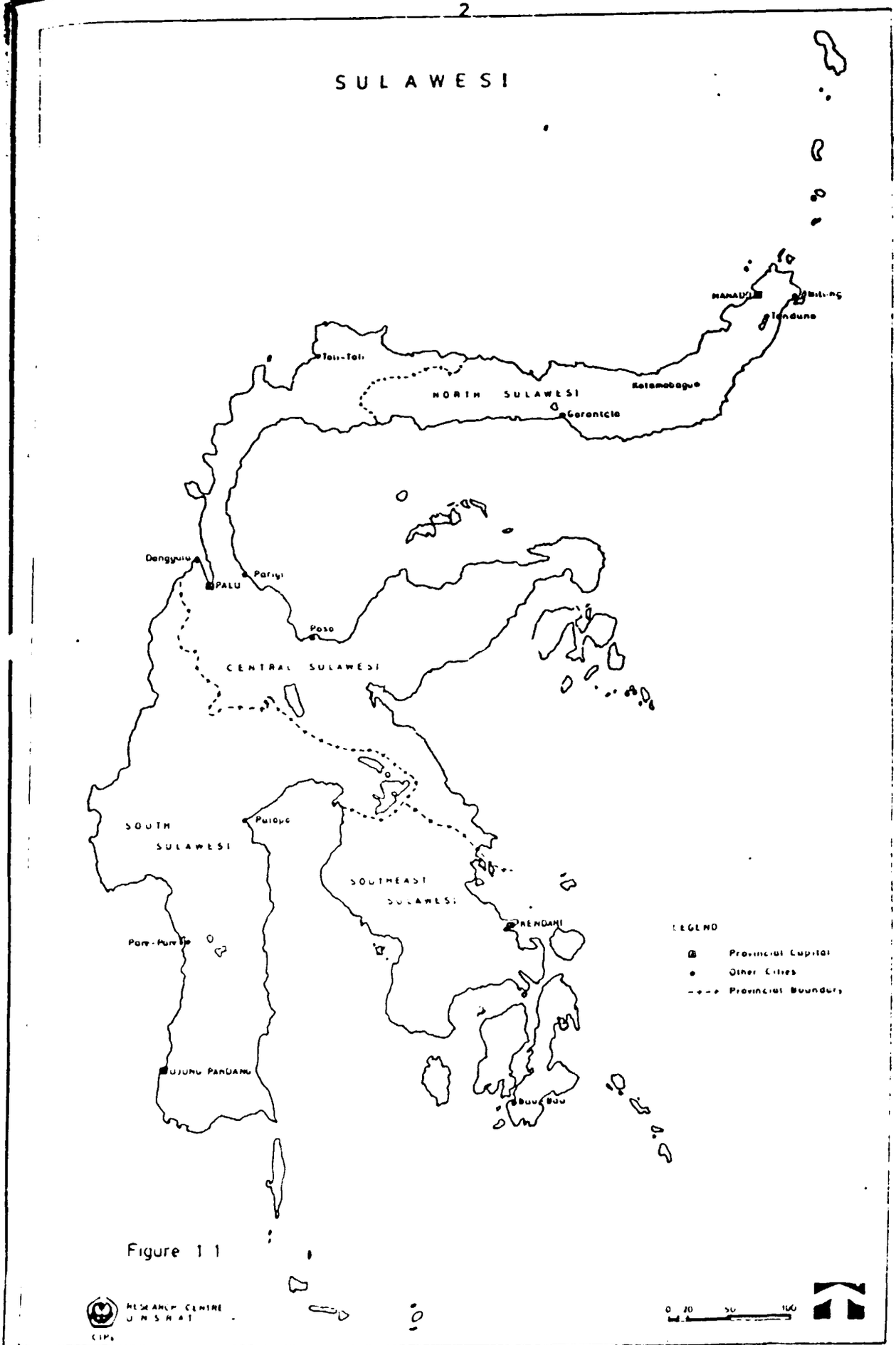


Figure 1.1

RESEARCH CENTRE UNSYIAH

CIPs

Figure 1.2 LAND USE DISTRIBUTION IN NORTH SULAWESI

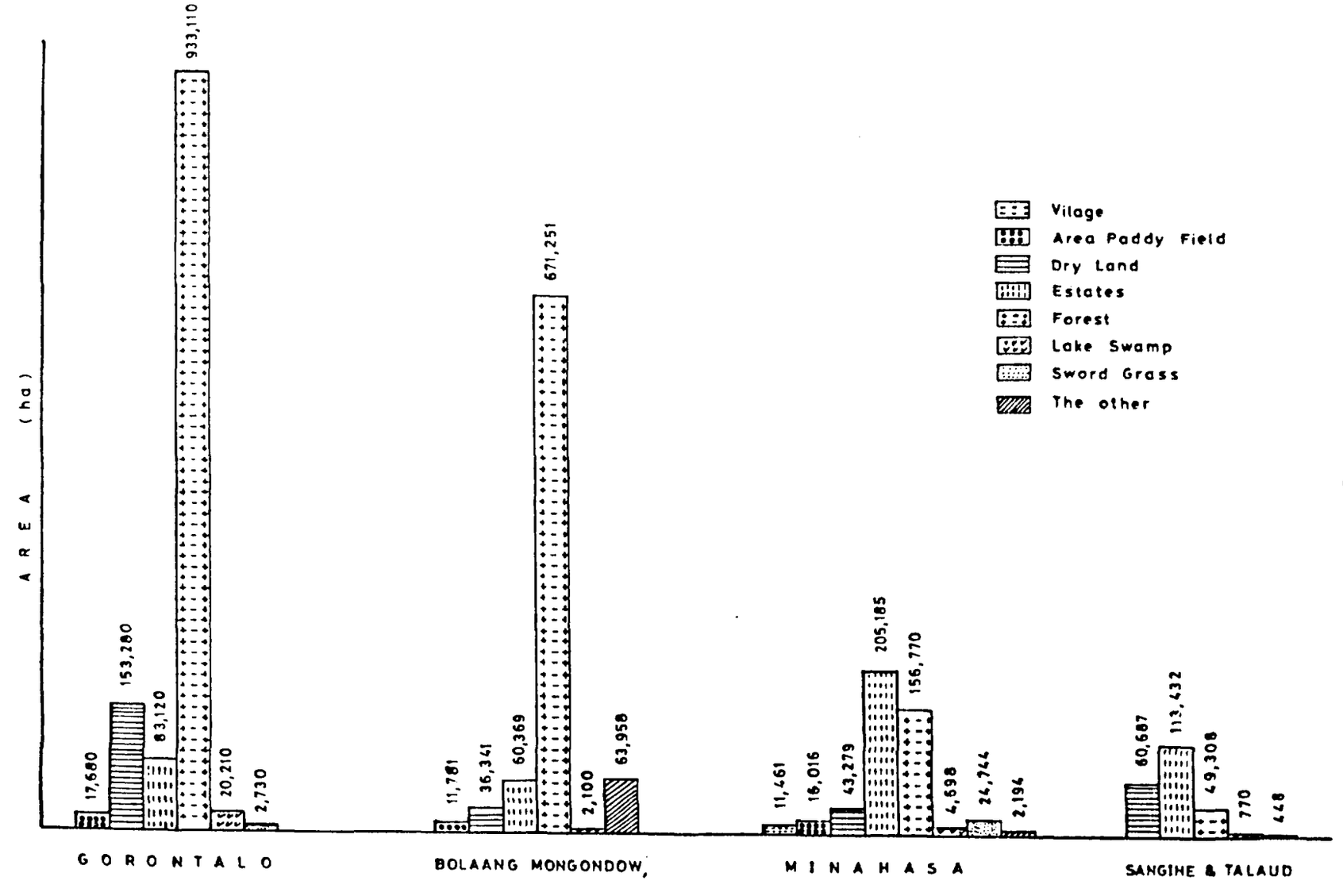


Table 1.1.

Distribution of Land Area, and Population in North Sulawesi

Name of sub-region	Area (sq.km)	Population	Population density
Kabupaten			
Gorontalo	12101.3 (43.98)	529598 (24.47)	44
Bolaang Mongondow	8448.0 (30.70)	309658 (14.31)	37
Minahasa	4322.0 (15.71)	686351 (31.71)	158
Sangihe Talaud	2263.9 (8.23)	240290 (11.10)	160
Municipalities			
Gorontalo	51.6 (0.29)	98591 (4.55)	1910
Manado	24.2 (0.19)	216796 (10.00)	8958
Administrative area			
B i t u n g	304 (1.10)	82755 (3.80)	272
Total Area	27515.0 (100.0)	2164039 (100.0)	82

Source : Compiled from North Sulawesi in Figures (1981).

Note : Figures in parentheses are basis percentage.

Table 1.2.

Area of North Sulawesi by Land Use

(1982)

Land Use	Regency				Total
	Gorontalo	Bolaang Mongondow	Minahasa	Satel	
1. Village	●)		●) 11,461	●)	11,461
2. Area Paddy Field	17,630	11,781	16,016	-	45,477
3. Dry Land/Ladang	153,250	36,341	43,279	60,667	293,537
4. Estates	83,120	60,369	205,185	113,432	462,106
5. Forest	933,110	671,251	156,770	49,308	1,810,439
6. Lake/Swamp	20,210	2,100	4,698	-	27,008
7. Sword Grass	2,730	-	24,744	770	28,244
8. Irrigation	-	-	-	-	-
9. Others	-	63,958	2,194	448	66,600
T o t a l	1,210,130	845,800	464,347	224,645	2,751,500

Source : Agriculture Service North Sulawesi, (1982)

Note : ●) Data not available

Distribution of land use among regencies in the province is shown in Table 1.2 and Figure 1.2. Tha table and figure indicate that approximately 65 per cent of the land area consists of forests (by all clasifications), 11 per cent of agricultural land, and the remaining consists of lakes, rivers and unfertile dry land. The main forest areas are Gorontalo and Bolaang Mongondow.

Analysis of maps, aerial photograps, satellite and field reconnaissance as shown in Figure 1.3, indicates that only 297 000 ha in the province are available for intensive agriculture. However, projection of the 1973 agricultural census data suggests that 500 000 ha will be available under cultivation in 1984. The excess of projected land under cultivation over area suitable for intesive cultivation is the result of cultivation on the steep volcanic slopes of Minahasa districts and considerable cultivation on the Sangir Talaud Islands to the North of Manado. Cultivation is being pushed on to areas within excess of 20 % slope, the normaly eccepted limit (Babcock and Cummings, 1984).

The origin (history) of North Sulawesi has been reviewed by Jones (1977). The Gorontalese and Sangirese are descended from Malay origin but the Minahasans and Sangirese have physical characteristics which appear to be related to the Filippinos, Japanese and Mongolian (Taulu, 1955). The European influence started in 1511. The groups most influenced by the European culture are the Minahasans and the Sangirese. The majority of them are Chistians. The Gorontalese and Mongondowese are primarily Moslems.

The economic geology of North Sulawesi has been reported in Sulawesi Regional Development Studies (SRDS,1979). According to this, North Sulawesi is mainly

volcanic and intrunsive rock. The older tertziary volcanics and intrusive rock aie in the western end. The extreme eas tern section is almost entirely Quartenary Tuffs and associated rocks. West of Gorontalo are large areas of alluvium which contain gold. Hot springs, fumerols and sulfataras can be found in the eastern part of the province. The major geologic zones, as reported by SRDS (1979) is shown in Figure 1.4.

Some minerals such as iron sands, copper, gold and sil ver, sulphur, cement raw materials, nickel, manganese, pozzo lanic etc, have been reported available but almost none of them have been intensively mined yet.

It has been estimated that 30 per cent of geothermal-deposits of 3000 MW (Megawatts) in Indonesia located in North Sulawesi. The main geothermal source can be found in Lahendong (30 MW), Linow, Tompaso and Ambang areas. Kaolin deposit is found in Toraget Minahasa. It has been mined for local use as for export on a small scale (Tenda and Sondakh, 1983). Iron deposit of volcanic origin occur on the northern islands. Iron sands (pyrite) encircle the northern half of Sangihe Island. Recent lava flows on the Island, i.e. the eruption of Mt Karangetan in 1978 contain taconic. Nodular magnetite is found on Siau and Tagulandang. The deposit , particularly the iron sands, appear to be easily recoverable. However, to date, no comprehensive survey and sampling of these iron deposits have been undertaken.

1.2. Main Features of The Economy of North Sulawesi

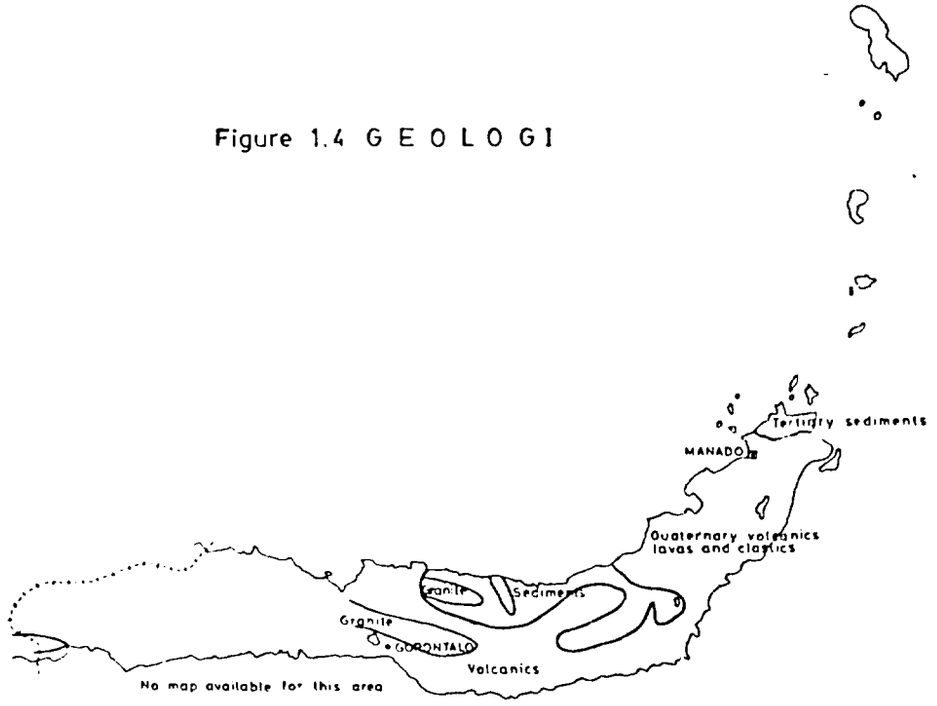
The economy of the province is strongly dependent on agriculture. Approximately 46 per cent of GDRP (Gross Do - mestic Regional Product) of the province comes from agriculture. In 1980 of the 730 120 labour force in the province, 66.06 per cent was in agriculture, nearly 7.00 per cent in industry, construction, energy and

drinking water and mining, 5.20 per cent in commerce, 12.92 per cent in services and the remainig 8.82 in other sectors of the economy. Coconut and clove industries have been the backbone of the economy. As shown in Table 1.2 approximately, 504 397 ha or 15 per cent of the total land areal in the province is devoted to agriculture. This consists of 462,106 unirrigated land and 45,417 ha paddy field (irrigated and non irrigated). The unirrigated land is further devided into 243 099 ha for coconut plantations (smallholders mainly), 25 069 ha for nutmeg, 31 153 ha for clove, 3 104 ha for coffee and the remaining 160,555 ha for 'mixed cash and food crops'.

Copra accounts for approximately 60 per cent of the total export in 1980. Cloves are produced mainly for 'kretek' (cigarette) manufacturing in Java, with total production ranged from 6000 to 15 000 tons per year and with prices ranging from $ 6 to $ 14 per kg (SUA 1981, Kantor Perdagangan, 1982). North Sulawesi has now started exporting, corn and soyabean, and to some extent livestock. Most of the commodities above are still exported as raw materials.

The role of 'non-agricultural industrial sectors, as shown in Table 1.3', is still moderate or even very minor, i.e. less than 4 per cent of GDRP. One reason for such a minor role according to Sondakh et.al (1983) may be due to a problem of 'lack of economies of scale'. North Sulawesi is situated quite far from the main market in dense populated area in Java, Madura and Bali. To some extent, the potential role of coconut industry may be hampered by disadvantageous policies on copra and coconut oil trade. For instance whilst coconut oil manufacturers in North Sulawesi have been operating under full capacities, part of coconut production of the province has still to be exported to

Figure 1.4 G E O L O G I



PUSLIT
UNSRAT
CIPs

NORTH SULAWESI

0 10 20 40 80

ADOPTED FROM SRDS, 1978

Table 1.3.

Rate of Growth by Sector in North Sulawesi at Constant Price 1975

No.	Industrial Origin	1976	1977	1978	1979	1980	Average Growth per Annum
1.	Agriculture	-11.3	75.0	-29.8	12.9	35.6	16.48
	-Food Crops	1.4	14.3	-4.3	1.2	3.6	2.68
	-Plantation Crops	-38.3	339.1	-62.9	42.9	90.9	74.34
	-Livestock and Poultry	11.5	-36.6	44.4	2.7	3.1	5.02
	-Forestry	-54.7	17.6	163.7	-8.2	59.8	35.64
	-Fishery	7.2	7.6	40.8	2.3	8.2	13.22
2.	Mining	20.9	41.9	54.2	53.7	53.7	44.88
3.	Industries (Manufactures)	-4.4	26.4	4.5	1.4	3.6	6.30
	-Large and medium sizes	-14.3	61.9	8.2	-3.6	-7.5	8.94
	-Small Industries	4.1	1.3	0.3	1.2	1.0	1.58
4.	Construction	4.8	5.1	0.4	2.5	2.5	1.53
5.	Electricity and Potable Water	13.9	26.1	-13.3	21.1	10.7	11.70
6.	Transportation and Communication	6.1	28.7	6.7	7.8	8.9	11.70
	-Land	7.3	15.5	3.7	12.2	10.3	9.80
	-Sea	-1.7	25.8	5.2	5.6	5.5	8.08
	-Air	28.2	32.6	10.1	10.3	13.4	18.92
	-Communication	29.9	121.2	13.6	17.8	23.7	41.24
7.	Trade	-4.4	37.8	10.0	6.4	6.0	11.36
8.	Bank and Finance	42.2	74.5	7.1	3.5	5.2	26.50
	-Bank	41.2	72.2	6.8	-1.4	8.8	25.52
	-Credit Cooperation	56.4	114.2	5.2	71.1	-46.2	40.14
	-Insurance	43.9	102.7	-3.3	12.5	-12.2	33.60
9.	Housing	3.2	2.7	0.8	0.6	3.4	2.14
10.	Goverment and Defense	3.7	26.4	5.6	2.6	10.9	9.84
11.	Services	4.9	10.7	19.0	10.4	5.1	10.00
	Average Growth of Cross Domestic Regional Produc (GDRP) North Sulawesi	-4.54	47.37	-10.61	8.50	18.78	11.90

Source : Rogi (1982, Bappeda, 1982) .

Java and other regions in the form of copra.

In the last seventeen years the total private domestic investment in the province was about 0.7 per cent, whilst the total private foreign investment achieved, was only 1.0 per cent of the total investment in Indonesia.

There has not been any intensive studies on effects of the economic growth on income distribution. However, previous studies indicate that income distribution in the province needs to be improved. Kandou (1983) reported the work of Parera (1978) that GINI coefficient in Manado is 0.50, higher than that in rural Java, i.e. 0.46 indicating that distribution of income in Manado is even worse or quite bad. Sarasutha (1982) reported that 18.76 per cent operated land less than 0.25 ha, 26.99 % operated land 0.15 - 0.50 ha sed 54.15 ha cultivated land higher than 0.5 ha. Sondakh (1978) reported that approximately 20 % of rural people did not have farm land. There is also a tendency of polarisation in land ownership (Sondakh, 1984). However, overall in rural areas, as reported by Sarasutha (1982), improvent in income distribution has taken place.

There is still difference in the stage of development between Kabupatens. According to CIDA (1984), Sangir Talaud is the least developed Kabupaten followed by Gorontalo and Bolaang Mongondow. Minahasa is the most advanced Kabupaten. However, potential for further development is in the two Kabupatens; Bolaang Mongondow and Gorontalo. These two Kabupatens, especially Bolaang Mongondow, with resources such as agriculture, energy, and mining can be better utilised by provision more and better infra structure.

North Sulawesi is considered as 'daerah perbatasan' (boundary area). One of its Kabupaten, i.e. Kabupaten Sangir

Talaud consists of 73 Island spreading out in the boundary of Indonesia and the Philippines. North Sulawesi is therefore a northern 'fence' of Indonesia. Indonesian security is consequenty partly dependent on the strength of this fence. This implies that, the economy of Kabupaten Sangir Talaud has an important role in the security of Indonesia. However, out-migration of this sub-regions is quite prevalent. This must be due to unfavourable work opportunities.

From the above description it is clear that the economy of North Sulawesi is predominantly an agriculture economy. Its contribution to GDRP is the highest and is the main source of employment. For an economy to sustainly grow,agricultural productivity must be increased and the other economic resources must be efficiently utilised. This means that the potential of economic resources must be clearly identified and factors constraining the optimum utilisation of the resources must be clearly described. To meet these needs, understanding of present realities and insights of past development process of the region is necessary.

Chapter 2

ECONOMIC DEVELOPMENT AND RESOURCES IN NORTH SULAWESI

2.1 An Overview of the Pattern of Economic Development of North Sulawesi Since 1967

2.1.1 Introductory Remarks

Development deals with improvements of quality of life of every citizens/people of a particular region, state or nation. Quality of life is determined by various factors, social, economic, environments and security. Among these factors, the economic factor seems to have been regarded as the main determinant and therefore, economic growth as indicated by a sustained increase in per capita income (Kuznets, 1955) has been considered important to pursue. In pursuing a sustained increase in per capita income, a process of economic transformation is required especially for a developing country which income and employment mainly come from agricultural sector. An economic transformation process is a process of gradually changing the main source of income and employment from the agricultural to non-agricultural sector. The process of (structural) change however, should be directed and controled in such a way so that benefits of growth be enjoyed by every individuals, i.e. a process of 'growth with development' (Ahluwalia and Chenery, 1974; Lewis, 1965; Lal, 1974) on which , provision of basic needs to every individuals is necessary (Streeten and Burki, 1976).

Table 2.1 indicates that economic growth has taken places in the province. Gross Domestic Regional Product (GDRP) has increased 16.3 per cent during 1969 - 1974 and 11.9 per cent per annum during 1975 - 1980. However ,

Table 2.1

Economic Growth in Terms of GDRP at
Current and Constant Prices
(1969-1980)
(Rp 10^9)

Y e a r	Current	Constant
a. Base Year 1969		
1969	43.3	43.3
1970	48.9	45.9
1971	58.0	50.2
1972	66.9	53.9
1973	117.6	64.3
1974	142.9	72.3
b. Base Year 1970		
1975	154.8	156.1
1976	185.2	155.4
1977	290.5	206.5
1978	277.3	N.a
1979	383.106	N.a
1980	522.1	N.a

Source : Compiled from SUA (1983), BAPPEDA (1979, 1980, 1982) and BPS (1983).

Note : Not available, (N.a).

whether an economic transformation as described above has underlied the process of growth remains unclear. Though it is unclear yet, one would find that the economic transformation does not seem to have taken places.

In order to fully understand why such an economic transformation did not seem to take place, an insights of the pattern of economic development from the First to the Third Five Year Development Plan, is necessary.

2.1.2 The Pre and First-Five Year Development Plan, 1964 - 1974

Prior to the First Five Year Development Plan the economy of Indonesia especially North Sulawesi was in a very bad shape. The province, suffered from the effects of the Second-world war and from an intrique between the province and the state, in 1958 to 1962, and from the so-called G. 30. S in 1965. By 1967, of the 2060 km roads in the province, only 75 km was surfaced, 20 000 houses were damaged. The total production of copra was only 8 000 ton, i.e. only 4 per cent of the potential production. It had also to import approximately 5 000 tons of rice per month. Copra price in 1967 was only Rp 18 per kg in comparison with that of rice of Rp 45 per kg (Rogi, 1983). The above evidences were the main reasons for the First-Five Year Development Plan to have been concentrated on rehabilitation of infrastructure such as roads, irrigation etc.

Between 1969 to 1974 total investment was Rp 52. 7 billion (Rp 52.709.270.857,00) which consists of 32 per cent goverment investment, 44 per cent private and foreign loan/investment, and 24 per cent self reliance investment.

Goverment investment was concentrated on 'economic investment'. The result of the investment programs, as reported by Rogi (1983) was quite remarkable.

Copra production increased from 170 000 to 188 000 tons, clove from 2 000 to 8 000 tons and nutmeg from 5500 to 7 000 tons. Rice production increased from 75 000 to 103 000 tons and corn from 51 000 to 123 000 tons. Fish - from 20 000 tons to 26 000 tons fresh water fish from - 10 000 to 70 000 tons.

Table 2.2

Growth of Income Per Capita at Constant Price 1969

Year	Per Capita Income (10^3)
1969	26.755
1970	27.738
1971	29.473
1972	30.794
1973	35.757

Source : Rogi (1983).

As shown in Table 2.2, the per capita income has grown at an average rate of 7.6 per cent. This growth was rooted from a relatively stable economic atmosphere due - to a sharp decrease in inflation rate from i.e, 600 per cent prior to 1967 to below 20 per cent thereafter.

2.1.3 The Period of the Second Five Year Plan, 1974 - 1978

During the second FYDP the economy of the province

Table 2.3

Distribution of Gross Domestic Regional

Product of North Sulawesi at Current Price (1975-1980)

Industrial Origin	1975	1976	1977	1978	1979	1980
Agriculture	45.10	41.89	49.76	39.05	40.64	46.40
Food Crops	50.91	56.62	36.97	50.46	45.21	34.53
Plantation Crops	30.26	21.05	52.79	27.90	35.33	49.73
Livestock and Poultry	11.13	14.00	5.07	10.43	9 .48	7.21
Forestry	1.40	0.72	0.48	1.81	1.47	1.74
Fishery	6.29	7.61	4.68	9.40	8.51	6.80
Mining	0.36	0.46	0.44	0.77	1.08	1.40
Industry (Manufacture)	4.37	4.37	3.75	4.38	3.98	3.23
Large and medium size	46.21	41.42	53.05	54.93	53.71	51.51
Small industries	53.79	58.58	46.94	45.07	46.29	48.49
Construction	3.48	3.82	2.73	3.06	2.89	2.49
Electricity and Potable Water	0.33	0.39	0.33	0.32	0.36	0.34
Transportation and Communication	7.16	7.96	6.95	8.29	8.24	7.55
Land	68.54	63.52	62.08	61.19	59.91	58.07
Sea	7.90	7.99	7.17	6.97	7.25	7.35
Air	21.91	26.47	27.27	28.13	28.78	29.97
Communication	1.65	2.03	3.48	3.71	4.05	4.61
Trade	20.11	20.15	18.84	23.39	22.95	20.47
Bank and Finance	0.49	0.73	0.87	1.04	0.86	0.88
Bank	93.57	92.93	91.70	91.44	87.13	90.11
Credit Cooperatives	2.49	2.46	3.37	3.31	5.47	2.79
Insurance	3.94	3.99	4.63	4.18	4.55	4.85
Housing	3.11	3.36	2.34	2.64	2.45	2.13
Goverment and Defense	11.51	12.49	10.72	12.66	11.92	11.18
Services	3.98	4.37	3.28	4.37	4.44	3.93
Gross Domestic Regional Product (GDRP) North Sulawesi (%)	100.00	100.00	100.00	100.00	100.00	100.00

Source : Rogi (1982, Bappeda 1982).

continued to grow quite well. However a structural trans - formation did not take place. It is shown in Table 2.3. - that the relative share of agricultural sector to GDRP remains the highest. It increases from 45.10 per cent in 1975 up to 46.40 per cent in 1980. Within the agricultural sector, the main contributor is plantation crops, i.e. 49. 73 per cent folowed by food crops, i.e. 34.53 per cent . The contribution of the industrial sector, a sector that may reflect the rate of economic transformation in con - trast, decreased from 4.37 per cent in 1975 to 3.23 per - cent in 1980. The relative share for trade remains cons - tant at 20 per cent, this is quite similar to those of ot- her sectors. Per capita growth, at constant prices are as follows :

Table 2.4

Per Capita Income Growth Rate
at Constant Price 1975
(1975 - 1980)

Year	Rp 10^3
1975	80.075
1976	73.436
1977	106.840
1978	95.148
1979	101.055
1980	119.330
1981	131.467
1982	141.648

Note : Base year 1975
Source : Rogi (1984).

From the table, it can be seen that in terms of per - capita income,the rate of growth is on average 10.4 per - cent, which is reasonable for a developing country. The main contributor for such a growth, as shown in Table 2.3 is that of the agricultural sector, especialy the planta - tion sub-sector. However, the growth pattern of this sub-sector has been subject to a very high fluctuation. In 19-76 the contribution of this sector was 38.3 per cent lower than that in 1975, it moves up to nearly 340 per cent in 1977, down again in 1978, and up again between 1979-1980. This growth pattern seemed to have significantly affected the regional economy growth as a whole. As shown in Table 2.3 GDRP fluctuates in similar manner with the fluctuation of the plantation sector.

2.1.4 The Period of the Third Five Year Plan (1975 - 1984)

To date, an account on GDRP in the above periode has not been completely undertaken yet. However, according to Rogi (1984) the economic performance during the 1979- 1984 may look as follows :

(1) Agriculture remains the main contributor. The contribution is very likely greater than 40 per cent.

(2) Contribution of the industrial sector is only between 3-4 per cent. Industrial sector still performs unsatisfactorily.During the period of 1975 - 1980 the growth rate was lower than the that of GDRP.

(3) Growth pattern during 1975-1980 is subject to unstability.

(4) Growth pattern of food crops was not very statis - factory. During 1978 - 1980, the average rate of growth is just above the rate of population growth.

Table 2.5

Investments in North Sulawesi 1979-1984 at Current Price

(Rp 10^9)

Year	Sectoral Investment (APBN)	Central Government Investment (APBN)	Credits	Private Investment		Regional Investment		Total
				Domestic	Foreign	APBD	Social Self Help	
79/80	23.632	10.733	9.510	-	-	4.014	1.818	49.707
80/81	42.623	17.078	28.076	2.766	1.437	5.691	2.218	99.889
81/82	62.495	24.526	31.088	10.316	-	5.604	1.893	135.922
82/83	71.429	28.808	22.283	3.001	-	7.616	615*)	133.752
83//84	71.429*)	33.785	19.819	3.001	-	7.722	615*)	136.371
84/85	-	-	-	-	-	-	-	172.272 **

Source : Compilled from BAPPEDA, (1983)

Notes : APBN (Anggaran Pendapatan dan Balanja Negara, National Budget).

APBD (Anggaran Pendapatan dan Belanja Daerah, Regional Budget).

** Projected figures proposed in Bappeda, (1983).

Total investment undertaken during the Third Five Year Plan Period can be shown in Table 2.5. It is shown in the table that significant increase was taking place in 1981/1982 but from 1981/1982 to 1983/1984 the increase is nearly negligible. One reason for this small increase is that of the world wide economic recession. The table also indicates that no more than 10 per cent of the total investment is financed through the regional budget. With respect to private investments the figures indicates a very small proportion to the total investments in 1980/1981 and 1982/1983.

The Third Five Year Plan, i.e. 1978/79 to 1983/84 remains focusing on increasing agricultural production to provide a sound base for an industrial development in the near future.

2.1.5 Income Distribution

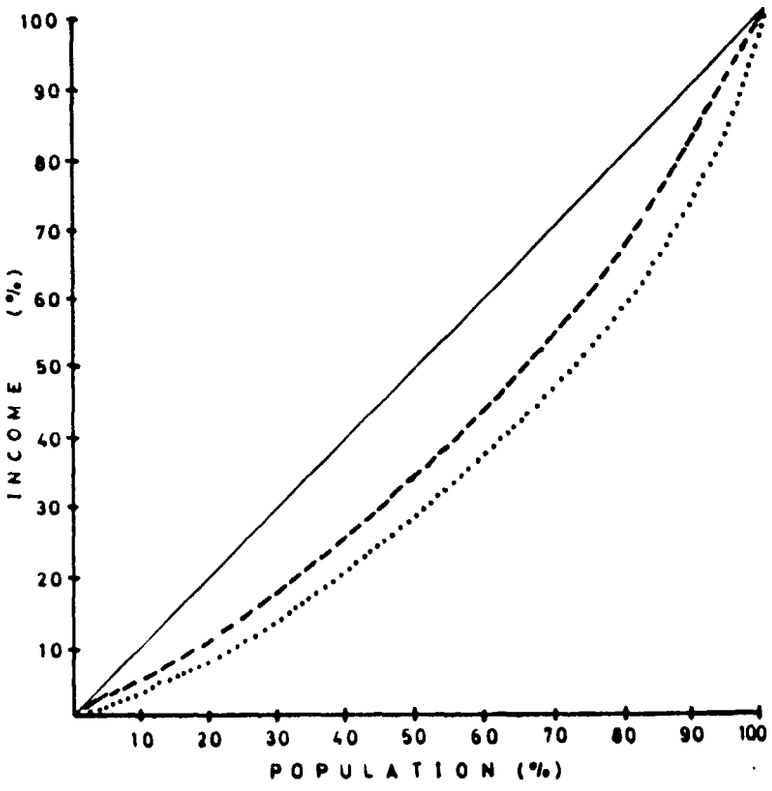
A study on income distribution indicates that during the development period 1974-1980 improvement on income distribution takes place (Lastario et.al, 1982). As shown in Figure 2.6 in 1974, the Gini Coefficient is 0.23 and in 1980, the coefficient is down to 0.19. This indicates an improvement in equity, i.e. decrease in Gini Coefficient of 0.045 per cent per annum.

Table 2.6
Gini Coefficient in Sulawesi

	1974	1980	g	r
North Sulawesi	0.2372	0.1922	-0.0450	3.16
Central Sulawesi	0.1796	0.1047	-0.0749	8.34
South Sulawesi	0.1845	0.1602	-0.0234	2.20
South East Sulawesi	0.2618	0.1300	-0.1318	10.07

Notes : g is changes in Gini Index
r annual rate of change
Source : Compiled from Lastario, et.al; (1983)

Figure 2.1 LORENZ CURVE OF NORTH SULAWESI 1974 AND 1980



NOTE

..... LORENZ CURVE 1974 : GINI INDEX = 0,2372

-·-·- LORENZ CURVE 1980 : GINI INDEX = 0,1922

Lastario et.al., (1983) reported that an inprovement in equity is considered significant if an annual rate of decrease of Gini Coefficient is 4 per cent. Using this criteria, significant improvements in equity appear to have taken place, mainly in the two provinces, i.e. Central and South East Sulawesi.

The unit of analysis used by Lastario however is village rather than households. Consequently the improvement in distribution shown is relevant to intra-villages but not to intra-households. The improvement in income distribution between villages is one of the results of goverment village development programs in providing social and phy - sical infrastructures in rural areas. However, it remains an open question which (income) group of the society get more benefits from such village development programs , including various credit programs. A case shown by CIDA (1984) that approximately 40 per cent of households in Lolak and Sang Tombolang districts in Bolaang Mongondow can only meet their basic needs in terms of food but not in term of housing, electricities and education. Such a study confirms Emil Salim's (1982), (the Ministry of Population and Environments) assessment that rates of increase of households living below subsistence levels is higher in the outer islands than that in Java.

Other cases that may support the above evidences of increasing inequality is that more and more fertile land around Manado and in Minahasa have been in the hand of rich bussinesmen, and small poor farmers have migrated to other location. As shown earlier, the Gini coefficient for Manado is approximately 50 per cent already in 1982.

To sum-up, regardless of the degree of reliability

of the above studies on income distribution, improvement of income distribution is a must.

2.2. Sectoral Economic Development in North Sulawesi Since 1969

2.2.1. Introductory Remarks

As already shown in the early chapters, agriculture is the backbone of North Sulawesi economy. Its contribution to GDRP is the highest and increasing over time. On the other hand, the industrial sector tends to decrease over time . Such a phenomena does not conform with the intended development strategy for economic transformation , i.e, for the industrial sector to grow faster than that of the agricultural sector. In other words, the process of economic development prior to 1982 is a process of growth without economic transformation.

In order to gain further insights on causes of the phenomena described above, an understanding of patterns of a sectoral economic development is necessary so that factors constraining such a development can be identified. Such understanding and identification are needed in assessing investment opportunities in the region.

2.2.2. Agricultural Development

During 1975 to 1980 the agricultural sector has grown at an average rate of 16.48 per cent, higher than the annual growth rate of GDRP of only 11.9 per cent. The sector is devided into 5 sub-sectors, plantation crops, food crops, livestock, fishery and forestry. As shown in Table 1.3 during this period annual average growth rate of the

sub-sectors are, 2.68 per cent for food crops, 5.02 per cent for livestock and pultry, 35.64 per cent for forestry and 13.22 per cent for fishery.

2.2.2.1 Development of Plantation Sub-Sector

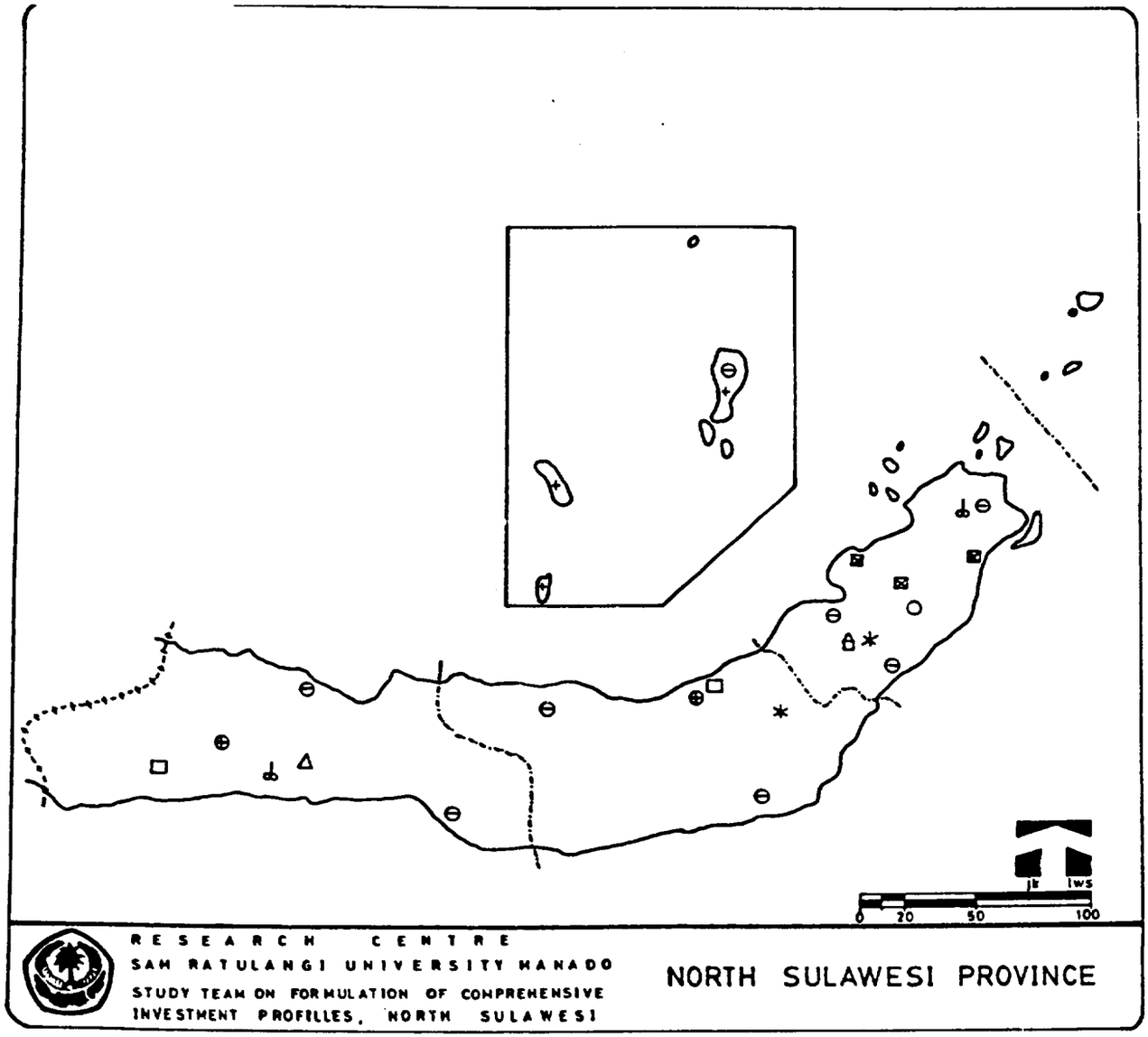
There are 4 main cash crops considered important in North Sulawesi; coconut, clove, nutmeg and coffee, and to less - extemt, vanilla, cocoa, ginger, sugar cane and pepper. Further details on situation and prospect of these industries- are described below.

2.2.2.1.1. Coconut Industry

The coconut industry has an important role in Indone - sian economy. One of the main products of the industry, i.e coconut oil, is considered one of 'sembilan bahan pokok' (nine essential commodities) that must be made available at a reasonable price to people. The importance of the industry- can also be indicated by its contributions to employment and income. In 1980, as shown in Table 2.7, the industry - consists of 2 622 900 ha. It provides living and employment to approximately 3 million households throughout Indonesia. This is because most coconut farms are smallholders. Among- the total area of 2 622 900 ha, 244 703 ha or 14.4 per cent are in North Sulawesi which population is only 1.3 per cent of the total population in Indonesia.

In North Sulawesi, the coconut industry provides li - ving and income to approximately 160 000 households, or near ly 40 per cent of the total number of households in the pro - vince. In 1980, approximately 85 per cent of coconut products are exported (mainly to Java) in the form of copra and/or - coconut oil.

Distribution of coconut farms throughout the province- can be seen in Table 2.8. As shown in table, 52.32 per cent of coconut farms area are in Minahasa. The remaining



NATURAL RESOURCES MAP
(AGRICULTURAL ESTATES)

LEGEND.

- Nugmet
- Rubber
- Coconut
- Clove
- Coffee
- Tobacco
- Sugar cane
- Palm oil
- Cocoa
- Coconut (Hybrids)
- Provincial border
- Regency border

Figure 2.2

Figure 2.3
Distribution of coconut products

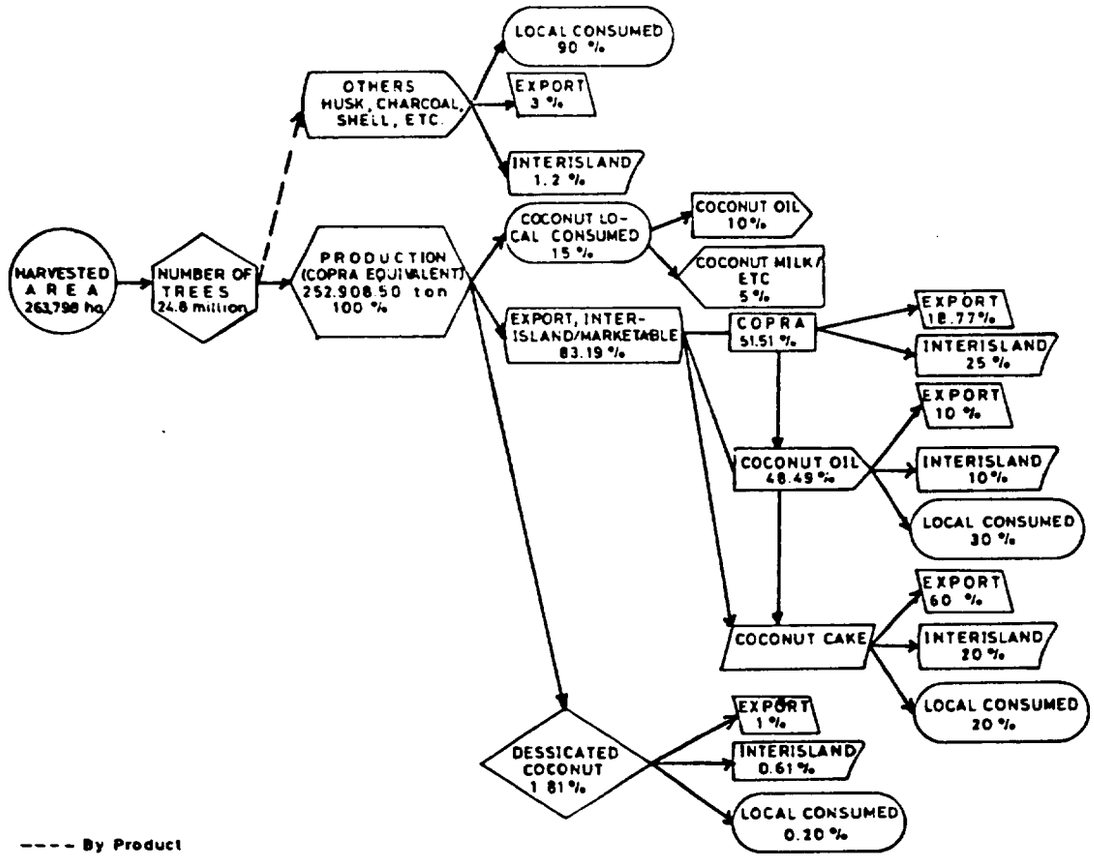


Table 2.7

Area and Production of Small Coconut Farms

in Indonesia, 1980

Province	Young Palms (ha)	Productive Palms (ha)	Unproductive Palms (ha)	Total Area (ha)	Total * Production (ton)	Average Production (kg/ha)
D.I. Aceh	10.529	73.052	2.878	86.489	69.905	957
Sumbar	10.916	48.597	6.513	66.026	42.904	882
Riau	59.585	117.575	33.147	210.307	101.115	860
Jambi	27.477	43.034	3.108	73.619	31.295	727
Sumsel	15.189	19.349	2.294	36.832	11.283	583
Lampung	30.008	73.415	5.351	108.774	42.834	583
Bengkulu	3.809	10.832	114	14.753	9.124	842
Jabar	60.554	187.254	15,028	262.836	116.050	620
D.I.Yogya	21.972	36.260	285	56.517	26.282	725
Jateng	89.424	146.917	6.266	244.606	91.742	625
Jatim	65.000	144.085	13.282	222.367	164.031	730
Kalbar	13.460	59.178	24.916	132.809	49.203	831
Kalsel	6.201	19.704	1.670	26.599	16.186	819
Kalteng	6.905	23.342	879	31.026	17.192	736
Kaltim	9.938	13.436	1.771	25.145	10.713	797
Sulut	25.357	204.070	18.276	244.703	247.945	1.215
Sulteng	23.201	115.702	2.710	141.558	173.533	1.500
Sulsel	36.445	72.756	4.042	113.243	89.126	1.225
Sultra	13.369	22.629	150	36.148	21.498	950
Bali	14.592	63.004	277	77.913	64.916	1.030
N T B	26.648	31.861	560	57.069	27.082	850
N T T	41.656	50.676	1.132	93.464	31.708	626
Maluku	20.150	104.000	2.279	126.429	166.400	1.600
Irja	3.500	13.610	538	17.648	12.589	925
Sumut	NA	NA	NA	NA	NA	NA
Timtim	NA	NA	NA	NA	NA	NA

Source : Compiled from Data Statistik Perkebunan, Direktorat Jenderal Perkebunan, Jakarta (1981).

Note : NA, Not available yet, at the time of writting.

* In terms of copra equivalent

47.68 per cent are distributed to other sub-regions especially in Kabupatens of Bolaang Mongondow, Gorontalo and Sangir Talaud. Of the total farm area of 248.251 as shown in Table 2.6, approximately 13.13 per cent are young palms, 79.12 per cemt are productive palms 7.75 per cent are considered unproductive. The total coconut production, as shown in the table is 204 957 ton, i.e., 0.825 tons per ha.

Most coconut palms in North Sulawesi were planted around 1910 (Sondakh, 1978; Sondakh, 1973). This means that most of the existing coconut palms at present are already older than 60 years of age., an age considered as the begining of unproductive economic life for coconut palms (Davis and Sudasrip, 1978; Sondakh, 1982). Furthermore, Davis and Sudasrip (1978) reported that in 1973, coconut plantations in North Sulawesi, especialy those in Sangir Talaud Islands, were heavily attached and destructed by a type of pest called 'sexava nibulla'. Approximately 40 per cent of the existing coconut palms in this sub-region were destructed. Another reason for the low productivity in coconut industry (farming), according to Sondakh (1983) and Rondonuwu (1983), is that farmers did not seem to have applied appropriate farm management practices.

Coconut area was only 177.206 ha in 1961 and increases to 243.00 ha in 1980, an increase of 65.894 (nearly 30 per cent) in 20 years. However, there does not seem to have a significant increase in coconut production per ha. In 1961 average production/ha is 0.68 ton and increases very sightly to 0.94 ton/ha in 1980. Such a production/ha is far below than that in the Philippines, i.e. 2.5 tons/ha. One other reason for the low rate of increase in growth of coconut industry in the province, can be attributed to relatively

Tabel 2.8.

Area and Production of Small Coconut Farms
in North Sulawesi, 1982.
(10^6)

Kabupaten/Dati II	Young Palms (Ha)	Productive Palms (Ha)	Unproductive Palms (Ha)	Total Area (Ha)	Total Production (in ton of copra equivalent)
Minahasa	9.840	116.102	3.982	129.924	107.237 (52.32)
Bolaang Mongondow	9.690	27.790	1.247	38.727	31.973 (15.60)
Gorontalo	7.378	26.753	574	34.705	28.652 (13.98)
Sangihe Talaud	5.678	21.096	13.435	41.209	34.022 (16.60)
Kotamadya Manado	-	1.700	-	1.700	1.639 (0.8)
Kotamadya Gorontalo	-	1.986	-	1.986	1.434 (0.7)
T o t a l	32.586	196.427	19.238	248.251	204.957
(in Percentage)	(13.13)	(79.12)	(7.75)	(100)	(100)

Note : Figures in parentheses are on percentage basis

Source : Compiled from Data Statistik Perkebunan, Direktorat Jenderal Perkebunan, Jakarta (1983) .

low copra prices.

Efforts to increase coconut productivity has been quite seriously undertaken since 1970's through a series of government program such as TTPK (Team Teknis Peremajaan Kelapa, Tecnical Team for Coconut Replanting) and recently, SCDP (Small Holders Coconut Development Program) and PRPTE (Proyek Rehabilitasi Peremajaan Tanaman Export, Replanting/Rejuvanation Project for Export Crops) (See Sondakh, 1983). The project were heavily funded through public investments assisted by World Bank loans (SCDP and PRPTE).

The performance of the programs however, are still unsatisfactory. Major portion of hybrid young palms planted in 1980/1981 fail to survive because of a long drought experienced in 1982. The effects of the 1982 drought to existing coconut production is also quite severe. It is estimated, because of a time lag effect of drought on coconut production of approximately 2 (two) years, coconut production during 1983 to 1985 would be down to 50 per cent of the normal production. Therefore, in early 1984, 'edible oil crisis' is reported to have taken place in Java (Kompas, 1984).

Drought is an exogenous variable that beyonds control of management. The one which strongly determines a rate of increase in coconut production and productivity and can be under management control is factor prices.

As shown in Table 2.9, the highest price ratio was experinced in 1974, i.e 2.32. In 1982 the price ratio is only 1.04 even lower than that in 1969 of 1.48. Because of price ratios of cloves are far higher than those of copra (coconut oil) and the ratio is increasing over

Table 2.9

Price Ratio of Rice and Coconut Oil & Rice and Clove of North Sulawesi, 1969 - 1982

(in Rp)

Year (1)	Rice* (2)	Coconut Oil* (3)	Ratio (4=3:2)	Clove** 1) (5)	Ratio (6=5:2)
1969	39.44	58.23	1.48	- 2)	-
1970	44.07	76.80	1.74	- 2)	-
1971	41.36	84.76	2.05	- 2)	-
1972	50.37	81.54	1.62	1,420.00	28.19
1973	84.36	158.29	1.88	- 2)	-
1974	111.68	259.46	2.32	1,955.00	17.51
1975	106.31	136.49	1.28	2,634.00	24.78
1976	122.03	154.44	1.27	4,270.00	34.99
1977	148.80	235.77	1.58	3,033.00	20.38
1978	168.27	267.13	1.63	5,080.00	30.93
1979	222.70	293.42	1.32	- 2)	-
1980	232.29	360.23	1.55	13,642.00	58.73
1981	259.29	360.23	1.39	7,357.00	28.37
1982	304.57	316.66	1.04	6,762.00	22.20

Source : * SUA, (1983).

** Weekly Report, Bank Indonesia, September 1983

Note : 1) Mid Convertion Rate, Begining December 1977.

2) N.A. / N.D.

