Culture, Ecology and Livelihood in the Tinombo Region of Central Sulawesi

Tania Li
with the cooperation of Sulaiman Mamar

Environmental Management Development
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EMDI

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Fax: 902-429-3728
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by

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Environmental Management
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EMDI Project
School for Resource
and Environmental Studies
Dalhousie University
1312 Robie Street
Halifax, Nova Scotia
B3H 3E2

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Menteri Negara Kependudukan
dan Lingkungan Hidup
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Jakarta 10010
Indonesia

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Author
Tania Li, Ph.D. is Assistant Professor and Canada Research Fellow, Department of Sociology and Social Anthropology, Dalhousie University, Halifax, Nova Scotia, Canada.

Contributor
Drs. Sulaiman Mamar, M.A. is a faculty member at Universitas Tadulako (UNTAD), Palu, Sulawesi, Indonesia.

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ABSTRACT

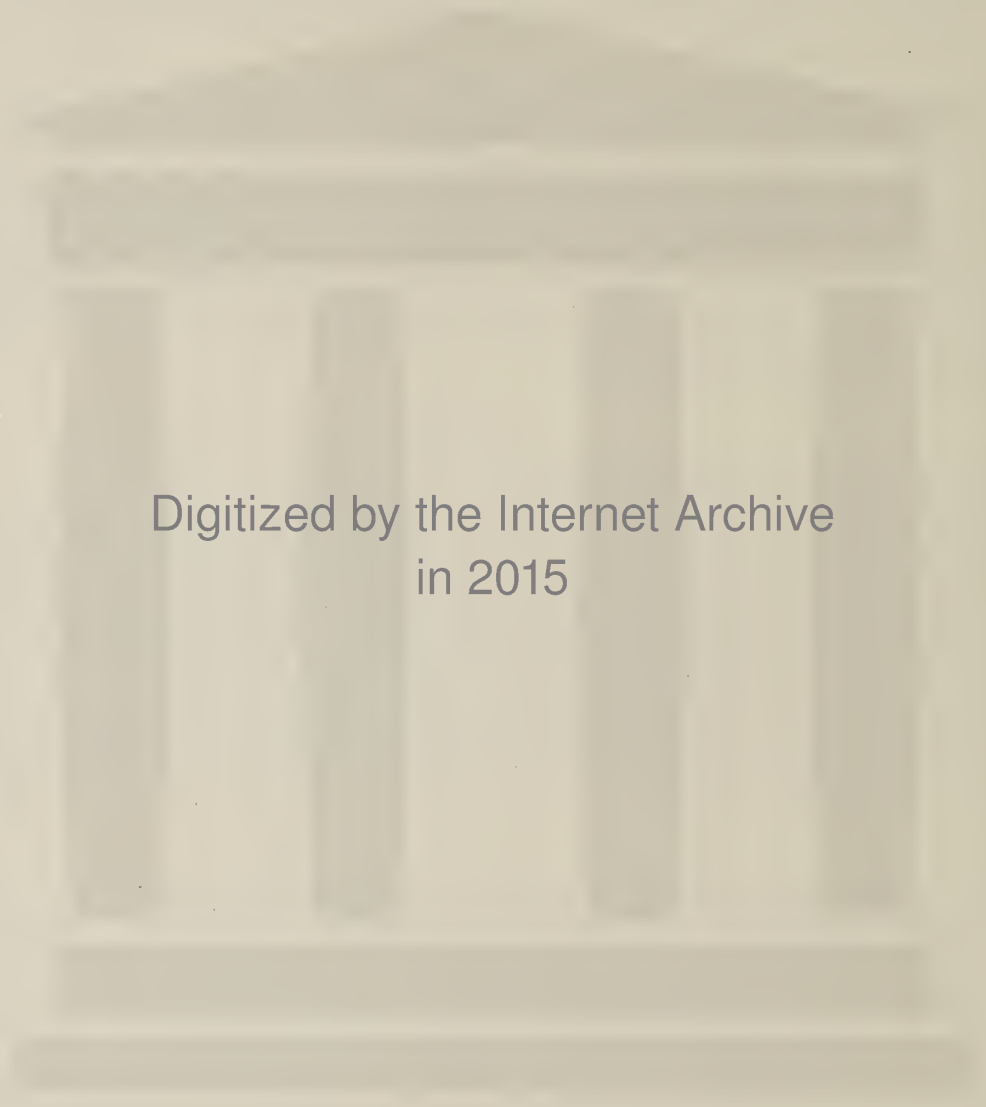
The study addresses the issue of livelihood security in the context of agrarian transformation in the uplands of Central Sulawesi, Indonesia. It has the practical goal of describing the ways in which livelihoods are obtained, and identifying ecological, economic and political/legal constraints to the attempts of uplanders to make their livelihoods more adequate and secure. The study analyses traditional and changing systems of agricultural production, and considers the implications of new forms of production such as tree based cash farming which radically alter the relationship between population and environment by redefining the social relations of access to land and labour. Based on detailed local field research, the study examines issues of relevance to many other upland areas in Indonesia and the region.

Part One describes historical and contemporary patterns of livelihood in three distinct agro-ecological zones: the coastal zone, the middle hills and the inner hills. In each case, current trends are examined from the perspective of their potential to enhance or reduce livelihood security. Part Two explores cultural, political and economic aspects of the interaction between the three zones in the broader context of the state and the wider economy. These include official perceptions of the uplanders, the operation of local government, proposed development programs, and trade linkages within the hills and with the regional and world economy. Part Three presents some recommendations for consideration by national and local government. The Appendix analyses household survey and case study data from each of the zones, demonstrating the diversity of livelihood strategies pursued in the area.

ABSTRAK

Studi ini berhubungan dengan masalah jaminan matapencaharian dalam konteks perubahan soal-soal yang berhubungan dengan pertanian dataran tinggi di Sulawesi Tengah, Indonesia. Tujuan praktisnya adalah menguraikan cara mendapatkan matapencaharian, serta mengidentifikasi kendala-kendala ekologi, ekonomi dan politik/hukum terhadap usaha-usaha dari penduduk di dataran tinggi tersebut untuk mengubah matapencaharian mereka menjadi lebih baik dan lebih terjamin. Studi ini menganalisis sistem yang tradisional dan sistem yang berubah-ubah dari produksi pertanian, dan memperhatikan implikasi-implikasi dari bentuk-bentuk baru dari produksi, seperti usaha-tani tunai yang didasarkan pada pohohn-pohohn yang diusahakan, yang secara radikal mengubah hubungan antara populasi dan lingkungan dengan mendefinisi uland hubungan-hubungan sosial dari akses terhadap lahan dan tenaga kerja. Berdasarkan penelitian-penelitian lapangan secara lokal dan terinci, studi ini mengamati masalah-masalah yang berhubungan dengan daerah dataran tinggi lainnya di Indonesia, dan di daerah Sulawesi.

Bagain pertama menguraikan pola-pola sejarah dan kontemporer dari matapencaharian dalam tiga daerah agroekologi yang berbeda: daerah pantai, daerah pegunungan bagian tengah dan daerah pegunungan bagian dalam. Dalam tiap daerah tersebut, kecenderungan-kecenderungan masa kini yang ada diamati dari potensi perspektipnya untuk mempertinggi atau mengurangi jaminan matapencaharian mereka. Bagian kedua menyelidiki aspek-aspek budaya, politik dan ekonomi dari hubungan di antara ketiga daerah tersebut, dalam konteks keadaan dan ekonomi yang lebih luas. Hal ini mencakup persepsi resmi dari para pemukin dataran tinggi, sistem permerintah daerah, program-program pembangunan yang direncanakan, dan hubungan perdagangan antara daerah pegunungan dan dengan ekonomi daerah maupun dunia. Bagian ketiga menyajikan beberapa rekomendasi-rekomendasi untuk bahan pertimbangan bagi pemerintah pusat dan daerah. Lampiran-lampirannya menganalisis survei rumahtangga dan data dari beberapa studi kasus dari masing-masing daerah, yang menunjukkan adanya keragaman dari strategi-strategi matapencaharian yang dijalankan di daerah tersebut.



CONTENTS

BAPPEDA	Provincial Development Planning Board
CIDA	Canadian International Development Agency
EMDI	Environmental Management Development in Indonesia
KKN	Student Work Program
KLH	Ministry of State for Population and Environment
LKMD	Village Development Board
LMD	Village Council
PBB	Land and Property Tax
PKK	Family Welfare Education
RK	Sub-sub-village division
RT	Neighbourhood Unit
SRBP	Sulawesi Regional Development Project
UNTAD	Tadulako University, Palu

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The research is being undertaken in collaboration with Universitas Tadulako (UNTAD), Palu. Drs. Sulaiman Mamar worked together with the author on parts of the data collection and collaborated in the preliminary analysis of the findings. His ongoing participation in the research is greatly appreciated. The Indonesian Research Council (LIPI) facilitated the research process.

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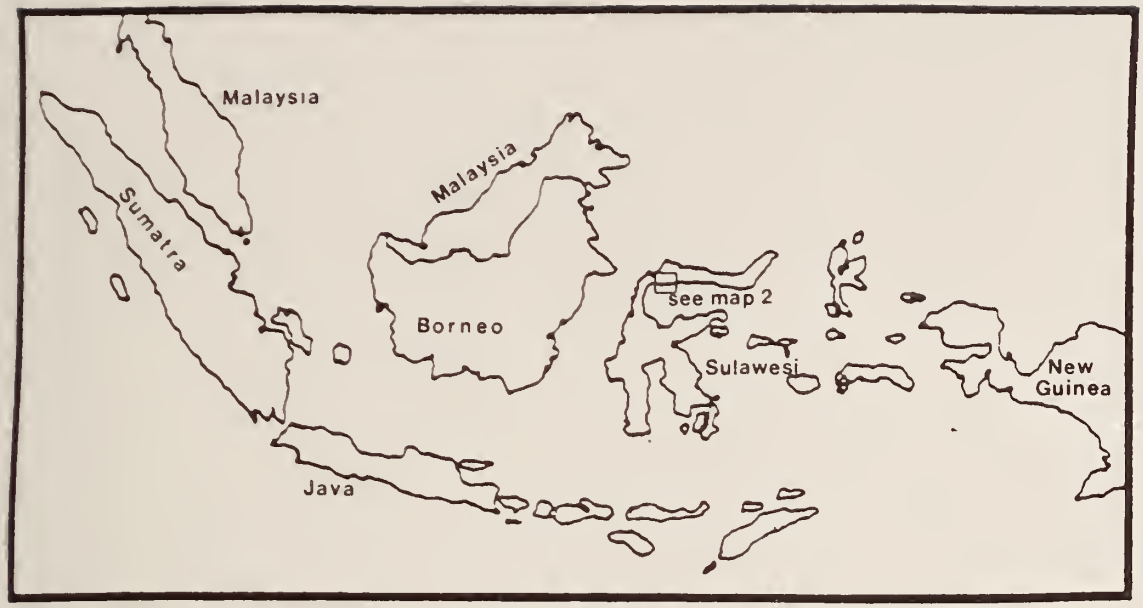
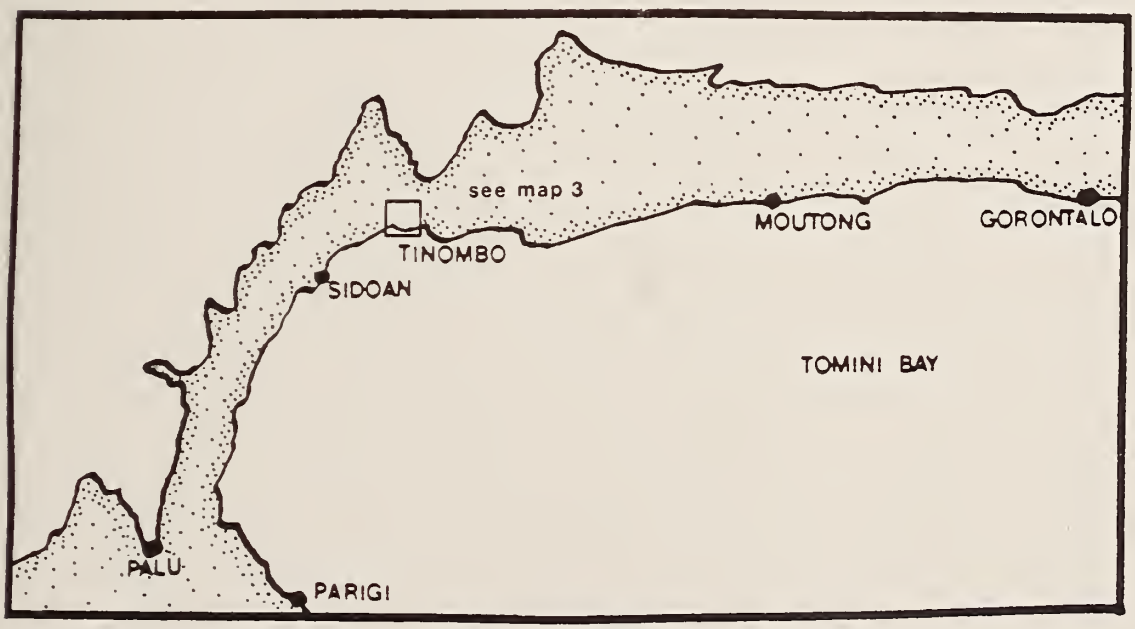
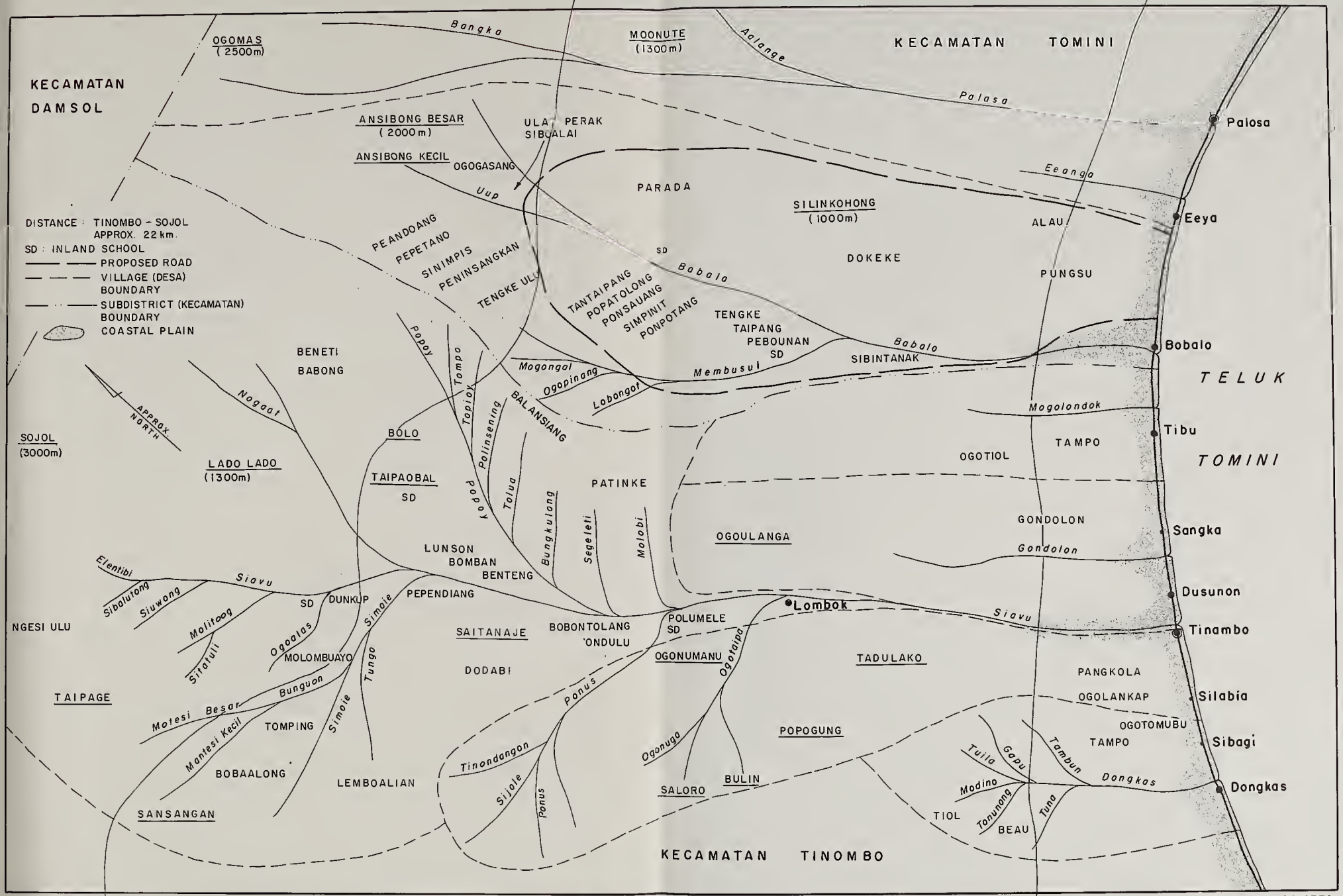
The most important contributors to the present study are the people of the Tinombo area, the villagers and the local and district officials, who gave their time and hospitality, patiently answered questions, and carefully explained their views. It is the author's hope and intention that this study will enhance the understanding of environment and development issues in the area, and contribute to the effort to improve conditions for rural people in this region of Indonesia.



MAP 1 INDONESIA



MAP 2 CENTRAL SULAWESI



MAP 3 RESEARCH AREA
(AUTHOR'S SKETCH MAP)

Part One

Culture, Ecology and Livelihood

INTRODUCTION

The research reported here has two goals. The first is an immediate practical goal: to analyse how livelihoods are obtained in the area, and to make recommendations to appropriate parties on ways in which those livelihoods could be made more adequate and secure. The research area is one of the poorest regions of Central Sulawesi, where the livelihoods of the population are both minimal and precarious, and issues of survival present themselves on a daily basis. Livelihood security has several components:

> *Ecological*: ensuring the biophysical sustainability of the natural resource base from which livelihood is obtained, and where possible increasing its productivity to meet the expanding needs of current and future generations.
>
> *Economic*: ensuring a diversity of livelihood sources, as well as stable demand and fair prices for labour and products which are sold in the market.
>
> *Political/legal*: securing legal rights to land and other resources from which livelihood is obtained, and freedom from fear of eviction or displacement.
>
> *Personal/community*: maintaining good health and the ability to work, as well as acquiring education and skills of all kinds that permit the pursuance of a full range of livelihood options, both as an individual and in cooperation with others.

Experience has shown that simple solutions to the problem of livelihood security do not exist: moving people somewhere else, introducing a new crop, providing credit -- all such plans are limited in conception and execution, and their impact is often negative or of limited benefit. Consensus that has built up around the notion of sustainable development, with a focus on livelihood security, recognizes that it is necessary to begin in the place where the poor are now, with the resources they currently control, and the knowledge and skills that they already have (Chambers, 1988). Backward steps, such as policies, programs and projects that do more harm than good to the poor, perhaps by displacing them from their land and resources, have to be avoided. Progress comes about in a slow, collaborative and step-wise fashion. If Indonesian government institutions, non-government organizations, and national or foreign development workers are to facilitate the development process, they require good information on what is already there. This research is a contribution to that information base.

The institutional context in which this research is being carried out is favourable to the serious use of research and analysis in policy and programming. At the national level, the Ministry of State for Population and Environment (KLH) has responsibility for monitoring the interactions between population and environment, and devising approaches to sustainable development in the context of spatial planning. This study provides "on the ground" material against which general approaches and policies can be tested. Funding for the research has been provided by a CIDA project that supports the Ministry. At the regional level, the area around Tinombo has been selected by the Provincial Development Planning Board (BAPPEDA) as the focus of rural development initiatives under an institutional strengthening project (also supported by CIDA). The research provides data of direct relevance to the design and delivery of rural development initiatives.

The second goal of the research is to advance the state of knowledge regarding the processes and mechanisms of agrarian transformation in upland areas. In particular, the research focuses on the changing social organization of access to productive resources, including labour. Such access depends on rights and responsibilities exercised through a host of social institutions ranging from the family to the state. A central issue concerns land tenure, which lies at the heart of the interaction between population and environment in an agrarian system.

The Tinombo area is undergoing very rapid change, both planned and unplanned. The physical environment is being transformed by the activities of people, both local residents and outsiders. The rush to plant tree crops is one example. Even more significant in the long run are the new social relations that emerge in the context of agricultural intensification, commoditization and environmental degradation: new sets of relations between men and women, parents and children, more and less affluent neighbours, traders, money lenders and their clienteles, village elites and their hinterland population, and villagers as a whole in relation to the market and the state. Research reported here, and extended over a period of time, monitors these transformations and seeks to identify not only how villagers react to outside forces, but how they negotiate and shape their social and material world according to their own knowledge and understanding.

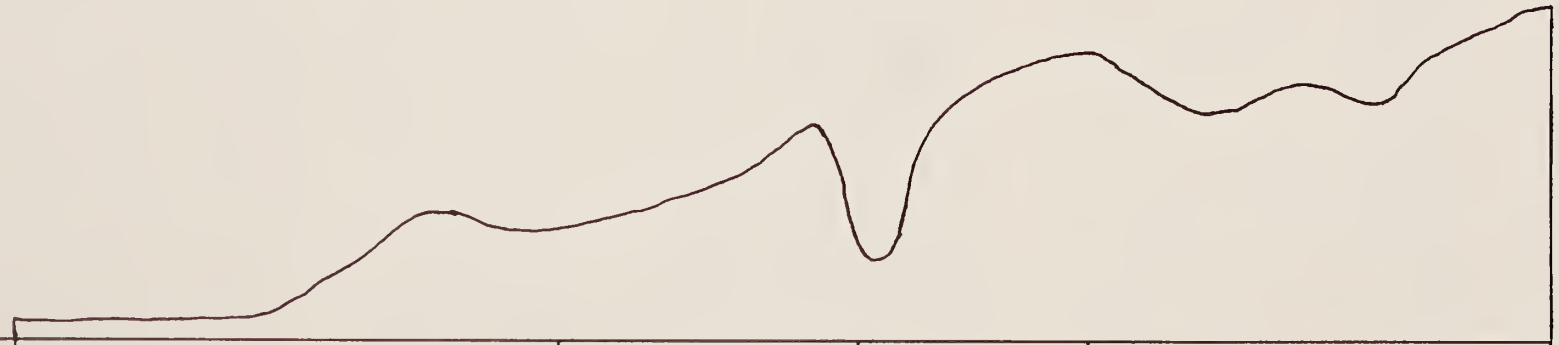
The two goals outlined above are closely linked. The difficulties experienced by poor rural people in obtaining secure and adequate livelihoods relate as much to the configurations of social relations in which their lives are embedded as they do to direct material limitations (lack of land, soil, roads, seed, credit etc). Proposed solutions to material problems that fail to understand and address social issues at the level of the household, the village and the state are unlikely to reach their goal. On the positive side, such analysis can lead to solutions which are grounded in the realities of everyday life, and in the ongoing attempts of rural people to improve their lot.

The Study

Six villages (*desas*) that lie near the border between the subdistricts (*kecamatans*) of Tinombo and Tomini in Donggala, Central Sulawesi are the site of the present study. The villages are Dongkas, Tinombo, Lombok, Dusunan and Tibu in Kecamatan Tinombo, and Bobalo in Kecamatan Tomini. At this point along the peninsula, the coastal plain is only one or two kilometres wide, and mountains reach almost to the sea. The coastal settlements became accessible by dry season road only in 1980 when the still unpaved trans-Sulawesi highway was opened. The mountain areas are accessible only by footpaths which are often steep and slippery, and require fording rivers and streams. As a result, the area is considered remote by outsiders. The indigenous people of the study area, who comprise the majority of its inhabitants, speak a language known as Lauje, and refer to themselves as the Lauje people.

A transect from the coast inland through the mountains in the Tinombo area traverses three distinct agro-ecological zones, each with characteristic patterns of resource management (see Figure 1). The term agro-ecological zone is used here to refer to a combination of unchanging natural characteristics (such as slope and altitude), natural characteristics subject to change due to human activities (soil, vegetation) and the typical patterns of resource use that people are engaged in. The concept thus includes bio-physical and social components, and focuses upon historical processes of change in the relationship between population and environment.

FIGURE 1: TRANSECT THROUGH THE ZONES



ZONE	COASTAL				MIDDLE HILLS	RIVER VALLEY	INNER HILLS	
RAINFALL	SEASONAL				FREQUENT		VERY FREQUENT	
VEGETATION	MANGROVE	GRASS BUSHES	LIGHT SECONDARY FOREST	GRASS	LIGHT SECONDARY FOREST GRASS	PRIMARY FOREST	DEEP SECONDARY FOREST	PRIMARY FOREST
CROPS/USAGE	FISH PONDS	COCONUT WAGE WORK	CORN GRAZING TOBACCO	GRAZING	CORN RICE SHALLOTS GROUNDNUTS COCOA CASHEWS KAPOK CANDLENUT		TARO CASSAVA CORN RICE GARLIC COCOA CLOVES	
RESOURCES EXTRACTED FOR SALE	FUEL WOOD		FUEL WOOD		BAMBOO	RATTAN TIMBER		RATTAN CINNAMON RESIN TIMBER
WILD FOODS	FISH SHRIMP		ONDOT		ONDOT	FISH	WILD PIG	SAGO ONAUN
PEOPLE	LAUJE AND OTHERS		COASTAL LAUJE		MIDDLE HILL LAUJE		INNER HILL LAUJE	
RELIGION	ISLAM						CHRISTIANITY AND INDIGENOUS RELIGION	

The zones identified for the purposes of this study are (1) the coastal zone, (2) the middle hills and (3) the inner hills. Although more refined distinctions between micro-zones could be made, the three zones named here correspond to local perceptions of the way Lauje land, people and practices can be distinguished. Each zone presents a set of opportunities and constraints for making a living, although there is diversity between households, according both to the resources they are able to access and the strategies they pursue. In each zone, the physical characteristics of the resource base and the modes of social organization through which resources are accessed and managed are undergoing significant, rapid transition.

Part One of this paper describes the history of the area, and the nature and origins of the cultural distinctiveness that characterizes each of the three zones. Physical resources, characteristic sources of livelihood, and associated modes of social organization are described. The major transitions in process in each of the zones are explored, together with the critical issue of land tenure.

Part Two explores cultural, political and economic aspects of the interaction between the three zones in the broader context of the state and the wider economy. It discusses the origins and implications of the view held by officials that the area, its people and their forms of production are backward. This perception colours the operation of local government and the design of projects intended to "develop" the people and the local economy. Trade relations between the three zones and with the regional and national economy are also explored, since these are important material links between local endeavour and the broader context.

Part Three takes a practical look at the prospects for people in the area to obtain more adequate and secure livelihoods than the majority now enjoy. Both opportunities and constraints, possibilities and pitfalls are presented, summarized in a series of recommendations put forward for consideration by both national and local government.

The Appendix analyses data from household surveys carried out in each of the zones. These data provide support for the generalizations made in Part One about the characteristics of each zone, as well as demonstrating that households within each zone have unequal access to resources, and pursue a diversity of livelihood strategies. Selected households were studied in some detail, providing added depth and quality of information. The Appendix also describes a transect through the three zones, indicating the differences and interaction between them.[1]

[1]The exchange rates at the time of research were approximately US$1 = Rp1,800 and Can$1 = Rp1,500.

1.1 HISTORY AND CULTURE

Piecing together the history of cultural and economic difference in the Tinombo area is a complex task, since all historical records, whether written or oral, are purposefully constructed by an author, and are intimately related to a specific place, time and audience. This point is central to the thesis of Jennifer Nourse, which shows both the diversity in interpretations of Lauje history, and the importance of such interpretations to present political issues. The following account is the author's interpretation of history and cultural difference, based upon Nourse's work, discussion with the missionaries, interviews with Lauje elders in various locations throughout the area, and analysis of contemporary developments.

The term Lauje means "no", and it is not known when or how the term came to refer to, and be used as a form of self designation by, the people living in the Tinombo hills. The Lauje claim to originate from the hill area between Taipaobal (about 15 km from the coast) and the coastal foothills. This is the area which, according to accounts of migratory movements, and judging from the exhausted state of the land, has been settled and farmed for the longest period of time. Near Taipaobal is an inscribed rock lying "at the center of the world", called Pola Irandu, which figures in many versions of Lauje origin myths (Nourse 1989:74).

The Lauje consider that they are "all one trunk", with a common origin, although their ways of life are now diversified, with some living in the inner hills near the center of the peninsular, others in the middle hills, and still others on the coast. The history told by the Lauje focuses on the nature of the similarities and differences that characterize them as a people. Although there is a sense in which the Lauje have a common history, their interpretations of that history, and the place of various groups within it, differ markedly.

Originally, all Lauje lived in the hills because they were afraid to live on the coast, where they were vulnerable to attack by pirates. They made occasional expeditions to the coast to make salt (Nourse 1989:74). While living in the hills some diversification of economies occurred, so that one group, living to the inland side, focused more on hunting, the collection of forest products for trade, and the production of root crops in small forest gardens. The other group, at an unknown date, adopted the cultivation of rice and corn, practicing shifting cultivation mostly on secondary forest land. This division of labour may have been based upon pre-existing cultural/ethnic differences between the two groups, or it may have been simply a matter of choice, some individuals and small family-based groups preferring life in the forest, while others preferred a relatively more sedentary form of agriculture.

The more inland group is referred to by those in the middle hills and on the coast by the term *bela*. The term bela is related to a verb, *membembelan*, which means to befriend and get to know someone, to be familiar, and to help each other out in various ways, including providing food and hospitality, and political support in case of a quarrel. It is used to describe the relationship between certain middle hill or coastal people and families in the interior. It carries positive connotations of mutual help and reciprocity. At some point in time, the term bela acquired derogatory connotations of primitiveness, and some inlanders consider it offensive. For this reason, the term bela will be avoided in this study, except when quoting from written sources or referring to statements of informants who themselves used the term. Here the term "inner hill people" will be used to refer to the more inland people, who are not Muslim, and who exhibit other signs of language, dress, and lifestyle that distinguish them from the middle hill people below them. The designation "inner hill people" is certainly a relative term, as indicated by the purposely vague designation "more inland", and also by the fact that adherence

to Islam, styles of dress and linguistic patterns vary by degrees, and not along clear cut physical and social boundaries. The range of variability is an additional reason to avoid the term bela, which can give a misleading impression of boundedness, as if the people so designated were a distinct ethnic group. The inner hill people, when asked, call themselves simply "the Lauje people".

There are different interpretations of the origin of the differences between the people living in the inner hills and those living in the middle hills. One interpretation is that the difference is based on location and agricultural specialization. In the past, the two groups frequently intermarried, and there was no status asymmetry between them since they are "both older and younger siblings" to each other. An oral history obtained by Nourse (1989:99) states:

> "Children, the bela communities have existed for a long time... For many generations our ancestors in Taipaobal fed the bela communities part of the year and the bela fed the Taipaobalers the other part of the year. The men and women from both communities have married each other for decades."

An alternative explanation offered by an elder in Taipaobal is that there was no division among the Lauje living in the hills before the coming of the Dutch. To escape Dutch rule, one group ran off into the inner hills. For fear of being discovered, they were unable to grow food and so began to rely on Taipaobalers, living in the middle hills, for rice and corn. Their dependence for food upon the generosity of the middle hill people made them into the inferior younger siblings (Nourse 1989:68, 94). The same informant also considered that the inner hill people were exclusively wife-givers, and that residence was ideally patrilocal: Taipaobal men married the daughters of their trade partners, the women coming to live in Taipaobal.

Nourse favours the former interpretation, and considers that there were differences between the people living in the inner hills and the other mountain dwellers living below them in the middle hills, before either the coming of the Dutch, or the arrival of Islam, which occurred much later. The missionaries also consider the differences between the inner hill people and the middle hill people to be very deeply rooted. There are some differences in vocabulary, intonation and usage which distinguish the language used in the inner hills from that used in the middle hills and on the coast, although they are mutually intelligible. Some differences in physique are notable: many of the inner hill people are smaller, and have paler skins and curlier hair than people in the middle hills, although others are physically indistinguishable. It is possible that two or more distinct groups co-existing in the mountains have merged or been merged under the Lauje label, rather than one group becoming differentiated, as some informants claim.

Certainly, food exchanges based on differences in climate, soils and agricultural practices have long been significant, and are part of the definitions of cultural identity. The more moist and fertile soils close to the forests of the inner hills are suitable for growing taro, which is the staple food of the people living there. It grows continuously, without seasons, and, according to the inner people and those living in the middle hills, it "never seems to be finished". As a result, the people from the middle hills that specialise in rice and corn, which have seasons and are vulnerable to pests, rely on the inner hill farmers to see them through hard times. They go to the inner hill communities to ask for food, either as a gift, or in return for goods such as coconuts, clothing, or tools which the middle hill people acquire during better times. According to the informant quoted above, the inner hill people also asked for corn and rice at certain

times of the year, although, for reasons to be described below, that pattern is no longer common.

Before the coming of the Dutch in the early nineteenth century, a more definitive split occurred among the mountain people, when some members of the group went to live permanently on the coast, converted to Islam, and intermarried with neighbouring groups such as the Kaili and Gorontalo. Many versions of Lauje oral history focus on this division (see Nourse 1989:75 and 90). The group that went down to the coast took with it the highest ritual office, that of Olongian, supposedly on loan for a period of seven generations. The office of Olongian adopted attributes common to other petty coastal kingdoms in Sulawesi, including an elaborate set of roles for aristocratic officials based at the royal court in Dusunan (Nourse 1989:5, 76).

The mountain people and coastal Lauje communities along the Tomini bay were required to give tribute to the Olognian in the form of rice and corn, a practice some continued up to the 1950s. In return, the Olognian, usually a woman, undertook rituals to ensure the success of their harvests, and placed specialists in agricultural ritual in hill villages (Nourse 1989:387n21). She also provided fresh corn and rice seed to mountain people when needed (Nourse 1989:4).

The coastal Lauje aristocrats saw themselves as superior to the mountain people, who were dependent on the Olognian's ritual intervention to secure their harvests, and who were animist. It is not clear whether the people in the inner hills, who did not grow corn and rice, and who lived very far from the coast, were involved in these ritual exchange relations: quite likely they were not, since they see themselves, to this day, as people who do not like to be ruled by others.

A Dutchman who travelled in the area wrote in 1892 that a tribe was found in the mountains, regarded as an under group, and referred to by the coastal people as aboriginals. They called themselves the "Lado-Lado" (this is actually the name of an inner hill settlement in the mountain west of Taipaobal). They numbered about 10,000 and were considered peaceable, although they were feared by the coastal people for their poisoned darts. They seldom involved themselves in coastal disputes (van Hoevell, 1892:354).

The Tinombo area was linked into regional trade networks as early as the seventeenth century, producing cinnamon until stopped by the enforcement of Dutch monopoly on the spice trade (Nourse 1989:87). Tinombo was part of a wider polity and trade system described by Dutch visitors early in the nineteenth century. The Dutch first signed agreements with coastal principalities in the region in the 1820s, recognizing a Mandar sovereign based in Moutong, who claimed that Tinombo was a vassal state to his own. Dutch accounts relate that as long ago as 1850, Tinombo was a major marketplace, dominated by immigrant traders (Bugis, Mandar etc.) (Nourse 1989:77). Tobacco was one of the hill products exported from the area in large quantity, and for this Tinombo was known around the region even in the eighteenth century (Nourse 1989:372n20). Forest products such as rattan and resin were also significant, linking even the most remote forest dwellers into the regional economy (see Nourse 1989:353n3).

The Dutch traveller noted as early as 1892 that, due to cultivation of corn, rice and tobacco, and even some cocoa and coffee, "all over the hills there can be seen the signs of overcultivation by these people" (von Hoevall 1892:345). He most likely referred to the foothills that can be seen from the coast, since he made no mention of hiking inland.

The Dutch became a more prominent force in local coastal politics at the turn of the twentieth century, when they conquered the Tomini Bay region, and instituted indirect rule via a series of Bugis and Mandar Rajahs, who were installed in a palace in Tinombo, just across the river from the Lauje Olognian's court at Dusunan (see Nourse 1989 for a detailed account of the politics of this period). The Dutch were the direct cause of the second Lauje diaspora, as they ordered people down from the hills to the coast to plant coconut trees, and to engage in various other forms of forced labour, building houses, roads and bridges (Nourse 1989:93). Some Lauje remained permanently on the coast and adopted Islam. They are the ancestors of the present coastal Lauje commoner population, some of whom prospered through the cultivation of coconuts, while others, slowly selling off their trees, became the landless labouring class that dwells under coconut trees they do not own. The aristocratic Lauje from Dusunan ended up with the majority of the coconut trees, as well as with wet rice fields developed with Dutch encouragement further along the coast to the west, particularly at Baina'a and Sidoan (Nourse 1989:356n1, 357n8).

