

WOMEN AND THE ENVIRONMENT:
A CASE STUDY OF TRANSMIGRATION AND ADAPTATION
AT LUWU IRRIGATION SCHEME,
SOUTH SULAWESI, INDONESIA

BY

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Submitted to the Faculty of Graduate Studies
in Partial
Fulfillment of the Requirements
for the Degree of

MASTER OF ARTS

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"In ignoring gender, there is a global distortion in ecological understanding of human impact on the environment." Valerie A Brown and Margaret A. Switzer (quoted in Ofosu-Amaah, 1994: 63)

ABSTRACT

Women are key actors in development schemes, yet their exclusion from large-scale development planning and implementation, particularly in developing countries, has left untapped a potentially important economic and environmental contribution. The transmigration programme, a large-scale development scheme in Indonesia, attempts to address two on-going and problematic issues within that country: population control via population redistribution, and economic development. Both issues directly impact women, mostly because the physical environment upon which women depend becomes altered when these issues are acted upon.

Field research for this study on women and the environment was carried out over several months at the Luwu Irrigation Project Site in South Sulawesi Province, Indonesia. The data was gathered by using a structured questionnaire administered to female heads of households within several transmigration villages at Luwu. Because of its flexible, yet reliable, characteristic, the systematic sampling method was employed.

Results of this research show that the lot for transmigrant women relocated to a new environment has not improved very much. Except for gaining land tenure for their family as compared to their point of origin, women are still experiencing vulnerability through their exclusion in major decision-making processes. Surprisingly the workload for most female heads of households increased substantially. More crucially, although the environmental resources necessary for transmigrant women to maintain their family's health were reported as improved initially upon relocation, evidence of shortages is now emerging in potable water, fuel and food sources and land tenure itself.

Demographic stress is felt from increasing population numbers using the same environmental resources on Luwu's transmigration sites, and crucial decisions will have to be made regarding better utilization and rehabilitation of these resources. It is mostly the women who have direct and daily experience with environmental resources and it is they who are affected first when these resources become lessened. The inclusivity of women in such major decisions, through improved status and education opportunities, seems a logical and necessary approach.

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CHAPTER 1

INTRODUCTION

Recent decades have indicated an ever-increasing necessity to effect reversals in the environmental impact on earth's resources by human misuse and overuse. To many, this last decade (1990 - 2000) before entry into the 21st century, indicates a last chance for humanity to arrest the spiral of environmental degradation perpetrated by the destructive nature of human relationship to planet Earth. Today there are 5.57 billion people on this planet, with three out of four living in developing countries. In fact, by the year 2000, it is estimated that the global population will have grown to 6.2 billion with 80 percent of the world's population living in the "South"¹ (IDRC, 1990: 17). However, the fact remains that Earth does not have the natural capital (fossil fuels, groundwater, clean air, and forests) to absorb an exponential increase in humankind's assault. Humankind must therefore become aware that we are now approaching many environmental limits because of our rapidly increasing population numbers and because of our accelerating exploitation of natural resources².

It is doubtful that Planet Earth will support such growth and exploitation without ever-increasing environmental distress. Ultimately population is controlled by access to basic environmental resources of food and water. An indication of the growing strains on the ecological system providing these resources is the increasing numbers of

¹ "The South" is used here synonymously with the term "developing countries."

² Environmental or natural resources, in this context, include renewable (forests, water, wildlife, soils) resources and non-renewable (oil, coal, iron ore, etc.) resources that are natural assets. All are products of the physical environment which is of use and value to the earth's inhabitants and are used by organism (also humans) in ways that affect the well-being of others (McNeely *et al.*, 1990: 153).

environmental refugees and environmental migrants. For millions around the world, the cycle of poverty and degradation has reached the point of no return; flight is their only option because their systems for life support are permanently collapsing (UNHCR, 1993: 18; Hall and Hanson, 1992: 217; Suhrke and Visentin, 1991: 73).

The overriding need is for a new view of the world, one that reflects environmental realities and redefines security and economic growth. Such a new view is possible by integrating ideas and expertise from half of the world's population, *women*, who, until now, have largely not been consulted in the planning and implementation of large-scale development³ schemes for economic or other gain, particularly in developing countries.

Large-scale development schemes implemented in developing or Southern countries have become a common phenomenon within this century. Indonesia is no exception. Considered today as placing midway on the developing continuum and being comparable to Canada in terms of natural wealth, and perhaps potential political significance, Indonesia has worked aggressively to convert its natural capital in the name of economic development (Hall and Hanson, 1992: 45).

As a developing country seeking to solve some of its embryonic, economic growth problems and to establish control over its geographically far-flung archipelago, Indonesia continues to carry out transmigration programmes. This programme, which is a large-scale, resettlement scheme, through the organized relocation of families, has become the

³ The process by which capacities of people affected are supposedly increased and their vulnerabilities reduced.

largest colonization project in the world. Between the early 1970's and the mid 1980's, some 3,600,000 people were transmigrated to the Outer Islands⁴, with the stated intention of easing the demographic pressure on land in the densely populated islands of Java, Madura, Bali and Lombok, known as the Inner Islands of Indonesia.

Much concern has been voiced regarding social and environmental issues in the recent projects in the transmigration programmes. A main social concern has centred on the fairness with which land was acquired. As land pressures grow, there are problems also with integration of transmigrants among local inhabitants and aboriginal peoples. Additionally, we know that the success of any migration, voluntary or involuntary, depends to a large extent on the ability of the relocated women and their families relocated to continue their lifestyles, roles and values as practised before (Petersen, 1958: 265). For the majority of Indonesian transmigrants this means they will wish to resume their traditional agricultural lifestyle upon arrival, using the physical environment in the pursuit of securing a stable and permanent agricultural income.

Indonesia's transmigration programme also incurs environmental costs as forested areas are denuded to accommodate the newly transplanted migrants. Transmigration settlements have reduced land under forest cover and placed pressure on conservation areas and on wildlife habitats as the carrying capacity of fragile ecological systems have most often been depleted.

⁴ Indonesia's Outer Islands consist of Sumatra, Kalimantan, Sulawesi, Moluccas, Irian Jaya, and the numerous smaller islands

Both the social and environmental concerns, brought about by transmigration, impact *women*⁵ extensively, since it is women who generally provide the cohesive elements within the family and hence within the society. Without addressing the needs of women as direct co-beneficiaries and co-planners, a successful development effort will be difficult. Success of development projects, such as the transmigration programme in Indonesia, rests also on implementing knowledge acquired from research, observation and experience about the women involved. It is appropriate, therefore, to research the impact of large-scale developments, such as transmigration, on women and on the physical environment.

Since both women and the environment seem to bear the brunt of large-scale development impacts in the South, it should become evident that women and the environment can be considered to be closely integrated. The research within this thesis is directed to this largely unexplored theme within the context of Indonesia's transmigration as a development project. A case study of transmigrant women located at one of the irrigation-based transmigration (development) schemes in Indonesia was carried out.

1.1 *Nature of the Problem*

Large-scale development projects, such as irrigation-based human resettlement or transmigration, most often alter local ecosystems upon which women depend for

⁵ The term "women" as used in this thesis is meant to encompass those adult females that are the general managers of the home. The women referred to here will be those that are of child-bearing age or those that are past child-bearing age, but still having substantial or main responsibilities in the home.

sustainable life support. Women are key actors in development systems, yet their neglect in development plans has left untapped a potentially large economic and environmental contribution (Overholt *et al.*, 1985: 3). This thesis seeks to address this oversight by researching the impact of Indonesia's transmigration programme, as a large "development" project, on the women involved.

Transmigration also impacts the environment, because the environment itself becomes altered in the wake of development. Transmigration therefore appears to directly affect the women who are involved and the environment upon which women depend. Women also represent half of the population and, because of their numbers, it would only seem fair to integrate their ideas and needs within policy concerns and practical realities.

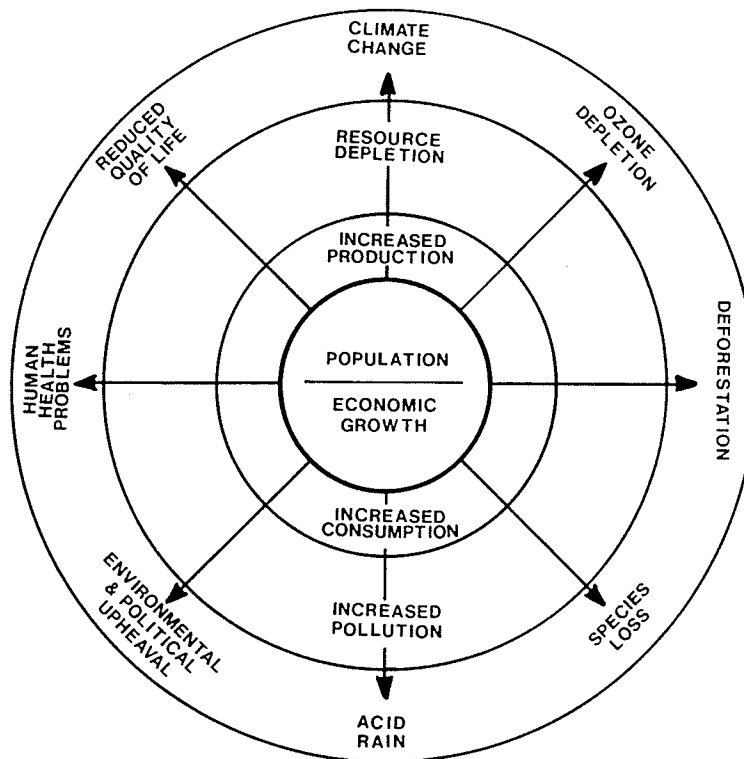
1.1.1 *Environmental Justification of the Study*

The alarming impacts of the almost absent-minded degradation and destruction of large areas of the world's biosphere is not only becoming too well known to millions of people, but is also affecting them on a daily basis. As the environmental issue wheel in Figure 1.1 depicts, the world's rapidly increasing population and the belief in the potential for unlimited economic growth, via large-scale development projects and other economically-driven industrial schemes, usually lead directly to increased production and consumption. Stead and Stead point out that,

As human kind incessantly produces and consumes, it continues to deplete its resources and to create devastation with wastes and pollutants. The resulting problems include environmental catastrophe, poor air and water quality, loss of species, climate change, land degradation, and a lower quality of life, now and for posterity (1992: 21).

Regularly there are disturbing stories about the burning of tropical forests, reclaimed wetlands, polluted rivers, lakes and oceans, and a growing list of animals and plants species becoming extinct. The human species may have little time left to reverse such a degraded and degrading situation, and if rehabilitation is not carried out, we will permanently undermine the ecosystems upon which our quality of life depends.

Figure 1.1 The Environmental Issue Wheel



SOURCE: Stead and Stead, 1992: 21

Conceived from the growing awareness to the danger of increasing environmental and economic crises on a global scale, *Our Common Future*, a 1987 landmark publication of The World Commission on Environment and Development led by Gro Harlem Brundtland, declared that "it is the environmental base that enables economic growth" (p.xi). The report also defined the "environment" as where we live, and "development"

as what we do in attempting to improve our lot within that abode. Consequently the two are inseparable (*Ibid.*). Alternately then, if an environmental base is eroded through unwise and short-sighted development projects, there can be no economic growth on a sustained basis. Therefore it could be said that the economic and environmental bases may be one and the same thing within the context of development.

However, the reality is that the problems, generated as a result of the continual separation of economic growth from environmental realities, now face humankind and are urgent. In early 1992, an ominous warning was sounded by two of the world's leading scientific bodies, the U.S. National Academy of Sciences and the Royal Society of London. Their striking report states that:

If current predictions of population growth prove accurate and patterns of human activity on the planet remain unchanged, science and technology may not be able to prevent either irreversible degradation of the environment or continued poverty for much of the world (Brown, 1993: 3).

In other words, science and technology can no longer be depended on to solve problems of environmental and economic deterioration on this planet unless population growth slows quickly and unless the economy is restructured and managed in a different fashion.

International concern continues to be voiced regarding global and regional security as an ever-increasing number of armed and ethnic conflicts erupt. While these conflicts traditionally rise from expansionism and regional differences, it is quite possible that today's conflicts may well be traced to more subtle underlying causes including overpopulation, large-scale manipulation and uneven distribution of the earth's physical resources, and subsequent gross environmental pollution and degradation.

Many of the earth's resources have been manipulated to ensure continuous economic growth mostly for nations today known as the "developed countries" of the North. Manipulation of earth resources also has taken place as a result of the large-scale development schemes implemented to initiate economic growth in the "developing countries" of the South. However, a growing number of reports indicate that large-scale manipulation of earth's resources have had a negative, rather than a positive, impact on the economies, on the physical environment and on the people (women and their families) who must live within and around such development schemes. Examples of such reports include: Ingham, 1993; Jacobson, 1992; Mehra *et al.*, 1992; Cernea, 1991, 1990a/b; Porritt, 1991; Rodda, 1991; Ehrlich and Ehrlich, 1991; Hall and Hanson, 1992; Burger, 1990; Goldsmith *et al.*, 1990; Colchester, 1986c; Heyzer, 1986; Bodley, 1982. As a result of these negative impacts, poverty has been entrenched as a way of life in countries struggling to develop living standards associated with the North. The reality seems to be that of growing and perpetual poverty affecting women and their families, particularly those living in the South.