3) Up to August 1982.

time, consequently farmers have increasingly replaced the unproductive coconut palms with those of more profitable crops (May, 1983). In other words, relatively low copra prices seem to have been a major impediment for an increase in coconut production.

That copra prices do not appear to have increased in the same line with those of other commodities including basic needs (Rogi, 1983) can be attributed to the roles of coconut oil as a basic/assential commodity which prices have to be controlled. The negative long term effect of low copra prices can be seen from the fact that in the Fourth Five Year Development Plan, approximately 150 000 ha (62.5 per cent) of coconut plams in North Sulawesi, have to be replanted. In contrast, according to Litow (1984) it is quite impossible that such a target can be achieved at the end of the planning period. The main difficulties according to Litow is that of the smallness of coconut farms. Not all small farms can meet criteria required for participating in SCDP. A large number of small farmers and a large number of varieties of these small parms, to deal with in implementation of the SCDP programs seem to have been one reason for some failures of the programs.

There appears quite strong relations between copra prices and investments on coconut oil mills. Most of coconut oil mills investments in North Sulawesi were undertaken in 1974, at the time where export ban on copra was imposed by GOI. The ammount of investments and capacity of coconut oil mills may have even exceeded the present capacity of coconut production. The capacity is sufficient to process copra coming not only from North Sulawesi but also from central Sulawesi and North Moluccas. Decrease

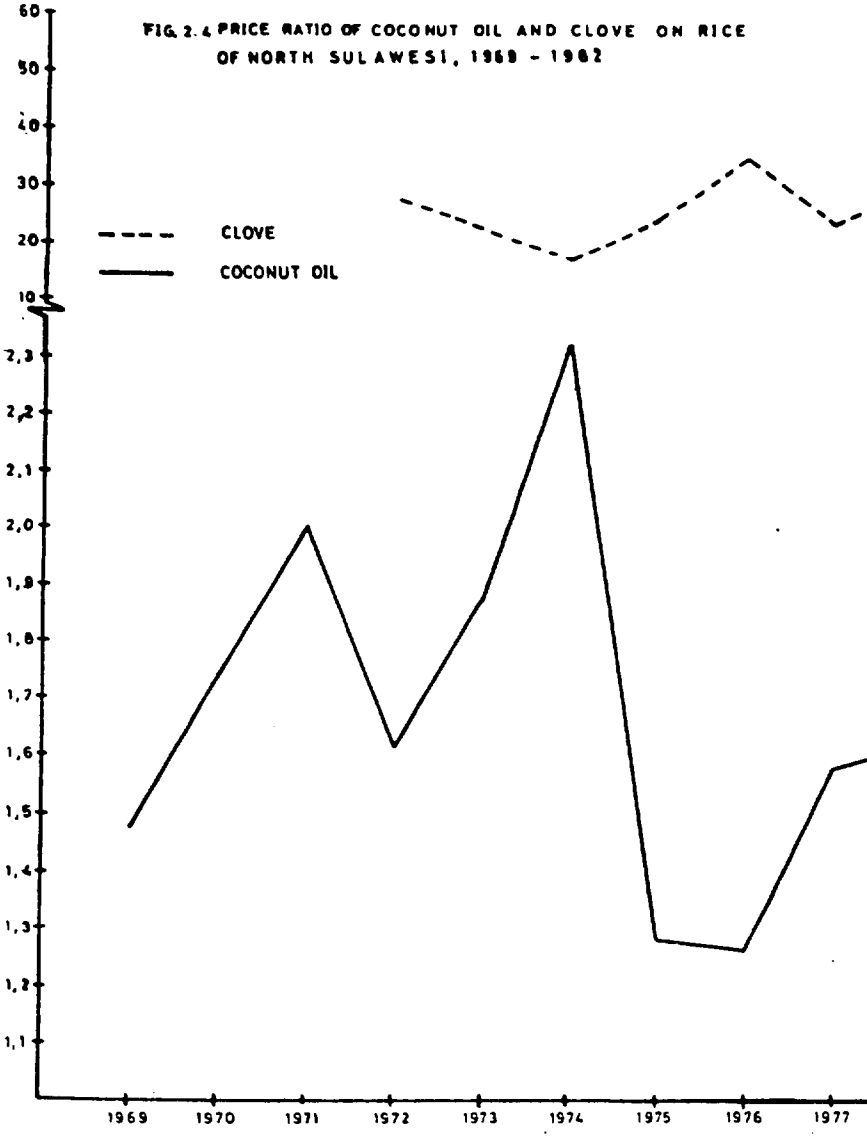
production due to the long drought in 1982 combined with a GOI regulation to send a certain ammount of copra to Java, in addition to the unappropriate price and trade policy, put the coconut oil industry and therefore coconut farms in a quite difficult position. On the one side coconut farmers have been asked to increase production, on the other side copra price have not been quite attractive from farmers stand point.

One possibility to increase coconut industry productivity is, findings of new and more productive coconut palm variety, i.e. hybrid. Hybrid coconuts is reported to have a production capacity of 3 to 4 time higher than that of tall palms. Naturally, most coconut farmers are interested in replacing their coconut unproductive palms with hybrid. However, the seeds are limited and have not been made available. This means that further investment on producing hybrids, either through private and/or public investment are still open.

2.2.2.1.2 Clove

In 1980, clove area in North Sulawesi is 31.158 ha i.e. 7 per cent of the total clove area in Indonesia, production per ha is 700.16 kg, the highest in Indonesia. The area has been sharply increased since 1960's. The increase can be attributed to a favourable term of trade. The term of trade of clove against rice increased dramatically during the past 20 years. As shown in Fiqure 2.4term of trades of clove increased from 17.51 in 1974 to its maximum 58.73 in 1980 and decline to 22.20.in 1982. In terms of clove area and producton the area increased from 6798 ha in 1961 up to 20846 ha in 1974 and 31734 ha in 1980. Or within 14 years the area increases approximately 4 times than that in 1969.

FIG. 2.4 PRICE RATIO OF COCONUT OIL AND CLOVE ON RICE OF NORTH SULAWESI, 1969 - 1982



1978
1979
1980
1981
1982

Minahasa is also the main clove producer Kabupaten. In 1980 of the total clove area of 31.158 ha, 19.540 ha (63 per cent) are in Minahasa, 6354 ha (20 percent) in Sanngihe Talaud, and the remaining 17 per cent, distributes to other Kabupaten and Municipalities. Main area of cloves are; Kombi, Sonder, Tareran in Minahasa, and few districts in Bolaang Mongondow and Gorontalo. (See Table 2.10)

In terms of trade, during 1969 to 1974, North Sulawesi transhipped 12.426.759 kg of clove to Java (for cigarete 'kretek' manufacturers). In the second Five Year Development Plan Period, 1974/1975-1978/1979, the volume exported to Java increased to 21.962.672 kg and in 1979 to 1982 increased to 27.816.466 kg. So within 14 years, interisland export of cloves is more than double than that in 1969.

Though, income from clove industry can be higher than that of coconut, in term of distribution however, clove farmers consists of only 1.5 per cent of population (households) whilst coconut farms are operated by approximately 45 per cent of rural people in the province.

To ensure a continued and sustained clove production, GOI imposes the so-called 'Sumbangan Rehabilitasi Cengkih' (contribution for clove rehabilitation), i.e. according to Keppres No.8 (Presidential Instruction No.8). For each kg of clove traded, an amount of Rp.500 (US $ 0.60) is allocated to government. The funds are used to increase clove production by providing farmers extention and other subsidised inputs. In 1980, cloves were exported to Java by 20 firms (Interisland traders). The largest among these 20 firms are P.T. Bentoel, P.T.Gudang Garam and P.T.Jarum. These firms are the main 'kretek' producers in Indonesia. Approximately 50 per cent of clove production in North Sulawesi are marketted by these firms.

Table 2.10

Area and Production of Clove

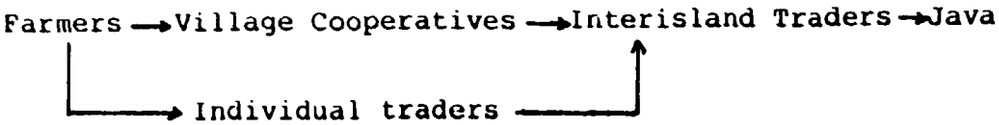
in North Sulawesi, 1982

Regency/Municipality	Young Trees (ha)	Productive Trees (ha)	Total Area (ha)	Total Production (ton)	
Minahasa	7,001	14,271	21,272	5,583	(61.24)
Bolaang Mongondow	2,569	1,210	3,779	992.128	(10.88)
Gorontalo	2,287	342	2,629	690.140	(07.57)
Sangihe Talaud	4,726	2,328	7,054	1,851.600	(20.31)
Kotamadya Manado	-	-	-	-	-
Kotamadya Gorontalo	-	-	-	-	-
T o t a l	16,583	18,151	34,734	9,116.868	(100.00)

Source : Compiled from Data Statistik Perkebunan, Direktorat Jenderal Perkebunan, Jakarta, (1983).

Note : Figures in Parentheses are on Percentage Basis.

The marketting channels of cloves are shown below.



Approximately there were 40 cooperatives involved in clove marketting. 26 in Minahasa, 8 in Sangir Talaud, 4 in Bolaang Mongondow and 2 in Gorontalo.
So far, Indonesia is still a clove importing country. Efforts to increase clove production there has been continuesly undertaken by GOI. Since 1969 GOI and regional government of North Sulawesi has carried out intensification as well as extensification programs. Extensification is undertaken by providing clove farmers cheap credit to enable them to grow a more productive clove variety, i.e. Zansibar variety. During Pelita I, 1 471 000 seeds were distributed to farmers, in Pelita II, 1 880 000 and in Pelita III, up to 1981/1982, it was already amounted to 1 200 000 seeds.

In term of clove areal, in Pelita II clove intensification using a package of credit (mainly for fertilizers) was provided to 3405 farmers (4750 ha) and in Pelita III the number of farmers obtained such credits were 4725 farmers.

2.2.2.1.3 Nutmeg

Indonesia supplies 80 per cent of the world market for nutmeg and mace. The province is the main nutmeg producer. Nutmeg area of the province is approximately 45 per cent of the total area in Indonesia. The area increases from 10118 ha in 1969 to 24200 ha in 1982, which consists of 7.8 per cent of the total plantation ares in North Sulawesi.

In 1981 export value was US $ 3,188,500 mainly exported in the form of nuts and 'mace' . In 1980 nutmeg powder export was 2.3 ton, i.e. US $ 2000. Production per ha seems low, i.e. only 0.22 ton per ha. However, of the total area of 24300 ha above, 11018 ha (47 per cent) are considered young and 900 ha (0.4 per cent) are considered unproductive.

The main nutmeg area in the province is Sangihe Talaud (16433 ha, or 68 per cent), followed by Minahasa (4314 ha, or 17.7 per cent) and the remaining 3643 ha (14.3 per cent) are in Gorontalo and Minahasa (see Table 2.11).

According to SRDS (1979) the short and long term market prospects are good. Therefore SRDS (1979) recommends that nutmeg be promoted as an alternative crops in diversifying the coconut dominating plantation sector. Trends of production since 1969 to 1982 can be further seen in Table 2.12.

As shown in Table 2.12 production per ha however decreases over time from 0.54 ton per ha in 1969 to 0.22 ton per ha in 1982. The decreases however may likely due to increase in proportion of young trees , because in reality total production increases over time from 5500 ton in 1969 to 9454 tons in 1982.

2.2.2.1.4 Coffee

SRDS (1979) forecasted that market prospects of coffee are still good, though it is subject to high uncertainty, i.e. the long term market is less predictable. Consequently any government plans to expand coffee production through replanting or new planting will be risky. According to

Table 2.11

Area and Production on Nutmeg,
in North Sulawesi, 1982

Kabupaten/Dai II	Young Trees (ha)	Productive Trees (ha)	Unproductive Trees (ha)	Total Area (ha)	Total Production (ton)
Minahasa	2502	1.812	-	4.314	960,96 (17.62)
Bolaang Mongondow	1889	-	-	1.889	-
Gorontalo	1754	-	-	1.754	-
Sangihe Talaud	5229	10.946	980	16.343	4.493,54 (82.38)
Kotamadya Manado	-	-	-	-	-
Kotamadya Gorontalo	-	-	-	-	-
T o t a l	11.374 (46.81)	11.946 (49.16)	980 (04.03)	24.300 (100)	5.454,50 (100.00)

Note : Figures in parentheses are on percentage basis

Source : Compiled from Data Sta¯tistik Perkebunan, Direktorat Jenderal Perkebunan, Jakarta, (1983).

Table 2.12

Area and Production of Coconuts, Cloves, Nutmeg and Coffee in North Sulawesi, 1969 - 1982

Year	Coconut			Clove			Nutmeg			Coffee			Total
	Area (ha)	Production (ton)	Production per ha (ton)	Area (ha)	Production (ton)	Production per ha (ton)	Area (ha)	Production (ton)	Production per ha (ton)	Area (ha)	Production (ton)	Production per ha (ton)	
1969	152.420	170.337	0.89	15.396	2.007	0,53	10.118	5.500	0.54	2.704	1.304	0.48	220.638
1970	195.445	188.033	0.96	16.016	2.103	0.13	10.829	6.015	0.56	2.615	1.264	0.48	366.905
1971	158.824	171.894	0.86	18.425	2.002	0.11	12.877	6.050	0.47	2.615	1.264	0.48	232.741
1972	225.883	171.894	0.76	18.149	904	0.05	14.859	6.014	0.40	2.650	1.254	0.47	261.541
1973	227.339	151.214	0.66	19.495	8.000	0.41	15.624	7.064	0.45	2.750	1.132	0.41	265.211
1974	227.731	153.541	0.67	20.846	700	0.03	16.330	7.800	0.48	2.855	1.244	0.44	267.762
1975	227.785	175.526	0.77	24.524	2.800	0.11	18.290	7.800	0.43	2.855	1.337	0.47	273.454
1976	243.985	205.353	0.87	25.284	150	0.01	19.098	7.800	0.41	2.875	1.225	0.43	282.242
1977	235.372	197.322	0.84	26.856	12.000	0.45	20.965	7.800	0.40	2.987	1.230	0.41	286.180
1978	237.907	210.594	0.85	28.432	2.400	0.08	21.628	7.800	0.37	3.104	1.235	0.40	291.071
1979	240.488	221.678	0.92	30.008	4.800	0.16	23.273	7.800	0.34	3.105	1.235	0.40	296.874
1980	263.758	252.923	0.96	31.158	12.042	0.39	25.070	5.422	0.38	4.152	2.029	0.49	324.178
1981	266.373	258.145	0.97	31.158	6.700	0.22	25.820	5.786	0.38	4.152	2.029	0.49	327.503
1982	248.835	222.837	0.90	34.734	9.116	0.26	24.300	5.454	0.22	3.725	2.900	0.19	311.598

Source : Sulawesi Utara Dalam Angka (SUA), 1983.

Note : Area and production are in 10^6 ha and tons. Production per ha are in tons.

SRDS (1979) Brazil, the main coffee producing country has initiated a massive replanting program in areas that are less vulnerable to frosts.[1]

North Sulawesi has a number of poorly maintained growing areas. With the total area of 3,725 ha in 1982 (0.4 per cent of the total area in Indonesia), 155 tons were exported to Java. Distribution of area of coffee is shown in Table 2.13.

The regional government program in increasing coffee production is carried out by providing smallholders with Subsidized credit in two UPP (unit Pembinaan Project, Unit of Extention Projects) and also one unit of coffee processing. During the Third Five Year Development Plan, the project coverd an area of 741 ha (Bappeda, 1983).

2.2.2.1.5 Other Cash Crops

The province imports sugar of approximately 23,705 tons in 1981. The Marisa plains in Gorontalo has been considered fo sugar production. However, at per cent it remains uncertain whether a sugar cane developmet project considered for the area can be put into operation. Perhaps, sugar contents of sugar canes resulted from experiments/ trials undertaken in the area is considered lower than the minimum standand of 10 per cent.

Vanilla has been considered as a potential cash crops to be developed. Market is informed available in Singapore.

---

[1] The relatively high world market prices experienced in mid seventies was due to a shortage of coffee supply caused by a massive freeze in Brazil.

Table 2.13

Area and Production of Coffee,
in North Sulawesi, 1982

Regency/Municipality	Young Trees (ha)	Productive Trees (ha)	Unproductive Trees (ha)	Total Area (ha)	Total Production (ton)	
Minahasa	166	870	-	1,036	453	(30.89)
Bolaang Mongondow	457	1,068	-	1,525	649	(47.61)
Gorontalo	335	622	-	957	310.5	(20.70)
Sangihe Talaud	-	207	-	207	12	(0.80)
Kotamadya Manado	-	-	-	-	-	
Kotamadya Gorontalo	-	-	-	-	-	
T o t a l	948	2,767	-	3,725	1,425.5	(100.00)
	(25.72)	(74.28)	-	(100.00)		

Note : Figures in parentheses are on percentage basis

Source : Compiled from Data Statistik Perkebunan, Direktorat Jenderal Perkebunan, Jakarta, (1983).

A Number of farms have now begun to grow vanilla but empirical evidences on cost of production etc, are not yet available.

2.2.2.2 Food Crops

The main food crops ccnsidered in this study are rice, maize, soya bean, groundnuts and also cassava and sweet potatoes. Rice is the main staple food. Maize is regarded as a staple food in rural areas in Kabupaten Gorontalo, and also in Minahasa. Cassava and sweet potatoes are regarded as main staple food in Sangir Talaud.

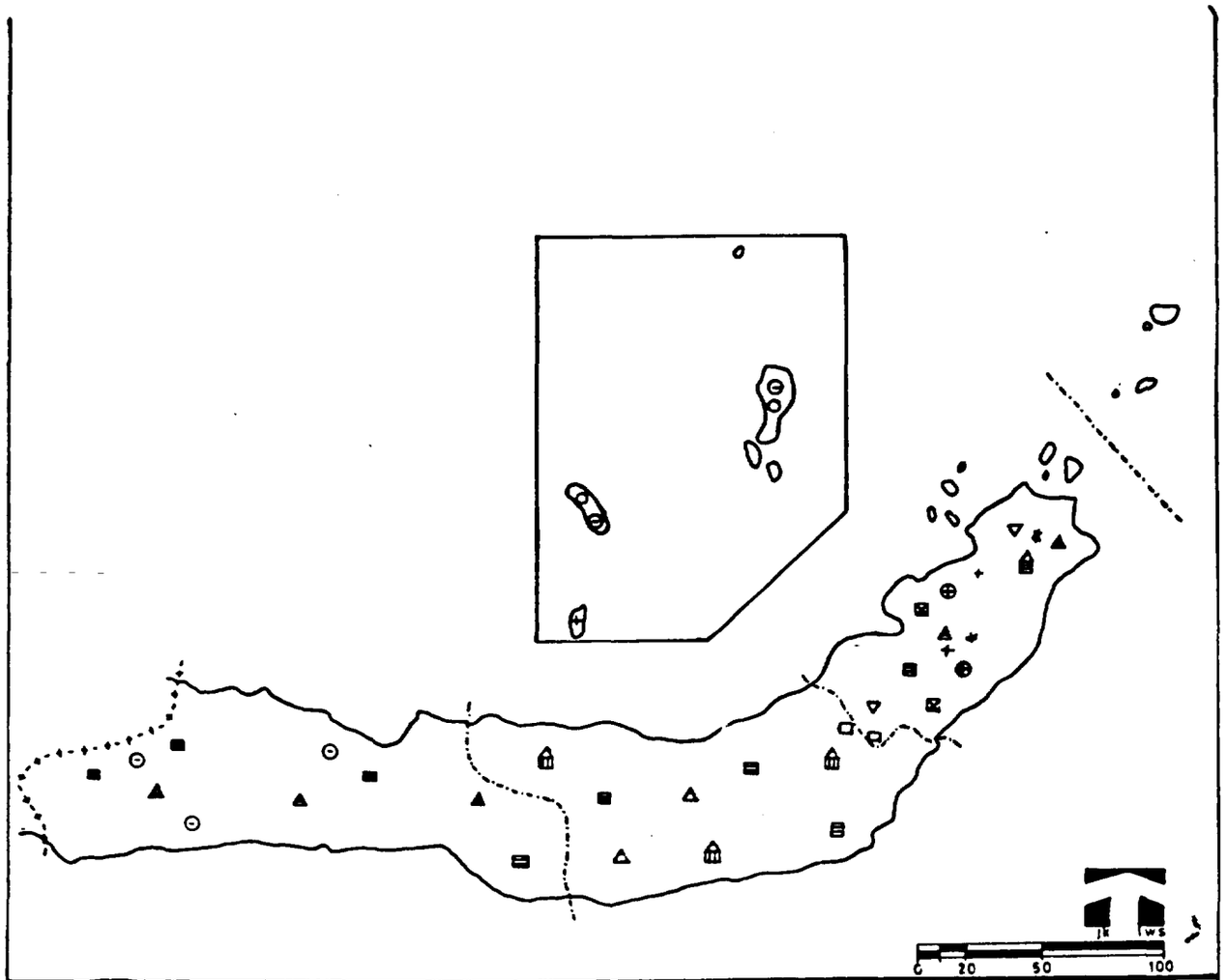
2.2.2.2.1 Rice

As shown in Table 1.2, agricultural land devoted for paddy field in 1981 is 47,477 ha. In 1982, the area increased to 58,000 ha, including those paddy field resulted from irrigation land under coconut palms of 11,332 ha (Bappeda, 1983). Not all of this total paddy field area, can be cultivated twice a year, due to in adequacy of rain and tertziary cannals. Therefore, total harvested paddy area in 1982 as shown in Table 2.14 is only 107,000 ha.

Trends of food crops area and production can be seen in Table 2.14. It is also shown in Table 2.14 that in 1969 total harvested area is only 59,752 ha with production of 155,230 (2.60 tons per ha). In 1982 the total area is 107,773 ha with production of 472,035 tons of paddy.[2]

---

[2] 1 kg of paddy is equivalent to 0.6 kg of rice.



RESEARCH CENTRE
SAM RATULANGI UNIVERSITY MANADO
STUDY TEAM ON FORMULATION OF COMPREHENSIVE INVESTMENT PROFILLES, NORTH SULAWESI

NORTH SULAWESI PROVINCE

NATURAL RESOURCES MAP (FOOD CROPS)

LEGEND.

- Sago
- Peanut
- Sweet potatoe
- Soy - bean
- Corn
- Cassava
- Pineapple
- Banana
- Vegetable
- Ginger
- Avocado
- Apples
- Provincial border
- Regency border

Figure 2.5.

Table 2.14

Area and Production of Food Crops in North Sulawesi

1969 - 1982

Year	Paddy			Maize			Cassava			Sweet Potatoes			Groundnut			Soya Beans		
	Area (ha)	Production (ton)	Production per ha (ton)	Area (ha)	Production (ton)	Production per ha (ton)	Area (ha)	Production (ton)	Production per ha (ton)	Area (ha)	Production (ton)	Production per ha (ton)	Area (ha)	Production (ton)	Production per ha (ton)	Area (ha)	Production (ton)	Production per ha (ton)
1969	59.752	155.230	2.60	59.569	50.462	0.85	13.942	100.452	7.21	9.680	51.801	5.35	2.059	1.385	0.67	359	213	0.59
1970	67.239	184.575	2.75	62.174	61.036	0.99	17.230	142.814	8.29	9.229	48.369	5.24	2.948	2.207	0.75	417	277	0.66
1971	66.332	195.103	2.94	63.667	68.583	1.08	14.680	130.994	8.58	8.525	48.581	5.70	3.138	2.674	1.18	412	332	1.25
1972	58.193	158.476	2.72	79.216	37.771	0.18	13.734	102.342	7.45	9.730	51.549	5.30	1.226	1.226	1. [illegible]	214	165	1.30
1973	73.838	211.778	2.87	106.047	123.605	1.17	14.680	104.824	7.10	9.854	48.727	4.95	2.952	1.987	1.49	1.228	854	1.52
1974	87.528	261.211	2.98	116.572	125.057	1.08	13.140	104.542	7.10	9.481	48.913	5.16	4.221	3.135	1.35	1.680	1.092	1.54
1975	91.892	338.051	3.74	111.134	126.722	1.50	13.166	104.812	8.04	9.416	49.764	5.26	4.476	7.344	1.65	4.191	2.809	1.50
1976	98.177	340.517	3.09	114.111	131.798	1.60	16.339	138.339	8.47	9.571	49.932	5.22	4.950	7.313	1.48	4.400	2.908	1.52
1977	98.027	36.126	2.72	126.437	154.303	1.23	13.722	114.737	8.51	10.209	55.449	5.44	13.767	12.200	1.13	6.480	5.701	1.14
1978	92.562	332.751	3.61	127.163	155.923	1.23	12.862	105.465	8.20	10.946	30.438	4.70	15.157	14.418	1.06	7.322	8.463	1.16
1979	98.055	353.955	3.69	118.884	156.360	1.32	12.119	97.066	8.10	8.696	49.194	5.66	11.653	14.849	1.28	7.967	10.361	1.31
1980	98.108	387.073	3.95	110.969	160.760	1.45	18.046	99.400	5.51	9.135	49.840	5.45	9.060	10.960	1.21	12.811	11.780	1.09
1981	107.564	431.369	3.05	130.575	179.950	1.38	15.503	104.483	6.74	10.700	50.970	4.77	10.696	12.889	1.21	15.924	20.000	1.26
1982	107.773	472.035	4.01	124.305	198.840	1.60	14.756	107.795	7.30	9.780	53.906	5.51	12.832	14.526	1.21	14.830	25.098	1.22

Source : SUA (1983).

Note : Area and production are in 10^6 ha and tons.
Production per ha are in tons.

It is as shown in Table 2.34, North Sulawesi is still importing rice on average, 48,480 tons per annum, or in pecuniary term, averagely, $ 16.2 m per annum. In other words, though area and production per ha has dramatically increased, i.e from 2.60 ton to 4.01 tons per ha, the province has not yet become a self-sufficient rice producer. Two factors account for such a fact. First, increase in population and second, increase in rice consumption per capita. Per capita consumption of rice has increased from 103.98 kg in 1975 to 125 kg in 1982 (Bappeda, 1983). Increase in per capita consumption of rice must likely be due to relatively low price of rice which has long been subsidised, i.e. domestic prices are kept below c.i.f. prices. Prior to the lifting of the subsidy in 1983, subsidy to each kg of rice amounted to Rp.100/kg.

Irrigation plays an important role in increasing rice production. Areal potential for irrigation is 51,828 ha distribution to 391 villages, i.e., 35 per cent of the total number of villages in the province. However, effectively only 16 829 ha has been fully irrigated. The remaining 34,988.5 ha can not yet be fully irrigated yet because, the tertiary cannals of irrigation dams in the regions have not been completely built yet. The completion, according to government is previosly the responsibility of users, i.e. farmes. Recently, government has been directly involved in the completion of the tertiary cannals. If the nearly 35,000 ha of the potential irrigated 'sawah' above can be fully irrigated then, an addition of approximately 70,000 tons of rice can be produced which therefore make the province to be self sufficient in rice production.

2.2.2.2.2 Corn

The province is considered suitable for corn production. During the First Five Year Plan, annual harvested area of corn is 65.283 ha (Sarasutha, 1983), with an average production of 1.02 tons per ha. During the second Five Year Plan, the harvested area increased to 118.195 ha per year with an average production of 1.17 tons per ha. Detail trends of area and production of corn are shown in Table 2.14. In 1982, total harvested area is 124.305 ha with an production of 198.840 ha, or with an average production of 1.60 tons per ha. Recently, government has paid special attention in increasing corn production through a program called 'Operasi mandiri' (Self Reliance Operation). 'Operasi mandiri' is a veriety of the well known 'Bimas' program in increasing food production. The main characteristic of the operation is, all farmers operating a unit of area are asked to cultivate corn at a similar period. The aim is to increase corn production from up to 4 tons per ha by providing farmers with cheap credit for modern inputs, extention, and marketing fascilities to anable farmers to sell their products at a given floor price.

It is reported that production did increase but marketting remains a problem. Floor price of corn is set at Rp. 105 per kg. However, in reality, cooperatives (KUD, Koperasi Unit Desa) who are assingned to conduct the buying, were unable to completely do so for several reasons :

(i) KUD, do not simply have enough capital and storage fascilities to conduct the buying.

(ii) Quality of corn is not in accordance with the standard of quality (i.e water content should not exceed 10 per cent). Corn production as a result of 'operasi mandiri', does increase but because of the above problems,

market prices of corn had been far below the floor price. It is reported that quite often the price was around Rp 60 per kg. In 1983, a part of corn marketable surplus was exported to Singapore. However, it is not certain yet whether the export can be continued. Private investors have also been looking for possibility in processing corn into corn oil,animal feed etc.

2.2.2.2.3 Other Food Crops

Other food crops considered important are soya bean and groundnut. To some extent, cassava and sweet potatoes. Area and production trends of these crops are shown in Table 2.14. Production of soya bean, seems to have increased rapidly. At present the province has been increasingly exporting soya bean and groundnuts. Cassava has been started exported. There is now a company in Bolaang Mongondow begins exporting cassava chips.

Rice however is not the only staple food crop. Tubers (cassava and sweet potatoes), Bananas and Sago are considered as main staple foods especially in Sangir Talaud Islands and Lembeh Island. In these islands, per capita consumption of rice is only 56 kg in contrast to the rest of the province which may likely at least 100 kg. Low consumption of rice in these islands, however do not mean that per capita calorie consumption is low. According to Kaligis et.al. (1984) total calorie consumption per capita is 2110 k calorie per day which 40 per cent of them come from non-rice staple foods, especially tubers, bananas and sago.

Production of cassava and sweet potatoes however, as shown in Table 2.14 remain constant since the last 13 years. The reason is that people tend to favour rice and corn for staple foods. Area and production of sago do not appear in Table 2.14. No statistics available in the provincial statistical office. However, it is well known

that sago palms are regarded as 'valuable' trees in Sangir Talaud Islands and also in several places in coastal areas in the province. In fact, a tree of sago palms may product sago sufficient to supply calorie requirements for approximately 2-3 months per family, furthermore, cost of sago palms production is almost negligible. One problem of sago as a staple food, in similar to that of cassava and sweet potatoes is that of lack of proteins. Consequently families whose staple food are mainly sago require other protein rich food such as fish, meat, eggs and milk. However, in the province, fish consumption is already high but meat, eggs and milk consumption are still lower than the recommended minimum levels. Consequently, livestock production have to be increased to meet such requirements.

Potential to increase other food crops production such as soya bean, groundnuts etc are relatively high. The increase may come from application of better farming and also from increases in areal of cultivation. Increase in production per ha through application of fertilizers etc is still possible because production per ha of these pulses are still lower than that in other regions with similar soils and climate. For example, in Bolaang Mongondow transmigration area, soya bean production per ha of those cultivated by Balinese transmigrants are far higher than those cultivated by Minahasan transmigrants.

The province has approximately 240,000 ha of coconut farms. Land under coconut palms can be used for intercropping especially corn, soya bean and grundnuts. However, only 40 per cent of these land suitable for intercropping have been used for. The remaining 60 per cent are open for increase food crops production.

Sondakh (1983) has conducted an intensive study on finding optimum allocation of land under coconut palms for

various food crops, rice, soya bean, groundnut etc. According to his study, the crops that appears in his optimal linear programming solutions are soya bean, rice, corn and groundnuts. Other food crops such as tubers etc, did not appear in the feasible solutions. He further shows that, for a coconut replanting program to be succesfully implemented, such a program needs to recommend participating farmers to cultivate these intercrops especially during the first five year of a coconut replanting.

Application of the intercropping under coconut palms would be beneficial not only from increased production but also from increased income and employment point of view. Impacts of intercropping on increased employment are important because of labour force in farm households have not been fully utilised. Therefore, credit programs aiming for increasing intercropping seems justifiable to be implemented.

2.2.2.3 Forestry

Approximately 1,877,220 ha (or more than 50 per cent) of land in the province is covered by forests under the juridiction of the forestry service (Palenewen, 1983). The primary forests ('hutan tua') are tropical rain forests with hundreds of different species. The major commercial species, according to SRDS (1979) are 'nantu' (Palaquium SPP), 'cempaka hutan' (El Merilla SPP), 'palapi' (Madhuca Philippinensis), 'bayam' or 'ipi' (Intsia Bijinga), 'Singon' (Albizzia), 'binuang' (Octomelis SPP), 'linggua' (Pterocarpus indicus), 'meranti' (Shorea SPP) and 'damar' (Agathis SPP).

The forests are divided into two groups, permanent (hutan tetap) and reserve forests (hutan cadangan). These

are further divided into production forests (hutan produksi), protected forests (hutan lindung) and natural reserved forest (forests reserved for tourists etc.).

Distribution of designated forests according to a recent study (CIDA, 1984) are as follows.

Table 2.15
Distribution of Designated Forests

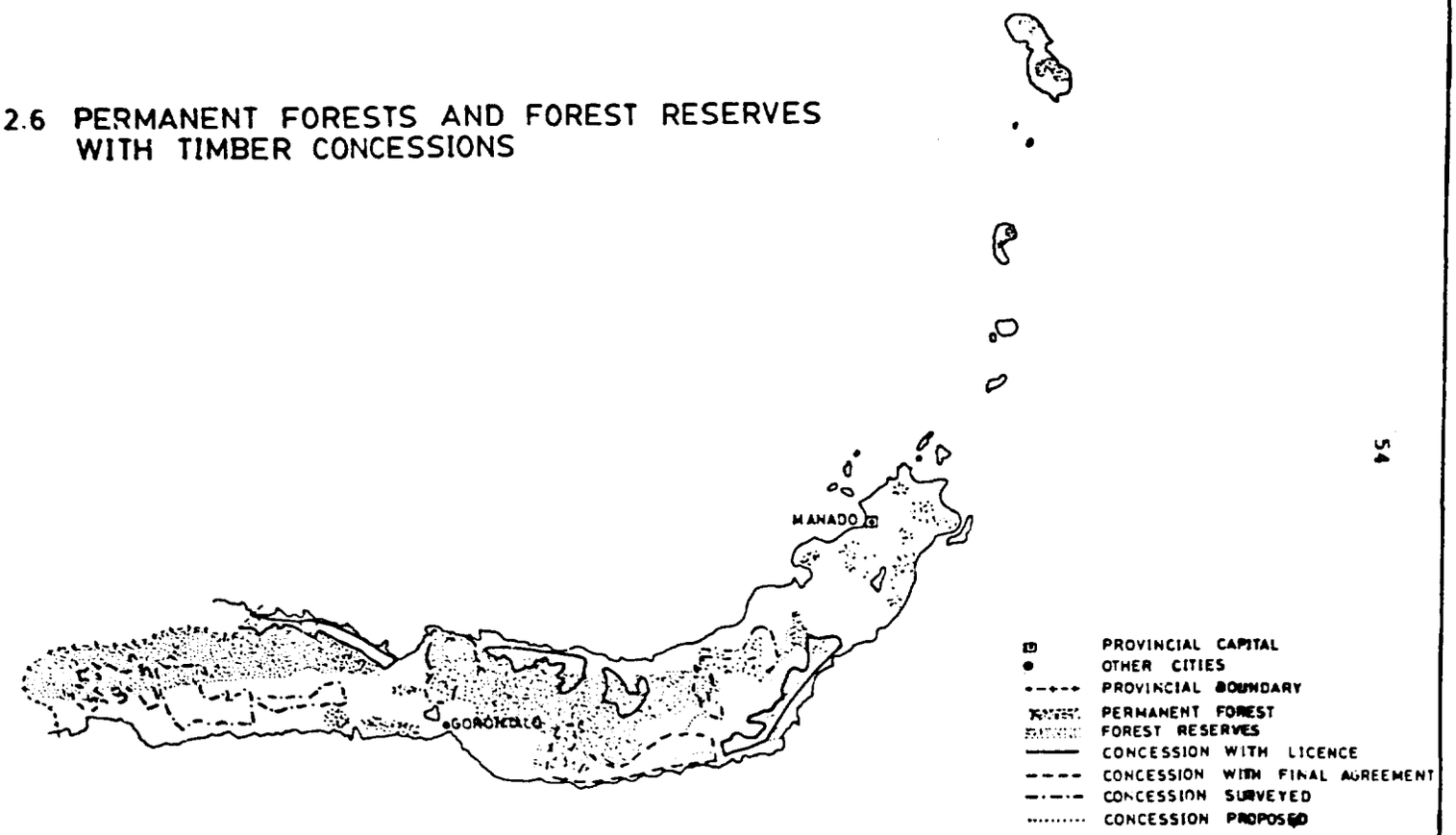
	Area (ha)	Proportion (%)
Hutan Suaka Alam (National Park)	326.590	17.4
Protection Forests	285.430	15.2
Mangrove Forests	28.000	1.5
Limitted Production Forests	741.200	39.5
Permanent Production Forests	202.500	10.8
Convertable Production Forests	293.500	15.6
T o t a l	1.877.220	100.00

Source : Forestry Service of North Sulawesi, (1983).

The total area of forests is about 60 per cent. Distribution of designated forests by Kabupaten are not available in the recent CIDA's report. Therefore, in order to provide some insights on such a distribution, data of SRDS (1976) are used instead, as shown in Table 2.16 and 2.17 and Figure 2.6.

Tables 2.16 and 2.17 give the location and area by forest Kabupatens. There is no explanations why the total forest area in the two tables are different. This indicates differences in techniques and methods in measuring the

Figure 2.6 PERMANENT FORESTS AND FOREST RESERVES WITH TIMBER CONCESSIONS



PUSLIT UNSRAT CIPs

NORTH SULAWESI

0 10 20 40 80

ADOPTED FROM SRDS,1979

areas by different bodies. Figures in Table 2.16 indicates that the main forest area are located in Bolaang Mongondow (79 per cent) and Gorontalo (65 per cent). Land in Minahasa and Sangir Talaud appear to have been intensively used.

Following cutting of the forests for shifting cultivation, secondary growth as well as 'alang-alang' (imperata cylindrica) occurs. Table 2.18 below, gives the area reported to be in second growth.

Although no detailed data are available, some 50 000 ha. of cleared forest land near lake Limboto in Kabupaten Gorontalo are reported to be a major source of erotion.

A major expansion of the reforestation/regreening program to protect erodable areas occured in the latter part of the Second Five Year Plan. The major species used for reforestation are 'mahone' (Swietenia spp.), 'nantu' (palaguium spp.), 'cempaka hutan'(Elmerillia spp.), 'singon'(Albizzia spp.) and pine (Pinus spp.).

Regreening is supervised by the Kabupaten Head or the Kecamatan Head and the work is carried cut by villagers on land outside the officially forested areas. Regreenning is either for watershed protection purposes with species such as 'lamtoro'(Laucena glauca) or to provide the rural population with cash crops such as coconuts, coffee, nutmeg, cashew nut and cinnamon. On steep slopes, the land is sometimes terraced. The area covered during the Second Five Year Plan i given in Table 2.18.

Only a few of the many tropical species of commercial value. The most valuable are the dipterocarp species of which the best known is Philippine mahogany. The average

Table 2.16

Areas of Permanent and Reserve Forests
by Forest Districts

Forest District (KPH)	Forest Area (ha)				Total land area
	Permanent	Reserve	Total	Per cent of land area	
Bolaang Mongondow	4,300	596,190	600.490	79	760.000
Gorontalo	253,205	468,000	721,205	65	1,109,600
Minahasa	76,247	34,480	110,727	23	481,700
Sangir Talaud	43,200	0	43.200	19	227,300
T o t a l	376,952	1,098,670	1,475,622	57	2,578,600

Source : SRDS, (1979)

Table 2.17

Areas of Production Forests, Protection Forests and Nature Reserve

Forest District (KPM)	Forest Area (ha)			Total
	Production Forest	Protection Forest	Nature Reserves	
Bolaang Mongondow	300,000	350,000	0	650.000
Gorontalo	468,900	250,000	1.785	720,685
Minahasa	34,900	71,281	4,548	110,729
Sangir Talaud	0	43,300	0	43,300
T o t a l	803,800	714,581	6,333	1,524,300

Source : SRDS, (1979)

Table 2.18

Areas of Secondary Growth by Forest District

Forest Distruct	Secondary Growth Area (ha)		
	Inside Permanent Forests	Outside Permanent Forests	Total
Bolaang Mongondow	81,500	150,930	232,430
Gorontalo	20,000	27,090	47,090
Minahasa	2,500	14,670	17,170
Sangir Talaud	22,000	72,310	94,310
T o t a l	126,000	265,000	391,000

Source : SRDS, (1979)

Table 2.19

Reforestation and Regreening, 1974/1975-1977/1978
Tondano and Gorontalo Catchment Areas

Y e a r	Reforestation (ha)	Regreening (ha)
1974/1975	0	250
1975/1976	400	600
1976/1977	3,200	14,150
1977/1978	9,360	17,880

Source : SRDS, (1979)

volume per ha of trees over 50 cm diameter within forest concession areas is given in Table 2.20.

The timber firms operating in North Sulawesi had the concessional area shown in Table 2.21

In addition to timber, rattan, resin, cinnamon, 'kayu kuning'(cudrania javanicum), which is used for dye, candle nut, bamboo and palm fibres are harvested. Logs are the major expert items among forest products. Further details of the forest industry in the province is described below.

According to Palenewen (1983), potential timber production in the province is 480,000 m^3 annually. In 1981/1982, production of log and sawn wood is 190,063 m^3 and 20,379 m^3 respectively, i.e. the total of 210,442 m^3. This means that approximately 269,558 m^3 are still annually available for further export and processing. In addition, rattan and other non-timber forest products are also potentially available as described above. In 1981, export of rattan is only 559.1 tons or $ 398,000. According to 'Kantor Wilayah Perdagangan'(1983), contribution of timber (wood) and rattan to export values increasing over time as shown in Table 2.22

It is clear in Table 2.22 that the role of forestry to export is important. Its export values increase faster that the increase of the total value of export. Destinations of export are mainly to Japan for wood and Singapore for non-wood forest products. Since 1975 exports have begun in the form of processed wood rather than just simply logs or sawn wood.

The main variety of wood exported is 'meranti'. The others, according to Palenewen (1983) should have a good

Table 2.20

Timber Volume Per Hectare
(over 50 cm. diameter)

Species	Volume (cubic meter over bark)
Dipterocarp	3.84
Non-dipterocarp	63.10
Agathis	.07
Others	23.67
T o t a l	90.68

Source : SRDS, (1979)

Table 2.21

Logging Concessions

Date/Forest Block (Kelompok Hutan)	Area (ha)		Maximum Annual Allowable Cut (cubic metre/year)
	Total	Forested	
1970 S.Dumoga-Gambuta	25,000	25,000	23,000
1971 Kepulauan Talaud	40,000	37,000	81,000
1972 S.Lungkap-S.Buyat	80,000	60,000	60,000
1973 Talaki - Sumalata	75,000	73,000	23,000
All Concessions	220,000	195,000	187,000

Source : SRDS, (1979)

Table 2.22

Contribution of Forestry to Export
in North Sulawesi (US $)

	Pelita I 1969 - 1973	Pelita II 1974 - 1978	Pelita III 1979 - 1983
Total Provincial Export	55.371.770	61.735.845	136.663.558
Rattan	12.276	348.964	1.701.532
Wood (Logs & Sawn Wood)	1.220.155	7.278.046	22.366.000

Source : Kanwil Perdagangan Sulawesi Utara, (1983)

export prospects. The most promising one is 'kayu hitam' (Diospyros Celebica). According to Palenewen (1983) the main forest area containing this type of wood is Gorontalo and also in Bolaang Mongondow. Approximately, production per ha is 8.4 m^3 with a diameter of 35 to 60 cm. Palenewen estimated a total annual production of 58 800 m^3 per annum which price is around $ 200 per m^3.

Palenewen (1983) further indicated other important non-wood forest products, i.e. wild animals. These animals are quite attractive for tourism and for natural reserves. Palenewen (1983) estimated a production of approximately 100 Anoas per annum which price is about $ 3000 per animal. The other wild animals that may be produced by preserving the forests are musang (macrogalidia muschenbroek), 'kuskus' (phalangar ursinus), 'tarsier' (rhuiolopnas sp), 'yaki' (macaca nigrescens), 'kelelawar bone' (boner biolms).

The largest company involved in wood production is P.T. Bina Wana Sejahtra. This company is now in charge of producing woods (sawn wood) from an areal of 131 000 ha. covering three main sub-areas of Dumoga to Cambuta river, Lungkap to Buyat river, and Bayau to ASndagileh river. The company may be able to produce approximately 36 000 m3 per annum with a total investments of $ 1 173 198 and manpower employed of 130 men. The cutting operation for sawning in 1982/1983 is 400 ha with a production of 12 000 m^3, (i.e. 30 m^3 per ha) and in 1983/1984 2800 ha with a production of 150 000 m^3 (or 53.6 m^3/ha). The wood cut and sawn are composed of 'njatoh' (40 per cent), agathis (40 per cent) and the remaining 20 per cent consists of 'cempaka'.

With respect to forest protection and management in the Fourth Five Year Plan, the government aims to reduce the 'critical area' by continuing and intensifying reforestation and regreening programs. In 1975, the critical area, as shown in Table 2.18 is 391 000 ha. In 1982 it already decreases to 357 471 ha (Bappeda, 1983). The reforestation and regreening target for this critical area is shown in Table 2.23

Table 2.23

Critical Area and Achievement of Reforestation and Regreening Programs (1969-1982)

	Reforestation (ha)	Regreening (ha)	Total (ha)
Critical area	138,740	218,731	357,471
Target Achieved 1969-1982	- 113,460	- 159,875	- 273,335
Failures	+ 48,572	+ 66,017	+ 11,589
Balance	73,850	124,873	198,723

Source : Bappeda, (1983)

As shown in Table 2.23, there are still 198 723 ha of serious critical land area. Bappeda, (1983) has planned to reforest and regreen , at most, 14 500 ha and 25 000 ha respectively.

2.2.2 4 Livestock

The important species of domestic livestocks in the province are cattle, pigs, goats, chickens, ducks and horses. Buffalo are of limited importance. The majority of catle are of the ongole type, preferred for both draft and heavy transport. Pigs are important especially in Kabupaten Minahasa where mayority of people are not moslems. Goats are mainly raised in moslem area especially in Gorontalo and Bolaang Mongondow. Chickens and ducks are raised by village smallholders and by commercial operations.

Trends of livestock population growth from 1974-1982 are provided in Table 2.24.

It can be noticed in Table 2.24 that during 1974-1978, except for buffaloes and chicken, rates of growth are very low, i.e. rate of growth of cattle population is only 1.72 and the remainings are less than one (1).

It is only since 1978 that rates of livestock population growth increase quite rapidly. From 1978 to 1982 annual rate of population growth of cattle is 6.08, carabous 7.42, improved chickens 43.03, ducks 26.97 and the rests are around 2 - 2.98.

In 1977, the livestock service initiated cattle distribution programs providing Bali cattle imported from South Sulawesi and Timor, to coconut smallholders under the coco beef program. Some 1300 head had been distributed through 1977 in packages of eight cows and one bull. Financing has been under a repayment in kind loan ('sumba contract'). The 'sumba contract' scheme has also been continued in the from of RCP (Rural Credit Program). RCP covers two types

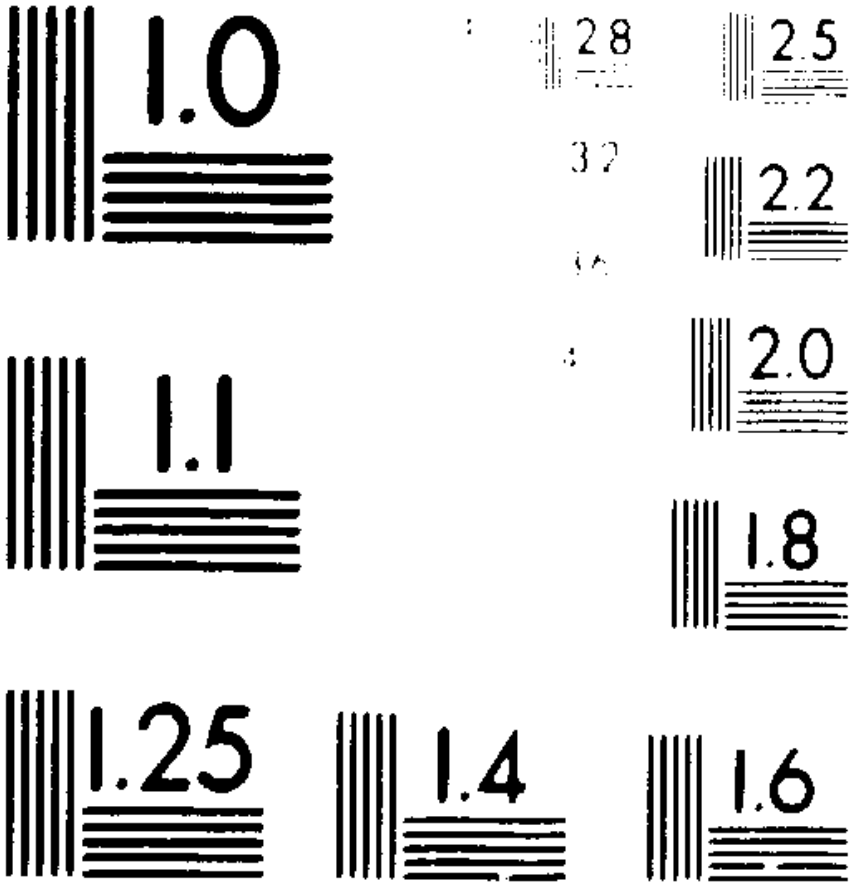


Table 2.24

Livestock Population (in number) of North Sulawesi

	1974	1975	1976	1977	1978	1979	1980	1981	1982
Cattle	129.600	144.600	146.100	134.310	140.300	159.717	163.657	179.634	188.386
Buffalos	1.000	1.100	1.200	1.320	1.400	1.520	1.630	1.864	2.004
Horses	12.350	9.600	8.400	6.810	5.500	17.014	17.077	18.987	19.189
Goats	37.500	36.700	38.800	38.960	39.000	48.471	50.242	52.144	53.437
Pigs	153.300	153.700	157.200	158.600	160.000	161.870	163.080	178.920	184.109
Village Chickens	1.194.600	1.201.000	1.202.200	1.207.000	1.210.000	1.250.920	1.220.481	1.209.412	1.209.532
Improved Chickens	119.690	121.800	126.700	133.700	197.600	312.549	428.009	757.660	1.083.538
Ducks	48.022	41.200	51.200	49.600	46.200	71.555	90.316	125.156	152.190

Source : SUA (1983)

of livestock, i.e. cattle and pigs. In 1981/1982, The RCP distributed 100 units of credit packages of cattle (i.e. 500 cattles) and 450 units of credit package of pigs (2250 pigs). The credit packages of cattle were distributed to Kabupaten Minahasa (50 units) and Kabupaten Bolaang Mongondow (50 units). The credit packages of pigs are all distributed within the Minahasa region, (Kabupaten Minahasa, Kotamadya Manado and the Administrative town of Bitung). In 1982/1983 the packages have been increased twofold.

Chickens have dramatically increased since 1970, as a result of a succestul introduction of improved breeds. The introduction is succestul because of availabity of corn, fish and other feedstuffs, and because of relatively high income elasticity of demand (i.e, 1.2) for protein sources food such as eggs and meats.

Percapita consumption of meat and eggs are 4.71 and 1.47 kg respectively in 1977 and increase to 5.28 and 2.00 kg respectively in 1982. Though these per capita consumptions are still lower than nutritional requirements, export of livestock has however taken place. In 1981 2170 cattles were transhiped to Jakarta (870 cattles) and East Kalimantan (1300 cattles). The cattles mostly come from Kabupaten Gorontalo and Bolaang Mongondow.

Increase of cattle production may come from improvement of pasture under coconut palms. However it remains uncertain yet whether land under coconut palms is more profitable for a large scale enterprise cattle rather than for other crops. Further more, most coconut farmers are smallholders. Prospect of a large scale cattle production may have to come from uses of coconut plantation estates (i.e. approximately 12 000 ha) and those land grown with secondary crops, i.e. 'alang-alang', especially in Gorontalo

Increase of pigs and poultry production would be possible as a result of increase in food crops, fishery and coconut oil production, or from findings of other products that may substitute the above food stuffs.

2.2.2.5 Fishery

In 1980, as shown in Table 2.25, total marine productions of North Sulawesi are 49 318 tons, and 17 tons and 364 tons of crustaceans and molluscs respectively. These productions compose of 3.5, 0.6 and 3.2 per cent of the total marine production in Indonesia, respectively. With population of North Sulawesi of only 1.4 per cent to the total Indonesian population, the role of North Sulawesi to the national fishery industry is therefore important.

The province is surrounded by sea. By excluding the ZEE (Zone Economic Exclusive) area, the sea in the province has a sustainable production (yield) of 125 992 m ton and 15 206.4 ton of marine and aquaculture fish per annum.