After a few years, the people were starving because they had not been able to grow food, and the Dutch allowed them to return to their hill territory (Nourse 1989:93). Several of the middle hill hamlets surveyed were reportedly founded in the 1910s. These could either have been founded or refounded by returnees, after an enforced period on the coast, or, as is claimed by the descendents, founded by ancestors who were coastal in origin (and possibly Muslim), but ran to the hills to escape from domination by the Dutch.

Many hill dwellers rejected the Dutch order to move to the coast, refused to submit to Dutch authority, or the authority of their Mandar and Bugis proxies, and resisted by fleeing further into the mountains. Many had submitted by the 1920s (Nourse 1989:7, 91). The most remote may have remained independent. They were, as noted above, afraid to plant gardens for fear of being discovered by the authorities, and earlier patterns of trade were reinforced at this stage as the inner hill people depended upon trade with the middle hill dwellers in order to obtain rice and corn.

Since 1920, the boundaries between the three groups of Lauje described here have become both more blurred and more distinct. Differences in forms of production have become more blurred. Fewer households now gain their livelihood exclusively from hunting, extraction of forest products, and cultivation of forest gardens of root crops. Some vestiges of the old forms of exchange still remain. In the mid 1980s, Nourse observed that "The bela trade bush products, such as taro, rattan mats, and roofing materials in exchange for Taipaobal rice and corn. Taipaobalers often offer market products in these exchanges. They give cloth sarongs, knives and clothes" (1989:62).

The economic and ecological basis of the former patterns of exchange have been undermined, as the majority of people in the inner hills now grow some corn, and many grow rice, as well as cash crops such as garlic and shallots. Those who live close to the forest frontier on newly cleared gardens have a marked advantage in food production over their erstwhile trading partners in the middle hills, whose land has, since the 1960s, declined sharply in productivity as it has become overworked and infertile (Nourse 1989:61, 95). Access to land resources makes it attractive for some middle hill men to marry into inner hill communities closer to the forest frontier, reversing the earlier pattern of patrilocality (Nourse 1989:96).

Modes of trade between the zones have changed: when the inner hill people produce garlic, or prepare rattan strips for sale, they tend to take them directly to lowland traders, where they get

the best prices, by-passing the middle hill people who once served as intermediaries (Nourse 1989:62). The middle hill people still, however, rely upon the taro grown by the inner hill people to see them through hard times caused by drought, pests, and waiting periods between harvests. It is the inner hill people who are now less likely to ask for corn and rice in return, since they either grow it themselves, buy it with the proceeds of the sale of cash crops or, most commonly, do without, as they still maintain production of taro and cassava, their staples. The dynamics of current patterns of non-market exchange between the zones are described in more detail in Part Two. As a further aspect of ecological transition, it should be noted that some inner hill communities, such as those at Lado-lado and Ogoalas, are now farming in secondary forest and grassland conditions identical to those in the middle hills below them. Few inner hill people now live and farm in the deeper forests, most of them farming secondary forest land.

The boundaries that have become more distinct are those based on religion. From about 1950, the peòple in the middle hills began to convert to Islam, an act which they see as closely connected with submission to coastally-based government authority and other aspects of citizenship in the new Indonesia (Nourse 1989:60). Those who have not converted to Islam are the inner hill dwellers now referred to by both coastal people and middle hill converts as bela, meaning primitive, beyond the pale. The middle hill converts are those most at pains to emphasize both their social distance from, and derision of, the inner hill people, ignoring or hiding the relations of descent and marriage that linked them very closely, barely a generation ago.

Wild pigs are an important element in the combined cultural and ecological transitions, and in new forms of economic exchange between Muslim and non-Muslim groups. Since the midhill Lauje converted to Islam, wild pigs have become rampant, destroying corn fields and making the growing of root crops such as cassava almost impossible. Muslim highlanders on good terms with inner hill people sometimes ask them to come and help guard their fields for a few nights, and take home with them a harvest of pork. They also ask to borrow a corner of inner hill gardens to plant some cassava and taro that will be relatively safe from pigs, as an emergency food store for difficult times in between corn harvests, especially when the shallot crops fail. Wild pigs also attack inner hill gardens, but much less frequently, since they are said to be able to sense the difference between pig eating and non-pig eating households.

The process of transition in cultural styles and forms of production is subtle and complex, since the designation bela or trade partner applied, some say, to all hill dwellers in the past, and styles of production and place of residence were, to a large extent, matters of choice not descent from rigidly defined and distinct ethnic categories. In the mountains, conversion to Islam occurred first in Taipaobal, as a result of close links between an elder of that community and the Rajah in Tinombo during the 1920-50 period (Nourse 1989:17, 91). Other hillside communities to the east, such as Patinke, Polumele, and Simoie converted subsequently. The communities to the west of Simoie and Taipaobal did not become Muslim. The missionaries believe that the new religious divide has simply been superimposed upon the older distinction that already existed between the two groups, with the boundary line at Simoie. This social division has proven to be quite durable, particularly in Lombok.

Since 1975, a Christian mission has been at work in the hills at Ogoalas, Lado-lado and districts further inland, all to the north and west of the cultural and religious dividing line at Simoie and Taipaobal. Interestingly, some Christian residents of Lado-lado, who farm in overworked grasslands similar to those at Taipaobal, indicated that they would not like to go off and clear

primary forest, or live near the forest people who are "different", besides which they like the convenience of proximity to the coastal market. This suggests that the Christians have developed their own sense of superiority in relation to those occupying the forest border zone, a hierarchy based on degrees of civilization and primitiveness similar to that adopted by the Muslims of Taipaobal towards all the people who live inland of them. For this reason, the Christians object particularly strongly to the designation bela, since they see themselves as "the Lauje people", not primitives, adhering to a "modern" world religion as good as any other, and, they consider, more advanced in health, education, and farming than the Muslims in the middle hills below them.

In the forest frontier region of Bobalo, where the cultural and religious dividing lines seem to be less embedded than in Lombok, a somewhat different form of transition seems to be occurring. In Li and Mamar (1990) the dynamics on the frontier were interpreted as a process of movement and displacement, as the inner hill people clear forest land, then move further inland while Muslim middle hill people fill in from below. From an ecological point of view, this interpretation is correct: the forest along the frontier is cleared, and gradually becomes more heavily farmed and settled; the people living there are unwilling to shift long distances to allow lands to fallow properly, and, over a period of decades, the productivity of the land deteriorates. From a cultural point of view the interpretation needs to be revised. It is not that the Muslims from the middle hills displace the inner hill people: instead, some of the people in the frontier zone choose to stay put, and gradually fill in the land with generations of their descendents, while others choose to move off to other areas further inland, pushing at the forest frontier, or to other distant places inland where they have kin and long-fallowed gardens. The latter pattern is the one considered by coastal and middle hill people to be typical of those who live in the inner hills: always on the move, and always in the forest. In fact, this image can be misleading.

The communities in the inner hills are not highly mobile. Some communities have been settled for many generations in one area, slowly adding to their stock of land at the forest frontiers, and farming mostly on secondary forest land, commonly fallowed for five to fifteen years. As they reach the boundaries of the available land resources in a particular valley, they have a range of strategies open to them. They can begin colonizing a new forest area, ideally a neighbouring valley, in order to establish a longer cycle in which they can move between the two areas, allowing the forest to regenerate thoroughly during the fallow period. Another strategy involves some members of the group becoming pioneers and moving off to quite new and distant areas to establish a new settlement, although still maintaining rights to their old secondary forest lands, which are borrowed in the meantime by those who stay behind. The third alternative is to accept a shorter fallow cycle and, as population pressures increase, the slowly declining productivity of their lands and/or a transition to a different form of farming, with a different range of crops possibly more similar to those grown by the middle hill people below them.

Those who stay for many generations in an area often do so because of a desire to remain within reach of the coastal markets, and because they have become comfortable with the idea of government authority. Those who convert to Islam, and begin to define themselves as "village people" (*orang kampong*), claim an affinity with the cultural and religious attributes of the coastal villages, including the fact that their lands are more densely settled and farmed, like a village, rather than being dispersed in the forest, as is the case with some of those living deep in the inner hills. Having converted to Islam, and adopted a coastally oriented life-style and identity, it is more difficult for them to move off deeper into the hills and become pioneers

should they feel the need to expand their land resources. To move off would entail living among the pork-eating "primitives", from whom they seek to establish a social distance. Moreover, if they have indeed lived for several generations in one delimited area, many have no experience of clearing the huge trees in the primary or deep secondary forest, and feel incapable of undertaking the task.

Although religion is an apparent cause of the social rifts that have occurred in the frontier zones, often between close relatives, clearly a more complex set of political, social and economic factors is involved in the choices made and affiliations expressed. Three prominent themes in the cultural and economic history described here are well known elsewhere in Southeast Asia: long-standing exchange relations between people specializing in the extraction of forest products, and others specializing in agriculture; the conversion of diverse indigenous groups into coastally oriented, Malay speaking, Muslims, associated with some form of court based elite; and the fluidity of ethnic group boundaries, such that a name, the "Lauje", does not coincide with a distinct social group clearly defined by descent, language, or other characteristics (Rousseau 1989).

An understanding of history and cultural difference is essential to the analysis of contemporary forms of life and livelihood. It provides a perspective from which to ask (and ask repeatedly, as positions change): who are these people, why are they here, and how does this help explain practices and conditions that are observed? These questions are addressed in more detail in the description of the coastal, middle hill and inner hill zones.

1.2 HOUSEHOLDS AND INTERHOUSEHOLD EXCHANGES

Economic activities are undertaken by individuals, households and small groups. Before proceeding to the analysis of livelihood strategies in each of the three zones, it is appropriate to describe some general characteristics of the social organization of production. Variations specific to each of the three zones are described further in the sections below.

1.2.1 HOUSEHOLD FORM AND FUNCTIONING

The household is being used as the focus of description in the present study. No assumption is made, however, about the jointness or coherence of the household economy. The relations between genders and generations within the household need to be analysed explicitly.

Economic relations within the household follow a pattern familiar elsewhere in Southeast Asia. A married couple work together, especially in the production of staples, to support themselves and their children. There is a sexual division of labour for some tasks such as clearing fields and planting, but it is not very rigid and there is some substitutability where circumstances require.

Husband and wife may produce cash crops such as shallots separately (on separate fields or separate sections of the same field), or they can produce these crops as a joint venture. In either case, the proceeds from the sale of the crops tend to be divided equally between husband and wife, or managed wholly by the wife on behalf of the couple. Women thus have a considerable degree of autonomy in cash oriented production, especially shallots and garlic which are key elements in the hillside economy.

In principle, married women are entitled to keep to themselves the money they earn from their own "sideline" activities, such as growing shallots, vegetables or groundnuts, weaving mats, raising chickens and goats or petty trade. Hill side fields often have sections set aside for the wife's (and children's) "private" production activities. In practice, married women's profits are often quickly absorbed by the household's day to day needs. A woman described the economic relationship between husband and wife as one where you "Work separately but eat together." The traditional right to own assets and earn separately is nevertheless very important to the women, who value the independence and security it gives them, especially if their husband tends to gamble or be lazy in farmwork.

Women maintain control over their own inheritance, such as coconut trees. Some coastal women have begun planting new trees under their inherited coconuts, as their own investment separate from their husband, and others expressed a desire to do the same. As one woman warned "it is better this way, in case he marries another". Some married women in the hills have begun to plant their own trees, and it is likely that others will also wish to do so.

Upon divorce, husband and wife are considered to be entitled to equal shares of assets acquired during the marriage, since they have laboured together. This does not always work out in practice, particularly with new assets such as fenced fields and cocoa trees, if the wife leaves the area to rejoin other relatives.

Accurate statistics on divorce are hard to obtain. The Muslim marriage registry in Tinombo records a total of only 1-2 divorces per village over the five year period 1985-89. From the number of divorces and abandoned women encountered in the course of household interviews, it is clear this figure is under-reported. The costs of registering marriage, Rp25,000, and divorce, Rp15,000 may keep the extent of reporting low. Divorce has traditionally been recognized by the people of the inner hills. Elders attempt to resolve conflicts fairly, and impose fines and other sanctions upon the offending party so that divorce, although common, is not casual.

Single adult women, whether unmarried, divorced, abandoned or widowed, farm on their own account. Some live in separate households, especially if they are elderly or have children to accompany them. Those of marriageable age, with or without children, are more likely to live with a parent, sibling or other relative. They thus form part of complex households, although their assets and sources of livelihood are often distinct from those of the household unit they have joined. These women farm or earn income independently, in an attempt to support themselves and their children. Women working alone grow the whole range of crops familiar in the hills: rice, corn, tobacco, shallots, groundnuts and vegetables. In order to access male labour, should it be necessary to clear forested land, some rely upon the assistance of relatives; others enter into arrangements with neighbours: an example is a widow who allowed a land-short neighbour to use half her plot of well-fallowed land for a year in return for clearing the remaining half for her.

Young children are expected to help with domestic tasks, especially the care of siblings. Hill people in the vicinity of the new hinterland schools noted that there has been a shift in the division of household labour since children started attending school, preventing women from accompanying their husbands to the fields until the afternoon when the older children return to care for the younger ones.

Older children work as labourers, plant fields, and engage in trade as early as they wish and are able, and their income is considered their personal property, not to be pooled with that of their parents. Girls as young as ten make snacks to sell in the market or at school. From age fourteen both boys and girls may have their own farms in which they plant shallots, ground nuts or other cash crops. Unmarried youth do not generally plant staples, the provision of which is the responsibility of the parents. In the case of girls wishing to plant cash crops, their father helps them to clear a field, or allocates a section of the parents' field for the daughter to plant independently. Mothers and sisters may help a boy to weed, but expect some consideration in return for their efforts when the cash comes in after the harvest. There is no suggestion that children owe their labour to their parents as repayment for their upbringing, nor do they necessarily contribute to the daily consumption expenses of the household in which they reside, even while earning cash. Parents appear to encourage early independence rather than seek to maximize access to their children's labour in order to achieve collective family goals.

Children sometimes choose to ask their mother to save their money for them, asking for it when they wish to buy clothing or other goods. Young men in the middle hills and on the coast try to accumulate savings for their wedding expenses, since they are expected to contribute a major share of the cash payment to the bride's family (common sums in the area being Rp1-500,000). Parents have the ultimate responsibility for the payments, however, and have to provide extra cash or suffer embarrassment if arrangements do not go as planned. Other relatives of the groom also make contributions to assist the young couple. In the inner hills, groom service is more common than a large bride price: the couple lives with or near the bride's family for a period of time, helping with the farming activities of her parents while in turn receiving help as the couple try to establish an independent economic base. The bride price is paid with traditional exchange items, brass and ceramic platters, which have circulated in the hills for generations.

An outcome of the emphasis on the economic independence of children is that their labour and capital are not freely available to augment that of parents still struggling to provide food and education to younger siblings, or wishing to undertake major projects such as developing new land. The children of the poorest people on the coast or in the lower hills are least likely to be around to help, since they are the ones who leave the village seeking wage opportunities outside.

Parents seek to treat all their children equally in terms of inheritance. Assets such as coconut trees are not passed on until the parent's death. Other productive assets, such as hill farm land, are lent to children when needed for use, but usually not finally distributed until the parents' death. This practice is changing, with children wanting more definitive rights to their parents' land at an earlier stage, in order to be able to plant trees on it.

1.2.2. Interhousehold Exchanges

There are three distinct forms of labour exchange for farming and other activities, such as housebuilding. One is *mendulo*, which means to help voluntarily and without direct recompense, out of a spirit of kindness. It occurs most often among close relatives and neighbours, ideally when one notices the other overwhelmed by a large task, and shows up unannounced at the field to help out. The likelihood is that the party receiving assistance will help in turn on another occasion, but this is not stated or calculated: "when I see my daughter is having difficulties, I go over and help her".

The second form of labour exchange is *mendunduluan*, which means mutual help, and refers to a definite agreement among a group of people, usually kin or neighbours, to work for a day on each others farms in turn, until the cycle is complete. Two to ten people commonly cooperate in this way, men and women forming separate groups. The tasks undertaken can be diverse, fencing on one farm, clearing brush on another, according to the task that most urgently needs to be done.

The third form of exchange is *mesug*, which involves inviting ten to twenty specific households, some perhaps from further away than the immediate neighbourhood. They are called to work for a day on a large task such as planting rice or shallots, or clearing land. Food must be provided, preferably a sweet snack and rice with fish, although cheaper substitutes are also offered. The cash outlay prevents many households from engaging in this practice. There is an expectation that labour given in a mesug will be returned at some future date, although records are apparently not kept, and the importance of return is not stressed, since a return in the form of food was provided at the time. It is the household that is invited to participate, and husband, wife or working aged child can represent the household. In both the mesug form of exchange and mendunduluan, the worker is expected to be able bodied: not too young or old to do their share.

Apart from labour, food is the most significant item exchanged between households, particularly those in the hills. When corn or rice is harvested, up to one third is given away within the first few days to kin and neighbours who come to help with the work, or who are invited specifically to come and collect a share to take home. Reciprocity is expected, but not calculated: the family will in turn taste the harvest of its neighbours and kin, the amount they receive depending on the success of the harvest and their own needs at the time. Root crops are not harvested at any specific time, but when requested are given freely among kin and neighbours. These forms of food sharing act to ensure a continuous supply of staple foods in between harvests, and a security net should a harvest fail. It also provides some security for those unable to provide for themselves for whatever reason. People claim that there is no shame in asking for food from kin and neighbours if yours is not ripe, but also feel that free-loading, or expecting others to provide for your family all the time, is unusual. As one farmer stated "if I did that, these eight children would never have grown big."

Food exchanges between people in the different zones are also highly significant in the local economy. They were described briefly above are explained in more detail in Part Two.

On a day to day basis, households are autonomous in their economic activities, endeavouring to meet their own needs for food and for labour, and asking for help from others only in certain circumstances. Changing social relations of production, both within and between households, will be the focus of further intensive research.

1.3 THE COASTAL ZONE

1.3.1 LOCATION, LAND USE AND LIVELIHOOD STRATEGIES

The zone described here includes the sea, sea shore, mangroves, coastal plain, and the nearest foothills facing the coast up to about one hour's walk inland. The research area curves around the Tomini Bay, stretching along the coast from the village of Dongkas to Bobalo. The coastal plain in this area is seldom more than a kilometre wide, although in a few places there are river

valleys comprising a few hundred meters of flat lands that extend the coastal type of land use pattern as far as two or three kilometres inland. The river valley land is prone to flooding. The Siavu River flooded seriously in 1989, washing away trees, livestock, homes and an important stretch of road linking the stores of the Lombok traders at the foot of the hills to the Tinombo market. The Tinombo area is distinct from other locations along the coast in having no land suitable for wet rice cultivation. The foothills are described here as part of the coastal zone rather than the middle hills because it is predominantly the coastal dwellers who make use of this land.

There are a number of modes of gaining a livelihood in the coastal zone, several of which are usually pursued in combination. Class differentiation, based mainly upon the ownership of the coconut groves, is quite marked, so that not all strategies are accessible or desirable for the whole coastal population. The following subsections describe the patterns of use, allocation and management associated with each important resource, and the characteristics of the group incorporating the resource into its livelihood strategy.

1.3.2 THE SEA AND SEASHORE

Since they descended to the coast, some Lauje have become fishers, but they consider that the skills, and possibly some of the ancestors of the present fishing population, originated from the Gorontalo area further to the east.

Each of the five villages has a small percentage of households (5-15%) involved in fishing. Women play little role in sea fishing or in the processing and marketing of fish, so this discussion relates primarily to the activities of men. The wives of fishermen are engaged in a range of economic activities, some of which are joint ventures with their husbands (such as seasonal hill side farms) and others, such as petty trade, which they pursue independently.

No men depend solely on fishing for their source of income. The significance of fishing in their overall livelihood strategy depends in large part on their capital resources as reflected in their fishing equipment. Those who have more expensive and more productive equipment can expect to gain higher returns. They seldom engage in seasonal hillside corn farming, which is by their standards an activity of low productivity, but some are investing in tree based cash crops if they can obtain access to suitable land. Line fishermen, some of whom own a boat (*perahu*) claim that their fishing activities provide only "enough fish to eat", with some over on a good day to sell in order to buy a few kilograms of rice and perhaps a bag of sugar. The average daily return is about Rp2,500, the equivalent of a day's wage for manual labour. Because of monthly and seasonal cycles in fishing patterns, as well as the unpredictability of the weather, line fishing cannot be relied upon as a principal source of income. It is regarded instead as a side-line. The favoured season is June to September, when the winds blow onshore, while September to December is considered dangerous as winds from the west can blow the oar-powered boats out to sea.

Depending on the size of the catch and the distance of the home village from Tinombo, fish may be sold on the beach, peddled around the village by foot or bicycle, or sold instead at the twice daily Tinombo fish market. Fishermen from Dongkas find that their fish sometimes spoils or fails to sell if they arrive late in Tinombo after a long paddle against adverse winds. A few well capitalized fishermen and entrepreneurs in Tinombo have invested in outboard motors to pull a group of ten perahus for a daily fee of Rp2,000 each. Salting and drying of fish is not undertaken by line fishermen. If quantities warrant, some of the species caught from off-shore

rafts (*rompong*) can be dried, but only one relatively highly capitalized fisherman preserves fish for sale in other markets as far along the coast as Parigi. The majority of the fish caught is sold and consumed immediately, since there is no refrigeration. Several fishers consider the localized nature of the markets to be a limitation on the profitability of fishing, and a disincentive for further investment in the fishing sector. Some fishers note a decline in near-shore fish stocks since the destruction of the mangroves (see below).

The fishing equipment in common use and its approximate capital costs and returns is as follows:

Rompong: a bamboo raft, anchored to the sea bottom by means of a weighted rattan line about 1 km long, and positioned 2-5 km from the shore. It acts as a "fish aggregating device", the fish actually being caught by lines or nets (see Zerner, n.d.). Cost estimates vary from Rp50-250,000, depending on size and how much of the rattan is purchased rather than being collected directly from the forest. It lasts at most a year before the lines rot and the raft is lost in a storm. It is sometimes owned by two or more people in partnership, because of the large capital investment, and the necessity to check the device daily. Fishermen estimate that they have a major catch, valued at about Rp30,000, at most twice a month. The men line fish on the way to inspect the rompong, a task that must be undertaken daily.

Pukat: a seine. Two types are in use. A large beach seine, used near the shore, requiring a specialised large perahu manned by a crew of eight men. The cost is estimated at Rp4-600,000 for the net, and Rp150,000 for the boat. The catch is divided, half to the crew, and half to the owner of the equipment. A small seine, measuring one meter by one hundred meters, is set by one person along the edge of the mangroves. The cost of the net is Rp25,000, and the total set is Rp60,000 including weights and lines. The expected return is Rp1-5,000 per day.

Milkfish nets: these are made of green nylon mesh on a triangular bamboo frame, with an area of about six square meters. They are pushed along the sea bottom near the shore to catch the minute, transparent milkfish used for cultivating in fish ponds. The nets, which cost Rp25,000 are owned by a dealer, and loaned to fishing families who receive Rp15, rather than the market price of Rp25 per fish. The dealers appoint a local fisherman to act as an agent, in return for a ten per cent commission. The peak season is during the monsoon from the east, when families can earn Rp1,500 to Rp30,000 per day, men, women and children taking it in turns to use the net continuously. Households whose production is insufficiently high find their net withdrawn by the dealer. This form of fishing has occurred only during the past five years.

Perahu: a wooden canoe made locally by specialists. The price of a new two-person perahu is Rp60,000 and a one-person perahu Rp35,000.

Baskets: without boats or nets, large groups of women catch anchovies (*nike*) in the river mouth when there is no moon, and dry and salt them for sale and for their own consumption. Men sometimes use the large beach seine for the same purpose, and can catch up to 35kg of the fish in one night, valued at Rp750 per kg when dry.

River fishing: at the river mouth and further inland, people fish for small prawns by diverting the water flow and then searching beneath rocks using goggles made from glass and bamboo, and a spear made from a sharpened bicycle spoke.

1.3.3 THE MANGROVES

The mangroves have traditionally been used on an open access basis as a source of house building poles and fuelwood for local domestic use. Some depletion began in the early 1980s, when the opening of the coastal road made the mangrove forest accessible to passing trucks, which if empty when returning to Palu, would stop to fill up with fuel wood. The most serious depletion took place between 1986 and 1988 during the boom in rattan extraction from the forested inland areas. The rattan is brought down to the coast, where it undergoes a sealing process involving being dipped in hot kerosene. The kerosene is heated in huge metal cauldrons suspended over pits. Mangrove wood, which has good burning properties, is used to heat the oil, and during the height of the rattan boom large quantities were being consumed daily. A rattan dipping plant is located on the edge of the former mangrove area which runs from the western section of Desa Tinombo at Silabia through much of Desa Dongkas.

About 40 hectares of former mangrove land has been designated for the development of fish ponds, and allocated to applicants in 1-5 hectare lots. The land was officially allocated free of charge. Subsequently, undeveloped plots have been changing hands for Rp150,000- Rp300,000 per hectare, although titles have yet to be issued. There is no information on how the application opportunity was advertised, how many applied, or any unofficial costs involved. Many successful applicants were government officials and local dignitaries from Tinombo. Few local families acquired rights through this process, and the new owners have begun to enforce exclusionary rights, such as forbidding fuel wood gathering on the formerly open access mangrove land.

The cost of developing a fish pond is in the range of Rp1-2,000,000 per hectare. The ponds are in various stages of development, but few in the Dongkas-Silabia area are yet in production. The lack of titles hampers the acquisition of development credit. There is little mature mangrove left standing even on the undeveloped land, although some new shoots can be seen. Wage labour in digging out the fish ponds using hand shovels and scoops is undertaken by younger men. It is strenuous work paid at a rate of Rp5,000 per cubic metre (1-2 days work), averaging Rp3,000 per day per worker.

Several local fishermen mentioned the loss of mangroves as a factor in declining fish stocks, although others seemed to be unaware of any association. No pre- or post- development impact studies have been undertaken.

1.3.4 THE COASTAL PLAIN

The coconut trees planted in the first decades of the century still occupy the majority of the coastal land. Ownership of coastal land is still often thought of in connection with trees. There are some land titles in existence, but the most common form of documentation is the registration of sale and purchase of trees (*Acte Jual-Beli*). The document can be written up to apply to particular trees, and the five metres surrounding them, or to a set of trees and the land in between them. In the past, many vendors apparently made little distinction between the two versions. With the rising demand for coastal land for house construction, and new tree crop plantations either under or in place of the old coconut trees, smart buyers try to insist on the

latter version, and look out for coconut trees that are distantly spaced, thereby acquiring more land for the price of the trees.

The ownership of coconut trees is not evenly distributed. A few individuals have amassed thousands of trees by having their agents look out for trees going on sale, and buying them up on a piecemeal basis. Some estimate that one Chinese entrepreneur, who was born in Tinombo although he now lives in Palu, owns 75% of all the coconut trees and coastal land around the Tomini bay. The elite in each village typically own 1-500 trees per family. There are many households that have inherited 10-20 trees, not enough to make much impact on their livelihood but enough to secure them rights to the land upon which their house is built.

The majority of people living on the coastal plain, along the shore, along the road, and along paths up through the trees to the foot of the hills, do not own the land upon which their houses are built. They live underneath coconut trees that belong to others. They obtain permission from the land owner to build temporary houses of wood and bamboo, and they are permitted to plant short term crops such as banana and cassava. If they wish to plant tree crops under the old coconut trees, an agreement can sometimes be made with the owner to share the new trees half each once they come into production. Some have fenced their house lots and planted house gardens. Others state that the land is poor and sandy, and has insufficient rainfall, so it is not worth the labour that would need to be invested in fencing or guarding the crops from pigs, goats and cattle.

Labouring activities in the coconut sector are a major income source for some of the non-coconut owners who live on the coastal plain. All the tasks are paid on a piece rate basis, the fees varying with the level of specialised skill involved, and also with the price of copra. The tasks are: climbing the trees to knock down the fruit; picking up the fallen fruit and loading the bullock cart; transporting the fruit by cart; processing the copra and cutting back the undergrowth from the trees. Where owners have given permission for people to live under the trees, they expect in return that the land will be kept clear of undergrowth and the trees guarded from fire. The fees and estimated daily returns for coconut related labouring activities are as follows:

picking coconuts - Rp150-175 per tree, range Rp2-7000 per day
copra processing - Rp6 per fruit, 10 day process (not full time), Rp12,000 for 2,000 fruit
picking up/loading cart - Rp1 per fruit
transporting coconuts by bullock cart - Rp3.5 per fruit
clearing undergrowth - Rp100 per tree, average Rp2,500 per day

Each tree is harvested every three months, but there are no seasons as such. In theory, the coconut workers could be employed continuously, as they harvest first one owner's trees, then another, in rotation. In practice, there are more labourers than demand for their work, and most work at their specialized task only about ten days per month. Most have a few owners that call them regularly, so that an open labour market scarcely exists. In between harvests, the skilled workers often take loans from their employers, a factor that can be reflected in the piece rates that they receive for their work. The slump in copra prices from Rp500 per kilogram in 1988 to Rp190 per kilo in 1990 has led to a reduction in work opportunities in the sector, as owners with few trees may decide to use the fruit for other purposes rather than having it processed.

Anyone is entitled to pick up coconuts that fall in between harvests, and this resource forms the basis of the coconut oil processing activities undertaken by the majority of poorer women living on the coastal plain. Children usually gather the fruit and sell them to the women. A limitation on this activity in some villages is the absence of a grinding mill to shred the coconut for processing. Women can be seen walking from Silabia to Tinombo and back, seven kilometres, to use the mill there since they do not have one of their own. The women process an average of three bottles each per week. The price per bottle has dropped with the price of copra: each bottle now sells for Rp450, leaving a profit of Rp300 after incurring a cost of Rp150 (six fruit at Rp25).

Trade is most commonly undertaken by people who live and work on the coastal plain. The capital resources for engaging in trade derive from or relate closely to holdings of coconut trees. The largest owner of coconut trees in the area, a Chinese who originated from Tinombo, is the owner of the rattan extraction and processing business mentioned above. Medium scale owners often engage in the shallot and garlic trade, bulking and handling the main exports from the region. Smaller scale owners with perhaps fifty trees and a partially concrete house built on their land are able to use their land, trees and house as collateral to obtain credit to engage in such enterprises as village dry goods stores (known as *kios*). The smallest scale traders are women, mostly wives of fishermen or labourers, who have no farms, and who operate with capital sums of Rp5-20,000. They specialise in purchasing mountain women's produce, such as vegetables, fruit and small quantities of shallots and ground nuts. A fuller account of women and men's trading activities is found in Part Three.

1.3.5 THE FOOTHILLS

The foothills support three main types of economic activity: firewood collection, grazing, and seasonal farming. The predominant vegetation growing on the lower foothills is a variety of *leucaena*, which has been spreading steadily inland, mixed in with other brush and grasses. The vegetation provides good fodder for livestock owned by richer villagers, whose goats and cattle graze freely on the hillsides. The woody species, especially *leucaena*, are cut for firewood for domestic use and also to sell by the cubic meter to households and food stalls in Tinombo. Firewood collection is a low status activity providing minimal returns, but is engaged in by poor households whenever no more lucrative opportunities are available. The wood sells for Rp2,000 per cubic meter. One cubic meter can be cut, carried and stacked over two days, giving an estimated return from this activity of Rp1,000 per day. In this form, it is collected by truck or cart at the roadside. Alternatively, the wood is sold at Rp150 per bundle, ten bundles per day, for a return of Rp1,500 not including the costs or labour of transporting the wood to Tinomobo. Women can sometimes be seen transporting headloads of wood along the road to town.

The foothills in the Tinombo area lie in a rain shadow, missing out on rains from the north and west. No official rainfall data are available for the area around Tinombo, the nearest measuring station being at Sidoan, about 20km along the coast. Sidoan may experience somewhat different rainfall patterns from Tinombo, and the measurements taken there certainly bear no relation to rainfall in the hills of the interior, which experience a range of micro-climates. According to local experience, the foothills around Tinombo can only be farmed once a year, during the rains from the east. The farming season begins in June or July. Corn is the main crop planted, with some shallots and groundnuts. The land is relatively fertile since the *leucaena* enriches the soil and the farming cycle, covering just one season, does not exhaust the soil. The land is commonly left fallow for five or more years. The yield reported for the foothills is a fairly consistent ratio of 1:50; i.e. 100 ears of corn yield 5,000 ears. This compares

favourably to yields in the middle hills which range from 1:15-1:50 depending on the length of fallow, which is often short. Newly cleared forest lands are reported to be capable of yielding from 1:80 to 1:100.

Many of the very poor households living on the coastal plain do not farm in the foothills, despite the attractiveness of the land resources there. Apparently more people farmed there in the past, but the practice has been declining. There are a number of reasons for this. The main issue relates to the allocation of labour and time. Clearing, fencing and planting hillside land requires an investment of labour, the returns from which are then delayed for three months while the corn grows. In the meantime, the crop has to be weeded and protected from intruding animals. Some coastal dwellers find that the labour invested is not worth the returns, which will be at most two month's supply of corn as a staple for the family. Others consider that the returns are worthwhile, but they are unable to do the work since they are totally dependent on obtaining cash on a daily basis to meet food needs, having no capital reserves or food stocks of any kind. In still other cases, the household usually does farm on the hillsides, but sometimes misses the season if the man whose labour is required to clear and fence the land is absent earning wages outside the village at the crucial time.

It is common for coastal families to join in groups of 3-7 households to establish one perimeter fence and ease the problem of guarding fields from pigs. The composition of these groups is based on kinship ties, but they are loosely structured and the members change from year to year as individual households assess their best options.

An estimate of male labour required for preparing a typical 50x50 m garden in the foothills is: five days to clear; twenty days (10 m per day) to fence, using *leucaena* stakes found nearby. Full days are seldom worked because of the need to earn other income, so the process can take up to two months, by which time weeds have begun to sprout even before the corn is planted.

The deployment of women's labour is crucial to hillside farming. Once men have cleared and fenced the land, all the rest of the tasks, including guarding the fields at night, are undertaken by women. This frees men to engage in labouring activities within or outside the village. Some men engage in fishing at nights, joining their wives at the hillside farm for a few hours each day. If women have savings, perhaps from their coconut oil production in the non-farming season, these may tide the family over for the few weeks when men's labour is required to establish the farm. Apart from coconut oil production, coastal women's income generating opportunities are extremely limited, since they do not undertake any of the paid tasks in the coconut sector nor general manual labour. A hillside farm permits a woman to augment her income by growing vegetables for sale in the market as well as corn to meet staple food needs for a period of time. Women's vegetable production is sometimes constrained by a lack of good seed stock, since production is highly seasonal and the seeds have to be purchased.

The short farming season in the foothills means that no family could survive on hillside farming year round. This activity has to be combined with other livelihood strategies oriented towards the coastal plain. Labour, time, capital, food stores and other resources have to be managed in such a way that day to day needs are met, while higher productivity activities, such as fishing and farming, are pursued in preference to lower productivity ones, such as firewood collection, whenever possible.

Access to land for farming annual crops on the hillsides does not seem to be exclusive. In some areas, villagers assert that no one knows who were the original claimants of the land, so

that any Lauje from the local area who wish to farm there may do so. In other areas, the descendents of the original claimants freely give permission to borrow land. The bald grassy areas in the foothills have a similar status. They are generally not actively claimed by the descendents of those who first cleared the land, even if known, since their productivity is so low that they are considered virtually worthless except as open grazing. Anyone who finds it worthwhile to attempt to plant crops there is welcome to try. The situation is different a little further inland, where land on which *imperata* and other grasses grow well is considered fertile, and is regularly farmed, claims to it being well defined.

Few tree crops have yet been planted in the foothills, either in the lightly forested or grassy areas, although the possibility has begun to attract attention. Where traditional land claims exist, the introduction of tree crops may lead to the exclusion of those who are currently able to borrow land to plant food, thus narrowing their livelihood options.

The basis of traditional rights to land and the impact of the introduction of tree crops is discussed extensively in the next section on the middle hills, since it is there that both problems and potentials arise most acutely. Official views of land tenure status are discussed in Part Two. Part Three proposes some ways in which the land could be developed for the benefit of the poorer people of the coastal zone.