The environmental and economic problems we encounter today may come not only from this manipulation and overuse of earth's resources, but also from an under-utilization of *women's* expertise and experience. Women, particularly rural women of the developing countries who are the primary providers of food, energy, and water for their family needs, embody an understanding of their environment and should therefore play a critical role in social education and in the setting of standards for environmental protection.

The United Nations Conference on Environment and Development, known as the Earth Summit held in Rio de Janeiro, Brazil, June 1992, was meant to address the increasing global environmental problems and to consider women's full participation as essential to achieve sustainable development. The Conference Agenda 21: A Programme Of Action "stands as a comprehensive blueprint for action to be taken globally-from now into the twenty-first century...in every area in which human activity impacts on the environment" (UNCED, 1992: 3). Principle 20 of the Agenda itself declares that "women have a vital role in environmental management and development" (*Ibid.*: 11). One of the main chapters in this blueprint for action entitled, "Global Action for Women Towards Equitable and Sustainable Development," in effect treats the need to incorporate fully women's issues into sustainable development as a cross-cutting issue and lists policies and recommendations to integrate women's concerns dynamically into effective development planning and implementation. Further, Agenda 21 took the major and unprecedented step by integrating women's issues in specific sectoral areas (Ofosu-Amaah (1994: 63), for example, demographic dynamics and human settlements, water-management, forestry, and transfer of environmentally sound technology, co-operation and capacity-building within development projects. To assess the policies and programmes on women and to ensure their contributions and benefits in all these areas recommendations and objectives within Agenda 21 were created to guide governments around the world in mechanisms at the regional, national and international levels.

Research into women's interactive role in environmental issues may seem too gender-central⁶ and off the point to some, but it could become paramount now that human survival depends more on co-operation than dualistic competition, on intelligent care more than brute strength. Gross imbalances must be addressed, not only between the numbers of men and women involved in the machineries of policy-making but also between the masculine and feminine aspects⁷ of our individual thinking. The future can work only with a holistic and balanced approach that puts supportive and personal relations at the centre of our thinking and actions. This holds true both for developed countries of the "North" and for developing countries of the "South," such as Indonesia. Given the interrelatedness of our world today and our need to preserve a habitable environment, we are forced to scrutinize our actions in the light of what will best promote the well-being of the people who inhabit our globe. This gives women a chance to do their essential and needed part in the transformation of the public sphere (Helgesen, 1993: 13).

1.2 *Research Objectives*

The following objectives guided the research procedures:

1. to determine environmental vulnerabilities of women and to suggest ways in which their capacities could be strengthened after their transmigration experience (irrigation-based move);

⁶ Gender refers here to the socially constructed relationship between women and men. In many countries the position and condition of women in society is subordinate. In addressing their situation calls for the understanding of their practical or basic needs and strategic (long-term) interests.

⁷ Dual moral aspects of individual human existence: the feminine aspects being gentleness, receptivity, and caring; and the masculine aspects being strength, dominance, and competing.

2. to assess women's environmental perceptions and their capacity in environmental management within the relocation site;
3. to identify environmental problems associated with human resettlement such as transmigration; and
4. to lend support to the growing field of women's studies relating to environmental rehabilitation.

1.3 *Location of the Study*

It is apparent immediately from the map (Figure 1.2) that Indonesia is a geographically fragmented and diverse nation. The 5,200 kilometre stretch of islands embraces a total of five million square kilometres, and the sea area of Indonesia is three times larger than its land area. An overwhelming impression one gains in undertaking any study of Indonesia is also the complexity of the country. This complexity is duplicated in Indonesia's enormous ecological diversity within its many different physical environments. Additionally, the cultural richness and diversity is indicated by the more than 300 distinct ethnolinguistic groups (NDIO, 1993: 13) which can be recognized within the citizens of Indonesia. Unique for its own diversities, the Island of Sulawesi, where the field research for this thesis was carried out, is highlighted in Figure 1.2.

The size of Indonesia's population, the rapidity of its growth, its uneven age structure and its uneven spatial distribution are phenomena with which the Government of Indonesia (GOI) has been required to deal with for several decades. According to Emil Salim, Indonesia's former Environment and Population Minister, with the country's projected population growth reaching 230 million in the year 2035, there is also concern regarding Indonesia's efforts to develop its fast-growing economy without destroying the

environment (UNFPA, 1992: 3). The significance of these realities, however, cannot be overstated and have forced national policy makers to deal with population problems. The major policies with an indirect impact on population distribution and migration are those associated with the national development strategy, especially as they are embodied in the Indonesian *Repelita*⁸. For example, government-sponsored transmigration schemes were formally incorporated into the first *Repelita* (which were begun in 1969), when a total of 240,000 persons were relocated (World Bank, 1988: xxi) to the Outer Islands, such as Sulawesi.

Figure 1.2 Map of Indonesia, showing Sulawesi Island



SOURCE: Cummings, 1993: 139

⁸ The Government of Indonesia's five-year development plans (*Repelita* I, 1969-74; *Repelita* II, 1974-79; *Repelita* III, 1979-84; and *Repelita* IV, 1984-89; *Repelita* V, 1989-94; and *Repelita* VI, 1994-1999).

Since this study was carried out specifically together with Indonesian women, it is pertinent to note some facts about them. Indonesian history tells past examples of queens, princesses of political wisdom, and honoured women who participated in public affairs to the same degree as the men. For example, Raden Adjeng Kartini (1879-1904), daughter of a Javanese aristocrat, broke with tradition in achieving a degree of western education. By her primary and outspoken vision which was universal education for girls, Kartini became Indonesia's first emancipist and an Indonesian national heroine. Each year on April 21, Kartini Day is celebrated with parades, lectures, programmes, and social activities attended by women, schoolgirls, university teachers, female workers and members of women's organizations (Dalton, 1991: 44). Research into Indonesia's cultural geography also shows that Indonesian women have never been a homogeneous group. Apart from differences in custom between ethnic groups, women's positions vary in different strata of society (Robinson, 1987: 105), reflecting also differences in economic income levels.

Despite the differences, some generalizations of Indonesian women are possible. Thirty-three percent are active in the labour force, but their activities in the under-counted small trade and family business sectors, and in the underground economy, indicate a much higher participation rate. CIDA reports that over half of the economically active women are agricultural workers, mostly during rice planting and harvest. Additionally, many rural women work for manufacturers on a piece-rate basis in their homes, or engage in small trading (1987: 14).

It should also be noted that Islam continues to be the dominant religion in Indonesia and, although Indonesia's New Order Government⁹ promotes a moderate version of the Islamic religion, 90 percent of Indonesians are officially Muslim (Dauvergne, 1993: 506). Compared to other countries where the Muslim ideology predominates, Indonesia is considered among the most advanced in relieving women of such restrictions as *pardah*¹⁰ and the compulsory wearing of the veil (Neill, 1973: 335). Despite this, current Indonesian government policies on "women in development" place women primarily and firmly in the domestic sphere, emphasizing their roles as wives and mothers. Although women and men have the same political and legal rights, government policy enshrines a gender division in social responsibilities and options which essentially casts women in a supporting, nurturing role in their relations to both men and the state. A key statement of this vision is the oft-cited, and government-supported, *Panca Dharma Wanita* [Five Duties of Women]: 1) to be loyal backstops and supporters of their husbands, 2) to regulate the household, 3) to produce future generations, 4) to educate and guide their children, and 5) to be useful members of society (Sullivan, 1983: 148). Current prevailing norms tend to emphasize submissiveness and obedience as ideal feminine qualities. This, plus the universal image of women as the weaker sex, contribute to the Indonesian private

⁹ Established in the mid-1960s by General Suharto with backing by the military, the New Order Government reconstituted a faltering economy by shifting from previous nationalist and protectionist economic policies to those focusing on foreign investment and industrialization fuelled by foreign loans and investment. Further "deregulation" and "de-bureaucratization" in the 1980s were designed to enhance Indonesia's international competitiveness and stimulate the activities of the private sector (Dauvergne, 1993: 504).

¹⁰ Seclusion of women from public observation among Muslims and some Hindus.

attitude which, although rarely articulated publicly, may be the major explanation for the lack of women's access into areas other than the domestic (Douglas, 1980: 178).

The recent Islamic revival in Muslim-dominated countries (including Indonesia to a lesser extent) represents not so much a return to absolute tradition, it is argued, but an acknowledgement that Western values, identities, and culture are incompatible with Muslim societies (Bernal, 1994: 61). This statement of current Muslim rejection also of Western gender standards is ardently advocated mostly by traditional middle classes. Thus, for them, at least,

The return to the wearing of the veil reflects women's efforts to gain or maintain esteem within a patriarchal society in which possibilities for autonomy are exceptionally and increasingly limited. Rejecting the negative image of women's "pseudo-liberation" associated with Westernization, young women find in the veil a powerful alternative: a positive identity and source of esteem sanctioned by Islam (Mule and Barthel, 1992: 329).

Although the Islamic view of the physical environment, according to the Qu^ʾran¹¹, is of a safeguarding nature, the current political climate within Indonesia appears to be ambiguous. The major focus appears more on the exploitation of its natural resources on for Western-industrial (linear-style¹²) economic growth and development rather than on strongly endorsing environmental protection policies. In addition, many of Indonesia's prominent Muslims are now seeking a stake in the growing economy by linking up with joint-venture banks within the country (Schwarz, 1990: 60). The government itself

¹¹ The book composed of writings accepted by Muslims as revelations made to Mohammed by Allah.

¹² Based on Western industrial systems: high input matter and energy consumption; high throughput and consequently massive waste generation, which ignores the cyclical design of our natural ecosystems. Linear design of economic growth limits humans to a make-believe unsustainable lifestyle (Singh *et al.*, 1994: 22).

continues to borrow from multilateral development banks (MDB's) such as the World Bank, the International Monetary fund, and the Asian Development Bank for funding of its large-scale development projects. Implications of MDB lending effect criticisms, from some international communities, of extravagance and gigantism, of negative environment and social impacts (Hirsch, 1995: 18), all of which impact rural Indonesian women involved in these (interminable) capitalist-like development projects.

1.4 *Contribution of the Study to Geography*

Geography seems the obvious discipline for discussions of "environmental" matters since, as Simmons (1990: 99) reminds us, it deals with the interface of the biophysical systems of the planet and human societies. One of the historical traditions of geographical enquiry is the study of humans and environment where the emphasis has been on their interactions. Geographers ask about where things are and why, and about how things are connected up one to another in place and across space and time (Cloke *et al.*, 1991: 206).

Geographers have always claimed the role of describing and making sense of both the order of the natural world and record of humans transforming it. They have a cross-disciplinary point of view and way of thinking about issues. This can equip them particularly well to help bridge disciplines that are human-based and those that are environment-based. Geographers' concern for natural systems, populations, land use, industries, states and the unit areas formed by these complexes, places them in a pivotal

position to help people understand their environmental choices and make wise decisions (Davis, 1992: 211).

It is this diverse nature of the geography discipline, and its ability to relate to and embrace a wide range of issues, that makes it also increasingly sensitized to gender and environmental issues. Therefore the study of environmental consequences of human activity, like transmigration in Indonesia, provides an opportunity for geography as a discipline to make a major contribution. Additionally, women's studies and feminist research remain firmly related to social practice and thus to social studies, the goal is understanding in order to act.

This study does not purport alignment with any environmental movement or feminist ideology in particular. However, global themes in geography must include issues such as gender, peace and war, human rights, economic disparity, a futures orientation (Lyons, 1991: 12) and the environment. The study also addresses Lowe and Short's lament (1990: 6) about the sad paradox that human geography studies have recently lost their environment sensitivity just as environmental concerns are re-emerging as issues of major significance. The symptoms of ecological collapse are very real, especially in the Southern "developing" countries, and environmental degradation can virtually preclude the possibility of any human improvement, be it social, economic or spiritual (ADAB News, 1986).

Another contribution which this study makes to geography is in broadening of the international scope of the discipline. The research for this thesis was carried out in Indonesia, a country that is socially, culturally, geographically, and ethnically very

different from, and yet similar in many respects to, Canada. General findings could illuminate the necessity of reopening for geographers the diversity of contexts, physical and human, something which Johnston (1985: 326) believes has been ignored too long by geographers.

It is hoped that this study shows a return of that plurality to geography, as it focuses on identifying, analyzing, and interpreting the "distribution of phenomena that are not uniform over the earth's surface" (Gould, 1991: 330). After all, "plurality can be a morally-informed respect, a tolerance of difference that grants the marvellous mystery of place, of culture and the vibrant weave of human life in its kaleidoscope of geographic settings" (*Ibid.*, 1991: 330).

1.5 *Organization of the Thesis*

The review of related literature follows this introductory chapter. Upon first glance it will be noticed that the literature review is fairly extensive; however considering the issues which had to be touched, they were included to effect a coalescence of the objectives of this thesis.

Chapter Three broadens the geographic matrix by describing the study area and the methods of data capture in more detail. Analysis of this data and testing of the hypotheses are covered in Chapter Four, which also includes results and interpretations. Important findings, with a discussion of recommendations and further directions in related research, conclude the thesis in Chapter Five.