According to Fishery Service as reported by Bappeda (1983) not more than 50 per cent of the potential resources have been utilised.

As shown in Table 2.2[illegible], in 1982 only 48.5 per cent of the marine resources has been exploited at a sustainable yield. The rate of exploitation however increases over time. In 1969 the rate was only at 52.9 per cent. In contrast, rate of exploitation of 'freshwater fish' decreases from 66.8 per cent in 1969 to 45.25 per cent in 1983.

The Standard fish consumption per capita for Indonesia is 22.5 kg per annum. In fact, in 1982 fish consumption

FIGURE 2. 7 SKIPJACK TUNA AND LIVE BAIT FISHING GROUNDS IN NORTH SULAWESI

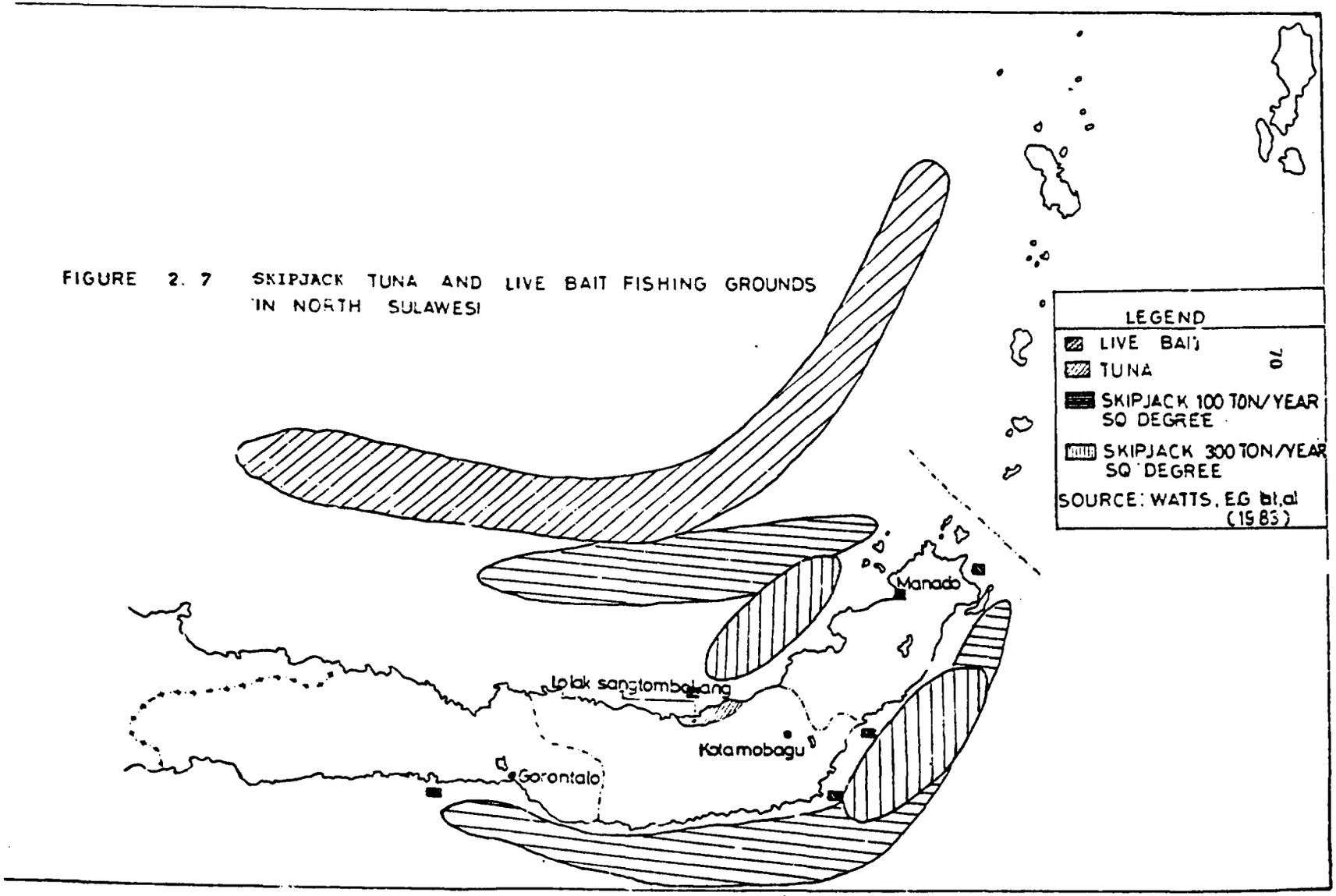


Figure 2. 8 AREAS OF SHRIMP/ MILKFISH TRI CONCENTRATIONS IN NORTH SULAWESI

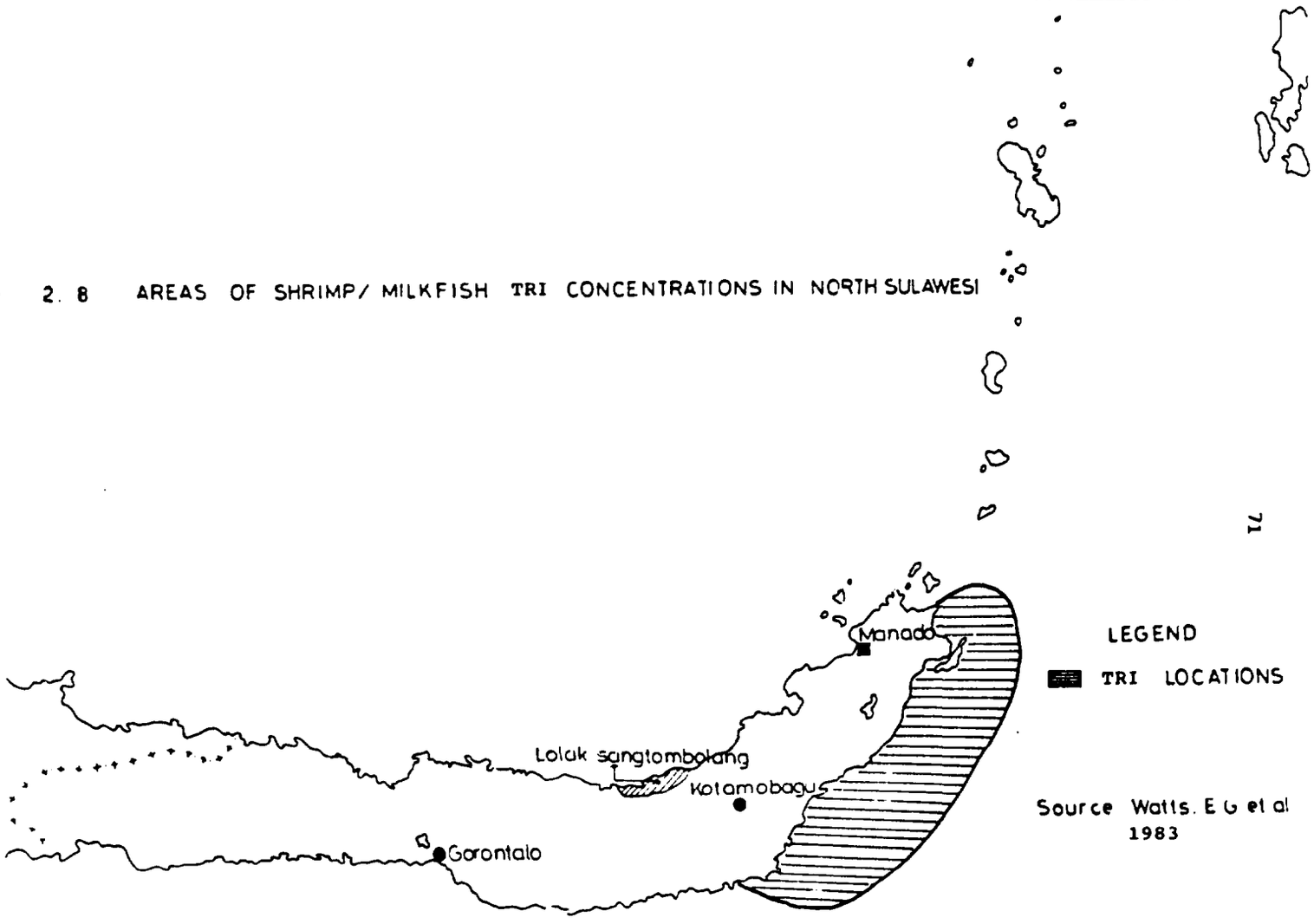


Table 2.25

Production and Price Analysis of Major Marine Species for Indonesia and North Sulawesi, 1980

Species	Indonesia			North Sulawesi			
	Total Production (mt)	Value (Rp.000)	Average Price (Rp./kg)	Production (mt)	% Total Production	Value (Rp.000)	Average Price (Rp/kg)
Fish	1,394,810	424,080,108	304	49,318	3.5	11,492,832	233
Anchovies	101,002	20,645,749	204	2,917	2.9	410,430	141
Fringescale Sardinella	92,646	17,278,447	186	1,349	1.5	257,927	191
Indo-Pacific mackerels	83,590	27,467,339	329	1,124	1.3	276,860	246
Eastern little tunas	76,797	31,420,548	409	5,465	7.1	1,235,842	226
Scads	64,107	19,334,190	302	5,275	8.2	1,224,004	232
Indian oil sardines	52,354	6,974,240	133	394	0.8	94,961	241
Skipjack	51,818	18,410,718	355	9,226	17.8	2,208,105	239
Trevallies	47,533	12,757,635	268	4,070	8.6	1,037,232	255
Ponyfish/ Slipmouths	43,638	5,615,309	129	170	0.4	37,008	218
Narrow barred Spanish mackerel	35,156	14,938,317	425	585	1.7	161,147	275
Crustaceans	117,879	113,965,776	967	17	0.0	4,972	292
Banana Prawn	38,554	66,477,598	1,724	-	-	-	-
Tiger Prawn	10,703	13,502,979	1,262	1	0.0	1,280	1,280
Moluscs	49,898	7,117,599	143	364	0.7	86,250	237
Squid	11,142	3,950,246	355	355	3.2	84,834	239
Cockles	32,383	1,244,538	38	-	-	-	-
Cuttlefish	1,995	847,022	425	6	0.3	960	160

Source : Watts, et.al; (1983)

per capita in the province is already 30.22 kg. This implies that further exploitation of fish must be directed toward export.

The fishing industry contributes approximately 6.80 per cent of the share the agricultural sector of fish (ranked third after coconut oil and) timber Ninety five per cent of export fish are 'cakalang' (skipjack). Approximately, 4780 tons of 'cakalang' ($ 4 679 452) were exported in 1982. In 1983 there were 31 313 fishing households in the province, i.e. 0.3 per cent of the total fishing households in Indonesia. The fishing households in the province consists of 22 341 fishing households in marine fishing, 2 799 in open water, 2 in 'tambak', 2 104 in fish pond and 4 067 in paddy field. (Watts et.al, 1983).

To increase export, the government has partly relied on P.N.Perikani to act as a "nucleus". i.e. to market fish caught by small fishermen organised in several cooperatives, i.e. KUD, and modernise fishing vessels.

There are five main companies involved in fish distribution, and/or processing, P.T. Deho Canning Company, P.T. Safcol, C.V. Perintis Tani and C.V. Siak. P.T. Safcol involves in fish canning, C.V. Perintis Tani in dried and salted fish and P.T. Deho in fish canning. The main base of activities of these companies is the Bitung Port. The main products are frozen skipjack but there is also activity in canned tuna, dried bonito, and dried/salted. In fact, export of frozen skipjack, smoked and dried bonito and dried sea cucumber, contributed almost $ 3 million, and frozen skipjack ranked third in economic importance on North Sulawesi (Watts et.al; 1983).

Further clasification on investment opportunities open in Fisheries can be seen in Figures 2.8. Shrimps can be caught in the eastern side of Minahasa, skipjack in both sides of the province and Tuna in the offshore of northern side of the province. Further investments in fisheries with capital intensive vessels should be directed toward catching of tuna. However, it has to be taken into account that, stocks fished in Indonesia are probably associated with populations that migrate into the western Pacific.

Watts et.al (1983) have postulated that western Pacific skipjack population spawn in waters around the southern Philippines where large number of juveniles are taken by the near-shore fishing. The same stock is fished at the adult stage by the Japanese pole-and-line fishery east of the Philippines and around Maluku and Irian Jaya.

The increase in skipjack catching in Indonesia that doubled over the past decade has invited an international concern. Watts et.al; (1983) for example have suggested that an international comission to coordinate research and establish eatch quotas would be desireable.

Other constraints in developing fishery industry as reported by Watts et.al. (1983) are as follows :

a) Production

1) limited inshore (demersal) fisheries resources,
2) small fishing boats possessing little storage space and unsuitable for offshore fishing,
3) shortage of motor repair facilities and spare parts, and
4) lack of accurate statistical and biological data needed to plan fisheries management programmes.

b) Marketing

1) seasonal nature of fish landings (with associated effects on fish prices),
2) lack of adequate market outlets for over-productions of fresh fish,
3) lack of cold storage facilities and high cost of ice,
4) too few centralized fish landing facilities,
5) poor roads and long distances to fish markets,
6) high transportations costs,
7) poorly designed, over-crowded and unhygienic municipal fish market, and
8) waste and low quality of processed products because of inefficient processing techniques.

c) Human

1) insufficient training and extension services,
2) lack of planning and business management skills,
3) ineffective fishermen's cooperatives, and
4) lack of alternative employment opportunities.

To over come the above constraints, Watts et.al. (1983) have recommended the following :

1) Further catching of those which are currently not of interest as exports, and is landed by the small scale inshore. These fish are usually sold fresh to local market, i.e. small pellagic and demersal fish.

2) Establishment of a nucleus enterprise similar to that used for skipjack should be geared towards development of internal marketting of small pelagic and demersal fish by establishment of cold storages.

3) Establishment of fishing harbours. No fishing harbours have been constructed on the Island of Sulawesi, except Dagao in Sangir Talaud. However, Dagao is quite isolated and without regular carrier service. Watts et.al. (1983) proposed constructions of class B and C fishing harbours in Bitung. Class B has a production capacity of 30 000 mt/year, and 600 gt of vessels. The function in directed toward local and inter-island trade and fishing zone is inshore offshore, and also ocean. Class C has a production capacity of 10 000 mt/year, and 150 gt of vessels. Target market are local and inter-island and fishing zone are inshore/offshore only.

2.2.3. Industries

2.2.3.1. Introductory Remarks

Prior to 1969 the industrial sector did not seem to have played a role in the economy of North Sulawesi. The role of the sector started to take place not earlier than 1969. During the period of 1969 to 1974, the kinds of firms increased at an average rate of 9.75 per cent, and the number of firms increased at an average rate of 78 per cent. However, approximately 90 per cent of manufac - turing products were coconut-based products. The role of coconut manufacturers emerged since 1972. In the same ye- ar, as described earlier, export on copra was banned and large-scale capital intensive investments for coconut oil manufactures took place.

According to Bappeda (1980), during 1969/1970 to 1973/1974 approximately 80 to 93 per cent of industries production consists of coconut-based products, particular ly coconut oil. The establishments of large-scale capital intensive coconut oil mills in 1972;

P.T. Bimoli Bitung with a capacity of 9 600 tons copra/month;

P.T. Inimexintra in Bitung with a production capici- ty of 3750 tons copra/month;

P.T. Bukit Manado, with a capacity of 2000 tons cop- ra/year.

The growth rate of the industrial sector during 1969 to 1974 was reported at 16.25 per cent for above the rate of growth of GDRP of 12.36 per cent. During the Second - Five Year Plan the annual growth rate of the industrial - sector decreased to 10.28 per cent and the annual rate of growth of GDRP came to 13.05 per cent (Bappeda, 1980).

In the Second Five Year Plan (1974-1979), types of manufacturers increased from 72 to 90 and the amount of manufacturing increased from 4177 to 60689, or 5 and 9 per cent per year consequently the rates are inferior to those of 1969-1974. In the Third Five Year Plan, contributions of the industrial sector to GDRP is approximately 4 per cent. The main reason for this poor contribution is that coconut oil mills failed to operate at their full capacity. This is because a part of the copra had to be exported to Java. This assesment is supported by the fact that the volume of coconut oil tran - shipped to other islands decreased from 137 000 tons in 1977 to 91,390 tons in 1982 (SUA,1983).

Small scale industries, however are reported to have grown higher in 1974-1979 compared to that 1969 - 1974. However, there are weak evidences on the develop - ment of other kinds of coconut-based manufacturers. For instance, according to Bappeda (1980) a number of large-scale capital intensive manufacturers such as; coconut - Flour Mills, (P.T.Unicotin); charcoal industry and vegetable oil manufacturers are as yet, unknown. Possible - reasons may, however, be attributed to mismanagements ra ther than other economic reasons.

2.2.3.2. Industrial Structure and Development

In Indonesia, industrial sector is divided into 3 categories, 'Industri Logam Dasar' (Metal Industries), 'Aneka Industri' (General Manufacturers) and Small-scale industry. General Manufacturers are dominated by coconut oil mills. Distribution of these three classes of in- dustries are shown in Table 2.26.

As shown in Table 2.26, the majorities of manufacturers are considered small scale industries where capital is approximately Rp. 1.7 m per firm compared to general manufacturers of Rp. 23 m and metal industries where capacity is of Rp. 500 m. Small scale manufacturers are the major source of employment followed by general manufacturers and metal industries.

From the coefficients of capital labour ratio's point of view, Table 2.26 indicates that metal industries, as well general manufacturers, are a relatively capital intensive investments. Small-scale industries, by nature, are obviously labour-intensive manufacturers.

Since 1969 the number of types of manufacturers and manufacturing firm have increased quite significantly, as shown in Table 2.27. Some main features indicated in Table 2.27 are follows :

(i) Increase in the number of types of manufacturers taking place where a process of diversification in the manufacturing sector is implied;
(ii) Increase in the number of firms, i.e. 556 in 1969 up to 17 664 in 1981/1982;
(iii) Volumes of export out of production varies, and;
(iv) The number of labours employed per firm decreases, indicating the substitution of labour with capital.

Sondakh, et.al. (1983), estimated the impact of investments on cost-output ratio. The impact is presented below :

Table 2.26

Distribution of Three Classes of Manufacturers in North Sulawesi

Classes	No. of firms	Capital (Rp 10^3)	Production (Rp 10^9)	Labours	Capital Labour Ratio (Rp 10^3)
General Manufacturers	94	16.435 0.17	53.6 0.57	3730 39.7	4.41
Metal Manufacturers	26	0.05 0.23	**N.A**	979 37.6	6.18
Small scale industries	2452	4.15 0.0017	N.A	11016 4.5	0.4

Source : Sondakh. et.al. (1983).

Note : NA, data not available.

Table 2.27

Trend of Number of Types of Manufacturers and Manufacturing Firms, 1969 - 1982

Year	Types of Manufac-turers	Number of Manufacturing Establishments	Export as per cent of Production value	Average Labour per Establish-ment
1969	41	556	-	-
1970	47	784	-	-
1971	57	1,122	-	-
1972	64	1,590	-	-
1973	57	2,289	-	-
1974	72	4,177	-	-
1975	76	5,577	69.00	2.26
1976	81	5,884	36.00	2.21
1977	97	6,745	28.00	2.48
1978	106	8,856	22.00	2.00
1979	110	14,032	70.00	1.59
1980	116	14,403	30.00	1.53
81/82	121	17,664	13.00	1.53
82/83	-	-	-	-

Source : Sondakh. et.al. (1983) .

Table 2.28

Cost-Output Ratio by Quantity of Investments

Investments (Rp. 10^6)	Output Cost Ratio	Average Cost Per Unit Output
< 50	1.406	0.71
50 - 250	1.716	0.58
250-500	1.336	0.75
500-5000	1.119	0.84

Source : Sondakh et.al.(1983)
Note : analysed from a sample of 50 establishment surveyed in 1983.

As shown on Table 2.28, the industrial sector is subject to'lack of economy of scale'. This is supported by the fact that the average cost is quite high, while investment is relatively low, i.e. less than Rp. 50 m, but the average cost tends to increase of the amount of investment is increased over Rp. 250 m.

The problem of 'lack of economy of scale' is a consequence of a limited market, with the absence of more efficient technologies and usually of less appropriate managerial practice. With a population of no more than 2.1. million, in North Sulawesi obviously limits the market for industrial (manufacturing) products that has to be produced with a minimum quantity that may have surpassed a local demand. To achieve a 'break even point' of a manufacturer (i.e. a capital intensive manufacturer), external market must be present. The external markets for the province, if at all available Indonesia, are mainly located in the densely populated islands. The distance obviously involves a relatively high transportation cost. According to SUA (1983) and Sondakh et.al.(1983)

in 1969 the ratio between incoming and outgoing cargos amounts to 1.3:1; and in 1981 the ratio increases to 2.7:1 . Understandably cargo ships demonstrated their reluctance to stop over at Bitung harbour.

2.2.3.3. Some Cases of Manufacturing Sub-Sectors

In the late seventies, automative industries were established. A case shown here is PT Inkoasku. The company located in Bitung, has an investment of approximately $ 550 thousands. Its main production consists of 'wheel rims' where its capacity amounts to 300 000 in 1982, actual production realized is no more than 166 972 rims or 54 per cent. One constraint the company is facing with, is the lack of market, as local consumers attach higher preference to imported rather than to local 'wheel rims' products.

Another case of a non-agricultural capital investment manufacturer is a docking/shipping manufacturer in Bitung named PT Industri Kapal Indonesia Unit Dok Galangan Kapal . The company has been established on 29 October 1977 with an investment of $ 443 thousands. However the company fails to operate at its full capacity of 10 000 BRT. In 1978 it provided services to 4755 BRT, and in 1982 the services increased to 7293 BRT.

One other case shown here is PT Galangan Kapal 'Surya Sakti' which has been operating since 1975 with a present investment of approximately $ 900 thousands. Not much is known about on the performance, except that it produced small ships (boats) since 1977.

Fishing industry, as described earlier plays an significant role to the economy. The case described below will

deal with a canning manufacturer, PT Deho Canning Company built since 1980, with an investment of approximately $ 135 thousands and bearing a capacity of producing 2160 tons of canned fish per annum. However, in 1982 its production did not reach its maximum capacity. It produced for local market approximately 347 tons; for inter-islands market 850 tons and for export if 338 tons. The said performance suggested that the company managed to operate at a reasonable-rate of capacity utilization Constraints faced by the company were insufficient catching fasilities, the absence of cold storages either in harbours or in vessels, and consequently led to fluctuations in production.

To support 'fish canning manufacturers, cans production would be needed. A can manufacturer visited was PT United can and Co.Ltd., built in 1981 with a total investment of $ 500 thousands. Its production in 1982 amounted to 400 000.

The above cases offer some insights that, eventhough contribution of the industrial sector to GDRP is still relatively low, there are however some hopes that industrial development may take place in the future, the confidence due to that local people have demonstrated abilities to manage and run capital intensive investment projects.

With respect to the development of small-scale industries which contribute to employment within the industrial-sector, the government implemented a series of schemes enabling entrepreneurs to initiate small-scale manufacturing. The provision of subsidized credits such as KIK, KMKP, etc is an example of the schemes. The above mentioned credits have mostly been absorbed in the development of cottage industries and small tradesmen .

The small scale industries play important roles in over - coming unemployment problem and initiating industrial development. According to Departemen Perindustrian (1983) - there are 20 637 units of small-scale establishments (u - nits) in the province. These establishments employ 35 376 labours, with a total investment of Rp. 4.4 billion, a total output of Rp. 39.5 billion and a total value of raw materials of Rp. 21.36 billion. In other words, the capital (investment) labour ratio is Rp. 0.12 million, which is very labour intensive. Each establishment emp - loys on average 1.7 labour, but the output-labour ratio is quite high, i.e.; Rp. 1.12 million. These establishment producing approximately 33 types of commodities mainly for local consumption. The relatively high output-labour and capital ratio is a promising sign for assisting the industries with a certain amount of capital aid such as KIK or KMKP.

2.2.3.4 Constraints on Manufacturing Development

The development process of manufacturing/industrial development shown above is still unsatisfactory. The process indicates that various constraints seem still impe - ding the development. The likely constraints are as follows;

(i) The absence of economy of scale which rooted from smallness of market in the province, high (air and sea) handling and transportation cost, and limitted capital for investments overcoming the absence of economy of scale;

(ii) Relatively high wage rates. North Sulawesian people are dynamic in the sense that they are quite responsive to any changes in wages and prices. Consequently, labour mobility is quite high that contribute to the relatively higher wage rates in the province. The other main contributor is that of higher cost of living in the province compared to that in the densely populated islands. The higher wage rates in turn are the reason for the higher production cost of investments;

(iii) Inadequacy of energy resources. The province, though possess more than sufficient resources such as geothermal and hydro power , these resources have not been sufficiently exploited or used. As a consequence, manufactures that must rely on electrical power for their deve - lopment can not profitably exist and or ope - rate, simply because of expensiveness.

(iv) Costly procedure in obtaining licence for in - vestment activitities especially for an invest ment that is funded through foreign capital - and to other large scale domestic capital. The cost is further aggravated by the absence of industrial sites.

The constraints above become more and more impeding due to the present world-wide economic recession and unfa- vourable international trade. In this kind of economic environments, any infant industries would only develop provided that they possess higher degree of competitive - ness against the more efficient and well established na - tional and multinational companies.

2.2.4. Mining and Energy

Contribution of the mining sector to GDRP as shown in Table 1.3 are still low, i.e., 0.36 per cent in 1975 - and 1.40 per cent in 1980. Since 1969, main activities in the sector has been limited primarily mining for construc- tion purposes, i.e, stones, sand, pozolanic, clay, lime - stones, kaolin and to some extent gold. The mining is undertaken in a traditional way. The relatively few acti - vities inherent in the mining industry is likely due to the limited capital available either for exploration and/ or mining.

Even though intensive surveys and exploration have not been intensively undertaken, past limited studies -

indicated the potential ities of North Sulawesi in the mining sector. The potential ities are shown in Table 2.29 and a brief description its potential ities will be pre - sented below.

Gold has been mined traditionally in Ratatotok and Molobok village since World War II. In 1971, PT Tropic Endeavor Indonesia discovered gold in Marisa. Detailed drilling to test alluvial areas in Marisa district was underway towards the end of 1980. However, it is not quite known wether gold production is contemporarily under - way. Until now the province has never exported gold.

The province of North Sulawesi is a cement importing area. in 1981, import of cement amounted to 189 450 ton. Annual requirements reach approximately 132 000 tons.(Kanwil Perdagangan, 1981). The main raw materials for cement i.e. limestone, clay, silica and iron sand are available . The availability of good quality limestone amounts to approximately 1000 million tons. PT Semen Sulut Indah for example, submitted an application to BKPM for the estab - lishment of a cement factory of 600 000 tons per year. Moreover, PT Kombos at Lolak has been making an effort to produce 500,000 tons of cement at Lolak Bolaang Mongondow. A maximum production capacity of 900 000 tons per year has been reported so far. However, until now there is no pro - duction activities underway yet. The approved plan of production of cement requires energy sources from coal which has to be transhiped from East Kalimantan and gyp - sum which need to be imported. One reason is the concern of the regional government on the impact of a cement factory on environmental qualities.

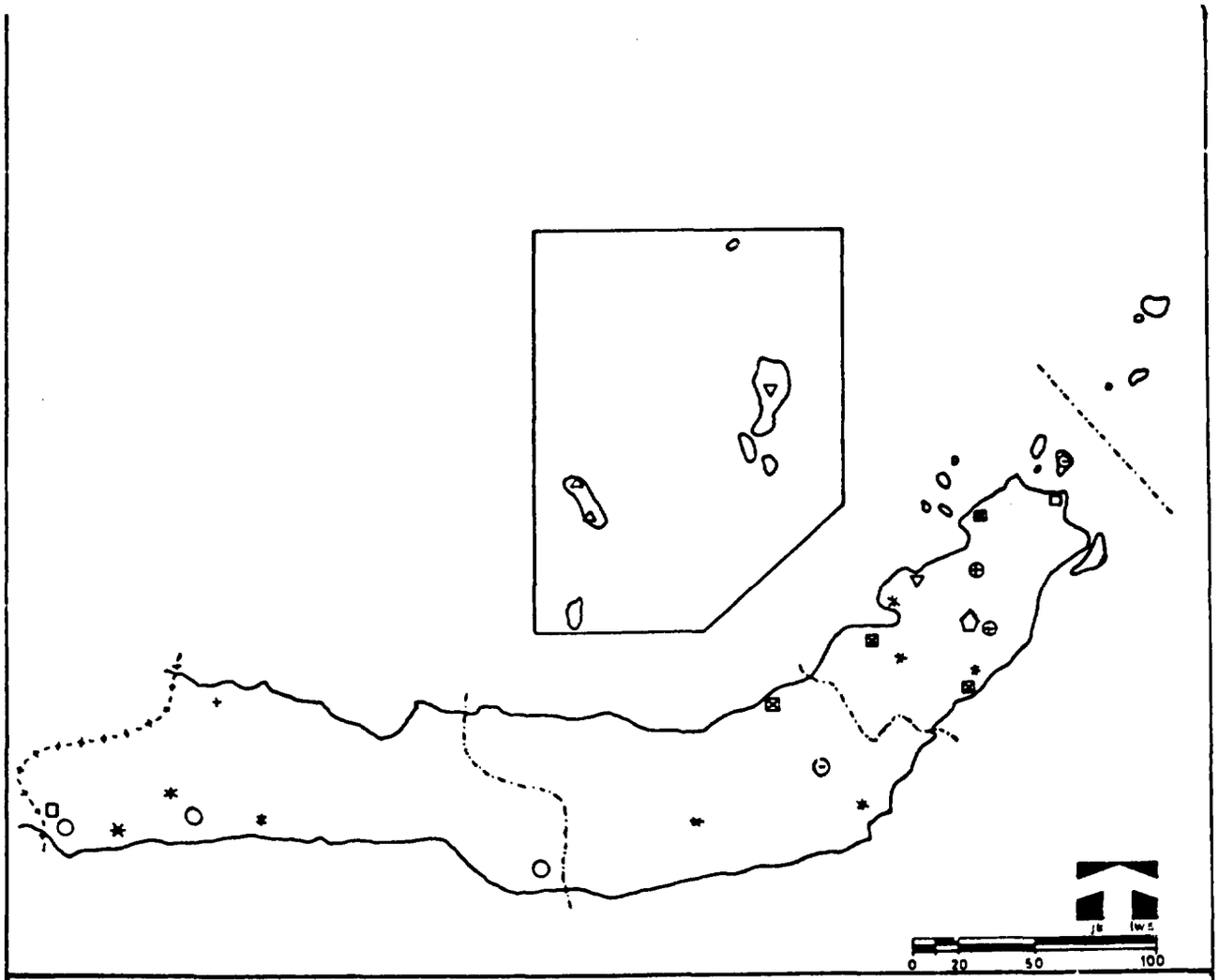
High quality of kaolin is available in Toraget Mina - hasa. An amount of 150 000 tons has been quoted. PT USIS

Table 2.29

Mining resources in North Sulawesi

No.	Kind of mineral	Location of the product
1.	Copper	a. Molosipat, Popayato district (Gorontalo)
		b. Tapadaa, Tilamuta district (Gorontalo)
		c. Bulanggala, Inengo, Bonepante district (Gorontalo)
		d. Molibagu (Bolaang Mongondow).
2.	Gold and Silver	a. Marisa district (Gorontalo)
		b. Gunung Agone, Wonggahu, Paguyaman district (Gorontalo)
		c. Paguat district (Gorontalo)
		d. Kotabunan district (Bolaang Mongondow)
		e. Passi district, Dumoga, Kadipang Bolaang Mongondow
		f. Tumpaan district, Motoling district (Minahasa)
		g. Ratatotok, Belang district (Minahasa)
3.	Lead and zinc	Sumalata district Gorontalo
4.	Iron ore	a. Bangka island, Likupang district (Minahasa)
		b. Bolaang, Bolaang Mongondou.
5.	Manganese	a. Tanjung Tarawitan, Likupang district (Minahasa)
		b. Molosipat, Popayato district (Gorontalo)
6.	White sand	a. Panarekeng, Sangir Besar district (Sangihe Talaud)
		b. Mola, Tabukan Utara district (Sangihe Talaud)
7.	Nickel	Minahasa Wese Coast and Talaud Island (Sangihe Talaud)
8.	Kaolin	a. Tanjung Liku (Bolaang Mongondou)
		b. Pinaesaan, Langowar district (Minahasa)
9.	Kaolin	Toraget, Largowan district Minahasa
10.	Sulphur	a. Mt.Ambang, Modayag district (Bolaang Mongondow)
		b. Lolak (Bolaang Mongondow)
		c. Mt.Mahawu (Minahasa)
		d. Mt.Soputan (Minahasa)
		e. Batukulo,Tompaso district (Minahasa)
11.	Obsidian & Perlite	Tataaran, Kiawa, Leilem, Pulutan, Tumaratas (Minahasa)
12.	Cement raw materials	a. Wori, Ratatotok, Amurang (Minahasa)
		b. Lolak (Bolaang Mongondow)
13.	Lime and Clay	a. Ratatotok (Minahasa)
		b. Lolak, Pinangoluman (Bolaang Mongondow)
		c. Wori (Minahasa)
14.	Pozolanic	a. Pineleng (Minahasa)
		b. Ranoasem, Kawangkoan district Minahasa
		c. Kaaten Paaweng, Tomohon district Minahasa
		d. Tinaan, Airmadidi district (Minahasa)
15.	Pumise	Mt.Soputan and Mt.Batu Angus (Minahasa)
16.	Gypsum	a. Malobo, Kotabunan district (Bolaang Mongondow)
		b. Kabila (Gorontalo)
17.	Quartz sand	a. Langowan (Minahasa)
		b. Gangga Island (Minahasa)
18.	Geotermal heat	1. Lahendong and Lake Linaow (Minahasa)
		2. Batukulo, Mt.Soputan complex (Minahasa)
19.	Construction rocks	Kinilow,Lilang, Mokupa, Kasuang,Noongan (Minahasa)

Source : BKPMD (1983).



NATURAL RESOURCES MAP
(MINERAL)

LEGEND.

- COPPER
- GOLD & SILVER
- LEAD & ZINC
- IRON ORE
- MANGANESE
- WHITE SAND
- NICKEL
- KAOLIN
- CEMENT RAW MATERIAL
- GEOTHERMAL HEAT
- PROVINCIAL BORDER
- REGENCY BORDER

RESEARCH CENTRE
SAM RATULANGI UNIVERSITY MANADO
STUDY TEAM ON FORMULATION OF COMPREHENSIVE
INVESTMENT PROFILES, NORTH SULAWESI

NORTH SULAWESI PROVINCE

Figure 2.9

has mining rights in Toraget Minahasa. However, the production marketed has significantly decrease from 820 tons in 1978 to 50 tons 1980. The market has been to Japan in the form of raw kaolin. It has been suggested that kaolin be used for local home and industrial uses, i.e. ceramics, insulators, etc.

A relatively large amount of copper has been reported in North Sulawesi. According to Bappeda (1980) copper mines are found in Gorontalo, i.e. Tombuililato District. The area is moreover near to Bonnay river as a source of electricity of approximately 40 Mw.

Iron sands are available in North Sulawesi, i.e. between the latitudes of 0° 40' and 1° 13'. North and between longitudes 123° 05' and 124° 30' East. The above-mentioned area is closer to Manado. Fe contents of sands is about 58 per cent and tio content is about 10 per cent. Estimated quantity in a coastal length of 15 km, width 150 to 250 meters and depth 4 meters is 30 m tons of crude, equivalent to 4 m tons of iron consentrate.

Other mining resources and their locations can be seen in Table 2.29. Unfortunately, little quantitative figures can be shown at present due to lack of data on exploration activities so far carried out. However, the one among them which deserves attention, is geothermal heat. It is reported that North Sulawesi nas approximately 1,000 MW, that is 30 per cent of geothermal heat resources in Indonesia. In the areas Lahendong and Lake Kinilow, utilization of geothermal heat of 30 MW has been reported. A succesful utilization of the above resources would significantly contribute in removing one of the main constraint in an industrial development i.e. energy and electrification.

The need to succesfully exploit energy resources , either geothermal or hydro power resources is at present - urgent due to rising cost in domestic oil. In the Forth - Five Year Plan the government plans to provide electricity to the majcrity of people. Presently only 16 per cent of the households has electricity. Due to increase in oil - prices, such a Program may cost more be than public income able to fund.

Hydro power resources are at present the main source- of energy, which are far more than sufficient. Consequent- ly, efforts to further explore and utilize the energy re - sources are crucial.

2.2.5. Trade

2.2.5.1. Introductory Remarks

Investments are directed towards production of import substituted commodities export and local possible invest - ments must be based on an understanding on the trends of imported, exported and local demanded commodities.

Imports come directly from abroad or indirectly from Java. Direct import goods in 1982/1983 to the Province are shown in Table 2.30. The imported goods in the amount of $ 65m consist of mainly manufactured goods, including those those which can be locally produced such as rice.

2.2.5.2. Imports

In aggregate terms, the composition of direct imports in 1981 is shown in Table 2.30.

Table 2.30
Composition of (Direct) Imports 1981

Items	Value (US $)
Consumption goods	8,841,071
Raw Materials	52,776,669
Capital goods	4,246,425
Others	1,365,843

Source : Compiled from SUA (1983).

As shown in Table 2.30 the main import goods are raw materials for industrial, construction and agricultural investments/projects.

Some insights on trend of import since 1969, can be seen in Table 2.31. The table indicates that imports of consumption goods decrease from 91.16 per cent in the First Five Year Plan, 53.60 per cent in the Second Five Year Pland and 25.74 per cent in the Third Five Year Plan. In absolute term, the figures show sharp decrease. On the other hand, the import of raw materials increases from 8.13 per cent in the First Five Year Development Plan to 66.45 per cent in the Third Five Year Plan.

Decrease in direct import of consumption goods was caused by the decrease in the imports of rice and sugar. Increases in import of raw materials were caused by increase in the import of cement and raw materials for manufacturers, i.e. wheel rims, zinc plates, and chemicals (see Table 2.32).

Composition of (indirect) imports of goods from other islands (mainly from Java) is shown in Table 2.32. The table indicates that the main commodities imported from

Table 2.31.

Export and Import in North Sulawesi

During the Past Three-Five Year Development Plan Periods

Commodity	Pelita I Value ($)	%	Pelita II Value ($)	%	Pelita III Value ($)	%
Export						
a. Raw Materials						
- Agriculture	36.960.918,71	67,11	18.164.348,02	29,57	29.134.660,85	21,14
- Fishery	2.653.056,13	4,82	5.577.030,71	9,07	12.489.732,25	9,06
-Forestry	1.333.733,85	2,42	7.266.411,00	11,82	24.062.957,58	17,46
- Livestock	-	-	-	-	-	-
- Mining	80.360,00	0,15	122.078,00	0,20	300,00	0,01
b. Manufactured Goods						
- Agro Based Industry	14.048.906,34	25,50	29.960.020,42	48,76	72.110.384,30	52,33
- Non Agro Based Product	-	-	-	-	-	-
c. Others	-	-	-	-	-	-
	55.076.575,03	100,00	61.489.856,15	100,00	137.796.038,00	100,00
Import						
a. Consumption Goods	1.379.411,65	91,16	95.580.107,85	53,60	69.011.783,61	25,74
b. Raw Materials	123.029,72	8,13	37.656.109,47	21,12	178.233.169,12	66,45
c. Capital Goods	5.826,48	0,39	41.864.326,65	23,48	13.859.621,18	5,17
d. Others	4.979,84	0,33	3.220.359,08	1,81	6.910.405,96	2,58
	1.513.147,68	100,00	176.320.903,05	100,00	268.113.979,87	100,00
Ballance of Trade	- 53.563.828,03		- 116.831.014,90		- 130.315.941,90	

Source : Calculated from North Sulawesi in Figures (1983).

Table 2.32

Import Goods, 1982 - 1983

Goods of Kind (Items)	US $
1. Petroleum	26,600,612.92
2. Galvanish Iron Sheets (Roofing)	7,225,020.57
3. Sugar	16,505,020.50
4. Rice	7,042,242.38
5. Fertilizer	6,555,500.00
6. Auxiliary materials	3,650,593.23
7. Cements	3,625,166.55
8. Equipment for Heavy Industries and Constructions	1,318,006.35
9. Wheel rims materials	1,142,334.12
10. Automotive Spare parts	1,019,049.93
11. Asphalt and Oil	554,576.00
12. Other	2,396,203.83
T o t a l	76,080,328.38

Source : SUA, (1983) .

Note : Data on the corresponding quantity are not available.

Java are those of 'nine essential commodities' especially- rice, sugar, kerosene, textil and salt. The import of cement, fertilizers, and wheat flour however, constitute the main import items. The main imported goods are des - cribed below.

Rice import comes from abroad and other islands. Dolog is the main rice importer and distributor. Distribution is undertaken to maintain a given floor and ceiling - prices. The amount of rice imports has been decreasing o- ver time, due increase in domestic rice production. Howe - ver, until 1983 the province remains to be a rice import - ing province. (See Table 2.34).

Though the Province is a coconut oil producing region it still imports edible oil. The edible oil imported howe- ver, are those of non-coconut edible oil. Kerosene is im - ported at 16 156 tons in 1980 and in 1981 the import in - creased to 20 099 tons. Textil import in 1980 was 3 852 tons in 1981 the import increased to 4 001 ton.

Import of sugar was 23 705 tons in 1981, distributed- by five distributors: PT Kema Jaya Wotraco; PT Sinar Se - rimpi; PT Dwi Karya and Puskud (Village Cooperative Centre of North Sulawesi). A sugar plantation project has been considered in Marisa to meet the local demand as well as export demand. The project is not underway yet for the reason already described earlier (i.e. sugar content be - ing less than 10 per cent). Another reason according to BKPMD (1984; personal interview) is that a company willing to undertake the project requires at least 20,000 ha of land. In fact, the land being availed for the main project could not be more than 12 500 ha.

Table 2.33.

Inter-island Import by North Sulawesi 1981

Commodities	Quantity
Rice (tons)	51,939
Sugar (tons)	23,705
Salt (tons)	7,570
Coconut Oil (tons)	3,034
Soap (tons)	2,992
Kerosene (tons)	17,626
Textil (tons)	3,852
Wheat Flour (tons)	81,400
Cement (tons)	132,000
Fertilizers	
- Urea (tons)	23,166
- TSP (tons)	11,296
- KCL (tons)	499
- Pestisides (ltr)	116,557

Table 2.34.

Import of Rice in North Sulawesi

1977 - 1982

Year	From	Volume (kg)	Value (US $)
1977	Taiwan (white rice)	4,629	1,131,900
	Thailand (ketan rice)	24,406,902	2,831,620.40
	T o t a l	24,411,731	3,963,520.40
1978	Taiwan	20,048,958.9	5,187,525
	Philipinnes	15,056,131	4,363,525.90
	China (white rice)	15,409,978	5,347,004.57
	China	28,097,720	7,329,462.34
	USA	8,021,483	2,579,084.98
	Birma	8,000,000	1,880,327.40
	T o t a l	73,863,930.9	26,786,730.19
1979	USA	856,517	284,652.79
	India	4,046,574	1,100,000
	North Korean (white rice)	9,286,698	2,595,912.12
	Philipinnes (white rice)	10,056,168	2,500,867.04
	T o t a l	24,245,957	6,481,431,95
1980	USA	64,438	38,128.66
	Philipinnes (white rice)	58,361,290	16,760,963.82
	China (white rice)	33,674,436	9,922,209.06
	Thailand (white rice)	1,008,689.43	289,329.24
	T o t al	93,108,853.43	27,010,630.78
1981	USA	7,943,892	894,283.52
	Thailand	9,583,359	2,904,045.84
	China	9,240,977	2,844,431.10
	T o t a l	26,768,228	6,642,760.46
1982	Philipinnes	19,554,660	7,042,237.38
	T o t a l	19,554,660	7,042,237.38

Notes : Januari - Mei 1983, no import of rice.

Source : Kanwil Departemen Perdagangan Sulawesi Utara, (1983).

Annual salt import is 7 500 tons, distributed by PN Garam. There is no information whether or not salt can be locally produced in the province. Even though the province is a fish exporting region, salted fish needs to be transshiped from North Moluccas. The import however, according to Kanwil Perdagangan (1981) is gradually decreasing.

Soap import amounted to 5 821 tons in 1980 and decreased to 2,992 tons in 1981. It can be assumed that the decrease in caused by decrease in soap production locally made from coconut oil.

The demand for cement seems to increase rapidly. In 1980 import of cement has only 114 000 tons. In 1981 it amounted to 132 000 tons, an increase of 15.8 per cent.

As described earlier, the potential for cement production is suficiently high but for the production to be executed public investments on infrastructure and energy - mining may be a prerequisite.

Other goods still imported, though not well documented are those goods considered essential for small farming, such as sprayers, hand tractor, water pump, fishing motors, nest (for fishing) etc. According to Waworoentoe (1981) those equipments are required by approximately 30 per cent of households in Indonesia.

2.2.5.3. Export

In 1981, total export value of the province was $ 19 613 000. As shown in Table 2.35, agricultural products, and agricultural based products are the major export commodities. Coconut and coconut based products rank first as export commodities. Forty seven per cent of the total -

Table 2.35.

Exports of North Sulawesi, 1981

Commodities	Volume M Ton and M^3	Value (US $)
Coconut Meat	66.462,6	7.007.400
Coconut Oil	3.502,8	1.534.200
Desiccated Coconut	597,2	660.800
Coconut Shell Charcoal	468,8	76.700
Nutmeg	1.724,9	2.191.300
Mace	542,8	997.200
Clove Leaf Oil	8,6	25.700
Timber (m^3)	42.692,4	3.580.000
Rattan	559,1	398.000
Rubber	29,9	39.500
Fresh Frozen Skipjack	2.564,9	2.863.800
Smoked and Dried Bonito	28,6	108.500
Ground Coffee	70,0	114.800
Rice Bran	138,1	8.100
Dry Sea Cucumber	5,1	7.000
T o t a l	76.703,4*	19.613.000
	42.692,40**	

Source : Kanwil Perdagangan (1981).

Note : * Excluding Timber

** Only for Timber in m^3.

Table 2.36

Exports from North Sulawesi, from Pelita I to Pelita III (up to Oktober 1983)

(Volume : M/Ton; Value : US $)

Commodity	Pelita I Volume	Pelita I Value	Pelita II Volume	Pelita II Value	Pelita III Volume	Pelita III Value	Rank
Cash Crops							
Copra	241,216	33,313,973	49,016	4,510,271	24,467	12,238,100	(6)
Nutmeg	8,037	2,434,616	9,013	10,752,325	11,169	14,616,344	(4)
Rubber	1,452	100,629	1,065	639,146	629	708,560	(10)
Fully/Mace	1,435	808,825	1,389	2,282,606	2,075	4,360,768	(8)
Coffee beans	-	-	-	-	305	567 538	(11)
Cocoa beans	-	-	120	147,300	-	-	(25)
Castrol seed	184	8,340	-	-	-	-	(30)
Clove Buds	0.10	500	-	-	-	-	(32)
Food Crops							
Corn/Maize	3,090	293,550	-	-	11,000	NA	(16)
Rice Bran	-	-	-	-	838	47,800	(15)
Fishery							
Fresh Frozen Skipjack	2,357	586,521	1,631	489,442	15,302	13,697,839	(5)
Fresh Frozen Shrimp	883	1,960,358	1,202	4,747,564	-	-	(23)
Shark fin	2	5,856	-	-	-	-	(28)
Shell Hide	2	192	-	-	-	-	(33)
Frozen Yellow Pin	-	-	39	7,996	-	-	(27)
Dry Sea Cucumber	-	-	-	-	10	19 135	(18)
Trica Shells	94	18,578	16	11,139	-	-	(24)
Woods							
Timber (m^3)	69,378	1,220,156	185,038	7,278,047	204,161	23,131,810	(3)
Rattan	305	12,277	426	348,364	2,064	1,814,254	(9)
Resins	15	1,341	-	-	-	-	(31)
Mining							
Caolin	4,018	80,360	6,271	122,078	10	300	(22)
Agro Based Industry							
Coconut Oil	51,830	7,723,586	57,381	6,403,866	65,434	36,754,616	(1)
Copra Cake	129,385	6,019,101	218,257	21,383,561	297,680	32,880,969	(2)
Nutmeg Oil	30	100,629	11	71,900	6	12,600	(19)
Clove Leaf Oil	146	205,592	31	116,528	19	61,400	(14)
Smoked and Dried Bonito	63	81,236	36	52,708	134	502,694	(12)
Mace/Fully Oil	-	-	-	-	8	15,135	(17)
Desiccated Coconut	-	-	2,708	1,827,626	466	5,253,684	(7)
Nutmeg Flour	-	-	9	540	8	4,905	(20)
Coconut Shell/Charcoal	-	-	150	10,500	1,389	197,200	(13)
Mace/Fully Flour	-	-	-	-	1	724	(21)
Others							
Raw Chili	-	-	19	27,200	-	-	(26)
T o t a l (Value)		54,976,216		61,237,707		147,090,375	

Source : Compiled and Calculated from SUA (1983), Richter at.al (1983) and Kanwil. Perdagangan (1983).

Note : NA, Not Available.

export value derives from coconut-based products. Forestry and Fishery rank second and third of which its contribu - tions are 20 to 15 per cent of the total export export value respectively.

One problem faced in increasing export, according to Kanwil Perdagangan (1981) is the irregular schedule of sea route transportation to the main importing countries of the above commodities especially to Europe, US, Japan and Australia. Nutmeg, mace, coconut oil, meat and clove leaf- oil are exported to Singapore and Europe; coconut flour to the Netherlands, Japan and Australia; charcoal and dried - bonito to Japan; rottan to Italy; and coffee to Denmark - and West Germany.

To offer further insights on export profiles since - the First Five Year Plan, export trends are briefly shown in Table 2.31 and 2.36. As shown in the tables coconut and coconut based products; nutmeg and nutmeg based products ; fresh frozen skipjack; timber and rattan, have traditional ly been exported. Desicated coconut, and dry sea cucumber have just been exported in the Third Five Year Plan. Some commodities such as shells, resins, frozen yellow fin, co- coa bins and raw chili.

On the other hand, those commodities that have been exported at increasing rate are rattan and timber; copra - cake (coconut meal); coconut oil; desicated coconuts; charcoal, nutmeg and mace. Further details of its features can be found in Table 2.37. The table indicates that in the Fourth Five Year Plan, vanilla, 'jambu mete' [3] and ginger may appear as export commodities.

---

[3] 'Jambu mete' is an Indonesian Name for cashew.

Table 2.37

Past, Present and Possible Future Export Commodities

Commodities	Still exported (1)	Just being exported (2)	last year of export (3)	Proposed for export (4)
Food Crops				
Maize/Corn	-	* (83)	-	-
Rice Bran	*	-	-	-
Vanila	-	-	-	* (85)
Ginger	-	-	-	* (86)
Jambu Mete	-	-	-	* (86)
Fishery				
Fresh Frozen Skipjack	*	-	-	-
Shell Hide	-	-	* (70)	-
Dry Sea Cucumber	*	-	-	-
Fresh Frozen Shrimp	-	-	* (76)	-
Shark fish Tails	-	-	* (74)	-
Frozen Yellow fish	-	-	* (74)	-
Troca Shells	-	-	* (77)	-
Cash Crops				
Copra	*	-	-	-
Nutmeg	*	-	-	-
Rubber	*	-	-	-
Mace	*	-	-	-
Coffee Beans	*	-	-	-
Castor Seeds	-	-	* (69/70)	*
Clove Buds	-	-	* (73)	-
Cocoa Beans	-	-	* (75)	-
Woods				
Timber	*	-	-	-
Resins	-	-	* (72)	-
Rattan	*	-	-	-
Cassia Vera	-	-	* (73)	-
Slabs	-	-	-	*
Edgings	-	-	-	*
Cuttings	-	-	-	*
Diospyros Celebica	-	-	-	*
Mining				
Kaolin	*	-	-	-
Sulphur	-	-	*	-
Copper	-	-	* (69)	-
Iron dust	-	-	-	*
Manganese	-	-	-	*
Cement Component	-	-	-	*

Table 2.37 (Cont).