The labour squeeze that faces coastal workers as they establish seasonal corn gardens applies also to the possibility of establishing hillside tree gardens. These problems are magnified when proposed tree garden schemes for coastal dwellers are located some distance inland, requiring people to give up their current activities (fishing, firewood, coconut oil etc) which provide a livelihood, however minimal. Officials sometimes fail to appreciate the stringencies imposed by a daily hand-to-mouth existence. Again, the deployment of women's labour is crucial to the household's ability to contemplate improving its lot through such schemes. Families expect to manage their participation by dividing their forces. Some have planned that the wife will live and work on the new inland garden, while the husband maintains his fishing or wage earning activities on the coast. Others plan that the wife will maintain her coconut oil production on the coast as a source of essential income while the husband establishes the garden inland. The design of tree garden schemes and the implications of the gender based division of labour are discussed further in Part Two.

A further resource found in the foothills should be mentioned here: the wild root crop *ondot (Diascorea Hispida)* is harvested as an emergency food, and processed by extended soaking in both river and sea water. Ondot grows in both the lightly forested and the grassy foothills, but in some areas has been eaten out, the tubers having been harvested while too young. "There are more people than ondot," commented a farmer, indicating the severity of the economic difficulties faced by coastal people.

Sago palms in the foothills or on the plain are individually owned, mostly through inheritance. Owners make roofing materials from the palm fronds, or sell the raw materials to others who do the work. For non-owners, the returns to the work are in the region of Rp1-2000 per day.

Chicken raising is an important source of income, especially for women. At the time of the survey in June and July, there had been an epidemic killing chickens along the coast, and most women had lost their entire stocks, averaging 5-20 fowl per person. Such epidemics occur almost every year at certain seasons, and the women have not yet received any assistance in preventing the loss of a significant source of income and saving. In 1990, for the first time,

buyers from Palu visited the area regularly looking for chickens, and any increased production could very easily be marketed.

1.3.6 OTHER WAGE OPPORTUNITIES IN THE COASTAL ZONE

Wage opportunities within the villages described here are very limited. There are many more willing workers than there is demand for labour. The average daily wage for unskilled work is Rp2500. Older men usually seek work in their own village or close by, while some young men and women from poor coastal families migrate out of the area. Young men work in construction on the roads or in the transmigration areas receiving large infrastructure investments such as Parigi and Kota Raya. Others load produce on the coastal trucks, or work as general labourers in other villages that are better endowed with resources, often marrying away from their home village. The opportunities for young women are restricted to service in food stalls or private homes in Palu. Men on the coast compete for wage opportunities with men from the middle hills who experience shortfalls in food production, so that the pool of workers available is very large and there is little chance that wages or conditions will improve. Some young men from the midhill area also migrate for work outside the village on a short term basis, but a more common pattern for midhill dwellers is for families or groups of families to migrate permanently to better agricultural land for full-time farming.

Rattan extraction and processing, which boomed during the period 1986-88, still continues at a reduced level, and provides a source of income for men living in all three zones, including the coast. Extraction is organized by entrepreneurs, including some village leaders and others from outside the region. The entrepreneur advances cash and provisions to a labourer, who agrees to obtain a certain amount of rattan within an agreed period of time, to be sold at a previously agreed price. The provisions, in the form of rice and sugar, are to maintain the family while the man is away, and for him to take with him into the forest. Typically the men go into the forest in groups of kin and neighbours, and stay there for about ten days before returning home to rest. In some cases, cash is also advanced. The credit supplied, which perhaps helps a poor coastal family meet an immediate food crisis, is tempting for many, but the price of goods supplied in kind, and the selling price of the rattan, reflect the weak bargaining position of the debtor. A few cases were heard of individuals not being able to repay their debt at the end of a month's work, and being forced to return to the forest for another round of collecting even when other more attractive opportunities for on or off farm work presented themselves. Estimated returns to rattan collection are as follows: 2-400 kg can be collected in a period of ten days, selling at an average price of Rp10,000 per 100kg, yielding Rp2-4000 per day before the deduction of the cost of supplies.

There is general agreement that all the easily accessible mature rattan has now been extracted, and returns to the workers have declined steadily as they have to go further afield in order to find new stands. The workers haul the rattan to collection points down on the coast or to a point in the interior above Sidoan where there is tractor access. Rivers are used to aid transportation wherever possible, but the work is extremely strenuous and many men claim they are incapable of it.

Much of the rattan is exported directly from the area with no local processing. There is one rattan processing plant in the area, near the mangroves to the west of Desa Tinombo. Workers for this plant are recruited mostly from the nearby hamlet of Silabia. As many as sixty men were employed at the plant in 1985-86. There are now around ten, depending on the amount

of rattan being brought in. Workers are paid on a piece rate basis for different tasks (grading, dipping, bundling, loading).

Men from the same community at Silabia had previously worked as labourers in the port of Tinombo, before the road was built. This form of employment was significant from the 1920s or possibly earlier, and continued until the opening of the highway in 1980. Close to Tinombo, three generations have been accustomed to wage labouring as their main means of livelihood.

A lucrative wage opportunity exists in harvesting rice from the irrigated fields along the coast from Sidoan southwards. Harvesting work is paid with one-fifth of the rice harvested. Because of its prized nature, the work is generally given to relatives of the owners. In the case of the six villages under discussion here, it is the village elites who either own rice fields in other villages, or have kin connections with rice field owners, and it is their sons who are most likely to be called to work the harvest.

Teachers are the only salaried government officials in five of the villages studied. The town of Tinombo, as kecamatan center, has a number of other officials. Many of these salaried individuals, including teachers, have recently branched into farming as the introduction of tree crops has made agriculture appear more profitable. Others are developing fish ponds. They have been buying land, or acquiring it through government approved land development schemes.

1.3.7 COMBINATION OF STRATEGIES

Although households exercise some choice in the range of livelihood strategies they pursue, they are strongly constrained by the set of assets that they control. Indicators of relative wealth are assets such as goats, cattle, fishing boats and coconut trees. Households with these assets seldom or never engage in collecting rattan, firewood and bamboo for sale, since these are activities of low status and poor returns, engaged in only by those with very limited options. Widows and abandoned women are among the poorest coastal dwellers, since it is often difficult for them to access male labour to clear hillside land to farm and they are not employed as daily labourers, so their range of strategies is more limited than that of men or married women. Coconut oil production is their main activity, providing a living at minimal standards.

1.3.8 PATTERNS OF CONSUMPTION

Coastal dwellers purchase the great majority of the food they consume. The desired pattern of consumption of working-class people includes rice and fish at least once a day, coffee with sugar, soap for bathing and laundry, and kerosene for lighting small lamps, pressure lamps being lit only on festive occasions. Many fail to meet these standards, depending instead on cheaper substitutes, such as corn or cassava as staples, and eating fish only occasionally. The following sample budget is derived from household survey data on coastal families.

Assuming a man is able to find work at the average daily wage of Rp2,500 four days in the week, and his wife makes Rp1,000 from the sale of coconut oil, a family of two adults and four children with a weekly income of Rp11,000 typically purchases the following items:

21 litres of corn (3 per day)	@ Rp 300	Rp6,300
10 sticks of cassava	@ Rp 500	Rp 500
1 kg sugar	@ Rp1,000	Rp1,000
1 milk tin measure of coffee	@ Rp 400	Rp 400
1 packet of tobacco	@ Rp 500	Rp 500
2 bottles kerosene	@ Rp 400	Rp 800
laundry/bathing soap	@ Rp 500	Rp 500
4 strings of fish (not daily)	@ Rp 250	Rp1,000
Total		Rp11,000

These are very minimal standards of consumption, that leave nothing over for school or medical expenses, clothing, festivals, savings or other incidentals. A more adequate minimum would require Rp20,000 per week.

1.4 THE MIDDLE HILLS

1.4.1 LOCATION, LAND USE AND LIVELIHOOD STRATEGIES

It was noted above that the foothills in the Tinombo area lie in a rain shadow, missing out on rain from over the mountains across the peninsula to the north and west. As a result it is only possible to cultivate corn once a year. Since the foothills cannot support year round agriculture, few families make their homes there, and most of the people exploiting the land do so in combination with wage or fishing activities on the coast.

The area referred to here as the middle hill zone begins at the point where altitude (approximately 2-300 m above sea level) with its attendant dew and rainfall, make possible the cultivation of two or more corn crops per year. Households farming in the middle hills make the area their permanent home and are committed to farming as a way of life. However, few farmers in the zone are self-sufficient in staples. This is due to a number of factors, including limitations to rainfall, overworked, insufficiently fallowed soils, and the ravages of the wild pig. The sub-soils are red-yellow podzolites, which are not highly fertile. The top soil is, in most of the farms surveyed, devoid of organic matter and eroded. The slopes being farmed are commonly 20-30', with even steeper slopes being brought into cultivation in some cases.

Shortfalls in the production of staples are made good through the production of cash crops (tobacco, shallots, groundnuts), the extraction and sale of natural resources such as bamboo, and through occasional wage work on the coast. Therefore, an important element of farmers' strategy and limitation on their movement further inland is maintaining access to markets and labouring opportunities on the coast. In earlier periods, and still today to some extent, shortfalls in production or gaps between harvests were made good through trade with the inner hill people. In this sense the area is truly a "middle" zone, in which a balance is struck between two more extreme lifestyle and livelihood options.

The cultural and historical background to the middle hill population was described earlier. To recapitulate: the middle hill people who originated from Taipaobal returned to their hillside farms after a brief period of enforced residence on the coast early this century; those lower in the hills, in Tibu, Dusunan and parts of Bobalo, claim to have moved into the hills from the coast and began clearing hill land in the 1910s to escape Dutch domination. A few mentioned

earning money to pay taxes by clearing hillside land for coastal dwellers to plant their rice and corn. These people were linked to the coastal elite by payment of tribute to the Olognian at Dusunan. Others further inland, such as those at Silikohong, could perhaps have been considered inner hill people in previous generations, but are now Muslims oriented towards the social and political system of the coastal zone, and living in quite densely farmed and settled conditions.

The adherence of the middle hill population to Islam, their positive orientation towards coastal authorities, their desire to consume foods such as sugar, coffee and dried fish purchased in the market, and the distinction they make between themselves and the inner hill people, provide further culturally based disincentives to migration to the forest fringe further inland. This cultural orientation accounts for the abundance of wild pigs that damage crops, and the overworked condition of the land, which can seldom be left to fallow the five to ten years required for a good regeneration of the soil.

The area is surprisingly heavily settled, although densities are difficult to determine accurately. The following are some very rough estimates, based on population data supplied by the village authorities, and land areas estimated according to a map compiled by the author through observation and with input from villagers. Tibu has about 559 of its 1121 population living in the hills, but there is little real hinterland since it is cut off by the borders of Lombok and Bobalo. The majority of the hill population live between about 2 and 7km inland, and the village measures only 3km across. The density in 3x5km of land, ignoring slope, is therefore 36 per square kilometre. Taking the Alau area of Bobalo as another example, and using the distances estimated by the camat (sub-district chief) for a new road (marked on Map 3), the distance from the beginning of the middle hill area (2km from the main highway), to the edge of the inner forest at Silikohong is only about 3km. The part of the Alau hill that lies on the Bobalo side of the Bobalo-Eeya border is at most 2km wide. The total number of households living there are 30 registered in Alau, and 10 from Eeya. The 3x2km area is therefore home to 40 families, or 200 people, with a density of 37 per square kilometre. A third example is the area in Lombok bordered by the Ponus, Ogoalas and Siavu rivers, where, according to the 1990 census, 125 households or 625 people are located. An estimation of the land area covered by that census subdistrict is 5x4km, disregarding slope. The population density is therefore 31 per square kilometre.

Since the middle hill area is not visible from the coast, and government officials rarely if ever climb into the hills, conditions of life and work there are seldom observed by outsiders. Access is by foot trail. The time taken to walk from the coast, through the middle hills, to the edge of the next, inner mountain, zone is about three hours in Bobalo, six hours in Lombok.

The middle hill area is heavily cultivated, with land under corn, rice, shallots, groundnuts, and, more recently, tree-crops such as cocoa, cashew and kapok. Fallows are short, usually two or three years, and many individual plots are surrounded by live fences of gliricidia. At the border between the middle hills and the dry foothills is an ecological niche suitable for tobacco production, where farmers specialising in this crop use the dry side of the hill for tobacco and the moister areas to grow corn.

The middle hill area is undergoing a major transition in the relations between people and land. Beginning in 1987, tree crops have been planted by many farmers. These trees represent not simply an addition to the farming system, but a potential source of its transformation. The

swidden cycle, the intensification of land use, and the implications of the adoption of tree crops for resource use, allocation and the security of livelihoods are the issues explored below.

1.4.2 THE SWIDDEN CYCLE IN THE MIDDLE HILLS

There are many factors that enter into farmers' decision making in regard to cropping patterns. These include the conditions of vegetation and soil, which are related to the length of the fallow period, the availability of seed and fencing, and the farmers' immediate priorities for food and cash.

In conditions that farmers consider ideal, an area of land in the middle hills will be left under forest fallow for about seven years. It can then be re-opened and used intensively for up to five years. The cropping cycle followed is one which moves progressively from more to less soil-demanding crops. For the first two years, the field can be used for hill rice, producing bumper harvests. As "small stones" appear in the soil, its drainage improves and it becomes well suited for shallots, a cash crop which has been integrated into the swidden system of the area for over forty years. The upper portion of the field is favoured for shallots, again because of drainage and "cool breezes" that prevent dampness and rot. Corn can meanwhile be grown on the remainder of the field to meet food needs. Two consecutive crops of shallots can be grown in one year. Ground nuts can be grown for cash as an addition or alternative to shallots, and are sometimes intercropped with corn. Following this, in the forth year of cultivation, two corn harvests can be achieved. By the fifth year, the soil is regarded as thin, and suitable only for cassava. It should then be left to fallow again.

Variations on this cycle are many. Some significant ones are outlined here. If the land has only been fallowed for two or three years, no rice harvest will be attempted, the cycle beginning instead with shallots, ground nuts and corn. Other reasons for not growing rice, even if the land is suitable, are lack of a current seed stock (since many households do not grow the crop every year) and the absence of neighbours growing rice to "share the birds" (the main rice pest). If the farm family has no access to shallot sets to plant (their own, borrowed, share-cropped or purchased), they cannot plant this profitable crop. Involvement in shallot production is a good barometer of the household's current capital liquidity. Some households claim never to have grown shallots. Disease has affected the shallot crop in the entire Tinombo area in the last two years, leaving households without new sets to plant and without ready cash to buy staple foods in between corn harvests. Many have become impoverished and hungry as a result.

Fencing is a significant element in the swidden strategy. Fencing is not usually considered essential for rice, since the main pests affecting this crop are monkeys and birds, which can only be kept at bay by constant guarding as the rice ripens. Shallots can also be grown without fencing. Corn and cassava are the crops most vulnerable to depredations by the wild pig. If the farm family has the resources to establish a strong live gliricidia fence, they can rest at night. Otherwise, a constant vigil is necessary, most particularly during the first week after the corn is planted, and the last month before harvesting. If a non-living fence is built, guard still needs to be maintained. In the latter case, the field may be abandoned after the last corn harvest, since the returns from cassava and other vegetables do not warrant the investment of labour in guarding the crop. Vegetables such as tomato, egg-plant and chili sown by women in the field may continue to yield for some time after the field is no longer cultivated or guarded, and are harvested for sale.

Farmers' short term priorities are also important. If food is needed quickly, farmers may choose to go for a corn harvest first, rather than rice, since corn is harvested in just three months while rice takes six to eight months. The great advantage of growing rice, if the land is sufficiently fertile, is its storability, since a bumper harvest can fill the family grain store for a year or more. Corn can be stored for up to nine months on outdoor racks, although it becomes so hard it is difficult to grind, and it quite unpalatable. Conversion of corn to flour for further storage is very labour intensive, and seldom undertaken. As a result, much of a large corn harvest tends to be sold or given away. With its food needs met through a good harvest of rice or corn, the farm family can diversify into other forms of production, such as shallots, and use the proceeds for building up assets, rather than buying staples.

Ideally, farmers pursue a mix of strategies on different plots of land. The number of plots currently being worked per household (including the separate plots of women, men and unmarried children and well as plots worked jointly) ranges from one to eight. The extent of land available to farmers, and its location, determines how many field plots they have in use simultaneously. Each plot, or portion of a plot if the farmer has a large area of contiguous land, may be in a different phase of the three to five year land-use cycle. Farmers may concurrently have two or more plots of corn and shallots at different stages of maturity, since rainy seasons are not well defined. Location is important because of the necessity to guard crops. Farmers whose plots are scattered cannot keep several active simultaneously, and they may not persist to the less intensive phase of the cycle, the root crops, if their new corn field requires guarding some distance away.

Tobacco is grown only by farmers specialising in this crop, who live close to the dry foothill zone. The annual production cycle takes eight to ten months of fairly intensive labour, and no other crops are grown in the tobacco fields. Tobacco farmers often grow some corn, but seldom obtain abundant harvests as their lands are in or close to the dry zone, where they have to stay to tend the tobacco. Their livelihood strategy depends upon saving enough cash from the sale of the tobacco harvest to see them through the long months of the next tobacco growing season. Women are involved in all stages of tobacco production, and, if necessary, maintain operations while men seek work on the coast. Some widows also produce tobacco alone. The Tinombo area is reported to have been famous for its tobacco as early as the eighteenth century (Nourse 1989:372n20).

1.4.3 INTENSIFICATION OF LAND USE

Seven year fallows are now very rare in the middle hill area. Fallows of two to three years are more common. Vegetation succession generally only reaches the stage of grasses or light brush. There are a number of distinct reasons for this.

Population growth is a favoured explanation for the intensified use of land. The extent and timing of population increase in the middle hill area is unknown. An attempt will be made to determine this by comparing data disaggregated at sub-village levels from the 1990 census with that from previous decades. There are no obvious reasons why a drop in mortality should have been achieved in the area, since education, immunization, and general health services are not available in the hills, and few farmers have taken the step of abandoning full time farming in favour of coastal wage work in order to benefit from facilities provided on the coast. According to household interview data, infant and child mortality remain significant, though the results are insufficiently complete to be quantified.

Outmigration is significant in some areas of the middle hills, but good data on the extent of such movements are not easily obtained. Tibu halved its population between 1979 and 1990, during which period many moved out from the middle hills and sought farmlands elsewhere along the coast, particularly in the vicinity of transmigration sites where new roads had made land accessible. Crises such as prolonged droughts in 1981-2 and 1986-7 have caused both temporary and permanent outmigration.

Inequality of access to land is a critical feature determining the intensity of land use, since intensity is not only a factor of the quantitative relation between population and land, but also of the social relations according to which land rights are distributed. Families with insufficient land are forced to use it intensively, even if the productivity and regenerative potential of the land are damaged in the process. Household interview data made clear that some households have access to many more plots of land than others, and are able to leave land fallow for longer, thereby obtaining consistently higher yields. In part, unequal access to land is a consequence of inheritance: descendents of the founding families make use of the large areas first cleared by their ancestors. Since both women and men acquire rights to farm land from their parents, marriage patterns are also significant. Families in which both spouses come from the area potentially have access to more land, since they can draw upon the resources of both sets of ancestors. Land fencing and the advent of tree crops are strongly exacerbating inequality of access to land, a factor explored in more detail below.

The declining productivity of land effects the intensity of its use. Where access to new land is limited, and assuming that no major innovations are incorporated into the farming system, farmers are forced to use and if necessary over-use the land they have available, in order to produce enough to meet their minimum subsistence needs. While traditional swidden cultivation systems involving small populations and large areas of land can be stable, maintaining yields and the regenerative potential of the soil indefinitely, a gradual decline both of yields and soil quality appears to have been taking place in the middle hills of the Tinombo area, which have been cultivated for several generations. Some areas of the middle hills which were said to be heavily forested early in the century are still in productive use now, ninety years later, although the fallow vegetation is mostly *imperata* and other grasses. Other bald and grassy areas, particularly in the lower middle hills of Lombok and Dusunan, are now considered too poor to be worth farming, although they were apparently in productive use fifty years ago. These particular hill slopes are reported to have been placed by force under continuous cultivation of cotton during the Japanese occupation, with no fallows, which may partly account for their depleted state (Nourse 1989:358). More generally, in the perception of farmers, the land in the middle hills has been "used too much", both too frequently and for too long, and this has caused corn harvests to become more meagre over the years. That the fairly dense population inhabiting the middle hills has been able to derive a livelihood from the land for so long can be considered something of an accomplishment, given the intrinsically low fertility of the soils and the steepness of the slopes.

Gradual depletion of the quantity and quality of soil does not necessarily decrease the land's potential for generating a livelihood, if adjustments are made to the farming system. The incorporation of shallots into the farming system as a cash crop is an innovation that has enabled some farmers to make good use of thinner and hence better drained soils, including those that have succeeded to grasses, and generate enough income to purchase staples in between corn harvests and to make up other shortfalls. For farmers unable to participate in shallot production, however, the declining productivity of their land requires them to intensify their efforts in ways which contribute to further long term deterioration. Examples observed

in the area include recultivating severely eroded, stony land after only one year, for lack of alternative sites, and bringing into cultivation steep slopes which were previously avoided. Farmers will need to make new adjustments to their land use practices in order to restore degraded lands and re-establish the sustainability of the farming system.

Fencing is another innovation practised by some farmers in the middle hills which has permitted the useful life and productivity of a swidden to be extended, thus allowing other swidden plots to be fallowed for a longer period. With a strong protective fence, a variety of root crops and vegetables can be grown which supplement corn and rice as staples. Losses of corn to wild pigs are reduced or eliminated. This situation contrasts with the extreme waste of labour and soil resources that occurs in the not uncommon eventuality that an unfenced and insufficiently guarded corn field is ruined by pigs, producing nothing.

The families that are able to establish live fences tend to be those whose ancestors first settled the area. These families enjoy two advantages: their better land produces more abundant harvests, freeing up labour to invest in long-term projects such as fences. Also, in some cases, their parents' generation had themselves established a few fences, from which fence posts can now be lopped to increase the fenced area. By contrast, other households have to purchase fence posts with scarce cash, and redirect labour from short-term income or food generating activities, a diversion many cannot afford to make. Location is also significant; while pigs are a serious problem throughout the middle hills, only the areas closer to the coast have live fencing, due to the proximity of fence poles. The labour required to carry poles three or four hours inland is prohibitive. A farmer (also the school teacher) at Silikohong in Bobalo paid Rp50,000 in 1990 for materials to fence 0.75 ha, purchasing the *gliricidia* fence posts from the coast and having them carried up to the mountain. Note also that fencing does not in itself resolve the issue of intensification. Farmers who first established live fences three or four years ago have watched the productivity of the soil decline, and, without guidance on more sustainable forms of intensive cropping, they too must leave the land to fallow.

The integration of cash crops such as shallots into the swidden cycle, and the establishment of live fences, represent successful innovations that have intensified land use and permitted living standards to be maintained or in some cases increased. These innovations counterbalance the long term decline in the intrinsic fertility of the soil that has occurred in the middle hills over the decades as organic matter has been depleted through insufficient fallowing and top soil loss through erosion. Both innovations, however, require capital investments that some households are unable to make, and they have not been universally adopted. Even for established shallot farmers, the shallot disease has meant a depletion of planting sets and other reserves, and everyone considers that the pig problem has become progressively more severe, seriously threatening their livelihood.

Since the middle hill farmers have for many years been unable to meet their subsistence needs through rice and corn production, and are faced with raiding wild pigs and disease in their main cash crop, they clearly need to innovate further in order to survive. It is in this context that tree crops have become popular, hundreds of thousands being planted by farmers in the middle hill area, particularly since 1987. These tree crops have wide ranging implications for the usage and allocation of land resources.

1.4.4 BACKGROUND TO THE INTRODUCTION OF TREE CROPS

Repelita V plans for the national expansion of the estate crop sub-sector, in order to increase non-oil exports (Stickings 1989:50, 77). The local government, most notably the district chief (*Bupati*), sub-district chiefs (*camats*) and village chiefs (*kepala desas*), have been strongly advocating the introduction of tree cash crops in the Kecamatans of Tinombo and Tomini. The main rationale used is an environmental one. Shifting cultivation as practised on the hillsides is seen as a cause of forest destruction and land degradation. It is also associated, in the minds of officials, with the backwardness, poverty and ungovernability of its practitioners, perceptions which are discussed further in Part Two below.

According to local officials, including village heads who live in the area, the farmers in the hills are "not really planting anything," just "moving around". The fact that they have been able to develop a farming system capable of providing subsistence for hundreds if not thousands of years, while also adopting innovations where appropriate, is little noted. Nor do officials recognize that the hill populations are very stable, having lived for generations in their present locations, re-using secondary forest land, and seldom shifting very far. In the official view, the introduction of tree crops will have three major advantages: it will encourage the hillside farmers to settle permanently in one place, close to their trees, instead of moving around; it will turn them into serious, "modern" farmers, producing principally if not exclusively for the market, who pay property and other taxes; and it will help to stabilize steep slopes where tree cover is more appropriate than the cultivation of annuals.

Strategies used by the camats to promote the planting of tree crops include lectures to villagers, and development of their own personal tree crop plantations in the area as an example to others. Village heads have used these two approaches, and added a further strategy of requiring hillside farmers to show evidence of having planted a certain number of trees before the village head will entertain requests for official letters, such as those required for marriage registration.

Despite the enthusiasm of government officials for the planting of tree crops in the area, no extension services have been provided. This reflects the limited capacity of government agencies to provide services in remote and difficult locations; their lack of expertise and appropriate input "packets" for hillside farming; and the belief that any tree planting, of whatever type and quality, is an improvement over the shifting cultivation system now being practised, since the latter is considered to have no virtues.

The consequence of the lack of extension services is that the trees planted are often poorly selected in relation to the land's potential, derived from immature and poor quality seed, inappropriately spaced, lacking in shade and cover crops, unfertilized and unpruned. Their yields, not surprisingly, are very low, and in many cases roots are already exposed as a result of erosion of the bare earth surrounding the young trees. The risks of disease, especially in cocoa, have not been taken into consideration, nor has market research been undertaken to assess the tree crop mix with the most secure long term potential.

The farmers have no previous experience in planting tree crops, and do not know what they can expect in terms of yields, prices, and tree life-span. They are nevertheless adopting this new form of production with great rapidity and enthusiasm, based both on the officials' exhortations and their own judgment. They observe that neighbours who were among the first to plant a few experimental trees are now deriving a cash income, where previously they may have had

none. They note that tree crops require little labour once established, and yield for many years, offering the hope of meeting monthly school expenses for children, providing an income in old age, and leaving a productive inheritance for descendents.

Some of the benefits of adopting tree crop production may prove to be real and others illusory. A major transformation in land use and land access is in progress which will have far reaching effects on social structure and on livelihood. Some of the dimensions of this transformation are becoming evident in the middle hill area, where large numbers of trees are being planted in an area already densely farmed and settled. An analysis of these early trends, and a projection of future developments, are provided here.

1.4.5 CHANGING LAND USE: THE DISPLACEMENT OF FOOD PRODUCTION

Tree crops such as cocoa, cashew and kapok (which produces a cotton-like fibre used in mattresses) have life spans of several decades, during which period alternative uses of the soil are precluded. Previous uses of the land, in particular for food and short-term cash crop production, are displaced and must be abandoned or practised more intensively (and potentially destructively) on the remaining, more constricted, areas of land. It is often the better, more level areas of land that are converted into tree gardens, leaving the steeper more vulnerable slopes for annuals. While in theory food and tree crops can be integrated into agro-forestry systems which use land intensively and sustainably, meeting a variety of food, cash, and fuel wood needs, these have not been introduced in the area. Instead, tree crops are being planted over the entire field plot either simultaneously with annuals or after annuals have been harvested, replacing the fallow stage and thereby breaking the swidden cycle.

Farmers hope and expect that by the time their tree crops yield, they will produce sufficient income to replace the value of food and annual cash crops grown under the previous swidden system. Risks incurred by tree crop farmers related to the probable low productivity of the trees planted, the reduction in diversity and flexibility of land use, and vulnerability to price fluctuations were noted above. When queried, farmers acknowledge that prices may not be stable, but they consider some income from trees to be better than none, especially where the labour demands are perceived as light in relation to the returns expected. At worst, the trees could be cut down, and the swidden cycle recommenced, although this is not an eventuality farmers envisage, since they place much hope in the new productive form.

For farmers with adequate land resources, perhaps ten swidden plots, the conversion of some plots to tree crop gardens represents a diversification of livelihood strategies. While waiting the five to ten years required for the trees to yield, they can continue with the cultivation of annuals as before. Even if five plots are eventually planted to trees, the remaining five plots will be sufficient to meet other needs without serious land degradation or yield depletion, at least in the medium term.

Other farmers, less well endowed with land resources, face two serious obstacles when they attempt to plant trees. First, lacking sufficient land, they are in danger of finding themselves with no place to grow food once their two or three plots are covered with trees. They quite literally displace themselves from food production. They are unable to wait for their trees to yield, providing cash to replace the value of food and other crops previously grown on the land. Several instances were reported in which farmers had been forced to sell their land, and the two or three year old trees planted on it, in order to meet short term consumption needs. In such instances, in attempting to plant trees, farmers risk becoming poorer.

Lack of time to make long term investments of labour is also an obstacle for poorer farmers who wish to plant tree crops. Those with inadequate land resources obtain low yields from overworked soil, and are able to meet their food needs from their own production only a few months per year. Since they tend also to lack other assets, such as shallot sets to plant, they are not well placed to obtain cash to purchase staples in between harvests. As a result, they are often dependent on wage work on the coast, or other time consuming and low productivity activities such as gathering firewood, bamboo or rattan for sale in order to meet daily subsistence needs. These activities leave them with insufficient time to make significant labour investments in tree crop gardens, which need to be cleared, fenced, planted, and weeded while the returns are delayed for several years.

It has been noted here that for some groups of farmers, particularly those who are poorer, the new form of production presents serious risks of making their livelihoods less adequate and secure. The risks derive from the instability of prices, vulnerability of trees to disease, the displacement of food production to more marginal and less productive lands, and the necessity to wait for five to ten years for trees to come into production, meanwhile losing access to income from the land the trees occupy, or, in severe cases, being forced to sell both land and trees to meet short term survival needs.

Changes in the allocation of rights of access to land are occuring in response to the opportunities and constraints presented by the new form of production. These too risk adding to the difficulties faced by the poorer farmers.

1.4.6 CHANGING LAND ALLOCATION: THE DISPLACEMENT OF THE POOR

With the introduction of long term tree crops and live fences, claims to land are becoming privatized and exclusive. The traditional means of establishing rights to land is to clear an area of primary forest. Rights thus obtained are passed on to a person's descendents. Through these means, some families have inherited rights to more extensive areas of land than others. These rights give them the advantage of always being able to farm land that has been sufficiently fallowed to produce good yields with a minimum investment of labour. However, these traditional land rights are not fully exclusive. An individual who has inherited rights to large areas of land is under strong social pressure to make land available to neighbours and kin who wish to "borrow" it for a few seasons to meet food and cash needs. Young farmers who have not yet established definitive claims through inheritance, or those of any age who come from families that are not well endowed with land resources, are generally able to borrow land to plant annual crops. It is sometimes parents who lend the land, allowing their children temporary use rights but not yet wishing to give up all their own claims. Grandparents, uncles, aunts and other more distant relatives are also likely to be approached to lend land, and for all of them it has traditionally been difficult to refuse requests. No rent or share is exacted in these agreements, although those borrowing land generally express their gratitude with gifts of produce of nominal and unspecified quantity.

In some cases, those who lend land for the production of annuals do see the loan as a sacrifice, since it reduces the fallow period and hence the productivity of the plot next time it is used by the owner. In other cases, use of the land by others is seen as an advantage, since it prevents the regeneration of heavy forest, making it easier for the farmer to clear after a few more years. The relative advantages and disadvantages of lending land depend on pressure on land and length of fallow: on the forest frontier, where land is plentiful and fallows are long, lending out land to keep it in cultivation once every ten years has very different consequences from lending

out land which is being used on a three year fallow cycle, where *imperata* grass is already taking hold.

Since land has begun to be fenced or planted to tree crops, use rights to land have taken on a quite different, long term and exclusive aspect. Planting of trees has traditionally been considered a "hand print," indicating in a visible and durable way that the land is claimed by the individual who first cleared it, or that person's descendents. Such tree planting has not been common or routine, however, and the majority of swidden plots contain no fruit trees when they are left to fallow. Now that more and more land in the middle hills is being planted to long term tree crops, it is becoming marked as exclusive property. Whatever the government's perception of the land's ownership status (discussed below in Part Two), the definitive rights of a person who acquired land through clearing or inheritance and subsequently planted trees are locally recognized.

It was noted above that planting tree crops on the land precludes its use for food crop production. Neither the household with prior rights to the land, nor others who may wish to borrow it, are able to continue planting annual crops there. As land is taken out of the swidden production cycle and planted to trees, flexibility is lost both in regard to its uses and its accessibility to potential users. Farmers without strong claims to sufficient land are unable to borrow land to plant long term tree crops, since that would amount to a transfer of permanent rights. They are thus unable to enter into the new form of production in which so many are placing their hopes. Even more serious, perhaps, is the fact that progressively less land is available to borrow, even for short term uses, since the parties who would previously have lent land now claim that they "plan to plant cocoa there."

Some farmers with less land noted that borrowing land for food production is becoming more difficult. The loan of land is now sometimes made on the basis of a commitment by the borrower to plant cocoa trees there for the owner. Through such an agreement the owner has his or her land cleared and planted with a minimal investment of labour and capital. The normal procedure is for the party who provides the land and seed to divide the trees equally with the party who provides labour. The precise terms of such agreements vary with the kin connections and circumstances of the parties involved. As land for food production becomes more scarce, owners will be able to drive hard bargains in return for the loan of land for short term cultivation. True landlessness may also arise in the middle hills for the first time, as some families find themselves unable to secure even temporary rights to use land to grow food.

1.4.7 THE EMERGENCE OF CLASS DIFFERENTIATION

Cash crops such as shallots and groundnuts have been produced in the middle hills for decades. They are integrated into the production cycle with no significant disruption in the mode of access to land or other resources. The size of shallot gardens is limited by the cost of sets to plant, but also by the availability of labour, since neighbouring farmers, with access to their own land for food and cash crop production, are generally not available as wage labourers. Share agreements between those who have access to land, shallot sets and labour are common, but do not involve commitments beyond the three month shallot cycle. Although many have not been able to participate in this form of production, due to lack of capital to purchase sets to plant or suitable land, no farmers have been impoverished by it.

The introduction of tree crops raises a different set of issues. The trees provide a mechanism for displacing some farmers from their own land, and excluding others who formerly could

obtain temporary use rights. They also provide, for the first time, an incentive to more affluent and successful farmers to accumulate large areas of land through purchase, just as their neighbours, encountering hard times, are becoming willing to sell. The advantage of tree crops for larger scale owners, is that they require little maintenance once established, so that managing large areas is feasible, and the limitation of labour scarcity typical of swidden cultivation systems is overcome.

For better off farmers intent on serious profits from tree crops, the middle hill area has a limited potential because the land is already heavily settled and claimed, and only occasionally available for purchase. Since the soils are already in various stages of depletion, only cashews or kapok can be grown in most areas. Cocoa is frequently planted, but does not thrive because of thin top soil, the lack of shade and humidity due to the absence of larger trees. These farmers are attracted to the inner hills. For reasons described in the next section, a move to the inner hills requires significant capital resources. Poorer farmers facing a land shortage in the middle hills are seldom able to move further inland, and they are forced instead to turn to labouring opportunities in the coastal zone in order to make up for production short falls and meet their survival needs. Out migration is another option, although it, too, requires capital.

1.4.8 GENDER ISSUES IN THE MIDDLE HILLS

Under the cultivation system traditionally practiced by the Lauje, the rights of women and men to access land do not differ significantly. Both sexes inherit land rights from their parents. They acquire temporary use rights or "borrow" land from their parents or other relatives or neighbours. Depending on a married couple's location of residence, they use either the husband's, or the wife's, or both sets of social connections in order to obtain access to productive resources. If one side of the family is much better endowed, the couple may follow that side exclusively. If both families have similar sets of resources, they may alternate, keeping both sets of social ties strong while maintaining flexibility to move their household periodically to wherever the best land is available.