The bibliographic collation at the end of the main thesis body contains not only material used as reference within the text, but also includes relevant literature which may aid further related research focusing on women and the environment.

CHAPTER 2

REVIEW OF LITERATURE

The pivotal area of research in this thesis, namely women and the environment, can include a wide spectrum of related issues. This is particularly true of research occurring in a developing country, such as Indonesia. While space does not allow for a literature review of each associated issue, only (trans)migration as large-scale development and as a large-scale migration, with its relation to the research theme will be considered here. The reviews of (trans)migration as development and as a migration are germane because they are very closely inter-related and because they impact women and the environment directly.

The first section within this review highlights the imbalance and on-going problems associated with Indonesia's population dilemma. The second section deals specifically with transmigration used by the government as a vehicle for addressing this population imbalance. Its significance in Indonesia's overall development plans is also reviewed. The third section reviews past experiences and impacts of large-scale development schemes on women involved. Fourthly, the connection of women and the environment in the South is explored and related to the thesis: how and why they are connected, and why this connection urgently needs to be promulgated within the scope of any anticipated major development where alteration of natural environments occur.

Lastly, a brief explanation of the contribution of this study to existing literature concludes this chapter. Terms or concepts inherent to this research are explained as necessary within the literature review.

2.1 *Indonesia's Population Dilemma*

Indonesia has spent most of this century grappling with its demographic problems. For all its achievements and advances since gaining independence from the Dutch colonial government in 1949, Indonesia remains a developing nation. One of its biggest challenges includes planning options for population growth while promoting far-sighted environment management in tandem with dynamic growth (NDIO, 1992: 1). Firstly, extreme differences in population distribution are very obvious due to the rich volcanic soils and suitable climate favouring sustained agriculture on the major Inner Islands. These very fertile soils of Java, Bali, Lombok and Madura have long permitted high growth by generating adequate food for a growing population.

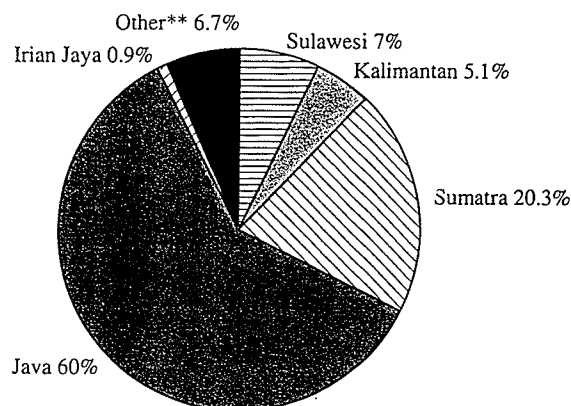
The area of the Inner Islands, particularly Java Island, still act as a magnet for people to pursue not only agricultural growth, but also business and industry growth. Situated on the coastal plain of northwestern Java is Indonesia's capital and largest city, Jakarta. This city alone is a sprawling metropolis of 8.2 million people. Monetary and decision-making powers consistently have converged in Indonesia's capital, and this has acted as a further attraction for rural-urban migration.

Alternately, most of the other major islands (Kalimantan, Sumatra, Sulawesi, Moluccas and Irian Jaya), known as the Outer Islands, have relatively infertile soil which support mostly tropical rainforest and dry tropical forest vegetation. As a consequence, they are unable to sustain higher population densities. The significance of differences in soil fertility across Indonesia and the resultant concentration of government, commerce,

and industry in Jakarta suggests that the population distribution over the past decades reflects the actual distribution of productive resources (Rigg and Stott, 1992: 84).

Population density in certain areas of the Java, Madura and Bali now exceeds 1000 people per square kilometre. The four Inner Islands with only seven percent of Indonesia's land area are home to more than 60 percent of the total population of Indonesia which reached 186 million in 1992 (Central Bureau of Statistics, 1992)¹³. By contrast Irian Jaya represents 22 percent of the land mass, yet has only 0.9 percent of the nation's population (Figure 2.1).

Figure 2.1 Population of Indonesia by Major Island
Total Population in 1992: 186 million*



SOURCE: Central Bureau of Statistics, 1992: 13

* Estimated

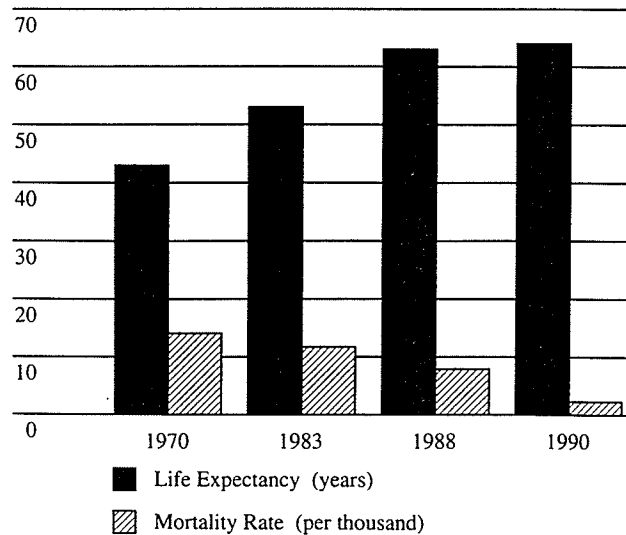
** Including Bali, West and East Nusa Tenggara, Maluku, East Timor

A second reason for the demographic dilemma is that the population within Indonesia has grown to be very large within a short period of time. In the tumultuous years following national independence (1949), Indonesia's population more than doubled

¹³ Other estimates indicate Indonesia's population in 1994 to be 199.7 million, projected to grow to 288.5 million by 2025 AD (Population Reference Bureau, 1994).

over the following two decades (NDIO, 1992: 8). With this explosive population increase, and following the dissolution of the former Soviet Union in 1991, Indonesia has now become the fourth most populous nation in the world, after China, India and the United States (NDIO, 1993: 57).

Figure 2.2 Life Expectancy and Mortality Rate



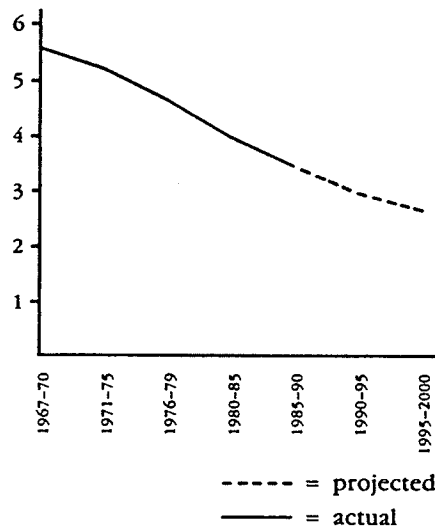
SOURCE: Central Bureau of Statistics, 1992: 14

Population growth often parallels the economic growth in developing nations over the short-term. In Indonesia, economic growth, largely from investments by Western-dominated corporations, has spurred the Gross Domestic Product (GDP) to rise dramatically. The many thrusts by current President Soeharto's New Order Government to develop natural resources and to improve living standards for Indonesia seem to have resulted in the lengthening of Indonesians' life expectancy (Figure 2.2). This, in turn, appears to add to the population crush, especially on the Inner Islands. Life expectancy for Indonesians has climbed rapidly from 45.7 years in 1968 to 62.7 years in 1993 and

is projected to reach 70 years within *Repelita VI* (begun on April 1, 1994). For Indonesian women the life expectancy currently is 63.8 years (UNDP, 1994: 144).

The cumulative impacts of these two factors appear to have affected significantly the ecological carrying capacity¹⁴ of the Inner Islands, and Indonesia continues to face a "population" problem. Resultant overcrowding on Java, Indonesia's most densely populated island, has led to unemployment, environmental degradation and land scarcity.

Figure 2.3 Indonesian Women's Total Reproductive Rate*
(1967 - 2000)



SOURCE: Sumbung, 1989: 6

* Number of children the average woman would bear in a lifetime at the current fertility rates of the time, given no mortality.

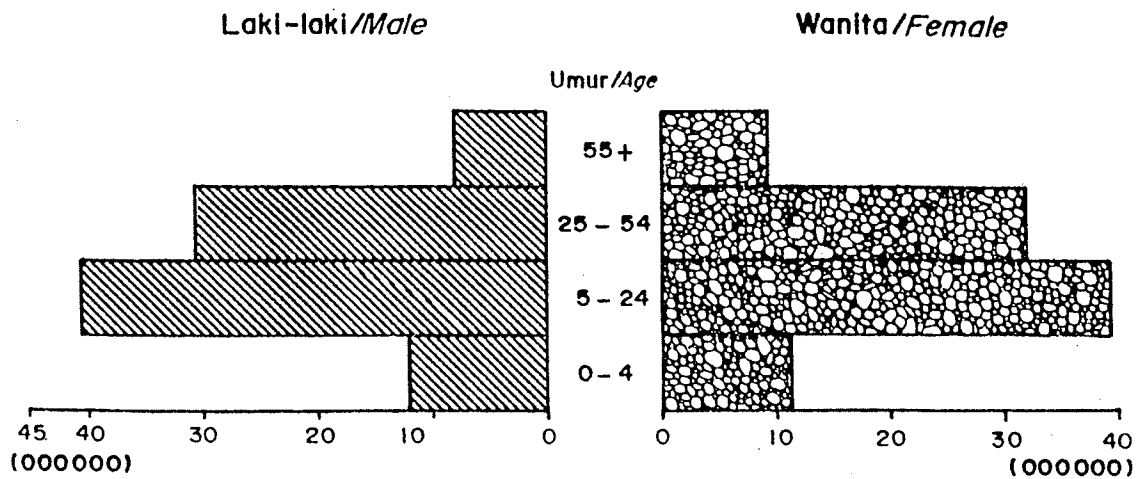
To deal with apparent over-crowding of the Inner Islands, the government has adopted vigorous counter measures. As a result of implementing a comprehensive family planning program over the past two decades, the population growth rate has now been

¹⁴ The amount of economic activity the Earth can withstand within the limits of the ecosystem; sustainability is determined by the Earth's carrying capacity at any given level of technology.

reduced from over 2.3 percent in 1972 to 1.97 percent by 1991. This is reflected by Indonesian women's reproductive rate dropping from 5.5 children per woman to 3.3 (Figure 2.3), upon completion of family size.

In spite of a dramatic decrease in birth rate, Indonesia's population currently remains very young (Figure 2.4) with approximately 44 percent of the population being under 25 years of age. This has implications for a lengthy lag in any population drop or slowing of population growth, since the largest bulk of the population is of child-bearing age or is just entering the reproductive period. The determining variable will remain acceptance and use of the government's family planning programme, with its now-famous slogan "*Dua Anak Cukup*" [Two Children are Enough]. Statistics are showing that the number of active participants in the programme is still only about 3 million (out of a population of 186 million) in 1992.

Figure 2.4 Population of Indonesia by Age and Sex (1990)

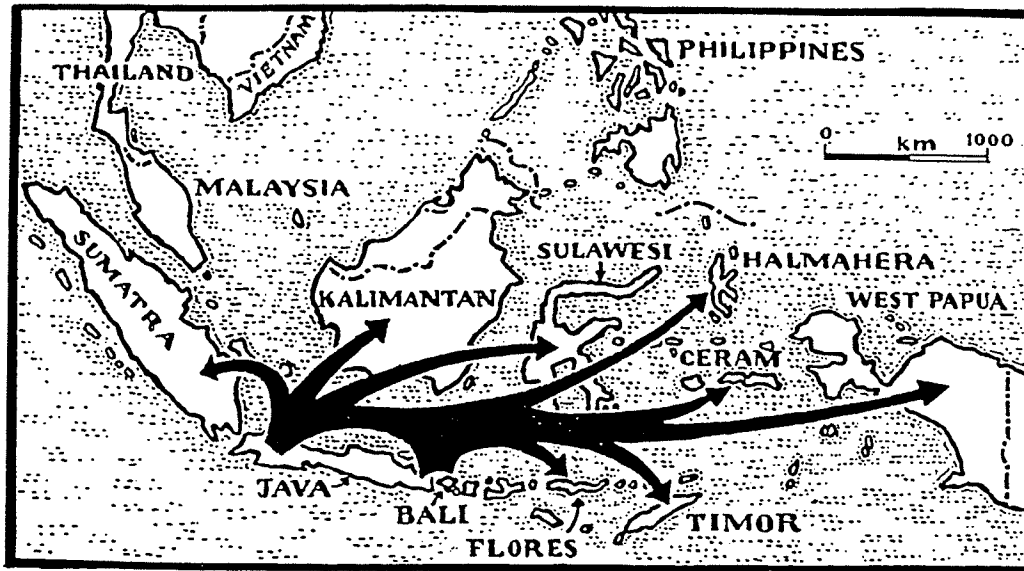


SOURCE: Central Bureau of Statistics, 1991: 13

2.2 The Transmigration Programme

The alternate programme, which the government is implementing to control population densities on the Inner Islands, is transmigration. Building upon previous Dutch "kolonisasi" (1905 - 1949) initiatives, the GOI continues to resettle families, as sponsored transmigrants¹⁵, from crowded areas to perceived more sparsely inhabited regions of the country (Figure 2.5). Called by officials as "the greatest voluntary resettlement programme in the world" (NDIO, 1992: 9; Zich, 1989: 119; Arndt, 1984: 40), the programme will have moved some 10 million people by the end of *Repelita V* (1989-94) (Table 2.1). This growing number also includes spontaneous transmigrants¹⁶, whose numbers are 2 - 3 times greater than the sponsored transmigrants (Whitten *et al.*, 1987: 631).