Commodities	Still exported (1)	Just being exported (2)	last year of export (3)	Proposed for export (4)
Agro Based Industrial Products				
Coconut	*	-	-	-
Copra Cakes	*	-	-	-
Smoked and Dry Bonitoes	*	-	-	-
Clove Leaf Oil	*	-	-	-
Desicated Coconut	*	-	-	-
Coconut Cream	-	-	-	*
Nutmeg Flour	*	-	-	-
Citronella Oil	-	-	-	*
Nutmeg Oil	*	-	-	-
Mace Oil	-	* (82)	-	-
Mace Flour	-	* (82)	-	-
Coconut Charcoal	*	-	-	-
Coconut Fibre	-	-	-	*
Textile handcratts	-	-	-	*
Coconut Meat	-	-	-	*
Dyospyros Celebica	-	-	-	*
Coconut Charcoal Flour	-	-	-	*
Cassava Pellet	-	-	-	*
Peanut Cakes	-	-	-	*
Coffee Flour	-	-	-	*
Fish Tin	-	-	-	*
Manufacturer Industry				
Wheel rims	-	-	-	*
Zinc (Plated Sheets)	-	-	-	*
Others				
Raw Chili	-	-	* (77)	-
Fragrant Grass	-	-	-	*

Source : Compiled from various Statistics. (Kanwil Perdagangan, 1983, SUA 1983, BPEN 1976).

Note : *Corresponded to an appropriate Category.

Figures in Parentheses are related to years of export Undertakings.

The Indonesian Government attempted in increasing non-oil export commodities as a consequence of the decrease in oil revenues. This implies that traditionally export commodities described above must be sustainly increased.

The main commodities exported to other islands in Indonesia (i.e. inter-islands trades) are shown in Table 2.38.

As the above table shows, North Sulawesi did not export non-agricultural industrial products. Copra, as indicated earlier, has to be exported to Java, in accordance with the Presidential Instruction No. 67, 1969. Other export commodities besides those directly exported abroad are cloves, clove stilks, soya beans and livestock. Corn has been exported in 1983 and early 1984. Most of the products however, except for coconut oil are still exported as raw materials, i.e. unprocessed goods, such as logs, soya beans, copra and livestock. Livestock were exported to Jakarta (870) and East Kalimantan (1300).

Since 1969, i.e. the beginning of the First Five Year-Plan when the export values are broken down into raw materials, manufactured goods and others, the trend however is quite encouraging. The proportion of raw materials decreased in contrast to an increased proportion of export values of the manufactured goods. Such a phenomena indicates an increase in efficiency of resource utilisation.

An important aspect in trade however is in balance of trade. An economic development requires an increase of export faster relative to that of import. Such balances for the province during the past Three Five Year Development Plans, are described below.

Table 2.38

Inter-island Export Commodities

of North Sulawesi, 1981

Commodities	Units
Clove (tons)	8,295
Clove Stalk (tons)	1,742
Copra (tons)	25,627
Coconut oil (tons)	88,140
Ground coffee	155
Logs (10^3 m^3)	36,344
Soya beans (tons)	8,507
Livestock (animals)	2,170

Source : Kanwil Perdagangan (1981).

2.2.5.4. Balance of Trade

The balance of trade of the Province, can be seen in Table 2.36, which shown that export values increase from $55 m in the First-Five Year Development Plan to $ 147 m in the Third-Five Year Development Plan. However, the import values appear to have increased far more rapidly than that of the export values. As a result, the province experienced a negative balance of trade of - $ 116.8 m in the Second Five Year Plan to - $ 130.3 m in the Third Five Year Plan. Details of annual balances of trade is shown - in Table 2.39.

One reason for the negative balance of trade mentioned above was because the central government banned export on copra in the 1970s. The reason for the export restriction was, as mentioned earlier, that since 1976 Indonesia has been importing a copra. As a result of the said res - triction, export of copra cake increases.

There is need to obtain figures on balances of trades as differences in total amounts of those sent abroad and- within Indonesia. Unfortunately the quality of data available is very scant at present. However, one can hypothesize that the 'balance of trade' would tend to be negative than positive if prices of copra/coconut oil and cloves - fail to increase at least in line with CPI (consumer Price Indexes) increments. Regional revenues depend to a large degree on prices of cloves and copra. Price of cloves in fact been below the floor price of Rp 7500, while the price of copra increased at a slower pace than that- of rice.

Table 2.39

Balance of Foreign Trade in North Sulawesi
(US $)

Year	Export	Import	Positive	Negative
1971	6,850,379	5,849,938	1,000,399	-
1972	10,824,004	3,965,937	6,858,007	-
1973	10,824,004	3,965,397	199,324	-
1974	8,806,854	20,929,966	-	12,123,112
1975	11,821,701	39,525,127	-	27,703,425
1976	15,071,900	8,672,518	6,399,382	-
1977	12,685,490	47,853,233	-	35,503,333
1978	12,349,900	61,420,061	-	49,070,161
1979	43,726,500	19,609,480	24,117,020	-
1980	58,612,000	841,273	8,771,527	-
1981	19,613	71,855,929	-	71,836,314
1982	14,711,258	133,807,298	-	119,096,010

Source : SUA, (1983).

2.2.6. Infrastructure

2.2.6.1. Introductory Remarks

The degree of resource utilisation mentioned in earlier relies significantly on infrastructure system such as - (roads, ports, the harbours, system of irrigation, electricity and marketting and trade institutions).

2.2.6.2. Transportation

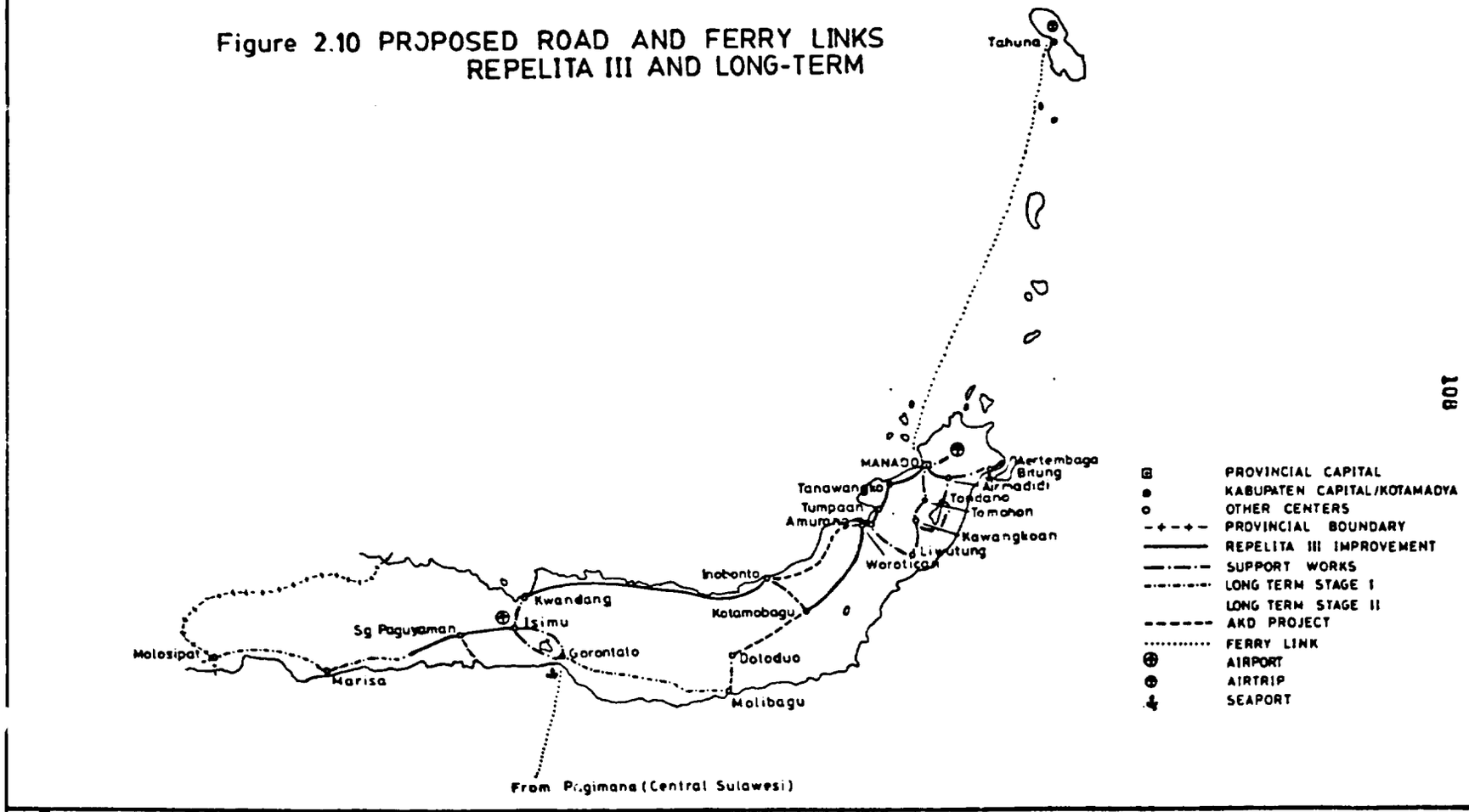
The total length of roads in the Province is 5380 km. Maintenance around 4000 km of roads are under the responsibility of Kabupaten; 624.91 km are under that of Central - Government; 3131 km are under that of the provincial government and the remaining are under that of village/districts.

The main road of the Province, as shown in map of Figure 2.10, connects Bitung - Manado - Kawangkoan - Amurang-Inobonto - Gorontalo - Marisa. This is part of the so called 'Trans Sulawesian Road' connecting Manado and Ujung Pandang.

The Trans Sulawesian Road has been constantly utilized eventhough further completion is being implemented. Not all the roads and bridges have improved entirely. Details of the quality of main roads in the Province are available in Table 2.40. Figures in the table refers to the length and quality of road in 1982 and early 1984, the first grade asphalted road will be covering Bitung - Manado - Kawangkoan and Tumpaan, Amurang, Inobonto, Lolak and Maelang, in Bolaang Mongondow. In 1984/1985 improvements of Isimu - Gorontola and Isimu - Kwandang roads are to be completed.

The Province, as shown in Figure 2.11, is mostly sur - rounded by sea. The most important towns are located at its

Figure 2.10 PROPOSED ROAD AND FERRY LINKS REPELITA III AND LONG-TERM



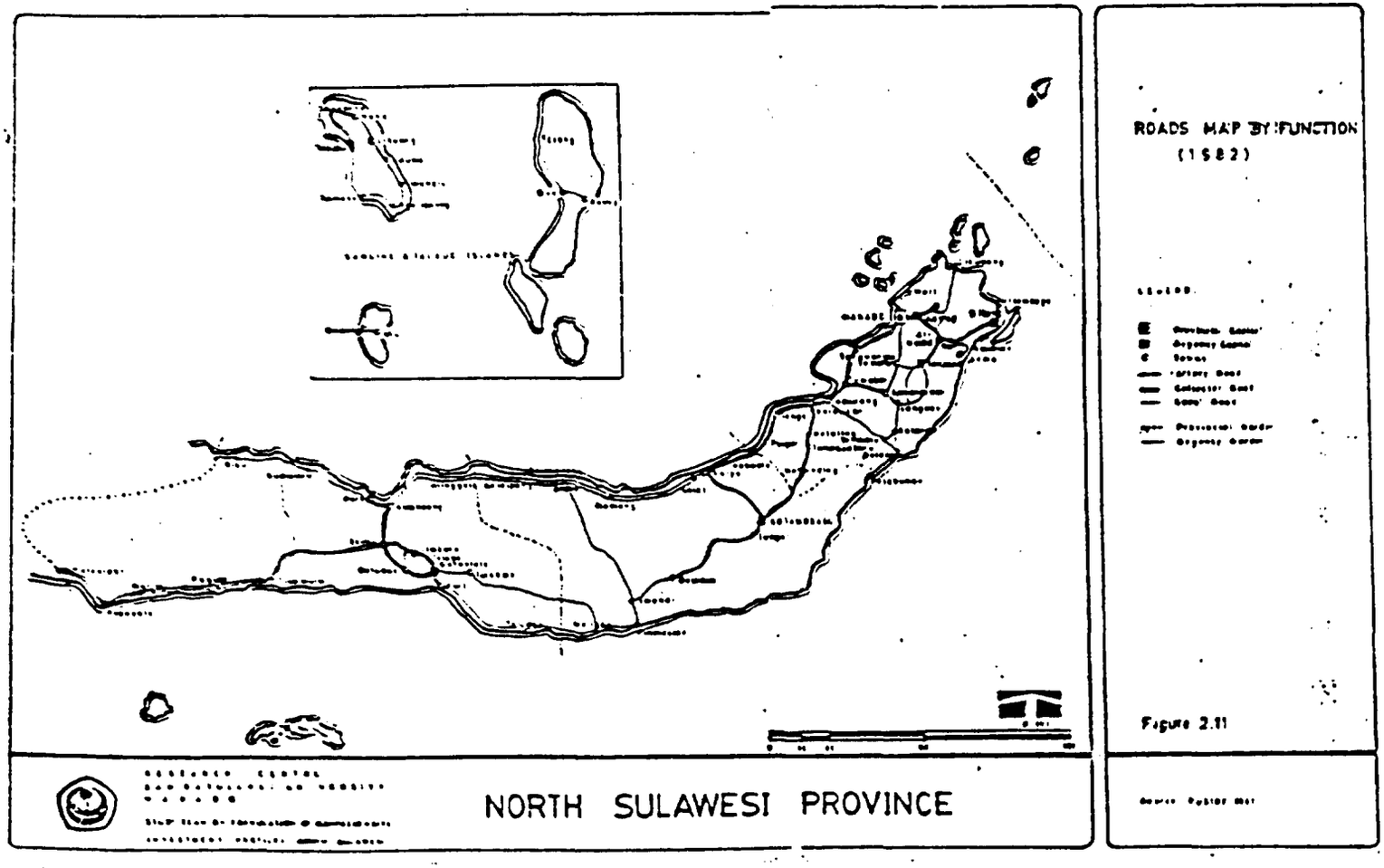


Figure 2.11

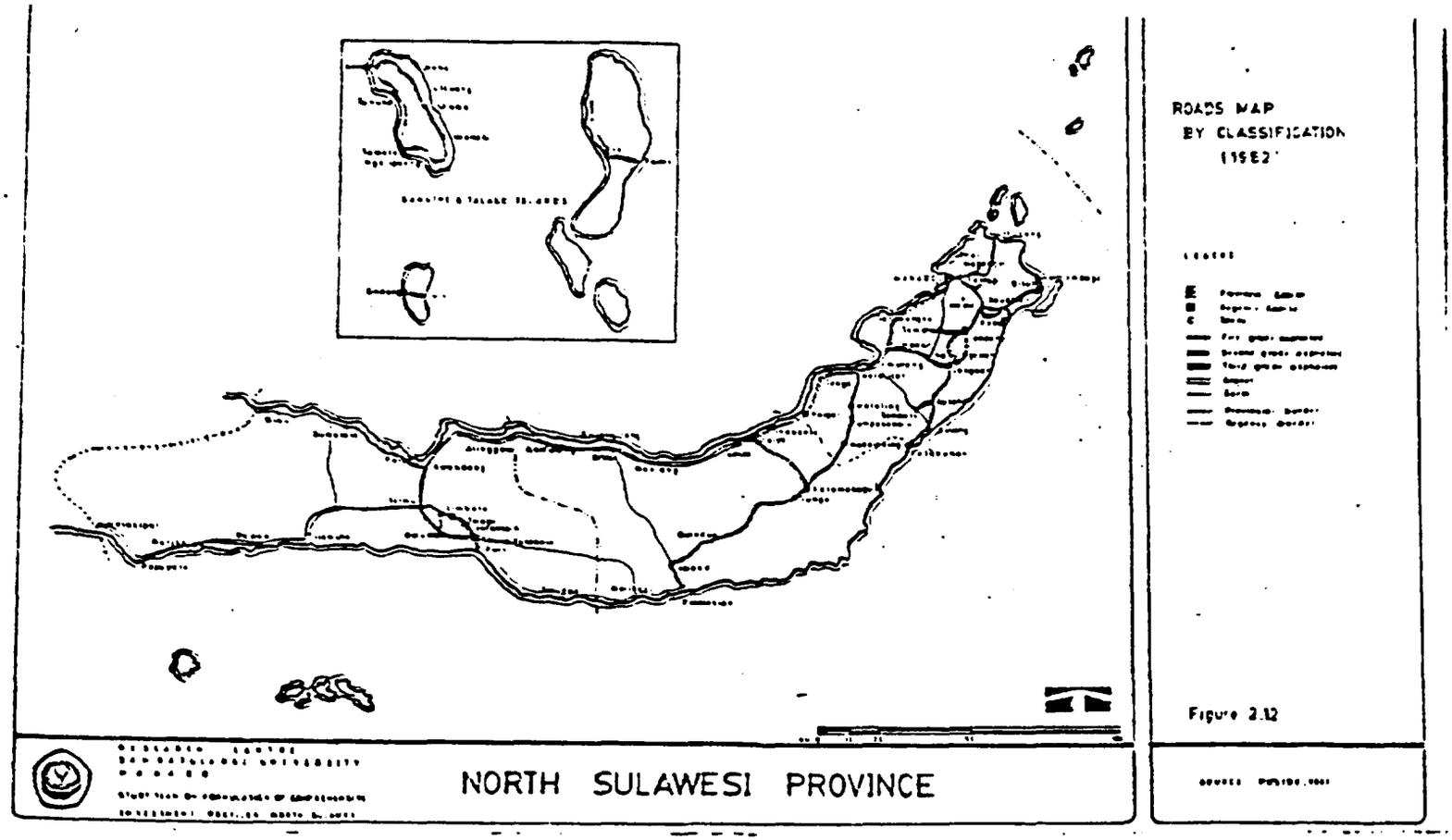

ROADS MAP
BY CLASSIFICATION
(1982)
NORTH SULAWESI PROVINCE
Figure 2.12

Table 2.40.

Lenght of Road by Types of Construction in North Sulawesi, 1982

No.	Segments	Road construction				
		First Aspalth	Second Aspalth	Third Aspalth	Gravel	
1.	Marisa - Isimu	-	-	46,50	86,37	-
2.	Isimu - Batudaa	-	-	14,25	-	-
3.	Batudaa - Gorontalo	-	-	14,25	-	-
4.	Gorontalo - Limboto	-	-	15,12	-	-
5.	Limbboto - Isimu	-	-	16,00	-	-
6.	Isimu - Kwandang	-	-	31,73	-	-
7.	Kwandang - Kaiya	-	-	-	210,70	-
8.	Kaiya - Kotamobagu	-	-	38,00	-	-
9.	Kotamobagu-Worotican	-	98,76	-	-	-
10.	Worotican-Kawangkoan	-	7,20	36,66	-	-
11.	Kawangkoan-Tomohon	-	-	19,50	-	-
12.	Manado - Tomohon	21,60	-	-	-	-
13.	Manado - Kairagi	-	-	1,40	-	-
14.	Kairagi - Mapanget	7,60	-	-	-	-
15.	Kairagi - Airmadidi	-	-	13,60	-	-
16.	Airmadidi-Kauditan	-	-	8,84	-	-
17.	Kauditan-Aertembaga	-	-	20,46	-	-
18.	Kauditan-Airmadidi	-	6,23	-	-	-
19.	Kauditan - Kema	-	-	4,96	-	-
20.	Airmadidi-Tondano	-	-	20,06	-	-
21.	Tondano - Kawangkoan	-	-	38,48	-	-
22.	Tondano - Tomohon	-	-	10,20	-	-
23.	Worotican - Kaiya	-	15,00	69,30	-	-
24.	Kwandang-Pel.Kwandang	-	-	2,39		-
25.	Gorontalo-Pel.Gorontalo	-	-	[illegible]	-	-
26.	Gorontalo-Tulabolo	-	-	26,00	-	-
27.	Kotamobagu-Doloduo	-		62,00	-	-
28.	Tahuna - Naha	-	-	6,50	15,50	9,00
29.	Tahuna - Likuang	-	-	15,00	-	-
30.	N a h a - Likuang	-	-	4,00	-	-
31.	U l u - [illegible]	-	-	-	12,00	-
32.	[illegible] Undong	-	-	10,00	-	-
[illegible]	[illegible]losipat-Marisa	-	-	-	109,70	-
34.	Tamako - Likuang	-	-	2,50	56,00	31,50
35.	Tahuna - Tamako	-	-	15,00	15,00	-
36.	Manado-Tanahwangko-Tumpaan	-	-	53,00	-	-
	T o t a l :	29,20	127,19	618,70	505,27	40,50
	P e r c e n t a g e :	2,21	9,63	46,84	38,25	3,07

Source : Direktorat Tataguna Tanah, (1982).

coastal areas; Hence, sea transportation is vital, connecting Java by either sea or air transportation. In adition , the port of Bitung is important for its economic activity in the Northern Part of East Indonesia.

The Government of Indonesia established 4 (four) main (export/import) harbours. The ports of Tanjung Priok in Jakarta; of Tanjung Perak in Surabaya; of Ujung Pandang in South Sul·wesi; and of Belawan in North Sumatra. The port of Bitung has been considered as the main harbour, however, under certain circumstances, export is being undertaken directly from the Bitung port. Though the Trans Sulawesian - Road in the province has not been entirely improved, fre - quency of trucks and buses ('mini buses') connecting Marisa - Bitung has been increasing. This results in increasing amount of goods supplied from Gorontalo and Bolaang Mongondow to Manado.

The offshore island of Kabupaten Sangir Talaud presents a challenging problem in terms of planning future waterborne passanger services. The Kabupaten consists of a number of islands scattered over a 60 000 sg km area of the Sulawesi-Sea to the Northeast of Manado/Bitung.

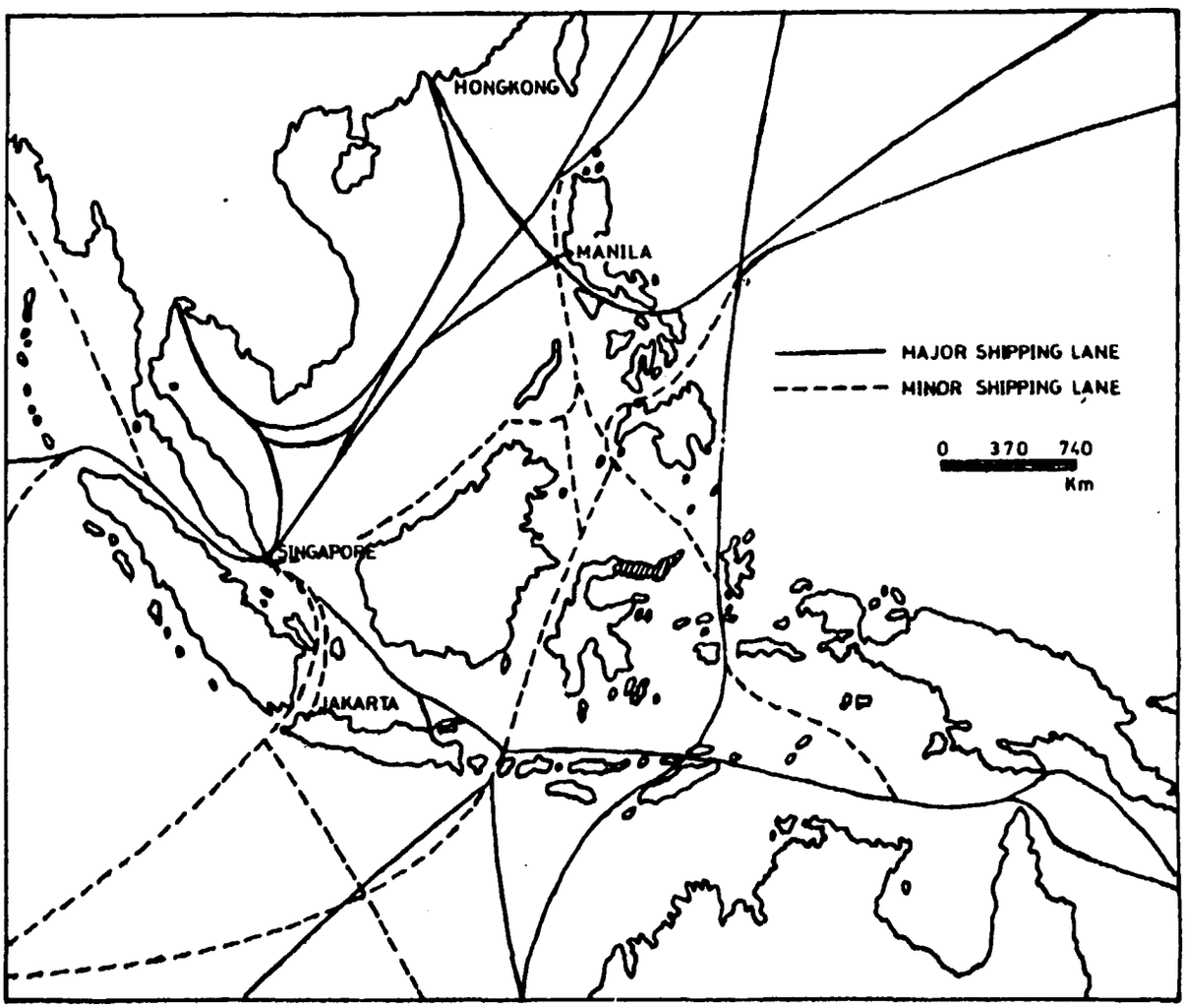
With respect to communication between the provinces of North and Central Sulawesi, SRDS (1979) proposed to strengthen the ferry services from Gorontalo South across the Gulf of Tomini to Pagimana in Kabupaten Luwuk, in Central Sulawesi.

Figure 2.13 provides some insights on the overall sea transportation network and the position of the province therein. Based from the network, inefficiency for the province to undertake exporting activities via the main ports input

FIGURE 2.13

MAIN INTERNATIONAL SHIPPING LANES

IN SOUTH EAST ASIA



RESEARCH CENTRE-UNSRAT-CIPs

ADOPTED FROM SRDS 1979

into evidence. The port of Bitung is located in the minor - shipping line which meet major international shipping lines in the Pasific. Its location is in a strategic position , being in the centre of the lanes in the Pasific.

The Province has two main airports, Sam Ratulangi in Mapanget (near Manado) and Djallaludin in Gorontalo. Sam Ratulangi airport has a runway for DC 9. At present a number-of airlines has landed at the airport. GIA (Garuda Indonesia Airways; DC 9 aircrafts) connecting Manado - Ujung Pandang-Jakarta twice a day; Mandala Airlines (Electra airafts) connecting Manado - Ujung Pandang - Surabaya; Merpati Airlines (Electra aircrafts) connecting Manado - Gorontalo - Ujung Pandang - Jakarta; Manado - Tahuna (small aircrafts); Manado - Ternate and Ambon (Electra); Bouraq Airlines (Electra) connecting Manado - Gorontalo - Palu - Balikpapan - Banjarmasin - Jakarta, and also Manado - Ternate - Ambon. As dessribed above Manado has excellent connecitons with the rest of Indonesia by means of air transportation.

The other ports in the province are Gorontalo, Manado, Inobonto, Tahuna and Amurang. Are main features of these - ports are shown in Table 2.40.

The roles played by the ports of Bitung, Gorontalo and Tahuna are expanding. While others, tend to decline. The increased roles of the Gorontalo port may be due to its location relatively closer to Bitung than that of Inobonto . The declining Inobonto importance of Port is attributed to the fact that the people found cheaper less riskif to tra - vel by roads (i.e. via the Trans Sulawesi) instead of ferry /boats. This also applies to reasons for the declining im - portance of port Amurang. The increased importance of port-Tahuna may be attributed to the establishment of port Dagao

Table 2.41

Number of Ships, Cargos, Passengers Through the Port of Bitung, Manado, Amurang, Gorontalo, Inobonto, and Tahuna, in North Sulawesi, 1979-1980

Ports	Years			
	1969	1974	1979	1982
A. Dry Cargo (tons)				
Bitung	324.861	587.616	1.040.366	1.464.559
Manado	87.050	22.929	31.824	30.668
Amurang	-	5.234	2.485	2.777
Gorontalo	39.881	67.739	197.848	107.995
Inobonto	-	16.141	3.102	468
Tahuna	10.022	29.894	40.948	33.728
B. Passengers				
Bitung	41.512	25.085	58.432	35.651
Manado	-	11.164	66.402	90.142
Amurang	-	10	36	-
Gorontalo	6.455	12.903	30.572	25.529
Inobonto	-	1.342	569	-
Tahuna	-	14.748	80.637	47.962
C. Number of Arrivsl/ Departuring Ships				
Bitung	2.304	1.862	2.459	2.444
Manado	483	1.218	1.215	1.166
Amurang	-	98	73	27
Gorontalo	448	666	1.357	924
Inobonto	-	269	90	44
Tahuna	1.090	1.437	2.350	1.005

Source : Compiled from SUA (1983).

as an important fishing resort mentioned earlier.

In Kabupaten Bolaang Mongondow, Tg. Siriman Koeya in Bolaang Uki Bay is considered as the most favourable site for regional port development. It is the only natural all -weather harbour available on the north coast of the Province. SRDS (1979) recommended to replace Port Inobonto - with 'Labuan Uki' Bay. In the Third Five Year Development Plan, Labuan Uki as Port have been undertaken. However , statistics indicated that the port has not been made full use of. According to CIDA (1984), most cargos coming from Bolaang Mongondow to Manado are transported by trucks rather than by boats. Possibly, the port would be in full - use of irrigated lands of Dumoga and Torout Districts accompanied by improvements in the cement production of Lolak District.

Communication fascilities have been remarkably im - proved since the beginning of the Second Five Year Plan. The Province, i.e. Manado, can now ready all parts of the world through telexes and telephones. However some difficulties are still being faced with telephone communications between Manado and the rural areas. In 1977 there were only 2949 households/firms/offices having telephones . In 1982 the number increased nearly doubled i.e. 5434.50, of the approximate 400 000 hhs in the province.

Limitations in telephone facilities have been partly overcome by improvements in radio and TV services. Radio and TV have now become usual images in rural areas where- people actively follow the media. The number of TV sets amounted to 5389 in 1977 and in 1982 the number increased to 41 744.

Table 2.42.

Distribution of Electrical Generators

in North Sulawesi

	Source of Energy	Number of Units	Capacity (KW)
Minahasa	Hydro Power/Oil	9	25 060
Manado	Micro Hydro and Oil	14	2 200
Gorontalo	Oil	12	3 515
Kotamobagu	Oil	12	2 314
Tahuna	Oil	9	1 494

Source : Bappeda (1981).

In 1981, approximately 59,932 households (15 per cent of the total households) had access to electricity. The availability of electricity is undertaken by the National Electricity Company (PLN, Perusahaan Listrik Negara). Kindly see the distribution of electrical Generator in the Province on Table 2.42 below. (the following page).

Table 2.42 shows that in 1980, 73 per cent of electricities are produced by hydro powered generators, while 27 per cent have been produced by oil powered generators. Acces of oil is an asset to Indonesia but as the oil production tend to decline in the near future, one has to attempt in finding other sources of energy for elctricity. So far, no officially published information on quantitative potential energy sources in the province is available, that of the geothermal energy in some rivers, mentioned earlier. In fact, a rural electrification program to be carried out in the Forth Five Year Plan, would tend to rely on oil as a main source of energy for parts of North Sulawesi, except Minahasa.

Chapter 3

POPULATION AND MANPOWER

3.1. Introduction Remarks

According to Table 1.1. the population in 1981 was 2 164 039. The least densely populated is in Kabupaten Bolaang Mongondow while the most densely populated in Gorontalo. A better view on population distribution on various districts is shown in Figure 3.2. A comprehensive review on the population of North Sulawesi has been done by Jones (1977), Tan (1983) and Kandou (1982). The following overview deals primairly on those reviews.

3.2. Population Growth

According to Kandou (1983) during the period of 1961 - 1971 the average population growth annual rates was 2.75 per cent, an increase of 2.1 per cent for that of Indonesia. During 1971 - 1980 the average population growth decreased to 2.34 per cent, being less than 2 per cent to that of Indonesia. According to BPS (1978), the average annual growth rate in of 1979 - 1983 was 1.99 per cent. From the above description one can conclude that population in the province grew more rapidly compared toIndonesia as a whole.

Kandou (1983) further pointed out that approximately 80 per cent of the population are in the rural areas, while the remaining 20 per cent are found in urban areas. Some facts on the annual population growth rate in urban areas can be seen in Table 3.1. It indicates that the average annual population growth rate in Gorontalo and Bitung are lower than that of the whole Province. The average annual population

Table 3.1

Population Trends in Selected Towns

Town	Years					Average
	1979/80	1980/81	1981/82	1982/83	1983/84	
Manado	162.350	160.002	169.741	173.471	177.288	2,61
Gorontalo	70.354	71.937	73.552	75.173	76.828	2,23
Bitung	58.120	59.428	60.764	62.102	63.468	2,25

Source : Kandou, (1983).

Note : Population of Tomohon as asked by UNIDO (TOR) can not be reported due to unavailability of data.

growth rate of Manado is 2.61 per cent, as it is the centre of administration, trade and general education activities . In Bitung the annual growth rate ranks second highest, i.e. 2.25 per cent per annum, and convect is in Gorontalo, being 2.23 per cent.

Table 3.2, provide further view on the population an - nual growth rate for variuos sub-regions. The Table indicates that differences in population growth rates within the province is dominant. The fact is that there is relatively high out-migration rate from Kabupaten Sangir Talaud and Municipality of Gorontalo, to the Municipality of Manado and the Kabupaten of Minahasa.

Table 3.1 and 3.2 show that, annual population growth rate in Bitung has significantly decrease during the past 4 (four) years.

3.3. Population Projection

Population trends of the province up to 1990 and 2000 have been undertaken by several authors, i.e. Jones (1977), Kandou (1983) and Tan (1983). Their projections are specially conducted for this specific. Some of the projections are shown in Table 3.6 Jones's adopted three kinds of assumptions in this projection, i.e. annual growth rates ranging from 1.9, 2.3 and 2.7 per cent during the period of 1986 - 1991. The resulting projection of population in 1991, are the following 2,769,347 , 2,936,201 and 3,026,050 for the assump - tion of low, medium and high rates of growth.

Tan criticed the above projection from the point of data quality. According to Tan (1983), Jones' projection - are based on out-of-date set of population data in mid

Table 3.2

Annual Population Growth Rate
by Sub-Regions of North Sulawesi

Sub-Region	Population			Annual Growth Rate (%)	
	1961	1971	1980	1961-1971	1971-1980
Sangihe Talaud *	194.253	229.395	238.433	1,68	0,43
Minahasa *	451.924	556.236	677.342	3,15	2,21
Bolaang Mongondow *	150.217	211.359	299.696	3,47	3,96
Gorontalo *	312.370	408.339	502.695	2,72	2,34
Manado **	129.912	169.943	217.159	2,72	2,76
Gorontalo **	71.378	82.182	97.628	1,42	1,93
Bitung ***	-	60.217	82.431	-	3,55
T o t a l	1.310.054	1.717.671	1.115.384	2,75	2,34

Source : Bappeda

Note : * Kabupaten
** Municipality
*** The Adminstration Town

1970's and failed to adequately account of one government commitment to succesfully implement the family planning - program. By taking account of such a government commitment and utilising a more up-to date population data (the 1980 census), Tan arrived at a figure of 2,443,613 in 1990. The figure is far below 2,769,347 estimated by Jones for the same year. (See Table 3.7 for the projection)

3.4. Migration and Urbanisation

Those who migrate, as indicated in Table 3.3 , are those who are mainly in an age group of labour force category (i.e. between 10 - 60 years of age), and those whose ages are in 0 - 4 years (this group must have been children of those who migrated). Among the 10 - 60 year migrants , proportion of those migrants within the age groups of 10 - 19 and 25 to 39 years, are relatively higher than those of the remaining groups.

The pattern of migration within the province is as follows : (i) Migrants from Sangir Talaud to Minahasa working mainly as coconut climbers labours, and to some extent for education ; (ii) Migrants from Minahasa to Bolaang Mongondow seeking livelihood by buying lands for farming ; (iii) Migrants from Gorontalo to the Municipality of Manado working as petty (small) traders and middlemen.

In comparison to the total population of the province however, the number of migrants implied from Table 3.3 are not much. During a period of 1971 to 1986 estimated migrants are only 47,532 and 35,537, for male and female migrants respectively. Overall, the number of migrants however does not seem to have significanly increased from time to time, i.e. rate of inter-sub region migration does not increase

Table 3.3

Estimated number of Migration up to 1986

Ages	Male				Female				Total
	1971-76	1976-81	1981-86	sub.total	1971-76	1976-81	1981-86	sub.total	
0 - 4	2.569	2.520	592	5.681	2.527	2.473	434	5.434	11.115
5 - 9	547	556	1.031	2.134	401	409	1.296	2.106	4.240
10 - 14	1.004	1.011	1.436	3.451	1.261	1.270	1.001	3.352	6.803
15 - 19	1.406	1.410	850	3.666	978	982	752	2.712	6.378
20 - 24	826	829	1.194	2.849	730	734	1.241	2.705	5.554
25 - 29	1.151	1.157	2.668	4.976	1.200	1.205	1.373	3.778	8.754
30 - 34	2.561	2.576	2.165	7.302	1.320	1.328	1.168	3.816	11.118
35 - 39	2.064	2.079	1.779	5.922	1.118	1.125	714	2.957	8.879
40 - 44	1.679	1.692	1.211	4.582	680	685	477	1.842	6.424
45 - 49	1.127	1.137	658	2.911	451	454	290	1.195	4.106
50 - 59	276	289	232	788	423	429	363	1.212	2.000
60 - 64	199	199	75	473	319	322	235	876	1.349
65 - 69	60	60	218	338	194	197	471	862	1.200
70 - 74	155	158	67	380	355	361	254	970	1.350
75 +	152	157	243	552	200	205	128	533	1.085
Total	16.375	16.426	14.731	47.532	12.928	12.449	10.660	35.537	83.069

Source : Bappeda, (1980).

in similar to the rate of growth of population.

According to the World Bank (1982), annual growth rate of population in urban areas in Indonesia is averagely 4 per cent for the period of 1970 - 1980. The figure is a little bit higher than those shown in Table 3.1, meaning that urbanisation in the province is not quite prevalent. Kandou (1983) indicates that relatively low rate of urba - nisation in the province is likely due to sufficient em - ployment availability in rural areas especialy during clove harvesting. Furthermore public project undertaken in the province have mostly been located in rural areas, i.e. road, irrigation, and other rural development projects. In addition industrial sector has not yet developed as intended in Manado and Bitung.

That urbanisation is relatively lower in the province can also supported by the fact market wage rates in rural areas the province is considered high, i.e. averagely, Rp 2,000 per diem for labours, i.e. equivalent to 7 kg of rice . Whilst in Java is about Rp 1,000 per diem. In 1962 the market wage rate in Minahasa was equivalent to only 5 kg rice.

3.5. Transmigration

Provincial planning documents give higher priority to solving local population problems through resettlement than to transmigration, though to date the latter has, not surprisingly, been the larger and better funded program. Three early transmigration projects were set up in the 1950's in the Gorontalo regency, followed by two more in the early 1960's in Bolaang Mongondow for victims of a volcanic erup tion in Bali. Only 10,000 settlers were moved into the pro vince during the first four year of REPELITA III with the

completion of the Marisa project in Gorontalo district scheduled. Except for Marisa, transmigration project are concentrated in two fertile, irrigable plains, Dumoga in Bolaang - Mongondow district and Paguyaman in Gorontalo district. In Dumoga, irrigation system was begun in 1979.

As early as 1905 the colonial government sponsored the relocation of setlers from the Tondano area to the southern-part of Minahasa regency. Government blessing, if not actual sponsorship, was also given to the formation of subsequent in Gorontalo by people from same area. In the post revolution - years the Bureau of National Reconstruction resettled groups of demobilized Minahasan soldiers in Bolaang Mongondow. During REPELITA I, 175 fam. lies were resettled from the densely populated and volcano - prone Sangir Talaud Islands to Bolaang Mongondow. During REPELITA II an average of 135 families per year were resettled, while subsantial increases were targeted for REPELITA III. One notable feature of land se - ttlement in North Sulawesi is the attempt to link transmigration with resettlement under the so - called Tripartial system. So far, however, this has involved only the physical location of both types of project on adjacent land, with little in the way of over all integrated planning.

Despite the implementation of the transmigration program

described above however, according to Babcock and Cummings (1984), net out migration in the province is positive. In other words, more people in the province migrated to other-islands than those come in to settle in the province. The - location most North Sulawesi people migrated to area Jakarta and East Java. The positive net out migration appear to conform with a view that development process taken places-in the outer islands is not attractive far those people in the densely populated islands (Java and Madura and Bali) to migrate in from the Islands.

In addition, the choice of Jakarta as the direction of migration, according to Babcock and Cummings (1983) was a consequence of relatively better Education in the province-and propensity of the migrants to seek working in bussines-and government services. On the other hand, spontaneous migration from Ujung Pandang to Bitung and coastal areas in the province, working mainly as fishermen.

3.6. Labour Force and Employemnt

Labour force is defined here as a segment of population whitin an age groups of 10 - 60 years who are working or seeking employment.

Time series data on labour force are shown in Table 3.3.

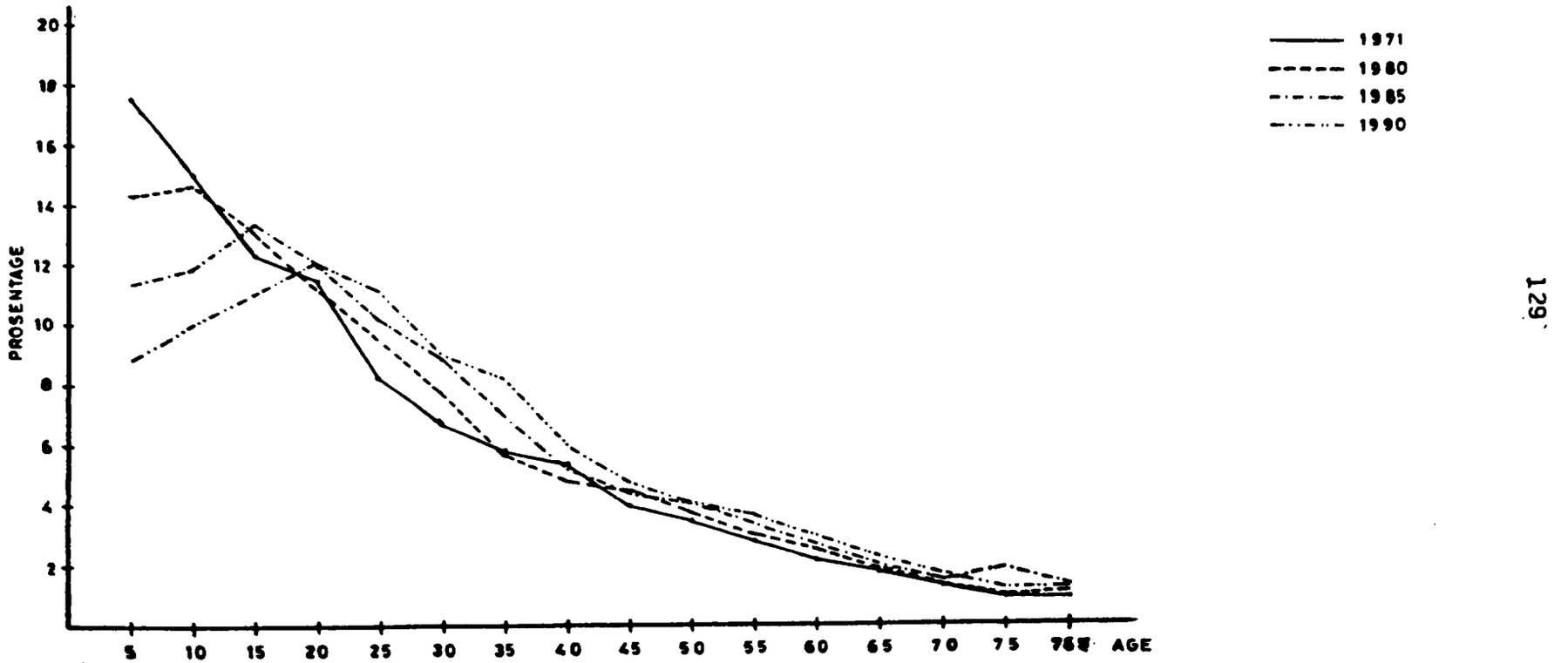
Table 3.4
Distribution of Labour Force in North Sulawesi
1971 - 1983 .

Sectors	Years							
	1971	1974	1978	1979	1980	1981	1982	1983
Agriculture	66.62	63.44	65.25	66.26	66.21	66.16	.66.11	66.06
Mining	0.05	0.09	0.05	0.06	0.06	0.05	0.66	0.06
Manufacturers	4.73	6.76	8.04	4.71	4.72	4.72	4.72	4.72
Electricity and Waters	0.23	0.47	0.22	0.24	0.24	0.24	0.24	0.24
Constructions	1.73	1.93	1.68	1.70	1.70	1.69	1.68	1.68
Trade	5.15	6.10	5.07	5.18	5.19	5.19	5.20	5.20
Transportation	2.18	2.92	2.12	2.17	2.17	2.16	2.15	2.22
Finance	0.24	0.19	0.23	0.24	0.23	0.23	0.23	0.23
Service	12.19	14.41	12.56	12.83	12.85	12.87	12.90	12.92
Others	6.15	3.69	4.76	6.61	6.64	6.68	6.72	6.75
Total (%)	100	100	100	100	100	100	100	100
Total Labour Force	488,590	523,474	640,183	639,116	660,713	683,123	706,232	730.212

Source : Compiled From BAPPEDA (1980, 1982) .

FIGURE 3.1

AGE COMPOSITION OF THE POPULATION OF NORTH SULAWESI



It is shown in table that approximately to third of labour force in in the province are constantly enggaged in agriculture since 1969, and the proportion of the labour force enggaged in various sectors remain- constant over time. The phenomena strengthens the hypothesis - that a structural economic transformation did not take pla- ce during the past three-Five Year Development Plans.

According to Tan 1983 during the Fourth - Five Year De- velopment Plan, thanks to a succesfull family planning prog ram, annual growth rate of population in the province dec - reased from 2.31 per cent in 1982/1983 to averagely only 1.3 per cent far lower than that estimated by Jones (1977) for the lowest population growth rate of annually, 1.9 per cent. However, according to Tan (1983) man power increase faster- than theincrease in population growth. This is because of relatively high birth rate in mid 1970, who enter the man - power age group in the mid 1980. Further description of Tan's work is concisely described in Figure 3.1.

Tan estimated that in 1980 a number of population with in the age group of 10 - 60 years are 1,430,204, i.e: 60.70 per cent of the total population. In 1985 the population - increase to 72.89 per cent, and in 1990, it increased to 76.57 per cent. The average annual rate of growth of the labour force during 1984 to 1990 is 2.37 per cent compared- to the annual population growth of only 1.3 per cent per -

annum.

In summary the estimated number of labour force according to Tan (1983), are as follows.

Table 3.5

Population and Man Power

1971 to 1990

	Years			
	1971	1980	1985	1990
Population	1,716,671	2,115,304	2,294,560	2,443,613
Man power	1,155,322	1,430,204	1,672,500	1,871,059
	(67.0)	(67.6)	(72.9)	(76.6)

Source : Tan (1983)

Note : Figures in perentheses are on percentage basis

Assuming that employment rate is held constant, then, Table 3.4 suggests that each year employment rate increase 2.3 per cent, i.e. approximate 1,500 employment per year.

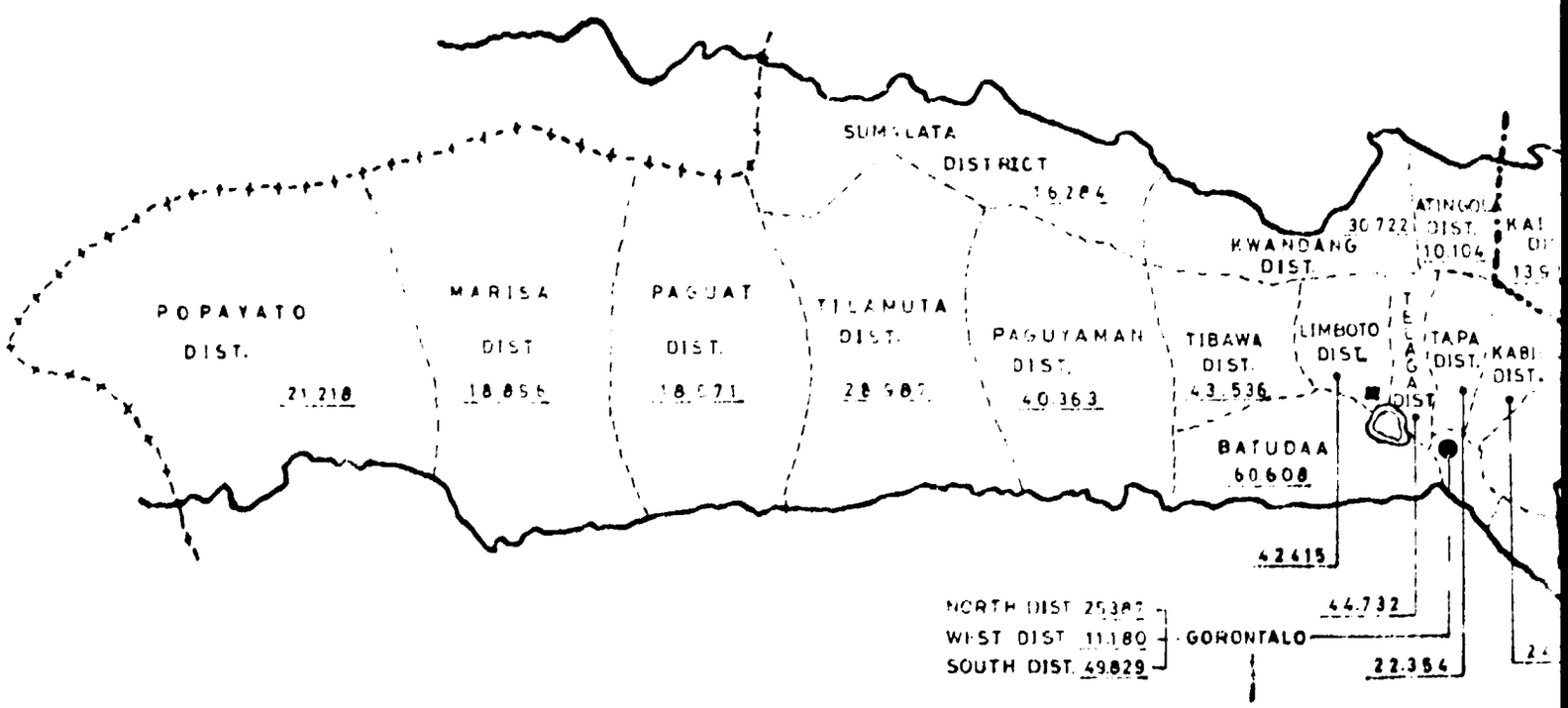
Kanwil Perdagangan (1983) estimated an increase in population of 2.2 per cent per annum during the Fourth Five Year Plan. On the other hand, corresponding labour force - increased faster at a rate of 2.2 per cent resulting in

approximately 866.920 labour force in 1990, or 93,791 higher than that in 1984. Employment available during the period is estimated at only 49,824 labours, i.e. 43,967 workers (i.e. 5.07 per cent) would be totally unemployed.

The rate of employment of 5.07 shown above is relatively low. However, one needs further examine employment - structure is the province, especially that of 'half and/or disquised unemployment'. Kanwil Tenaga Kerja (1983) indi - cated that in 1981 approximately 36 per cent of employed - workers were considered as 'half employed', i.e. working - less than 40 hours a week. If the structure continue to take place, the proportion of 'half employed' is estima - ted to increase to 312,091 in 1990.

If the unemployment rate is relatively higher, why then the market wage rate in the province is relatively - higher than that of the national rat? There has not been intensive studies undertaken to resolve this conflicting - issue. However, one possible reason is that of a strong evidence in seasonal employment related to clove harvesting and reluctance of labours to undertake jobs in harvesting (picking up) coconuts. Furthermore, because of relatively-high level of education, educated workers are quite reluctant to undertake farm works. These workers have a propensity to find works in bussiness and/or government services.