Whichever side of the family has provided the land currently being farmed, a married couple work together in the annual farming cycle according to a defined but flexible division of labour. Men are responsible for clearing forest or undertaking the heavy work of preparing grasslands for cultivation. Women assist in both tasks. Women and children clear fields covered by light brush, such as that which springs up in the few months between one harvest and the next planting, although men will help if they are not away working outside the village. Women, children, and men participate in planting, although women are the experts on seed stocks and varieties, planting distances and patterns. Women are mainly responsible for weeding, harvesting, drying, bundling and other post harvest processing, although men often help. Men are responsible for negotiating with middle men for the sale price of a harvest of shallots, but women are consulted, and the entire proceeds of the sale are generally handed to them for safekeeping and budgeting. Women participate in the cultivation of tobacco. Most women grow vegetables for sale on their own account. Many married women grow shallots and garlic on their own account, in a separate field, or in a subdivision of a field also being used for private production by their husband and perhaps their older children. Single women, whether unmarried, divorced or widowed, grow shallots, ground nuts and tobacco for cash, as well as a range of staple foods. They use a variety of means for gaining access to male labour if it is needed to clear fields.

Some changes in patterns of access to productive resources, division of labour, and household form and functioning can be expected in the context of the introduction of tree crops. The full dimensions of these changes are not yet apparent, but some elements can be anticipated. A crucial fact is that tree crops require a long term commitment to a particular place. Flexible movements between the area of origin of husband and wife may become less common, and, over time, a matrilineal or patrilineal bias may develop. It was stated by both men and women that husband and wife are each entitled to 50% of any trees upon divorce in recognition of their labour inputs, but this may not work out in practice as the trees are physically located on land derived from either the husband's or the wife's family. For these and other reasons, many women desire to plant trees of their own, separate from those owned and managed by their husband, or by the couple jointly.

Registration and taxing of land and trees, which are only just being introduced in the hillside area, raise related issues. According to village officials responsible for the registration, all the land and trees are being registered in men's names, even when the land and trees are recognized by the husband to belong to the wife. This process, if allowed to continue, will inevitably affect women's rights in case of divorce or dispute, and may even affect inheritance, as parents may be unwilling to give assets to daughters only to have them taken over by sons-in-law.

In the long run there will be changes in the sexual division of labour. It is not yet clear whether men will take on principal responsibility for the new tree crops, leaving women to focus on maintaining the annual production cycle, or whether men will absent themselves more often from all types of farm work once their major distinct task, the clearing of land for cultivation, is no longer or only seldom being undertaken. Few of these questions can yet be answered, although it is important to raise the issue of the likely differential impact upon women and men of the major land tenure and production transformations currently in process.

1.5 THE INNER HILLS

1.5.1 LOCATION, LAND USE AND LIVELIHOOD STRATEGIES

The area referred to here as the inner hills is the zone inland from the middle hills. The closer edge of the inner hill zone can be reached after walking four to six hours from the coastal plain. Settlement extends inland until the point where the high peaks and ridges at the center of the peninsula around Mount Sojol and Ogomas present obstacles for habitation and cultivation. After crossing the center point, Lauje settlements are again encountered all the way down to the western coast.

The main vegetation is secondary forest, most of which is regularly farmed under a forest fallow rotation cycle of about five to ten years. Primary forest is restricted to a few frontier areas, and to areas that have been considered unsuitable for farming over the centuries that people have lived in the area: very steep slopes, rocky terrain, and river banks (although the latter are now being cleared in places). The main difference between the inner hills and the middle hills lies not in the characteristics of the natural environment and resources, but in the economic and resource management practices of the populations that live there. These practices are informed by the social, cultural and religious traditions that distinguish the people of the inner hills from the population in the middle hills below them.

There are few, if any, large areas of primary forest that are suitable for conversion to tree plantations. This should be stressed because village and kecamatan officials, most of whom have never visited the area, believe that in this area there are plentiful unused land resources. Their misconception is due both to a lack of good information on the state of the land and population densities, and to their failure to appreciate the importance of forest fallow to the sustainability of the traditional agricultural system. This issue is explored in more depth in Part Two.

The missionaries estimate that there are 5-7000 inner hill people or non-Muslim Lauje in the hinterlands of Lombok, Bobalo and Palasa. A proportion of these people are not registered in any village, and do not possess identity cards. Some are reluctant to acquire these cards, since the religion "Islam" is sometimes written on them by village officials without the people's knowledge or consent.

The population of the inner hills is surprisingly dense. Some estimates are presented here, based on population figures from the 1990 census, matched with the intra-village census boundaries (which tend to use rivers as borders), and land areas derived from the author's hand-drawn map (Map 3). Slope has not been taken into account in any of the land area estimates. Although approximate, the population density estimates serve as a useful point of comparison between the middle hills and inner hills. According to these estimates, the population density in the inner hills is as great or even greater than that in the middle hills. The two villages included in the study with inner hill populations are Lombok and Bobalo.

According to the Lombok census, there are 292 households (about 1,460 people) living between the Ogoalas river, Mount Sojol at the center of the peninsula, and the Nogaat. This is a land area of approximately 8x6km, yielding a density of 30 people per square kilometre, not much less than that in the middle hills. According to the same census, there are 479 households (about 2395 people), living in the census district bounded by the Malabi, Siavu and Nogaate rivers, and the Bobalo border, an area of about 4x8km. This produces a density of 74 per square kilometre. Part of this area, up to Taipaobal, is classified by the author as middle hills. Taking only the inner hill population inland of the Bolo mountain that lives around the headwaters of the Nogaat, at Beneti and Babong and inland to the center of the peninsula, there are 270 households, or 1,350 people, in a land area of about 3x6km. This still produces a density of about 75 per square kilometre. The majority of the latter group belong administratively to Bobalo, but were enumerated for census purposes in Lombok according to an agreement between officials of the two villages and two kecamatans. As a third example, the inner hill population census in Bobalo in the area which includes Tengke Ulu and areas inland up to the borders of Lombok, Ogomas, and Ansibong (or possibly as far over as the boundary of Palasa) was 207 households, or about 1035 people. This is an approximate land area of 3x6km, producing a density of 57 per square kilometre.

Despite these high population densities, the inner hills are generally more forested than the middle hills. The reasons for this are the farming system that is practiced, the conscious preservation of forested areas, and the availability of a forest frontier for expansion. These issues are discussed below.

1.5.2 THE FARMING SYSTEM

The farming system is centered around root crops, particularly taro. When a garden is first cleared, taro, cassava and corn are planted. The proportion of each crop and the pattern of planting depend upon the state of the garden.

If a garden has just been cleared from primary or very old secondary forest, it will still be covered with large tree trunks that failed to burn due to their huge size and frequent rainfall during the two-month drying period. The planting pattern then consists of taro, corn and cassava in between the logs, wherever space is available. Corn is the first to be harvested and so is essential to the farm family's survival in the new garden, but it does not yield well in the overgrown conditions. The rich soil and moist shady conditions are good for taro. The garden is used in this pattern for two to three years, and then left to fallow again.

If a garden has been fallowed for a period of ten or fifteen years, ideal conditions exist for a good corn harvest, since the burnt vegetation enriches the soil, but the trees are still small enough that they will burn thoroughly, leaving a clean field. In this case, a large proportion of the garden is set aside for corn or more rarely rice. An abundant harvest means food security for many months. It means the capacity to be generous to kin and neighbours (who have helped the family on previous occasions, or will do so in future). It also means the possibility of acquiring significant trade goods such as knives and clothing, or, more recently cash, from middle hill farmers who hear about the harvest. After the corn or rice harvest, corn is planted again intermixed with root crops. The cassava is harvested from six to nine months after planting. The taro takes a year to mature, but then yields continuously for many years with minimal tending, as the secondary forest grows back up around it.

If the garden has been fallowed for five years, taro is usually already established, as the roots survive the clearing and burning process, and the leaves resprout. The taro may have been tended and harvested continuously during the fallow, so that the field is productive throughout the cycle, even while the forest is regenerating. Because of the abundance of well established taro, farmers have to search carefully for a small area of the field that is relatively free of taro in which they can plant corn. The taro competes for space with corn, and a second corn harvest is not attempted in the same spot; where possible, a new taro-free patch is cleared from the forest at the edge of the field. The field is left to fallow after the corn and cassava have been harvested, and the taro continues to yield while the farmer's attention shifts to a new garden plot.

In order to plant garlic, farmers select an area that has a good deep top soil and is free from taro. For shallots, they look for a well-drained slope with thin soils that will not waterlog. Such slopes are harder to find in the inner hills than lower down where the farming pattern keeps the soils "thin" and well suited to shallots. Some inner hill farmers have been growing these cash crops for at least twenty years, but many grow little or none. Unlike the middle hill farmers who rely upon cash crops to make up for shortfalls in staple foods, the inner hill farmers are able to meet their staple food needs from their own produce, requiring cash only for "extras," such as salt, kerosene, and dried fish.

Inner hill farmers generally have one or at most two plots of land actively being worked for corn or rice at one time. They frequently have a number of fallow gardens where taro is still nurtured under the regenerating forest cover, although these gardens require little maintenance. Only farmers with garlic or shallots have an additional separate plot. The farmers note that

they differ in this regard from middle hill farmers, some of whom have as many as eight active plots simultaneously. With fewer plots per household, the inner hill farmers are able to fallow their fields for a longer period. A further difference in farming styles is that middle hill plots are kept clear of weeds, with bare earth surrounding the growing corn or shallots, sometimes for as many as five or six consecutive harvests, while the inner hill farmer's plot is planted in amongst tree stumps or logs, covered with spreading taro leaves, and soon permitted to regenerate to forest. The farming practices in the inner hills tend to conserve forest and soil resources better than those in the middle hills.

Whether a household in the inner hills is using a garden cut from primary, heavy or light secondary forest depends upon its short-term options, and its long-term strategy in relation to the cycles of resource use and management in which each of these forest types plays a distinct role.

Clearing primary forest has few short-term production advantages, since the frequent rainfall throughout the year makes a thorough burn and abundant rice or corn forest the exception rather than the rule. The labour investment is heavy: on an average 50m x 50m plot, it takes about thirty man days to cut the huge trees, five days to clear the smaller trees and shrubs, then, after a two month wait for the logs to dry, one day to burn and five days to pile up and reburn the medium sized charred logs still littering the field. If it rains too much during the drying period, the plot may have to be abandoned entirely for five years until the big trees have rotted and the secondary forest can be burnt. After a partial burn, crops are planted in between the logs, but the yield is small, as described above. A good burn produces a good harvest of corn and other crops, but happens, according to farmers, only two times out of five, so the short term risk factor is high.

A household cannot think of investing labour in a primary forest plot if it does not have good reserves of food derived from its secondary forest garden and old taro plots. The reliance on these food sources makes it difficult to clear a new plot at a great distance from the current one, hence the common pattern of clearing new land in the vicinity of existing gardens, if not directly from their edge. Some farmers prefer locations deeper inside the forest, which have fewer weeds, but run more risks if they cannot tend their old garden while establishing the new one. If there is some secondary forest in the vicinity that can be used as a starting-point, this will be opened first, the pioneer asking to borrow the land from the person who cleared it, if it is not his own. Should an attempted new forest clearing not succeed, the family returns to a plot in light secondary forest that can quickly be cleared and brought into production to provide food, especially if taro is already there. A heavy secondary forest garden, if one is available, provides the best hope of an abundant harvest and the reserves necessary for expansion into the primary forest. Thus the three distinct types of forest and their respective farming patterns are all essential to the system as a whole.

The long-term advantage of clearing primary forest is that it increases the land area in the cultivation cycle, and so permits other fields to be fallowed for longer and retain their productivity. The social and economic advantages enjoyed by the household that clears land are an increase in their production and food security over the long term, and the capability to pass adequate reserves of land on to their descendents. Among previous generations, a strong and capable farm household would move off to a new area, perhaps with some close relatives, and establish a kin-based territory. Subsequent generations added to the land area along the edges, to keep up with the land needs of the growing population. They tended to intermarry,

keeping the land within the extended family. If the land area became cramped, a few would move off as pioneers and repeat the cycle. Most of the inland communities today are kin based groupings controlling an area of land inherited from their common ancestors. The difference today is that there is very little land on the forest frontier that is suitable for conversion to gardens, so that few become pioneers, and the majority farm a fixed area of secondary forest land which they have been using in rotation for three or more generations. Among the present generation in the inner hills, many have never cleared primary forest, and those that have done so count a maximum of five or six plots over a lifetime.

1.5.3 THE FOREST AND ITS RESOURCES

There are no supernatural taboos against clearing steep hill slopes, but farmers are extremely aware of the danger of landslides. The only places that are taboo are a few sacred trees on hill tops and river banks which are the resting place of spirits, although the land around them can be cleared. Farmers first clear the choice locations, such as relatively level land, close to a water source. Other less desirable locations are cleared later, either by the first pioneers or by their descendents. Thus the pattern of clearing is not linear, and primary forest left standing between cultivated areas promotes the quick restoration of forest cover. As pressure on land resources increases, steep land previously avoided will eventually be brought into production. The process of clearing marginal lands is almost complete in the middle hills, where there is very little primary forest left. In the inner hills, land alongside rivers and gullies, and other steep or rocky lands, still has its original forest cover.

Besides their concern to avoid landslides, inner hill households rely on the primary forest for a number of important resources. They do not see the forest as empty or unused, but as a reservoir where they can find things that they need for use or sale. The main forest items used are poles, bark and rattan for building houses, and wild fruits and vegetables as supplementary foods. Sago, *onaun* and a wild root locally called *wubi* used to be processed as emergency staple foods. Pioneer farmers recalled that they had eaten onaun for three months continuously while waiting for the first corn harvest at a remote new garden. The Lauje recognize that onaun, sago and hunting were the sources of livelihood in ancient times, before the ancestors learned to make small gardens of taro, and later still learned to plant corn and, even more recently, rice.

Hunting is practiced in the inner hills, both in the forest and in the vicinity of gardens, which attract the wild pigs. Stakes and traps are set near gardens, especially those in which the forest is beginning to regenerate, but there are still old cassava roots left behind. The wild pigs do root up taro, but apparently "never manage to finish it." Only corn and cassava are guarded from pigs, an important reason for having only one corn garden at a time. Pigs, *anua* and birds are hunted in the forest by means of blow pipes. Hunting expeditions in the forest can last for up to ten days, as long as the food supplies taken with the hunters last. They always carry food with them, only supplementing with foods they find in the forest. Some have planted small taro gardens in the middle of the forest for use when out hunting, although food must still be carried in case the taro is unripe.

The forest is also the source of cash for inner hill dwellers. It contains rattan that they collect and pare into strips for sale to middle hill and coastal people for use in house building, fishing gear, and other purposes. The rattan stands are not individually owned, but certain territories are commonly exploited by certain kin groups, usually those living close by. Other groups from further away only collect forest produce in such territories after asking permission. In the last

five years the extraction of larger rattan poles for export has been a major feature of the inner hill area. Some inner hill people participate in this enterprise as labourers, although the initiative, the financing and many of the workers originate in the coastal zone The forest also contains resin, candlenut and cinnamon trees, which are harvested periodically when there is demand for the produce. Rights to these trees have been inherited by certain families.

1.5.4 LAND RIGHTS

Rights to land are established by clearing the primary forest. The person who clears the original forest has the right to cultivate the secondary forest, can pass those rights on to descendents, can lend the land to whoever requests it, and can transfer permanent rights to others in return for compensation for the labour invested (*ganti-rugi*). Land rights are commonly not divided among descendents, all of them having the same right to cultivate the land after a fallow period. If land still has signs of previous cultivation, such as taro or banana trees, the person who last used the field has prior rights to it, and others must ask permission before clearing it again. As in the middle hills, it is difficult for people to refuse to lend land to someone who wants to use it to grow food. Most commonly in the inner hills, it is not a case of lending land to others, but circulating it among the descendents of common ancestors, all of whom have rights there.

Access to the primary forest is open, although actual patterns of clearing are determined by kinship ties that make an area attractive, and that provide a stepping stone in the form of inherited or borrowed land for growing food while working on clearing the forest. Households seldom clear land in an area where the nearest residents are completely unrelated, and if pioneers really wish to enter a new area, they consult first with those living nearby. A household or group of households that is clearing an area of forest lays claim to the surrounding area, to the extent that no one else would begin clearing there without permission. However, as with other situations in which the livelihood of fellow Lauje is at stake, it is difficult to refuse permission to the person who respectfully requests it. Rights of open access apply only to Lauje: the land and forests belong to the Lauje people "since we are the original people here." There is a sense that outsiders do not have automatic rights to clear and use the land, although the issue has hardly arisen so far.

Tree crops are just beginning to be planted in the inner hills, and with their arrival land rights are becoming more individualized: permanent rights to land are acquired by a person who plants trees on land that they cleared themselves or that was cleared by ancestors. Problems sometimes arise between the person who plants the trees and other kin, who also have claims to the land and previously could expect to use it periodically to grow food. More serious problems arise when one person transfers to outsiders the rights to property that properly belongs to a group of descendents, not just to that individual. Such cases are increasing in frequency along the border zone with the middle hills, where middle hill and coastal people are trying to acquire land to plant trees.

1.5.5 INTERACTION WITH OTHER LAUJE IN THE HILLS

Differences in farming practices, resource use and management between the middle and inner hill dwellers have been described above. Such differences in practice mark cultural boundaries, and are assigned status implications by the groups on each side of the divide. For example, middle hill people despise the inner hill diet of taro and cassava, which is less respectable than

the preferred middle hill diet of rice and corn. At the same time, middle hill farmers envy the fact that inner hill people can grow root crops with less devastation by pigs, and so always have staples to eat. Indeed some middle hill farmers choose to live on the border zone, to benefit from the protection from pigs afforded by the inner hill people's hunting and eating habits. Other middle hill farmers depend on the taro of the inner hill people to see them through hard times, walking up to exchange staples for trade goods such as a salt, or simply asking for food.

The triple advantage the non-Muslims in the inner hills enjoy over the Muslims in the middle hills arises from their ability to hunt and eat wild pigs: the pigs provide protein; the pigs are too scared to go near the farms and so do not raid the corn and root crops; and there is no need to expend labour and capital in fencing. Not obliged to purchase staple foods with their cash, the main expenditures are on salt, kerosene, clothing, and items such as torches and batteries. Tobacco is sometimes consumed, but the locally grown areca nut (*pinang*) is considered more essential. Sugar, coffee and dried fish are occasional treats, not purchased regularly. This pattern of consumption requires a visit to the coastal market only once in many months. To the middle hill people, it is evidence of remoteness and backwardness of the inner hill people.

Middle hill people consider inner hill people to be dirty, especially the men who often have long hair and always carry a knife *(parang)*, even when going to market. Middle hill men distinguish themselves by wearing the Muslim hat (*songkok*). On the other hand, inner hill women are considered desirable, because of their paler skins, bright clothing, fine plucked eyebrows, colourful beads and painted faces. Middle hill women more often wear sarongs than dresses.

Differences in housing and garden style can be observed. Some inner hill families, particularly those of leaders and patriarchs, have large houses, with more wood planks and bark used in their construction than is found in the middle hills, where houses are mostly light bamboo. Other inner hill houses are small, consisting of a roof built in against the sloping land, and no walls. Roofing inland is more likely to be made from rattan leaves, while middle hill people use sago leaves if available. The inner hill house lot is often not cleared, and access is along huge fallen trees that act as bridges across the undergrowth and across streams. Middle hill Lauje looking across the valley towards the forested heights of Silikohong from Alau could distinguish the inner hill people from the middle hill people living among them by the visibility of both the house lot and the gardens: the house lots and gardens of the inner hill people, being covered with taro leaves and other vegetation, blend in with the forest (and are considered "dirty") while those of middle hill farmers stand out starkly due to the bare brown earth (and are considered "clean"). The difference in garden type is magnified when two or three middle hill farmers clear contiguous gardens to ease the problem of guarding, exposing a large patch of the hillside while the inner hill people prefer to put some distance between one house and garden and the next.

The difference in farming and cultural styles should not be exaggerated. Among the inner hill people, it is the root crop gardens around the house and in other locations, sometimes no more than 10x10 metres, that are covered with foliage. When the inner hill people plant rice, garlic, and large fields of corn, as many of them do, especially those living in the border zone, they do weed the fields and expose the bare earth just as the middle hill people below them do. Inner hill people who continue to farm in an area for several generations eventually blend, in both agricultural and cultural styles, with the middle hill population: they live in more densely settled conditions, farm mostly secondary forest and eventually grassy lands, and seldom clear heavy forest. Not all become Muslim and blend socially, however: some of those in the

Lombok valley have become Christian, and still maintain a sharp social distance between themselves and those from the middle hills below.

The people who associate themselves culturally with the midhill Lauje, but pioneer the frontier zone as neighbours of the inner hill people, have a history that is particularly complex, and also often hidden. Are they the advance guard of a distinct midhill group, or are they instead inner hill people in the process of a religious and cultural conversion? In all likelihood there are some of both, according to the specifics of local history in each area. Not all the conversion is one way: there are intermarriages in both directions across the cultural and religious border, and inner hill land resources are attractive to many young men from the middle hills.

There are some households referred in the border zone as "half and half," i.e., people who claim to have converted to Islam, and who associate themselves culturally with the middle hills, but whose claims are disputed by those who set themselves up as arbiters of social purity and group membership. In some cases, the two groups which now present themselves as culturally distinct and unrelated by kinship were much less distinct in years past. One farmer now disassociating himself from the inner hill people was prepared to recognize that they are indeed his first cousins, the family having split into two factions in his father's generation, in the 1960s, when some chose to convert to Islam and "some people started marrying people from above, while others married below." Other border people vigorously deny any kin connections with the people of the inner hills, and emphasise a point in their family's history when they moved up to the frontier zone from below, in order to benefit from the more fertile and productive lands.

For a number of reasons, families in the border zone may need to acquire additional land: some have moved into the area from some distance away; some have always lived on the frontier but seldom or never cleared primary forest land; while others simply require additional land to meet the needs of a new generation, who are planning to stay near by rather than move off. These people seek to acquire land from those who first cleared it. A few inner hill people specialize in clearing forest, and have large reserves of land, some of which they are willing to lend or transfer permanently, providing a polite request is made. The current cash value of a hectare of land is about Rp40,000. In earlier times, such exchanges were frequently made in kind, payment for land being in the form of axes, parangs, sarongs, bundles of rice, and other goods.

Some inner hill people feel that their land resources are already under pressure because of the large number of descendents farming there, and the lack of appropriate land for expansion at the frontiers. They are unwilling to transfer any of their inherited land to outsiders: "If we turn our secondary forest lands into cash, where will our children be able to grow food?"

Many middle hill families, although they recognize the greater availability of land and the superior fertility of the fresher soils in the inner zone, cannot afford to move to the border area. Unless they already have kin in the area prepared to loan land and food, the requirement to pay out in cash or kind for acquiring land on the frontier, together with the necessity for supporting themselves for four months while preparing the land and awaiting the first corn harvest, makes the capital requirements prohibitively high. For this reason it is not really an open frontier, and poor middle hill families with no stocks or savings find themselves trapped instead into a cycle of labouring work on the coast, where, when work is available, cash for food comes in daily.

Since the rush began to plant tree cash crops, the inner hills have become attractive to some coastal Lauje with substantial capital, who have begun acquiring land to establish tree plantations. The maximum size so far recorded is 5,000 trees, with the majority of gardens having 1-3,000, and covering at most five hectares. In most cases the owners do not take up residence in the hills. Some have delegated an unmarried son or relative to establish the gardens. Others have paid wages to workers either from the inner hill area or from the middle hills. Several of the individuals establishing these gardens are officials from the village or kecamatan center, who have apparently benefitted from free labour services provided by local residents. Once the land is cleared and planted, the most common arrangement is to pay for labourers to weed it three times a year.

The capital required to finance the establishment of a tree crop plantation depends on several factors. These include: whether or not the owner takes up residence in the hills; if the family moves to the hills, whether or not they have land for food farming, and how successful they are at that task; how much of the work is done by the family, and how much is contracted out to local labourers. Labour is paid for at rates that approximate wages on the coast: clearing a 0.3 hectare plot of ten-year-old forest takes two men about six days, and the fee paid is about Rp30,000, which gives each worker about Rp2,500 per day. Clearing the undergrowth from around the young trees is paid at similar rates and is undertaken three times per year. For an entrepreneur wanting to clear and plant several hectares, the labour costs are formidable: about Rp100,000 per hectare per year, for five years, before the trees begin to yield, assuming that they thrive. Some examples of coastal "pioneers" are given in the Appendix.

Apart from the cost of labour, availability of labour is another issue. With the desire to plant tree crops universal, it is not clear that the long term residents who have access to their own lands will be willing to work for newcomers on a regular basis. They may do so occasionally, when they have a pressing need for cash, due to the failure of a shallot harvest or other crisis. However, routine labour requirements for tree crops, once established, are sporadic rather than continuous. Labour can, if necessary, be brought in from the coast or middle hills where people are dependent on cash to buy food, and have few long-term investment options of their own. Thus access to labour may not prove to be a problem for those intent on large scale accumulation of land and trees.

For the sum of Rp75,000 per hectare, a chain saw and skilled operator can be hired to clear heavy forest and make wood planks from the trees which can then be sold to cover the rental cost. The viability of this depends on the accessibility of the location. No chain saws were seen in use in the inner hills.

Some rumours were heard of outsiders failing to pay the sums they had promised in return for land. When village or district officials are involved in acquiring land for themselves or on behalf of their associates, local residents are in a weak bargaining position. In general, however, those moving into the area to plant trees recognize the customary rights of those who first cleared the land, fear the repercussions of antagonizing their new neighbours, and negotiate politely for a foothold in the area.

The land in the mid and inner hills is classified as state land. Permission to clear and develop land areas greater than one hectare requires approval at the district level. Village and kecamatan officials who wish to see the area developed for tree crops on a large scale have been seeking such permission. If their plans are approved, there is the possibility for large scale displacement of the inner hill residents. The areas that have so far attracted most tree crop

farmers from outside the inner hill area are those that lie along a proposed new road in Desa Bobalo. The situation in Bobalo and the status of local land rights are discussed in more detail later in this paper.

1.5.6 CLASS AND SOCIAL DIFFERENTIATION

The inner hill area does not yet show signs of class differentiation based on access to land such as is becoming evident in the middle hills and has long existed on the coast. Differences in wealth relate strongly to skills, household labour availability, and farming strategies pursued. Luck is an important factor, since the timing of clearing and burning operations is critical when working in heavier forest, and rains cannot be precisely predicted. Capital is important, especially as reflected in the availability of planting sets for shallots or garlic. Class differentiation may well emerge as more people stake individual land claims and plant trees, but this process has barely begun.

There are marked distinctions between inner hill groups which are based on kin affiliation and territory (groups not always being friendly with each other). These do not relate to differential access to key means of production, but they are important. Coastal authorities sometimes assume that a prominent leader from the inner hills can speak on behalf of all the people living in his settlement, or even the whole zone. In fact, he may represent the interests of his own kin-based territorial unit, or his own personal interests, and seek to capture a large share of resources intended for general benefit. In the long run, this could promote inequities, as individuals and groups better connected to the coastal authorities become brokers of goods and services in relation to outsiders. This has already begun to happen in at least one location, where the village chief has given a local leader in a frontier zone the authority to supply land to newcomers from the coast who wish to plant trees. Some of his relatives, and neighbouring inner hill people, dispute that the land transferred to outsiders was really his to begin with, and fear that their own so-called leader has been instrumental in displacing them.

Along the border with the middle hills, the new comers with large capital for the establishment of tree crop gardens are a social group and a class of their own. Unless or until they displace the earlier residents from access to their land, however, they will not be able to restructure local relations of production in their favour, as reflected in the heavy costs they must pay for labour.

The majority of those making their farms on forest lands which have been cleared after a sufficient fallow, are able to meet their annual food needs from their own gardens. In terms of the sufficiency of daily caloric intake, those living in the inner hills, who base their diet on root crops, are generally better off than the poorer groups in the middle hills or on the coast.

It should not be expected, however, that current farming practices and consumption standards will remain static. Inner hill people are strongly interested in education and literacy, as evidenced by their efforts in building a self-help literacy school at Tengke Ulu near the border between Lombok and Bobalo. They would like access to health care services. They desire to plant tree crops as a source of cash, in part to replace the collection of forest produce such as rattan which is becoming more scarce, and in part to keep up with trends that they observe in the middle hills below them. They may soon aspire to higher material standards of living, if they do not already. They express a desire to participate in plans for "development" in the inner

hills, in order to make known their aspirations and priorities, and in order to ensure that they are not by-passed or displaced through the various changes that are underway in the region.

Part Two discusses in more detail and in a broader context the issues of land tenure, displacement, the role of the state, and the cultural dynamics that have been raised in this description of the inner hill zone.

Part Two

Linkages Between the Zones in the Wider Context: Culture, Politics and Economics

INTRODUCTION

This section describes cultural, political and economic aspects of the interaction between the three zones described in Part One. It places these interactions in the wider context of the Indonesian state. First, perceptions of the mountain people are described, and the influence of the state on local perceptions of hierarchy and cultural diversity are explored. The mode of operation of local government, land tenure policies, and development initiatives sponsored by the state that effect the three zones and the relations between them are described. Finally, the exchange of goods between the zones through trade, and linkages to the wider economy, are examined.

2.1 CULTURAL DISTINCTIONS

The nature and origins of the cultural distinctiveness characterizing each of the zones was described in Part One. Elements of difference, in simplified form, are:

Coastal	Middle Hill	Inner Hill
mangroves, shore	light forest, grass	deep forest
coconuts	corn, rice	taro, cassava
wage work	shallots, garlic	forest produce
farm, fish	wage work	hunting
villagers	hill villagers	bela
Islam	weak Islam	animism, Christians
government	weak government	beyond government

In practice, the distinctions are blurred, especially between the second two categories, where a transition has been in process for decades if not centuries. Those wholly in the third category are very few. Most of the inner hill population, including the animists, fall within the local government system, have officials appointed and recognized by the village chief, grow corn and in some cases rice and garlic. Perceptions of difference and sameness vary with the social location of the speaker. Seen from the coast, the hierarchy is one of "civilization": the mountain people are backward, more backward the further inland one goes.

Infrequent contact and cultural prejudice existing in relation to the inner hill people promote many misconceptions among the authorities and others. The inner hill Lauje do not speak Indonesian. The more remote people do not visit the coast with any regularity. Coastal people rumour that those in the inner hills wear no clothes and live in caves and trees. When the inner hill people do visit the coast, the degree of cultural alienation between coastal and inner hill Lauje is extreme.

Muslim holidays are occasions when some of the more remote inner hill people from Bobalo come down to the coast. They visit the house of the village chief, some reportedly staying overnight on his front porch while others make fires and sleep by the river. They go to Tinombo town looking for the festivities, and move around the town in groups of 5-20, knocking on doors to ask for the cakes traditionally served to guests on Muslim holidays. They are treated with utter disdain by the villagers, who see their long hair, tattered clothes and parangs as signs of dirt and disrespect. If they have advance warning of a group coming down the street, some villagers close their doors and windows. Others, either more hospitable or afraid of the

inner hill people's magic, prepare a special plate of cakes for them, since they are reported to help themselves to the whole jar if offered, tipping the contents into their cloth bundles to eat later.

Many hill people, including those from the border zone with the inner hills, are able to move around less conspicuously when down on the coast. They carefully carry down their best clothes in a bundle, changing into them after the last muddy river crossing before walking to town. The women's clothes and makeup are actually a little too bright for coastal tastes, subtly revealing their "up country" origins. Men wear songkoks: according to the missionaries, those donning this head gear include some who are not Muslims, but who see the headwear as fashionable and appropriate for use in town.

In order for outsiders such as researchers or district officials to visit the inner hill people in their own environment, it is necessary to work through the village authorities and the sub-village leaders living closest to the border zone. The authorities are not convinced that the inner hill people require the attention of outsiders, since they consider them to be already privileged by the assistance that some (about ten per cent) of them have received from the mission. Moreover, with the exception of those who live in the border zone as close neighbours of the inner hill people, the coastal and middle hill Lauje are afraid of their poison darts, their magic, and their supposedly vicious dogs. They consider them to be dirty and primitive, and in many respects quite "beyond the pale."

Quite apart from the long walk along difficult paths, there are social barriers that prevent close contact with the inner hill people. In the border zone, requests to local leaders to arrange visits to inner hill households are met with many excuses: there is no one home; the men are away hunting or collecting rattan; they would not understand the purpose of the visit; the dogs would bite; the slope to the house is too steep; the path is too overgrown because the people do not weed their gardens or keep their house sites clear; even their names are considered difficult to say and sometimes cannot be remembered. The idea of an extended visit, including staying overnight, is quite abhorrent to local officials, interpreters and escorts, because of the possibility of pollution by pigs. The difficulty lies more with the actual and asserted social distance between the middle hill or coastal people and the inner hill people than with any reluctance on the part of the those in the inner hills to receive visitors, as succesful visits reveal.

Although they have little or no direct knowledge of conditions in the inner hills, village and district authorities have definite ideas about the nature of life there. A village leader with a large inner hill population described their condition of life as "less than zero." The only village officials ever to have visited the inner hill area are those charged with undertaking the census, although even then, the most remote and isolated households are not visited but called to assemble at a given location.

The village and kecamatan authorities deem the farming practices of the inner hill people to be unproductive and damaging to the environment. They also believe that the area is heavily forested, that the inner hill people are currently cutting into the primary forest on a large scale, that there are plentiful "unused and empty" land resources, and that people move their farms each year over a large and random area. In fact, as noted above, the land was converted to secondary forest some generations ago, is densely farmed and settled, and many people have been rotating their fields within a fixed area for several generations. There is little or no empty land, except that which is too steep to farm. Besides this, the set of factors noted -- the small size of inner hill gardens, fallows of five or more years, the predominance of root crops and

the non-exposure of bare soil, combine to minimize damage to the fragile top soil and promote rapid regeneration of secondary forest cover. In all these characteristics the inner hill Lauje contrast favourably with those in the middle hills, who farm the land more intensively, for

longer continuous periods, with more damaging techniques, staying in place until the land is finally too poor to be farmed.

It is important to make the point that the group the authorities regard as the most primitive and environmentally destructive, the inner hill people, are in fact, like many other traditional swidden cultivators, knowledgeable and careful in managing land and forest resources. Those in the middle hills are also knowledgeable, and have derived farming systems that have provided subsistence for large numbers of people in difficult conditions for decades if not centuries. They have had to face the issue of agricultural intensification with its attendant ecological risks, and a gradual process of land degradation has resulted. The contrast should not be overdramatized: the inner hill farmers are also facing problems of population pressure on land, and they also need to intensify their farming system.

From the point of view of secure and adequate livelihoods, the people in the inner hills are less often hungry than hand-to-mouth coastal wage workers. This fact is seldom recognized by authorities, who give greater importance to the production of cash crops for the market than to the production of food, especially root crops. According to local officials the people in both the middle and inner hills are "not producing anything, just moving around." The significance of the production for cash of shallots, garlic and tobacco, which have long been exported from the middle hill region, is also neglected. In the last few years, it has been emphasized by all levels of government that the only valid and valued form of cash production comes from permanent fields of tree crops.

Despite the official view that hillside farmers damage the environment, many government officers from kecamatan to ministerial levels now recognize that traditional farming systems are often well adapted to the terrains on which they are practised. In the case of the Lauje, their farming system has permitted large numbers of people over several generations to gain a livelihood from mountainous land, which is an important accomplishment.

Real and imagined differences in cultural and agricultural styles between the Lauje in the various zones are highly significant in shaping the interactions between them, influencing the operation of local government, and affecting the plans formulated and activities undertaken in the name of development. Some local officials are convinced that the mountain people will only become "civilized," and absorb religious and other values promoted by the government, when coastal people go up to live among them and provide "leadership."

2.2 THE ROLE OF THE STATE

2.2.1 LOCAL GOVERNMENT

The direct influence of the state is strongest in the coastal zone. It is there that village heads and their officials reside. Visitors from the district and provincial offices occasionally stop in to talk to village officials, but spend most of their time at the kecamatan offices when on tour. No officials above the rank of village head ever walk into the hills, unless they have personal economic interests there. In one of the six villages studied, the village head himself has never visited the interior of his domain, even the closest middle hills, claiming he is not strong enough for the hike.

Even when physical strength should not be an issue, as among the university students posted to the thirteen villages of Kecamatan Tinombo the KKN program (which is intended to expose the students to village life while they also offer some assistance to villagers), the students spend very little of their time in the hills. Of the KKN participants in 1990, several noted that they had made at most one overnight visit to the hills during their three month period of residence in the village. Thus the services they were supposedly offering were concentrated exclusively on the coastal zone, while in several of the villages the majority of the population live in the hills.

The national framework for village government involves a combination of centralized committees, and a system of sub-village units. The village territory is divided into two or more dusun; the dusun are further divided into two or more groups, known as RK; the RK is comprised of two or more neighbourhood groups, RT, ideally with about ten households in each. Each of these units has a leader appointed by the village chief. This village government system is in place in the coastal and middle hill zones of the study area. In the inner hills, the dusun system is in place, but only those close to the border areas are organized into RK and RT. As noted in Part One, the inner hill dusuns of Bobalo and Lombok have large populations, although registration of households is incomplete.