Figure 2.5 Transmigration Movements from Inner Islands to Outer Islands



SOURCE: Colchester, 1986a:59

¹⁵ Assisted financially by the government

¹⁶ Usually not financed by the government

Table 2.1 Reported Transmigration Numbers

Years	Numbers
1969 - 84	3.5 million
1984 - 89	3.8 million
1989 - 94	2.7 million
TOTAL	10 million

SOURCE: Burger, 1990: 87

For most landless peasants who voluntarily register to be "transmigrated" from the heavily populated Inner Islands to the new transmigration sites across the Indonesian archipelago, their migration appears to be of their own volition, motivated by the desire to acquire land. According to government transmigration development information:

The government conducts thorough research to identify suitable sites in the Outer Islands for the Transmigration programme, from ecological, social and livelihood perspectives. Potential sites are studied using aerial photography, detailed topographical mapping and soil sampling to ascertain their agricultural viability ... another set of criteria must be met to ensure the relocation of Transmigrant settlers will not disrupt indigenous communities. The chosen sites are then carefully prepared according to thorough engineering guidelines, and roads, schools, clinics and religious facilities are put in place before occupancy. Settlers are then provided with seed crops, tools, building materials and cash grants to undertake resettlement for a new life (NDIO, 1993: 58).

Indonesian transmigrants are classified into four broad categories: 1) sponsored transmigrants, consisting usually of landless agricultural labourers or subsistence farmers who are initially assisted by the government in various means; 2) local transmigrants, who are local people originating from the resettlement area and who are given the same facilities and support; 3) registered spontaneous transmigrants who move at their own

expense, or are partly assisted by the government and settle where they prefer. These are referred to *swakarsa bertantuan* or partly assisted transmigrants (Otten, 1986a: 41); and 4) unregistered spontaneous transmigrants who, unassisted and unregistered, move to join their relatives in the resettlement locations (Gany, 1993: 76-77). In terms of the migration theory, the distinctions between spontaneous and sponsored settlers refers here to whether they are self-recruited or respond to the recruitment initiative of the sponsoring agency. It has nothing to do with the reasons or motivation for leaving the original residence for a new settlement (Scudder, 1991: 153).

Transmigrant sites for sponsored settlers are usually incorporated into agricultural development programme of some sort. Those agricultural programmes currently, and in the past, administered for transmigration are: 1) large-scale irrigated schemes which were developed in great numbers earlier in the history of transmigration; however government investment in irrigation was sharply reduced due to financial constraints in the 1970's; 2) swamp-reclamation schemes, considered as a cheaper alternative to irrigated land development, found in Kalimantan and the eastern part of Sumatra; 3) rain-fed projects which are intended to support agriculture in the Outer Islands where irrigation is not possible nor economically feasible; and 4) cash-cropping schemes conducted through the Nucleus Estate Small-holder Programme (Gany, 1993: 77) to raise tree cash crops such as oil palm, rubber, sugar cane, coconut, and cotton (World Bank, 1988: xviii-xix).

TABLE 2.2 Population Distribution in Indonesia, 1961 - 2001

Islands	Landsurface sq. km	Population (x 1,000)		Population Density	
		1961	2001	1961	2001
Java and Madura	132,174	63,059	161,117	477	1,219
percentage	6.9	65	65		
Sumatra	473,606	5,739	40,155	33	85
percentage	24.9	16.2	16.2		
Kalimantan	539,460	4,102	10,410	7.6	19
percentage	28.3	4.2	4.2		
Sulawesi	189,035	7,079	18,095	7.6	19
percentage	9.9	7.3	7.3		
Bali and Nusatenggara	73,614	5,558	14,129	76	192
percentage	3.9	5.7	5.7		
Maluku	74,505	790	1,995	11	27
percentage	3.9	0.8	0.8		
Irian Jaya	421,951	758	1,971	1.8	4.7
percentage	22.2	0.8	0.8		
Indonesia	1,904,345	97,085	247,873	51	130
percentage	100	100	100		

SOURCE: Tjondronegoro, 1984: 69

From the beginning the transmigration programme, as a population redistribution mechanism, has attracted widespread criticism on several fronts. Firstly, it is pointed out (Rigg and Stott, 1992: 83) that, although the transmigration programme has had multiple objectives which have changed in their relative importance over time (regional

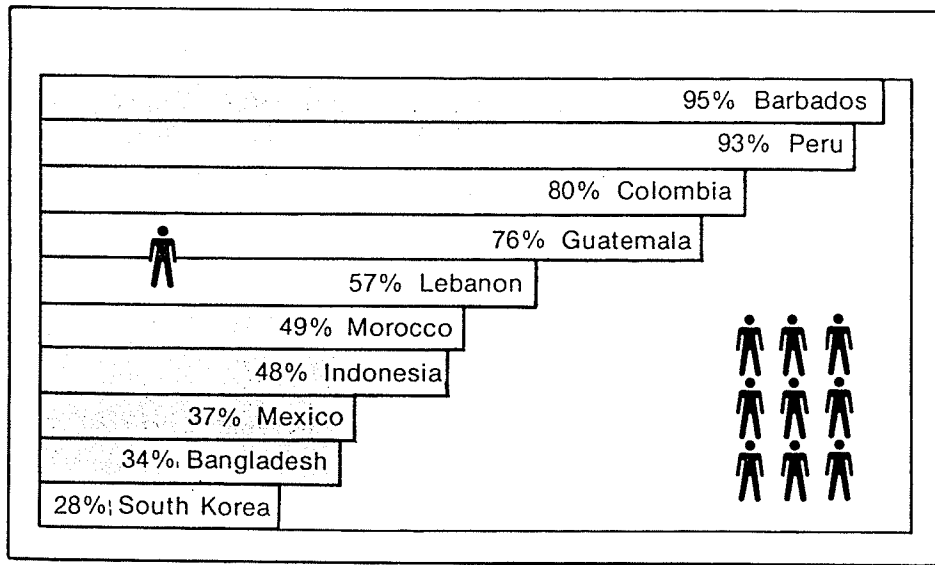
development, security, food production and improvement in general welfare), the demographic rationale or the solving of Indonesia's population "imbalance," has remained deeply rooted. In other words, the redistribution of population growth, especially that of the Inner Islands has not occurred to the extent as predicted (Otten, 1986a: 71; Otten, 1986b: 127; Tjondronegoro, 1984: 69). The Inner Islands of Java and Bali continue to remain the most densely populated areas of Indonesia (Table 2.2).

A second criticism is based on the practical or logistics of the programme's implementation (Rigg and Stott, 1992: 83). In spite of government transmigration guidelines, there is evidence of inappropriate selection or poorly prepared sites, failure to introduce farming systems which are suitable to the environmental conditions of the Outer Islands, and related issues of poor management and administration (Hardjono, 1988, 1986; Otten, 1986a; Arndt, 1984).

The selection, at times, of inappropriate migrants in terms of age, family size or skills has also been cited as being counter-productive to transmigration goals. Some transmigrants, after the selection process and the actual move, proved to have very little potential for, and knowledge of, agricultural development (Hardjono, 1988: 430). These transmigrants used both slash-and-burn methods which exceed natural constraints, and cropping techniques which the infertile forest soils cannot support (Secrett, 1986: 84). Additionally, there is evidence that government troops forcibly rounded up tramps, beggars, and prostitutes in major urban centres such as Jakarta City, and transported them to Outer Island transmigrant sites for resettlement (Otten, 1986a: 69-72). It has been suggested that forcible removal of urban slum dwellers for transmigration destinations was

one of the aims of depopulating congested areas (Hardoy and Sattersaite, 1991: 124). However the real root of such removal, some authors suggest, is not human overpopulation, but the concentration of fertile land on Java in the hands of a tiny minority of wealthy elite (*Ibid.*) (Table 2.3).

Table 2.3 Percentage of Land belonging to Top 10% of Land Owners (selected countries)



SOURCE: Smyth, 1990: 258

Several references have been made to the fact that the standard allocation of 2 hectares (ha) of land per average transmigrant family of five has been inadequate. A study completed at the Luwu Irrigation Scheme shows that since 0.25 ha is needed for the house and yard, and 0.75 ha is upland area (within many sites), only 1.0 ha (of the 2 ha allocated) is available for farming. The income from this land is barely enough to cover expenses and leaves no room for improvement (Gany, 1993: 350; Tjondronegoro, 1991: 144).

A third criticism is fundamental and focuses on the impact of transmigration on the destination areas. As families expand in number, more land is needed. Where crops fail or soils are not sustaining, transmigrants can experience poverty. Should they wish, transmigrants are free to dispose of their land by selling to new owners. Also with the existing patterns of inheritance, land can be parcelled out and divided among children in such a way that within two or three generations serious land fragmentation occurs. This has already happened within transmigrant areas of southern Sumatra, for example, where impoverishment and overcrowding shows similarities with the situation in Java (Tjondronegoro, 1984: 67).

A fourth critical observation is that population 'imbalances' in South East Asia are rarely the result of historical accident, since population imbalances usually reflect variations in agricultural potential. In fact, the transmigration programme has made no appreciable impact on Java's overcrowding problem, and the country is running out of arable land (Zich, 1989: 119; Hugo, 1981: 146). Today, the reality is that there are few large tracts of good agricultural land left in Indonesia, and there is a lessening chance that surplus population can be accommodated through its redistribution (Rigg and Stott, 1992: 84; Hardjono, 1988: 434).

The spectre of land shortage over substantial areas, even of the Outer Islands, is not unrealistic (Hugo, 1981: 146). Besides, population growth in transmigration sites tends to be very rapid not only because of net migration gains, but also because of the large numbers of births associated with the emphasis of the transmigration officials to recruit young married couples who are at the stage of peak family formation. Oey (1975)

found in her study of Javanese transmigrants in Lampung, Sumatra, that their fertility was higher than among the population at the point of origin, perhaps in response to perceived greater opportunities in the new environment.

Lastly, a major drawback to transmigrant programmes is its huge expense. For financial aid, the government has received substantial amounts from various international donors, like The World Bank. In spite of receiving large amounts of foreign loans and grants, the programme has at times consumed over six percent of the total development budget (World Bank, 1988; Hardjono, 1986; Arndt, 1984: 40). The expense of establishing projects, in which transmigrants are supposed to achieve better incomes and higher standards of living, was finally recognized after many years of budget strain (Hardjono, 1988: 431). The dramatic fall in the price of oil during 1986 also required the GOI to revise its development budget; allocations to the transmigration programme were slashed so much that target numbers for new sponsored transmigrants were cut by two-thirds (Whitten *et al.*, 1987: 640). The winding down of sponsored migration, as it was first set up, seems to be imminent. During 1992-93, only 13,299 out of the target of 60,000 families had been moved (*Jakarta Post*, 20 March 1993).

Additionally, foreign funding organizations are currently no longer as enthusiastic as they once were about transmigration, largely because of its failure to establish economically strong settlements. Hardjono (1988) observed that the obsession with target attainment has resulted in funds being used more for land clearing and house construction, instead of the development of a firm agricultural foundation for transmigrants. The World Bank has recently indicated it will give new loans, not for new settlements, but for

second-stage development programs which improve living standards in some less successful projects set up during *Repelita* II and *Repelita* III (1974-84 and 1984-1989 respectively) (Hardjono, 1988: 434).

Because spontaneous migration has occurred in tandem with the more formal government-sponsored transmigration programmes (Scudder, 1991: 169), and because of the costs, it appears that Indonesia's government is now relying on spontaneous migration becoming the major form of transmigration. Table 2.4 shows government expectations within *Repelita* V, for example, of larger numbers of spontaneous transmigrants as compared to the subsidized or sponsored ones. The government is also endeavouring to interest *penanam swasta*¹⁷ to finance transmigration projects (Hardjono, 1988: 435).

Table 2.4 Government Transmigration Targets in *Repelita* V

Year	Subsized	Spontaneous	Total
1989 - 90	5,000	22,000	27,000
1990 - 91	17,000	38,000	55,000
1991 - 92	31,000	79,000	110,000
1992 - 93	61,000	109,000	170,000
1993 - 94	66,000	112,000	188,000
Total	180,000	370,000	550,000

SOURCE: Department of Transmigration, Indonesia, 1989

Thus, after more than 80 years of implementation, large-scale sponsored migration in Indonesia appears to be diminishing. The reason may lie with the decline of available land resources and because agriculture is decreasing in relative importance. Also some

¹⁷Private investors

transmigration agricultural settlements have become small towns, and the second generation of migrants no longer aspires to a future in agriculture (Tjondronegoro, 1991: 144-148).