Figure 32 DISTRIBUTION OF POPULATION BY DISTRICT
1980

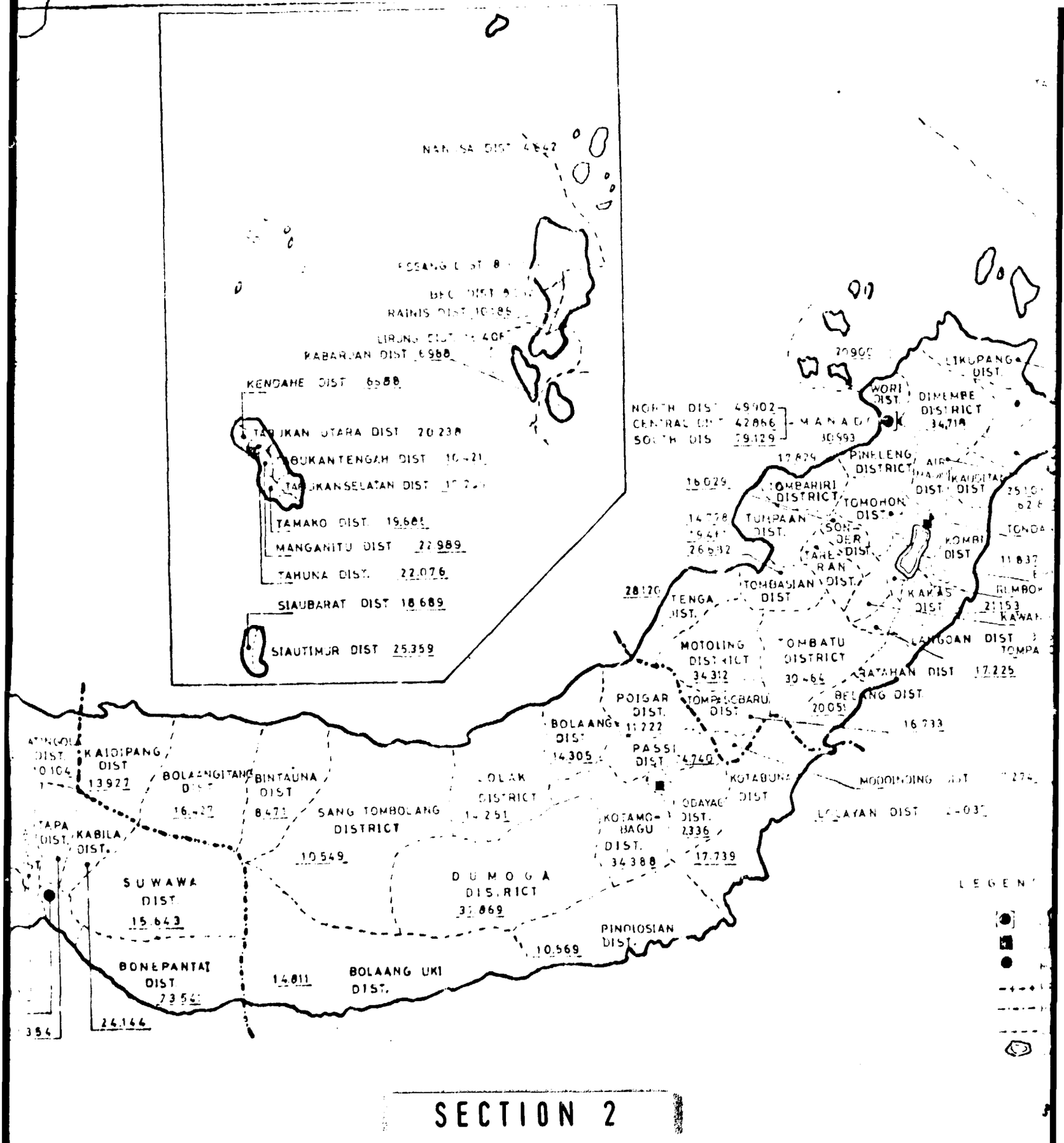


SECTION 1

RESEARCH CENTRE
SAM RATULANGI UNIVERSITY
MANADO

STUDY TEAM ON FORMULATION OF COMPREHENSIVE
INVESTMENT PROFILES, NORTH SULAWESI

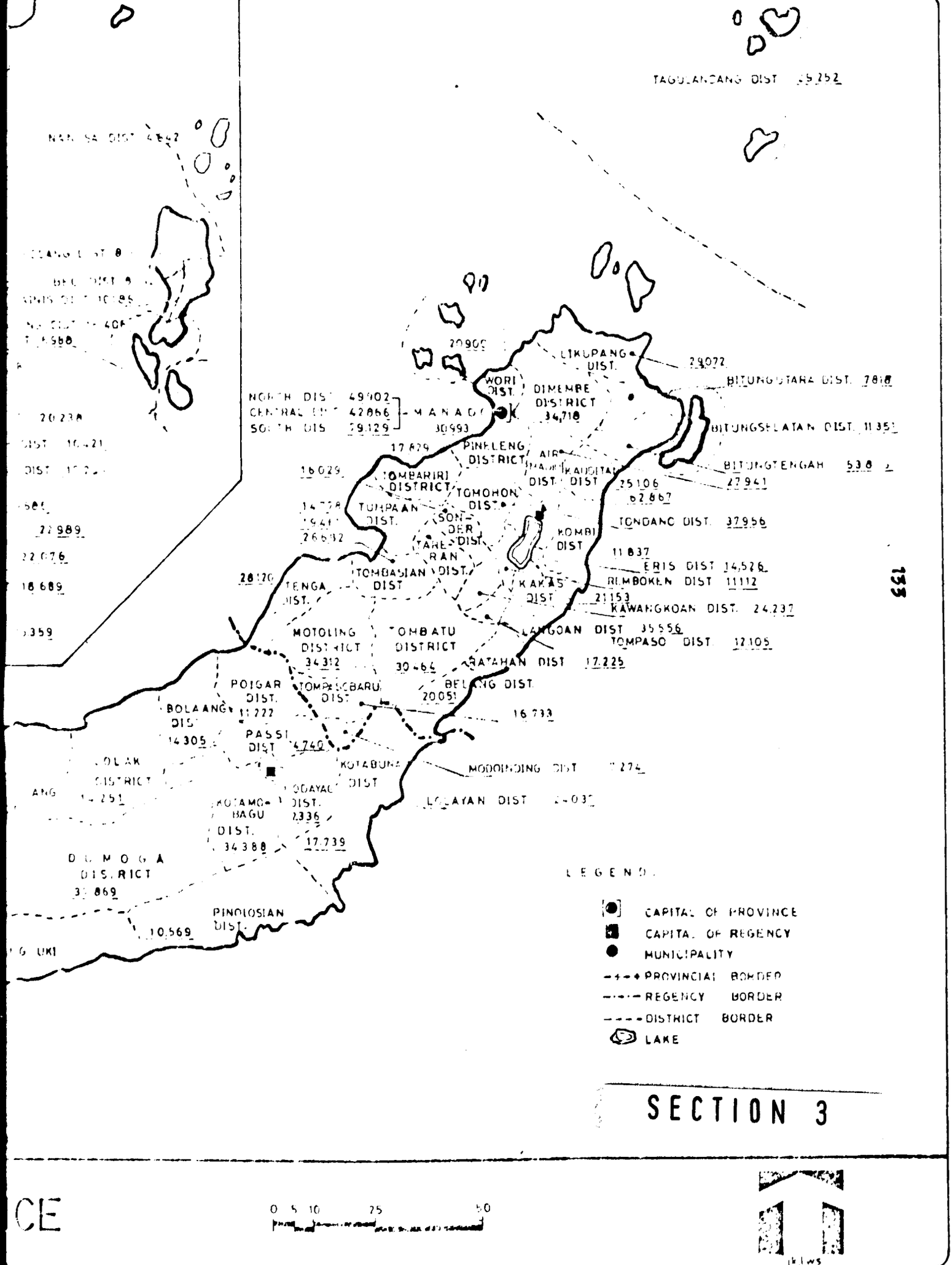
NORTH SULAW



SECTION 2

JLAWESI PROVINCE

0 5 10 25 50


TAGULANDANG DIST 15252
NAN SA DIST 4662
20905
LIKUPANG DIST.
29072
BITUNGUTARA DIST. 7818
NORTH DIST 49402
CENTRAL DIST 42866
SOUTH DIST 29129
MANADO
30993
WORI DIST.
DIMEMBE DISTRICT
34,718
BITUNGSELATAN DIST. 11351
17829
PINELENG DISTRICT
AIR MADIDI DIST.
KAIDITAN DIST
BITUNGTENGAH 530
16029
TOMBARIRI DISTRICT
TOMOHON DIST.
25106
62867
27941
14728
1941
26632
TOMPAAN DIST.
SONDER DIST.
TARERAN DIST.
KOMBI DIST
TONDANO DIST. 37956
11837
ERIS DIST 14526
REMBOKEN DIST 11112
28120
TOMBASIAN DIST
TENGA DIST.
KAKAS DIST
21153
KAWANGKOAN DIST. 24237
MOTOLING DISTRICT
34312
TOMBATU DISTRICT
30464
LANGOAN DIST 35556
TOMPASO DIST 12105
RATAHAN DIST 17225
BELANG DIST.
20051
16733
POIGAR DIST.
11222
TOMPASOBARU DIST
BOLAANG DIST
14305
PASSI DIST
4740
MODOINDING DIST 7274
KOTABUNA DIST
LOLAYAN DIST 24031
MODAYAG DIST.
2336
KOTAMOBAGU DIST.
34388
17739
DUMOGA DISTRICT
35869
PINOLOSIAN DIST.
10569
LEGEND
CAPITAL OF PROVINCE
CAPITAL OF REGENCY
MUNICIPALITY
PROVINCIAL BORDER
REGENCY BORDER
DISTRICT BORDER
LAKE
0 5 10 25 50

SECTION 3

However, because these kind of jobs are limitted, the workers then migrate to Jakarta and other parts of Indonesia.

3.7. Concluding Remarks

During 1961-1971 population growth of the Province was averagely 2.75 per cent per annum. In 1971-1980 the rate decreased to 2.1 per cent. For the coming 5 to 10 years, several estimates have been undertaken. These estimates are summarised in Table 3.5. As shown in the table population of the province in 1990 varies, starting from the lowest - of 2,443,613 to the highest 3,026,050. The various estimates implies that one should not adopt one estimated figure in foreseeing the future demand for good and services.

Capacity of the agricultural sector to provide more - employment is likely limitted. Two-third of labour force - enggaged in agriculture means that per ha of arable land- on the province provides employment to only four labourers. Such a difficulty has been foreseen by the government. according to Kanwil Departement Tenaga Kerja (1983) annual population growth rate of the province during the Fourth-Five Year Development Plan is averagely 2 per cent per annum and the annual labour force growth rate is averagely 2.2 per cent. This office estimates that at the end of the plan, i.e. 1990 there will be 866 920, an addition of 93,791

Table 3.6

Projection of Population

For North Sulawesi (1980-1990)

Year Estimated	1980	1985	1990
J. Tan,MA., 1983	2.115.384	2.294.560	2.443.613
Richter, et.al., 1983	2.115.384	2.371.262	2.658.092
Jones G.W., 1977 * (UGM),			
High	2.259.713	2.616.543	3.026.050
Medium	2.251.455	2.578.152	2.936.201
Low	2.238.320	2.512.411	2.769.347

* High : Estimated using a rate of growth 3 per cent per year for the period of 1971-1986 and 2.9 per cent per tear for the period of 1986-1991

Medium : Estimated using a rate growyh of 2.9 per cent per year for the periode og 1971-1980 and 2.7 per cent per year for the periode of 1981-1986.and 2.4 per cent per year for the period of 1986-1990.

Low : Estimated using a rate of growth 2.7 per cent per year for the periode of 1971-1981 ans 2.3 per cent per year for the periode of 1981-1986 and 1.9 per cent per year for the period of 1986-1991.

Table 3.7

Age Distribution of Population in North Sulawesi, 1974, 1980, 1985 and 1989/1990

Age \ Year	1971 (%)	1980 (%)	1985 (%)	1989/1980 (%)
0 - 4	17,76	14,33	11.33	8,76
5 - 9	14,98	14,66	11,85	10,54
10 - 14	12,34	13,09	13,37	11,02
15 - 19	11,14	11,12	12,00	12,49
20 - 24	8,24	9,73	10,11	11,18
25 - 29	6,73	7,66	8,86	9,44
30 - 34	5,83	5,70	6,93	8,21
35 - 39	5, 39	4,84	5,17	6,42
40 - 44	3,98	4,47	4,38	4,77
45 - 49	3,46	3,78	4,03	4,02
50 - 54	2,78	3,02	3,37	3,66
55 - 59	2,17	2,35	2,65	3,04
60 - 64	1,84	1,85	2.02	2,32
65 - 69	1,28	1,30	1,55	1,73
70 - 74	0,88	0,97	1,00	1,21
75 +	0,90	1,13	1,25	1,19
Total	100,00	100,00	100,00	100,00
Total Population	1.716.071	2.115.384	2.294.560	2.443.613

Source : Tan (1983); Repelita IV Sulawesi Utara(1984)

compared to that of 1983/1984, in this period, employment available would only be for 49,824; or only 53 per cent of the additional labour supply.

In 1981, the amount of labour force was 722,726 but employment available was only 686 726, i.e. 5 per cent was unemployed. In 1990, those who would be unemployed are 5.07 per cent.

During the past of Three Five Year Development Plans, proportion of labour force enggaged in various sector of economy remain constant. This imply that economic transformation did not take place. Two-third of the labour force remains working in the agricultural sector.

Low rate of urbanisation support the view that the economic transformation did not take place. The low rate of urbanisation implies that meaningful industrial growth in urban areas did not seem to have taken place. This view however does not seen consistent with the evidence that outmigration in Sangir Talaud Islands are quite prevalent. The migrants however, come to Minahasa and Manado, for mostly agricultural employment especially during clove harvesting period, fishing, and to some extent for employment in other sectors.

The average rate of employment is 5 per cent. By examining the pattern of migration described above it can be concluded that rate of unemployment in Minahasa is lowest. The highest is in Sangir Talaud Islands and Gorontalo. The relatively low unemployment in Minahasa is caused by high proportion of school attendance (Bappeda, 1981) and labour requirements per ha of land is relatively higher. This is caused by and system of farming (coconut and cloves) and topography of Minahasa which is mostly hilly where labours can not be easily substituted by others. Labours for coconut and clove harvesting can not yet be replaced by other-equipment and workers are reluctant to do the jobs except-those from Sangir Talaud Islands.

Low rate of employment opportunities available is not industrial sector combined with limits of the agricultural farming to absorb labour surplus may be a strong reason for a positive net out-migration in the province. As shown by Babcock and Cummings (1984) that despite availability of considerable land in Sulawesi certain areas are experien - cing population pressure as indicated by net out-migration and rates of annual growth lower then that would be expected by natural increase. In fact, only one province, Central Sulawesi, experinced a significant net net inflow. Accor - ding to Babcock and Cummings (1983) migrants from North Sulawesi mainly come down to Jakarta. This is partially ex -

plained by their high level of education and their high - propensity to enggage in commercial activity and government services. Both area of activity are highly concentrated in Jakarta.

As a consequence with an increase of labour force faster than population growth estimated during 1984-1990, and combined with relatively slow rate of growth of employment opportunities available, it is reasonable to foresee that pressure on migration to Java may be more evident.

Chapter 4

ECONOMIC OUTLOOK IN 1990

4.1 Introductory Remarks

It has been described in Chapter 2 the supply side of development process in the province and description of the demand side has been illustrated in Chapter 3.For an economic development to sustainly take place, the demand has to be met in such a way so that increase in quality of life, which is the ultimate objective of development policies in Indonesia, can be achieved.

The ultimate objective must be achieved in such a way so that the economic resources can be best utilised. Best utilisation of resources means that the resources are utilised in efficient ways. It is not yet fully known whether the existing resources described in Chapter 2 have been best utilised.

Policy makers as well as investors and common people are always interested in knowing or having some idea on most possible state of a system in the future. Such kind of ideas are needed to assist them in making decisions, i.e. investment decisions.

From the investor stand point such ideas may assist them in choosing the best investment alternatives among several investment opportunities open.

In relation to investment decisions in production, projection of production and demand of good and services under consideration are important. Theoretically, growth in production is simultaneously determined by two market forces, supply and demand forces. Quantities of supply of

and demand for a commodity are simultaneously determined by prices of the commodity. The quantity supplied however, is constrained by resources available which is usually scarce or limitted and the quantity demanded is strongly related to numbers of population.

Scarcity of resources is reflected by its price. The more scarce the resource is the higher the price. Scarcity may be measured as a difference between quasntity supplied and demanded at a given price. Therefore, in order to gain some insights on scarcity of a particular commodity would be, projection of the production and demand of the commodity are necessary.

Projections in both sides (supply and demand sides) would assist an investor in observing what kind of investment to be undertaken and what the best strategy to adopt for. This implies that an investment profile can be reflected by such projections.

4.2 Methodology

A number of methods can be used for projections. In this study, the method of projection chosen is simply that of 'trend analysis' as for example described in Hamburg (1977). Several functional/ regression forms/formuleas have been tried for in making the projection based on past trend data. The forms are linear, quadratic and logarithmic regression equations. Naturally, the methodology is subject to several shortcomings, for example, the method ignores the effects of uncertainty and other exogenous variables which are usually beyond management control. However, the trend line analysis is considered suitable to the nature, scope and objective of the study.

The projected supply is theoretically best estimated using a form of identified supply response, where the supply is a function of sizes of area (or number and sizes of firms) and present and lag prices. On the other side, demand side is theoretically best estimated by a number of population, consumption per capita and income elasticity of demand. However due to the nature of the study, the projected supply is estimated simply using the trend analysis described above, and demand is estimated simply based on per capita consumption.

Per capita consumption used are those consumption required to meet minimum requirements. These measurements are of crucial important especially for those commodities considered as basic needs, such as 'sembilan bahan pokok' (nine essential needs), other food (meat and milk), housing, electricity, education, health, potable water etc.

The minimum requirements for 'sembilan bahan pokok' are shown in Appendix 4.1 and 4.2. One problem arising in the minimum requirements shown in the Appendices is that, the total calorie of minimum food requirements have likely exceeded the minimum calorie requirements of 1,500 K cal/man/day. However, for North Sulawesi, according to Waworoentoe et.al (1983) to avoid under estimation on calorie consumption, a per capita consumption of 2,200 K cal/man/day can be used.

A similar case applies to consumption of meat and fish . However, because of income elasticities of demand for meat, eggs and milk are likely greater than one (1), in this study the per capita consumption of meat and eggs reported by Kaligis and Wilar (1983) are used. The consumption are slightly higher than those recommended by Indonesian Academy of Sciences.

4.3. The Outlook

Economic growth rates in the Fourth Five Year Plan, as described in Chapter 2 have been projected at a range of rates between 4 and 8.7 per cent per annum. The range is lower than the rates experienced in the past three Five Year Development Plans. One reason for the relatively lower economic growth is that of limitted capital available through APBN as a result of decrease in oil revenue projected by year 1990.

The relatively high rate of economic growth rate of 8.7 per cent per annum described above is however unlikely to happen if production and prices of the main (strategic) commodities of the province, i.e; coconut, cloves, fish and timber would not reasonably increase. Furthermore, the projections are based on an assumption that an economic transformation takes place. It is however reasonable to assume that the tranformation required would unlikely to take place. As decribed in Chapter 2, in the past three Five Year Development Plans, such an economic transformation did not take place. In other words, proportion of contributions of economic sectors to GDRP remain constant over time. Such an assumption is quite likely reliable for those who believe on method of projections employing trend analysis described above. If the present trend of sectoral growths continue to take place, then, increase in GDRP would strongly depend on increase in net-balances and prices of the strategic commodities.

The net-balance depends on quantities produced and quantities consumed. If a net balance is positif then an investment may be directed toward processing and exporting commodities. If a net balance is negatif then an investment

project may be directed toward processing or substituting import goods or to utilise available resources to meet the balance (gap). Consequently, in undertaking an investment appraisal, one has to have some ideas on trends of local production and local consumption. Projection of production can be estimated by extrapolating a given production trend. Trends on consumption may be projected on the basis of present consumption per capita (or a standardised consumption per capita), population and income growth rate, and income elasticity of demand for a commodity concerned. Most data/information corresponding to the strategic commodities as well as those of bacic needs except that of income elasticities are available (as already reported in Chapter 2). By adopting the projection methods described in section 4.2, projection of these commodities can therefore be undertaken which result are described below.

4.3.1 Projections of Plantation of Sub-sectors

Provincial Department of Plantation Crops (i.e. Platation Services or 'Dinas Perkebunan') has made projections for a number of important plantation/cash crops up to 1988. The projection are shown in Table 4.1. It is shown table that growth rates of net balances of commodities are : 4.80 per cent for copra, 6.78 per cent for clove, 1.81 per cent for nutmeg, 18.64 per cent for coffee, 150 per cent for cocoa, 243 per cent for vanilla, 52.90 for ginger, 20.19 per cent for sugar and 100 per cent for peper 'jambu mete' (Cashew).

In this study, projections are limited only to copra, clove, coffe and nutmeg. Two kinds of regression eguations have been tried for the projections, linear and quadratic eguations. The eguations obtained (from the corresponding time series data shown in Chapter 2) are shown in Table

Table 4.1.

Projection of Cash Crops Production, Consumption and Net Balance in North Sulawesi According to Provincial Department of Plantation, North Sulawesi

No.	Commodities	1984 (ton)	1985 (ton)	1986 (ton)	1987 (ton)	1988 (ton)	Rate of Increase
1. Copra	: Production	260.921	271.514	282.537	294.008	305.944	5.04 %
	Consumption	80.676	82.427	84.215	86.042	87.909	2.17 %
	Net Balance	180.843	189.087	198.322	207.966	218.035	4.80 %
2. Clove	: Production	8.000	9.000	11.000	12.000	10.000	6.78 %
	Consumption	-	-	-	-	-	-
	Net Balance	8.000	9.000	11.000	12.000	10.000	6.78 %
3. Nutmeg	: Production	7.500	7.600	7.700	7.850	8.000	1.63 %
	Consumption	1.450	1.500	1.450	1.450	1.500	0.89 %
	Net Balance	6.050	6.100	6.250	6.400	6.500	1.81 %
4. Coffee	: Production	3.164	3.594	4.083	8.638	5.769	13.60 %
	Consumption	1.092	1.110	1.128	1.126	1.1 5	1.63 %
	Net Balance	2.072	2.484	2.959	3.492	4.104	18.64 %
5. Cocoa	: Production	-	-	-	2.400	6.000	150.00 %
	Consumption	-	-	-	-	-	-
	Net Balance	-	-	-	2.400	6.000	150.00 %
6. Vanilla	: Production	-	-	120	520	1.440	103.63 %
	Consumption	-	-	6	12	18	75.00 %
	Net Balance	-	-	114	508	1.222	243.08 %
7. Ginger	: Production	560	1.120	1.680	2.240	2.800	52.08 %
	Consumption	28	29	30	30	30	0.03 %
	Net Balance	532	1.061	1.650	2.210	2.770	53.90 %
8. Sugar	: Production	-	70.000	70.000	105.000	105.000	16.67 %
	Consumption	22.575	23.100	23.625	24.150	24.675	2.63 %
	Net Balance	-	46.900	46.375	80.850	80.325	20.19 %
9. Pepper	: Production	-	-	-	76,8	153,6	100.00 %
	Consumption	-	-	-	-	-	-
	Net Balance	-	-	-	- 76,8	153,6	100.00 %
10. Jambu Mate	: Production	100	100	100	100	100	-
	Consumption	25	25	25	25	25	-
	Net Balance	75	75	75	75	75	-

Source : Dinas Perkebunan Propinsi Sulawesi Utara, (1983).

Table 4.2

Projection of Some Selected Commodities

in North Silawesi (1980-1990)

Commodity	Quadratic regression	Linear regression	r^2
Coconut	$y = 188693,34+7163,14x+700,83x^2$	$y = 198505,02+7186,14x$	0,672
Coffee	$y = 1160,87+92,81x+23,62x^2$	$y = 1491,51+92,81x$	0,490
Clove	$y =$ -	$y = 4497,18+587,37x$	0,844
	$y = 8025,06+171,19x-42,42x^2$	$y = 7431,19+171,19x$	0,260
Livestock			
Meats	$y = 9920,28+433,02x+3,44x^2$	$y = 9943,19+433,02x$	0,980
Egg	$y = 3358,96+241,67x+11,051x^2$	$y = 3432,69+241,67x$	0,980
Timber (wood) (m^3)	$y = 57944,34+4595,37x-713,59x^2$	$y = 47954,15+4595,37x$	0,240
Fishery	$y = 56666,76+3735,42x-69,66x^2$	$y = 56388+3735,42x$	0,902

Table 4.3.

Projections of production of some selected commodities
(Linear regression)

Commodity \ Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	r
A. Plantation crops												
Coconut (ton)	227249,50	234435,21	241621,83	248807,97	255994,10	263180,24	270366,37	277552,51	284738,64	291924,78	299110,92	2,30
Coffee (ton)	1862,77	1955,58	2048,39	2141,21	2234,03	2326,84	2419,66	2512,47	2605,29	2698,10	2790,90	4,06
Clove (ton)	8021,4	8609,79	9196,16	9783,54	10370,91	10958,28	11545,65	12133,03	12720	13307,77	13895,15	5,38
B. Livestock (ton)												
Meats	10809,23	11242,24	11675,26	12108,28	12541,30	12974,32	13407,34	13840,36	14273,37	14706,39	15139,41	3,36
Egg	3916,02	4157,69	4399,36	4641,02	4882,69	5124,35	5366,02	5607,69	5849,35	6091,02	6332,68	4,95
C. Timber (m^3)	66135,63	70931,00	75517,37	80121,72	84717,09	89312,46	93907,83	98503,19	103098,56	107693,93	112289,29	5,20
D. Fishery (ton)	60123,55	63858,90	67594,38	71329,80	75065,22	78800,64	82536,05	86271,47	90006,89	93742,31	97477,31	4,51

Table 4.4.

Projection of Some Selected Commodities

(Quadratic regression)*

Year / Commodity	198.	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	r **
Coconut (ton)	226881,21	241149,87	257045,18	273037,10	291035,16	310130,12	330638,10	352541,05	378547,08	403554,07	426662,72	6,34
Coffee (ton)	1915,11	2215,37	2567,89	2967,81	3414,88	3909,19	4450,73	5039,51	5675,52	6358,76	7089,24	13,78
Clove (ton)	8121,42	8606,79	9198,16	9783,54	10370,91	10958,28	11545,65	12133,03	12720,40	13307,77	13795,15	-
Livestock												
Meats (ton)	10801,08	11280,26	11707,34	12171,29	12642,11	13119,81	13604,38	14095,83	14594,15	15099,34	15611,41	3,75
Egg (ton)	3888,04	4183,37	4502,38	4843,49	5206,72	5592,04	5999,47	6428,99	6880,63	7354,36	7950,20	7,33
Fishery (ton) (Ocean)	64903,43	63083,55	59827,49	55146,02	49037,54	41501,88	32539,04	22149,02	10416,78	-2912,56	-17584,12	-18,57
Fishery (ton)	60332,43	63858,96	67248,09	70497,90	73602,39	76571,57	79401,43	82091,97	84643,20	87055,11	89327,70	4,05

Note : * Estimated by Research Centre Unsrat 1983

** Annual rate of growth in per cent.

4.2. The results of the projections using the linear and quadratic regression equations are shown in Table 4.3 and 4.4 respectively.

It can be noticed that the estimations made in this study and those by the provincial plantation service ,are different. The results are summarised below.

Table 4.5

Estimated Production Rates of Growth of Selected Commodities (%) (1984-1990)

	A	B	C
Coconut (copra)	5.04	2.80	6.34
Clove	6.78	5.06	6.00
Coffee	13.60	4.06	13.78
Nutmeg	1.63		

Note : A, Estimated by Plantation Services, North Sulawesi (1983)

B, Estimated using linear regression equations

C, Estimated using quadratic regression equations

It can be noticed in Table 4.5 that the estimated regresion models are consistent with those estimated by the plantation services. On the basis of such a consitency, it is therefore quite convincing to adopt the estimated productions of the other cash crops undertaken or made by the plantatation services.

It is however not explicitely shown in Table 4.1 the way the consumption trends of the corresponding cash crop commodities have been made. For instance, which coefficients

of annual population growth and which coefficients of income elasticity of demand for the commodities have been chosen as bases for the projections. Consequently, the estimates must be interpreted with cautions. However in general, the projections made, have provided some insights and ideas on the outlook of the commodities in 1988. The summary of the outlook is, that by 1990 the province would have cash production surplus that can be subject to investments project for 'agro-based industries' and trade.

4.3.1.1 Copra and Cloves

Coconut and clove however are the main commodities determining provincial GDRP. The rates of growth of production of these commodities are, as shown above, 4.80 and 6.78 per cent respectively. Projections of coconut production are further illustrated in Figures 4.1 and 4.2. Assuming that during the Fourth Five Year Plan period, prices and technology used in production of these commodities are constant over time, then, one should not expect an economic growth rate of more than say 7 per cent per annum. In fact, the most likely coefficients of annual economic growth rates reliably foreseen by the provincial authorities is averagely 6.7 per cent per annum (Bappeda, 1983).

Since the coconut industry plays a major role in the economy of the province then, programs to significantly increase coconut production are considered sound. Potential for an increase in coconut production is great since coconut production per ha can be increased from the present 1.1 tons up to 2.5 tons per ha for 'tall palms' or up to 4.0 tons per ha for 'hybrid palms'. The increase can be achieved by application of fertilizers and appropriate farm

managements. In fact, the government of Indonesia at present, has paid strong attention in increasing copra production through applications of fertilizers and replanting. If the programs can be succerfully implemented it would be reasonable to foresee that coconut production in 1990 would grow at a rate of approximately 10 per cent per annum.

Increase in coconut production would enable the present coconut oil manufacturers, either in the province or in Java to operate at or nearly full capacities. The present total capacities in the province for example is approximately 300 000 tons whilst the present supply is normally 200 000 tons. In 1984, the supply of copra for coconut oil manufacturers even decreased to 100 000 tons due to the long drought experienced in 1982.

One of a major constraints in increasing coconut production however, is price. As described in Chapter 2, coconut oil prices has been increasing at slower rates than those of rice. It has therefore been proposed somewhere (Rogi, 1983) that price ratio of copra to rice is 1 = 1, so that coconut farmers would make decisions to increases their products.

Contraints in increasing coconut production can be related to models adopted by the government in encouraging farmers to undertake a more intensif coconut replanting and/or rehabilitation. The most well known model for North Sulawesi is the so called 'SCDP' that relies on how well the CWCs carried out the program at farm level. The model, as already described in Chapter 2 is subject to some short comings. However in 1984 a more comprehensive and deeper study is to be undertaken by world Bank in other to device

Figure 4.1 PRODUCTION AND THE CORRESPONDING ESTIMATED TRENDS OF COCONUT IN NORTH SULAWESI 1970-1982

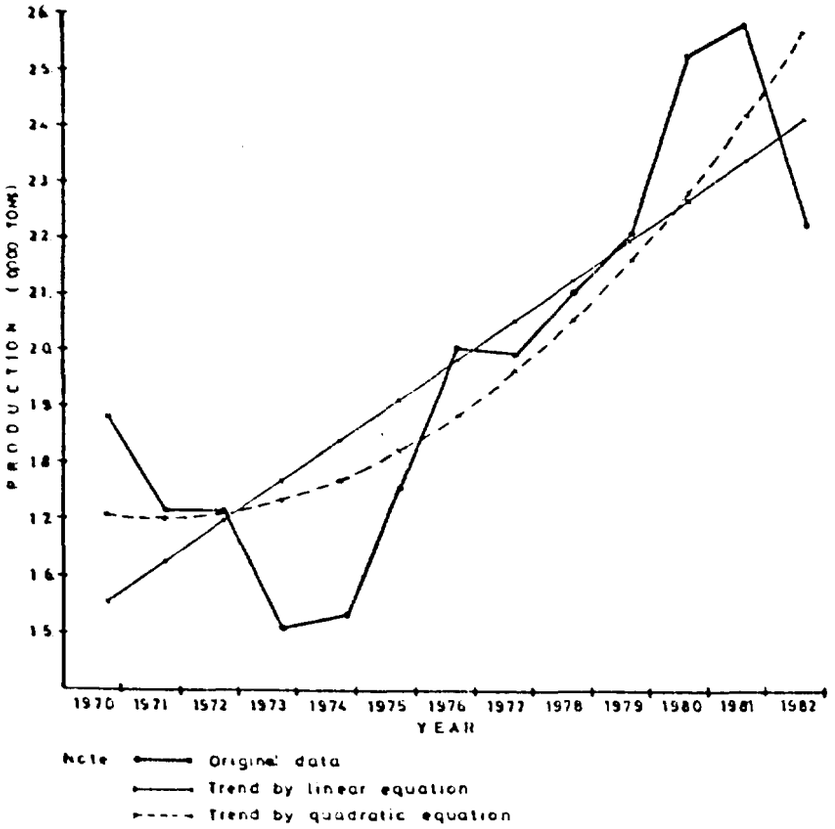
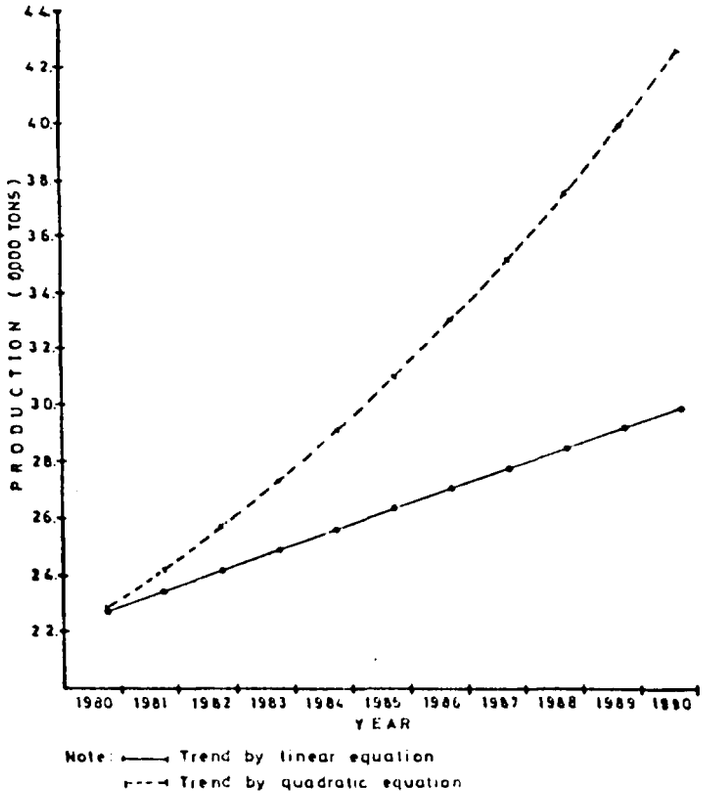


Figure 4.2 PROJECTION OF COCONUT IN NORTH SULAWESI 1980-1990



"CIPs"
JK IWS

[illegible] production increase at a rate

---

[1] The author has recenty been asked by P.T. Redecon (Resource Development Consultant) to coordinate the research and feasebility studies for the World Bank.

a more succesful coconut development program in Indonesia (Sondakh, 1984).[1]

From the above description, one may convincingly foresee that coconut and copra production would significantly increase starting from 1990. The increase would come not only from those hybrid palms already planted in 1980/1981 that start bearing coconuts in 1976 but also from the intensification program enabling coconut farmers to apply fertilizers in their coconut trees aging less than 50 years.

There is however some worries in making decisions in increasing coconut production. The worrieness may be related to a belief that copra prices may not likely to increase since coconut oil is one of the basic needs, and coconut oil has been (misleadingly) advertised as a kind of oil with relatively high contents of cholesteral. A counter argument of such a warrieness is that coconut oil can be used as a main material for 'lubricating oil' and can be further procesed for high quality soaps etc. Further more, Indonesia consumers appear to have a specific preference to coconut oil which rate of substitution by palm oil is relatively low (i.e. not so easily be substituted by palm oil).

From the past trends of area and production of clove, it is estimated that clove production increase at a rate

---

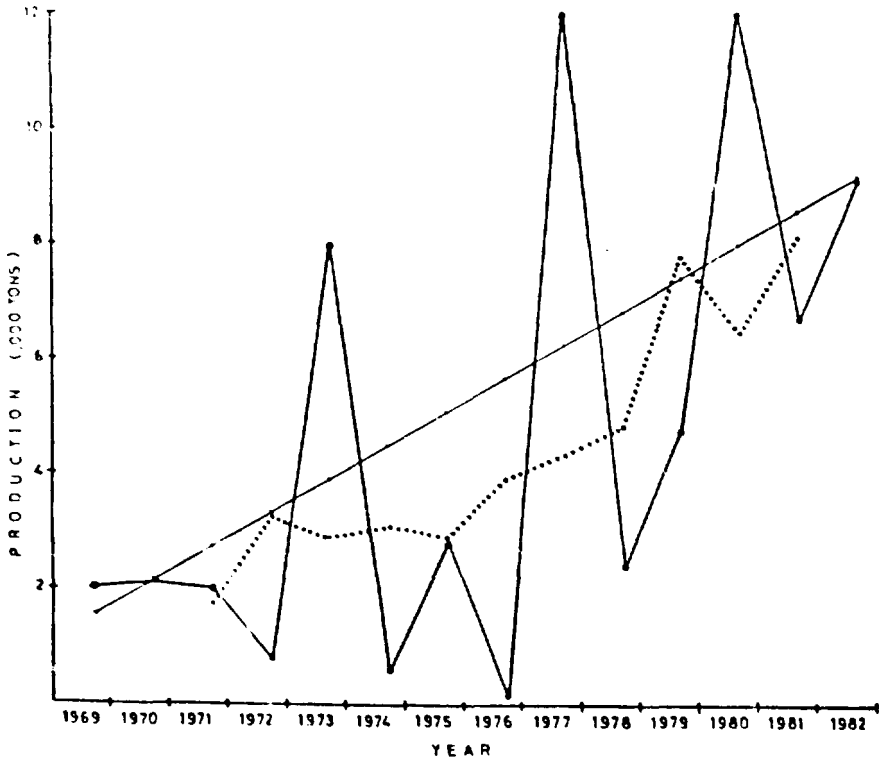
[1] The author has recenty been asked by P.T. Redecon (Resource Development Consultant) to coordinate the research and feasebility studies for the World Bank.

of 5.38 per cent and 5.20 per cent per annum for the linear and quadratic regression respectively (see Table 4.1 and Figures 4.3 and 4.4.). As described in Chapter 2, increase in clove production is strongly determined by favourable prices of cloves. There is however now a deep worry on the future of clove industry. C.I.F prices of cloves have been informed far lower than farm gate prices of the commodities. Clove are produced for 'kretek' (cigarettes) manufacturers in Java which also import clove from Tanzania (i.e. Zansibar). The present farm gate prices of cloves is averagely only Rp 6000 whilst the floor price set up by the government is Rp 7500. It has been indicated that the C.I.F price of cloves in the some period is only Rp 4500. In fact, according to Bank Indonesia (1982) time series data on C.I.F prices of clove have always been lower than of farm gate prices.

The soil of North Sulawesi is reported to be one of the most suitable for cloves. However, the province seems to be facing a quite strong competition with other regions in clove production that products begins to enter clove market in 1985, for example those from Central Sulawesi and South Sumatera (Lampung). Another factor that may likely to limit clove market is shifting in type of cigaretes smoked by Indonesia. Major part of Indonesian smokers, smoke 'kretek'. In the meantime, 'mild cigarttes' produced by ,multinational companies appear to begin having a growing market in Indonesia. If this phenomena continued to take place then,the future of the clove industry would likely be gloomy.

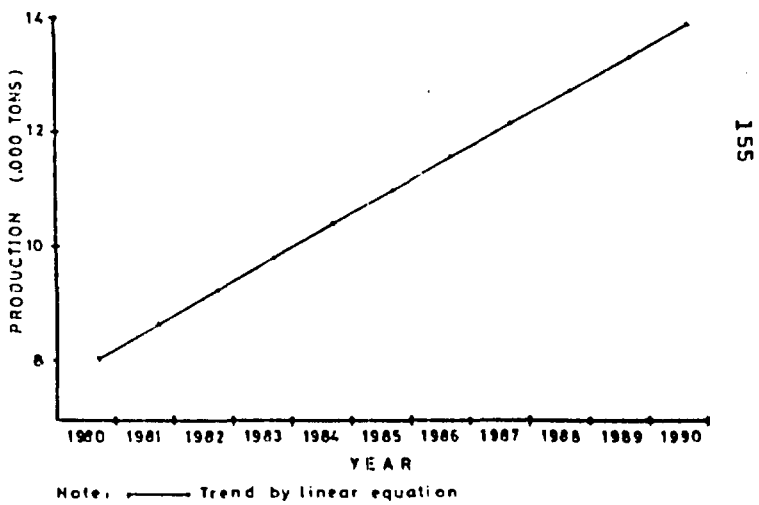
From the above description it can be noticed that the prospect of clove would not be as good as that of coconuts. However, such a gloomy prospect may be quite

Figure 4.3 PRODUCTION AND THE CORRESPONDING ESTIMATED TRENDS OF CLOVE IN NORTH SULAWESI 1969 – 1982



"CIPs"
lws

Figure 4.4 PROJECTION OF CLOVE IN NORTH SULAWESI
1980 – 1990



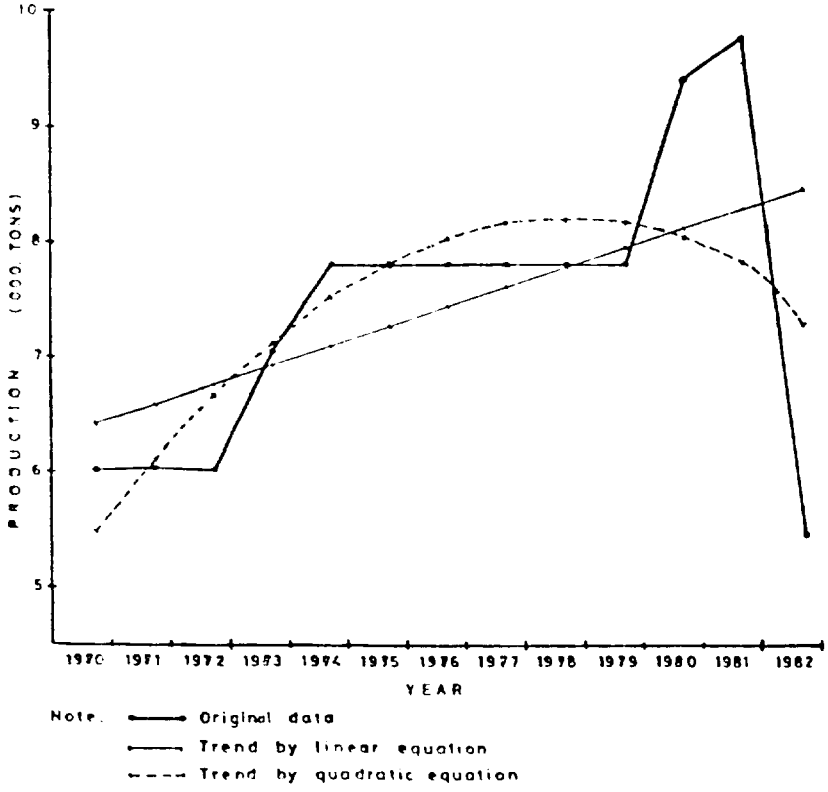
attractive for prospective investors that may be able to use clove as main products for other more valuable products for example clove oils etc.

4.3.1.2 Other Cash Crops

As shown in Chapter 2, North Sulawesi is the main nutmeg producing province and Indonesia (along with Granada) have a share on nutmeg world market of approximately 80 per cent. Nutmeg and mace are exported to EEC (European Economic Community), North America and Japan. During the periode of 1971-1975 annual import of these countries is averagely, 4000 ton for EEC and, 2100 tons of North America. In 1974, nutmeg production of the province was already 7800 tons. On the basis of this figure it seems quite risky to foresee a good prospect of nutmeg industry by 1990. In fact, as reflected in Figure 4.5 and 4.6, people seems to have not paid more attention in maintaining their nutmeg trees as indicated by the fact that production per ha seems decreasing over time. Nutmeg price does not seem to have increased significanly in the last 14 years. In 1970, price of a kg of nutmeg was Rp 122 (i.e. $ 0.35) whilst in 1982 it was only Rp 325 (i.e. $ 0.50). In 1989, price of nutmeg is projected to be Rp 530.19 per kg (i.e. $ 0.53) (Mandagi et.al; 1983).

The prospect of coffee and sugar have already been generally described in Chapter 2. Based on the projected trends in Table 4.4, and Figure 4.7 and 4.8, coffee production in 1990 would be about 7089 ton i.e. an annual growth rate of 13 per cent per annum, far higher than the annual population growth rates. This implies that there may be a reasonable amount of coffee that can be exported.

Figure 4.5 PRODUCTION AND THE CORRESPONDING ESTIMATED TRENDS OF NUTMEG IN NORTH SULAWESI 1970-1982



"CIPs"
jk lws

Figure 4.6 PROJECTION OF NUTMEG PRODUCTION IN NORTH SULAWESI 1980-1990

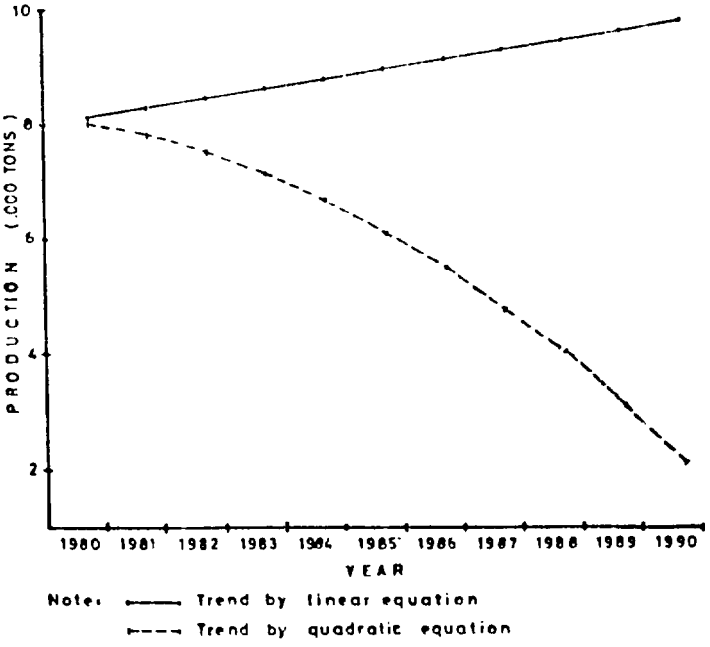
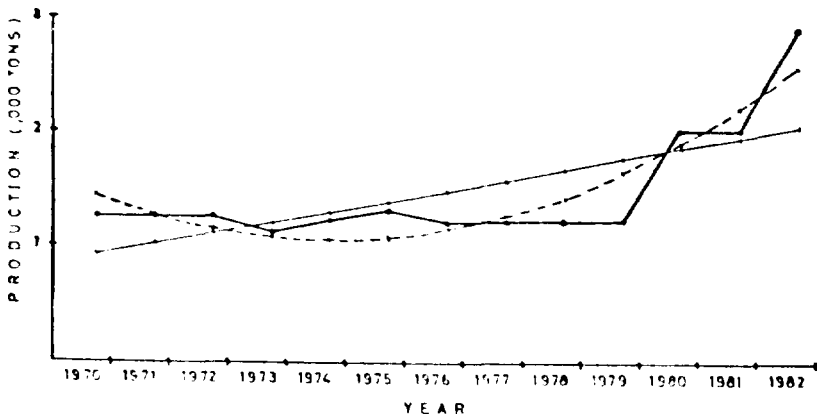


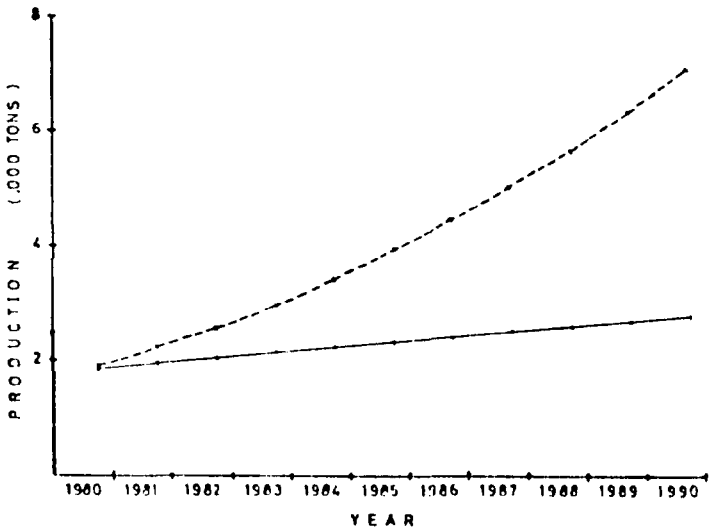
Figure 4.7 PRODUCTION AND THE CORRESPONDING ESTIMATED TRENDS OF COFFEE IN NORTH SULAWESI 1970-1982



Note. ——— Original data
——— Trend by linear equation
- - - - - Trend by quadratic equation

"CIPs"
jb lws

Figure 4.8 PROJECTION OF COFFEE IN NORTH SULAWESI
1980 - 1990



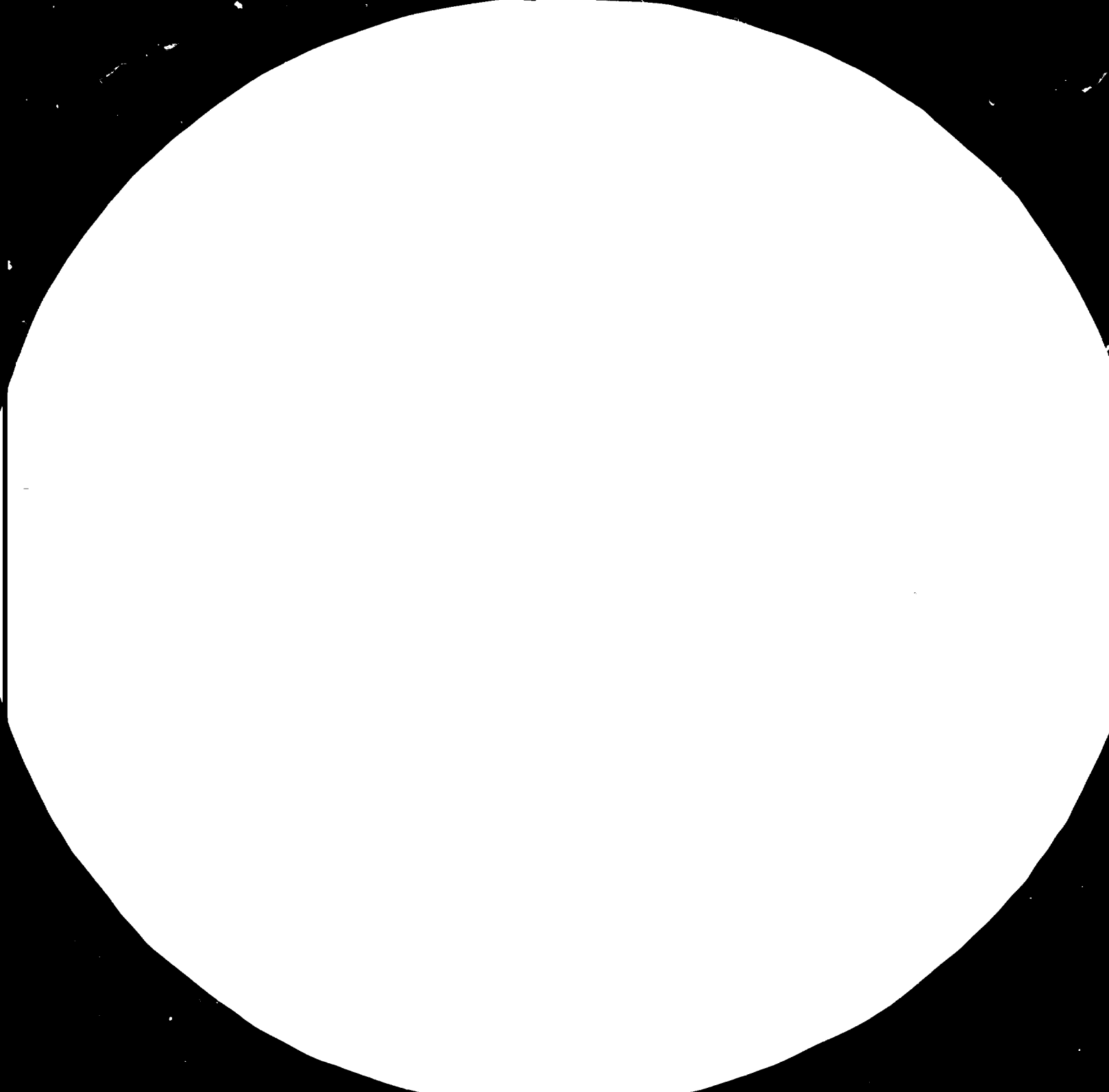
Note: ——— Trend by linear equation
- - - - Trend by quadratic equation

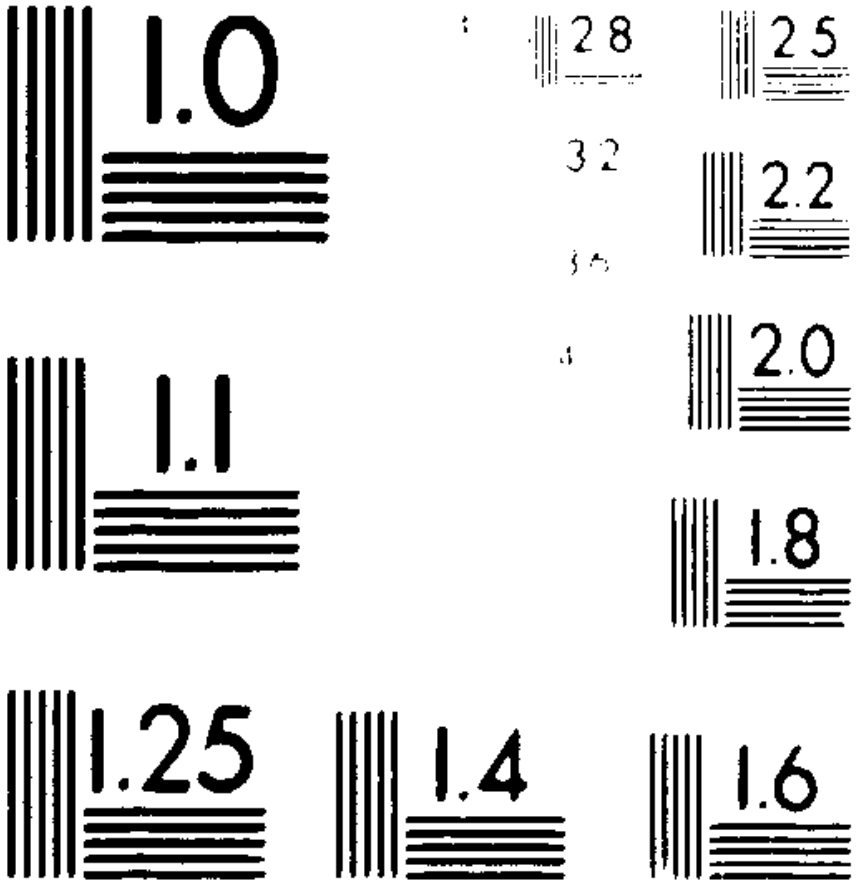
The other cash crops that have attracted investors attention are vanilla and ginger. There is however no statistics on past trend production of vanilla and ginger in the province. Markets for vanilla seems attractive however production of vanilla required special kind of expectise and decterity. With respect to gonger, recent study (Mandagi et.al; 1983) indicated that main ginger producing countries in the world are India, China, Taiwan, Siera, Loone and Nigeria. The main importing countries are North America, United Kingdom Arabic countries, Japan West Germany, and Jaman. These countries imported approximately 9465 tons in 1975.[2] Mandagi et.al. (1983) have estimated an increase in demand for ' dry ginger' of 5 per cent per annum. Regardless of reliability of the figures described, one thing reveals in the figures is that a market for ginger seems worth while to pursue.