The principal mode of interaction between the coastal-based village authorities and the hinterland is by means of the dusun and RK leaders. The village chief talks to them while they are down at the market or the mosque, or sends word for them to descend if he has information or requests to convey. Once back in the hills, the RK leaders may call the residents to a meeting, but often do not reach the households that are socially and physically remote from the leading hillside families. This problem is especially acute where hillside families are living outside the boundaries of the village, dusun or RK unit in which they are registered, a common occurrence.

The dusun and RK leaders, even when they are selected from the local leading families, lack power to enforce directives, and can only explain what is requested by the higher authorities and ask for cooperation. There is no evidence that the system works in reverse: hillside residents getting together at the dusun or RK level to package information and formulate proposals and requests to the village authorities.

Individuals who require official papers, such as marriage permits, convey their requests via the dusun leader or direct to the village chief. Few copies or records are maintained in the village office, which is often empty of paper, although some documentation is maintained by officials in their homes. The village head exercises discretion over the granting of requests, and may impose his own conditions. One village head hopes to meet the request of higher levels of government that more tree crops be planted on the hillsides by insisting that youths plant 50 trees before they may acquire a marriage permit. Some village chiefs with hinterland populations demand a tribute from the middle and inner hill farmers in the form of corn, rattan and other produce. The tribute is not collected in lieu of taxes and paid into the village tax fund, but is seen more as an indication of loyalty to the village chief and an informal continuation of tribute once paid to coastal rulers (such as the Olognian in Dusunan and the Rajahs in Tinombo) earlier in the century.

The lack of official records, the difficulty of obtaining information, the lack of open meetings, and the proportion of government business carried out in the home of the village head, open village officials to accusations of favouritism and corruption. Assistance given to the village, such as galvanized iron for house roofs, seedlings, and literacy packages is delivered to the village

head. Since no clear and open information exists about how much was received and how it was distributed, rumours fly and resentment grows, even if no improprieties have occurred.

The material rewards offered to village officials in the form of honoraria are set at low levels, and often fail to arrive. Some additional rewards promised, sueh as eash, a bieyele, a radio and elothing that were to be given to village officials in return for their work in the previous census, also failed to materialize. Dusun and RK leaders responsible for the hinterland districts were considering with some dismay the large investment in time and energy the 1990 eensus would eost them, hiking to distant hill settlements, with no clear indieation that their efforts would be rewarded, or their loss of income at least compensated. These factors clearly affect the motivation and performance of officials, although some are surprisingly active and diligent despite these constraints.

The official organs of village government, the Village Development Committees (LKMD, the LMD) and the Family Welfare Education Committee (PKK) are in place in all the villages. Their mode of functioning tends to be routine and reaetive, as they undertake programs such as lectures on official ideology (P4), with limited participation from the villagers, and none at all from those who live in the hills. Sports and social events are somewhat more popular, at least among coastal dwellers. The committees do not, at present, seem to be acting in the capacity of active partners in village development.

The experience of the KKN team in the kecamatan of Tinombo in 1990 provides an example of the gap between what is planned and what can readily be accomplished in village development. In many of the villages the KKN team found village government to be largely inactive, with the village office seldom open (in one case the office is being used as a goat pen). Much of the program the KKN was supposed to implement was rendered ineffective because of "lack of motivation" and the "mentality" of village officials and villagers, and possibly also the inappropriateness of some of the initiatives themselves. Despite the difficulties encountered, the KKN participants proceeded with their standardized list of activities, and distriet offieials pronounced, at the closing seminar, that the program was "positive and 90-99% complete." One month after the departure of the KKN, the demonstration plots they had established were overgrown and abandoned, village reading clubs were inactive, and the information boards the students had prepared were still empty of data.

Government services, such as agricultural extension, which are nominally available to all villagers, are concentrated in the coastal zone. Extension workers interviewed admitted that they had never set foot in the hills. This is due to their inadequate numbers in relation to the population supposedly served; their lack of training and inputs appropriate to hillside agriculture; and an attitude among district and village officials which favours keeping scarce resourees within their own reach.

The exclusive focus of the government apparatus on the coastal zone (and partieular elasses within it) is captured in the statement of a senior kecamatan offieial that "75 per cent of the people here are coconut farmers." This a gross distortion since the majority of people in the region are in fact, as we have seen, coconut workers with no trees, or hillside farmers: a population quite literally out of sight and out of mind.

Health facilities are provided on the coast. Hillside residents are welcome to make use of the facilities, but few efforts have been made to render them more accessible or extend the delivery of services to interior areas. Health officials interviewed were unable to estimate the pereentage

of the population in the area that is actually being served, since they opperate on a reactive basis, serving only those who come forward.

Educational facilities are somewhat more accessible. Lombok has three schools in the interior (Polumele, Taipaobal and Ogoalas). In addition, three self-help schools have been established in the last few years (two in Bobalo, one in Dusunan), and two adult literacy schools, one each in the middle and inner hills, began operation in Bobalo in 1991. These schools provide educational opportunities to hillside families for the first time, although the majority remain unserved. Schooling exposes families to the Indonesian language, without which they are disadvantaged in their dealings with the official realm. The few school teachers who have been willing to live in remote hillside locations are Lauje in origin, and play a very useful role in mediating cultural and other disjunctions between the coast and the interior. Staffing remains a problem in all the schools in the interior, as well as many on the coast.

2.2.2. Land Tenure

Security of land tenure is of critical importance to the thousands of households in the Tinombo hills. Traditional and current forms of tenure as they exist in each of the three agro-ecological zones were described in Part One. Here the relevant legal framework, as understood and implemented by local officials, is described. As the strength of local government in the area is increased, the implementation of previously existing and new regulations and other interventions could have significant impacts on local land use and tenure, and on the security of livelihoods.

Many local officials are familiar with traditional forms of land tenure operating in the hills. To recapitulate: the individual who first clears land and his descendents have perpetual use rights. These use rights can be transferred to others for a fee in cash or kind, or, in some circumstances, loaned out for temporary use. There are some areas of land which are seldom cultivated, such as grasslands or parts of the dry foothills, where knowledge of "first opening" has been lost, and where the strongest claims are based on recent use and/or current desire to use the land, which is generally not contested.

When officials wish to acquire hillside land for their private use, they follow established local practice, and, de facto, recognize traditional rights. The same is true for other lowlanders who have sought access to hill land for establishing tree gardens. Hillside farmers currently feel that their tenure over the land is secure, since it has not yet been threatened by outsiders. They fully expect to be able to return to their land after fallowing and to pass it on to their descendents in due course. Part of the security experienced by the inner hill people, is due to cultural difference: people from the middle hills and the coast are afraid of their magic and their poisoned blow pipes, and tread very carefully when in their territory.

A few hill farmers who have planted tree crops mentioned that they would like to have formal papers (Acte) such as those possessed by the owners of coconut trees on the coast, which permit them to buy and sell trees together with the land upon which they are planted. This desire was stated in terms of convenience rather than as a response to a threat of displacement. No one has yet applied for or obtained such papers.

The main types of land disputes that occur among residents have to do with planting trees on borrowed land without permission, division of inherited land among kin for tree planting, and selling land or trees belonging to a deceased ancestor without the agreement of other

descendents. These disputes relate to the process of reinterpreting the traditional tenure system in the light of the implications of tree crop farming, a new form of production being introduced into the hills. The characteristics of this transition will be explored more fully in a separate paper.

Government regulations, if implemented, could make hillside farmers using land under traditional forms of tenure vulnerable to displacement. Local officials do not consider the hill farmers to have secure legal rights to the land they cultivate, since it could be considered government property which they have cleared without permission. Their status in regard to officially recognized traditional rights (*hak adat*) is unclear. Establishing a claim through hak adat requires the land to have signs of cultivation (such as trees) planted thirty years prior to 1959, together with evidence of permanent settlement. Many hill farmers meet this requirement, but the situation has not yet been investigated in detail. Between 1960 and 1989, the kecamatan office was allowed to grant permission to clear up to two hectares of government land, which had to be documented by the village head. Since 1989 the Bupati's permission has been required to clear any area of government land larger than one hectare. The implementation of these regulations would be extremely difficult, particularly in the hills, and has scarcely been attempted. However since none of the hillside farmers have ever sought such permission they have, according to a senior local official, cleared government land illegally and so have "no permission, no papers, and no rights," particularly should the land be designated by the government for other uses, such as tree plantations.

Officials are more inclined to recognize de-facto rights if trees have been planted and/or live fences established, since this can then be classified as land "in use," although the legal basis for their right to use the land in this manner is unclear. Fallow land is deemed to be unused, and several officials stated that land that is unused for more than a period of six months reverts to the status of government property. In the study area, the existing system of cultivation requires fallow periods to restore soil fertility. The condition of continuous cultivation could only be met through tree cultivation which does not require fallows. Hillside farmers who stopped fallowing land used for food production would quickly degrade the land and/or starve.

The question of determining a reasonable cut-off point for the re-use of fallow land before it reverts to "unclaimed" status is complex and disputed. Lauje in the hills consider that even land fallowed for more than thirty years is still claimed by the person who first cleared it, since the labour required for clearing the original huge trees is so immense. Some village officials and coastal people seeking land in the hills state that if a plot of land contains any trees big enough to require cutting with an axe rather than a parang (about five years), it can be considered empty and unclaimed land. This issue will also be reviewed in more detail in a separate paper.

The land and property tax (PBB) introduced in 1988, is potentially a serious threat to the tenure security of hill farmers. Officials are stating that if people using hillside land have claims to it, they should declare it and pay taxes. If not, they have no rights at all. 1990 is the first year in which an attempt is being made to implement the PBB in the hills. Since the cultivation system which is practiced requires much of the land to be under fallow, the hectarage used by each family is relatively large, and the tax expense impossible to meet from the produce of the land. The tax rate is set at approximately Rp5,000 per hectare. The PBB tax system, designed with intensive wet rice or cash crop agriculture in mind, is inappropriate to the forms of traditional agriculture found in upland regions of Indonesia, and makes the cultivators vulnerable to displacement if they fail to obey the new rules. Some flexibility exists within the

tax law to apply different rates of taxation to different types and grades of land, which might provide an appropriate solution for the taxation of upland farmers with traditional rights.

In response to the danger posed by the PBB, some hill farmers have chosen to register a token amount of land, such as 0.2 hectares, but not the total to which they have traditional rights. Others plan to wait until some of their tree cash crops produce, using the profits to pay for registration and tax. Many know little about the new regulations and their implications, and have not yet confronted the insecurity to which state regulations potentially subject them. On the positive side, coastal dwellers and outsiders who may be tempted to stake out large areas of hillside land to establish tree crops may be discouraged from "land grabbing" by the requirement to pay taxes, particularly if they do not have the capital to develop the land immediately. In this sense, the PBB law may provide hill farmers with some protection.

Examples of large scale land grabbing have occured in many areas where new roads have made land more accessible. Two patterns are common: the original users of the land are displaced, and poor newcomers in search of new land are also exploited. In one location in Tomini powerful locals and outsiders staked out large areas of land made accessible by new infrastructure on the fringes of a transmigration site in the 1980s. They did not develop it themselves, but were able to exploit the labour of poor newcomers (including many from the Tinombo area). Whichever piece of land a new settler wished to develop, they were informed that it "already had an owner," and they would have to negotiate with the owner for the right to develop the land on a half-shares basis. In this way, the "owners" were able to have their land developed without using any capital or labour of their own.

2.2.3 Land Development Schemes

In the past few years, a number of schemes have been proposed by local officials for the development of hillside land. They are designed to meet a mix of economic, social and ecological goals. They mostly involve coastal people developing cash crop plantations in the interior, with the promise or hope of some government services for new settlements. These schemes bring both risk and opportunity to the current inhabitants of the hills, and to the coastal people who are being encouraged to move into their territory. The rationale, as described by local officials, and some of the modes of operation of two such schemes are described here.

Bobalo Interior and Hillside Development:

This is the most elaborate development scheme in progress in any of the six villages under study. It was developed by the Tomini Camat together with the village leader. It involves a road, a market, interior schools, interior and foothill tree plantations, and settlement areas for inner hill people.

The path of the proposed road is marked on the map. It passes along the shoulder of Alau on the border between Bobalo and Eeya, then behind the Silikohong Mountain, on to Siboalai/Ulat Perak, then to Tengke Ulu, Penando'ang and Sinimpis in the heart the inner hills, and back down to the foot of the hills at the Sibintanak market, where it joins the rough road that crosses the narrow coastal plain down to the main highway. A two kilometer stretch of road from the coast through the foothills to the middle hill area of Alau was built in 1989, under a public works department contract. The new road is very steep, partially eroded, and usable only by a powerful vehicle. A further two kilometres were scheduled for 1990, to take

the road to the inner hill border of Alau at Silikohong, but funding was unavailable. There are plans to have a further four kilometres built to Siboalai in 1991.

The rationale for the road, according to local officials, is to facilitate the provision of services (such as health, education, and "leadership") to the mountain people in their own area, as an alternative to resettlement. It is expected that the road will draw the inner hill people down from the interior, where they are in danger of encroaching on the protected forest at the center of the peninsula. Other enticements are planned in the form clove seedlings, and a designated garden area of one hundred hectares (on territory the inner hill people already claim as their own). There are also plans for a settlement area of twenty hectares at Silondong near Tengke Ulu, which was once cleared by the people living in the area upon some promises of assistance which did not materialize.

The goal of providing services to mountain people in their own area is appropriate, and in line with current thinking in the Department of Social Affairs (Depsos) in Jakarta, which recognizes resettlement to be ineffective (Stickings et al 1989:137). However, a potential conflict exists between this goal and another goal of local officials in relation to the inner hill land, which is to encourage coastal people to move into the hills to establish tree crop gardens. Officials believe that the coastal people moving into the area will provide important leadership and example to the inner hill population, whose religious, cultural and agricultural practices the authorities consider inadequate.

The problem arises when coastal people moving into the area with official encouragement displace the original inhabitants from their land, and force them to move higher into the hills where services are even more inaccessible, and pressures on the environment will inevitably increase. Local officials state that the coastal people will not displace the inner hill people or encroach on their land, but only occupy "unused, empty land." However the definition and categorization of "unused and empty land" is itself subject to dispute, as noted above, since what coastal people and officials may regard as unused, middle and inner hill farmers regard as undergoing a fallow period essential to the sustainability of the agricultural system. Once the movement of coastal people into the inner hills has begun it will be difficult for authorities to control in an orderly and equitable manner. As individuals in the inner hills transfer land rights to newcomers from the coast, others in their kin-based territorial group feel uncomfortable and insecure, and some are tempted also to sell up and move out. The inner hill people have always lived inland of, and preferably at some distance from, the middle hill and coastal populations, and some do not want these non-pork eating groups to move into their territory.

A development linked to the road is the establishment of a cocoa plantation at Siboalai, the size of which is stated by different local officials as one hundred, two hundred or five hundred hectares. This development will serve to draw people from below into, rather than away from, the inner hill areas. It was noted in the description of Siboalai that a one hundred hectare plot has already been designated, and it bears a sign post stating "official garden." It occupies land claimed by the inner hill people to be fallow garden land cleared by their ancestors, although the village head states that it was virgin forest land. So far, local officials have been the only ones to plant trees there. Others who know about the official garden scheme have been reluctant to register their names for a plot, usually because they are unable to make the requisite capital or labour commitment to garden development in an area so remote from the coastal area where they live. Still others know little or nothing about the proposed developments, and the opportunities they present.

At least twelve coastal households had already acquired land in the Siboalai area by June 1990, and, by December of the same year, another ten had notified the local RK leader of their intention to seek land in the vicinity. The newcomers are responding to strong directives from the village head, who urged them to move to the area and instructed the informal leader of Siboalai to "find empty land for them." The newcomers have negotiated individually with the informal leader or directly with local residents for access to secondary forest land outside the boundaries of the official scheme.

The village chief mentioned that many officials and entrepreneurs from outside the village have approached him asking for grants of land along the new road. So far, he has resisted some of these requests since, as a responsible local official, he believes village residents should come first. Should the proposed road be completed and even, to some extent, without a road, there is little doubt that pressure for the granting of interior land to powerful outsiders will be exerted at all levels of the system.

A further motivation for building the road, according to Stickings et al (1989:184), is to encourage the mountain people to bring their produce down to the market in Bobalo, rather than Lombok, which is on the other side of the kecamatan boundary, thereby capturing revenues and other benefits for Kecamatan Tomini.

In addition to the plans to develop gardens in the inner hills, there are plans to develop plantation areas in the degraded foothills in the hope of making that area at least as attractive for tree crop farming as the hinterlands. A one hundred hectare development scheme is proposed for the foothills at Pungso, only three hundred meters from the coastal road. The scheme aims to regreen degraded foothill land with candlenut and other productive trees. The land is to be divided into one hectare lots for one hundred households. Thirty households have traditionally farmed land in the designated area. They have been invited to join the scheme, which occupies their former corn garden land. They are, according to the village chief, only too pleased to welcome "progress" to their area, although they have little capacity to object since their land rights, as noted above, are unrecognized. Many households have already left the area because of the critical state of the land. Whether the remaining thirty families will retain enough land for food production while waiting five years for the trees to yield is an issue. For them, the proposed garden development displaces a previous source of livelihood whereas for the coastal dwellers who join the scheme it represents an opportunity for additional income.

The scheme is aimed primarily at coastal dwellers, but may fail to attract the poorest who depend on daily wages and cannot afford to invest labour in a long term venture (see the discussion of the Dongkas scheme, below).

In the attempt to alleviate such "problems of transition," officials propose a staggered work schedule, and assistance with improved seed and fertilizer for food and annual cash crops that can be planted between the rows of trees, using agroforestry techniques. As yet, no assistance has been provided for the latter initiatives. A team of district officials from a number of departments that visited the village to announce its assistance package of 0.5kg of candlenut seed plus a bag of fertilizer per household caused serious disappointment among the village leaders. The villagers feel that more substantial and integrated assistance is required to make a success of the venture, particularly if it is to serve the interests of the poorest who are, as the district officials stated repeatedly, its intended beneficiaries.

Dongkas: Interior Garden for Coastal Dwellers

This scheme aims to open an area of eighty hectares at a distance of four kilometers inland from the coast for cocoa farming. The area is reported to be heavily forested, and not farmed or settled at present. There are no middle or inner hill people in the vicinity, so that problems of displacement do not arise. The important question concerns the potential for the poorest to benefit from the scheme. There is some variation in the views of village officials about the purpose of the scheme and about how motivation and participation can best be achieved.

According to one official, eighty households resident in the coastal zone are to be required to move to the garden area, where a new settlement, including housing and a school, will be built. The reason for insisting that coastal people move inland, this official asserts, is that they are very poor and have no assets, living on borrowed land under coconut trees, and also lack motivation to improve their position. During the four years while they are waiting for the cocoa trees to yield, they will survive from food crops planted between the young trees.

According to another official, the villagers are being invited to join the scheme by registering in one of five groups, each to comprise 10-15 members. The group leaders have been charged with recruiting members among their friends, relatives and neighbours, but no one will be forced to join. The group leaders will be responsible for organizing work parties among members to clear land. The plan for housing and a school was proposed to the Department of Social Affairs in 1988, but has not yet been approved. Kecamatan officials are said to have promised the use of a chain saw and the provision of seedlings.

The reality in June 1990 was that the chain saw had not materialized, and the land had not been cleared, but some seedlings were ready and the groups formed. Though not all the poor coastal households had registered, a good number of those interviewed had done so. In all cases, however, they planned to balance their labour investment in the scheme with their existing work on the coast (in the coconut sector, fishing, labouring), accomplishing this in part through a gender based division of labour in which women would be responsible for the new gardens, once cleared.

The expected predominance of women's labour in the new plantations is inconsistent with the village leaders' policy of excluding women household heads from registration in the scheme on the basis that they "are not capable" of doing the work. In fact it is bachelors, who are permitted to register, that are more unlikely to be able to keep up with the work. An important attraction of the scheme for women is the immediate potential for increased income from growing vegetables for sale on a year-round basis, since the land is more moist than the foothill land upon which their seasonal food crops are grown. This advantage they will have to counterbalance with the loss of income from the production of coconut oil, which makes a significant contribution to the food budget.

Besides the eighty hectare village garden scheme, a further twenty-five hectares have been set aside for outsiders. Kecamatan officials and other wealthy people from Tinombo town have applied for a share in the land. The advantage of this arrangement, according to one village official, is that the wealthy people will hire the poor scheme participants to prepare and maintain their gardens, providing a source of much needed income at the site itself. The official believes that it will be possible to require the outsiders to use local labour, and to pay for the work contracts at a fixed and favourable rate of Rp25,000 per hectare for initial clearing and

subsequent weeding. The perception among officials at present is that land in the interior is abundant, and so need not be reserved exclusively for villagers.

2.3 TRADE AND EXCHANGE

The people of the hills and the coastal region are linked by means of trade and other forms of market and non-market exchange.

2.3.1 NON-MARKET EXCHANGE

As noted in Part One, an important form of exchange between the hills and the coast in the nineteenth and early twentieth century centered on the ritual and material role of the Olognian. The Olognian had the right to the first taste of any rice or corn harvested in the hills, and received a tribute in the form of subsistence food through this mechanism. In return, her ritual performances assured the success of food production and she was expected to provide new seed to hillside farmers whose crops had failed in order to permit them to re-establish their farming ventures. At the point where the Olognian became negligent of her duties, reportedly in the 1950s, hillside farmers also ceased to support the institution. This period coincided with a ban by the newly independent government on the institution of tribute, which was enforced by the Raja in Tinombo (Nourse 1989:90.84). In earlier periods, according to a descendent, the Mandar Rajas also received tribute from loyal subjects. In the case of both the Olognian and the Mandar rulers, their domain extended only as far as the middle hills since many of the people in the more remote inner hills refused to be ruled by lowland authorities.

A form of non-market exchange is still prevalent throughout the middle and inner hill zones, and also links these zones with the coast. The Lauje term for this form of exchange is *modagang*, which means seeking food. It can take three forms: asking for food as a gift, exchanging other goods for food (barter), or exchanging money for food (purchase). When a person approaches another to ask for food, the outcome of the transaction is not clear at the outset, but evolves through a process of negotiation in which a key factor is the state of the social relationship between the parties involved. In general, the closer the social relationship (through kinship, neighbourhood ties, or mutual familiarity and friendship), the more likely outcome is that food will be given for free; barter occupies an intermediate position, where the economic nature of the transaction is somewhat disguised; cash sales are clearly calculated, and most appropriate among strangers.

There is a sense in which the Lauje recognize themselves to be "all one people," so that a request for food by another Lauje, even a stranger, should not be refused. However, the quantity of food given to the stranger may be small, just enough for one day, whereas more would be given if the stranger offered something (such as coconuts or salt) in return. Since kinship networks are broad, spreading out among the kin of both a person's mother and their father, distant kin may not see one another for long periods. They may be unsure, as they approach each other to ask for food, whether their proferred trade goods will be accepted or refused, or the other party will haggle over quantities or, by contrast, will insist on making a free gift. The form of the "negotiation" may be entirely silent: if a distant kinsperson comes to visit, the likelihood is that he or she is looking for food, so, after a period of social chat and perhaps a meal if the person has come far, the host will simply go to the household corn rack or root crop garden and return with a bundle, saying "here, this is for you."

Patterns of "seeking food" follow well defined seasonal and ecological parameters. Among close kin and neighbours, the practice serves to fill in the spaces between corn harvests. A person who has just harvested gives away a considerable proportion of the crop, knowing that others will give in a similar manner when their crop comes in.

Between the zones, exchanges follow seasonal patterns. Coastal people who farm in the foothills once a year quickly eat up their corn harvest, and seek food in the middle hills during the coastal dry season, taking with them fallen coconuts or salt or dried fish purchased with their meagre wages. Middle hill people most commonly go inland to seek food from the inner hills when they experience a prolonged drought and are unable to grow the customary two to three corn crops per year. In this case, they go seeking food in large groups, since everyone is hungry. Middle hill farmers also go seeking food from inner hill people when they have suffered from an individual disaster such as a crop ravaged by wild pigs, or a shallot crop that was diseased. The inner hill people usually give them taro and cassava, unless they happen to have had a good crop of rice or corn. In the latter case, the middle hill farmers hearing about an abundant harvest may take major trade goods such as sarongs or parangs with them, and make several trips or go with many family members so that they can carry home enough corn or rice to see them through several weeks.

Inner hill people seldom ask for food from middle hill people, since they generally have enough taro as a staple, but they sometimes ask for rice or corn seed, or a few shallot or garlic sets to plant if they are trying to establish a new garden. Sometimes they bring a bundle of rattan in exchange.

As noted in Part One, the term bela is related to a verb, membembelan, which means to get to know someone and to help each other out in various ways, including providing food and hospitality. It is used to describe the relationship between certain middle hill or coastal people and people in the inner hills. It carries positive connotations of mutual help and reciprocity, unlike the term bela which is now associated with derision. When people from the coast or middle hills have a need to go into the inner hills to seek food or for other reasons, they go first to the houses of people they know, although they also visit others with whom they are less familiar, especially if they notice that one garden has little ripe taro, while another has plenty.

2.3.2 MARKET EXCHANGE

Market exchange between the coast and the hinterland is usually conducted with the participation of specialist traders. This includes the sale of hill produce, such as shallots, garlic, groundnuts, cocoa, rattan, tobacco and vegetables. It also includes the sale of coastal products to hill people, either at the coastal market places or at the smaller hinterland markets (such as those at Simoie, Taipaobal and Ogoalas in Lombok) or from home-based stores (such as that of the teacher at Silikohong, Bobalo).

Large scale trade:

According to local traders, shallots and garlic have been produced in the Tinombo hinterland since the 1940s, at first for the local market and, by the 1950s, for sale outside the district. The inner hill people have also been producing these goods since the 1970s, particularly garlic which grows well in moist and fertile land recently cleared from forest.

After the harvest, the produce is dried and tied into bundles. The farmer then goes down to the coast to check out the price, and makes an agreement to sell to a particular middle man. This activity is often undertaken by husband and wife together, and in some cases by women or men alone. Some farmers have stable relations with a particular middleman, while others prefer flexibility in seeking out the best price. The prices at any point in time actually vary little between one middleman and another, as they in turn are often selling to the same second party (also a middle man) based in Tinombo or Bobalo. From there, the produce is sold through fixed links to a third party, a larger scale trader in Gorontalo, Parigi or Palu.

While there are occasions when all parties buy and sell freely on an open market, credit arrangements are also common at each point in the chain. The trader in Gorontalo provides a sum of capital to the second party in Tinombo, instructing him to buy shallots or garlic at so much per kilo. The latter in turn advances funds and gives instructions to the middlemen who have weighing scales and storage areas in their homes at the foot of the Lombok mountains. In the case of Bobalo, the traders use the weighing facilities of the Sibintanak market, which also lies on the main path down from the hills, and from where they collect the produce by truck. These traders, in turn, may advance loans to farmers. The normal profit margin for the middleman buying direct from the farmer and selling to a second party is Rp100 per kilo, whether or not he is using his own capital.

There are many middlemen who purchase directly from the farmers, and there is considerable competition among them to capture larger volumes of the trade. For this reason, traders at pains to build a stable clientele seldom engage in price cutting, and the terms of credit advanced to farmers are not too severe. Once a farmer sees that his shallot or garlic crop is going to succeed, perhaps a few weeks before the harvest, he may go to the trader to ask for a loan of cash, and make an agreement to sell this particular crop to this trader. The price is fixed according to the market price on the day the produce is carried down to the trader, at which point the cash advance is deducted without interest. The farmer remains free to sell subsequent harvests elsewhere. Debts incurred earlier in the production cycle, just as the crop is planted, are more likely to incur interest in the form of a reduced price per kilo, but such loans are apparently not common. Traders interviewed each claimed to have a stable clientele of about one hundred farmers. Some do not keep written records of loans advanced, trusting in their memory, and in the honesty of the farmers who come forward when ready to pay up. All sales of shallots by the farmer are subject to a levy of Rp25 per kilo collected by the first middleman and payable to the Cooperative (K.U.D.).

The level of indebtedness is reported to be low, common pre-harvest loans being in the range of Rp5-30,000. Inner hill people are particularly wary of incurring debts, and have been known to ask only for an advance of Rp500 to buy salt while down at the market. This reflects also the extent to which they are self-sufficient in food production, in contrast to the middle hill farmers who depend on shallots to make up for consistent shortfalls in their food harvests, caused both by poor land and the more marked seasonality of production. The disease that has devasted shallot production in the past three years has reportedly led to an increase in the number of farmers seeking loans for the purchase of staple foods urgently needed to feed their families.

Since the farmers have no title to hill land, it cannot be mortgaged and it is not possible for traders to dispossess farmers of their means of production. Traders occasionally loan planting sets of shallots or garlic to farmers who have had a crop failure in order to help them recommence production. This has become especially critical since the crop became diseased and the sets are often lost in a failed harvest. Some farmers have borrowed sets repeatedly, without

producing a succesful harvest. Common forms of agreement are to split the proceeds of the crop between the owner of the sets and the farmer, or for the farmer to replace the sets and undertake to sell that harvest only through that middleman, or for the farmer to replace double the quantity of sets after the harvest. Similar arrangements are made among hillside farmers themselves, as traders have no monopoly on the provision of shallot or garlic sets to plant. In either case, should the crop fail due to bad weather or pests, the party providing the sets applies no sanctions, but hopes for a return of their share at some future date.

In the past few years, some traders report a breakdown in established patterns of trade and a defection of their clientele. This results from an increase in the number of traders, from only four at Lombok in the 1960s and '70s, to seven in 1990, plus many others who do not have permanent premises, all vying for a share in a contracting market. The younger more aggressive traders have been cutting into the business of the established traders by reducing profit margins in order to offer higher prices, or by walking up into the hills to make sale arrangements, rather than waiting for the farmers to walk down. In this way, farmers with debts to traders at the foot of the hill can avoid walking past them, and their produce can be carried down "anonymously" from the hills by the porters of the trader to whom it has been sold. One established trader reportedly lost millions of Rupiah in outstanding loans this way. Alternatively, the crop can be sold over the kecamatan border, since Lombok and Bobalo are equally accessible to many interior farmers.

Farmers who sell their produce to traders in the mountains are more vulnerable to unfair prices, since they often lack current information on the price they can expect, and prices may shift from week to week. Some itinerant traders encountered on the footpath down from Ogoalas market were delighted at their purchase of garlic for Rp3,500 per kg, when the selling price on the coast had just risen to Rp4,500. This generally only occurs with small sales: farmers about to sell the bulk of their crop check out the prices carefully. A trader on the coast remarked that the inner hill people are now less easy to cheat, since they have learned from the mission how to calculate the fair price, some of them actually owning pocket calculators. The inner hill people have also cut into the trade in the opposite direction: Church based groups from Lado-lado and Ogoalas have pooled resources to provide capital for expeditions to purchase dried fish from a coastal village in Tomini some distance away. Each member of the group carries back up to 50kg, which they then sell to other inner hill dwellers at the Ogoalas market at a price much lower than that charged by coastal traders.

Sources of price variation for the major middle and inner hill crops, shallots and garlic, are both local and external. According to an experienced trader, there has been a gradual decline in the quantity of produce from the Lombok interior. Peak production was achieved in 1978, with 5-8 tons sold per week. Declining soil fertility caused a gradual decline to an average of 3 tons per week in 1987, and disease subsequently reduced production further to about 1 ton per week in 1990 (accurate production figures have been maintained only since the beginning of 1990 when the traders were instructed to deduct the K.U.D. levy from the price paid to farmers). The lucky farmer whose crop is not diseased may attain a high price. The price of shallots can vary between Rp500 and Rp1,100 per kilo. There is little seasonality in production levels or prices, as the crop is planted continuously in the hills. A source of price variation is quality: when compared to the producers in Palasa and Ulatan, the Lombok farmers are apparently not careful in their work, tying produce before it is fully dried, and mixing second quality bulbs with the better ones. According to the trader, the quality difference is shown in the shrinkage, Palasa shallots reducing by 3%, Lombok shallots by 7%.

An external source of price variation is the importation of shallots from Java: when a ship loaded with produce sails from the port of Surabaya, Java and docks at Gorontalo, it unloads thousands of tons, and the local prices tumble. This happens on a sporadic basis, in some years not all, and not with any seasonal regularity for which the producers and traders can plan.

The variety of shallot that has been most resistant to disease is the very small, and is favoured for use as a crisp fried topping. This is the variety first produced in the hills that was losing favour due to its small size, lower price, and lower storability relative to other varieties of shallot. It is now enjoying renewed interest among both farmers and consumers, and is sold as far away as Manado. Improved marketing of this product, and the temporary abandonment of the other main variety of shallot, could be the best solution to the disease problem currently devasting the hillside economy.

The produce from the tree crops now being planted in the hills in such numbers is currently being marketed in the identical manner to shallots and garlic, utilising in many cases the same middle men at the first and second levels. According to a Lombok middleman, about 20 kilos of cocoa per week is marketed through Lombok, while up to 500 kilos per week is already being marketed through Bobalo. A Palu based buyer for cocoa has a representative in Sidoan to whom the second middlemen in Tinombo sell, and there is a Chinese buyer based in Sipayo. The world cocoa price is so volatile that the middlemen are wary in dealing with this crop, and credit relations matching those for the shallot and garlic trade are not yet established at any point in the chain. Cloves are supposed to be sold only to the official cooperative, the K.U.D. Some producers who are members sell direct to the K.U.D., while others who are not members or who wish to sell quantities less than the minimum 50kg, sell through middlemen for a lower price. Candlenuts are sold through the Lombok traders at the rate of 500-1,000 kilos per week, at Rp250 per kilo.

The long term nature of investment in tree crops, and the changed tenurial status of the land upon which they are planted, potentially open up hillside farmers to new forms of vulnerability through harvest, tree or land mortgaging. Harvest mortgaging is the most common form of credit in the coconut sector, the creditor acquiring the right to all the produce of the tree for a fixed period of time. Mortgaging often leads to the forced sale of trees to the creditor as debts become too large to be repaid by other means. These problems could be alleviated through the improvement of cooperative credit facilities (now in place for the coconut sector through the K.U.D.). However, the most effective protection for hillside farmers would be the maintenance and improvment of the production of food crops, which guarantee the farmers a degree of autonomy from the market and its representatives.

Extractive industries, especially the rattan trade, also link the coastal and hinterland economies, and link the region to national and international markets. Extraction was at its peak in the 1986-88 period. According to one of his agents, the largest Chinese rattan merchant was putting up to Rp5 million per week into the Tinombo area economy in 1988 in wages for rattan collectors, processing workers, haulers, loaders, truckers and in payment for firewood. The volume of extraction has declined drastically, due mostly to market factors introduced by government regulation: since 1989, only processed rattan goods can be exported from Indonesia. Since the rattan manufacturing industry in Java cannot process all the raw rattan potentially available, demand for raw rattan has declined. The price, however, has increased from Rp90,000 per ton in 1988 to Rp200,000 in 1990 for grade 1B unprocessed rattan. This suggests that supply may also be becoming limited, since the more easily accessible stands of rattan have long since disappeared, and the labour required to extract rattan by hand from the interior is strenuous

in the extreme. This has not led to a higher price being paid to labourers, but to a decline in supply as men engage in this activity only when their food and cash needs are immediate, and no other source of income is available. As noted earlier, offering advances of food and cash valued at around Rp75,000 is one mechanism used by rattan traders to acquire an indebted workforce without improving the net returns to labour.

The extraction of rattan poles is on an entirely different scale from that of rattan strips, a traditional source of cash for the inner hill people. Fifty strips make a bundle, that sells for Rp550-600. These are bulked by the middleman into loads of 200 bundles, and sold to outside purchasers. Rattan strips valued at Rp50-100,000, pass through the hands of the Lombok middlemen each week, in addition to the smaller quantities purchased by women traders for sale in the local markets (see below).

Small Scale Trade:

Coastal women dominate small scale marketing. They are well represented among the traders who walk up into the mountains to seek produce, carrying up provisions such as dried fish to sell in return. They are predominant among those who wait on the path at the foot of the hills for farmers carrying produce down, but, with the exception of the widow of a major trader in Lombok, they are not involved in large volume, high capital trade. Women trade in small quantities of shallots or garlic that are being sold by mountain women in advance of, or later than, the main harvest; groundnuts, largely grown by women; vegetables, grown exclusively by women; and cinnamon and rattan strips, sold in small quantities by the inner hill people. The women traders do not sell to second parties but direct to consumers at the markets along the coast, focusing on those within a twenty kilometre radius of their own home village.