2.2.1 *Transmigration as Development*

Besides the demographic objective of population redistribution, the transmigration programme was also initiated as a vehicle for development, both politically and economically. Alongside such improvement is the belief that political stability and economic progress for all Indonesians come from the constant implementation of five fundamental principles, known as *Pancasila*: 1) the belief in one supreme God; 2) justice and civility among the people; 3) the unity of Indonesia; 4) democracy through deliberation and consensus among representatives; and 5) social justice for all (NDIO, 1993: 15).

Regional development, in terms of political development and stability, has been promoted by the government of Indonesia for a long time, especially on the many islands that are distant from the central government in Jakarta. Indeed, the official definition of transmigration in the *Basic Transmigration Acts* is:

The removal and/or transfer of population from one area to settle in another determined upon within the territory of the Republic of Indonesia in the interest of the country's development or for other reasons considered necessary by the government (Transmigration Department, 1972).

Implicitly, transmigration, as a multi-causal nexus, is meant to promote regional development in the resettlement areas and in the areas of origin, as well as fostering national integration and unity and strengthening security (Gany, 1993: 76). According to

the Commander-in-Chief of the Indonesian Armed Forces (1985) the government's fundament of transmigration should be:

The only programme in the economic field that must categorically be tied in the removal of obstacles to land availability (which) needs to be given special focus, because the choice of locations is related to the concept of territorial management (*The Ecologist*, 1986: 59).

The government is also keenly aware of the far-flung nature of the physical geography of the nation, as it is composed of 17,508 islands (NDIO, 1993: 12). Additionally, the peoples of Indonesia consist of 300 ethnic groups, speaking many different languages and dialects. For the supposed purpose of developing *national security*, transmigrants from the Inner Islands have been settled into areas of indigenous people¹⁸, thereby attaining a more "unified" nation. Therefore the settling of frontier areas in Indonesia by Javanese transmigrants, specifically, is seen by some as attempts to secure "sensitive" areas populated by dissatisfied ethnic minorities (Rigg and Stott, 1992: 80) and indigenous people. In the support of nationalism, the Minister of Transmigration in 1985 reiterated the government's objective:

We are one nation, the Indonesian nation; we have one native country; one language, the Indonesian language. By way of Transmigration, we will try to realize what has been pledged, to integrate all the ethnic groups into one nation, the Indonesian nation ... The different ethnic groups will in the long run disappear because of integration ... and there will be one kind of man (*The Ecologist*, 1986: 59).

Much of the lands in Indonesia used originally by indigenous peoples have been converted to transmigration settlements also because of the Javanese-centred government's

¹⁸ Used here synonymously with "aboriginal" and "first peoples."

perception of the Outer Islands being empty or underpopulated and, therefore, unused. Although sparsely populated, these islands have been occupied, often by forest peoples belonging to distinct tribes and cultures, and so the setting up of transmigrant colonies involves clearing forests and dispossessing the local people. Additionally, transmigration settlements are a way of reducing shifting cultivation which is practised by many forest peoples, but seen by the government to be a wasteful use of the land. The intent is to replace it with a more intensive, permanent cultivation, such as irrigation-based resettlement.

Over the years as previous waves of transmigrants filled the available lands on the more accessible and fertile lands in Sumatra and Sulawesi, for example, the more remote provinces of Kalimantan and Irian Jaya began to be targeted. At times this meant settling transmigrants adjacent to indigenous groups, even when one group had customs or habits abhorrent to the other (Hugo, 1981: 146). Colchester (1986a: 62) states that assimilation of tribal people was, and is, accompanied by taking over their land as well, in the interests of national development and national security. Usually less than 20 percent of the settlers in and around transmigration sites are local people, and in some instances (e.g. parts of Irian Jaya and southern Sumatra) first peoples have lost major portions of their lands.

The alteration of Outer Island land ownership and land use seems easy to do because the Indonesian Government asserts domination over 74 percent of the nation's land (Durning, 1992: 22). It is also easy because Indonesian law gives legal standing only to titled land, and only if that land is under cultivation, not lying fallow (McBeth,

1994: 52). Transmigration, like commercial logging, is considered by the government to be in the interests of the nation and state, and thus takes priority over local land claims.

Land conflict has characterized transmigration since its inception (Colchester, 1986c: 105). Two widely known conflicts, which include alleged abuse of tribal human rights by transmigration and other government officials, occur frequently in Irian Jaya and in East Timor (Budiardjo, 1986; Colchester, 1986c), as transmigration sites are being prepared there on an ever increasing scale. By 1984 for example, Irian Jaya alone had 24 major transmigration sites, appropriating land belonging to tribal peoples. In an attempt to assimilate the West Papuans, whole communities have been broken up and families dispersed to separate transmigration colonies. Similarly in East Timor where local people¹⁹ continue to fight for independence, the governor has called for an increase in the number of Javanese or Balinese transmigrants to match the native population one-to-one (PANOS, 1993: 4).

Since Indonesia embarked on its *Repelitas* (Five-Year Plans) in 1969, the country has pursued economic development in an almost dogged fashion. In terms of pursuing *economic development* which is seen to be the threshold to a modern, high technology society (Ward and Dubos, 1972: 146), Indonesia has had to deal with issues similar to many other developing countries. On the one hand, economic development to satisfy their people's aspirations is the very stuff of effective political leadership and national identity. On the other hand, developing countries, like Indonesian, are all integrated with the

¹⁹ Includes first peoples and those claiming land before the implementation of transmigration.

international circuits of the world economy which they did not create and within which they are still relatively powerless members (*Ibid.*: 148).

Transmigration has afforded the Indonesian Government the opportunity to pursue development on the assumption of *progress*. This is not to deny that development has brought many benefits, even when investment, trade and aid have had political strings. The government vaunts of new employment opportunities resulting in higher standards of living for transmigrant families, and of resettled areas having gained from the introduction of new food and tree crops (NDIO, 1992: 9). Transmigration areas have become hinterlands for smaller towns in many provinces, and the towns close to settlement projects have experienced booms in economy and activity (Tjondronegoro, 1991: 150). Vast irrigated transmigration areas in northern Sumatra, South and North Sulawesi, as well as part of tidal-influenced swamp land in Kalimantan, have not only become self-sustaining but have become exporters of rice, thus contributing to the country's rice self-sufficiency (*Ibid.*: 149)

However, various transmigration schemes implemented for the economic development seem to reflect inadequate, non-appropriate, or non-existent consideration of affected peoples. Forced displacements imposed by dams, for example, shatter local cultures, community networks and social organization, and cause homelessness, landlessness and impoverishment. For example, the reservoir created by the Kedung Ombo dam and its associated irrigation project, meant to promote economic progress in central Java, displaced 30,000 inhabitants who had to be transmigrated. Their resistance

to the rising waters and to being transmigrated is well documented (PANOS, 1993:15; Goldsmith *et al.*, 1990:134).

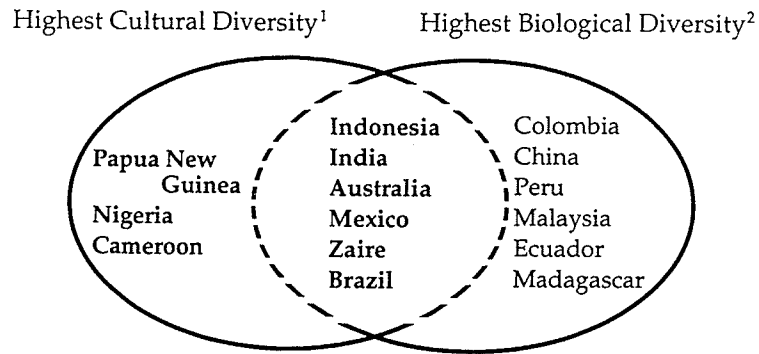
Transmigration, under the guise of socioeconomic development for tidal-residing people, resulted in the forced transfer of the Bulusu in East Kalimantan and of interior Dayak groups to government-established resettlement centres. The stated purpose was to provide them with services (Cernea, 1991: 194). Similarly, there are accounts of the Toraja people of South Sulawesi who were forcibly removed from their traditional hilltop homes and relocated along new roads where they were persuaded to grow wet rice "for their own good" (Bodley, 1982: 134).

Thus, transmigration has obviously become a vehicle for economic and national security development. In many instances, to develop new land for these purposes has meant the over-riding of local people's self-determination in the Outer Islands by government transmigration policies.

2.2.2 Transmigration and the Environment

It has been pointed out that tropical regions like Indonesia contain the most diverse and complex ecosystems in the world (Durning, 1992: 16; Hutterer, 1985:59). Within these complex ecosystems, the flora and the fauna, and the indigenous peoples that use these resources, make up unique areas known as having a "mega diversity," both biologically and culturally. Indonesia is one of the only six countries in the world to be generously endowed with these two diversities (Durning, 1992: 16) (Figure 2.6).

Figure 2.6 Cultural Diversity and Biological Diversity (Circa 1990)



¹Countries where more than 200 languages are spoken.

²Countries listed by biologists as "megadiversity" countries for their exceptional numbers of unique species.

SOURCE: Durning, 1992: 16

What is critical to remember is, firstly, that these ecosystems house, not necessarily great numbers of each species or indigenous peoples, but that there are so many different and unique types. Secondly, tropical diverse environments are known to be complex and highly fragile, having evolved over millennia into highly efficient ecosystems *in situ*. High diversity has led to low species density and complex species inter-dependency (Secrett, 1986: 78; Hutterer, 1985: 64).

The high species diversity and almost sterile tropical soils have obvious implications for their conversion to other uses. The clearing of even relatively small areas of forest, for example, can swiftly lead to species extinction. Therefore extensive human interaction with such environments can result in relatively poor habitats for human population. Because of the fragility and complexity, tropical environments consequently demand the special managerial skills from humans who have depended on them for a long

time. Traditional peoples in Indonesia, it is observed, *have* lived in harmony with such environments for thousands of years (Hutterer, 1985: 64-65).

It is the pitting of political and economic development against fragile and complex natural environments that has frequently occurred in Indonesia via transmigration settlements. The price of "progress" in the linear development philosophy adopted through the transmigration mechanism has been at the cost of the environment. Over the years, even the World Bank has come under increasing attack for its ignoring of environment issues and indigenous peoples in the transmigration projects it has financed for "progress" and development (Hall and Hanson, 1992: 275).

In the preparation of transmigration sites which are usually established after vast land clearance, Indonesia has lost irreplaceable forest areas. Once tropical forests, for example, have been cleared and the efficient nutrient cycle broken, they recover very slowly and with great difficulty, and the underlying soils are subject to rapid degradation (Mannion, 1991: 241-242; Hutterer, 1985: 64). The government's transmigration department invariably sets over-ambitious settlement targets, insisting on clearing extensive areas for resettlement (between 15,000 and 20,000 ha/site) and rigidly sticking to a prescribed farm model (Secrett, 1986: 82).

Adding to the destruction of tropical forests are the migrants who move spontaneously at their expense, following family and friends to the "opened" land of transmigration sites, perceived by migrants to be "free" lands available for unimpeded settlement. Whitten *et al.* (1987: 632) and Secrett (1986: 84) claim that it is the spontaneous transmigrants who, essentially inexperienced in jungle farming and untouched

by formal transmigration planning processes, can cause piece-meal, but unrelenting and ubiquitous, destruction of forested lands.

The main problem encountered by those who follow friends and family to transmigration areas is the difficulty of obtaining agricultural land if the transmigration sites are full. The potential for a major environmental impact is when these settlement areas expand into adjacent forests or up the hillsides onto marginal soils. Some transmigration settlements on Sulawesi Island, for example, have cleared more than five times the forest area originally allotted them (Whitten, 1988: 241). Additionally, as transmigration sites fill up, settlers themselves may often remove trees from forested lands outside project boundaries either to plant non-rice food crops or to obtain firewood and timber that can be sold (Hardjono, 1988: 429).

An overview of the impact of transmigration on forest resources, admitted by the Indonesian Departments of Forestry, Population/Environment/Development, and Home Affairs, in co-operation with the International Institute of Environment and Development, concluded that "given the current objectives and operational procedures of the transmigration programme, the Team considers transmigration as the single sectoral activity with the greatest potential to advance forest destruction" (quoted in Secrett, 1986: 77).

The clearing of forested areas for transmigration sites has been accomplished by using heavy machinery, owned by contractors whose only concern was to complete the job as quickly and as profitably as possible. Such heavy machinery initially damages fragile tropical soil by compaction (Otten, 1986a: 72). After an area has been cleared,

few nutrients remain in the soil, since nutrients in tropical forest soils are locked up in surface vegetation (Secrett, 1986: 78). Thus soils can not sustain intensive agricultural yields over the years. They soon become exhausted, and the usual *alang-alang* grass²⁰ springs up and spreads rapidly. Transmigrants have reportedly played a role also in this process (Gardiner and Oey-Gardiner, 1990: 221). Because transmigrants from the Inner Islands practise the same pattern of agriculture on tropical forest soil, whose fertility and structure differs from the volcanic soils of Java, Bali or Lombok, the sustainability for annual food cropping lasts only a few years. After this, transmigrants frequently have to resort to slash and burn farming, which results in an encroachment onto lands claimed by indigenous peoples (*The Ecologist*, 1986: 42). In Kalimantan, for example, only less than 2 percent of the soils are now thought to be permanently cultivatable (Burger, 1990: 87).