Mandagi et.al. (1983) and the provincial plantation services, have indicated some places in Minahasa considered suitable for ginger production. The places are located about 800 m above sea-level, in Modoinding district in the Kabupaten of Minahasa and Modayag districts in the Kabupaten of Bolaang Mongondow. Average production of ginger reported are 1.768 tons per ha and 2.481 tons per ha in Modoinding and Modayag district respectively.

---

[2] The figure is far lower than that reported by BKPMD (1983) that in 1983 the world import of Jahe (ginger) was 103 000 tons.





4.3.2 Projection of Food Crops Sub-Sector

Regression equations estimated the based or past-trend areal and production data of selected food crops are shown in Table 4.6. As shown in the table, the equations are referred to those of rice, maize (corn) cassava, sweet potatoes, peanuts and soya beans. The resulting projections extrapolated from these equations are shown in Table 4.7 and described in Figures 4.9 and 4.10 for rice, Figures 4.11 and 4.12 for maize, Figures 4.13 and 4.14 for cassava, Figures 4.15 and 4.16 for sweet potatoes, Figures 4.17 and 4.18 for peanuts and, figures 4.19 and 4.20 for soya beans.

The summary of those figures are that production of all food crops above would significantly increase except that of cassava that may increase (if the quadratic regression equation applied) or decrease (if the linear regression equations applied). Increase in cassava production would likely depend on ability of the province to export the product (as cassava chips), and if the province may have animal feed manufacturers using cassava as one of feed components.

The likelihood of the province to export cassava chips is quite high because of suitability of soil for cassava production in some areas (i.e. Bolaang Mongondow). However, a firm involved in cassava export found difficulties in obtaining a sufficinly large area of approximately 20 000 ha for cassava production. Furthermore most farmers seem to considere high opportunity costs of growing cassava, especially, on lands suitable for soya beans, corn, penuts etc.

Projection of food crop production estimated using the regression equations shown in Table 4.7, are shown in

Table 4.6

Linear and Quadratic regression equation

Selected Food Crops

Commodity	Quadratic regression equation *	Linear regression equation * r^2		Linear regression equation ** r^2	
1 Rice (Paddy)	y=308121,77+24388,48x+217,43x²	y=312180,47 + 24388,48 x	0,85	y=18,89 + 24,34 x	0,8
2 Maize (corn)	y=127769,85+1154,04x+123,59x²	y=130076,87 + 11594,04 x	0,90	y=110327,1+6531,5 x	0,9
3 Cassava	y=107981,94-2008,99x+298,06x²	y=109674,15+2008,99 x	0,36	y=109728,0 - 4638 x	0,14
4 Sweet Potatoes	y=47241,69+137,23x+127,32x²	y=49245,46 + 137,23 x	0,01	y=50163,1+69,84 x	0,01
5 Peanuts	y=8174,07 - 1174,01x+61,87x²	y=8174,07 _ 1174,01 x	0,85	y=1753,38+1530,50 x	0,8
6 Soya Beans	y=472,03+3713,83x+674,64x²	y=13055,27 + 3713,83 x	0,56	y=553,33+99,05 x	0,8

Note : * Estimeted using least Square regression methods (Humburg 1970).

** Estimeted by Richter et.al (1983).

Table 4.7.

Linear and Quadratic Regression Used to Estimate Trends of Selected Food Crops

Commodity	Quadratic regression equation *	Linear regression equation * r^2		Linear regression equation ** r^2	
1 Rice (Paddy)	$y=300121,77+24388,48x+217,43x^2$	$y=312180,47 + 24388,48 x$	0,85	$y=18,89 + 24,34 x$	0,85
2 Maize (corn)	$y=127769,65+1154,04x+123,59x^2$	$y=130076,87 + 11594,04 x$	0,90	$y=118327,1+6931,5 x$	0,91
3 Cassava	$y=107981,94-2008,99x+296,06x^2$	$y=109674,15+2008,99 x$	0,36	$y=109728,0 - 4630 x$	0,14
4 Sweet Potatoes	$y=47241,69+137,23x+127,32x^2$	$y=49245,46 + 137,23 x$	0,01	$y=50163,3+69,84 x$	0,01
5 Peanuts	$y=8174,07 - 1174,01x+61,87x^2$	$y=8174,07 _ 1174,01 x$	0,85	$y=1753,3H+1530,58 x$	0,85
6 Soya Beans	$y=472,03+3713,83x+674,64x^2$	$y=13065,27 + 3713,83 x$	0,56	$y=553,33+99,05 x$	0,65

Note : * Estimated using least square regression methods (Hamburg 1970).

** Estimated by Richter et.al (1983).

Table 4.8.

Proyection of Food Crops in North Sulawesi (1990) *

Commodity		1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1995	r **
Rice (Paddy)	a	409.734	434.123	458.511	482.900	507.288	531.677	556.065	580.531	604.843	629.231	653.619	-	4,70
	b	-	-	-	-	-	526	-	-	-	-	647	769	4,20
	c	-	-	-	-	399.490	438.730	460.614	484.890	510.450	-	-	-	7,02
Maize (Corn)	a	176.453	188.047	199.641	211.235	222.829	234.432	246.017	257.611	269.205	280.799	292.393	-	5,00
	b	-	-	-	-	-	201.505	-	-	-	-	236.167	270.820	3,20
	c	-	-	-	-	270.726	286.970	304.188	322.439	341.785	-	-	-	6,00
Cassava	a	92.646	89.596	86.546	83.496	80.445	77.395	74.344	71.295	68.245	65.194	62.144	-	- 3,90
	b	-	-	-	-	-	103.670	-	-	-	-	101.380	99.061	- 0,40
	c	-	-	-	-	254.500	259.590	264.782	270.078	275.480	-	-	-	1,21
Sweet Potatoes	a	50.243	50.400	50.536	50.712	50.868	51.024	51.181	51.337	51.493	51.649	51.806	-	0,30
	b	-	-	-	-	-	51.071	-	-	-	-	51.420	51.770	0,10
	c	-	-	-	-	57.509	58.429	59.364	60.314	61.279	-	-	-	1,60
Peanuts	a	22.262	23.436	24.610	25.784	26.958	28.132	29.306	30.480	31.654	32.808	34.002	-	4,30
	b	-	-	-	-	-	21.651	-	-	-	-	29.304	36.957	6,00
	c	-	-	-	-	20.418	22.460	24.706	27.177	29.895	-	-	-	10,00
Soya Bean	a	27.631	31.346	35.059	38.773	42.487	46.200	49.914	53.628	57.342	61.056	64.770	-	7,80
	b	-	-	-	-	-	22.955	-	-	-	-	32.685	42.415	7,10
	c	-	-	-	-	71.608	78.769	86.646	95.311	104.842	-	-	-	10,00

Note : a Research Centre Unsrat, 1983.

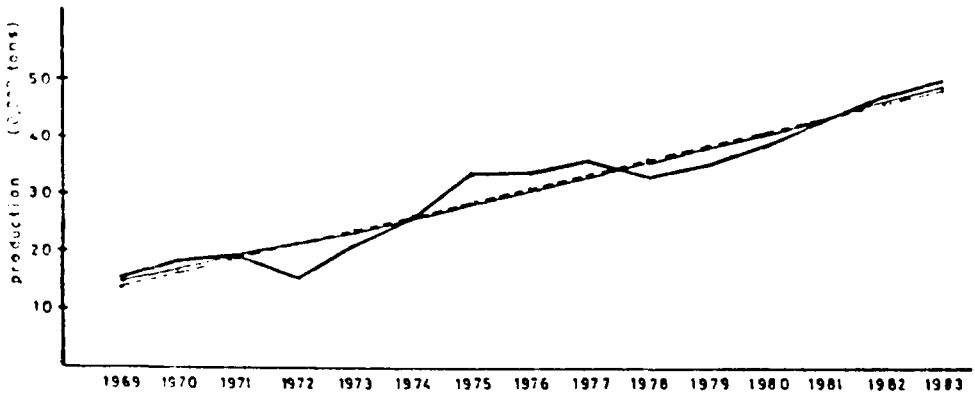
b Richter et.al., 1983

c Food Crops Service North Sulawesi.

* See Table for the regresion Equations used to Estimated the Trends.

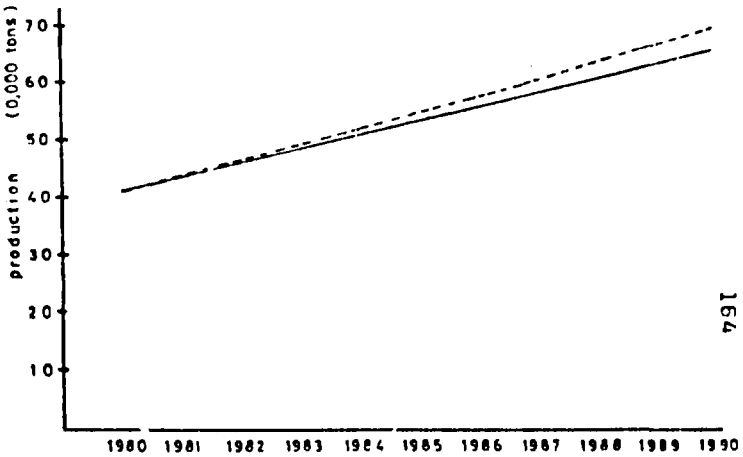
** Production Growth rate in %/year.

Figure 4.9 TREND OF PADDY PRODUCTION
1969 – 1983



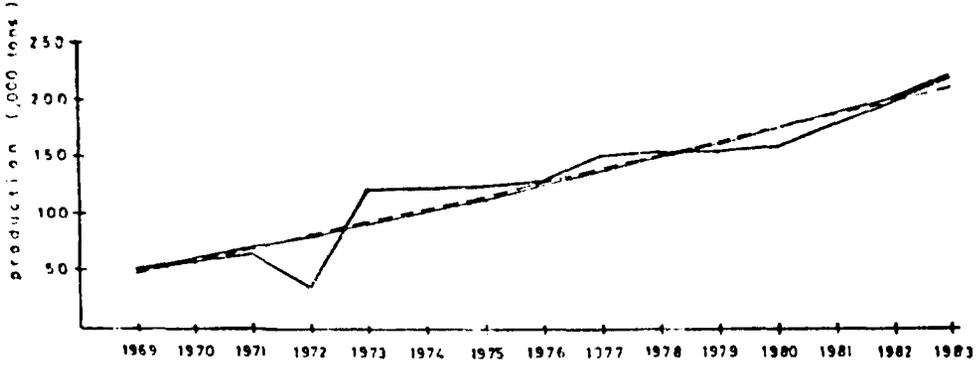
Note: ——— Observed production (SUA, 1983)
- - - - Rice production trend estimated using linear regression model
——— Rice production trend estimated using quadratic regression model

Figure 4.10 PROJECTION OF PADDY PRODUCTION BY 1990



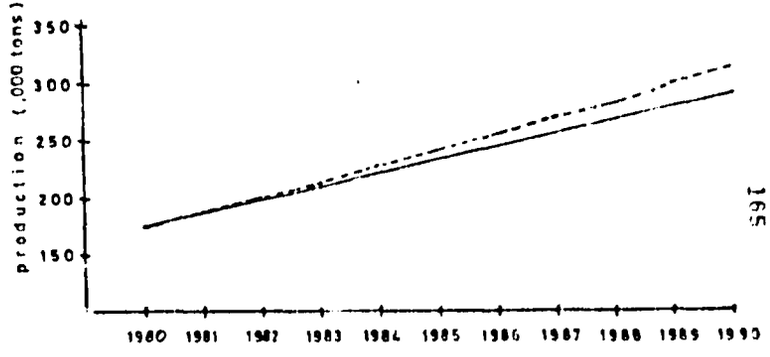
Note: ——— Estimated using linear regression model
---- Estimated using quadratic regression model

Figure 4.11 TREND OF MAIZE PRODUCTION
1969 – 1983



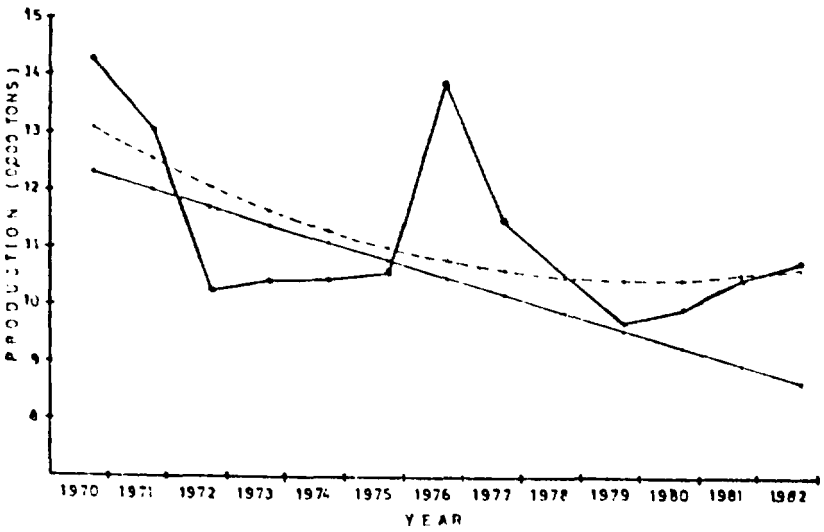
Note: —— Observed production
---- Maize production trend estimated using linear regression model
—— Maize production trend estimated using quadratic regression model

Figure 4.12 PROJECTION OF MAIZE PRODUCTION
BY 1990



Note: —— Estimated using linear regression
---- Estimated using quadratic regression model

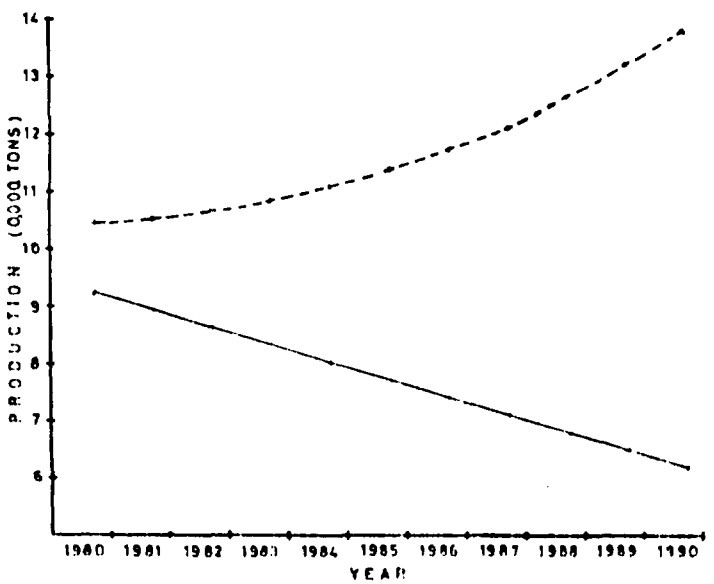
Figure 4.13 PRODUCTION AND THE CORRESPONDING ESTIMATED TRENDS OF CASSAVA IN NORTH SULAWESI 1970-1982



Note: Originil data
Trend by linear equation
Trend by quadratic equation

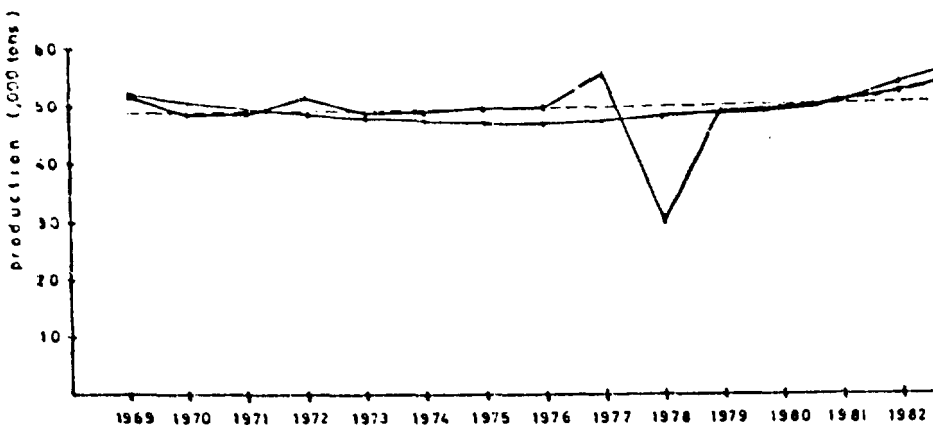
"CIPs"
jk 1es

Figure 4.14 PROJECTION OF CASSAVA IN NORTH SULAWESI
1980 - 1990



Note: ——— Trend by linear equation
- - - - - Trend by quadratic equation

Figure 4.15 TREND OF SWEET POTATOES PRODUCTION 1969 – 1983



Note: ——— Observed production (SUA, 1983)

---- Sweet potatoes production trend estimated using linear regression model

——— Sweet potatoes production trend estimated using quadratic regression model

Figure 4.16 PROJECTION OF SWEET POTATOES PRODUCTION BY 1990

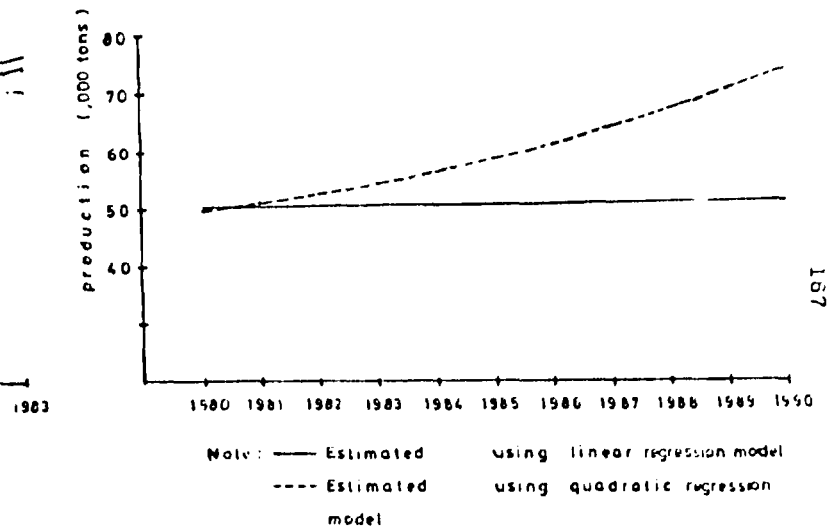
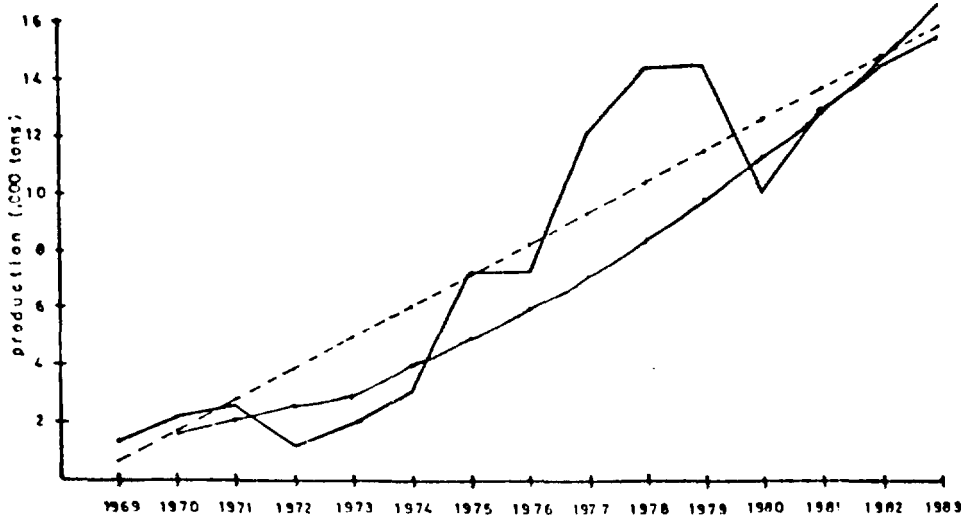


Figure 4.17 TREND OF PEANUTS PRODUCTION
1969 — 1983

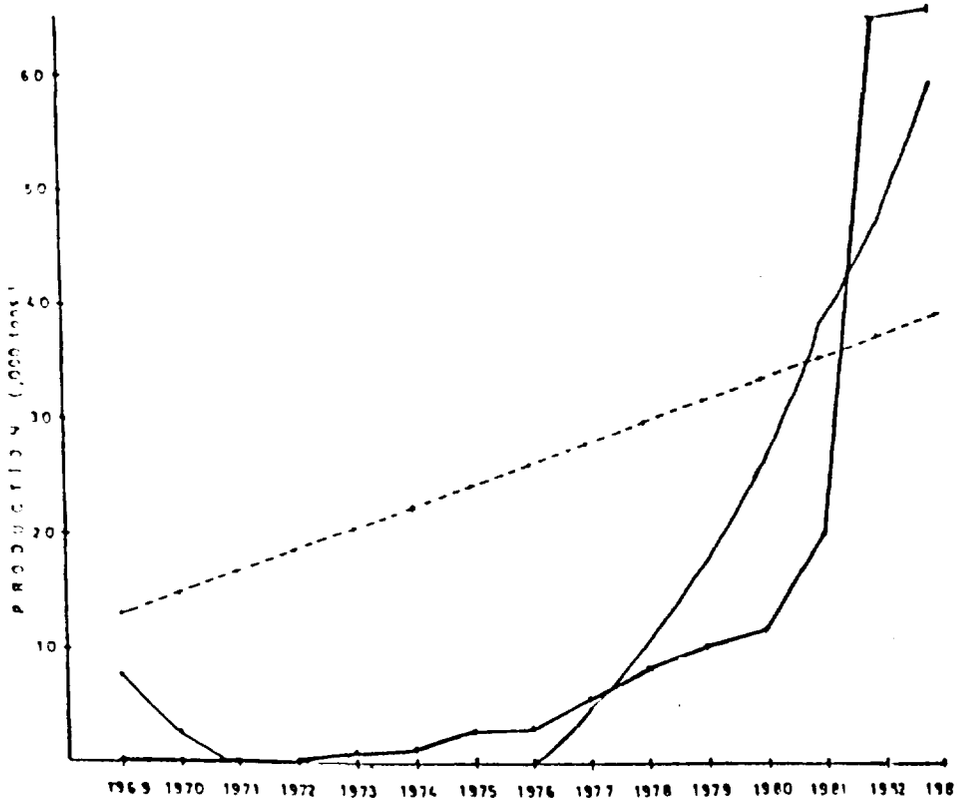


Note : ——— Observed production (SUA, 1983)
---- Peanuts production trend estimated using linear regression model
——— Peanuts production trend estimated using quadratic regression model

Figure 4.18 PROJECTION OF PEANUTS PRODUCTION BY 1990

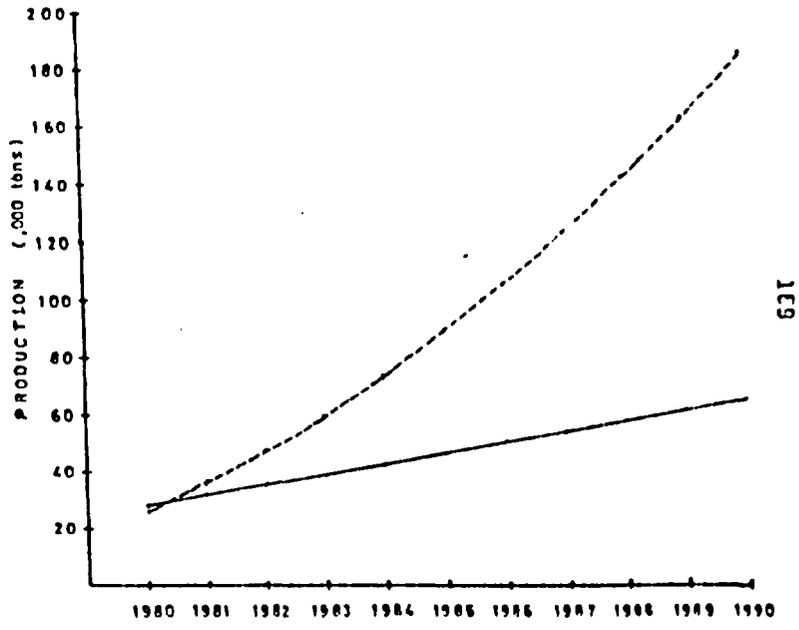
Note : ——— Estimated using linear regression model
----- Estimated using quadratic regression model

Figure 4.19 TREND OF SOY. BEANS PRODUCTION
1969 — 1983



Note: —— Observed production (SUA, 1983)
---- Soya beans production trend estimated using linear regression model
—— Soya beans production trend estimated using quadratic regression model

Figure 4.20 PROJECTION OF SOYA BEANS PRODUCTION
BY 1990



Note: —— Estimated using linear regression model
---- Estimated using quadratic regression model

Table 4.8. It is shown in Table 4.8 that rice production estimated in this study is far lower than that by Richter, et.al (1983). In 1990 the difference is about 140 000 tons. In contrast, projections of maize in this study is higher than that of of Richter et.al, (1983). It is however judged that projected production of rice and maize undertaken in this study are likely more reliable than those of Richter et.al; (1983) for several main reasons as follows :

i. This study used more time series data than those of Richter et.al. (1983);
ii. Rice production is limitted by availability of fully irrigated arable land;
iii. Report of the provincial Food Crop Services (1983) on rice production, seem to have been over estimated (i.e. relatively high rice production per ha);
iv. In reality, until now, the province remains importing rice in contrast to a projection of the provincial food crop services in 1984 that the province would be self sufficient in rice production, and;
v. With respect to maize, in 1984 the province has exported corn as a result of a significant increase in corn production due to a program called "operasi mandiri" as described earlier. Increases in export would therefore keep price of maize relatively high which in turn encouraging farmers to grow more maize on their lands.

Net-balances of food crops resulting from the projections made in this study and various assumptions of consumption per capita, are shown in Table 4.9 , and 4.10

Table 4.9.
Projected Net Balances of Selected Commodities for North Sulawesi, 1980-1990

(000 ton)

Commodities	Years	1980			1985			1990		
Rice		104*	120**	125***	104*	120**	125***	102*	120**	125***
(10^3 tons)	a.	25,9	-8	-18	80,6	43,7	32,2	137,9	9[illegible],9	86,7
	b.	25,9	-8	-18	72,5	34,5	22,6	115,7	73,3	59,9
	c.	10,8	-25,4	-36,7	46,9	6,2	-8,1	77,3	28,8	13,7
	d.	11,7	-24,4	-35,7	50,9	9,6	-13,3	86,8	39,8	25,7
	e.	13,1	-22,8	-34,8	57,7	17,5	4,9	104,1	59,9	45,9
Maize (Corn)			45*			45*			45*	
(10^3 tons)	a.		63,6			97,3			[illegible],3	
	b.		63,6			93,9			14[illegible],6	
	c.		57,2			82,8			126,9	
	d.		57,6			84,5			131,1	
	e.		58,1			87,5			138,6	
Tober			50*			50*			50*	
(10^3 tons)	a.		29,9			7,3			-14	
	b.		29,9			3,4			-24,4	
	c.		22,9			-16,8			-43,2	
	d.		23,3			- 6,9			-38,6	
	e.		23,8			3,6			-30	
Pulses			3*			3*			3*	
(10^3 tons)	a.		33,5			51,2			72,3	
	b.		33,5			50,2			71,8	
	c.		33			50,3			70,6	
	d.		33			50,5			70,9	
	e.		33			50,5			71,4	

Note :
a. Estimated on the basis of Tan (1983)
b. Estimated on the basis of Richter, et. al. (1983)
c. Estimated on the basis of the estimated population of Jones, for a high rate growth (1977)
d. Estimated on the basis of the estimated population of Jones, for a medium rate of growth (1977)
e. Estimated on the basis of the estimated population of Jones, for a low rate of growth (1977)
* Based on per capita consumption of Richter et. al. (1983) 104 kg per capita per year
** Based on per capita consumption of Government of Manado Municipality (1983), 120 kg percapita per year
*** Based on per capita consumption of [illegible]. (1983), 125 kg per capita per year.

Table 4.10

Food Balance Sheet Projection of North Sulawesi

Food Crops		1985 (10^3 tons)	1990 (10^3 tons)	1995 (10^3 tons)
Rice *	Supply	383,8	349,5	415,3
	Demand	246,6	276,4	309,9
		+ 37,2	+ 73,1	+105,4
Maize *	Supply	181,4	212,6	243,7
	Demand	106,7	119,6	134,1
		+ 74,7	+ 93,0	+109,6
Tuber Crops **				
	Supply	147,0	145,2	143,3
	Demand	118,6	132,9	194,0
		+ 28,4	+ 12,3	- 5,7
Pulses **	Supply	42,5	59,1	75,7
	Demand	67,9	75,1	83,0
		- 25,4	- 16,0	- 7,3

Source : Richter et.al. (1983).

Note :

* Paddy, Maize ; allowance forseed and losses is 10 % ; conversion factor paddy to rice is 60%

** Tuber Crops, Pulses ; allowance for losses is 5 % ; allowance for seed and losses is 10 %.

Base year, 1983.

Table 4.11.

Projection of Demand for Selected Food Crops in North Sulawesi, 1980-1990

(tons)

Commodities \ Year		1980	1985	1990
R i c e	a.	220.000	238.635	254.136
	b.	220.000	246.611	276.442
Maize (Corn)	a.	95.192	130.326	109.962
	b.	95.192	106.707	119.614
Tuber	a.	105.769	114.728	122.180
	b.	105.769	118.563	132.614
Pulses (groundnuts) and Soya Beans	a.	6.346	6.884	7.331
	b.	6.346	7.974	7.974

Notes : a. Computed on the basis of estimated population in Tan (1983) and consumption per capita as reported by Richter et.al. (1983).

b. According to Richter et.al. (1983)

for the balances estimated by Richter et.al, (1983). The assumptions used are shown in Table 4.11.

It is shown in Table 4. 9 that in 1990, the net-balances of all food crops except those of tubers, are positive. The net balances of rice and maize, are more or less similar to those estimated by Richter et.al; (1983), that in 1990 the province would enjoy a surplus in quantities of rice and maize. However, with respect to pulses (peanuts and soya beans), Richter et.al, (1983) estimated 'negative net balances', in contrast to the positive balances estimated in this study.

It is judged that the most probable balances are those estimated in this study for similar reasons to those underlying the projection of rice and maize. Reliability of the judgedment, is also supported by the fact that as shown in Chapter 2, the province has been exporting (interisland trades) soya beans and peanuts, meaning that local production have exceeded local demands.

From the above description it can be seen that further investment in processing maize, soya beans and peanuts, to achieve relatively higher 'value-added' for those products, are open.

4.3.3 Projection of Livestock, and Fish

The estimated regression equations underlying projections for the commodities concerned have already been shown in Table 4.2. The resulting projections are shown in Figures 4.21 and 4.22 for eggs, Figures 4. 23 and 4. 24 for meat, and Figures 4.25 and 4.26 for fish. Altogether, the projections of those commodities up to 1990 have been

Figure 4.21 PRODUCTION AND THE CORRESPONDING ESTIMATED TRENDS OF EGG IN NORTH SULAWESI 1974-1982

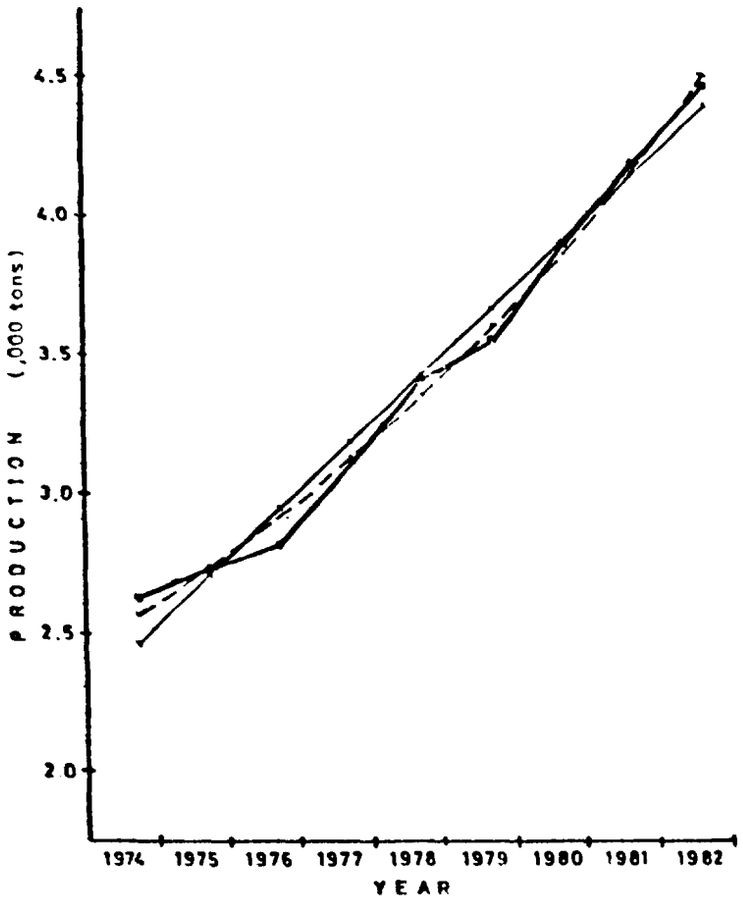
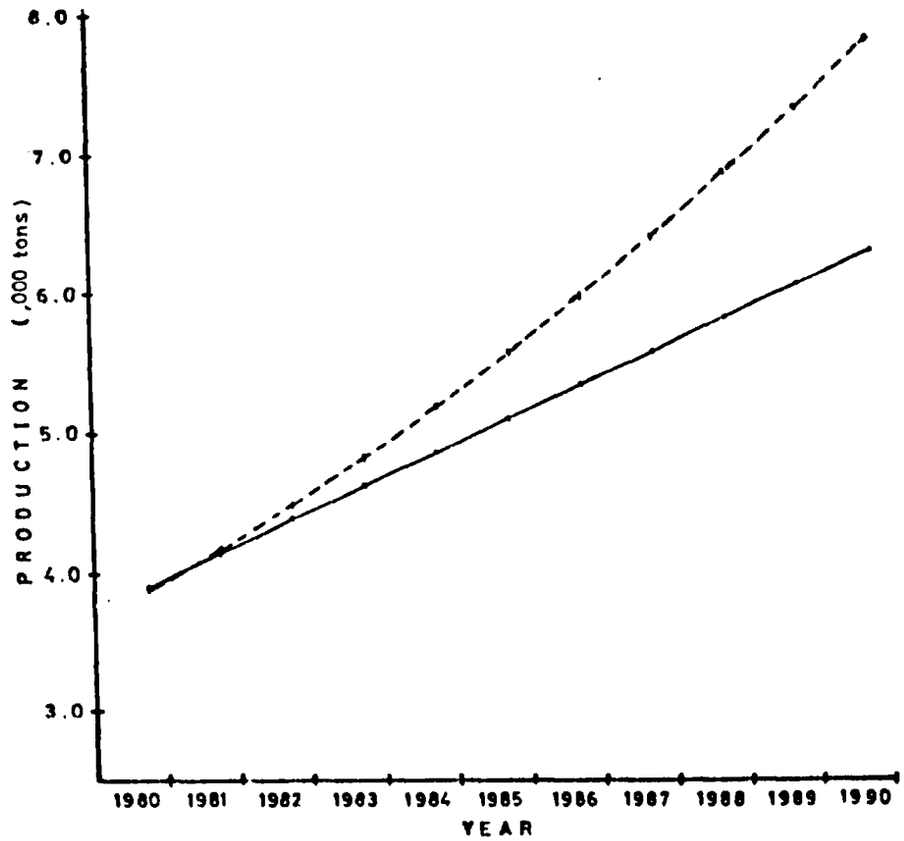
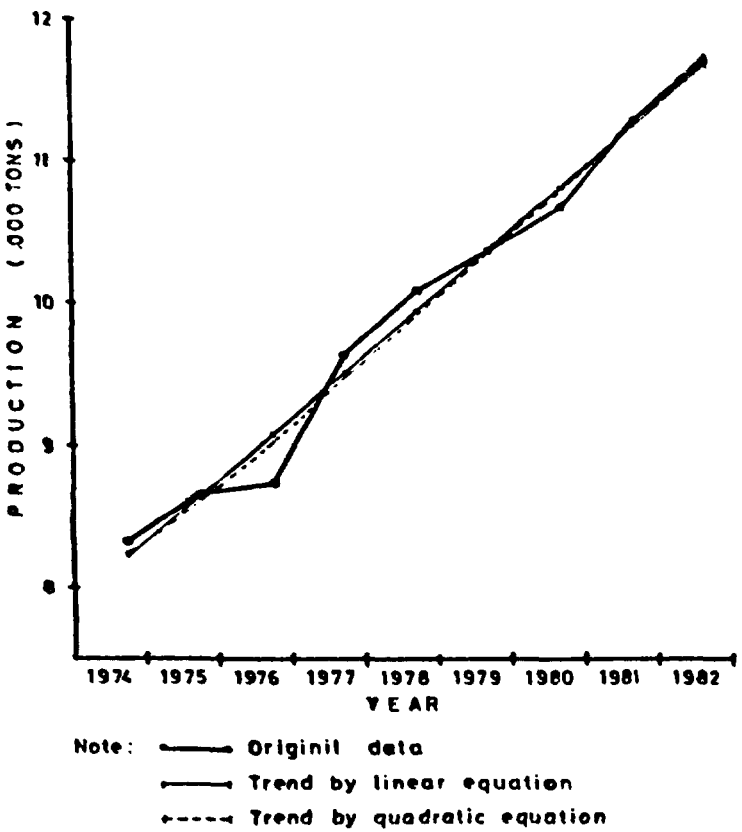


Figure 4.22 PROJECTION OF EGG IN NORTH SULAWESI 1980 - 1990



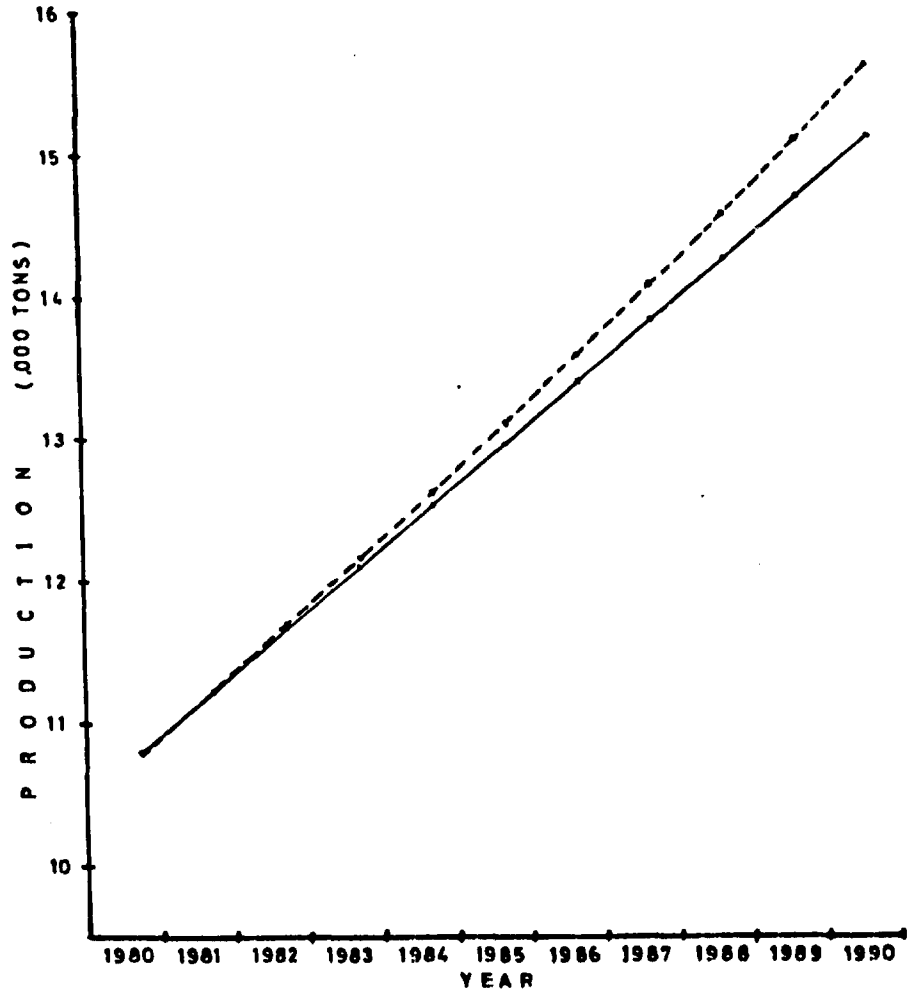
"CIPs"

Figure 4.23 PRODUCTION AND THE CORRESPONDING ESTIMATED TRENDS OF MEAT IN NORTH SULAWESI 1974 - 1982



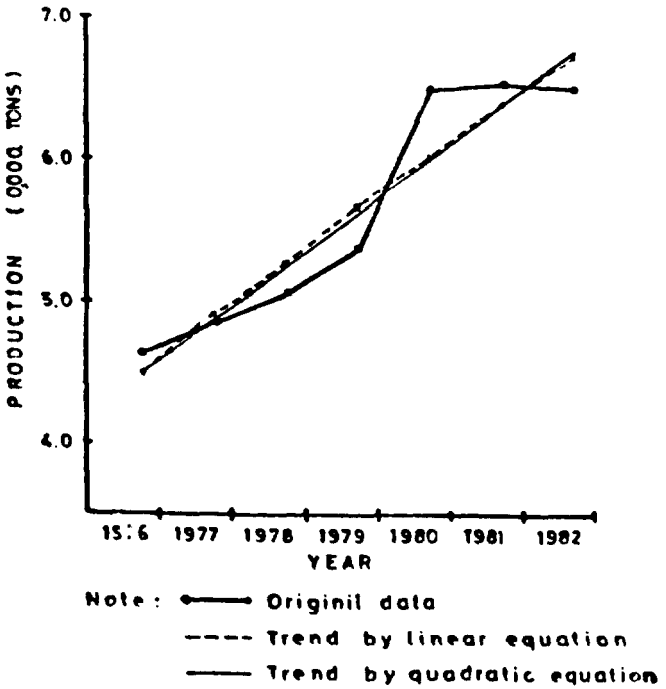
"CIPs"
jk lws

Figure 4.24 PROJECTION OF MEAT IN NORTH SULAWESI
1980 - 1990



Note : ——— Trend by linear equation
- - - - - Trend by quadratic equation

Figure 4.25 PRODUCTION AND THE CORRESPONDING ESTIMATED TRENDS OF FISHERY IN NORTH SULAWESI 1976 - 1982



"CIPs"
jb lws

Figure 4.26 PROJECTION OF FISHERY IN NORTH SULAWESI
1980–1990

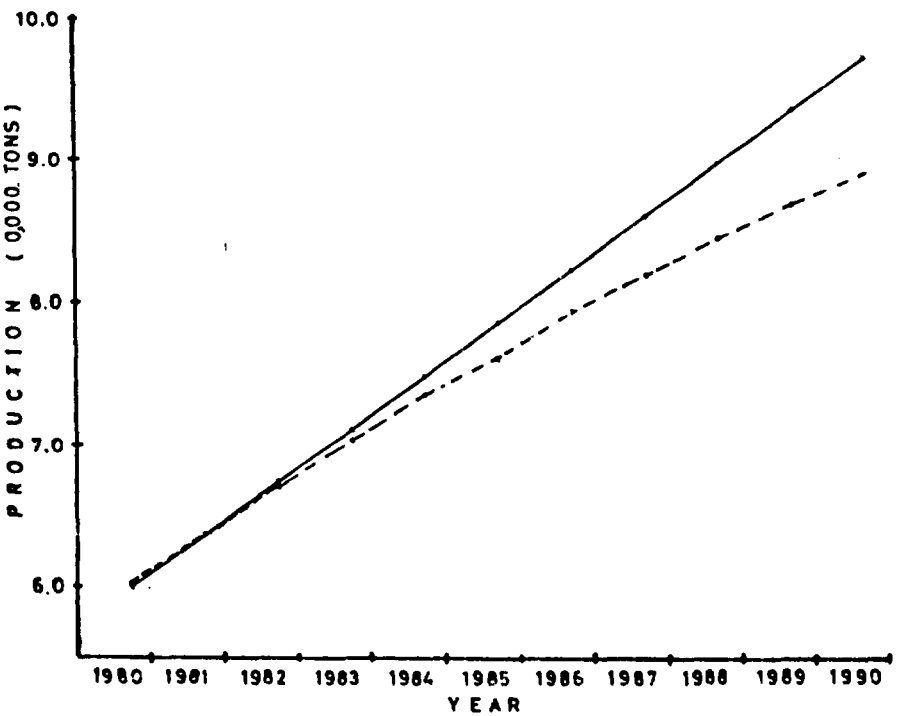


Figure 4.27 PRODUCTION AND THE CORRESPONDING ESTIMATED TRENDS OF TIMBER IN NORTH SULAWESI 1969/1970-1981/1982

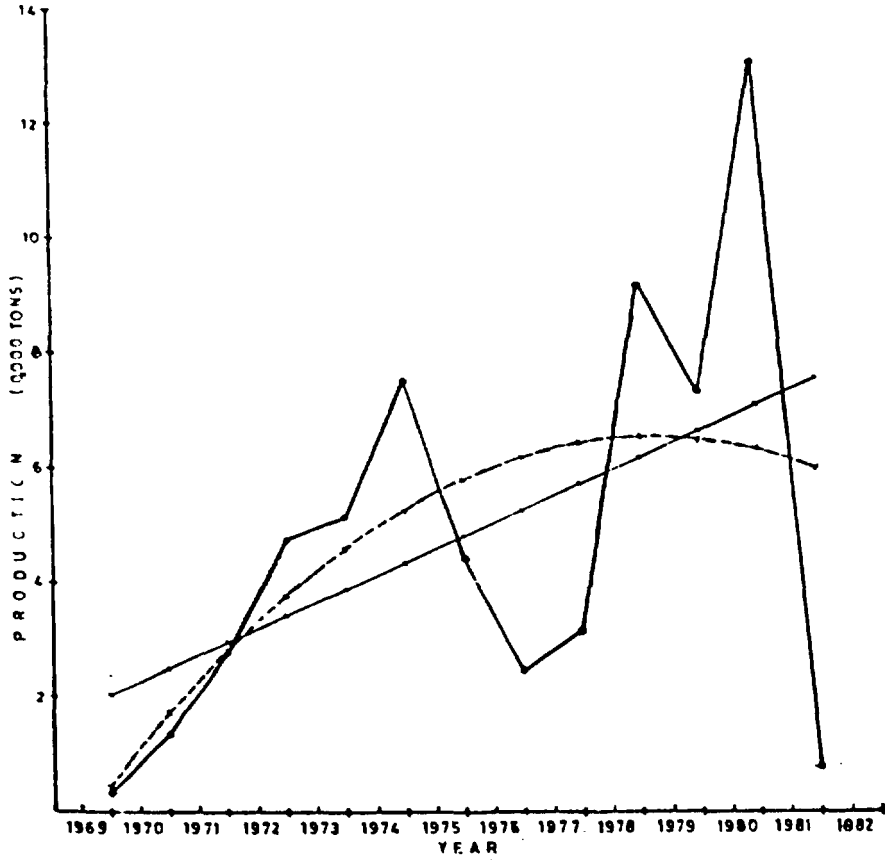
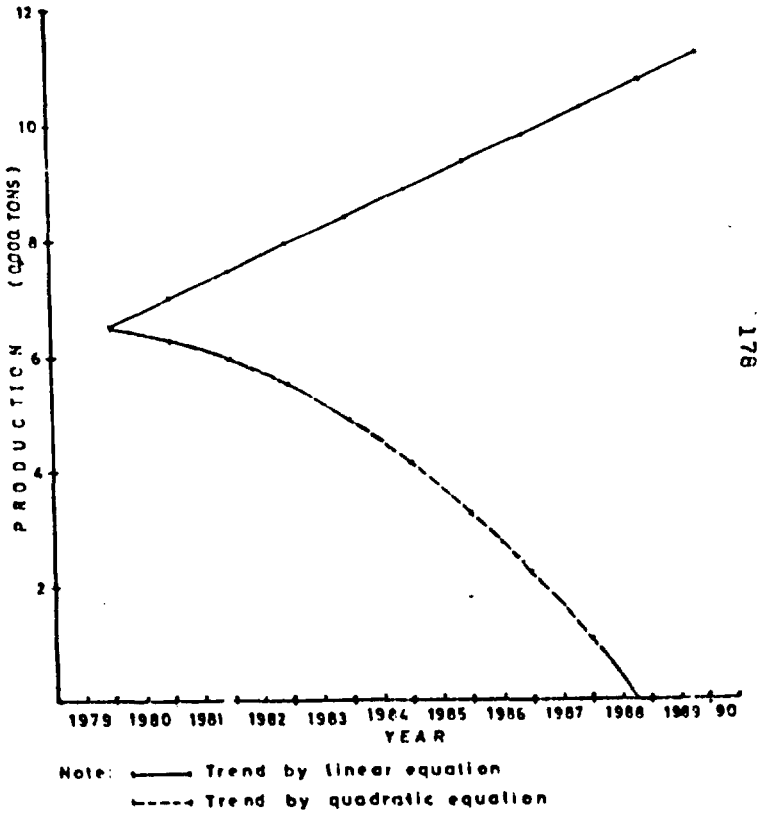


Figure 4.28 PROJECTION OF TIMBER IN NORTH SULAWESI
1979/1980 – 1989/1990



178

shown in Table 4.3 and 4.4 for the linier and quadratic regression equations, respectively.

By applying similar assumptions and techingues in the projections of net balances of the the food crops described above, net balances of eggs, meats and fish are obtained. The balances are already shown in Table 4.12. As shown in the table, except for fish, net balances of meats and eggs are negative.* This implies that the province needs to produce more eggs and meats to meet recommended minimum requirements specified or reported in Kaligis and Wilar (1983) and Rondo (1983).