The weekly market schedule pursued by a group of five women traders from Silabia (see Part two) involves buying and selling goods at a number of locations along the coast. They frequently walk up to ten kilometres to save on transportation costs. They stay overnight at the houses of relatives.

Monday	buy goods at the foot of the Lombok hills
	sell some in the Tinombo market
	travel with goods to Baina'a, overnight there
Tuesday	sell goods from Lombok at Baina'a market
	buy goods from Baina'a mountains
	travel to Sidoan
Wednesday	sell goods in Sidoan market
	return to Tinombo
Thursday	buy goods at foot of Lombok hills
	sell goods in Tinombo market or store
Friday	travel to Bobalo (walking), stay overnight
Saturday	buy goods at foot of Bobalo mountains (Sibintanak)
Sunday	buy goods at foot of Lombok hills
	sell goods at Tinombo market

Each woman trades with her own capital, usually in the Rp5-20,000 range. Although they travel together, the women do not pool capital or trade cooperatively to save time or transportation expenses. They do not have fixed trading relations with particular mountain women. Expansion of their enterprises is limited by three factors: their low level of capital, which tends not to

expand, since there are transportaion costs and profits are spent on the purchase of food for the family rather than being accumulated; the limited amount of produce that mountain women bring down for sale on any particular day; and the number of traders competing for a fixed volume of business. These limitations are interrelated: competition among traders keeps profits slim and capital accumulation low; increased capital in the hands of some women (for example,

through a credit program) would only squeeze other women out of business, unless the volume of produce coming down from the mountains also increased.

Some of the women borrowed trading capital from a special unit (the KCK) of the K.U.D. from 1985 to 1989, but have now stopped borrowing, because the officials of the K.U.D. were unwilling to increase the size of their loans to Rp10,000, then Rp15,000 and so on, despite their sound rates of repayment and growing savings.

The women traders are just as interested in planting their own tree crops as a source of income as they are in increasing their trading operations, which they consider to involve hard work for low returns. It should also be noted that the very poorest women are not engaged in trade, as they lack even Rp5,000 to use as capital, and would always be tempted to use capital for immediate food needs. Their situation is well understood by the elite women of the village who run the PKK rotating credit programs, and who never lend capital to the poorest for fear of non-repayment.

In the coastal market places, women dominate in the marketing of vegetables, and participate to some extent in the marketing of rice, dried fish and other dry provisions, but are seldom involved in trade in higher priced commodities such as hardware and clothing. Generally speaking, the smaller the scale, the riskier the venture (due to perishability), and the lower the capital requirement and the margin of profit, the more likely women are to be involved.

Part Three

Recommendations for Consideration

3 RECOMMENDATIONS FOR CONSIDERATION

These recommendations for consideration are presented in summary form. They relate primarily to the research area itself, and were prepared at the request of officials of the Provincial Bappeda. The rationale for them is found in the detailed analysis provided in the text.

3.1 POLICY CONSIDERATIONS: EFFECTS OF NATIONAL LAWS AND POLICIES AT THE LOCAL LEVEL

Several national laws or policies have serious implications for the relations between people and environment in the research area: those related to land tenure, especially in upland regions long inhabited by indigenous people; tax laws, particularly the new land and property tax; and the promotion of particular cash crops for world markets as a form of "development." Issues for consideration are the following:

3.1.1 Indigenous people

In the context of debates around sustainable development, it has been recognized that some indigenous people have valuable knowledge about the forest resources, and obtain their livelihoods in ways that do minimal damage to the environment. The Lauje in the inner hills of the Tinombo area appear to be one such example. The nature of their legal rights to the land they use is unclear, and they are in danger of being displaced from their traditional area, with the consequent loss of both their livelihoods and the specialized resource and environmental knowledge they possess. Some reassessment of policies towards such people may be appropriate.

3.1.2 Tax laws

Laws such as the new land and property tax, may have unintended negative consequences when applied in upland regions for which they are not well adapted. The law does not fit well with the situation of traditional upland farmers, part of whose land is under forest fallow, which is essential to the sustainability of their agricultural system. They are not able to pay taxes on the total area of land that they use over a multiple-year cycle. Their fallow land tends to be classified by village authorities as "unused." The tax law is not intended to be a means of displacing people from their land, but it may unintentionally have that effect unless it is adapted to diverse agro-ecological contexts.

3.1.3 Tree crops

Tree crops are being promoted for the development of upland regions. In the long run, trees can play an important role in stabilizing steep slopes. However they need to be introduced with due consideration for the livelihoods of those currently using the land. Prices of tree crops are notably volatile on world markets. The yields may not be able to replace the value of the food previously grown on the land. Desire for quick profits from trees attracts outsiders to take over land previously used for subsistence. Instead of improved conservation, the end result can be further incursion on forest lands, as the poor seek new sites to produce food, and outsiders seek to expand their tree holdings. This is the scenario that is unfolding in the area under study. Remedy at the policy level requires the recognition that the intensification of food crop production in the uplands is just as critical to both environment and livelihood as the planting

of trees for cash. The diversity and flexibility which characterise traditional small scale farming systems need to be retained in proposed new systems. Agro-forestry programs that integrate food, trees and short term cash crops are needed with some urgency. They cannot wait until the trees are planted, covering the land, and attention belatedly turns to the immediate food and cash needs of farmers.

3.2 PROGRAMMING CONSIDERATIONS: DEVELOPMENT APPROACHES APPROPRIATE TO LOCAL DIVERSITY

The study presented here highlights the diversity of agro-ecosystems and modes of livelihood within a small geographical area. This diversity needs to be taken into account in the design of program interventions, especially if these interventions are intended to benefit the poor. Though there are poor people in each of the three zones described in this study, the nature and causes of their poverty, and the ways to overcome it, are not the same. The following approach is recommended for consideration for each of the zones in the Tinombo area:

3.2.1 Coastal zone

The majority of those living on the coast are dependent on daily incomes, often from marginal and insecure sources. Development of the land in the dry foothills and bald grasslands with tree crops should be considered. This could increase incomes, while not removing people from their current sources of livelihood. Trees should be able to withstand dry conditions, and have sound market prospects. Ideally, where rainfall permits, some food crops such as bananas, and seasonal crops such as beans and corn should be integrated with the trees. The current usage of the foothill land in each vicinity should be verified: where it is seldom used it tends not to be strongly claimed, and it could be redistributed to those with no coastal land and coconut trees. Where it is already used regularly by people living in the area, the rights of the current users should be protected, and assistance in appropriate forms of agricultural improvement offered to them. Where a few families have traditional rights to large areas of foothills land, they may be prepared to transfer rights to those who have, for many generations, borrowed the land for seasonal farming. In return, they could be offered fencing, seed and other assistance enabling them to develop land that would otherwise remain idle, so that they benefit at the same time as the poor gain a foothold. Income support is necessary for those working on plantation development, since the poorest cannot afford to forgo a day's pay. Women's labour will be critical to the development of the foothills land, and their rights to the newly developed resources should be fully recognized and protected (see below).

3.2.2 Middle hills

Agriculture in this zone needs to be intensified to respond to population growth and progressive land degradation under the existing farming system. An integrated program including food, annual cash crops, and long term tree crops is recommended. The current trend is for trees to displace other land uses, leaving farmers vulnerable to volatile world market prices and displacement through distress mortgaging and sale of land and trees. Only food production and annual cash crops which can be adapted flexibly to land and market conditions provide farmers with autonomy and security.

Arrangements need to be made to ensure that land-poor households secure enough land to develop a stable farming pattern. Minimum land size and quality per household should be determined. Hillside communities could be encouraged to make land distribution arrangements

among themselves (verified by outsiders) as a precondition to the whole group receiving farming inputs (seedlings, fence posts etc) and extension advice.

Immediate problems of disease in the major cash crops (shallots and tobacco) and destruction of crops by wild pigs need to be addressed. Vigorous but sensitive extension efforts are needed to assist farmers in overcoming technical and other difficulties in the period of transition from extensive to intensive farming systems. Farmers recognize the need to innovate, and will be very receptive to appropriate extension programs.

In most cases, agroforestry techniques and approaches will need to be introduced on a step-wise basis, one innovation at a time, and broadly spread so that everyone participates, none being left behind. The result will not be neat rows of trees across whole hillsides, since the existing pattern of land use is based on small parcels of about 0.5 hectares, which cannot easily be consolidated and there is no unclaimed land. Instead, farmers should learn techniques to enhance the productivity of their existing plots.

3.2.3 Inner Hills

Those people in the inner hills who have lived for centuries in remote locations and who have sufficient land resources to pursue a sustainable swidden cycle do little damage to the environment, and their land and livelihoods should not be disturbed. In time, if they observe positive developments, such as improved livelihoods, in the middle hills below them, they may themselves choose to move closer to markets and adopt more intensive patterns of agriculture. Change and innovation should occur at a pace that they choose and control.

These conditions of sufficient land, stable population, and sustainable farming systems are met in some areas of the inner hills, but not all. Many inner hill people are already encountering problems of increased population pressure on a limited land base, and have been forced to reduce the fallow period on their lands. The former method of relieving population pressure -- groups moving off to pioneer on the forest edge -- no longer exists as an option for the majority of them. There is little cultivateable forest land left, and many desire to be closer to, rather than more remote from, the coastal markets, in order to meet new consumption goals. Where such conditions exist, and in consultation with the groups concerned, programs of agricultural intensification using agroforestry approaches should be introduced. As in the middle hills, a balance of food and cash crops, both annuals and perennials is preferred, to reduce dependence on markets and merchants.

New roads pose real dangers of displacement for those living in the inner hills, and should be considered very carefully, preferably being postponed until secure land tenure has been established for those who have lived for generations in the area. Agricultural intensification involving both food and trees is especially important along the border of the inner hill zone, where it could improve the livelihoods of those living there, and help secure their land claims against incursions by outsiders. Indeed the original inhabitants in these border zones have already recognized the importance of trees in this regard, and are planting trees on secondary forest land quite specifically so that outsiders will not claim it to be empty land and take it from them.

Any plans for plantation development in the inner hills should be subject to thorough social and evironmental impact studies, which establish whether the land is really suitable for development; whether it is already claimed and used by those living in the area; and whether the inner hill

people themselves should have priority over outsiders in its development, in order to improve their livelihoods and reduce pressure on their land resources.

3.3 PROJECT DELIVERY CONSIDERATIONS: REACHING THE INTENDED BENEFICIARIES

3.3.1 HOUSEHOLDS: WOMEN, MEN AND CHILDREN

According to traditional Lauje practice, women have the same rights as men in relation to the ownership and management of property, and they have the right to use their labour to earn personal income. This is true whether they are unmarried, married, widowed or divorced. It is therefore recommended that women's economic interests be considered separately from those of households. Any productive inputs, such as fenceposts or seedlings, should be given to all women and men over a certain age (say 14) as individuals, rather than to households. Parties (such as married couples, siblings, neighbours, parents and children) who choose to pool their resources may of course do so. Others who choose to invest separately in the development of their own land may also do so. With this approach, women who are widows and divorcees living within other households will have the opportunity to strenghthen their productive base, rather than being passed over because they do not head households of their own. Unmarried and married women will retain their traditional right to a degree of economic independence from their household unit, benefitting equally from the new forms of production introduced through development programs. This approach is consistent with Lauje values, and preserves the equality in access to resources that existed between women and men in the traditional system.

Some productive ventures such as chicken raising or vegetable gardens may be designed specifically for women, but women should also participate equally in the main activities and benefits related to agricultural intensification, such as land fencing, tree planting and so on. They should not be restricted to "supplementary" activities. Particular care should be taken to ensure that land development schemes, changes in land tenure status and property registration and taxation recognize women as owners or co-owners of resources, and do not discriminate against single, widowed or divorced women.

The situation of young people can be addressed in a similar manner. Children as young as ten are encouraged by their parents to seek incomes independently. Some parents give their children groundnut seeds to plant, or small trading capital, in the hope that they will earn enough to pay their school expenses. Project inputs could be directed specifically towards children, providing them with opportunties to generate income and keep themselves in school. For young adults, both men and women, assistance in establishing an economic base through farming or other activities increases the likelihood that they will stay in the area rather than drifting to town, and would help to reduce the difficulties experienced by young couples and their infant children, who are among the poorest people encountered in the study.

3.3.2 GROUPS: VOLUNTARY OR INCLUSIVE

There are two possible approaches to forming groups to engage in project activities, such as training sessions, land fencing and other aspects of agricultural improvement. One is to invite interested parties to register. This runs the risk that only the better educated, more motivated, and well connected actually come forward to join. This is the experience of the schemes described in the Tinombo area. Groups formed to receive project inputs have been composed mainly of members of the local elite, or those well connected to them. Many do not live in the

hills but on the coast, and are using project inputs, such as tree seedlings, as a mechanism to establish a stake in hillside land, possibly at the expense of those already claiming and using the land. In some cases, they are not doing any farming work themselves, but hiring others to do the work. They do not form a coherent territorial or kinship unit that can work together as a group in any meaningful sense, the "group" being no more than a list of names.

The other approach to group formation is to use the existing RK system as an inclusive net which does not leave anyone out, even the poorest, the widows, and the socially most isolated. Differences in wealth and status exist within RK boundaries, but are less marked than those at village level. Members of an RK all know each other, most are related by kinship ties, and they have similar sources of livelihood since they live within the same agro-ecological zone. The question remains whether the poor and marginal would really be integrated in practice, and whether RK membership can become a focus for active participatation in development efforts. This approach should be considered for adoption on a trial basis, using the RK system as the principal focus for popular participation in project activities. This participation includes designing initiatives, solving problems (such as land distribution) and requesting inputs and services. The first steps should be a complete registration of RK members, verified using household information and lists of names from the 1990 census, plus any necessary supplementary information, to ensure that no one is left out. This should be followed by training for Dusun and RK chiefs and women leaders.

The more remote inner hill communities are not organized in RK units, but a similar approach can be used to encourage the strenghthening of their community organization and their capacity to participate in development programs. The first step, again, is a comprehensive registration. Using maps, the names of all the inner hill settlements should be listed. Women and men representatives of each of these kin-based territorial groups should be called down to provide information on the numbers, names, characteristics and needs of their group. In this manner, each group will be permitted to participate directly and speak for itself, rather than being represented by one leader claiming to represent the entire inner hill area, or by middle hill or coastal Lauje with little knowledge of conditions in the inner hills. The group representatives, after receiving some training, could work with their groups to select the package of inputs that best meets their needs and priorities.

3.3.3 AUTHORITIES AND ELITES: OPEN INFORMATION AND INCENTIVES

A serious problem in project delivery is lack of popular trust in the official village leadership, who tend to be drawn from the elite, and who are seen as representing elite interests. One way to overcome lack of trust and to make leaders accountable is to encourage a free flow of information and open documentation through such mechanisms as public meetings and noticeboards. If villagers know what is planned, what inputs arrive and how they are actually distributed, they will be able to monitor project delivery, raise the alarm if necessary, and build trust and support for responsible leaders who do their jobs well. This open approach in the village center, combined with the strengthening of community organization at the RK level, will encourage a higher level of motivation and participation. Leaders will come to see that an open atmosphere and closer monitoring of their activities by both villagers and officials is to their advantage, as it will enable them to answer accusations of dishonesty which may be undeserved. They may gain satisfaction from the praise and respect that reward their efforts. Consideration should be given to the recommendation that the kecamatan and village officials be encouraged to adopt an open approach to project design and also to project delivery, conveying important information through open meetings which include RK level representatives. In this way it may

be possible to avoid some of the biases and shortcomings of the village committees, which are comprised of members of the coastal elite, and enhance their capacity to address the interests of the village as a whole.

CONCLUSION

This paper has described the patterns of livelihood in a remote upland region. Using the concept of the agro-ecosystem, it has traced the evolving relationship between the natural environment and culturally informed patterns of resource use and management. Emphasis was placed on the significance of human creativity in devising livelihood strategies and also upon the set of constraints, both physical and social in nature, which delimit the set of resources that particular social groups and individuals are able to access.

The conditions of life in the Tinombo hills are not dissimilar from those found in other upland regions of Southeast Asia, where remoteness, a lack of services, and traditional farming systems under stress combine to produce low material standards of life. In comparison to other areas, however, the Tinombo hills have some special advantages which could provide the basis for more secure and sustainable livelihoods. The area has little commercially attractive timber, and so there is no problem of logging concessions competing with local people for access to land. The area is sufficiently remote that poor and landless people from lowland areas have not been attracted to seek land there, unlike, for example, the Philippines where poor lowlanders put great stress on upland environments. Also because of its remoteness, wealthy outsiders have not yet tried to take over the land for commercial plantation development, although they may begin to do so in the near future. A further advantage is that the traditional patterns of access to land are relatively open, so that everyone who wishes to gain a livelihood through farming can do so, and no class of people or gender group is excluded from the possibility of engaging in independent production. Finally, the people have been able to engage in small scale production of cash crops such as shallots, garlic and tobacco for local markets without losing the autonomy and flexibilty that stems from maintaining control over their own land and labour to engage in food production. Threats to this pattern through tenure insecurity and the over-concentration on commercial tree crops for world markets, entailing a loss of local autonomy and a restriction in the access of some people to land have been noted: they are serious dangers, but have not yet progressed so far that their effect is overwhelming.

Together, the advantages noted above mean that, in the Tinombo area, the Lauje people are still largely in control of the labour and natural resources upon which they depend for their livelihood. Providing their control of these resources can be maintained and strengthened, they will be the beneficiaries of the process of agricultural intensification that they are already engaged in, and that will increase in pace and scope as regional development assistance begins to play its part. Models of development which are founded upon local control and management of resources, diversity and flexibility are being advocated by many parties, including the Indonesian government, under the general notion of "sustainable development." The Tinombo area is one where these models are fully appropriate, and much could be accomplished to make livelihoods more secure.

APPENDIX

HAMLET AND HOUSEHOLD STUDIES

INTRODUCTION

This appendix explores in more detail the patterns of livelihood characteristic of each of the agro-ecological zones described in general terms in Part One. It presents data from a survey conducted with selected households in a number of hamlets representing the three agro-ecological zones. The inner hill hamlet, Siboalai, is on the border with the middle hills, and no house to house survey has yet been undertaken deep in the inner hills. The survey focused on sources of livelihood. It provides an insight into the range of variation both within and between the zones described in Part One. It demonstrates the range of livelihood strategies employed in a particular zone, the combinations of strategies employed by particular households, and the strategies pursued by individuals within households. The set of strategies pursued is an indicator of the economic status of the household, in that some activities are profitable, high in status, and require capital in the form of land and cash, while others produce meagre returns and are engaged in only by those unable to access more productive resources. Survey information thus helps to illustrate the issues of class differentiation discussed in Part One. The survey also demonstrates the frequency with which the various strategies occur, and provides a check on generalizations about the zone as a whole, indicating, for example, just how many people grow shallots or have planted trees.

In the presentation of survey data, the specific background of each hamlet is described, followed by an analysis of livelihood strategies. Brief profiles of households are provided in order to put a "human face" on the data, and to illustrate the variability in the resources that household members control, and the strategies they pursue. The profiles do not list all the data obtained from the survey, but serve to highlight issues of particular interest.

The farming system of a small number of households was selected for more detailed study, including the measurement of field size, slope and altitude. These data serve as indications of the material conditions of farm production in each zone. In addition, farmers were asked to describe the history of each plot of land, including the name of the person who first cleared it, the mode by which the present user came to have access to it, the number of years it had lain fallow, and the cropping pattern pursued since it was cleared for use. This information provided valuable insight into the social relations through which land is accessed, and indicated the extent to which the buying or borrowing of land is practiced in each of the zones. It was at this level of detail, too, that it became clear that the field plots being managed by each household, sometimes as many as eight, were in fact managed by specific individuals within the household or, in some cases, individuals outside the household to whom a section of a plot had been loaned.

It is intended that selected households interviewed in the initial survey will be interviewed again over a multi-year period in order to monitor the changes that have occured in the material conditions faced by the households, and the strategies that they pursue in seeking a livelihood. Also included in this Appendix is a description of a transect through the three zones, indicating the differences and patterns of interaction between them.

1. DESA DONGKAS, HAMLET SIBOGI

1.1 LOCATION, HISTORY AND LAND USE

The hamlet lies along the sea shore, between the sea and the Trans Sulawesi Highway, and has about twenty households.

The bamboo houses are built under coconut trees, many of which are owned by a village official, who is descended from Kaili and Gorontalo families long resident in the Tinombo area. The official's family, who live in Tinombo, bought the land and trees some years ago, and he has recently built a substantial concrete house there for his second wife. The issue of fencing land or planting trees or vegetables in home gardens hardly arises here, since the soil is sandy and crabs are a pest. The owner claims he would allow the residents to plant trees if they wish since "they were here first, we just came and bought land."

The main sources of livelihood for those in the hamlet are some combination of fishing, hillside farming, wage labour, collection of rattan, firewood and bamboo, and production of coconut oil. Several households claimed to be harvesting corn from the hills two times a year, mostly in Tampo, which appears to be resonably fertile but not yet heavily claimed, settled or overworked by a resident middle hill population.

Despite the location of the hamlet on the sea shore, two of the households, numbers 5 and 7, do not fish at all. Others fish, but have very limited capital to invest in equipment, and depend as much on farming and wage labour for their livelihood. Many see the planting of tree crops on the hillsides, rather than fishing, as their best option for the future. This is reflected in the fact that a high percentage of households from this hamlet have registered for a village scheme to develop cocoa gardens in the interior (see Part Three).

The fishermen of Dongkas also wish for a "scheme" to improve the returns to their fishing efforts: they require an outboard motor to tow their boats out to the fishing grounds and back into Tinombo. They often find that, if the wind is against them, they arrive at the Tinombo fish market after it has closed for the evening and/or after their fish has spoiled. The motor would be used for towing ten boats per day, and a fee levied to cover fuel, maintenance, and eventual replacement. The idea was developed by the local official mentioned above, who has inquired about a bank loan, but is quite reasonably reluctant to put his own land up as a guarantee as the bank requires.

The fishermen have noticed a decline in fish stocks close inshore in the past five years, since the Dongkas mangroves were destroyed. Capital investments in fishing, especially if they involve the fishermen in long term credit obligations, should carefully consider issues of fish stocks and market outlets.

1.2 HOUSEHOLD CHARACTERISTICS

Of the ten households surveyed, six are simple families comprised of parents and children, and four are complex. The additional members in complex households are unmarried siblings, divorced or widowed parents, or, in the case of one household, young nephews and nieces acting as farm helpers.

The average age of household heads is thirty-two, and the average period of education five years. Four out of thirteen elementary school-aged children are not in school.

Water is obtained from a single well in the center of the hamlet, which is also used for laundry and bathing.

1.3 HOUSEHOLD ECONOMIC STRATEGIES

Six of the ten households farm hillside land for staples, particularly corn. They live right on the sea shore, and all six also have some involvement in fishing. This combination of strategies is recognized by the households to depend on a sexual division of labour, such that women can be relied upon to do the bulk of the agricultural work while men fish and do other wage work. None of the men work in the coconut sector, although processing coconut oil from fallen fruit is an important source of income for seven of the ten women. Two households own coconut trees, one an older man who inherited a few trees, and the other an extended family group that bought some trees and planted more on the surrounding land.

The stock of fishing capital owned by these households is limited, only three owning their own boats, and three owning small seines. A number have shares in rompong, reducing the capital required for participation, but also the returns to each individual. Only one household has planted cocoa. Six households have registered for the cocoa scheme, all six of them also being fishermen. They indicated in discussions that they "could not depend too much on fishing," especially given the limitations of their capital resources and equipment.

The households in the weakest economic position are the youngest ones, numbers 4 and 6, who have no capital assets in the form of fishing gear, no trees and no established hillside farming skills. They are dependent on the extraction of rattan from the inner hills, an activity they began in their teens, and which keeps them away from home for two weeks at a time, thus preventing them from exploring or pursuing other livelihood strategies.

Some cooperative work patterns are evident in this hamlet. Eight of the households co-own a major piece of fishing gear, a rompong, which they built from rattan they themselves collected from the forest. Costs, labour and proceeds are divided eight ways. Small groups of three or four households farm on adjacent plots on the hillside, reducing the labour of fencing and guarding. The groups are recruited mainly on the basis of kin ties through either men or women, i.e. siblings or siblings-in-law cooperating on a particular project for a season or more. These groups are cooperative rather than collective: labour, investment, profit and loss are still highly individual.

1.4 HOUSEHOLD PROFILES

Household 1 This older man is a full-time fisherman. His main operation is line fishing, from which he can earn an average of Rp2,500 per day. He has not made a hillside farm in the last ten years, because of lack of strength. Fishing is regarded as a less strenuous activity, suitable for an older man. He and his wife produce roofing from sago whenever there is a demand. He inherited five sago palms by the river. His wife makes five to ten bottles of coconut oil per week. He claims to have heavy expenditures for staples, sugar and kerosene, because of his grandchildren and friends who gather at his house at night.

Household 2 The couple farm on the hillside. Since they grow corn twice a year, as well as rice, their land must be far enough inland to receive adequate rainfall. They have farmed their current plot for three years and are planning to move since "the soil is stony." The husband fishes only occasionally from a borrowed boat. Their cash income source is the collection and sale of firewood and bamboo. Their teenage son left home some years ago and has not returned or sent money. The teenage daughter has worked as a housegirl in Palu, assisting the family by providing school uniforms and supplies for the younger sisters. She is currently caring for her siblings at home, since her parents stay mostly at the hill farm.

Household 3 This household pursues a mixed strategy of fishing and hillside farming. They harvest two corn crops a year, with average yields of 1:30 i.e., one ear of corn yields thirty. They also grow rice, but still calculate that they must buy staples for seven months of the year. They have an investment in fishing capital in the form of a boat and a one-eighth share in a rompong. The husband makes perahu to order. The wife and young children live at the farm continuously during the farming season, while the husband fishes on the coast.

Household 4 This young couple depend on the husband's income from rattan collection, an activity he has engaged in since his early teens. He occasionally helped his parents farm as a child, but has never yet established a hill farm of his own. He is buying a used perahu on a credit basis, giving half shares of his catch to the present owner for one year as payment. He is member of the rompong group.

Household 5 The household is in a weak economic position, having few assets or stable sources of income. They became indebted to a landowner in Sidoan through taking a bicycle on credit. The bicycle was subsequently sold. To pay off their debt they are obliged to care for the landowner's garden, which once had space for them to plant corn, but is now too shaded by trees. The wife stays mostly at that garden, accompanied by the two children who have dropped out of school. They survive on the bananas they planted there. They have not fenced their house lot in Sibogi, or planted any trees, since they have no permission from the landowner. Living with the family, but maintaining a separate kitchen, is the husband's widowed mother and his divorced elder brother, who has a shallot garden in Sidoan.

Household 6 Fishing is the main source of livelihood of this family. They have a boat, a pukat, and half shares in a rompong. The wife's father is a substantial owner of land and trees. The couple plan to swap their share of land in the new cocoa garden for a much nearer plot on the hillsides of Sibogi on which her father has planted with cocoa and cashew. This will enable them to continue to live near the sea.

Household 7 This household includes a young couple and the wife's divorced mother and younger sister. The three women produce coconut oil. The husband is away most of the time collecting rattan. An effort at planting corn and vegetables on a small plot in the foothills lent to them by the wife's father failed for lack of rain. They have not registered for the cocoa scheme because the husband, who is from another village, is not linked into the social networks of the village and did not receive information about the scheme.

Household 8 The wife of this couple has her own farm separate from that of her husband, on land borrowed from an uncle. There she plants bananas and vegetables for sale. The couple have opened a hill garden in heavy forest, and achieved a very high yield of corn. During the farming season, the wife stays at the farm while the husband goes down to the sea to fish. She is keen on the new cocoa garden scheme not only for the cash income from trees, but for the

opportunity to grow vegetables for sale year round, since rain in the interior is more frequent than on the coast. The couple are helping to support the husband's mother who lives nearby, by providing her with rice, sugar and kerosene every week.

Household 9 They farm once a year in the foothills. The husband has a half share in a rompong, and borrows the boat of the rompong co-owner. The wife's two teenage brothers live with them. They collect rattan, and give a contribution towards food expenses.

Household 10 The husband of this family was born in the midhills of Desa Lombok. In 1970 his father came down to Donkas, and bought 4 hectares of land, half flat and half sloping into the foothills. The cost of the land was Rp100,000, approximately the cost of the ten old coconut trees that stood there. The land is now farmed as one coopertive unit by this man and his family which includes two young nephews, his father with a daughter and three grandchildren, and a cousin with his wife and child. The three households work together and equally divide all the proceeds in cash and kind. They previously planted only annual crops, but since 1987 have planted 150 coconut trees, 30 cocoa, and plan to add cashews. They collect firewood for sale to meet cash needs, especially in the dry season. They fish from the shore for their own food. This group is unusual in maintaining a joint economy between three households. It is also unusual in its high commitment to farming rather than wage work, pursuing a livelihood strategy more typical of the middle hills than the coastal zone.

1.5 SOCIAL RELATIONS OF RESOURCE ALLOCATION AND CONTROL

The main natural resources used by this set of households are open access: the fish in the sea, the hillside farm land, the forests from which timber, firewood and bamboo are extracted, and the coconuts that fall from the trees and can be made into oil. The limiting factor in relation to fishing is productive equipment. In relation to hillside farming, the limiting factor is skill and knowledge, and possibly choice sites, although respondents claimed that anyone could have access to foothill land if they wished to grow food. In relation to the extraction of forest products, the limitation lies in the low status and rates of return, barely enough for one day's food, making these activities of last resort rather than strategies adopted with a view to improving the households short or long term economic position.

The households are very similar in their level of economic well being, and frequently cooperate through activities such as "borrowing a boat from a relative to go fishing," or through farming adjacent land to reduce the labour of fencing and guarding.

2. DESA TINOMBO, HAMLET SILABIA

2.1 LOCATION, HISTORY AND LAND USE

The hamlet lies on the narrow coastal plain, and stretches along the sea shore, along the coastal road and along a rough road that leads about 2 km inland to the foot of the mountains. It comprises about sixty households.

The bamboo houses are built under coconut trees, a few of them owned by the family of the *Dusun* chief, most owned by outsiders, including Chinese entrepreneurs and people from Tinombo town. The parents of the current residents, and one or two surviving older people, were among those who were moved down to the coast from the hills by the Dutch in 1910. They planted coconut trees, which have been sold off or divided among heirs, leaving few to this

generation. For example the grandfather of the Dusun chief, Lamaria, considered the founder of the hamlet, owned 400 trees which were sold off in the 1950s. The middle hill areas from which the people originate, Dongkas, Ogolangkap and Pangkola, lie directly behind Silabia, about one to two hour's walk inland. Until the 1950s, many still maintained farms there in addition to their coconut holdings on the coast. Today it is considered too far away to combine farming there with wage labour on the coast, but many families depend on the sale of firewood collected from the hillsides behind the hamlet. Besides, in the last ten years their former hill gardens have been taken over by others from Tinombo who have planted cocoa and cloves, and the land claims of those who moved down to the coast have become weaker despite some recognized signs, such as coconut and mango trees, planted by their ancestors.

All the coastal land is claimed by the coconut tree owners, except for a few flat but rocky areas, not more than three or four hectares, along an old stream bed close to the hamlet that are in the process of being claimed and fenced by residents. In some cases, there were a few standing coconut trees that were inherited, or bought, by the families currently developing the land. A mixture of trees, root crops and vegetables is being planted.

Leucaena is the main vegetation that grows in the foothills, having spread in the area over the past thirty years. The land is fertile, but corn production is strictly limited to one crop per year because of rainfall. Residents claim that two harvests of corn used to be possible, but the land has become drier, as indicated by the dry stream bed mentioned above.

Apart from their seasonal hillside farming activities, the residents of the hamlet have been wage labourers for more than half a century. They were stevadores at the Tinombo port, loading copra and produce during the period when the sea route to Parigi was the main form of transportation to and from the area. This activity was significant for hamlet residents from the 1920s, as the coconut trees came into production and copra began to be exported. It reduced slowly in importance as the coastal road was improved, and ceased entirely by the end of the 1970s, when the Trans-Sulawesi Highway (still unpaved) was opened. They report that the work was well paid, and they could earn up to Rp3,000 per day, providing a very adequate living in relation to 1970s prices. Another labouring opportunity was provided by a local enterprise run by a Gorontalese producing whitewash from coral, that was in operation from 1970 to 1985. They were labourers manufacturing red-bricks in Tinombo, particularly during the early 1980s boom in school construction. They were the main wage labour force for the rattan processing and bulking station that lies by the sea shore a short distance from the hamlet, and that employed sixty people from the hamlet in 1985-86. The work was steady and the wage rates were in the range Rp3-4,000 per day, which compares well to the current average daily labouring rate of Rp2,500. The rattan plant now employs only a dozen men, although about twenty of the younger unmarried men were taken by the Chinese owner to work at his plant in Palu when he reduced his Tinombo operations.

The hamlet is feeling the effects of unemployment. Their current economic difficulties are compounded by the drop in the price of copra from Rp50,000 in 1988 to Rp19,000 per 100kg in 1990, which has made some tree owners reluctant to harvest, reducing employment in this sector. The slump also reduces the amount of cash in circulation in the Tinombo economy, and hence the demand for bricks and for casual labour in tasks such as house building. The local electrician says business has been very slow, as owners with just a few hundred trees postpone electricity installation in their homes.

The hamlet has long supplied fuel wood to Tinombo households and food stalls. Demand for fuel is constant, and collecting fuel is a stand-by activity of last resort for both men and women. Its monetary returns are very low, barely providing for a family's daily food, even at minimum nutritional levels. Supply of wood has become a problem since the nearby mangroves were destroyed during the rattan boom and the land declared "off-limits" to villagers by those who have acquired rights to develop it into fishponds. Fuel wood is now gathered primarily in the foothills, and comprises mostly local varieties of *leucaena*.

The mangrove areas of Silabia have all been allocated for fish pond development. The only local resident to obtain a share was the Dusun chief, who took one hectare but does not have the capital to develop it. Labourers from Silabia have been doing the strenuous work of digging out the mud using a shovel and scoop, both for the ponds in Silabia and for those in other villages to the south which are proceeding more quickly, reportedly because of the involvement of large outside capital.

Many men have been seeking work outside the area, and as a result, in the 1990 season, few households were able to establish hillside farms. It is in the context of the downswing in the economic fortunes of the hamlet that people are expressing an interest in the planting of tree crops in the foothills, which it is hoped will yield a steady income, more secure than that from wage labouring, while still permitting them to take up wage earning opportunities whenever available. Few have planted trees as yet. Their current dependence on finding cash from day to day makes it difficult for them to free up time for establishing gardens. A large area of the foothill land is claimed by the family of the sub-village (dusun) chief. He states that access to land is not a problem, and that he will give permission for any hamlet residents to plant trees on his land without claiming a share for himself. Residents remain uncertain about access to land. Any organized scheme for land development will have to take into account the people's daily-wage dependency, and provide support for living costs while they undertake the work.

Women in this hamlet do not make coconut oil for sale as regularly as women elsewhere along the coastal plain, because the hamlet has no mill suitable for grinding coconut. Some grind it by hand, a time consuming process, while others walk a few kilometers each way to the grinder in Tinombo. Many noted that they like to grow vegetables for sale, but since so many households do not have corn farms in the foothills this year, the women have lost out on this income opportunity. In those families that have established hillside farms, women do the majority of the work, once the land has been cleared and fenced. Five to ten women are traders, purchasing produce from mountain women in other villages and selling it at the markets along the coast (see Part Two).

A particular historical event has left some hamlet residents nervous and demoralized. During the period in the 1960s when many worked on the docks, a number of hamlet residents were registered as members of the ship and dockworkers union (Syarikat Buruh Pelabuhan dan Pelayaran) which was affiliated to the Indonesian Communist Party. They claim that union membership was compulsory for dockworkers, and that they were not involved in politics. Many suffered, however, during the crackdown on communist activities in 1965, and were subject to a number of restrictions for more than two decades. While most restrictions upon their activities have now been lifted, there is a general sense among hamlet residents that their position is vulnerable, involvement with outsiders is risky, and that harrassment in the form of compulsory resettlement may result from any wrong moves on their part.

In both political and economic matters, the fortunes of the hamlet have been strongly tied to those of the town of Tinombo, the region, and the world economy. The people have adapted between wage and farm work according to the seasons and long term changes and fluctuations in the wider system of which they are a part. There has been no clear trajectory either towards proletarianization, or agricultural improvement, or formal education that could clearly be classified as "development." Despite their accessibility to the road and integration into the world economy, their current living standards are among the lowest in the region.