On-going destruction of the tropical ecosystems by transmigration is particularly dismal because of the resultant loss of plant and animal species. Most countries throughout the world remain highly dependent on drugs extracted from plant species found only in tropical forests. Many such plants are harvested and used by local rural women and their families; however these and other plant species are being wiped out by the elimination of Indonesia's tropical forests (Tickell, 1993: 379) in preparation for transmigration sites.

While transmigration's impact on the environment has been rather significant, it is acknowledged that issues involving transmigration are very complex, and overlap into social, demographic, economic, political and ethical arenas. Decision-makers in most

²⁰ Voracious and useless type of vegetation.

developing countries now accept that poor management of the environment has become a significant barrier to development (Munasinghe, 1993: 1731; NDIO, 1993:123). Unfortunately where the environment is concerned in (transmigration) development planning, corruption and widespread disregard of the law, according to Fisher (1966: 74), remain pervasive.

2.3 *Impacts on Women by Large-Scale Development*

It is acknowledged that impacts on women affected by large-scale projects, such as transmigration, vary from region to region and from woman to woman. Factors that determine impacts for women include: 1) general economic conditions, such as poverty levels, inflation rates, income distribution, international terms of trade, infrastructure; 2) institutional structures, including the nature of government bureaucracies and arrangement for the generation and dissemination of knowledge, technology, and skills; 3) demographic factors; 4) socio-cultural factors; 5) community norms, such as familial norms and religious beliefs; 6) legal parameters; 7) training and education; and 8) political events, both internal and external (Overholt *et al.*, 1985: 8).

Major strategies imposed by governments of developing countries are intended that large-scale development projects enhance agricultural output. These strategies include mechanization, irrigation and resettlement into areas where inputs, cropping patterns and sales are regulated (Heyzer, 1985: xix). Although some benefits for communities have accrued (roads, communication links, electricity, social services, etc.), most literature on large-scale development in the South still report a dearth of positive improvements for the

affected women. The benefits of economic growth simply have not always "trickled down" to the vast majority of rural people, especially women.

Ester Boserup's watershed book, *Women's Role in Economic Development* (1970) demonstrated for the first time that economic modernization often marginalized and impoverished women, thereby weakening their social position. The rapid growth in "women in development" research over the past 20 years has produced much documentation confirming Boserup's assertion that major development policies in the South have been aimed primarily at men. Chambers (1983: 80) calls such development policies a "pervasive bias against rural (Third World) women." The consequences of this bias have been devastating for the women affected: erosion of their traditional autonomy; erosion of their traditional rights to land tenure; entrenched subordination to men; increased stratification between the sexes; and limited access to credit, education, and employment. Such consequences are aptly discussed by development researchers such as: Ingham, 1993; MacPhail, 1993; Jacobson, 1992; Kardam, 1991; Rodda, 1991; Swift, 1991; Tinker, 1990; Shiva, 1989; Dankelman and Davidson, 1988; Heyzer, 1986, 1985; Rogers, 1980.

Large-scale projects have also tended to widen or reinforce inequities brought about by sexual division of labour (Mollett, 1991: 234). Scudder (1991: 178) explains that women's status is adversely affected by resettlement programmes, for example, because land holdings are largely registered in their husband's name, even where the crops grown were formerly women's crops, such as rice and groundnuts in West Africa. Additionally, while women provide much of the labour, the payout is to men. Extension services are

staffed by men who provide advice only to men (Harrison, 1987: 440; World Bank, 1985: 11).

When large-scale development projects undermine women's autonomy by giving land control and tenure to men and by suppressing matriliney (Rogers, 1980: 129), women as persons become uncounted or "invisible" (Charlton, 1984: 39). Kardam (1991: 12) suggests women have not been recognized as a development "problem" by most planners because it is assumed they will be cared for by male heads of households, and so their marginalization from economic activities is both inevitable and appropriate. In fact though, women's status has decreased while their role and work load in agricultural production has increased dramatically (Boserup, 1985).

Expectations of women impacted by, and in spite of, large-scale projects nonetheless are that they work as food and crop producers, involve themselves in income-generating activities, maintain the home, and perform as reproducers of children. This "double day" (quadruple day?) is often the result of cultural lag biased in favour of men and is perpetuated by development planners (Harrison, 1987: 442; Plewes and Stuart, 1991: 107). It is also an accompaniment within the transition from rural to industrial capitalist economies via large-scale development projects (Dankelman and Davidson, 1988: 13) which make the activities of women in the South both more burdensome and less socially valued than before. Women settlers on some transmigration sites were said

To bear a disproportionate amount of the agricultural and household work while the men and some of the older children were out working for wages. This is at a time when resettlement has already weakened the position of women by undermining their traditional networks, and by the loss of the additional job possibilities open to them in Java (Otten, 1986a: 108).

When large-scale development projects fail, or if women are no longer able to make an important contribution to the agricultural economy, women often migrate out of rural areas in search of monetary alternatives elsewhere. All too often such conditions force poverty-stricken women into socially unacceptable forms of wage labour or into prostitution to gain income for their families. Such was the case for some women from transmigration sites in West Papua (Otten, 1986b: 109). Displaced women in rural areas of the South affected by these projects are therefore observed to be "the poorest of the poor" (Harrison, 1987: 438).

The oppression of growing poverty is linked not only to negative economic and social impacts, but also to environmental impacts from large development projects. Often the displacement of women from their home is rooted in the manner how projects appropriate and destroy the natural resource base. Women's productivity is destroyed both by removing land, water and forests from their management and control as well as through the ecological destruction of soil, water and local vegetation systems (Shiva, 1989: 3).

The carefully evolved soil building strategies of women's work in organic agriculture have been disrupted by foreign scientific miracle seeds and inappropriate agricultural land use. The Green Revolution, for example, substituted the nutrient cycle with linear flows of purchased inputs of chemical fertilizers and pesticides from factories and focused on the production of marketable agricultural commodities with High Respondent Variety of seeds (Shiva, 1991: 118). Additionally, the pesticides and insecticides applied during cash crop growing and crop intensification find their way into

the food chain affecting the health of women and their families. Spraying of fields and local storage of unsafe chemicals are especially hazardous for women whose children also suffer if their mothers were poisoned during pregnancy. In developing countries more and more rural women are accumulating poison in their breast milk from pesticides (Ferah *et al.*, 1985: 36; Rodda, 1991: 90).

Donner (1987: 252) also suggests that when transmigration projects enter the tropical rainforest (resettlement schemes consist mainly of such intrusions), degradations to the ecosystem take place within a few months. A degraded and exhausted environment leads to excessive work burden on women, who play culturally determined roles as food producers and processors, and as prime domestic gatherers and users of water and fuel. Under pressure of shrinking resources from the implementation of large-scale development projects, therefore, women may, out of necessity, contribute to environmental abuse by having to cultivate marginal lands because their access to more fertile land is restricted.

2.4 *Women and the Environment - the Connection*

Until recently, very little had been researched on the women/nature relationship. Most of the research with a focus on interpretations of the women/environment relationship is emerging from the increasing numbers of history and contemporary writings by women themselves: Rodda (1991), Merchant (1989), Miles (1989), Shiva (1989), Dankelman and Davidson (1988), Momsen and Townsend (1987).

It seems that it is *women* writers who initially have taken up environmental issues, specifically, as a cause and thus have effected extensive environmental awareness. Over

thirty years ago Rachel Carson published *Silent Spring* (1962), a terrifying account of the rapid devastation of Earth's natural systems and an impassioned plea for social change. Her groundbreaking book heralded the modern environmental movement. Gro Harlem Brundtland, former Prime Minister of Norway chaired the World Commission on Environment and Development. Under her leadership the resulting report, *Our Common Future* (1987), contains key recommendations to move toward global "sustainable development," a recognition that our continuing need for growth must be done in harmony with our environment so as not to jeopardize the welfare of future generations.

Because of growing evidence indicating exploitation and pollution of the natural environment in many areas of the world, women are also initiating grass-roots movements, sometimes together with first peoples, to foster conservation of ecological niches and systems. The leading-edge social and "green"²¹ movements of our time, says Eisler (1990: 23), are in some respects very new, but they draw from traditions and values embedded in ancient and current traditional societies. These movements today, agrees Shiva, are inspired in large part by the recovery of the concept of Gaia, the Greek name for Mother Earth (1989: 41).

Fundamental to many ecology-related movements is the Gaia hypothesis first proposed by British scientist James Lovelock (1987). The basic premise of this hypothesis is that life and its natural environment have co-evolved on the planet, and therefore Gaia is a living system made up of all the living things and their environment.

²¹ Diverse organizations fostering basic human values humanity must have: ecological wisdom, grass-roots democracy, responsibility for society, non-violence, decentralization, community-based economics, post-patriarch values, respect for diversity, global responsibility, and future focus (Barnaby, 1988: 227).

Each of us is a community of living beings, and each community of living things is part of a larger community of communities. Thus the Gaia theory creates a vision of the Earth in which the Earth's living organisms continuously interact with their natural environment to regulate chemical, atmospheric, and climatic processes.

Whether some scientists (Stead and Stead, 1992: 46; Ehrlich and Ehrlich, 1991: 20) dispute that the Earth itself is a living organism or not does not really matter. Environmental scientist, Daniel Chiras (1991) argues that the Gaia theory is nevertheless an elegant metaphor that underscores a key principle of ecology: that all living things operate together and that they operate optimally within a wide species diversity. Therefore the key to achieving proper environmental balance and helping regulate ecosystems is maintaining species diversity (Lovelock, quoted in Stead and Stead, 1992: 45). The question

Is not how to care for the planet but how to care for each of the planet's millions of human and natural neighbourhoods, each of its millions of small pieces and parcels of land, each one of which is in some way different from all others (Berry, 1989, 18).

2.4.1 *Ecofeminism*

In 1974 the prominent French writer Françoise de' Eaubonne coined the term *ecofeminism* and called upon women to lead an ecological revolution to save the planet. Using the Gaian hypothesis as fundament, women active in ecological issues support the notions that: 1) everything is connected to everything else in an integrated web; 2) nonhuman nature is active, dynamic and responsive to human actions; 3) process, not parts, is primary; and 4) people and nature are a unified whole (Merchant, 1989: 263).

Recognizing the linkages among patriarchy, modernity and planet-wide ecological destruction and responding with action on the environmental front, many women (and men) today embrace the ecofeminist philosophy in some form or other. Both feminism and ecology embody the revolt of nature against human domination. The central claim of ecofeminism is that the roots of the ecological crisis lie in the domination of some humans by others, more specifically they lie in the domination of women and nature by men, and this master model and colonizer perspective must be altered (Plumwood, 1993: 29). The basic premise of ecofeminism, says Ariel Salleh (1988: 26), is the acknowledgement of the parallel in men's thinking between their 'right' to exploit nature on one hand, and the use they make of women on the other. From this, it follows that the current ecological crises in many parts of the world may be a consequence of the lengthy patriarchal suppression of women and their exclusion from institutions in which major decisions regarding the use of the physical environment are made.

Critics of the ecofeminist movement suggest on the other hand, that by associating women so strongly with biology and nature, the limiting patriarchal ideology of domination could be reinforced (Berman, 1993: 20). Seager (1993: 219) suggests that such association obfuscates the power relations that are really involved when we try to sort out who's controlling what, and who's responsible for what, in the environmental crisis. In the same light Robin Ekersley cautions accepting ecofeminism uncritically. She suggests that overprivileging women's experiences can inhibit general emancipatory process because: 1) such an analysis can overlook the extent to which many women have been accessories in the process of ecological destruction in the past; 2) it can fail to

identify different ways in which men themselves have suffered from "masculine" stereotypes; and 3) it can be less responsive to the impact of other social dynamics and prejudices unrelated to the question of gender (1992: 92).

In spite of its weaknesses, ecofeminism offers a profound critique and a different way of looking at things. It shares much fertile ground with current movements which are focused on changing the relationships of power and institutional control that shape our environmental affairs and that are extensions of the ordinary and everyday relationships between men and women, and between them and institutions (Seager, 1993: 282). Ecofeminism, with deep ecology, social ecology and other green movements, has a philosophy consistent with the Gaia hypothesis. Within these environmental movements there are celebrations of interconnectedness and diversity in nature that have to be understood to be preserved in order for humankind to survive.

The conjunction of women's movement with the ecology movement brings the issue of liberation of both into focus (Merchant, 1980: 294). In fact much of the environmental movement is driven by women (Gancher, 1993: ix). Professor Wangari Maathai of Nairobi, Kenya, heads the famous Green Belt Movement, begun in 1977. Pushing the very foundations of culture, economics and politics, she began a unique programme combining reforestation and women's self-help that spread to more than 30 other African nations. Poor tribal women in India were the most prominent players in the Chipko Movement, which is a revolt against the existing values which regard nature as a commodity. These women became India's "tree huggers," whose action in the early 1970's prevented trees from being commercially felled and influenced forest conservation

movement that has spread throughout the Himalayas, into other parts of India and beyond (Shiva, 1990: 67).