The estimation/projections of eggs and meats above are however, seemingly inconsistent with a number of daily observations. North Sulawesian people do not seem to suffer from 'protein malnutrition'. Most protein consumed are supplied by relatively cheaper protein sources, especially fish. Furthermore, the province has been exporting cattle ti East Kalimantan and eggs to West Irian. In addition, in 1984 as a result of a Rural Credit Program of approximately $ 3 m allocated in the province in 1983, the province seems to have been able to export pigs. However, since pig export, did not take place yet, in early 1984,price of pig meat is now averagely only Rp 1000 ($,1) far below the price considered appropriate, i.e. $ 1.6 per kg (Sondakh, 1984).

The pheromena of 'excess supply' in pigs production above has been one of several reasons for government policy to plan to establish few modern abatoirs and to encourage exports. So far however, none of the proposed investments and activities have been undertaken yet. The main constraints faced, is in the field of marketting and trade. Consequently,

* This is based on an assumption of a minim requirements of animal protein per capita. However, since the province is a fish consuming region and fish is the main substitute for meat then the negative balance is unlikely a problem. Kaligis and Wilar (1983) must have over estimated the demands for meat and eggs.

Table 4.12.

Net Balance Sheet for Livestock, Fisheries in North Sulawesi, 1980-1990

Commodity / Year		1980	1985	1990
Livestock (ton)				
meats	: Supply *	10 809.23	12 974.32	15 139.41
	Demand**	15 364	34 376	64 308
	Balance	- 4 554	-21 401,68	-49 168.59
egg	: Supply *	3 916.02	5 124.35	6 332.68
	Demand**	3 028	6 383	11 402
	Balance	- 888.02	- 1 258.65	- 5 069.32
Fisheries (ton)	Supply *	60 123.55	78 800.64	97 477.31
	Demand***	63 461.52	68 836.80	73 308.30
	Balance	-3 337.97	9 963.84	24 169.01

Note :1) * Own Estimated
** Estimated by Kaligis and Wilar, (1983)
*** Estimated by Rondo, (1983)
2) There is inconsistency between the negative balance implied and the fact that the province is exportim livestock. The explanation is that the Kaligis and Wilar selver to have over estimated the minimum meat and egg requirements per capita.

it is in the marketting and trade sectors that investments can be directed to.

Prospect of fish seems good for two reasons :

(i) As shown in Table 2.26, approximately 50 per cent of the resources are still available for catching. The resources is in fact higher when one considers resources in the ZEE (Zone Economic Eclusive), i.e. 200 km off-shore.

(ii) In the third Fourth Five Year Plan, the regional government pay more attention on improvement of transportation and communication infrastructure, including estalishment and improvement of 'fishing ports', i.e. Bitung and Dagao.

(iii) The role of Japan fishing vessels in catching fish in Indonesian sea teritory is very likely to limit in the future, so that relatively more fish can be caught by a unit of catching equipments of Indonesian fishing vessels.

(iv) Investment projects on fishing did not seem to have some serious 'economic and bussiness difficulties'. One seemingly difficulty faced is in organising small fishermen to participate in an integrated fishing development project.

At present avarage fish consumption per capita in Indonesia is only 13 kg per annum. According to Watts. et.al. (1983) the minimum consumption level is targeted at 30 kg of fish. So, further improvement in catching, marketting and distribution in the fishing industry would certainly have a good market either in Indonesia, as well as abroad as described in Chapter 2.

4.3.4 Projection of Timber

Production of timber projected using the linear and quadratic regressions, as shown in Table 4.3, would be 112 289 m^3 and - 17 584.12 m^3 in 1990 respectively. Data used in the projection are those data reported by SUA (1983). The projections based on the quadratic regression model, in one side seem unconvincing from the stand point that potential timber production in the province; as shown in Chapter 2 is 480 000 m^3 annually. Even when this figure is compared to those projected on the basis of the linier regression equation, the projected timber production in 1990 is still far two low than the potential production above.

The projected figures above seems to have been based on 'poor quality of data' reported in SUA (1983). According to SUA, timber production in 1983 is less than 100 000 m^3. According to Bappeda (1983) the timber production in that similar year is already 210 442 m^3 (see Chapter 2), and 269 558 m^3 are still available for cutting, processing and export.

One possible way to reconcile the above inconsistency is that it seems very likely that major part of the potential production is still 'unreachable' and relatively expensive to exploit. Unreachable because of relatively heavy topography and unavailability of transportation. Expensive because of the difficulties in transportation as well as relatively lower tree density. The density is only 88.2 m^3 per ha in comparison to 92.3 m^3 of avarage Indonesian forest production.

Completion of the Trans Sulawesian road in the fourth Five Year Plan combined with increasing demand for timber

and rattan would likely be able to remove the above difficulties. Therefore, the outlook of investments in the forestry sub-sector, in the Fourth Five Year Plan, is quite promising. Any investments must however be limitted to exploit at most 150 000 m^3 per year. Poor availability of data shown above implies that before an investment project to be undertaken, one should first cautionsly carry out a set of sound feasibility studies.

4.3.5 Outlook of Other Commodities and Services

The other sub-sectors/(commodities and services) considered important to be described here are mining, energy, and tourism. Mining prospects shauld be bright due to increase in demands for raw materials to be used for an industrial development. From those mining resources described in Chapter 2, the ones who have mostly attracted (private) investors are, construction rocks, cements, kaolin, and geothermal energy. The others are still at the stage of further explorations though some investments have ever been undertaken, such as mining of gold, sulfataras, etc.

Prospect of tourism seems quite bright because of a number of natural resources such as Sea Garden in Bunaken Island and wild animals in North Sulawesi forests such as Anoa, Musang (Macrogalidia muschenbroek SP), 'Yaki' (macaca nigrescens), and 'kelelawar bone' (bonerbiolms). Trend of tourists coming to the province has been increasing over time, especially since establishment and improvents of Sam Ratulangi airport as a center of air transportation in Northen part of East Indonesia. The prospect of tourism would even be more highter if in the future Bitung would be established as a main export-import harbour inIndonesi. At present, visits of international ships to the Bitung Port is still irregular.

4.3.6 Outlook and Availability of Basic Needs

Basic needs, according to Streeten and Bukti (1976) consists of food, potable water, cloths, health, education and participation in decision making process. Among these items, other goods considered as basic needs, are called as 'sembilan bahan pokok', i.e; rice, saled fish, sugar, textile, edible oil, kerosene, salt, soap and 'batik' (textile). Minimum requirements of these items are shown in Appendixes 4.1 and 4.2.

It is shown that for one to be able to meet the needs, a minimum income of Rp 66 700 (i.e. approximately $ 105 in 1980). This amount is far below the average annual per capita income of approximately $ 375 in 1980. However, due to skewness in income distribution, some people are not able to meet the needs. In fact some portion of people do not mainly use rice as staple foods. The staple foods in rural areas of Gorontalo, Bolaang Mongondow and Minahasa are mainly both rice and corn and those in Sangir Talaud Islands are Sago, Sweet potatoes and cassava, the lower quality foods. However, because fish is quite abundant in the province, cases of protein-calorie malnutrition are quite rare. In other words, one may find poor but not starving people in the province.

Poverty is therefore reflected by consumption level of other basic needs. With respect to housing, according to CIDA (1983), 39 per cent of housing (floors), are uncovered by any materials (wood, bamboor or cement). The districts chosen by CIDA's studi above are considered typical for coastal areas in the province and therefore may roughly reflect the main feature of the province as a whole especially in the coastal areas. In mountainous areas, the main materials

for shelters are timber and pozzolano. Conditions of shelters however are mostly 'unfavourable', unavailabily of electricity is insufficient and in adequate potable water. Only 16 per cent of houses in the province have electricity (Waworoentoe, et.al., 1983) and potable water are mostly from 'sumur'[1/] In 1980 only 16 855 households had excess of 'pipedwater'

Electricity has been regarded as a basic need. Therefore in the Fourth Five Year Plan, the government has tried to carry out a massive rural electrification program. However, due to increase in 'oil' prices, it is not certain yet how the government can fullfill the commitment since the program, especially that in Gorontalo relies an 'oil genarators' in different to that of hydro powered generator in Minahasa, and geothermal energy in Lahendong for electricity.

With respect to health, according to Bappeda (1983) there are 1978 medical doctors in the province i.e. 7 medical doctor for every 1000 people. In 1977, according to World Bank (1982) medical doctor: population ratio was 1 : 13 670. This implies that health services in the province are for much better than the average Indonesian health services. Obviously one has to consider the distribution of the services. Though no empirical data can be provided yet, but it suffices to indicate that health services in the province is quite good. In each district there is at least one unit 'small hospital' called 'puskesmas'.

Analysis on amounts of basic needs imported in 1980 however, indicates that the minimum requirements of basic needs specified were not fully met yet, meaning that in

---

1/ Sumur is Indonesian name for ground water used as drinking / potable water.

reality some people do live below the porvety line, as shown below.

Table 4.13

Recomended Minimum and Actual Per Capita Consumption of Selected Basic Needs

Commodities	Minimum Requirements	Actual Supply
Textil	4 m	2 m
Sugar	6 kg	12 kg
Kerosene	60 l	104 l
Salt	9 kg	4 kg
Soap	10 kg	2.75 kg

Source : Recomputed from Lastario et.al. (1983) and Kanwil Perdagangan (1981).

From the above table, it can be noticed that the actual consumptions do not closely match or exceed the recommended minimum consumptions. Those items that are below the recommended minimum levels, are textils, salts and soaps. Import of soap however, is lower than the minimum requirements because the province is also a soap producing province. The production is however still inadequate to meet the local demands.

From the above illustration it seems reasonable to see that availability of the basic needs commodity in the next Fourth Five Year Development Plan is unlikely a problem. Consumption of kerosene may likely to decrease because of the recent increase in keronese price, but consumption is still likely far above the minimum requirements.

4.4 Concluding Remarks

The economy of the province is predominantly influenced by the agricultural sector. The main influential commodities are copra, clove nutmeg, fish and timber. Unfortunately, assuming constant prices through out 1984-1990, and if the present trends of growth of commodities produced in the sector continue to take place by 1990, then, one should not expect an economic growth rate of more than 5 per cent per annum. This is because, copra, clove, nutmeg, fish and timber, production would increase only at most 6.5, 6.78, 1.63, 4.05 and 5.20 per cent per annum, respectively. (See Table 4.1; 4.2 and 4.3). These likely maximum rates are relatively low, lower than the intended economic growth of targeted by BAPPEDA of 8.7 per cent, and even still lower than the most likely intended growth rate of 6.7 per cent per annum. Sharp increases in production of the other cash crops can be expected for vanilla and ginger and food crops. The outlook indicates that in 1990 the province would be self sufficient in rice and enjoy surplus in maize and soyabeans. In other words availablity of food in the future would be more than sufficient.

Employment problem may however be getting more difficult. Even if the present family planning program be successful, rate of growth of labour force would still be higher than the corresponding rate of growth of employment availabilities. As a result, outmigration may increase espesially for those shcool leavers who could not find jobs. A relatively high outmigration would therefore create more pressure on the population problem in Java since majority of migrants from the province went to East Java and Jakarta. Rate of urbanisation is unlikely to increase because of relatively slower growth of manufacturers in urban areas, whilst possible investment would take place most in rural rather than urban areas.

Bappeda (1983) has made an attempt to conduct economic projection up to 1988 as shown in Appendix 4.2 and 4.3. As indicated in the appendix, the projections are based on assumption of an economic growth rate of 8.7 per cent per annum. Such a rate, requires increases in investments public and private for an economic transformation take place, i.e. the role of agricultural sector be decreased from 45.10 per cent in 1975, to 35.13 per cent in 1989 and the role of manufacturing sector increased from 4.27 per cent to 9.28 per cent. Such a transformation according to Bappeda (1983), would require increases in rates of growth of the industrial sector of 14.37 per cent, the servicing sector of 11.94 per cent, the electricity sector of 18.59 per cent, the mining sector of 13.09 per cent and agricultural sector of only 8.37 per cent.

A glance from the pattern of development during the past Three Five Year Development Plans would however suspect the above estimation of the economy to grow at 8.37 per cent per annum and to be accompanied by the mentioned structural transformation. Naturally, for the transformation to take place, the agricultural sector must increase far more rapid than the projected rate of growth which are in general below the 8.37 per cent. The increase is crucial to allow increase in saving available for investments. The fact that not only the agricultural sector increased at lower rate but also saving available in this province seems to have been invested some where else. This is indicated by the fact that capital outflow in the province is higher than the capital inflow, and 'real saving' in for lower than the assumed average saving ratio of 15 per cent.

Chapter 5

THE POSSIBILITIES FOR INVESTMENT

5.1 Introduction Remarks

The ultimated objective of a private (public) investor is to maximize financial (economic) return of investments. In economic 'jargon', the return is measured by a number of criteria such as Internal Rate of Return (IRR), Net Present Values (NPV) etc. Finacial (economic) return of an investment project depends on a number of production factors/resources as well as marketing, and the combination of both. The set of production factors consists of rersources (physcal and human/labours), techology, and management. With respect to marketing, the ones that mostly important for prospective investors are his assesment on potential market sizes. Such assesments are crucial for a prospective investor to formulate a number of investment and marketing strategy in order to chose the 'best' one to achieve/maximaze the objective function.

However in Indonesian context, an investment project can not be undertaken simply on the basis of 'financial efficiency criteria', but also on the basis of 'economic efficiency criteria' as proposed by Gittinger (1974); Little and Mirrlees (1968) and/or OECD method (OECD; 1972) and UNIDO method (UNIDO, 1972), or if possible, on the basis of 'social efficiency criteria' as described in Squire and Van der Tak (1974).[1] The scope and nature of this study

---

[1] A comprehensive review of all these methods have been undertaken by the author (editor) in his Ph.D. thesis at the University of New England, Australia (See Sondakh, 1983).

however limit the application of the above methodology. However, an attempt is to be made to provide some insights on investment possibilities on the basis of meeting a set of objectives of reducing unemployment and provision basic needs by making better use of the resources available.

5.2 Choice of Investment Strategies

A number of investement alternatives or strategies are open to be selected to achieve the investment objective described in Section 5.1. Unfortunately, the strategies open are usually mutually exclusive. Consequently, one (i.e. a policy maker) is faced with a problem of choice, i.e. a problem to select a 'best' strategies among the strategies available. The choice may be faced can be listed as follows :

(i) The choice between the production 'import substituting commodities' and for ' export commodities'

(ii) The choice between labour, capital or knowledge intensive technologies,

(iii) The choice between public or private investments, i.e. whether a specified set of development objectives should rely on public, private on combination of both investments,

(iv) The choice between concentrating investments on primary or based industry ('industry hulu') or on 'secondary and tertziary' industry (industry hilir), or on filling up the so-called 'structural emptiness', i.e. unavailability of establishment/firms in bridging a gap between 'industry hulu' or 'industry hilir',

(v) The choice between promoting private investments through foreign or domestic investments, or 'combination of the two'.

Different strategies would contribute different contribution to the different objectives. Quite often, a (set) of strategies may contribute to the achievment of one objective at the expense of another objective. For example, a capital intensive investment seems in favour of

the efficiency criteria but may not be so in terms of employment and distributional criteria. Or, in other words, there may be a trade-off between the (competing) objectives.

One implication of the 'phenomena of likely 'trade-off' between the competing objectives is that the policy makers can not get rid off attaching a certain scale of priorities. A priority is usually given to a strategy that may best approach or if possible solve specified or identified policy issues. This means that policy issues must be first described. The main policy issues viewed as indicated in previous chapters, that of seemingly growth without development. Economic growth rate does increase but it increased at a decreasing rate. This is caused by the fact that during the past three Five Year Development Plans, no structural changes have taken places and unemployment may likely increase.

In the next Five Year Plan, as shown in Chapter 3, not to mention the number of 'half-employed' work forces, approximately 40,000 work forces would be unemployed. The number of labours employed by an establishment varies according to kinds or types of investments, small, medium, large or labour vs capital intensive investments.

Table 5.1 provides some insights on labours employed by different investments. For domestic investments, capital labour ratio ranges from Rp 2.4 m to Rp 6.4 m (current prices) and for foreign investments, it ranges from Rp 143.9 m to Rp 221.7 m per labour employed. So by taking the lowest capital labour ratio of Rp 2.4 m, then, for the province to be able to absorb the projected 40,000 unemployed labours, investment required would be approximately Rp 100 billion.

Table 5.1

Capital Labour Ratio of Domestic and Foreign Investment in North Sulawesi

($Rp\ 10^6$)

	Domestic Investments $Rp\ 10^6$	Man power	Capital per Labour	Foreign Investments $Rp\ 10^6$	Man power Employed	Capital per Labour
F F Y D P	8,686	1969	4.4	80,300	558	143.9
S F Y D P	15,059	2445	6.2	N.A	N.A	N.A
T F Y D P	9,273	3887	2.4	203,126	916	221.7
T O T A L	33,018	8301	3.9	283,426	1474	192.3

Source : Compiled from SUA, (1983).

Note : FFYDP is the First Five Year Development Plan
SFYDP is the Second Five Year Development Plan
TFYDP is the Third Five Year Development Plan

During the past Three Five Year Development Plans, the total amount of private investments, as shown in Table 5.1 amounted to only Rp 33 billion, and for foreign investments during the First and Third Five Year Development Plans was Rp 283 billion. However, rate of labour absorption in foreign investments are very low so one should not relies on foreign investment to solve the unemployment problems. (see to appendix 5.4)

The estimated additional investments of Rp 100 billion during the Forth Five Year Plan to solve the unemployment problems shown above, if it can be made available however, may unlikely to yield in a quite rapid economic growth. A macro economic exercise in estimating investments requirements to achieve a specified economic growth rate for North Sulawesi is shown in Appendix 5.1. It is shown in appendix that for an assumed ICOR (Incremental Capital Output Ratio) of 0.33 and 0.25, annual additional investments required are at least Rp 13 billion and Rp 45 billion. The requirements are even greater if the real domestic saving available in banks in used. The real saving is approximately one-third of the assumed average saving ratio of 15 per cent of GDRP.

In 1982/1983 the total investment of the province was, as shown in Table 5.2 , Rp 138.5 billion. Of this total investment, only 2.17 per cent are private investments. The remaining are mostly public investments. Furthermore, even the public investments, approximately 50 per cent of then are financed through APBN. The provincial receipts and expenditure, as shown in Table 5.3 and 5.4 are only around Rp 50 billion in 1982/1933. Even of this mount only Rp 12 billion directly comes from the provincial revenues.

Table 5.2

Composition of Investments in North Sulawesi 1982/1983

(Rp 10^6)

Items	Amounts	Percentase
a. Public Investment		
APBN/Sectoral	71,429.0	51.59
Central Government	7,023.0	5.07
Regional Government (Provincies + Regencies)	7,619.0	5.50
Credits	22,014.0	15.90
Government Special Aid	26,762.0	19.33
Sub Total	134,847.0	97.39
b. Private Investment		
Domestic/Regional Investment	3,001.0	2.17
Foreign Investment	-	-
Social Self Help/Village Project	0,615.0	0.44
Sub Total	3,616.0	2.61
c. T o t a l	138,463.0	100.00

Source : Compiled from SUA, (1983) .

Table 5.3. Expenditure Pattern in North Sulawesi
1976/1977 - 1981/1982
(Rp 10^3)

Type of Expenditures	Years					
	1976/1977	1977/1978	1978/1979	1979/1980	1980/1981	1981/1982
A. Routine Expenditue						
1. Personal Expenditure (Wages and jalaries, etc)	7.151.557	13.694.200	11.513.284	14.434.396,00	19.180.379,00	23.336.089
2. Material Expenditure	231.099	301.307	626.370	1.203.448	1.846.922	2.216.811
3.Current Subsidies	1.549.074	-	3.457.132	4.306.260	6.443.396	8.814.837
4. Loan Repayment	-	-	-	-	-	-
5. Rent Repayment	-	-	-	-	-	-
6. Reparation & imporment of Current Expenditure	53.135	86.417	217.836	247.025	422.285	432.579
7. Other Curren Expenditure	467.024	1.288	566.382	317.953	1.046.805	1.733.817
Sub T o t a l	9.451.679	14.083.212	16.381.004	20.509.082	26.939.786	36.534.133
	(90,90)	(82,67)	(78,82)	(91,19)	(60,84)	(77,22)
B. Development Expenditure						
1. Expenditure for [illegible] improvement of building, steet, bridges Irrigation project etc	442.915	1.005.639	2.704.831	818.582	7.936.366	N.D.
2. Expenditure for establish new building, street, bridges irrigation project etc	362.214	640.292	432.348	438.853	2.233.486	9.445.775
3. Current Subsidies	91.553	224.526	122.000	85.000	1.690.000	750.000
4. Other Current Expenditure	45.758	1.080.519	1.143.690	640.113	-	472.093
Sub T o t a l	942.439	2.951.030	4.402.869	1.982.548	6.859.852	10.776.868
	(09,10)	(17,33)	(21,18)	(08,81)	(19,16)	(22,78)
T o t a l	10.394.317	17.034.242	20.783.873	22.491.630	35.799.638	47.311.001
(%)	(100)	(100)	(100)	(100)	(100)	(100)

Source : Recalculated from SUA (1983).

Note : Figures in Parentheson are on persentage basis.
N.D, No data indicated.

Table 5.4. Routine and Development Receipts in North Sulawesi
1976/1977 - 1981/1982
(Rp 10^3)

Items	Budget Year					
	1976/1977	1977/1978	1978/1979	1979/1980	1980/1981	1981/1982
A. Routine/Operating Receipts						
1. Taxes	371.343	969.171	1.093.367	899.204	2.280.022	2.643.457
2. Other revenues	909	1.354	3.371	11.160	152.203	206.396
3. Extention services	47.512	83.317	310.754	282.324	324.231	504.985
4. Subsidies from Central government	8.141.289	16.128.439	12.843.712	18.765.341	29.189.683	34.627.414
5. Loans	-	-	-	-	-	-
6. Others	81.817	-	568.796	2.973	-	645.575
7. Housing/building revenues	869	51.697	-	13.275	-	-
Sub T o t a l	8.643.740	17.233.978	14.820.000	19 974.277	31.946.139	38.627.827
	(79,43)	(83,83)	(77,71)	(78,52)	(82.09)	(76,76)
B. Development Receipts						
1. Previous year surplus	-	-	936.607	1.428.755	995.909	2.244.687
2. Grant fron Central government	1.358.000	1.716.000	2.000.000	70.500	5.905.648	8.564.231
3. A.D.O. Substituted grant	-	-	-	2.536.000	-	-
4. Regional development contribution Taxes	43.999	60.756	63.999	74.583	68.000	70.825
5. Local Funds	76.400	49.734	611.655	4.553	-	-
6. Other development Receipts	760.067	1.498.873	639.262	1.351.339	-	812.986
Sub T o t a l	2.238.466	3.325.363	4.251.523	5.465.731	6.969.557	11.692.729
	(20,57)	(16,17)	(22,29)	(21,48()	(17,91)	(23,24)
T o t a l	10.882.205	20.559.341	19.071.523	25.440.008	38.915.696	50.520.556
(%)	(100)	(100)	(100)	(100)	(100)	(100)

Source : Recalculated SUA (1983).

Note : A.D.O., is an acronym of Alokasi Devisa Otonomi (Desisa allocated to Regional Government).
Figures in parentheses are on percentage basis.

At national level, for example during the last 13 years, i.e. 1967 to 1980 total foreign investments approved by the government of Indonesia was US $ 7,921.8 m, in which the approved investments in Indonesia was only US $ 81.9 (1 per cent). Witn respect to approved domestic investments, the total for the whole Indonesia was Rp 5,190,936 m in which only Rp 37,915 m (0.7 per cent) in North Sulawesi. The proportion of private investments in the province shown above are far lower than the propotion of its population which is 1.4 per cent of the total population in Indonesia.

Until know there has not been reliable studies undertaken in examining why private investments in the province is relatively low. However, from Chapter 2, one can notice that the main constraining factors are that the province is subject to 'lack of economy of scale' and it does not enjoy comfortable 'comparative' advantages in industrial development, except for fishery, coconut and clove industries.

The province geographical location which is quite for from the main market in densely populated islands in Java, limits market. Also, the province because of its population of only 2.1 million, inadequacy of infrastructure etc, are seem to be the most determining factors of the existence of lack of economy of scale. On the other side, relatively high wage rates seems to be the factors affecting the lack of comparative advantage.

From the above description, one may notice that to chose the best strategy described is quite complicated.

On the one side a relatively large quantity of saving are needed to meet the employment and basic needs objectives, but on the other side the opportunity cost of such investments may likely be greater, especially from financial and/or economic efficiency criteria. The difficulties are further complicated by the fact that in the next few years, the government seems to face shortages in public earnings because of declining in oil revenues. In other words, capital is going to be more expensive and limit the implementation of any subsidy programs to cure unemployment and to meet basic needs.

Due to a quite serius capital constraint then, the only alternative/strategy open is to substitute capital through labours and technology. In other words, the investment strategies needs to be directed toward training and education to enable people to apply better technologies, and to work harder and more efficient, so that the resources can be utilised to best achieved the multiple development objectives; employment, and basic needs/distribution, without of course impeding economic growth, i.e. an approach of 'growth with development'.

5.3 Potential Resources for Possible Future Investments

Resources of the province as shown in Chapter 2 are mainly in the agricultural sector, plus some in mining (environmental) resources. The agricultural sector is dominated by copra, clove, fish and timber. In the mining sector, several resources has been indicated available, but their real potential do not seem to have attracted yet real investment. The likely reasons for lack of investments in the mining sector are:

(i) the real potential have not been very well indentified,

(ii) the likely potential do not seem sufficient enough to attract a long term investment, and;

(iii) some of the resources, though available in relatively large amount, can not yet be economically exploited due lack of economic of scale and comparative advantages, because of inadequacy in infrastructure and uncertainty in markets.

Those resources belong to the above categories are summarised in Table 5.5. It is shown in the table that by 1990 the possible investments open (to be readily undertaken) are, investments on utilitation of geothermal energy, cement production, and continuation of production of Kaolin, Sulphur, Gold, Silver and Pozzolan. The others, seem to be not readily open for direct investments, since further studies indentifying their real potential have to be undertaken yet.

Table 5.5 also indicates that the province does not seem to have coal, oil, and uranium the most demanded commodities to enable the region to enter an industrial era. Some energy resources, have been shown available such as geothermal and hydro-power but one has to wait for approximately 2 - 5 years for the resources to be readily exploited. Inadequacy in energy resources is faced in production of cement that has to used 'coal' from East Kalimantan. Lack of energy resources is also felt by industries that have to rely on electricity. Production of electricity is not yet sufficient. However, it is planned that electricity production may increase two fold in the end of the Forth Five Year Plans.

Table 5.5

Categories of Mining Resources Potential for Investments

i	ii	iii	iv
Molibdinum	Gold	Geothermal energy	Kaolin
Copper	Silver		Sulphur
Nickel		Cements	Pozzolan
Copper		Iron	Hydro power
Manganese			
Obsidian and Perlite			
Pumice			

Note : Categories (i) to (iii) are shown in the preceeding page, and (iv) is those resources presently being exploited.

From the above description, the only resources readily subject to attract investments by 1990 are the agricultural resources. The most attractive agricultural resources for further investments are coconut replanting, fishing, animal feed production, processing of corn and pulses, and further processing of coconut oil. As shown in chapter 4, by 1990 the province may enjoy surplus of these products.

New investment on coconut oil and copra milling is however unlikely attractive since the present coconut oil investment in coconut industry is in coconut replanting and rehabilitation, and on processing coconut fibres, charcoal in decicated coconut and coconut milk and coconut cream.[2]

Details of prospects of investments in processing coconut by products have been described in Rondonuwu (1983) BPEN (1976). By products of coconuts are nutshell, fibre and coconut water. Approximately there are about 25 million coconut trees in the province with nuts production of one (1) billion nuts, and therefore one (1) billion of coconut shells and fibres plus approximately 100 million litters of coconut water. Some of these products especially coconut shell (charcoal) have been processed through investments projects but due to some reasons the projects have not been quite developed yet. Coconut trunks (logs) would also be available at large numbers in the province. Approximately 150,000 ha of coconut trees need to be cut down i.e. rejuvenated by younger and more productive palms such as

---

[2] Detail description an prospect of investments an processing coconut by products can be seem in Rondonuwu (1983) and BPEN (1976).

hybrid palm variety. It is however not fully known yet what to do with the above trunks (logs).

Most of cattle slaughtered in Manado and exported to East Kalimantan come from Gorontalo and Bolaang Mongondow area which are relatively dry compare to that in Minahasa. Furthermore, Gorontalo is the main corn producing region. Minahasa is the main swine/pig producing region, its people are fond of raising these livestock and, swine feed especially coconut meal and corn can be easily obtained at relatively lower prices. The province poultry population has increased dramatically since the past 12 years and potential for further increase remains open provided these poultry meat and eggs can be further processed.

There is however no dairy cattle in the province. This does not mean that dairy cattle can not be raised in the province. The province used to have a number of dairy farms, especially in 1950s and 1960s. Some places in the province is suitable for dairying, especially in rural Minahasa where daily temprature are lower than 24 ° C. However, until know no new investments have been undertaken in dairy production. Markets of milk in the province should be good because no dairy farm so far. The main constraint however may be in adequacy of electricity. However, especially in Minahasa such electricity may now unlikely be a problem.

New investments on logging and saw-mills are not open due to logging concessions appear to have unintentionally exceeded the area of forest production.[3]

[3] It is preliminary reported that area of logging concessions in the province is already 810,000 ha for larger than the area of forest production to approximately only 600,000 ha.

However, investors holding the concessions do not seem to have diversified their activities. The only district well known for wood (furniture) manufacturers in the province, is in Minahasa (Leilem). The province is a rattan exporting country. With repect to rattan it is preferable to see that the rattan is not exported as raw materials. Rattan furniture manufacturers are mainly in Gorontalo. However quality of products needs further improvements.

Investment in increasing clove production is unlikely feasible since expected clove prices in the near future are likely to decrease. The clove industry in Indonesia strongly competes with that in Tanzania. At present, farm gate (floor) price is Rp 7500 and c.i.f. prices is only Rp 5500. This means that investments an processing clove for clove oil etc are quite attractive, provided that market of clove oil is available. At present it is not known yet (by the writer) whether such a market is available. Two other commodities have strongly been proposed by the provincial Plantation Service for investments, i.e. vanilla and ginger. Thie plantation services has demonstrated that preliminary indicated good market of the crops. As shown in Table 2.29 the commodities have good prospect to be exported.

5.4 Future Investments in Production of Basic Needs.

As indicated in Chapter 2 and 4, among those basic needs, some of them have not been completely met yet by local production such as essential food (rice, meat, eggs ands milk), electricity and housing. Furthermore, those people who may noy be able to live at or above a particular specified minimum subsistent level are relatively high.

This is because approximately 20 per cent of farm households in rural areas do not have land and therefore their incomes are likely below the subsistent level.

Increase in rice production can be achieved either by provision of subsidized credit packages to enable them to adopt new farming methods or by further development of irrigation dams and cannals or the combination of both.As described in Chapter 2, of the total potentially irrigated rice fields, about two-third of them can not yet be fully irrigated because ofd inadequate and/or malfunction of corresponding tertziary cannals.

Completion and/or maintenance of the tertziary cannals are expected from social participation, i.e; from farmers/people who directly or indirectly benefited from the development. However, it is not fully understood yet why the rate of social participation in tertziary cannals maintenance is reported to be low.

The need for irrigation development in the province is crucial for better utilisation of limitted plain lands reported in Chapter 2. As shown in the chapter, the province has a number of plain lands suitable for intensive farming. However, the main factor constraining the uses is that unavailability of water especially during dry seasons. For example, the plan to implement sugar plantation in the Marisa plain seems to be the lack of irrigation. CIDA (1984) reported that inadequacy of water was the main factors impeding agricultural development in Lolak and Sangtombolang districts in Bolaang Mongondow. CIDA therefore strongly recommends construction of irrigation dams and cannals to tap water resources available in the districts.

Further, SRDS (1978) has estimated that of the total 297 000 ha of plain lands in the province, approximately 100 000 ha can be potentially irrigated using the existing water resources. However, until now only about 52 000 ha can be potentially irrigated by the existing dams.

Availability of potable water and irrigation strongly depend on existing ecological systems. It has been reported somewhere that deforestation near Lakes Tondano and Limboto and in several irrigation dams in Bolaang Mongondow, have seriously resulted in decrease in water storaged in the lakes and dams. Consequently, Lake Limboto is now almost to disappear and production of electricity generated by hydro powered generators in Lake Tondano have steadily decreased. During the 1982 drought for example, a number of black out in electricity lighting had been experienced and to substitute it, the State Electrical Company had to spent approximately Rp 0.5 billion. Deforestation is mainly resulted from shifting cultivation which is now about 320 000 ha. Therefore, of the total forest area available for production of about 900 000 ha, only 600 000 ha have been recommended for exploitation.

It is shown in Table 2.23 that 198 000 ha of former forest has to be reforested and/or regreened. Per ha cost of reforestation and/or regreening is about Rp 200.000. This means that investment required to conduct the program would be around Rp 40 billion, a one year annual provincial budget in North Sulawesi. Though forest in the province is still open for further logs cuttings, methods of cuttings must be carefully chosen to avoid further deforestation and in turn environmental deterioration. Two methods are possible, selected and clear cuttings. The selected cuttings

has been considered suitable for the province which is hilly and relatively high rainfall.

Chapter 4 shows that net balances in protein rich food are negative except for fish. The balances suggests that further increase in livestock and poultry production is necessary to meet the minimum requirements. Inrease in these production seem to be of no problem. The main problem seems to be in finding markets for these products.Meat, eggs and especially milk are relatively expensive compare to prices of fish. Therefore majority of people especially those living in medium and low income groups are rarely to consume these protein rich food. However, for those high income groups, demand for these products must be high because of income elasticities of demand for these products are greater than 1 (one) i.e. very elastic. Private investments on production of livestock, poultry and dairy cattle are therefore open to tap the demand of the high income groups. Prospects of investments would also be more brighter for those investors who may be able to export livestock or processed meats.

Since only 16 per cent of households have access of electricity consequently investment on electricity production is important. The problem is that private investors are not of interest in such a public project. Undertakings of electrification program is now underway especially in Minahasa where energy resources are relatively cheaper. In other areas, especially in Sangir Talaud provision of electricity can only be undertaken by using oli powered generators. Similar things is applied to the areas of Gorontalo and Bolaang Mongondow though the problem faced in these two Kabupatens are relatively easier.

Housing that is considered healthy for living have not been enjoyed by majority of people especially those of low income groups. The main factors constraining building or improvemnt of healthy shelters are expensive prices of cement. The province, though has resources for cement production as described in Chapter 2 but it is still importing all of its cement requirements of on average 130 000 tons per annum. The relative more expensive of cement has naturally been the main contributing factor in the deforestation described earlier. Kaligis (1984) reported that annual wood consumption of housing is 0.89 M^3 per households. This means for a number of households of approximately 400 000 in the province, wood consumption for housing would be 356 000 M^3. This amount is still lower than the allowable production of 480 000 M^3 estimated by Palenewen (1983).

Level of education in the province is relatively high. From the total number of population in an age group of 20-24 years old, i.e. 212 486, 10.4 per cent of them (i.e. 22 236) have been ever admitted in Universities in the province. The proportion of 10.4 per cent is far higher than that of Indonesia which is only about 3 per cent. A problem however arises is that only those sons and daughters of higher income groups that are able to enjoy the relatively cheaper education fascilities, cheaper at the expense of the whole economy. Families from lower income groups can not afford to meet costs of being admitted in the Universities. Another problem faced however is the quality of the students and graduates. The universities appear to have not been fully equiped as those in other Universities in Indonesia.

The annual budget of Sam Ratulangi University for example is only Rp 1.5 billion which is insufficient for her to provide better libraries, experimental stations and laboratories. Consequently, research activities which are necessary to find better technologies in order to break the existence of "lack of economy of scale' is therefore limited. The University, though have been succesfully in equiping her with appropriate manpower and staffs graduated and coming from various Universities in Indonesia and abroad but is not yet accompanied by appropriate teaching and research fascilities described above. It is therefore reasonable to see that if these fascilities can be provided sufficiently, the expected contribution of the University toward development would be more significant.

5.5 Future Investments in Industries and Tourism.

Badan Koordinasi Penanaman Modal Daerah (Regional) Coordinating Board of Investment) a government institutions respossible for promoting and asisting investments has identified a number of possible (private) investment projects. The indentified possible investments are shown in Appendix 5.2 and 5.3. It can be noticed in appendix 5.2 that the possible investments project identified comforms with possible investments project implied from that resources available and potential demand (for substituting commodities such or sugar, textile, cement) described in section 5.6.

It is shown in the tables that the investments promoted are not only those type of investments which resources are available in the province but also those resources (raw materials) that have to be imported somewhere else, i.e. investments aiming at producing 'import substituted

commodities' such as rooftile, garment, and also 'wheel rims' (which is undertaken already but not shown in the table). Investments on tourism have also been promoted due to the fact that the province seems to have a quite unique natural resources attractable for tourism, i.e. Sea Garden in Bunaken etc.

Some of the proposed investments have in fact been tried to be implemented in the previous years but, as shown in appendix 5.3, not all of the planned investments were in reality realised. Appendix 5.3 indicates that among the firms planned to undertake the proposed or promoted investments only 20 per cent of them managed to sustainly survive. This implies that some constraints must have been faced by the firms in realizing the planned investments.

The constraints may come from a number of reasons, including inadequacy and unreliabilities in undertakings of corresponding feasibility studies, i.e. in project planning stages, inadequacy in capital because some of the firms relied on borrowing funds, difficulties in marketting the products, and to some extent difficulties in procedures of planning and implementing the promoted investment possibilities. Difficulties in marketting and others except that of procedures have been explained earlier. The one that requires further elaboration is that of the procedures.

The procedures required for a firm to undertake a (set) of investment project is shown in Appendix 5.1. It is clear from the appendix that the procedures required is quite a long process which obviously needs relatively expensive transportation and communication costs especially for those quite remoted and/or isolated area in the outer

islands. Communication gap is therefore inevident so that some investment plan that have been approved in Jakarta still find difficulties in obtaining proper project location which have to be approved by the provincial government.

Among those described possible constraints, the one which is quite often raised by prospective investors and also government authorities is that of lack of capital, managerial skills and technical know how.

According to Bappeda (1983) the above constraints can be relaxed by promoting 'joint investments' projects, 'joint venture'. Indonesia has demonstrated a quite successful result in adopting the 'joint venture' approach, as shown for example by PT Nurtanio, which at present is able to produce aircrafts. The stage PT Nurtanio is now oprating, is resulted from profitable cooperation between PT Nurtanio and foreign (Spanish) aircraft manufacturers.

There are strong possibilities for 'joint venture' investments be undertaken in the province. A number of 'private domestic investors/firms' have proved that they could managed such relatively complicated investment projects such as PT Udatin in 'wheel rims' production, PT Bimoli in coconut oil mills, PT Bina Wana Sejahtera in timber production etc. Furthermore, the government has paid high attention in promoting roles of private investors, as for example indicated by establishment of a number of trade-associations such as KADIN (Indonesia Chamber of Commerce and Industry), HIPMI (Associations of Indonesia Young Businessman), and in strongthening the role of BKPMD. The above associations have been set up in the province, and BKPMD has been quite active for several years.

5.6. Planned Future Investments According to Regional Planning Bureau.

In order to assist the roles of private investments, the (regional) government has strongly believed the need to improved infrastructure, i.e transportation, irrigation; such a belief can for example be seen in the main Regional Development Plan Program which emphasizes on provision and improvement of infrastructure to enable the region to experience an economic transformation. Unfortunately no information yet above specific projects that are to be undertaken during the next 5 years, except that those projects for 1984/1985.

The following are a summary of main projects proposed to be undertaken/completed in 1984/1985, either by public or private investments.

(i) Improvement of Trans-Sulawesi Roads, i.e. Isimu-Marisa 65.99 km, Kaiya-Kwandang 191.20 km and Marisa-Molosipat 109.70 km, etc,

(ii) Improvement of the Bitung Port. It has been the objective of the province to improve facilities in this port to become one of the main Export-Import Port in Indonesia. As shown in Figure 2.13. The Port is located strategically in the Pacific.

(iii) Establishment of Bitung as a centre of industrial development (a project called KABIMA, Kauditan-Bitung-Kema industrial estates,

(iv) To intensity implementation of coconut rehabilitation and replanting programs,

(v) To increase the exploitation rates of fish from 49.5 per cent (61,085.3 tons) to 125,992.4 tons. The objective will be achieved through motorisation of small fishing boats, expantion of fishing vessels in Aertembaga Bitung, i.e integrated fishing industries in Aertembaga and Dhago Sangir Talaud,

(vi) Implementing the 'rural electrification program' Geothermal exploitation is in fact,

now underway,

(vii) Improvement of other social welfare services to meet basic needs in health, housing, education, etc; and,

(viii) Continuation of regreening and reforestation in the catchment area of Gorontalo etc,

(ix) Implementation of cement production by carefully taking into account its impact on 'environments'.

The programs described above would approximately $ 175 m but the likely funds to available may only be around $ 135 m, i.e. just little bit higher than the investment in 1983/1984. Obviously the above public investments would provide better climate for potential private investments shown earlier.

The programs described above must be congratulated from the point of few of urgency in activying the process of economic transformation. An economic transformation in the province did not take place since 1969 not mainly because of the resources needed and man power required for such a transformation are not available. The transformation did not take place because most of private investment were forced to operate under condition of 'lack of economy of scale' partly because of inadequacy in infrastructure. Most investments here operate at relatively higher cost and therefore did not enjoy a certain level of comparative advantages. It has been a common view that the province is a 'high case economic province'. Almost everything is relatively more expensive compare to that in Java. It is indicated in Chapter 2 that the main contributing factor of the 'high cost economy' is that of inadequacy in infrasturcture.

One thing however seems to have not been explicitely highlighted in the above proposed program, i.e. the need to provide more investments a strengthening quality of education. Of cource, as indicated earlier that in quantitative point at view, level of education in the province is quite high. However, it is not necessary so from the qualitative stand point. Problem of lack of economy of scale and comparative advantages can be partly solved by improving technology and labour quality. This means that investments on education research has to be increased, and the program described above have not explicitely given stronger emphasis an investments and education and research.

Increase in education quality in the province would likely benefit more the nation as a whole than that of the province. As described in Chapter 3, outmigration in the province in quite prevalent and those who migrate are those 'educated labour forces' the naturally contribute a lat to nation wide productivity.

The need to improve quality of labour force is strongly felt in facing a problem of increasing unemployment described, i.e. 40 000 work forces by 1990. The 'structural emptiness' experienced in this province must be partly caused by lack of labour force who are skillfull enough to enter or fill the structural industrial 'emptiness', i.e. unvailabilities of small and medium scale industries. Therefore, Kandou (1983) for example has strongly emphasised the need for public invetments an training work forces for small industries. The training program undertaken by the government however is now limitted to only 1500 man power per annum, far too small than those who need the training.

Obviously, the training program has to be designed

in such a way to match labour demand from manufacturing or trade sector. However to expect increase in employment by firstly increasing the manufactures, trade and other sector may be misleading. The rate of growth of the non-agricultural sector is too low. It is therefore expected that training is directed toward exploiting entrepreunearial talents of the potential labour force who may create jobs for them selves by employing economic opportunities available in the region or nation.

Appendix 2.1

GDRP at Current Price in North Sulawesi, 1975-1980

(Rp 10^6)

Industrial Origin	1975	1976	1977	1978	1979	1980
Agriculture	67,409	75,528	137,787	116,889	172,148	252,071
Food Crops	34,318	39,721	48,745	46,534	62,937	78,236
Plantation Crops	20,400	20,761	74,783	50,801	83,891	140,334
Livestock and Poultry	7,501	9,852	7,389	9,618	11,597	13,773
Forestry	946	548	811	2,699	3,147	6,319
Fishery	4,243	4,643	6,057	7,235	10,574	13,407
Mining	543	743	1,162	3,233	5,060	8,675
Industry (Manufacture)	6,523	7,153	10,059	11,492	14,294	16,222
Large and Medium Size	3,014	3,044	5,488	6,586	8,379	9,545
Small Industries	3,509	4,109	4,571	4,906	5,914	6,677
Construction	5,204	6,854	9,546	11,033	13,768	19,122
Electricity and Potable Water	487	625	939	847	1,290	1,155
Transportation and Communication	10,702	14,514	21,631	22,153	25,848	28,517
Land	7,335	9,468	13,707	13,460	15,135	16,175
Sea	845	1,058	1,267	1,204	1,473	1,802
Air	2,344	3,754	6,012	6,533	8,064	8,955
Communication	177	232	644	956	1,174	1,583
Trade	30,062	32,612	50,221	60,252	85,045	109,205
Bank and Finance	734	1,190	2,342	2,749	4,144	5,420
Bank	686	1,111	2,183	2,556	3,837	5,127
Credit Cooperatives	18	32	66	85	167	107
Insurance	28	46	91	107	139	185
Housing	4,649	6,096	6,204	6,344	8,863	12,070
Government and Defence	17,195	20,046	27,829	31,433	38,411	51,532
Services	5,945	6,980	8,483	10,841	14,230	18,095
Gross Domestic Regional Product (GDRP) North Sulawesi	149,458	172,345	276,209	277,270	383,106	522,089

Source : Bappeda, (1982).

Appendix 4.1

Standard of Minimum Subsistence Requirement

in North Sulawesi, 1974 and 1980

No.	Essential commodities	1974 Quantity	1974 Price per unit (Rp)	1974 Total Price (Rp)	1980 Quantity	1980 Price per unit (Rp)	1980 Total Price (Rp)
1.	Rice (kg)	100	125,63	12.563,00	125	240,00	30.000,00
2.	Salted Fish (kg)	15	411,25	6.168,75	15	1.000,00	15.000,00
3.	Sugar (kg)	6	162,50	973,56	6	387,50	2.325,00
4.	Textile (m)	4	222,53	890,12	4	587,50	2.350,00
5.	Edible Oil (kg)	6	461,82	2.770,92	6	412,50	2.475,00
6.	Kerosene (lt)	60	26,64	1.596,40	60	67,50	4.050,00
7.	Salt (kg)	9	31,28	281,52	15	100,00	1.500,00
8.	Soap	20	112,39	2.447,80	20	150,00	5.000,00
9.	Batik (textile)	2	697,64	1.395,38	2	2.000,00	4.000,00
	Total (Rp)			29.089,39			66.700,00

Source : Lastario, A. et.al. (1983).

Appendix 4.2

Projection of Rates of Growth of GDRP fot North Sulawesi

at Constant Price 1975

Sectors	GDRP (Rp 10^3 m)				Average growth rate	
	1975	1981	1984	1989	1975-1981	1975-1989
1. Agriculture	67.409.20	102.205.98	119.777.23	161.951.75	12.18	8.46
2. Mining	543.77	1.412.60	1.866.83	3.042.65	27.66	13.09
3. Industry	6.423.90	20.374.91	26.235.65	42.781.45	30.28	14.37
4. Construction	5.204.19	6.194.55	6.067.20	6.177.50	2.96	1.24
5. Ilectricity	487.27	1.881.12	2.523.58	4.241.28	31.65	18.59
6. Transportation and Communication	10.702.29	33.093.58	30.702.71	51.863.29	23.17	11.94
7. Trades	30.062.91	55.075.60	67.372.61	85.562.89	11.31	7.73
8. Finace and Banking	734.18	4.422.41	4.167.03	6.638.50	40.51	17.03
9. Housing	4.649.38	5.827.09	6.533.91	7.883.22	3.91	3.89
10. Goverment	17.195.73	39.760.87	50.604.47	62.743.05	15.99	9.68
11. Services	5.945.85	13.254.27	17.501.54	28.121.43	14.86	11.74
GDRP	149.458.67	283.502.98	333.362.75	461.006.99	12.76	8.37

Source : Bappeda, (1983)

Appendix 4.3

Projection of GDRP for North Sulawesi

1975 to 1989

Sectors	1975 (%)	1981 (%)	1984 (%)	1989 (%)
1. Agriculture	45.10	36.05	35.93	35.13
2. Mining	0.36	0.50	0.56	0.66
3. Industry	4.37	7.19	7.87	9.28
4. Construction	3.48	2.18	1.82	1.34
5. Electricity	0.33	0.66	0.78	0.92
6.Transportation and Communication	7.16	11.67	9.21	11.25
7. Trades	20.11	19.43	20.21	18.56
8. Finance and Banking	0.49	1.56	1.25	1.44
9. Housing	3.11	2.06	1.95	1.71
10. Goverment	11.51	14.02	15.18	13.16
11. Services	3.98	4.68	5.25	6.10
T o t a l	100.00	100.00	100.00	100.00

Source : Bappeda, (1983).

Appendix 5.1

Estimated Investments Requirements
in North Sulawesi, for a Projected Economic
Growth Rate of 5 Per cent, per annum .
(Rp 10^6)

Year	GDRP[1)]	Capital Required[2)]	Estimated Domestic Saving 3)	Gap
1982	271,035	54,204	40,655*)	13,549
1983	284,586	56,916	42,688	14,228
1984	298,815	59,764	44,822	14,942
1985	313,756	62,752	47,063	15,689
1986	329,444	65,888	49,417	16,471
1987	345,916	69,184	51,887	17,297
1988	363,212	72,644	54,482	18,162
1989	381,373	76,276	57,206	19,070
1990	400,442	80,076	60,066	20,010

Notes : 1) GDRP in year 1982 is adopted from SUA, (1983).

2) Based on assumption of ICOR 0,25.

3) Based on assumption of 15 per cent from GDRP.

*) The estimate agreese with the observed saving at Banks in North Sulawesi 1982, of Rp. 42,156 billion.

Appendix 5.2

Possible Investments in North Sulawesi According to BKPMD

No.	Nature of Industry	Project site	Capacity
1.	Coir Fibre processing plant	Manado, Bitung	A Maximum of 20,000 husks/ day.
2.	Activated carbon plant	Bitung	A minimum of 40 tons/month
3.	Margerine plant	1.Bitung 2.Manado	100 tons/month
4.	Harboard Manufacturing plant	Bitung	500 sheets.day
5.	Kaolin Beneficiation plant	Langowan (Minahasa)	100 tons/day
6.	Sulphur refining plant	Minahasa, Bolaang Mongondow	100 tons/day 50 tons/day
7.	Rooftile Manufacturing plant	Minahasa	750,000 and 300,000 pcs/ month
8.	Garment factory	1.Minahasa 2.Bitung	
9.	Sawill (venner plywood)	1.Bolaang Mongondow 2.Gorontalo	
10.	Botling plant (beverages & beer)	1.Manado 2.Bitung	
11.	Fish Canning & Fish Waste processing palnt	1.Gorontalo 2.Sangihe & Talaud	
12.	Portland Cement Factory	1.Solok (Bolaang Mongondow) 2.Ratatotok(Minahasa)	1,000,000 tons/ year 600,000 tons/ year
13.	Agro-Industries (processing of Soyabean & maize)	1.Bolaang Mongondow 2.Gorontalo	
14.	Sugar manufacturing plant (fluctosa)	Karakelang (Sangihe Talaud) Bolaang Mongondow	
15.	Sugar manufacturing plant (cane sugar)	Gorontalo	

Source : BKPMD, (1983).

Appendix 5.3

Possible Investment in Tourism

According to BKPMD

No.	Nature of enterprise	Location	Accomodation
1.	Hotel & Bourding hourses		
	a. Three-Star hotels	Manado	100 rooms
	b. Two-Star hotels	Minahasa	50 rooms
	c. One-Star hotels	North Sulawesi province	500 rooms
2.	International Restaurants	Manado	3
		Gorontalo Municipality	1
		Bitung	2
		Minahasa	3
		Bolaang Mongon-dow	1
		Sangihe Talaud	1
3.	Transportation of tourists	Manado/Minahasa	5 (five) 20-27 seat trucks
4.	Development of tourists objects	a. Remboken b. Tasik Ria c. Kema/Tanjung Merah d. Kinali/Kawangkoan e. Kinilow	
5.	Development of cultural objects	a. Tara-Tara b. Airmadidi c. Kinilow	
6.	Development of Sea Garderns	Minahasa Bunaken	
7.	Establishment of recreation centre	Manado/Minahasa	
8.	Convention hall	Manado/Minahasa	
9.	Souvenir & art shops	Manado/Minahasa	

Source : BKPMD (1983).