2.2 HOUSEHOLD CHARACTERISTICS

Six of the twenty households in this sample are complex in form, five including an elderly parent or parent's sibling, and two including a female relative (sister or niece) with children who had been abandoned by her husband. The households are closely related to each other.

The average age of household heads is forty-two, and the average period of education is three years. Three out of sixteen elementary aged children are not in school.

Water is obtained from a common well by the main road about 1 - 2 km walk from the houses.

2.3 HOUSEHOLD ECONOMIC STRATEGIES

Eleven of the twenty households grow some corn. Seven people own coconut trees, a few older trees that were inherited, and some newly planted. Three households with more than fifty cocoa trees are all related to the founding family. Cashews have recently been planted by eight households, although a large number of trees died in dry weather. Six men engage in fishing, four owning their own boats, and only two owning small seines (pukat) which are laid at the edge of the mangrove. Four households own some goats, three of them siblings who were given goats by a parent, and one the dusun chief, who also owns some cattle. Other people mentioned owning goats previously, which had died from disease. Four households are still employed at the rattan processing plant, although they do not have steady work every day. Eleven households collect firewood for sale. Three practice skilled trades: one a housebuilder, one a net maker, and one a curer. Eleven households are involved in daily wage labour, which includes rattan processing, digging fishponds, and general labouring.

2.4 HOUSEHOLD PROFILES

Household 1 This household has not planted corn in the foothills for the past two years, because the husband was wage working at the time when he needed to clear and fence the land. The husband works in the coconut sector and the wife, without a garden, is without income opportunities. Sale of firewood is a source of income, although they have recently been forbidden to cut wood in the nearby mangrove forest which is now under private ownership and will be developed into fish ponds. They would like to plant tree crops in the foothills, although they are uncertain of land rights.

Household 2 The household comprises an older couple, several of whose eight children live in the hamlet. One unmarried son, that they still consider to be part of their household, has been away labouring outside the village for many years, and never visits or sends money. This is the first year the couple have not farmed in the foothills, the old man claiming he is no longer strong. He survives through clearing undergrowth from coconut trees, selling firewood, and occasional fishing, although his boat is used mostly by his married children.

Household 3 The head of this family is the son of the couple above, and still apparently dependent on some assistance from his parents, at least as long as they had a hill farm. He is a subject of some derisive gossip, since he has never yet farmed alone, although he has been married for eighteen years and has eight children. His fishing capital is minimal, and he borrows his father's boat. One teenage son is away working as a labourer in Palu. Another fishes on days when the father stays home, generally keeping his earnings to himself, except when his mother asks for some to buy food. The wife and children collect firewood for sale. The wife hopes to establish a permanent hill farm with tree crops, staples, and vegetables, to make their lives less precarious. Her labour time is freed up by a daughter who has dropped out of school to care for the five younger children.

Household 4 The household head is also a son of number 2 above, younger brother of number 3. He pursues a similar set of activities combining fishing with collection of firewood. He is one of four fishermen from the hamlet who work for the Tinombo-based owner of a fish trap (rompong). The catch is shared three ways -- one share to the owner, and two shares for the four fishermen. He has farmed in the past, selecting a site close to his mother, who stayed with his wife in the hills while he was fishing. He sees tree-crop farming in the foothills as the best opportunity to improve his livelihood, but has not yet begun to plant.

Household 5 The wife is a daughter of number 2 above. Her husband originates from Lombok. They usually farm in the foothills, but have no farm this year. The husband defines himself as a craftsman, a housebuilder, and was away building in Bobalo when the farming season began. At the moment they have no secure source of income.

Household 6 The household head is a younger sibling of number 2 above. He has enclosed the land under his eight remaining coconut trees, inherited from his parents, and has planted kapok and cashew. The couple have planted corn on some hillside land near the tree garden, and plan to plant trees their too. His wife is one of five women from the hamlet who trade in produce, buying from women who come down from the hills, and selling at markets along the coast. Three unmarried sons are working as labourers, two in Palu in the rattan plant, and one in the village, digging out fish ponds.

Household 7 The household head is the older brother of number 5 above. He originates from the mountains inland from Silabia, at Pangkolak, and continued to grow corn and shallots in the middle hills until about fifteen years ago. Since then the couple have farmed in the nearby foothills, but they have no hill farm this year. The couple, together with two sons-in-law, have fenced an area of level land on a former stream bed in the vicinity of some coconut trees inherited by the wife. They have planted a few cashews, some cocoa which died, and some corn and cassava, taking advantage of the strong fence. He processes copra, and they both collect firewood for sale. One son, aged twenty, is a labourer hoping to plant tree crops, and two teenage girls help on the parents' farm. The wife's sister lives with them.

Household 8 The household head is the son of the couple above. The wife and children are staying at their hillside farm, where they have a bamboo house. When in the hamlet, the family stays in his parents' house, although they have a separate food budget. Coconut climbing is his main source of income. He plans to plant tree crops in the foothills close to the land enclosed by his parents.

Household 9 The wife is the daughter of number 7 above. The husband's father, who lives with them, bought an area of coastal land in the vicinity of a former stream bed in 1987. It

borders the land of household 7 above. Four of his sons, including the head of household number 9, cooperated in building a fence around the perimeter of the area. Inside the fence, each household's area is demarcated, and each has planted a mixture of tree and food crops. *Household* number 9 has coconut, cocoa, kapok, mango, cashew and banana, as well as root crops and vegetables. They have planted corn on the hillside beside their mixed garden. Farming is mostly done by the wife, while the husband works as a labourer digging the fish ponds, and processing rattan and copra. She has also been given some land by her parents. The couple is in the process of fencing the land and plan to plant trees which, she says, will belong half each to herself and her husband, since it is her land but he is providing seeds, and they are undertaking the work jointly. Two unmarried brothers of the husband live with them. One has been given a share of land by his father while the other has not. They are both labourers in the coconut sector, and contribute to the household's food expenses.

Household 10 The wife is a sister of household number 9 above, but she did not receive a share of the land described above. Her husband has inherited a small area of coastal land, 20x30m, which they are in process of fencing in order to plant tree crops. They normally plant corn in the foothills, but missed the season because the husband had been ill for the three months when fields needed to be prepared. When he is well, he works as a labourer, turning to the collection of firewood only as a last resort. The wife has been deriving an income of about Rp2,000 per day from the sale of a fruit, assam java, from a large tree near their house that was planted by the grandfather of the dusun chief. The owner states that he allows people to harvest and sell the fruit for the time being, as he has not yet registered and paid tax on the land he claims.

Household 11 The husband is a brother of the head of household number 10. He is unmarried and lives in a complex household with his mother, and a sister who was abandoned by her husband, with her five children. His mother's sister, who is elderly, widowed and has no children, lives very close by, and is partially supported by him. She raises chickens and has fenced some land and planted cassava and vegetables, which she sells in the market to buy rice. He inherited a few coconut trees, which he has sold, but he retains a small piece of coastal land on which he has planted some tree crops. He works as a labourer clearing undergrowth and fencing land under coconut trees for one of the large scale owners who has holdings along the coast. His sister supports her family by working as a laundry woman in another village (Sidoan), returning home only for a few days each month. The mother grows vegetables for sale. They have no hillside farm this year.

Household 12 This is also a complex household, comprising a man in his eighties, one of his two wives, and the wife's niece who was abandoned by her husband, together with her child. The bamboo hut is on borrowed land. The two wives and the niece each have semi-independent farming activities. The husband has an interest in five different garden locations each associated with one of the women: he has developed a housegarden with his first wife; he has helped his second wife plant cocoa on some flat land he bought for her twenty years ago, which she previously used for bananas, cassava and vegetables; he has worked with his second wife on some hill land she inherited, where they have planted one hundred coffee trees, to be shared equally; he has cleared a hill-side corn garden for his wife's niece who lives with them; he plans to clear and fence some flat land his second wife inherited, after which the land will be divided between them for each to plant and tend. Apart from his farming activities, he is an expert in healing, and is often called to attend to sick people from some distance away.

Household 13 The husband works as a labourer loading and unloading goods at the Tinombo market three times a week. They both collect firewood for sale. They have a hillside corn farm which they expect will provide food for just two months. They have fenced the land around their house, but not yet planted anything.

Household 14 The household comprises a divorcee and her twenty-year-old son. She maintains herself by preparing snacks for sale within the hamlet, while he engages in general labouring on the fishponds, loading trucks and in the rattan plant.

Household 15 The couple have planted trees on their borrowed houselot on the basis of a half-share agreement with the owner. They have a hillside corn garden on land borrowed from the dusun chief, who is the wife's cousin. He has agreed to let them plant trees there next year if they wish. Sons-in-law living close by and the three unmarried sons living at home help the mother with land preparation, as the father is often sick. The sons work as labourers.

Household 16 The couple have planted some coconut and cocoa on their houselot with an agreement to share the trees with the land owner. They often plant corn in the foothills, but missed the season this year. Their main income comes from fishing. The husband has a small seine net, which cost Rp25,000, and which enables him to earn Rp3-15,000 per day. It is used near the mangroves, where he notes a depletion of the fish stock. Three sons are in Palu working in the rattan plant, and one son, living at home, takes turns with the father fishing with the father's net.

Households 17 This is the household of the dusun chief, head of the premier family in the hamlet, and claimant of the majority of land in the foothills which was cleared by his ancestors. He has some inherited land on the coast, although his parents long ago sold their coconut trees. With his wife, he is planting tree crops there, and plans to expand into the hills. When they first developed the garden five years ago it was inadequately guarded, and many of the trees were spoilt. The wife and a daughter now sleep in the garden much of the time, to guard it more effectively. Over a hundred banana trees are a source of income. The husband was allocated one hectare of mangrove land adjacent to the family tree garden for development into a fishpond. He is the only hamlet resident to receive such land, although he currently lacks the estimated Rp1,000,000 capital needed to develop it. He used to work as a labour gang leader. Two of the unmarried daughters living at home are engaged in trade, one selling sugar, cigarettes, and kerosene, while the other trades in snacks.

Household 18 The household comprises an unmarried man and his sister, both in their thirties, and their elderly mother. They are closely related to the family of the dusun chief. The two women trade in produce up and down the coast. They have fenced an area of inherited land and planted it with trees, also growing corn on the adjacent hillside. They have over a hundred mature banana trees that provide a signficant source of income.

Household 19 The household has planted a few trees on inherited land, which was still in their possession after its four old coconut trees were sold off. They have a hillside corn farm, where they also grow ground nuts and vegetables for sale. Details of their farming enterprise are as follows:

> *Plot* 1, housegarden, 430m x 60m, level land, with a live fence since 1986. This land belonged to the widowed mother, who lives alone in a house a few metres away. She appears to have given it to her son, although she still plants vegetables there. A few

coconut trees that stood on the land were sold as "trees alone," leaving the surrounding land to the family. The couple have planted 50 bananas, 4 coconut, 10 cocoa, and 10 cashews. More trees were planted, but 80% died in the dry months. The wife grows papaya, cassava, sweet potato, lemon grass, and others vegetables which, together with the bananas, she sells in the market. Fence posts were purchased at Rp50 each.
Plot 2: Foothills, directly behind the house, 26 degree slope, 30m x 40m, 25 m above sea level, with a live fence since 1987. This land was reported to have been opened by the husband's grandfather, in 1930. It was used periodically by the family and re-opened in 1987, after a seven year fallow. It has been used for three consecutive years to grow corn, resting for the nine month period between harvests when it is too dry to cultivate. Five liters of corn and one liter of groundnuts were planted in late May 1990. Clearing was done by husband and wife, while the wife planted and does weeding.
Plot 3: Foothills, 500m from house, level land, 60m x 50m, 32m above sea level. This land was reported to have been opened by the husband's grandfather in the 1930s. It has been in fallow for two years, and was previously used for corn.
Plot 4: Foothills. This plot has been in fallow for five years. They plan to re-open in next year to plant cocoa.

Household 20 The household head is a son of the Gorontalese who owned the whitewash enterprise, closed after the father died five years ago. He has recently planted a few trees on land purchased by his father. He has a hillside farm, where he grows corn and groundnuts. He fishes with a small seine, and he also makes and repairs nets for others. His wife trades in the markets up and down the coast, while two teenage daughters assist at home and on the farm. Details of their farming enterprise are as follows:

Plot 1: Foothills, on the 26 degree slope directly above the house, 70m x 80m, 10 - 25m above sea level, soils thin and stony, with no organic matter. A live fence was built in 1989. The land was opened in the 1930s by the wife's grandfather. The wife is the sister of the husband in the case study above. The land was sold by her father to another, who, in 1989 lent it back to the family to plant corn and groundnuts. It had been in fallow for three years. Live fence posts were taken from an established fence belonging to her mother. They have planted 20 coconut and 20 kapok trees along the lower border of the field close to their house.
Plots 2 *and* 3: Foothills. They have two other fields in the foothills to which they lay claim, both now in fallow. On one they experimented in planting clove trees, all of which died.

2.5 RELATIONS OF RESOURCE ALLOCATION AND CONTROL

The value of land on the coastal plain is rising rapidly, now that the economic potential of new tree crops is recognized. Some families in the hamlet were fortunate enough to inherit a few trees, or the land surrounding trees that have been sold. Others have been able to buy a little land (in some cases in return for one or two goats). In the past three years, these households have been planting new tree crops, while also developing home gardens with rootcrops, fruit and vegetables that take advantage of strong living fences. Already advantaged by the home gardens, once the tree crops yield the economic standing of these households will diverge further from that of their neighbours who have no stake in coastal land, and who are limited to the old repertoire of wage labouring and firewood collection, at the same time as incomes derived from these sources are becoming less secure.

As the planting of tree crops becomes more popular, attention is turning to the foothills, where there is estimated to be about 350 hectares of suitable land. The dusun chief, who claims most of the land, states that anyone can plant trees there, and he will not demand a half share. Many residents either do not know of his views, or do not quite believe him. The way in which the foothills land is allocated during the process of privatization through fencing and tree planting is a critical issue in the hamlet's future. Because the land is not yet claimed by anyone as exclusive property, and trees have not yet been planted, an opportunity exists to redistribute land rights and establish a productive investment for each family. Timing is important, since there is the obvious possibility that government officials, traders, and other wealthy people from Tinombo will be attracted to lay claim to the hill land, which is the nearest land resource close to the town as yet undeveloped. If care is not taken, this distribution could take place in the same manner as the mangrove land, without any benefit to the local population currently using the resource.

3 DESA BOBALO, HAMLET ALAU

3.1 LOCATION, HISTORY AND LAND USE

Alau lies in the middle hills on the eastern side of the village, and is bordered on the interior side by the first high mountain, Silikohong. Bordering Alau to the east is a ridge which divides it from the neighbouring village of Eeya. There are about 30 households registered in Alau, and about 10 additional households living in among them but registered in Eeya. The population is fairly well established, most households going back several generations in the area.

According to local knowledge, the settlement in the middle hills was opened by Gusi in about 1910. He previously lived on the coast at Tomini, a village about 40km to the east. He moved to Alau to avoid Dutch control. Alau at that time was said to be under primary forest. At the interior edge of the Alau, close to Mount Silikohong, the land was opened by Tadulama (father's father of Adau, now aged 90+) about a 150 years ago. This inner hill land is still occupied by some of his descendents. It is not clear whether the lower end of the middle hills had been previously worked by inhabitants of the area before the arrival of Gusi, or whether it really was primary forest.

The Alau area is heavily cultivated, with land under corn, rice, shallots, and more recently tree-crops such as cocoa and kapok. Fallows are short, usually two or three years, and many individual plots are fenced with *gliricidia*. The foothill zone below Alau is seldom cultivated, as it tends to be dry. Apart from a few plots used for tobacco, it has been in fallow for over five years, but is now being re-opened by a group previously resident in Pungso, the steeper slope immediately to the west of Alau. This group lost much of their land and their new kapok trees in a landslide in 1987. There are also some coastal families with holdings in the foothills, including a teacher from Eeya with more than 100 clove trees. At the upper end of the district is some very old secondary forest, inhabited by the inner hill people. People from the more heavily settled areas of Alau are steadily expanding into the frontier area, some establishing extensive new tree crop gardens.

A new road is planned for Bobalo, penetrating from the coast to the fertile inner hills which are being eyed for large scale tree crop production. The road passes right through Alau, and will have a marked impact on accessibility and other aspects of social and economic life. A district official reportedly offered a resident Rp150,000 for two hectares of land alongside the road and such pressures can be expected to increase. Several plots have already been sold to

coastal dwellers. Few from Alau have registered for the official garden scheme at Siboalai which lies further along the planned new road (see details in Part Three). This is due to a lack of information and of capital and/or free time to undertake the work. More details are provided in Part Three below.

3.2 HOUSEHOLD CHARACTERISTICS

Five of the fifteen households in this sample are complex in form, comprising a simple family with the addition of a parent, parent's sibling, unmarried sibling or widowed child.

The average age of household heads is thirty-two, and the average period of education is one year, eleven household heads having no education at all, and four having three to five years. There are sixteen children of elementary school age, of whom only five are in school. The other eleven have never attended school or have been forced to drop out because of their family's move further inland.

The river that runs closest to Alau is mostly dry, reaching the sea only in the rainy season. Those living on the shoulder of Alau depend on natural springs, that have been adapted by building a pit to store water for bathing and laundry. These springs apparently become polluted at certain times of the year, and Alau is noted by village authorities as having deaths almost every year due to fever and diarrhea, caused by the lack of clear water.

3.3 HOUSEHOLD ECONOMIC STRATEGIES

Corn is grown by all households, and all but three households grow rice, the exceptions being one household whose land is too poor (number 3), a divorcee whose ex-wife took her rice seed with her, and a bachelor. No households are self-sufficient in staples, all of them having to find cash to buy rice or cheaper staples from the market. Shallots are grown by only seven families, and are indicative of the households' economic status, since only households with cash reserves are able to replace planting sets lost through disease. Groundnuts are grown by all but the poorest households, who cannot afford to buy seed. Cocoa trees have been planted since 1988, but most are not doing well because of inadequate soil depth and shade. Cashew and kapok have also been planted since 1988, and are more favoured because of their ability to stand poor and dry soils. Vegetables are grown for sale, although those without fences sometimes do not bother to plant them because of the damage done by wild pig.

Fencing is more common among the better-off households, and also more common lower down the hill (households 1-6) than further inland, although pigs are a serious menace there too, and frequently devastate an entire corn field if insufficiently guarded. Production of mats for sale, collection of bamboo and rattan, processing of sago, and general labouring down on the coastal plain are undertaken by the poorer households that need to make up shortfalls in food production and have a more limited involvement with cash crops. Three households have purchased land at some point in their history, and the only two who have registered for the official garden scheme are those with both information and resources: the RT chief (number 5) and a lowlander who is in the hills only to acquire land and plant trees.

3.4 HOUSEHOLD PROFILES

Household 1 This is a complex household comprising a couple and their young child, the husband's mother and the mother's sister, both the latter in their mid fifties, but still active in

farming. Their pattern of land use shows clearly a pattern of food crops succeeding to tree crops. In 1986, their farm plot was planted with a few experimental trees before being left to fallow. Ten cocoa and ten cloves survived, and they plan to return there to fill in with more trees. Their next garden, opened in 1987, was well fenced, and three corn harvests were obtained before planting one hundred kapok, twenty cashews, and lots of cassava, which is still yielding. The next garden, opened in 1988, was used once for rice, then three times for corn and ground nuts, before being covered with five hundred cocoa trees in 1989. The third corn yield was extremely low, with a ratio of only 1:15 due to "thin soil." One current garden was used for rice, and has just produced its first corn harvest, with a yield of 1:50. A second current garden has been used for shallots once, and is now also under corn. Trees will be not be planted on these two current gardens as they are on borrowed land. The family plans to move on to other plots belonging the husband's mother and to the wife. Both sides of the family are among the substantial landholders in the area. Despite their extensive land holdings, the combination of limited rainfall, low corn yields plus limited labour power means that they find themselves buying staples for about six month's per year. Sale of shallots, ground nuts and vegetables helps to make up this shortfall. They do no regular wage work.

Household 2 This household has planted trees, mostly kapok, on two former gardens, and has prepared five hundred cocoa seedlings to plant in its current corn garden after the harvest. The corn garden was covered with *imperata* grass after three year's fallow, but they still planted rice first. They have not planted shallots for two years because of a lack of seed, but they do grow groundnuts and vegetables for sale. The husband is related to the founding family, and they have a reasonable quantity and quality of land available to them. The husband does wage work on the coast for a few weeks each year, clearing undergrowth from coconut trees in Baina'a, 30km down the coast.

Household 3 This is a complex household comprising a young couple with a baby, the husband's mother, and a distant aunt who helps on the farm. They have very limited land resources. They have one plot planted with cocoa and kapok, with a broken fence that has allowed the wild pigs to finish off the cassava. Their current farm is on a steep slope and is seriously eroded, with little top soil among the stones. It had been left fallow for two years, and brush rather than grass was growing, although in this case the brush was "growing on stones" and did not indicate restored soil fertility. They have taken two consecutive corn harvests, and plan to improve the fence so that cassava can be planted among kapok as they move elswhere. Their only other plots are steep and unsuitable, and they expect either to plant trees on a share basis with the land owners, or to move up to the edge of the deep forest in the inner hills. The husband earns cash as a labourer clearing under coconut trees, usually going away for about ten days each time. He also collects rattan.

Household 4 This young couple is related to the founding family. In 1988 they fenced one plot and planted fifty cocoa, three hundred kapok and eighty cashew. Their current garden had been fallowed for seven years, and is now planted with corn, groundnuts and shallots, each of which will be planted three times in succession before the garden is fallowed or planted with trees. They did not plant hill rice for lack of seed. They have purchased an additional plot of land, about one hectare, for the price of Rp85,000, to extend their tree cropping.

Household 5 The household head is the RT head. He is a divorcee, living with his mother, two younger sisters, and a niece. Another nicce is living with him temporarily, growing groundnuts and shallots in partnership with the two sisters. He is descended from the founding family, and has considerable land resources. He has planted almost two thousand trees (cocoa,

clove, kapok, cashew), and also has corn, rice, ground nuts and shallots. He has registered for the official garden scheme, and he is also one of the few so far to register his land for taxation.

Household 6 This is the household of a widow. She has four sons, all of whom have left the village to marry or work elsewhere, and never return to assist her. She has two daughters, both of whom have two young children, and both of whom are also widowed. The older woman specializes in growing rice, and is able to subsist on this year round supplemented by occasional fish purchased from the sale of vegetables. Her rice field had been in fallow for three years. She made an arrangement with a neighbour that he could borrow half her plot of land in return for his labour in clearing the entire plot. The two daughters farm independently, but share food with the mother. One daughter cleared land used by the mother the previous season, to grow rice, corn, ground-nuts and shallots. Another daughter has been lent an area of land by an uncle in another valley, and has a similar mixed farm. Mother and one daughter have planted some kapok trees, but they have no more plots of land close by. They have some land in the inner hills, cleared by the older woman's husband, although the land is in process of being encroached by others seeking land for tree planting.

Household 7 The household head is the brother of number 3 above and, like him, is very short of land. He inherited half a hectare, which he has planted with one-hundred cocoa and kapok trees. The current farm is on land inherited by the wife, and is used for corn and rice. A daughter, aged ten, has been given a corner of the field and some seed to grow groundnuts to meet her own school expenses. Despite their difficulties, the family is committed to the attempt to educate their children, and has decided not to move further into the hills to seek better land. They are attempting to make up the shortfall through sale of vegetables, woven mats, and bamboo gathered from the hills and sold down in the village.

Household 8 The household has one plot planted with about two hundred assorted trees, and one in use for rice, corn and vegetables, which they plan to plant with trees soon. They have a few more plots of land available to them. They live close to the foothills, and grow tobacco as a major part of their strategy. An unmarried brother of the husband lives with them, and is currently farming jointly but plans to plant kapok on another plot in the current season on a share basis with the land owner.

Household 9 This household also has one plot planted with trees in 1988, one for food crops, and one for tobacco, and no further plots to move on to next year. The husband inherited fifty yielding kapok trees, and one fifth share in a *langsat*, the fruit of which can fetch Rp100,000 per season. They have started a small stall selling kerosene, soap and tobacco papers from their home. They expect to move up to the inner hills, and will try to acquire land from people in the area.

Household 10 The family has four plots, of which two are under trees and two under annuals. They plan to replace the annuals with trees, and then move on up to the inner hills, perhaps using as capital the profits from shallots. Their shallot production has decreased in the last two years because of disease, leaving them short of sets to plant. They have lost many trees due to the wild pigs, but have no live fencing.

Household 11 The family has one fenced plot planted with trees in 1987, on inherited land lower in the hills. They moved further inland to their current location two years ago, and have a mixed garden of food crops and trees. They have a third garden used for shallots and ground nuts, which will next be used for corn, then trees. After that, they hope to move to the inner hills to find more land.

Household 12 The family previously lived lower down in the hills, and sold its land with fifty kapok trees two years ago in order to find cash to finance its move further inland. The price was only Rp10,000. Their current farm has some corn, mostly eaten young, before the harvest, and some rice. They have no fences and so cannot grow root crops or vegetables. They have no shallots or groundnuts because they are without seed. The wife is ill, and the husband is away in another village much of the time looking for wage work to meet their crisis situation. The husbands' two brothers live close by (households 11 and 13), but the extent of their assistance to this family is not known.

Household 13 This household also moved further inland in 1988, at which point the children, who had been walking down to the coast daily to attend school, were obliged to drop out of school. Their garden in the lower part of Alau is now full of trees, one hundred cloves and three hundred kapok. When they made the move, they carried up the last corn harvest from their former garden, which lasted only one month. Three years before they began cultivating their current garden, it had been borrowed by another farmer for shallot production, and had reverted to grasses during the two-year fallow. It is a small field, very steep and stony. They first grew rice and corn, and are now filling in with cocoa and cloves. They have no more land, and no clear plans for the future.

Household 14 This household is renowned for its success at farming. They bought three hectares of land in the vicinity of some land farmed by close relatives in 1980, for the price of Rp20,000 plus some rice. Different sections of the land were used in succession for rice, shallots and corn, while others were left fallow. Since 1988, two hundred trees have been planted, and more will be added. After ten years of intensive use, the soil is too poor for annual crops. During the 1989 dry season, they bought land with young kapok trees from owners who were desperate for food and cash. They expect to be able to purchase more land through distress sales in future years. They have also inherited 1.5 hectare of farm land near their house, which they currently use as their rice, corn, and shallot garden. They have three hundred tree seedlings ready for planting after the annual crops have been harvested.

Household 15 This is a young bachelor, who is being financed by his parents while he establishes tree crops, particularly cloves, on a hectare of land purchased for Rp30,000 from a resident of E'eya. His parents live on the coastal plain, and have assets such as coconut trees and goats. They have given him some goats to raise. They provide rice to support him, and he has planted some corn and cassava as a supplement. The parents appear not to expect a share in return for their investment, content to see their son well established. When not working on his garden, he works for wages in this village or others, supposedly saving for his marriage while looking out for a bride.

3.5 SOCIAL RELATIONS OF RESOURCE ALLOCATION AND CONTROL

It is evident that the fifteen households exhibit a range of assets and economic strategies, despite the fact that all are full-time farmers, using predominantly family labour and the same tools and cultivation techniques. The variation is not random. It is clearly related to the distribution of inherited land, an inequality now compounded by the introduction of tree crops, placing a squeeze on land availabilty.

There is a cluster of households, numbers 1,2,4 and 5 that are descended from the family of Gusi, who is reputed first to have cleared land in Alau. They have all fenced part of their land, and planted considerable numbers of trees, and three of the four are involved in shallot production.

Two households, numbers 3 and 7, headed by brothers, have extremely limited land and capital resources, reflected in their failure to plant shallots, their limited number of trees, and their involvement in the low status and poorly remunerated activities of rattan and bamboo collection. Their dependence on wage work on the coast and their lack of capital make it impossible for them to contemplate a move to seek better land in the inner hills. Neither have they yet taken the alternative step of abandoning hill farming and trusting their survival to the uncertain, hand-to-mouth existence of those living under coconut trees in the coastal zone.

Two households, numbers 8 and 9, specialise in tobacco growing, and occupy the border zone between the dry foothills and the moister middle hills. Their corn production is lower than that of others, they do not grow shallots, and their main tree crops are cashew and kapok, which can withstand drier conditions and poor soils.

Another cluster of households, numbers 10,11, 12 and 13 (the latter three headed by siblings), have all moved about one kilometre inland in the past three years to take advantage of some inherited land. Before moving, they had planted trees on the plots they previously occupied lower down on the hillsides of Alau, closer to households 1-9. Two of the households, numbers 12 and 13, have a very weak economy, without shallot sets to plant or groundnuts, few trees, and no land resources for further expansion. Household 12 was forced by its economic crisis to sell land already planted with trees in order to finance a move further inland, although the condition of the land to which they moved is not good and their crisis continues.

The situation of household 12 is in direct contrast to that of household 14, which is in the process of accumulating land by purchase whenever neighbours are forced by hunger to sell, particularly in the dry season. Household 15 has also purchased land, since the young bachelor is from the coast and has come to the area with the sole purpose of acquiring land and planting trees.

Up to this point, the more affluent residents of Alau have not begun to hire their poorer neighbours as wage labourers in order to expand their production, particularly their tree crop plantations, more quickly than is possible on the basis of family labour alone. It is not clear when, or even whether, this will occur. So far, those with serious shortfalls in food and cash crop production have sought wage work on the coast rather than in the hills, or have moved on, further into the hills, down to the coast, or to other open hill frontiers elsewhere along the coast. While they are accustomed to selling their labour as a commodity, they still have a range of strategies open to them, and will not inevitably be available as a landless labour force to work for their erstwhile neighbours in the hills. Share cropping agreements are more common, particularly for growing shallots, and reflect the relatively strong bargaining power of labour.

3.6 INNER ALAU, FOREST FRONTIER

The inner edge of Alau borders forests. Four related inner hill families live here, using well fallowed secondary forest land cleared by their ancestors including Adau, who is still alive (reputedly one hundred years old). These families have each planted about two hundred cocoa trees in the past year, and have for at least a decade produced garlic for sale. They also sell

rattan, pared into strips, and the younger men have been involved in extracting rattan poles for the enterprise of the village chief.

In the past three years, five newcomers have arrived in the area, buying land from the inner hill people with the intention of developing it for tree plantations. Three of the newcomers are related to the founding family of middle hill Alau, and two are from the coast. Only two of the newcomers have made their permanent homes in the area, the others maintaining other gardens or sources of income down on the coast.

One of the newcomer households is profiled here. The family originate from middle Alau where they have considerable land resources. Their land is either filled with trees planted over the past five years, or overworked and infertile. When they decided to move inland, they were able to buy land from the inner hill people on favourable terms, since the husband had been a local official for many years and was well known to them. They paid only about Rp20,000 per hectare, half the going rate. Their gardens are as follows:

> *Plot* 1: Middle hills, has two hundred kapok, seventy cashews, and twenty cocoa, still having some space to fill in with more trees.
> *Plot* 2: Forest edge, has seven hundred cocoa, seventy cloves, and one hundred kapok. A further five hundred cocoa died.
> *Plot* 3: Forest edge, alongside planned new road, has nine hundred cocoa and one hundred bananas.
> *Plot* 4: Forest edge, is currently used for annuals and is planted with corn, rice and shallots. The rice and corn produced bumper harvests when the land was first used after its ten year fallow, corn yielding at a ratio of 1:100. Two hundred clove trees have already been planted there, and more trees will fill in.
> *Plot* 5: Middle hills. Shallots have not done well on the moist and heavy soils of the newly converted forest land, "preferring stones," so they have established a shallot garden back down in the middle hills worked by one of the daughters and using some paid labour.

The family pays heavily for labour services to manage their three hill plots. They give a contract of about Rp100,000 three times a year for the clearing of weeds and brush from the five hectares of tree and annual gardens. The usual contractee is the husband's younger brother, who is also trying to establish gardens in the area but with fewer capital reserves.

None of the family's three thousand trees have yet begun to yield. In the meantime, they are self sufficient in staples, and use income from shallots for other supplies. They do no wage work, but the husband does earn extra cash by cutting trees in the forest and making hand sawn planks for housebuilding. They also own five goats.

Their total investment per hectare in land purchase, initial clearing and seedlings was about Rp50,000. The fields now need annual maintenance for five years until the crops begin to yield, at a cost of Rp60,000 per hectare per year. This puts the cost of development at Rp350,000 per hectare, well beyond the reach of most local families. For this reason, only households with large capital reserves are successfully able to establish themselves as major tree farmers on the frontier.

4. DESA BOBALO, HAMLET SILIKOHONG

4.1 LOCATION, HISTORY AND LAND USE

The Silikohong Mountain lies towards the inland border of the middle hill zone, inland and to the west of Alau, two to three hour's walk from the coast. It was cleared and populated in the 1940s and 1950s. The residents are Muslim. Several households have acquired land rights by purchase, usually in exchange for goods, as the land changed hands between those who were moving further inland, and those who decided to stay in the area. Acquiring land from individuals moving on from the area is a traditional practice, and different from the recent distress sales of land and purchase for the purpose of accumulation that were witnessed at Alau. All the adult men and women in the present sample, with the exception of the family of the school teacher, were born on Silikohong, indicating that this is a stable population, and not composed of newcomers moving up from the coast or lower areas of the middle hills. From accounts of life history, it appears that their parent's generation adopted Islam and became more distinct from the inner hill population in the period since the 1950's.

The land on Silikohong has been well worked over, and the vegetation is mostly grasses and light brush. Its advantage lies in frequent light rainfall and dew, making it suitable for shallot and garlic production. The land is heavily claimed by the resident families, but there are as yet few permanent fences. Wild pigs are a serious problem, several farmers noting that their entire corn crop had been wiped out. There are some interactions with the cultural-ecological border zone futher inland: familes on Silikohong sometimes ask to borrow a corner of a garden plot from the settlement at Siboalai, where some people eat pig, in order to plant root crops as an emergency store of food. Others go to the inland zone to plant shallots when it is too dry at Silikohong.

Families at Silikohong have begun to plant tree crops, and several are anticipating a move inland to Siboalai when their current land is too thin or filled up with trees. The new road that passes through Alau will pass to the other side of the Silikohong mountain, but will still make the area much more accessible.

A Lauje school teacher from the village has started a small self-help school at Silikohong, which has attracted about sixty pupils from the two-hundred or so school-aged children in the area. It is the first experience of school for most families. The teacher and his wife trade in shallots and garlic, and run a small store from their house, which has become a focal point, people stopping there while travelling between the inner hills and the coast.

4.2 HOUSEHOLD CHARACTERISTICS

With the exception of the school teacher, who does not originate from the area, the level of education is very low. Of the six households surveyed, three household heads have no education, two have one or two years, and one has six years. Since the new school was opened, all children from the cluster of houses nearest the school have been attending. Completed family size is large, eight children being common, although the family planning program promoted by the school teacher's wife is becoming established.

4.3 HOUSEHOLD ECONOMIC STRATEGIES

Corn and shallots are the mainstays of the local economy, and many households are suffering severely because of the failure of shallot harvests due to disease. They depend on cash from shallots to meet expenses for both staples and other items. Unlike Alau, all the households are involved in shallot production, some more succesfully than others. Only three grow rice. All the households have planted some cocoa trees, and a few have planted cashew and clove. None are involved in regular wage work on the coast, although they go there to find cash when facing a crisis such as failed corn and shallot harvests. The main casual source of cash income is from the porterage of shallots to the coast.

4.4 HOUSEHOLD PROFILES

Household 1 Both husband and wife were born on Silikohong, and they have acquired land rights from both sets of parents, in addition to clearing some land themselves. A break down of their current farm plots indicates the range of land uses and land rights in a frontier area:

> *Plot* 1 - borrowed from his father, 50m x 50m, just reopened after ten year fallow; obtained good harvest of rice;
> *Plot* 2 - permanent rights acquired in 1986 from the individual who first cleared it in the 1950s, in exchange for 12 bundles of rice; now being planted with cloves and cocoa;
>
> *Plot* 3 - 40m x 60m, 12 degree slope, 210m above sea level, fallowed ten years, first cleared in 1970 and ownership subject to dispute, so can only be used for annuals, corn, papaya, bananas, and root crops (cassava, sweet potato);
> *Plot* 4 - 40 x50m, 12-37 degree slope, 215-240m above sea level, fallowed ten years; purchased by the wife's father from the individual who first cleared it in 1940, and given to the wife; used first for two harvests of shallots, now planted to corn, shallots and 140 cocoa trees. The shallots in the field belong to a nephew from Tomini, who asked to borrow land here.
> *Plot* 5 - in Siboalai, cleared from previously passed over primary forest alongside a small river in 1989 by a just-married daughter and her husband, and given as a gift to the parents; first used for corn, now being planted with 500 cocoa trees.