On the North American continent it is most frequently women who initiate action on environmental rehabilitation. Women led the clean-up of chemical pollution at the Love Canal and began the NIMBY (Not In My Back Yard) movement in the United States, protesting toxic chemical storage close to urban areas (Ontario Advisory Council on Women's Issues, 1990: 4). In Canada, the National Council of women was one of the first groups to request federal action on acid rain. Since 1988, groups led by women and children of the Innu, northern Canada, undertake an annual campaign of non-violent civil disobedience to protest the intrusion into their lands by low-level flight testing of the Canadian military, the British, Dutch and West German jet-fighter planes (Helwig, 1993: 52). Deforestation and destruction of natural habitat are consistently fought by groups initiated by Canadian women.

It is not the intention here to use all these examples of women writers and activists as a means of negating or undermining ways that men also may be connected to the environmental issues. There are innumerable examples of environmental rehabilitation issues successfully instigated and carried out by men. So it is not women alone who are involved in these struggles (Shiva, 1989: x; Ontario Advisory Council, 1990: 8).

However, it is no accident that women are leaders of the global environmental movement (Seager, 1993: 101; Johns, 1990: 235). Literature tells us that: 1) women's concern for the natural environment is rooted in their concern for the health and well-being of our family and community; 2) women are primary purchasers of consumer

goods; 3) environmental problems are specifically women's issues. An example is breast milk contamination from pesticides used in agricultural production; 4) women are also the lifegivers and maintainers. This is true especially true in countries of the South where women have prime responsibilities for family care and nutrition; and 5) women inhabit the earth, and being half of the world's population, are in part responsible for its survival (Ontario Advisory Council, 1990: 3). It is also frequently women's labour that is made more arduous as a result of deforestation or cash-cropping, militarization and displacement; it is often women who are primarily responsible for the health of their family members in the face of toxic waste or famine or inadequate housing; it is increasingly women's lives and bodies that are affected by developing biotechnologies and discourses around "overpopulation." Further, it is women who have borne the effects of war; 80 percent of the world's refugees are women and children (Helwig, 1993: 52).

Shiva (1989: x) states that, both as victims of modern technological development and the scientific paradigm (from which development derives its *raison d'etre*) and as possible deliverers from it, women are more central to environmental stress than men are. This is true for women that still cherish and nurture the feminine principle (not all of them do). The impacts of environmental stress are never gender neutral, but women's social roles as family caretakers, and in agrarian economies as primary subsistence providers, situate them in the environmental front lines (Seager, 1993: 99).

2.4.2 *Women in the South and their Environment*

Although the feminist voices are heard more loudly in the North regarding issues of social justice, emancipation and environmental stress, women in countries of the South are experiencing a deepening struggle with the same issues. In spite of acquiring political independence, many countries in the South have governments which still demand that legacies of colonialism be practised.

Affecting women of the South and their physical environment particularly are lingering legacies of colonialism including patriarchy and monotheistic religions. Both legacies encourage exploitation of natural resources meant to foster capitalism and the accumulation of wealth. Shiva states that violation (domination and exploitation) of nature is linked with the violation and marginalization of women, especially in the South (1989: 42). During the colonial era in Indonesia, for example, native Indonesian women were subjugated and silenced by the exploitative government, by patriarchal Dutch colonial men and even by their wives. Colonial discourses associated femininity with weakness and frivolity, and identified non-white women with childish helplessness, rendering their status to a natural dependency on patriarchal tutelage (Gouda, 1993: 320).

Likewise, monotheistic religions, which spread alongside colonialism via missionaries within today's developing countries, have done little to elevate women's status after attaining independence. Islam, for example, is a strong force in support of patriarchy; it is explicit about the sexual labour division and essentially sanctifies male dominance in areas of resource control, rendering of women as helpless and dependent on men (Massanari, 1991: 18; Wiest, 1990: 6). Legacies of colonialism, patriarchy and

dominant religions that tend to undermine women's status will thus also tend to restrain their opportunity for education, including learning about their natural environment.

For women in the South, especially those in rural areas, involvement in any "green" movement is not a sentimental movement. In many cases their own, and their families' lives, depend on the preservation/rehabilitation of ecosystems. So interest in preservation of land, water, air and energy is no abstraction for many women, but a clear effort simply to survive. Almost invariably women, especially those in the South, have the responsibility of keeping their family unit intact. Such a responsibility requires much time and effort on the part of women to devote a large portion of their life to their nurturing skills. The nurturing of a family is a lengthy process which demands having ready access to, and interacting with, a physical environment that has the resources capable of sustaining life. There are two important interactive ways that these rural women can be related to the environment.

Firstly, women, especially those in the South, in their daily tasks use natural resources for the provision of basic needs: food, water, energy, and, in some areas, shelter. It is generally understood or assumed that it is up to women to procure, prepare and to serve food in edible form to their family. To do this means that women depend on their immediate environment for such resources to supply an adequate and diverse food supply (Rodda, 1991: 84; Dankelman and Davidson, 1988: 8).

In addition to and in conjunction with food preparation, there is also the need to have access to a steady supply of potable water and fuel. Studies show that in many parts of the developing world women are chiefly responsible for collecting, transporting, storing

and managing water for household use (Rodda, 1991: 84; Dankelman and Davidson, 1988: 32). Besides water being used for drinking purposes, the many purposes for water in the household include sanitation and waste disposal, child care, vegetable growing, food cooking and processing. Women also play a significant part in using water to grow crops. Similarly, fuel is needed in the household for food preparation, lighting and heating.

These three substances: food, fuel and water, are elements which are procured from the surrounding or more distant physical environments. Thus, in their role as home and family managers and in their need to have immediate and on-going access to these elements, women directly impact their physical environment and local ecosystems. Should their environment not have these necessary life-sustaining elements means that women, together with their families, will need to migrate to a new area which will sustain them. Alternately, if migration is not possible, women will have to exploit their local ecosystems to a larger extent. This requires women having to expend more time and energy to go further afield for fuel, food and water, or to find other, non-traditional methods to do so.

Often women may find that they must become the "head" of their household as husbands and older sons leave the home to search for income-generating jobs in urban areas. Sometimes this effects a disorienting change in the traditional role of women as they take total responsibility for the well-being of themselves and their families. Such an intensive responsibility left to women alone may again impact the immediate

environment to a greater extent, as women may have to exploit their surrounding ecosystems more intensively for food, fuel and water.

Besides having responsibility for the physical nurturing of their family, women also play an important role in the psychological, emotional, economic and social well-being of each of their family members. They are the main-stays of families, passing on values and traditions, through their work, their songs, their religions, their ceremonies and by their example. All these responsibilities can be successfully accomplished only if the physical environment is sustaining the needs of the family. Thus it could be said that women are one of the main *users* of, and are *dependents* on, their physical environment (WFPa: 19; *Populi*, 1991: 44).

Secondly, because of the responsibility women have in the nurturing and sustaining of their family, it can be said that they inherently realize it is the physical environment that sustains life. All food, water, shelter and fuel ultimately come from elements of our earth. Women also can extend their nurturing skills to the physical environment. Their skills in nurturing, consensus and conflict resolution could sustain local ecosystems since their very life and that of their families depend on preserving what there is (Mehra *et al.*, 1992: 67). Women are central to any conservation effort; they have skills and knowledge built over centuries of daily use of natural resources. They know about the quality of fuelwood, location of water sources, seed selection, storing vegetables and preparing herbal medicines. Thus women can be the daily *managers* and *protectors* of the environment (WFPa: 19; *Populi*, 1991: 44; Rodda, 1991: 72), especially the women in the South.

Rural women of the South not only depend on environmental resources because of household importance, but also for economic survival. For example, women farmers grow crops for sale in domestic and export markets. They are also main producers of forest based wood and non-wood products sold for export and locally as supplementary income. National incomes and foreign exchange earnings of Asian countries, for example, have increased significantly as a result of women's economic activities that depended directly on the environment and natural resources (Mehra *et al.*, 1992: 43).

In many parts of the South, however, extreme pressures have created environmental stress and imbalances that continue to undermine rural women's ability to manage resources sustainably. These extreme pressures result from a phenomenally fast population growth, pockets of increased militarism and national elitism, and government corruption in search of capitalist market economy development. Failure to take into consideration the important facets of women's roles in development schemes, which alter physical environments, has limited development efforts and benefits in countries of the South. Although there has been much activity in recent years on issues of women and development, there is little evidence that development planning thus far considers these issues important enough to be acknowledged and integrated.

2.5 *Contribution of the Study to Existing Literature*

In his paper called "The dissemination of research results in South East Asia," Hénault (1992: 39) suggests that information from research "cannot be treated like a brick being thrown from system to user, but like clay the user can use for constructing his or

her own sense." Research impact on the users is not entirely dependent on research quality but on the needs it meets at a particular time.

This thesis was carried out with the anticipation of fulfilling a particular need. By way of a transmigration case study in Indonesia, a major objective is to bring to light the crucial impacts of large development projects that impinge on the physical environment and, hence, affect women. The process, by which large development projects (such as transmigration schemes) have been put into place until now, has resulted in the inevitable alteration of natural environments, traditional customs and economies. It should not be inevitable that such changes should leave large numbers of women and their families worse off whereby their lives become environmentally unsustainable. There are ways to prevent this.

As natural resources and energy supplies diminish in the future, it will become essential to examine alternatives of all kinds so that, by adopting new social styles, the quality of the environment can be sustained. By way of research on transmigrant women, this study attempts to address a very necessary ingredient to produce such alternatives. Environmental issues are central to women, as are those issues that influence women's impact on the environment (women's status and autonomy, their education level, their work load, etc.). The issues need to be reiterated again and again by many researchers and then addressed by decision-makers in a gender-balanced environment.

While not appropriating the meaning of the lives of women of the South by homogenizing their infinite diversity, and by refuting Western scholarly superiority, this thesis endeavours to lend support to other research material relating to women, the

environment, and ecologically sustainable development. Such an viewpoint is necessary especially with any research undertaken within developing countries like Indonesia. Only by creating an awareness of the many positive and critical roles that women play in their society will their opportunities for an improved social status remain viable. In the context of Indonesia, this study aims to provide information on environmental impacts of large-scale projects, like transmigration, on women. It is hoped that this thesis will provide additional information for decision-makers also within that country when and if further transmigration projects are planned.

CHAPTER 3

METHODS OF ANALYSIS

This chapter contains a detailed discourse of data acquisition for the thesis. Within the discourse is included an elaboration of the hypotheses which were used as a guide for the research. This is followed by a description of the study area, the methods implemented in collecting data from various sources, and of the method of analysis used. Finally, the limitations of the study and the analysis conclude this chapter.

3.1 *Discussion of the Hypotheses*

Based on the basic and inter-related issues that converge in this thesis, environment, women, and (trans)migration as development, two hypotheses were formulated to guide the research:

Hypothesis One: Transmigration gives women continual access to necessary environmental resources²² for sustaining their families.

Discussion: One of the stated goals of Indonesia's transmigration programme is to ease the pressure of too many people on the environmental resources of the heavily populated Inner Islands. Intensive and inappropriate land use in the uplands of Java, for example, because of the dense human population, is endangering the soil and human lives. Farmers have had to move onto steep slopes and into forest reserves where cultivation and erosion have caused environmental degradation, siltation of reservoirs and canals, and downstream

²² For purposes within the thesis, environmental resources include mainly the basic elements necessary for life: water, food, and fuel.

flooding (World Bank, 1988: xvi; Whitten *et al.*, 1988: 240). Therefore moving families out of crowded areas of Inner Islands should help them get a "fresh start" with the basics of life. Resettlement for most transmigrants usually occurs to the Outer Islands of Indonesia.

Since it is women's traditional responsibility to procure and prepare food for their family, transmigrant women look to the new environment to meet this responsibility. For a properly balanced diet, we know that women and their families need access to a diverse food supply, i.e. a wide variety of food types. In an agrarian setting this diversity is best made available by a large environmental resource base. Additionally, an intact forest base can mean fuel and diversity of food sources.

Two other basic resources that women need are a reliable supply of potable water and a source of fuel for domestic uses. Transmigrant women and their families expect these to be plentiful at their point of destination. Clean rivers, for example, are immensely valuable to humans. They provide food, drinking water, and a place to wash, swim and to bathe.

Hypothesis Two: Ecologically sustainable use of environmental resources by transmigrant women is positively correlated with the amount of education and training they have received.

Discussion: We know that the ecological knowledge of indigenous people, for example, occurs from the accumulation of experiences with their physical environment over many generations. They depend on their natural environment for food, building materials, clothing, and herbal medicines. Just as important, they have deep-rooted cultural ties with

their natural environment which extend far beyond pure economics and which give meaning to their lives and cohesion to their culture (Goldsmith *et al.*, 1990: 74).

Because transmigrant women, like indigenous people, must procure basic and necessary resources for their family's survival from the natural environment, their choices in how to acquire these resources should enhance environmental sustainability. The questions remain: are transmigrant women, as users and managers of the environment, making wise and intelligent use of those resources in their new location? What role does education and training for transmigrant women have in determining their wise use of environmental resources? Does education and training of transmigrant women stimulate them to participate in environmental preservation and rehabilitation?