Appendix 5.4

Capital Investment in North Sulawesi

Year	Capital Domestic			Foreign Investment		
	Projects	Capital	Man Power	Projects	Capital	Man Power
1969	-	-	-	-	-	-
1970	4	900.255.315	128	-	-	-
1971	4	3.280.999.443	1.116	2	76.300.000	558
1972	6	821.135.116	377	1	4.000.000	-
1973	4	3.684.222.500	348	-	-	-
1974	5	2.927.446.375	93	-	-	-
1975	2	5.697.785.643	1.451	-	-	-
1976	1	819.736.601	36	-	-	-
1977	4	3.207.013.343	493	-	-	-
1978	3	2.407.119.883	372	2	9.696.420	859
1979	-	-	-	-	-	-
1980	3	5.516.123.800	216	2	2.299.000	232
1981	6	7.565.394.715	1.425	1	122.328.000	528
1982	1	3.000.775.000	2.236	4	78.499.000	156
FFYDP	18	8.686.612.374	1.969	3	80.300.000	558
SFYDP	15	15.059.101.845	2.445	2	9.696.420	859
TFYDP	10	9.273.493.515	3.887	7	203.126.000	916

Source : SUA (1983)

Note : FFYDP = First Five Years Development Plan
SFYDP = Second Five Years Development Plan
TFYDP = Third Five Years Development Plan.

APPENDIX A.1 PLANNED AND ON GOING INVESTMENT IN NORTH SULAWESI

PELITA II (SEVDP)

Number	Name of the Firm	Field of Production	Location	Amount of Investment	Note
	P.M.D.N.				
1.	P.T. Witicco	Zinc Plates	Bitung	Rp 930.000.000,-	On going
2.	P.T. Sulox Oxygen	Oxygen	Bitung	Rp 735.000.000,-	On going
3.	P.T. Sarunta Waya	Dried Banito Fish	Kab. Minahasa (Amurang)	Rp 700.511.614,-	On going
4.	P.T. Inkoasku	Automotive Component	Bitung	Rp 5.296.381.674,-	On going
	P.M.A.				
5.	P.T. Safcol Indonesia	Canning	Bitung	Rp 885.000.000,-	On going
			T O T A L	Rp 8.546.893.288,-	

APPENDIX A.2 PLANNED AND ON GOING INVESTMENT IN NORTH SULAWESI

P E L I T A III (1979)

No.	Name of the Firm	Field of Production	Location	Amount of Investment	N o t e
	P.M.D.N.				
1.	P.T. Agnis Astra	Ice	Kodya Gorontalo	Rp 12.750.000,-	On going
2.	P.T. Bunghol	Palm Estates	Kab. Minahasa	Rp 522.980.000,-	Planned
3.	P.T. Gala Karya	Docking	Bitung	Rp 938.134.000,-	On going
4.	P.T. Hina Wana Sejahtera	Logging & Saw Mill	Kab. Bolaang Mongondow	Rp 1.512.000.000,-	On going
5.	P.T. Kemboan Baru	Logging & Saw Mill	Kab. Bolaang Mongondow	Rp 2.750.500.000,-	Planned
6.	P.T. Norsherday Hotel	Hotels	Kodya Manado	Rp 1.674.946.767,-	Planned
7.	P.T. Modal Tombulu	Textiles	Kab. Minahasa(Tomohon)	Rp 3.000.775.000,-	Planned
8.	P.T. Panumar Indonesia Utama	Cassave farm and Animal Feed	Kab.Bolaang Mongondow	Rp 3.647.423.000,-	Planned
9.	P.T. Sutamargo	Hybrid Palm Estates	Kab.Bolaang Mongondow	Rp 9.508.330.000,-	Planned
10.	P.T. Tanjun Wenang	Coca cola and Sprite drinks	Kab. Minahasa	Rp 2.624.799.092,-	Planned
11.	P.T. Sulmalir	Animal feed	Kab.Minahasa	Rp 1.748.000.000,-	Planned
	P.M.A.				
12.	P.T. United Can Comp	Can Production	Bitung	Rp 8.150.000,-	On going
			T O T A L	Rp 23.948.787.859,-	

Note : P.M.D.N. = Penanaman Modal Dalam Negeri (Domestic Investment)
P.M.A. = Penanaman Modal Asing (Foreign Investment)
FFYDP = First Five Year Development Programmed
SFYDP = Second Five Year Development Programmed
TFYDP = Third Five Year Development Programmed
Kodya = Municipality
Kab = Regency.

APPENDIX A.3 PLANNED AND ON GOING INVESTMENT IN NORTH SULAWESI

PELITA I (FFYDP)

Number	Name of the Firm	Field of Production	Location	Amount of Investment	Note
	P.M.D.N.				
1.	P.T. International Hotel Manado	Hotels	Manado	Rp 1.872.717.614,-	On going
2.	P.T. Multi Food	Food	Manado	Rp 150.000.000,-	On going
3.	P.T. Bimoli	Coconut Oil	Bitung	Rp 4.833.929.089,-	On going
4.	P.T. Inemex Intra	Coconut Oil	Bitung	Rp 750.000.000,-	On going
5.	C.V. Bersatu	Ice	Bitung	Rp 25.000.000,-	On going
6.	P.T. Bukit Zaitun	Coconut Oil	Manado	Rp 183.500.000,-	On going
7.	P.T. Kamanta Vegetable Oil	Coconut Oil	Amurang	Rp 3.304.134.000,-	On going
8.	P.T. Multi Food	Biscuit / food	Manado	Rp 150.000.000,-	On going
			STTL	Rp 11.269.280.703,-	
	P.M.A.				
9.	P.T. United Coconut Tina Indonesia	Coconut flour	Kab.Minahasa (Airmadidi)	Rp 1.300.000,-	On going
10.	P.T. Tropic Endeavour Indonesia	Mining Exploration	Kab.Gorontalo	Rp 13.948.944,-	Development phase
11.	P.T. UMV. Marabunta Timbor	Logging	Kab.Gorontalo	Rp 13.000.000,-	
			SUTTL	Rp 28.248.944,-	
			T O T A L	Rp 11.297.529.647,-	

APPENDIX A.4 Location, Areal and Production of Farm States / Plantation in North Sulawesi

Kab. II Minahasa and Bolaang Mongondow

Number	Name	Management	Location	Commodities	Areal (Ha)	Production (ton)	Workers Permanent	Workers Temporary
1	2	3	4	5	6	7	8	9
1.	Talise	PO Kembangu Kem. Inchaan	Talise	Coconuts	973.1	145.0	15	25
2.	Kinabobutan	PO Kembangu ni	Kinabobutan	-,,-	72.1	8.9	15	25
3.	Rondor	PT Perk. - Minahasa	Rondor	-,,-	100.0	20.4	12	[illegible]
4.	Tolimbou	PT Perk.Pe- rusahaan Jepang	Lakawidei/ Bitung	-,,-	113.0	55.5	9	30
5.	Kalasey	PT Perk. - Kasuk Lama	Kandu Lasa	-,,-	74.6	24.0	12	40
6.	Kinali Kem- bera	PT Perkeb- un Tembega	Airbendege	-,,-	144.3	29.0	9	51
7.	Minaleosan	PT Perk.Mi- naleosan	Tirian	-,,-	145.0	121.1	8	35

1	2	3	4	5
8.	Diyang	PT Perk. Ranomut	Tanjung Merah	Coconuts
9.	Paula Tontalete	PT Perk.Kumelembuay Paula	Tontalete	-,,-
10.	W u s a	Puskopal Daeral VI	Wusa Kec.Dimembe	-,,-
11.	P a n d u	-,,-	-,,-	-,,-
12.	Talawaan - Kecil	PT Perk.Nusa-Andhika	Talawaan Kecil Wori	-,,-
13.	Ilo-Ilo Wori	PT Perk.Nyiur Wicaksana	Pandu Kec.Wori	-,,-
14.	Loilow	PT Perk.Noro-konda	Pandu Kec.Wori	-,,-
15.	Pintu Kun - cung Buha	PT Perk.Pintu Kuntung	Buha Kec.Wori	-,,-
16.	Sea Ranoma-wuri	PT Perk.Sea-Ranomawuri	Sea Kec.Pine - leng	-,,-
17.	Gunung Batu	PT Perk.Gu - nung Batu	Sea Kec.Pine - leng	-,,-

6	7	8	9
92.9	67.6	14	10
66.4	61.9	10	17
166.8	26.0	19	8
93.6	60.0	19	8
123.4	-	27	30
105.0	106.1	18	28
104.5	123.0	10	38
38.18	7.0	6	15
82.3	63.0	9	18
99.8	27.6	5	11

1	2	3
18.	Tumpagen	PT Perk.Mum-ber
19.	M o k a	PT Perk.Moka-Farming
20.	P u n e	PT Perk.Wasa-ta Jati
21.	Pungkol	PT Perk.Pung-kol
22.	Ratatotok	PT Perk.Rata-totok
23.	Norato	PT Perk.Per-naco
24.	Kinamang	PT Perk.Kina-mang Waya
25.	Mawali	PT Perk.Mawa-li Waya
26.	Sunbeam	PT Sunbeam - Consultant

4	5	6	7	8	9
Sea Kec. Pine-leng	Coconuts	35.0	17.0	3	5
Ranotongkor/ Tombariri	Cloves	53.1	18.9	7	35
Ranotongkor/ Tombariri	Coconuts Cloves	26.0	20.6 ---	6	30
Wawontulap - Kec. Tumpaan	Coconuts	820.4	612.0	20	94
Ratatotok II - Kec. Belang	-,,-	297.6	223.7	13	32
Ratatotok I	-,,-	40.4	144.0	2	1
Mangkit Basaan Kec. Belang	-,,-	157.0	69.2	13	12
-,,-	-,,-	160.5	70.6	13	10
-,,-	-,,-	190.5	71.4	15	14

1	2	3
27	T i a r a	PT Perk.Kar -ya Tiara
28	Sidate	PT Perk.Sida-te Murni
29	Laimpangi	PT Perk.Kayu-wolo
30	Batu Kapal	PT Perk.Batu-Kapal
31	Laimpangi	-,,-
32	-,,-	PT Perk. Sul-ga Indah
33	-,,-	PT Perk.Laim-pangi
34	Bolongko	PT Perk.Bo - longko
35	Bintangar	PT Perk.Bin- tangar
36	N o i t	PT Noit Rumo-yowen

4	5	6	7	8	9
Mangkit Basaan	Coconuts	127.0	55.4	11	12
Pakuweru Kec.-Tenga	-,,-	90.0	45.1	10	40
Sapa Kec.Tenga	-,,-	145.3	95.3	11	20
Sapa Kec.Tenga	-,,-	63.3	61.2	9	24
-,,-	-,,-	597.6	221.5	9	105
-,,-	-,,-	241.8	63.0	11	32
Bolongko Kec.-Tenga	-,,-	112.2	51.5	10	57
Boyong Atas - Kec. Tenga	-,,-	106.8	33.3	7	12
-,,-	-,,-	530.0	100.0	14	60
Tanamon Kec.Tenga	-,,-	49.7	64.2	8	27

Location,Areal,and Production of Farm Estates/

Plantation in North Sulawesi

DATI II GORONTALO

Number	N a m e	Management	Location	Commodities	Areal(Ha)	Production	Workers	
							Parmanent	Temporary
1.	Popola	PT.Popola Jaya	Talongio Popola	Coconuts	34.2	4.2	3	9
2.	Tolongio	PT Tolongio	Tolongio Kec. - Kwandang	,,	111.0	5.0	-	-
3.	Tolongio	PT Tolongio - Kiki	,,	,,	41.0	99.0	5	20
4.	Buntolohutia	PT Buntolo Hutia	Dunggala Kec. - Tibawa	,,	39.0	12.5	5	-
	K a n a k a	,,	Malingkapato - Kec. Kwandang	,,	39.0	1.0	5	-
5.	Monedaa-Monedaa I - II	PT Abdullah Aon	Dene I Kec. Sumalata	,,	169.7 52.9	125.0	3	41
6.	Suderame I, II,III Jasereh, Bustam - Nawar	PT Suderame	Bolontia Timur - Kec. Sumalata	,,	395.7	39.6	7	30
7.	Hika, Hika kiki,- Hika III,Hika III a,b,c	PT Hika	Bolontia Barat	,,	164.2	49.13	7	19

1	2	3	4
8.	'Moru I,III	'PT.Harapan Moro	'Desa Dema I Kec. Tilamuta
9.	'Maknocu	'PT.Maknocu	'Desa Bolontia Timur.Kec .Sumalata.
10.	'Dema Mouve	'PT.Pandu Sari	'Labunu Kec.Tibawa
11.	'Balantau Mohuhulo	'PT Bangu	'Panggaila Kec.Tibawa
12.	'P a p a l o	'PT Papalo	'Isimu Kec. Tibawa
13.	'Dangango Ulunu	'PT Ayula	'Molowahu Kec.Tibawa
14.	'Molowahu	'PT Molowahu	'Molowahu Kec.Tibawa
15.	'Bangomeme	'PT Bangomeme	'Bangomeme Kec Batudaa.
16.	'Motoduwo Dan Motolatulahu	'PT Motaduwo	'Dungaila Kec Batudaa.
17.	'Motolahu Berzigh	'PT Pilolalenga	'Desa Dungaila Kec. Batudaa.
18.	'PilolalengaCultmatschapy hungodaa pinipi	'PD Pedago	'Desa Bungomeme Kec Batadaa
19.	'Hameril	'PT Hameril	'Desa Dungalio Kec Batudaa.
20.	'Limba I II	'PD Pedago	'Desa Limbahitu Kec Paguyaman
21.	'Vouroit	'PT Basulapa	'Tabongo Kec Batudaa

5	6	7	8	9
Coconuts	87.6	36.0	6	20
"	80.0	54.4	6	20
"	47.5	6.0	-	-
"	54.0	42.0	3	11
"	38.4	22.0	11	16
"	107.1	49.3	10	32
"	56.1	11.0	2	11
"	83.3	65.9	5	23
"	53.8	5.2	5	20
"	267.5	Nil	35	40
"	230.4	10.5	16	19
"	57.7	2.5	73	NA
"	160.8	67.4	10	27
"	50.9	12.0	4	12

1	2	3	4
22 .	'Tidalu Molalahu	' PT Pilata	' Tabango Kec.batu-daa.
23 .	'Huwongkiki	' PT Huwongkiki	' Bilahu Barat Kec.' Batudaa
24 .	'Masialo	' PT Dulumayo Jaya'	Desa Dulumayo Kec' Telaga
25 .	'Paulaa	' PT Paulaa	' Desa Bilato Kec. ' Paguyaman.
26 .	'Dulupi	' PT.Dulupi	' Dulupi Kec Tilam-' uta.
27 .	'Bontula Tapadaa	' PT Bontula Tapa-' daa.	Limboto Kec Tila-' muta.
28 .	'Limututu	' PT Dusa Indah - ' Gorontalo	Desa Tulato Kec. ' Tilamuta.
29 .	'Tanjung Baru	' PT Tanjung Baru	' Desa Libuo Kec- ' Paguat.
30 .	'Utama Jari	' PT Utama Jari	' Kelurahan Penta-' du.Kec Paguat.
31 !	'	' PT Pengharapan Buhudaa.	'

5	6	7	8	9
Coconuts	95.5	50.	8	25
"	37.0	27,5	6	18
"	125.3	20	33	49
Cloves		6,8		
Coconuts	139.7	53.5.	7	5
"	104.0	90	3	21
"	163.0.	71	7	45
"	29.0	52.0	7	8
"	138.4	248	5	26
"	62.7	34	4	31
"	N A	N A	N A	N A

1	2	3	4	5	6	7	8	9 /1
32.	Parimonian	PT Perimonian	Desa marisa	Coconuts	37,92	24	4	16
33.	Dombito	PT Dombito	Desa Tahele Kec. Papayato	"	317.1	295	20	61
34.	Dulamayo	PT Gemina Dulamayo.	Desa Papayato Kec Papayato.	"	41.1	51.2	6	17
35.	Marisa	PT Marisa Tingki	Desa Tahele Kec Papayato.	"	97.6	75.4	17	NA
36.	Mantu	PT Mantu	Desa Tahele Kec Papayato	"	33.4	14.5	6	11
37.	Lepa Lepao	Pt Lebuni	Desa Papayato Kec Papayato.	"	262.3	NA	NA	NA
38.	Buuto	- " -	- " -	"	269.6	213.3	17	90
39.	Nipa	- " -	- " -	"	48.665	NA	NA	NA

Location, Areal, and Production of Farm Estates/ Plantation in North Sulawesi.

Number	Name	Management	Location	Commodities	Areal (Ha)	Production (ton)	Workers Permanent	Workers Temporary
1.	Poigar	PT. Poigar	Poigar Kec. Poigar	Coconuts	689.9	110.0	91	120
2.	Monapan I	PT. Monapan	Monapan Kec. Poigar	,,	26.3	38.7	3	10
3.	Monapan II	,,	,,	,,	9.2			
4.	Tanganya	PT. Tanganya	Inobonto I Kec. Bolaang	,,	37.7	1.0	5	5
5.	Mendeng	PT. Bangonolunow	Inobonto I Kec. Bolang.	,,	38.0	30.0	-	-
6.	Bangonolunow	,,	,,	,,	22.0	42.0	5	12
7.	Moyayat	PT. Arfa Putra	Layangon Kec. Bolaang.	,,	73.3	16.2	5	10
8.	Komangaan	PT. Komangaan	Komangaan Kec. Bolaang.	,,	35.1	12.0	2	7
9.	Sikala	PT. Sikala	Salimadungan I. Kec Bolaang.	,,	96.0	116.0	1	12
10.	Bangka I.II.III.	PUSKUD SULUT	Lombagim Kec. Bolaang	,,	179.7	103.0	18	11
11.	Ambang	PD. Gadasera	Ambang Kec. Bolaang	,,	280.0	33.4	45	-
12.	Langagon	,,	Langagon Kec. Bolaang.	,,	63.6	16.8	42	-

1	2	3	4
13.	Modayag	PD.Mekanera	Modayag Kec.Modayag.
14.	Lolak II	,,	Looak Kec.Lolak.
15.	Lolak I	,,	,,
16.	Dulangon	,,	Dulangon Kec Lolak
17.	Motabang	PD.Motabang	Lolak Kec Lolak
18.	Moyambak	PT.Moka Farming	Pinogaluman Kec Lolak
19.	Loni	PT.Deyaman	Labuan Oki
20.	Baturapa Kakapoyo	PT.Turko Jaya	Pinogaluman Kec. Lolak
21.	Biontang I	PT.Wahana Sumantain	Biontong Kec Bolaang Itang
22.	Biontong II	PT.Mayo Agro	Biontong Kec bolaang Itang
23.	Babo I	PT.Wahana Klabat.	Bolangat Kec Santobolang
24.	Babo II	PT.Eng Chun	-

5	6	7	8	9
Coffee	1519.0	6.3	11	400
Cocunuts	763.2	428.8	36	-
,,	787.0	442.0	36	-
,,	397.4	138.1	55	-
,,	47.8	41.6	5	13
,,	183.6	108.9	21	64
,,	103.8	50.4	15	21
,,	175.4	30.4	17	-
,,	318.0			
,,	34.0	422.0	18	35
,,	354.8	-	15	20
,,	120.0	-	-	-

1	2	3	4	5	6	7	8	9
25.	Binjeita I.II.III.	PT.Musa Indah	Binjeita Kec.Bolaang Itang.	Coconuts	131.6	-	6	-
26.	Binjeita IV	PT Berkat Usaha Jaya.	"	"	78.3	-	-	-
27.	Panango	PT.Panango	Tabilas Kec Bolaang Uki	"	239.0	256.0	9	40
28.	Tolotoyon	PT.Tolotoyan	Pinolosian Kec. Pinolosian	"	72.6	138.0	17	36
29.	Tutuyan	PT.Ranomut	Tutuyan	"	371.15	190.2	23	27
30.	Lonsiow I.II	PT.Lonsiow	Motongkat Kec. Kota Bunan.	"	169.0	77.8	7	19
31.	Kebudian	PT.Kebudian	Kota Bunan Kec. Kotabunan.	"	53.6	-	5	12.

APPENDIX A.5 SELECTED OF POULTRY AND LIVESTOCK IN NORTH SULAWESI

N A M E	AREAL	NUMBER OF STOCKS			NUMBER OF STAFF		CAPITAL	
		Young	Breeding	Laying	Management	Labour	Credit	Owner
	m²				men	men	(000)	(000)
1. Lumoring-Farm	16,340	1,500	1,500	--	1	4	20,000	10,000
2. Unsan - Farm	12,000	--	3,000	3,000	1	6	10,000	10,000
		3,000	3,000	--				
3. Kamapan-Farm	20,000	--	5,000	3,000	1	13	40,000	10,000
		3,000	3,000	--				
4. Berkat - Farm	12,000	--	5,000	--	1	6	10,000	10,000
		3,000	3,000					
5. Ventje Ma[illegible] Farm		3,000	3,000	4,000	1	[illegible]	15,000	10,000
6. [illegible] Farm	72,500	3,000	3,000	4,000	1	5	15,000	10,000
7. [illegible] Farm		3,000	3,000	4,000	1	5	15,000	10,000
8. [illegible] - Farm	20,000	1,000	950	5,000	1	14	--	55,000
9. [illegible] - Farm	20,000	--	1,000	5,000	1	16	--	35,000
10. [illegible] - Farm	20,000	--	--	6,000	1	10	30,000	32,000
11. [illegible] Farm	16,000	300	540	215	1	11	40,000	16,000
12. [illegible] - Farm	7,854	70	200	53	3	9	--	30,900
13. Buha Farm	30,000	--	765	157	1	12	27,000	8,000
14. Ventje Mo ningkaFarm	9,000	--	600 100	2,400 21	1	1		
15. Ny. Mewengkang Farm		-- 5,000	--	3,000				
16. Bandeirot Farm		-- 5,000	--	7,000				
17. [illegible] Farm		-- 2,000	1,000	1,350				

FIGURE A_1 LOCATION OF CENTRES OF SMALL INDUSTRIES IN NORTH SULAWESI 1982/1983

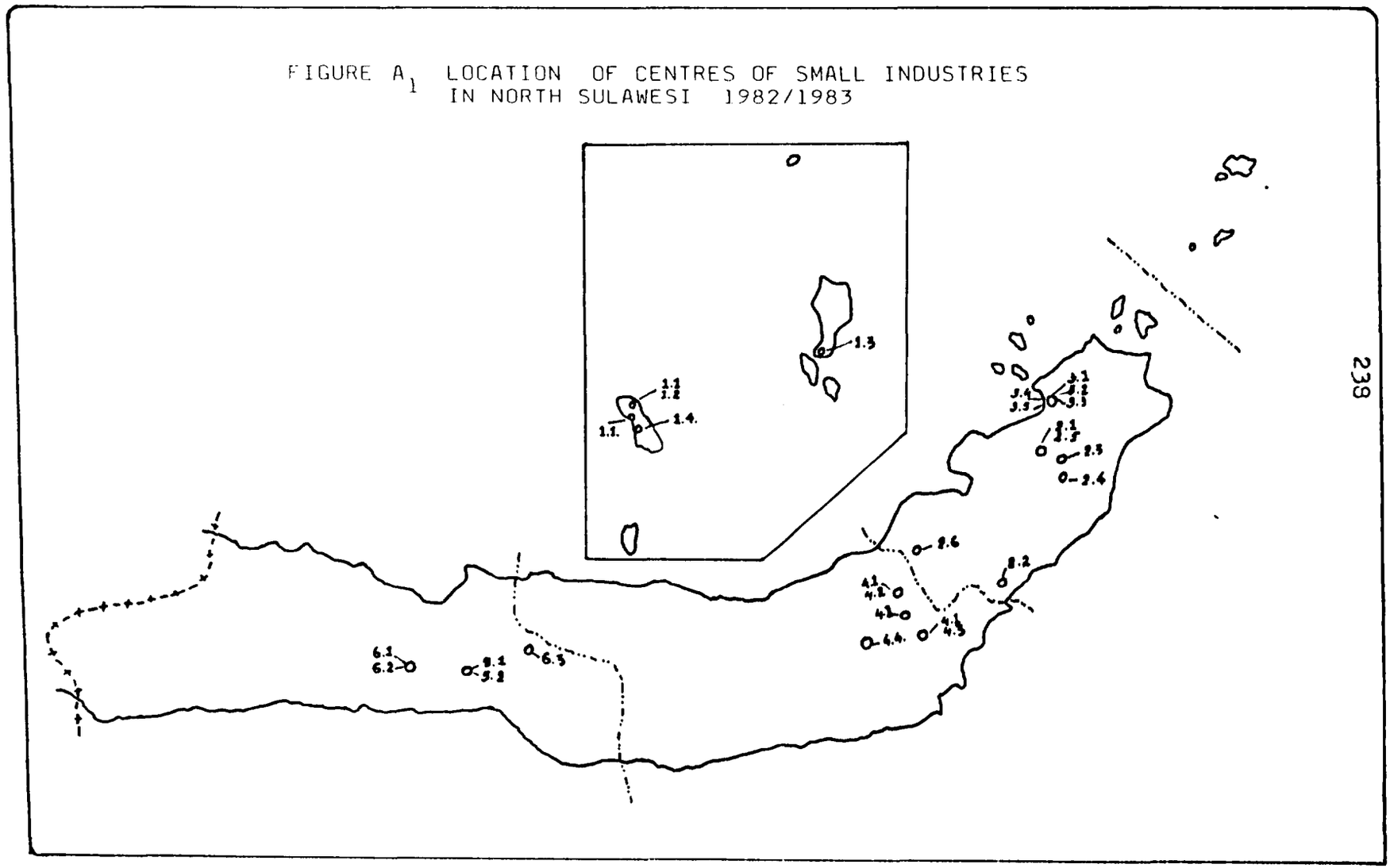
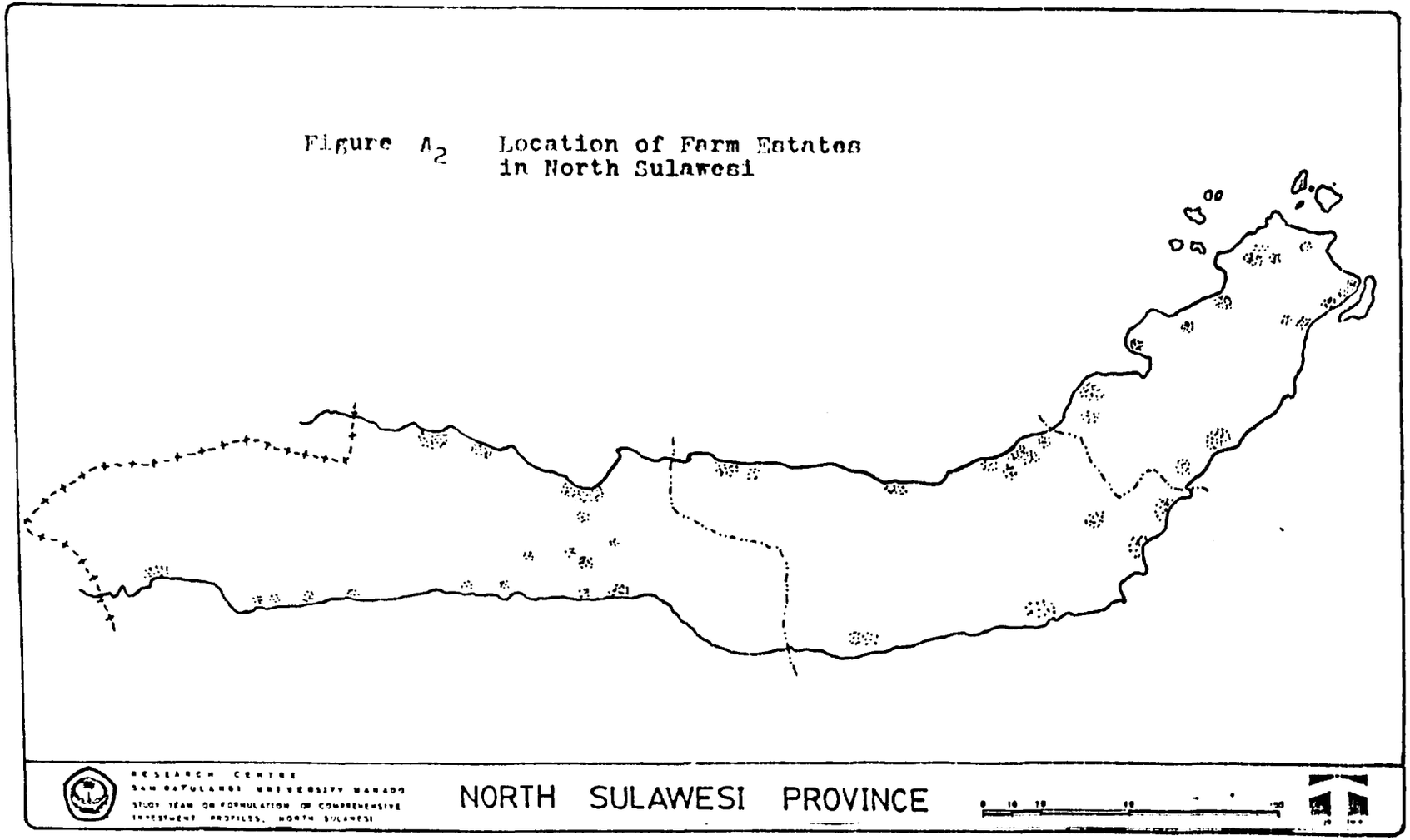


Figure A_2 Location of Farm Estates in North Sulawesi



REFERENCES

Ahluwalia, M.S. and Chenery, H. (1974), 'A Model of Distribution and Growth', in Chenery et al. (eds), Redistribution with Growth, Oxford University Press, London.

Anderson, J.R. (1972), 'An overview of modelling in Agricultural Management', Review of Marketing and Agricultural Economics 40 (3), 111-22.

Anderson, J.R. and Hardaker, J.B. (1979), 'Economic analysis in design of new technologies for small farmers', in A. Valdes, G.M. Scobie and J.L. Dillon (eds), Economics and the Design of Small-Farmer Technology, Iowa State University, Ames.

Assagaf, M., Pakasi, P. and Pajow, P.M. (1976), Analisa Biaya Pemasaran Gabah dan Beras, Jagung, Kubis dan Kacang Tanah di Daerah Tingkat II Minahasa, Fakultas Pertanian Universitas Sam Ratulangi - Dinas Pertanian Rakyat Dati I Sulawesi Utara.

Babcock, T.G. and Cummings, F.H. (1984), Land Settlement in Sulawesi Indonesia, First Draft Paper, Resource Management International Inc., Jakarta Selatan, Indonesia.

BALITRI, (1983), Rencana Pembangunan Penelitian Tanaman Industri Manado Dalam Repelita IV, Badan Penelitian dan Pengembangan Pertanian Sulawesi Utara, Manado.

BAPPEDA, (1979), Pendapatan Regional Propinsi Daerah Tingkat I Sulawesi Utara Tahun 1977-1979, Bappeda Sulawesi Utara, Manado.

BAPPEDA, (1980), Sulawesi Utara di Arena Pembangunan, Badan Perencanaan Pembangunan Daerah Sulawesi Utara, Manado.

BAPPEDA, (1982), Pendapatan Regional Sulawesi Utara Tahun 1975 - 1980, Badan Perencanaan Pembangunan Daerah Sulawesi Utara, Manado.

BAPPEDA, (1983), Penduduk dan Kesempatan Kerja, Badan Perencanaan Pembangunan Sulawesi Utara, Manado.

BAPPEDA, (1983), Presentasi Ketua Bappeda di sampaikan pada Konsultasi Nasional Pembangunan 21 - 26 Nopember 1983, Mandagi - Bappeda Sulawesi Utara, Manado.

BAPPEDA, (1984), Fourth Five Year Regional Development Plan, (Premilinary draft), Bappeda, North Sulawesi, Manado.

BKPMD, (1983 a), Kumpulan Project Profil Bidang Usaha Penanaman Modal: Tanaman - Industri Jahe, Badan Koordinasi Penanaman Modal Daerah Tingkat I Sulawesi Utara - Fakultas Ekonomi Universitas Sam Ratulangi , Manado.

BKPMD, (1983), Penanaman Modal Di Sulawesi Utara: Kemarin Hari ini dan Prospeknya di Masa Depan, BKPMD Sulawesi Utara, Manado.

BKPMD, (1983), Laporan Hasil-hasil Temu Usaha Penanaman - Modal Daerah Tingkat I Sulawesi Utara, BKPMD Sulawesi Utara, Tanggal 14 - 15 September 1983, Manado.

BKPMD, (1983 a), Laporan Hasil-hasil Temu Usaha Penanaman Modal Untuk Daerah Tingkat I Propinsi Sulawesi Utara BKPMD Sulawesi Utara, Tanggal 31 Oktober 1983, Manado.

BKPMD, (1983), Project Profile: Industri Makanan Ternak , Kerja sama BKPMD Sulut dan FEKON Unsrat, Manado.

BKPMD, (1983), Petunjuk Praktis Penanaman Modal di Sulawesi Utara, BKPMD Tingkat I Sulawesi Utara, Manado.

BPEN, (1976), Hasil Kesimpulan Lokakarya dan Pameran Pengembangan Ekspor Nasional, Departemen Perdagangan , Badan Pengembangan Ekspor Nasional Sulawesi Utara , Manado.

BPS, (1978), Statistical Profile of Children and Mother in Indonesia, Biro Pusat Statistik, Jakarta, Indonesia.

BPS, (1981), Vehicles and Length of Road Statistics, Biro Pusat Statistik, Jakarta, Indonesia.

BPS, (1982), Provincial Income in Indonesia, 1975 - 1979, Biro Pusat Statistik,Jakarta, Indonesia.

BPS, (1982), Indikator Ekonomi, Biro Pusat Statistik, Jakarta, Indonesia.

BPS, (1982), Bulettin Ringkas, Jakarta, Indonesia.

BPS, (1983), North Sulawesi in Figures, Biro Pusat Statistik Perwakilan Sulawesi Utara, Manado.

Butarbutar, T.B., et.al, (1978/1979), Elastisitas Pendapatan atas Permintaan Konsumsi Daging, Telur, Susu - dan Ikan di Kotamadya Manado, Universitas Sam Ratulangi, Manado.

Chrisholm, H., Anthony, D., et.al., (1975), Discounting - and Other Interest rate Procedures in Farm Management Faculty of Economic Studies University of New England Armidale, N.S.W. 2351.

CIDA, (1983), Proyek Tata Pelaksanaan Pembangunan Daerah-Sulawesi Utara, Studi Pengembangan Wilayah Lolak-Sang Tombolang, Pemerintah RI dan Pemerintah Kanada, Direktorat Tata Kota dan Tata Daerah, Dirjen Cipta Karya-Departemen Pekerjaan Umum, Jakarta.

CSIS, (1982), Analisa Industrialisasi dan Pembangunan Nasional, Centre for Strategic and International Studies, Jakarta, Indonesia.

Davis, T.A. and Sudarsip, (1978), Methods of Rejuvanation and Replanting of Coconut Stands in Indonesia, Makalah yang dibawakan pada pertemuan teknis Kelapa V,April 1978, Manado.

Dasgupta, P., Sen, A. and Marglin, S., (1972), Guidelines for Project Evaluation, Project Formulation and Evaluation Series, No.2, United Nations Industrial Development Organisation, United Nations, New York.

Departemen PU, (1982), Data/Informasi Perencanaan Tata Ruang dan Daerah Sulawesi Utara, Direktorat Jenderal - Cipta Karya, Direktorat Tata Kota dan Tata Daerah , Proyek PUSIDO Ujung Pandang.

Direktorat Tata Guna Tanah, (1980/1981), Analisa Tata Guna Tanah dan Design Tata Ruang Propinsi Sulawesi Utara, Lokasi Marisa, Departemen Dalam Negeri, Direktorat Jenderal Agraria, Jakarta.

Direktorat Bina Sumber Hayati, (1983), Hasil Evaluasi Potensi Sumber Daya Hayati Laut di Perairan Indonesia-dan Perairan ZEE Indonesia 1983, Direktorat Jenderal Perikanan Balai Penelitian Perikanan Laut, Departemen Pertanian, Jakarta.

D J P, (1980), Data Statistik Perkebunan Indonesia, Direktorat Jenderal Perkebunan (DJP), Jakarta.

FEKON UNSRAT, (1982), Pokok-pokok Hasil Perumusan Seminar REPELITA IV Dati I Propinsi Sulawesi Utara, Fakultas Ekonomi Universitas Sam Ratulangi, Manado.

Fakultas Pertanian, (1983), Laporan Survey Proyek-proyek Perkebunan Rakyat REPELITA III di Propinsi Sulawesi-Utara, Unit Pelaksanaan Proyek Kelapa Pineleng Kabupaten Minahasa, Kerja sama Direktorat Jenderal Perkebunan dengan Fakultas Pertanian Universitas Sam Ratulangi, Manado, Intern Report.

Gubernur KDH Tingkat I Sulawesi Utara, (1982), Nota Keuangan, Rancangan Anggaran Pendapatan dan Belanja Daerah Propinsi Dati I Sulawesi Utara, Pemerintah Daerah Tk I Sulawesi Utara, Manado.

Hughes, G.A. and Islam, I., (1981), Inequality in Indonesia; A Decomposition Analysis, Bulettin of Indonesia Economic Studies, XVII (2), July 1981; 42 - 71, Australian National University, Canberra.

Jones, G.A., (1977), The Population of North Sulawesi, Gajah Mada University Press, Yogyakarta.

Kaligis, D.A., dan Wilar, A., (1983), Perkembangan Peternakan 1974 - 1982 serta Proyeksi 1984 - 1990, Makalah Untuk Tim Stuci CIPs, Puslit Universitas Sam Ratulangi, Manado.

Kaligis, W.A., (1984), Suatu Studi Penanggulangan Masalah Lapangan Kerja Penduduk dan Kelestarian Lingkungan - di Pulau Lembeh, Lewat Analisa Sumber Daya Pertanian dan Peternakan, Fakultas Peternakan Universitas Sam Ratulangi, Manado.

Kandou, H., (1983), Keadaan Ketenaga-Kerjaan, Masalah dan Proyeksinya sampai tahun 1990 di Sulawesi Utara, Disusun Untuk Tim Studi CIPs, Pusat Penelitian Universitas Sam Ratulangi, Manado.

Kantor Statistik Minahasa, (1983), Minahasa in Figures 1982, Pemerintah Daerah Kabupaten Minahasa.

Kantor Wilayah Tenaga Kerja Sulut, (1983), Aspek Ketenaga Kerjaan dan Kesempatan Kerja dalam Repelita IV Daerah Tingkat I Propinsi Sulawesi Utara, Kantor Wilayah Departemen Tenaga Kerja Sulawesi Utara, Manado.

Kantor Wilayah Perdagangan, (1982), Laporan Tahunan 1981, Departemen Perdagangan dan Koperasi, Kantor Wilayah-Perdagangan Sulawesi Utara, Manado.

Kantor Wilayah Perdagangan, (1982), Perdagangan Dalam Angka, Bidang Metrologi, Departemen Perdagangan, Kantor Wilayah Perdagangan Sulawesi Utara, Manado.

Kompas, (1984), Produksi Kopra Sulut Turun Drastis, Harian Kompas, tanggal 4 Januari 1984, hal.2, kolom 1.

Kompas, (1984), Harga Minyak Goreng Naik 35 persen, Harian Kompas, tanggal 6 Januari 1984, hal.2, kolom 6.

KPPR, (1974), Pendapatan Regional Daerah Tingkat I Sulawesi Utara, Kelompok Penghitung Pendapatan Regional Sulawesi Utara 1969/1973, Manado.

Kuznets, S., (1955), 'Economic growth and income equality; American Economic Review, 45(1), 1-28.

Lal, D., (1974), Methods of Project Analysis; A Review, World Bank Staff Occasional Papers No. 16, World Bank Washington.

Lastario, Arie, et.al., (1983), Analisa Perbandingan Peningkatan Pendapatan dan Pemerataan, Jilid IV, Pulau Sulawesi, Yayasan Pengembangan Ketrampilan dan Mutu-Kehidupan " Nusantara ", Jakarta.

Lewis, A., (1965), Development Planning, George Allen and Unwin Ltd., London.

Mai, Ulrich, (1983), Small Town Markets and The Urban Economy in Kabupaten Minahasa (North Sulawesi), Indonesia , Paper read at the Fourth BIELEFELD Colloquium on Southeast Asia " Urbanization - in South -- east Asia " University of Bielefeld 7 - 8 January , 1983, West Germany.

Makaliwe, W.H. and Saleh, A.K., (1975), Beberapa Aspek Masalah Kopra di Sulawesi dan Maluku, Agro Ekonomica, 4 (6); 15 - 26.

Mandagi, J.W.P., et.al., (1983), Penelitian Kemungkinan - Pengembangan Ekspor Komoditi Non Minyak Pala/Fuli , Raw Chili dan Jahe di Sulawesi Utara, Proyek Penelitian Perdagangan Propinsi Sulawesi Utara, Bekerja -- sama dengan Fakultas Pertanian Universitas Sam Ratulangi, Manado.

Masiki Usman, D., et.al., (1983), Studi Komparatif Mengenai Pola Pengeluaran Petani Cengkeh, Kelapa, Beras, dan Nelayan di Sulawesi Utara, Fakultas Ekonomi Universitas Sam Ratulangi, Manado.

Mewengkang, M., (1983), Comprehensive Investment Profiles for North Sulawesi, Makalah Untuk Tim Studi CIPs,Pusat Penelitian "Wale Sea", Universitas Sam Ratulangi Manado.

Moelyono, J.H., (1982), Pembangunan Irigasi Repelita IV - Propinsi Sulawesi Utara, Disajikan Pada Seminar Pembangunan Pertanian Repelita IV Propinsi Sulawesi U - tara, tanggal 3 - 5 Pebruari 1982, Manado.

Morris, H., (1970), Statistical Analysis For Decision Making, Harcourt, New York.

Paauw, D.S., (1978),Labour Intensive Export : Cost and -- Market Distributions, Paper presented to the Core -- Group on Employment Strategy, ILO, Jakarta.

Palenewen, J.L., (1983), Potensi dan Pembangunan Kehutanan di Sulawesi Utara, Makalah Untuk Tim Studi CIPs , Pusat Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

Pangaila, A.O.D. and Rondonuwu, O., (1976), Survey Tingkat Konsumsi dan Produksi Kelapa Dalam Hubungan dengan Kebijaksanaan Komoditi Kelapa di Sulawesi Utara , Dinas Perkebunan Dati I Sulawesi Utara, Manado.

Parera, Jack., (1982), Kebijaksanaan Pemerintah Daerah -- Tingkat I Propinsi Sulawesi Utara Dalam Bidang Ekonomi dan Pembangunan, Makalah Untuk Ceramah pada KADIN Sulawesi Utara, tanggal 11 - 16 Januari 1982, Manado.

Parera, Jack., (1982), Masalah Pembiayaan Investasi, Gubernur Kepala Daerah Tingkat I Sulawesi Utara, Manado.

Pemerintah Daerah Kota Madya Manado, (1980), Rencana Induk Kota Manado 1980 - 2000, Data dan Analisa, Pemerintah Daerah Kota Madya Manado.

Psacharopoulos, George., (1980), Higher Education in Developing Countries : A Cost - Benefit Analysis, World Bank Staff Working Paper, The World Bank, 1818 H --- Street, N.W. Washington, DC. 20433, USA.

Poetiray, P., (1975), The Coconut Industry in Indonesia , A Simulated Replanting and Rehabilitation Project in North Sulawesi, Paper Prepared for the Award of Ingenieurs Degree at Wageningen Agricultural University, Wageningen.

Republik Indonesia, (1979), Rencana Pembangunan Lima Tahun Ketiga , Percetakan Negara, Jakarta.

RIA, (1973), Pendapatan Regional Propinsi Sulawesi Utara Regional - Income Accounting (RIA) Group Sulut, Manado.

Richter, J.J., et.al., (1983), Palawija Crops in Sulawesi: Marketing and Post-Harvest Activities A Development Study, Paper Prepared for the Government of Indonesia and the Canadian International-Development, Agency, Jakarta.

Rogi, M., (1981), Pengembangan Wilayah dan Masalah Kete - naga Kerjaan di Sulawesi Utara, Diperuntukkan Bagi - Sidang Pleno ISEI, Yogyakarta.

Rogi, M., (1982), Evaluasi Hasil Perhitungan Pendapatan - Regional Sulawesi Utara (1975 - 1980), Fakultas Ekonomi Universitas Sam Ratulangi, Manado.

Rogi, M., (1982), Perkiraan Laju Pertumbuhan dan Perkiraan Penyerapan Tenaga Kerja, Fakultas Ekonomi Universitas Sam Ratulangi, Manado.

Rogi, M., (1983), Mengapa Dipermasalahkan Harga Kopra Di Sulawesi Utara, Makalah Untuk Kongres ISEI, Indone - sia, Jakarta.

Rogi, M., (1983), Macro Economic Review, Makalah Untuk Tim Studi CIPs, Pusat Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

Rondo, M., (1983), Prospek Investasi di Bidang Perikanan-Sulawesi Utara, Makalah Untuk Tim Studi CIPs, Pusat-Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

Rondonuwu, O., (1982), Penentuan Besaran Potensi Produksi Konsumsi Lokal dan Besaran Effektif Bahan Baku Industri dari Limbah Hasil (By Product) Kelapa di Kabupaten Minahasa, Laporan Hasil Penelitian, Universitas-Sam Ratulangi, Manado.

Rondonuwu, O. and Palar, F.A.S., (1982), Kelapa Sebagai - Komoditi Sosial yang Berpotensi Tinggi Bagi Pengem - bangan Agro Based Industry, Makalah yang disampaikan Pada Konperensi Nasional Ekonomi Pertanian VII, 21 - 23 Agustus 1982 di Jakarta, UNSRAT - Komisariat -- PERHEPI Manado.

Sarasutha, I.G.P., (1983), Base Line Survey Propinsi Su - lawesi Utara, Sulawesi Tenggara dan Maluku, Proyek - Penelitian Tanaman Pangan Maros, Departemen Pertanian, Badan Penelitian dan Pengembangan Pertanian, Balai Penelitian Tanaman Pangan, Maros.

Scandizzo, Pasquale, L., et.a., (1980), Methodology for Measuring Agricultural Price Intervention Effects, World Bank Staff Working Paper No. 394, The World -- Bank 1818 H Street, N.W., Washington D.C., 20433,USA.

Sembel, D.T., et.al., (1983), Perbaikan Sistem Pengeringan Daging Buah Kelapa (Cocos nucifera) dalam Hubungannya dengan Peningkatan Mutu Kopra, Tim Peneliti Fakultas Pertanian Universitas Sam Ratulangi, Manado.

Sembel, D.T., (1983), Prospek Investasi Bidang Pertanian Tanaman Pangan di Sulawesi Utara, Makalah Untuk Tim Studi CIPs, Pusat Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

Sondakh, L.W., (1979/1980), Analisa Terhadap Kelakuan Ekonomi dan Keterbatasan Sumber Daya untuk Meningkatkan Pendapatan Usaha Tani Lewat Program Perkreditan Peremajaan dan Diversifikasi di Sulawesi Utara, Suatu Pendekatan Secara Terpadu, Proyek Kerja Sama Universitas Sam Ratulangi dengan Dinas Pertanian Propinsi Sulawesi Utara, Manado.

Sondakh, L.W., (1982), Analisa Ekonomi Sumber Daya Untuk-Program Industrialisasi di Sulawesi Utara, Bappeda - Unsrat, Manado.

Sondakh, L.W. and Hardaker, J.B., (1982), Growth and Equity Aspects of Alternative Credit Allocation Policies on Small Holder Coconut Development Program in North Sulawesi, Paper Presented at 18th International Conference of Agricultural Economists, Jakarta, 24th August - 2nd September, 1982.

Sondakh, L.W., (1983), Growth and Equity Aspects of Credit Programs for Small - Farm Coconut Development in Sulawesi Utara, Indonesia, A Thesis Submitted for the Degree of Doctor of Philosophy of the University of New England, Armidale, N.S.W., April, 1983.

Sondakh, L.W., (1983), The Economic of North Sulawesi,Makalah Untuk Tim Studi CIPs, Pusat Penelitian "Wale -- Sea", Universitas Sam Ratulangi, Manado.

Sondakh, L.W., (1983), Comprehensive Investment Profiles for Selected Region, Pusat Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

Sondakh, L.W., (1983), Strategi Dasar Pembangunan Sulawesi Utara, Makalah Untuk Bappeda Sulawesi Utara, Manado.

Squire, L. and van der Tak, H.G., (1975), Economic Analysis of Projects, Johns Hopkins, Baltimore.

SRDS, (1979), Sulawesi Regional Development Study, Sulawesi Utara, Department of Public Works Directorate General of Housing, Building, Planning and Urban Development - Directorate of City and Regional Planning-in Cooperation with the Canadian International Development Agency, University of British Columbia, Vancourver, Canada.

Streeten, P. and Burki, S.J., (1976), Basic Needs: An Issue Paper, World Bank.

SUA, (1983`, Sulawesi Utara Dalam Angka, Kaulan Sensus -- Statistik Sulawesi Utara, Manado.

Sumaraw, S.R., et.al., (1983), Laporan Rural Kredit Pro - ject (RCP) ALP 1981/1982 & 1982/1983 Sulawesi Utara, Dinas Peternakan Daerah Tingkat I Sulawesi Utara, Manado.

SUSENAS, (1979), Industri/Kerajinan Rumah Tangga Jawa Madura Luar Jawa Indonesia, BPS, Jakarta.

Tan, J., (1983), Penduduk Sulawesi Utara, Makalah Untuk - Tim Studi CIPs, Pusat Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

Taulu, H.M., (1955), Sejarah Minahasa, Toko Buku Rame, Manado.P.7.

Team Peneliti, (1983), Team Pelaksana dan Penyusunan La - poran Base Line Survey, Propinsi Sulawesi Utara, Sulawesi Tenggara dan Maluku.

Tenda, R. and Sondakh, L.W., (1983), Pengelolaan Bahan - Tambang Kaolin di Daerah Toraget Kabupaten Minahasa, Feasibility Study, Universitas Sam Ratulangi, Manado

Thirwall, A.P., (1972), Growth and Development, Printed in Great Britain by Richard Clay (The Caucer Press Ltd) Bungay, Suffolk.

UNIDO, (1972), Guidelines for Project Evaluation, United-Nations, Vienna.

Universitas Indonesia, (1982), Laporan Pembangunan Dunia-1982, Terjemahan Laporan terbitan World Bank, UIPress Jakarta.

Von Pischke, J.D., et.al., (1981), The Political Economy of Specialized Farm Credit Institution in Low-Income Countries, World Bank Staff Working Paper No. 466 , Washington D.C., U.S.A.

Watts, G.E., et.al., (1983), Draft Report The Small Scale Fisheries Sector of North Sulawesi (Pre-Feasibility-Study of Development), Direktorat Jenderal Cipta Karya, Departemen Pekerjaan Umum, Jakarta.

Waworoentoe, W.J., (1983), Basic Framework for a Basic - Needs Study in North Sulawesi, Makalah Untuk Tim Studi CIPs, Pusat Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

Waworoentoe, W.J., (1983), Housing and Settlement Policies for the Next Five Year Plan, Preliminary Research Silabus, Makalah Untuk Tim Studi CIPs, Pusat Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

Waworoentoe, W.J., (1983), Basic Needs, Makalah Untuk Tim Studi CIPs, Pusat Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

Waworoentoe, W.J., (1983), Beberapa Saran Untuk Penyusunan Strategi Dasar Pembangunan Daerah Sulawesi Utara, Makalah yang dipersiapkan Untuk Penyusunan REPELITA-IV Daerah Sulawesi Utara, Manado.

Waworoentoe-W., Paath-R. and Pangalila, P.E.A., (1983) , Kebutuhan Pokok Rakyat di Sulawesi Utara Sampai Tahun 1990, Makalah Untuk Tim Studi CIPs, Pusat Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

Warouw, J., (1983), Prospek Investasi Bidang Perkebunan di Sulawesi Utara, Makalah Untuk Tim Studi CIPs, Pusat-Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

World Bank, (1974), The Assault on World Poverty, Johns - Hopkins, Baltimore.

World Bank, (1978), Report of the Indonesian Hybrid Coconut Introduction Program, FAO/World Bank, Washington D.C., USA.

World Bank, (1980), Indonesia Smallholder Coconut Development: Project Staff Appraisal, Projects Department , East Asia and Pasifik Regional Office, World Bank , Washington D.C., USA.

World Bank, (1982), World Development Report, Johns Hopkins , Wahington D.C, USA.

Yan, Hassan, (1983), Keadaan Transportasi di Sulawesi Utara, Makalah Untuk Tim Studi CIPs, Pusat Penelitian "Wale Sea", Universitas Sam Ratulangi, Manado.

Zhozawa, Hitoshi, (1983), Promotion of Economi Cooperation to Nucleus Nations on the PAN - PASIFIC, Indone - sian Alternative Energy Development and Japan's Cooperation October 11 - 13, Mandarin Hotel, Jakarta,Indonesia.