Despite having many children, the household's labour resources are still stretched. In part this is because the older children have separate enterprises: the older unmarried son has his own separate farm, with shallots, corn and cocoa, although his mother and sister help him to weed, and have some claim on the proceeds as a result; the daughter is providing all the labour for a shallot plot belonging to the school teacher, in return for half a share of the crop, proceeds from which will be her own cash. The second son has not been permitted to establish a separate garden because of his dependence on the mother and sister for weeding. Three younger children are at school, and are unavailable in the mornings either to do farm work or to care for younger siblings, their usual task. The family's shallot production has declined because of disease. The main source of ready cash income for purchase of essentials such as kerosene and salt comes from porterage of produce to the market down on the coast.

Household 2 This younger couple has recently suffered some serious failures: a corn crop ravaged by wild pigs, and a shallot crop that was diseased, not even yielding enough to replace the sets. As a result they are reduced to asking for food from their parents, and processing the emergency food ondot. The husband also frequently does porterage, and, during their crisis

period, went to search for wage work on the coast some 30 km away. The couple were being assisted by gifts of food, labour and seed from their parents.

Their field plots are as follows:

> *Plot* 1 - bought by husband's father in 1980 for Rp20,000, first worked by this couple in 1985, fallowed two years and reopened by them in 1988, although the parents still have claims on the land and some of their crops are also planted there. It measures 40m x 55m, at a slope of 10-20 degrees, altitude 245-260m. It contains 20 cocoa trees, corn, five coconut seedlings, pineapple, sugar cane and tumeric, plus the parent's bananas and papayas.
> *Plot* 2 - similar to *Plot* 1 in origins and characteristics, in process of being cleared for shallots and corn.
> *Plot* 3 - planned for rice.

Household 3 This is an elderly couple living and farming alone, although also assisting/assisted by their son, number 2 above, and by their daughter, wife of number 1 above. The husband was born on Silikohong, and is related to the founders of the settlement as Siboalai. Seven of his ten siblings migrated to other mountain areas (Baina'a, Tomini, E'eya). They have a tree garden started in 1988 with fifty cocoa, one clove (many died), seven kapok and fifty cashews. They also grow corn, rice, and shallots. Their stated reason for planting trees is "in preparation for death," perhaps so that they will be remembered by descendents who will enjoy the fruits.

Household 4 The wife is another daughter of number 3 above. They have three gardens, given by the parents of either husband or wife. One garden has about one hundred cocoa and twenty cashew trees, one has corn and another shallots. Their main cash income source is shallots, with porterage of goods providing an additional source, especially when their shallots have not done well.

Household 5 The husband is the elder brother of the man in household 4 above, and the wife also originates from Silikohong. Their farming pattern is similar: a few trees, a rice field, a corn field, and a shallot field. The teenage children farm shallots independently, and some have been placed in charge of rice fields, so that the households total number of active farm plots is eight.

Household 6 The family has about thirty trees, shallots, corn, and many banana trees. They use banana as a staple. They have a heavy dependency ratio, with seven children all under twelve, and hope that the tree crops they are now planting will provide some security for the children's future.

Household 7 This is the household of the school teacher. He purchased land in Siboalai in 1983 (before starting the school), where he has seven hundred and fifty cocoa trees in production. He is in the process of expanding his farm area. Around Silikohong and Siboalai he has borrowed and purchased land for corn and shallot production, and obtains three shallot harvests per year each of about 3-500kg, about double the production per harvest of the other farmers in this sample, due to his capital reserves that enable him to replenish sets when necessary. He enters into share agreements with others to obtain access to labour, since he is occupied part of the time with the school. His younger brother is living with him, developing

a new cocoa garden on a share basis. He trades in shallots, buying up the produce of his neighbours, who then carry it down to the coast for a porterage fee. He also acts as a general shallot trader, buying up produce at the foot of the hill on market days, waiting by the side of the path along with the other middlemen traders. His wife runs a small store out of their house, selling salt, sugar, soap, kerosene, cigarettes, snacks and dried fish in small packets. The goods are paid for in cash, or sometimes through the sale to her of small quantities of shallots. She is also raising one hundred chickens for sale, the average for other women being 3-10.

4.5 SOCIAL RELATIONS OF RESOURCE ALLOCATION AND CONTROL

Patterns of intra-household exchange and assistance are much more evident here than in hamlets surveyed lower in the hills or on the coast. Examples are: going to help tie up and store the corn harvest of a younger sibling, in return for three hundred ears of corn; going to process sago from a tree belonging to the father, and receiving a share; helping build a rice store, plant rice, harvest rice; clearing land for gardens; married daughter and mother weeding each other's gardens; married daughter and mother together processing ondot; giving rice seed to a married child to plant and so on. With the exception of the school teacher, the households are relatively similar in their types and levels of production, with no evident inequalities beyond those having to do with skill and fortune in farming. Differences in access to land may exist, but the consequences of this were not evident from the survey, and the extent of pressure on land resources occasioned both by population density and tree planting is not clear.

5 DESA BOBALO, HAMLET SIBOALAI

5.1 LOCATION, HISTORY AND LAND USE

Siboalai is about one hour's walk futher inland from Silikohong, and typifies the cultural and ecological transitions of the border zone between middle hills and inner hills. The residents there comprise long term, stable residents who acknowledge having converted to Islam and separated from the inner hill people in the present generation, within the last forty years. There are inner hill people, some of whom are adopting Christianity while others retain their independence from imported religions. The inner hill families are related to the recent Muslims, and have also had connections to the area for at least a generation, although some of them have tended to migrate between this area and other inner hill locations, some one or two days walk away. In addition to these groups, there are newcomers from the coast who have acquired land to plant cocoa gardens, and one of whom is Bugis, not Lauje.

The history of the founding of the area is complex. One set of ancestors began clearing land in the area in the 1920s, moving in from Pepetano to the west, nearer Taipaobal. Additional pioneers, a group of brothers and cousins, moved in during the 1930s, and borrowed land from the first group, while also clearing the bulk of the remaining farmable forest in the 1940s and '50s. The two groups intermarried. Gradually over the 1930-60 period the second group were exposed to Islam when they went to sell shallots on the coast, and began to convert. They stopped intermarrying with the first group, who remain oriented towards the inner hills. Some of the inner hill people moved off to Alau and other inland areas in the 1970s, partly as a result of discomfort caused by the religious and social split between the two groups. In 1977, the inner hill people requested a final transfer of the land they had been lending to the second group for so many years, and thirty-two sarongs were handed over as payment. Thirty households, descendents and relatives of the second, now Muslim group, contributed to the

payment, thereby acquiring rights to the land on which their house and garden plots were located. The area of land retained by the inner hill people is called Ulat Perak, and is separated from Siboalai by a small stream.

There is some old secondary growth forest in the area, but little primary forest. The latter exists only in scattered pockets on steep, unsuitable slopes in between the more level and attractive areas that have previously been farmed. Most of the long term residents in the area have cleared a few plots in primary or extremely old secondary forest, but not more than four or five plots over a lifetime. The remainder of their land has been inherited from the previous generation, or purchased from others who cleared land and then moved on. It is common for farmers here to fallow land for at least ten years, and so to obtain abundant corn and rice harvests, provided wild pig and other pests can be controlled.

There is an established practice by which long term residents who have stayed in the area for more than one generation, and people from Silikohong or other neighbouring districts who wish to expand their holdings, acquire land on the frontier by negotiating with the longtime residents. They give goods or cash in return for the transfer of rights. People from the coast who have been attracted by the potential for cocoa plantations have followed the same practice, negotiating with the residents and paying cash, at a current rate of Rp40-60,000 per hectare for secondary forest land. There are rumours of some promised cash never being paid but, in general, these transfers appear to have taken place without causing disputes between the two groups. The long term residents, especially the Muslims, have welcomed the cash and the signs of "progress" in their area, while the newcomers have been careful to maintain good relations with their new neighbours.

Some disputes have occurred among the long-term residents over the sale of land to outsiders. This occurs when the descendents of the person who cleared the land have not divided the land between them, but one member, usually an older brother, disposes of some of an elderly or deceased parent's land to outsiders without agreement or consultation with the other descendents, who are potential heirs. One farsighted family has made a point of sharing out all their land, giving definitive rights to the younger generation before the death of the older generation. By this means they hope to avoid land disputes among the children, and encourage the younger generation to plant trees to strengthen their claims to the land before more outsiders arrive.

The new road that passes through Alau is planned to pass through Siboalai on its way to a major inner hill settlement at Tengke Ulu, a half-day's walk further inland. One hundred hectares at Siboalai have been designated an official garden development area, the location marked by a sign post, although so far only some village and kecamatan officials have planted trees there. There are reported to be disputes over the status of the designated land. It is claimed by local residents, who say they have not been compensated by the official system which regards it as state land. This garden scheme is dicussed in more detail in Part Three.

Apart from the land set aside for the official scheme, the village chief has been encouraging coastal families to move up and acquire other land directly from the residents, in order to establish gardens in the area. Ten new families arrived at the beginning of 1991. The effect of many outsiders moving in is to make the area less attractive to the residents, particularly inner hill people, who define themselves as being up-land of, and preferably distant from, Muslims and those associated with lowland authorities. Some of those who have family ties and land holdings elsewhere have been tempted to sell up and move out. Others, however, feel very

strongly that their land at Ulat Perak was inherited from their ancestors, and that they should stay there and retain the land intact for the next generation, refusing to sell secondary forest plots to outsiders.

The desire to plant tree crops has caused both newcomers and long-term residents to clear additional and more extensive forest lands than have traditionally been required for food and annual cash crop production. In some cases, steep land previously avoided for fear of landslide has been cleared for the first time.

5.2 HOUSEHOLD CHARACTERISTICS

Eight households were surveyed. The average age of the household heads is forty. Only one long-term resident has any education, three years. The other two residents in the sample with some education are newcomers from the coast. Completed family size is large, averaging 6-10 children. The complex households are formed by the addition of a newly married or widowed child, or widowed parent.

5.3 HOUSEHOLD ECONOMIC STRATEGIES

The climate and soils permit three shallot and corn harvests per year, which in a good year provides both sufficient staple foods and cash to meet other needs. At the time of the survey, however, several residents were experiencing severe difficulties due to loss of corn crops to the wild pigs, and shallot disease. Like the people at Silikohong, they were reduced to eating rootcrops, their own or begged, and struggling to find cash for necessities such as salt and kerosene, and to replace lost shallot sets. Some were resorting for the first time to the collection of rattan poles for the coastal merchants in order to acquire cash.

Of the households profiled below, numbers 1-4 are long term residents associated with Islam. Households 5 and 6 are newcomers who have come to Siboalai from the coast with the express purpose of buying land and opening tree gardens. Households 7 and 8 are descendents of the original inner hill pioneers. Other outsiders present are the school teacher, the son of the headman, the nephew of the camat, a Bugis family, and a dozen other coastal people, either bachelors or married men whose families are still living on the coast. None of them has yet acquired more than a few hectares and a thousand trees. The profiles demonstrate the diversity of origins and economic practices.

5.4 HOUSEHOLD PROFILES

Household 1 The husband and wife are first cousins, descendents of the brothers who lead the now Muslim founding group. The couple have acccess to some inherited land resources, but have emphasized the purchase and clearing of land, particularly in recent years. They have five gardens in process of cultivation, with tree crops (coffee, cocoa, cloves), corn, shallots and garlic. Two more gardens are being worked independently by teenage sons, who have one hundred cocoa trees each plus shallots and garlic. The origins of four of their gardens are as follows:

> *Plot* 1 - 50m x 150 m, 9-25 degree slope, 520m above sea level, first opened by the head of household in 1982. It was first used for corn, then fallowed for four years and reopened in 1986 for corn, rice, garlic, and ground nuts. Since 1988 it has five hundred cocoa trees, twenty-five cloves, five cashews, a variety of rootcrops, vegetables, corn

and one hundred coffee trees belonging to the wife planted under the forest on the edge of the garden.

Plot 2 - 40m x 50m, 10-40 degree slope, first opened by a neighbour in 1960, and acquired by the couple in 1966 in return for one parang, one shirt, and Rp1500. They have used the plot five times over a period of twenty-five years, usually with the same sequence of one shallot crop followed by two corn harvests, then root crops and fallow. Their recent harvest barely replenished the sets (72kg sown, 80 kg harvested) due to disease.

Plot 3 - 40m x 100m, 38-47 degree slope, 600m above sea level, first opened by the household in 1988. It has been used for cocoa, corn and padi, rested for one year, then used for garlic, and is now to be used for rice before being filled in with cocoa. The steepest areas are already showing signs of erosion. The first harvests on the newly cleared land were very large, yielding in a ratio of 1:75; 6,000 ears of corn were harvested, of which 1,000 was sold and 1,000 given to family; rice was also given to family who assisted with the harvest.

Plot 4 - land alongside a river, opened in 1990 by the head of household, with assistance from another who was paid a fee of Rp10,000 to cut down the bigger trees. The plan is to plant five hundred cocoa trees.

Plot 5 - plot purchased recently for Rp20,000 in goods and cash; in process of being cleared for shallots.

Note that the two gardens cleared recently, intended for tree crops, numbers 1 and 3, are three times the usual size of gardens cleared in decades past, which was 50x50 m. Plot 3 is especially steep. At the time of the initial survey, the household was suffering a shortage of cash after the failure of a shallot crop, forcing the husband to go and collect rattan, an activity normally only engaged in by younger men such as his sons. Once their garlic was harvested, they were able to stock up on rice, undertake ritual obligations such as the circumcision of sons, buy clothing, visit relatives, and begin work on a new garden. The household is involved in labour exchange with relatives and neighbours, and considerable cooperation with the households of married children living nearby. Their expenditures on food and other necessities during the four month period July - October 1990 totalled Rp49,600: Rp3,400 sugar, Rp2,000 kerosene, Rp2,000 soap, Rp4,200 fish, and Rp38,000 rice. This is an average of Rp12,400 per month.

Household 2 The wife is descended from one of the founders. She has not been given extensive rights to land by her father. Her father was working an area of forest in Sumpinit to the south of Siboalai when she was born, and the couple themselves cleared some land there in 1980 to which they plan to return. The husband originates from a neighbouring inner hill area Moganggal, and moved to the Simpinit/Siboalai area on marriage. In his area of origin he could access land from his parents but "other people are always borrowing land there so it has been turned into grassland."

The household was in very severe economic distress when interviewed in July, due to the failure of a rice crop, a corn crop, and a shallot crop. The whole family, including seven children, were staying temporarily with a married son while trying to re-establish their farming enterprise. Corn, shallot and rice seeds were donated by their married children, as were staple foods such as cassava and taro. During this period of dependence upon their married children, the parents provided them with assistance in field tasks, and received labour assistance in return. Cash for essentials was obtained by collecting rattan, and by the sale of vegetables still growing among the failed corn and shallots. During the four month period July to October 1990, they spent only Rp8,250 on household needs: Rp1,250 kerosene, Rp1,000 soap, Rp500 salt, Rp500 tobacco, Rp500

coconut oil, Rp2,500 fish and Rp2,000 rice, an average of Rp2,060 per month. In addition they spent Rp11,500 on rice and fish for a labouring party called to work on their farm.

The household has three active farm plots:

> *Plot* 1 - 50m x 40m, first opened by another in about 1930 and bought by the household head in 1957 for the price of two sarongs. The field is in use now for only the third time since 1957, after a fallow of fifteen years. They first planted rice, harvested three months ago, then corn which was ruined by pigs, and then corn and shallots, from sets given by a married child.
> *Plot* 2 - 50m x 50m, 7-10 degree slope, opened by her father in 1950, and given to her in 1982. It has been used for rice, corn, twenty-three cocoa trees (1983), and is now being cleared again for the addition of six hundred new cocoa trees.
> *Plot* 3 - opened in September for rice.

Household 3 The husband is descended from one of the founders, and acts as head of the family since the father is very old. He has access to plentiful land, cleared by his father and by himself. He is an informal leader and ritual specialist, and has been acting as broker, arranging for land acquisition by outsiders. He has planted about two hundred trees over the last few years, and grows rice, corn, shallots and garlic. The only non-farm activity he noted was work supervising the weighing in of rattan during the extraction boom. A newly married son still lives with him.

Household 4 The wife is a daughter of one of the founders, and the husband originates from a middle hill area, Ogopungsong. They moved to Siboalai only in 1987, attracted by the possibilities for planting tree crops, and have both borrowed and purchased land. The husband obtains extra cash by collecting rattan and by porterage.

Household 5 The household moved to Siboalai in 1989 from a middle hill area in, Pibounan. They have no relatives in the area, and have purchased land. They have some trees -- kapok and coffee, on the coastal plain, and so far have planted sixty cocoa trees in their new hill garden. The man is a widower, living with three unmarried children as well as a widowed daughter and her young child. They have planted corn and rice for subsistence, but found their rice attacked by pigs, birds and rats. With his unmarried son he collects rattan, each of them averaging Rp30,000 per month. He has also been clearing the new cocoa garden for the teacher, earning abour Rp15,000 per week.

Household 6 The household moved from the coast at Bobalo to Siboalai in 1990, buying land to establish tree gardens. They have already planted various trees under some coconuts on the coast owned by the wife's parents, and have other significant assets such as cattle. The husband originates from Bobalo, but spent twenty years with his family on the west coast at Toli-Toli where they grew cloves. They have not planted food crops in the hills, having all their supplies carried up from Bobalo.

Household 7 This is the household of a daughter of one of the inner hill pioneers. She was born over on the western side of the peninsula, reflecting her father's wide ranging movements. The husband originates from an inner hill area of Palasa. The couple moved to Siboalai in 1982 in order to be "closer to the village and the market," which they visit about once every two months. For them, moving to Siboalai represents a choice to live in a location more accessible to the coast than the areas deep inside the inner hills where they had lived previously. They

have planted about eighty trees of various kinds in the past two years, as well as growing rice, corn, shallots, garlic and root crops. Additional cash income comes from selling bundles of rattan strips, used for ties in house construction.

Household 8 The husband is son of one of the inner hill pioneers. He was also born in the inner hills above Palasa, and moved here in 1982. His wife originates from Ulangga, Palasa. They planted thirty cocoa trees and eight cloves this year, and have long planted garlic for sale. Root crops are their main staple.

5.5 SOCIAL RELATIONS OF RESOURCE ALLOCATION AND CONTROL

The zone has been one of cultural transitions for a period of at least a generation. Some have become affiliated with Islam, and have stayed within the area, slowly adding to their pool of land by both clearing and purchasing. Others have maintained their traditional practices and their orientation to a broad set of kin ties and land claims spread over the inner hill zone.

Newcomers have integrated themselves into the community through marriage and/or through purchasing land as a base before trying to expand their holdings. No coastal people have tried to clear heavy forest land, feeling themselves too physically weak and inexperienced to contemplate the task. Since the mechanism for acquiring land by purchase has long existed in the frontier area, they have adopted this strategy.

Tree farming is the new element in the picture, attracting many outsiders from the coast, and also potentially creating conflicts among the long term residents over claims to land, which now have to become more definitive. Economic welfare is related to the quantity and quality of land to which a household has access, as well as to skill, luck, capital for shallot and garlic sets, and the strength of kin ties to help a family out in a bad year. Newcomers depend on their capital reserves to acquire access to land and labour, paying wages on a contract basis to other newcomers for the clearing and maintenance of their tree gardens.

Long term residents are mostly too busy with their farms to be attracted to daily wage earning opportunities with the newcomers, although the inner hill people have stated a willingness to use their specialised skill to clear the big trees on new forest land for new settlers, providing the work is properly paid.

6 TRANSECT THROUGH THE THREE ZONES: DESA LOMBOK, THE SIAVU RIVER VALLEY AND ITS WATERSHED

This valley is the heartland of the Lauje area. It is the site of significant historical events, such as the splitting of the Lauje people into two groups at Pola Batala, near Polumele (Nourse 1989). It contains the full range of agro-ecological and cultural variation that characterize the Lauje way of life. The middle and lower reaches of the main river and all its tributaries are intensively settled and cultivated. The remaining heavy forest in the upper reaches is being brought slowly into cultivation.

The officially registered population of Lombok in 1990 was 3,899 (this figure differs from the number counted in the 1990 census in Lombok, 5,660, because many inner hill people registered as residents of Bobalo live within the physical boundaries of Lombok). The village of Lombok occupies the hinterland of Tinombo, Dusunan and Tibu, the latter two villages comprising only coastal, foothills and some middle hill lands. Lombok is the only village that does not reach

down to the coast. It shares its inner boundary with Desa Damsol, at the center of the peninsula.

The following is a description of land use, settlement, and cultural patterns along the river valley and surrounding area. The place names mentioned are indicated on Map 3.

6.1 THE LOWER REACHES

The coastal plain of Lombok and the lower reaches of the river valley are heavily planted with coconut trees, as is the case in other villages. Important occupations are seasonal hillside farming, wage labour, and trade with the hinterland. There are a large number of men and women petty traders who walk into the hinterland to buy and sell produce, and others who wait at the end of the road for people to bring down their goods. There are also about six larger-scale traders whose brick and concrete houses line the road, with weighing scales prominently displayed. They trade in shallots, garlic, and the newer produce of the hinterland, such as cocoa. Their mode of operation is more fully described in Part Two.

From the end of the road, it is necessary to ford the river about ten times in order to reach Polumele. Level areas along the river have been fenced and planted with coconut and cocoa trees, although they are prone to flood. The hillsides of Ogonumanu on one side and Ogoulangga on the other are grasslands, used occasionally for shallots, with low productivity, but mostly just for grazing the cattle and goats of wealthy coastal dwellers. This is the area reported to have been damaged irreparably by the forced cultivation of cotton during the Japanese occupation (Nourse 1989:358n16). It has been grassland since the 1950s, and suffers frequently from accidental burns which prevent the regeneration of other vegetation. Because it is seldom cultivated, there are no strong ownership claims to the hillside land. A few people from the Lombok lowlands try growing shallots there, because of its accessible location, but a group of them have moved their shallot gardens over to the middle hills of Dongkas, where the land is more productive.

There is a school at Polumele which was founded in 1967 by a teacher who originated from Polumele and attended primary school in Lombok. He is the only teacher to have stayed at the school, all others appointed from elsewhere having lasted only a short while due to the perceived isolation and inconvenience of the posting. He is now unofficially assisted by his son. He does not collect school fees, and himself pays for expenses such as graduation photos. In return, he receives some free labour services from parents and children for his farming enterprise. He grows corn, rice, shallots, groundnuts and root crops as well as coconut and cocoa.

6.2 THE MIDDLE HILLS

The path has four branches at Polumele, leading up to Patinke and Taipaobal to the north, to the Ponus up behind the school to the south, and to the level stretch leading inland along the main river known as Bobontolang.

The Patinke area is heavily settled and cultivated up as far as Balangsiang, which is the forested frontier of the inner hills. Much of the hillside land is covered with *imperata* grass, and fallows are seldom more than three years, although yields are still considered reasonably good, and rainfall conditions permit 2-3 harvests per year. Rice, corn, shallots and groundnuts are grown. The shallots have been devastated by disease during the past two or three years. Tree planting

started in about 1985, and there are clove, kapok and cocoa trees coming into production. Some members of the founding families of Malabi and Sigeleti have about 600 trees, although a house to house survey would probably show that some families have little or none. There is pressure on land, and many who have aspirations to begin or extend their tree gardens are unable to access additional land resources. Some lowlanders, including the village head, have bought land in the area to plant trees.

The hillsides at the lower reaches of the Ponus and Simoie are grasslands, while the upper reaches are still forested. There is steady expansion into the area by long-time area residents, both middle and inner hill people. There are no lowlanders in this area as yet. In the upper reaches of the Simoie, a few households are clearing forest land in order to produce garlic for sale. Garlic requires the deep fertile soil of newly cut heavy forest land. The plot sizes are as big as 120x120m, and are used five times in straight succession before being abandoned to grasses, weeds and eventual forest regrowth. The households growing garlic on a major scale have prospered, and one is building a brick house down in Lombok village; they also own a television. Households planting shallots on secondary forest land along the middle reaches of the Simoie can only manage smaller gardens, because of the burden of weeding, although they may have several plots at different stages of maturity to stagger the labour inputs. Many households are not involved in garlic or shallot production, and have great difficulty obtaining cash to buy food supplements and other goods.

Near the group of huts that serve as the Simoie market, there is a stand of ebony which was left behind after some extraction activities in 1973, and is now protected by the government. There are also about 80 resin trees in the forested headwaters which are protected. The residents are afraid of fines for accidental burning of these trees, and their presence in the headwaters may restrict further clearing of forest in the area.

There is no *gliricidia* for live fencing in the area, but two bamboo species, known locally as *Tiboyole* and *Pananke* are capable of rooting when the stakes are planted as a fence.

Simoie is a cultural frontier zone. The people are nominally Muslim, but some are reputed not to follow the dietary prohibitions of that religion. Some were attracted to join the Christian group around the mission, but were dissuaded by the village chief from doing so. There are differences in language above and below Simoie, the usage below showing more influence of Indonesian. Above Simoie there are no non-pig eaters, with the exception of one school teacher at Ogoalas. Taipaobal is also a cultural border zone, being predominantly Muslim but close enough to the non-Muslim population of Lado-lado for interactions and intermarriages to take place (see Nourse 1989). Some of the residents interviewed in Lado-lado recognize that their ancestors who pioneered the area originated from Taipaobal, choosing to move on as the area became dominated by Muslims, while also responding to the poor conditions for agriculture, as grasses have dominated Taipaobal for sixty years.

6.3 THE INNER HILLS

Further along from Simoie is Ogoalas, the site of a clustered settlement of about thirty households, a church, a health post, a school, and the airfield and houses of the three New Tribes Mission families. When the mission was first established in 1975, Ogoalas was the ecological frontier zone on the border between the middle and inner hills. Land there is reported to have been first cleared in about 1960. It is now heavily farmed and settled, with most of the fallow land under grasses and light secondary forest.

The land across the river at Lado-lado is in a similar condition, and was settled earlier than Ogoalas. Farmers grow corn, root crops, shallots and ground nuts, and some have begun to plant trees such as coconut, clove and cashew, purchasing seed from the coast or obtaining some from the mission. Individuals who do not have access to land for planting trees acquire rights by agreeing to give half the trees they plant to the landowner. Rice is grown only when land has fallowed sufficiently, and a group of households farm close together to "share the birds". Yields of staples are still high enough for farmers to produce most of their own food. Root crops figure more prominently here than in Muslim areas of the middle hills, a fact they attribute more to the relative absence of pigs than to different dietary preferences. Kerosene and salt have been regularly purchased for several decades, but other goods sold at the coastal market such as soap, sugar, coffee, tobacco and dried fish are bought only occasionally, when a shallot crop has been sold. Supplementary sources of income are porterage of shallots to the coast, and collecting rattan to make into strips for sale.

The farmers interviewed in Lado-lado are occupying land cleared by their parents generation 30-40 years ago. They themselves have only occasionally cleared heavy forest, and they are for the moment unwilling to move further inland because of their attachment to their ancestral land and their desire to remain within reach of the coastal markets. There is also some suggestion that the people who are clearing the forest are "different," although still Lauje, and that it might be socially uncomfortable to go and live near them. The difference implied relates to cultural and agricultural styles: the people in the hinterland are considered to be backward, or quite literally, "back woodsy," more dependent on the products of the forest and less progressive than those in the Christian area bordering the middle hills. Some people in Lado-lado are taking more interest in clearing forest now with the intention of planting tree crops, a pattern evident also in Siboalai. The frequency with which the people at Ogoalas and Lado-lado farm in grasslands and secondary forest is an important point to note, since these people are culturally classified as backward inner hill people by those living in middle hills and on the coast, and yet are growing the identical crops, using the same techniques, in land conditions similar to those elsewhere in the middle hills. The only difference is that some of them occasionally clear new forest lands. In this area, there is no clear co-incidence of cultural and agro-ecological boundaries.

The mission estimates that there are about 1000 Christians (about 200 families) among the 5-7000 non-Muslim Lauje. There are church groups that meet regularly in a number of locations throughout the hills besides the 100 families close to Lado-lado and Ogoalas. These locations include Ansibong, Siboalai, Beneti/Babong, Sibalutong and Sitatuli. The teaching and extension work is done by Lauje elders, with the missionaries concentrating on training of the elders and bible translation. The mission has emphasised community development, and considers that the Christian community's capacity to work together is greatly improved over the situation that existed previously, where inter-group tensions were high and people were afraid to move around the hills. The new community strength is shown in the work they have done upgrading footpaths, building a bridge for the school children to cross the river, maintaining a rotating credit fund for trading enterprises, building a new marketplace, running a health center, and responding efficiently to outbreaks of disease such as typhoid or cholera which would previously have claimed many more lives. Most significantly, they have a clear sense of their right to the land they occupy, and are determined to prevent the incursion of coastal dwellers and non-pig eaters into their area.

The residents of Ogoalas and Lado-lado heard in 1989 that they would need to have twenty trees on a plot of land to secure their rights to it. They started a community fund to buy 2000 cocoa seeds and hybrid coconut, and they set about planting trees. However they have not yet

paid land taxes, and their claims are still vulnerable to incursions, especially those sponsored by the government in the form of land development schemes. In their favour, the land in upper Lombok is so heavily settled and farmed right up to the headwaters that it is probably less attractive to outsiders than the hinterlands of other villages such as Bobalo and Palasa.

"Traditional" group dynamics among the inner hill people noted by the mission include the strong obligation to share food with people who ask for it, although there are attempts to hide surpluses in order to reduce demands. They also lend food and cash, mostly without guarantees. People are unwilling to put themselves above others and consequently leadership tends to be weak. Large work groups are used only for planting rice, people mostly working individually or in small groups, on an exchange basis or for payment in cash or kind (sarongs, food). They also engage in share cropping for cash produce such as shallots or more recently trees. The missionaries have noted the importance of example as a means for innovations to spread quickly, while groups also specialize in certain products, such as blow guns at Alau, musical instruments at Bineti. There is a tendency to be litigious, judges frequently being called upon to hear family cases related to adultery, divorce, improper adherence to procedures for arranging marriage, lies, gossip and threats. The largest ceremonial occasions are feasts to mark marriage and death, other events such as birth, tooth filing and circumcision occasioning little expense. The main goods exchanged at marriage are antique ceramic and brass platters that have been in circulation between families for many decades. Wedding feasts tend to be much smaller and less expensive than those in the middle hills.

The forest frontier is a further 1-2 hours walk, at the headwaters of the Molitoog, the Nogaat, and at Sibalutong and Ngesi-ulu. Farmers often maintain farms and semi-permanent houses in the more accessible areas, such as Sibalutong and the middle Nogaat, farming in grasslands or secondary forest most of the time, while occasionally clearing forest land further away when conditions are suitable, staying there for a few months then returning to their main house after the harvest. They use some secondary forest land, vacated by others who have moved further on, as a base while clearing new land. They clear accessible land passed over the first time, such as that along river banks, or venture out to the edge of the main forest. For some, the desire to live close to other relatives, to have access to the market, as well as to tend the tree crops they have planted in the past five years serve to tie them to one place, where previously they would eventually have moved their household inland to their newly pioneered farmlands, not returning to the original site until it was well fallowed. Whether people choose to stay where they are, or move off further inland or to other inner hill locations depends upon a range of personal factors, such as skill, strength, ambition, and attachment to the family groups of husband, wife or other kin.

Among the households that live in the more isolated headwater areas are those that are not registered with village authorities. Some are simply too remote, while others have been unwilling to submit themselves to the authority of the government, to register their names (which they often see as a forced conversion to Islam), or to associate closely with the mission. They are slowly clearing forest and moving further into headwaters, but face two limitations: the missionaries note that the soils above Ogoalas are a heavy red-yellow clay which is less fertile than the soils in the middle hills, indicated by the ferns that are prominent in the fallow vegetation; and they are running out of space as they back up against the uninhabitable walls of rock that flank Mount Sojol and mark the center of the peninsula.

The missionaries have seen evidence of a few isolated households, probably dependent on hunting, gathering, and small gardens deep in the forest, but the majority of land opening is taking place from the edge of the settled area, with residents in contact with village authorities

and familiar with the coastal markets. The mission's estimate of the number and distribution of isolated households is 20-30 in the Nuga'at, 8-10 above Sibulotong, 6-8 at Ansibong, and 40 above Palasa. This is only about five percent of the estimated 5-7,000 non-Muslim Lauje in the hinterlands, and an even smaller percentage of the total 15,000 Lauje in all three zones (see Anema 1983 cited in Nourse 1989:1). It is thus quite misleading to regard the Lauje as a whole as "isolated" (*terasing* or *terpencil*).

6.4 DEVELOPMENT ASSESSMENT FOR THE LOMBOK RIVER VALLEY

The area is intensively farmed and settled. There is now pressure upon land resources, stemming from three sources: population growth associated with improved medical care organized by the mission; the geographical limitation posed by reaching the poor soils and sharp rocky peaks at the center of the peninsular; and the effects of converting land to tree crop gardens, most evident so far in the lower middle hill areas such as Patinke. The residents also believe that there has been a decline in rainfall and increase in flash floods, although no hard data exist. Incursions by outsiders have not yet become a problem, probably because the little remaining attractive forest land is deep in the hinterland and inaccessible, and because of the cultural differences that make the hinterland potentially "inhospitable" to non-pork eating outsiders. The middle and inner hill residents are still vulnerable to developments such as roads or large scale government schemes that could bring in large numbers of outsiders and/or challenge their entitlement to the land upon which they depend.

People at all locations in the valley, from the headwaters to the foothills, are involved in a process of agricultural intensification necessitated by the pressures of population upon the environment. They require assistance with this process, beginning with an assessment of their land resources, and the development of culturally appropriate and sustainable means to increase both food and cash crop production. Marketing structures also require attention, to ensure fair prices for new and existing crops.

Community development and extension efforts will need to be sensitive to the cultural diversity that exists in the area, and avoid all the inputs being captured by one group to the exclusion of others. This is a real danger since there is a tendency for authorities in the lowlands either to dismiss the people living above Simoie as primitive and uninterested in modern farming, or to claim that since they are already self-sufficient in food and/or since they have already received some assistance from the mission, their needs are less immediate than those of the people in the middle hills or coastal zone. The serious pressures on the existing farming systems in the hinterland are not recognized, probably because authorities seldom visit the area, and assume that empty, fertile land is abundant. Extension services will be easier to organize where there are community organizations such as the Church groups that can promote and disseminate new imputs (providing they are appropriately paced). An even handed approach to all groups is essential, allowing each group to determine its priorities and needs. Permitting one group to progress ahead of another risks creating jealousies. It also threatens the livelihood of the weaker parties, whose land resources may be coveted by those who wish to expand their productive activities.

BIBLIOGRAPHY

Chambers, Robert

1988 "Sustainable Livelihoods, Environment and Development: Putting Poor Rural People First". Discussion paper 204, International Development Studies, Sussex.

Dove, Michael

1985 "The Agroecological Mythology of the Javanese and the Political Economy of Indonesia". Indonesia, No 39, April, 1985 and reprint No. 84, East-West Environment and Policy Institute.

Hoevell, G.W.W.C. Baron van

1892 "Korte Beschrijving van het Rijke Mooeton [Bocht van Tomini]" (A short description of the kingdom of Mouton [Bay of Tomini]. Tijdscrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschaap, Series 2, Vol. 9, pp. 349-360.

Li, Tania and Sulaiman Mamar

1990 "Sustainable Rural Livelihoods". Working Paper 1, School for Resource and Environmental Studies, Dalhousie University.

Nourse, Jennifer

1989 "We are the womb of the world: birth spirits and the Lauje of Central Sulawesi". PhD Dissertation, University of Virginia.

Rousseau, Jerome

1989 "Ethnicity, old and new". Unpublished paper presented at the Canadian Council for Southeast Asian Studies meeting, Vancouver.

Stickings, Jeremy et. al .

1989 Provincial Development Status Review Sulawesi Tengah. University of Guelph and Directorate General of Regional Development (BANGDA). Department of Home Affairs in cooperation with Canadian International Development Agency.

Zerner, Charles

n.d. "Sharing the Catch in Mandar: Changes in as Indonesian Raft Fishery (1970-1989)".

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Kantor Menteri Negara
Kependudukan dan Lingkungan Hidup
Jl. Medan Merdeka Barat 15
Jakarta Pusat 10110
Indonesia

School for Resource and Environmental Studies
Dalhousie University
1312 Robie Street
Halifax, Nova Scotia, B3H 3E2
Canada

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