3.2 *The Research Environment*

The research took place on the Outer Island of Sulawesi which is located across the Java Sea to the north-east of the heavily-populated Inner Islands of Java, Bali, Lombok and Madura. With authorization from various Government of Indonesia departments and representatives, the research was carried out at the Luwu Irrigation Scheme. This is a large resettlement area specifically developed for transmigrants and covers approximately 29,000 hectares (ha) within the deltaic northern area of South Sulawesi Province. For administrative purposes, the provinces within Indonesia are divided into smaller units known as *kabupaten*, or regencies, which are further subdivided into *kecamatan*, equivalent to municipalities. Within each *kecamatan* are the *desa*, or villages, each having its own chief (Table 3.1). The study area for this research is

located within *kabupaten* Luwu. Currently the large Luwu Irrigation Scheme, consisting of several independent irrigation projects within *kabupaten* Luwu, serves the water needs of transmigrants which were interviewed for this thesis.

Table 3.1 Indonesia's Provincial Administrative Divisions, with Official in Charge

DIVISION	OFFICIAL
<i>Provinsi</i> (province)	<i>Gubernur</i> (governor)
<i>Kabupaten</i> (regency)	<i>Bupati</i> (regent)
<i>Kecamatan</i> (municipality)	<i>Camat</i> (municipal officer)
<i>Desa</i> (village)	<i>Kepala Desa</i> (village chief)

3.2.1 Selection of the Study Area

Luwu Regency (or *kabupaten* Luwu) in the Province of South Sulawesi served as a favourable research area on women and the environment on several counts. Firstly, the physical environment of Luwu has had to accommodate large numbers of family-unit transmigrants coming from the Inner Islands in anticipation of beginning a new life. The resultant impact of large numbers of transmigrants on the fragile forest ecosystems of the study area has potential for research geographers. Studies show that biodiversity decrease is also occurring in the study area on Sulawesi Island (Whitten *et al.*, 1987: 42). Therefore Indonesia's geographic immensity, ecological diversity and subsequent ecological fragmentation will demand that local solutions be found for local problems, like those caused by transmigration impacts.

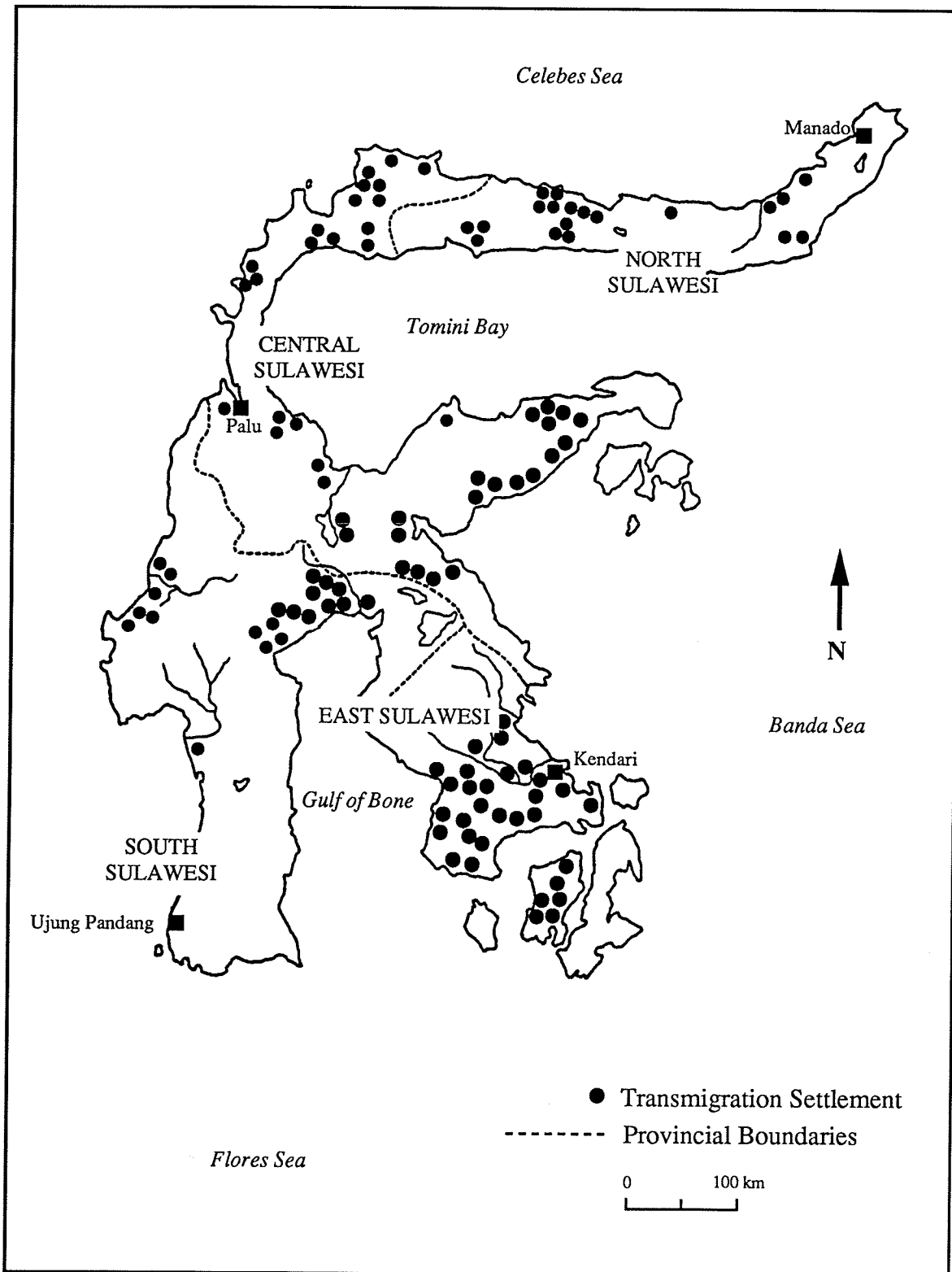
Secondly, transmigrant women served as excellent potential sources of information in terms of human adaptation to a new environment. Since military conflict is not an issue in the vicinity of Luwu Regency at this time, transmigrant women with their families could be interviewed unencumbered and thus served as potential environmental "mirrors" to gain insights into, and for, development planning where necessary.

Thirdly, Luwu Regency was used as the study area because officials themselves, within several Government of Indonesia (GOI) agencies, expressed the need for information related to women and transmigration projects, specifically at the Luwu Irrigation Scheme. The data gathered from the field research in Luwu Regency was, therefore, also used to write an initial report specifically for these governmental agencies in August 1993.

3.2.2 Geographical Description of the Study Area - Physical and Cultural

Sulawesi is a most unusually-shaped island with four distinctly radiating arms and four distinct provinces. South Sulawesi Province itself has a total population of 7.0 million (NDIO, 1993: 159) and is the most densely populated province in eastern Indonesia. Its capital city is Ujung Pandang (formerly Makassar). Four ethnic groups are pre-dominant in the local population of South Sulawesi *Provinsi*: the Bugis, the Makassarese, and the Mandarese(who are concentrated around Ujung Pandang and along the coast), and the Toraja who inhabit the northeastern mountain districts of the Province. Additionally, transmigrants of various other ethnic groups continue to arrive at various sites prepared for them on Sulawesi Island (Figure 3.1).

Figure 3.1 Transmigration Sites on Sulawesi Island



Soils within the study area are composed mostly of the alluvial type which generally relate to a history of deposition rather than to processes of soil development. Many transmigrants to Luwu have been settled on these deltaic soils at the mouths of the many rivers that drain the prominent inland mountain ranges into the nearby Bone Gulf. The climate of South Sulawesi is best described with reference to rainfall, since temperature is relatively constant; therefore the study area lies in a major tropical climatic subzone receiving ten to twelve consecutive wet months and two or less consecutive dry months.

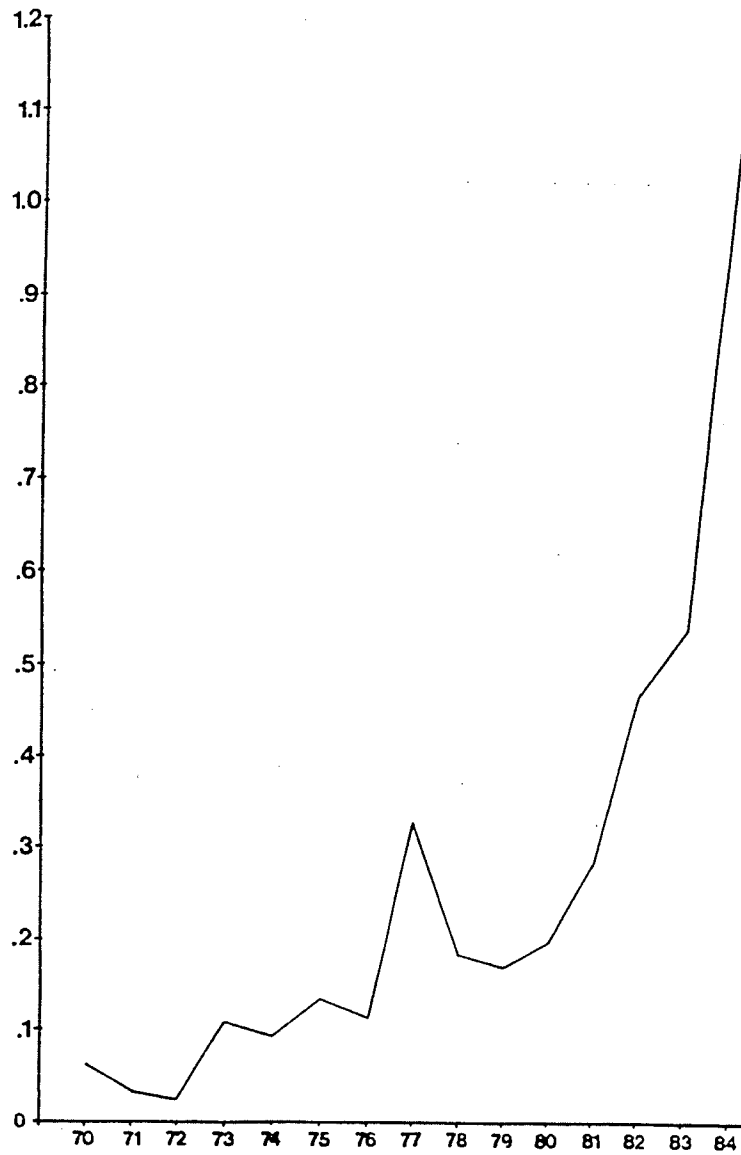
The fauna of Sulawesi is one of the most distinctive in all Indonesia, particularly among the mammals. Of the one hundred and twenty-seven indigenous mammal species, seventy-nine (62 percent) are endemic. New species of mammals continue to be catalogued as they are found in less-populated areas. There are three hundred and twenty-eight species of birds known on Sulawesi of which eighty-eight (27 percent) are endemic to the Island (Whitten *et al.*, 1987: 37-38). However, the present state of natural ecosystems on Sulawesi indicates overuse of the resources. The conversion of natural forest to other forms of vegetation began many hundreds of years ago, but this process has accelerated greatly since the early 1970's when commercial logging, transmigration and estate crop projects altered vast areas of landscape on Sulawesi Island.

With the complete clearing of forests for large-scale agriculture and transmigration sites, habitat for endemic animals has been destroyed. Personal conversation throughout the time-frame for this research confirmed the decrease in biodiversity of the area because of large-scale forest conversion and subsequent population increase. It was stated that

during the 1950's and early 1960's many moor macaques (*species M. maura*) could be seen in the trees even beside the major roads. Today none of these species are left in the area. Further, a university researcher, who grew up near to the study area, stated that during his youth (again 1950's to early 1960's) he observed many species of songbirds in the area. Again, none of Sulawesi's endemic birds are today heard singing in the vast fields of rice production estates (personal conversation). Besides the elimination of biodiversity habitat via forest clearance, South Sulawesi's eco-systems have also been permeated by vastly increasing amounts of pesticides, herbicides and chemical fertilizers (Figure 3.2). Affecting the agricultural communities through the inclusion of transmigration sites in Sulawesi is the proliferation of mosquitoes species, some of which are potentially serious vectors of malaria and filariasis. These diseases are now found in far greater abundance in farmland than in forested areas of Sulawesi (Whitten *et al.*, 1987: 437).

When major transmigration programmes were drawn up at the beginning of the First Five-Year Plan (1969-1974), for migrants originally to be settled formally in tidal areas of South Sulawesi, the Luwu area was chosen as one having great potential. One of the major reasons for this choice was the availability of large tracts of land free from any registered formal claims. Thus it was easy in Luwu to set up infrastructure including use of the village unit concept which was to guide village design and organization in future years. With such a plan the government hoped also to avoid fragmentation of holdings and to implement administrative and social services for transmigrants and for local inhabitants.

Figure 3.2 Increase in the Use of Biocides (000s tons) in South Sulawesi (1970-1984)



SOURCE: Whitten *et al.*, 1987: 583

Another reason Luwu was originally chosen for transmigration settlement is that the alluvial plain that makes up much of the Luwu Regency seemed initially to offer good possibilities for agricultural development (Hardjono, 1971: 79). Land clearance was accomplished by logging companies first extracting the commercial timber. Then the land

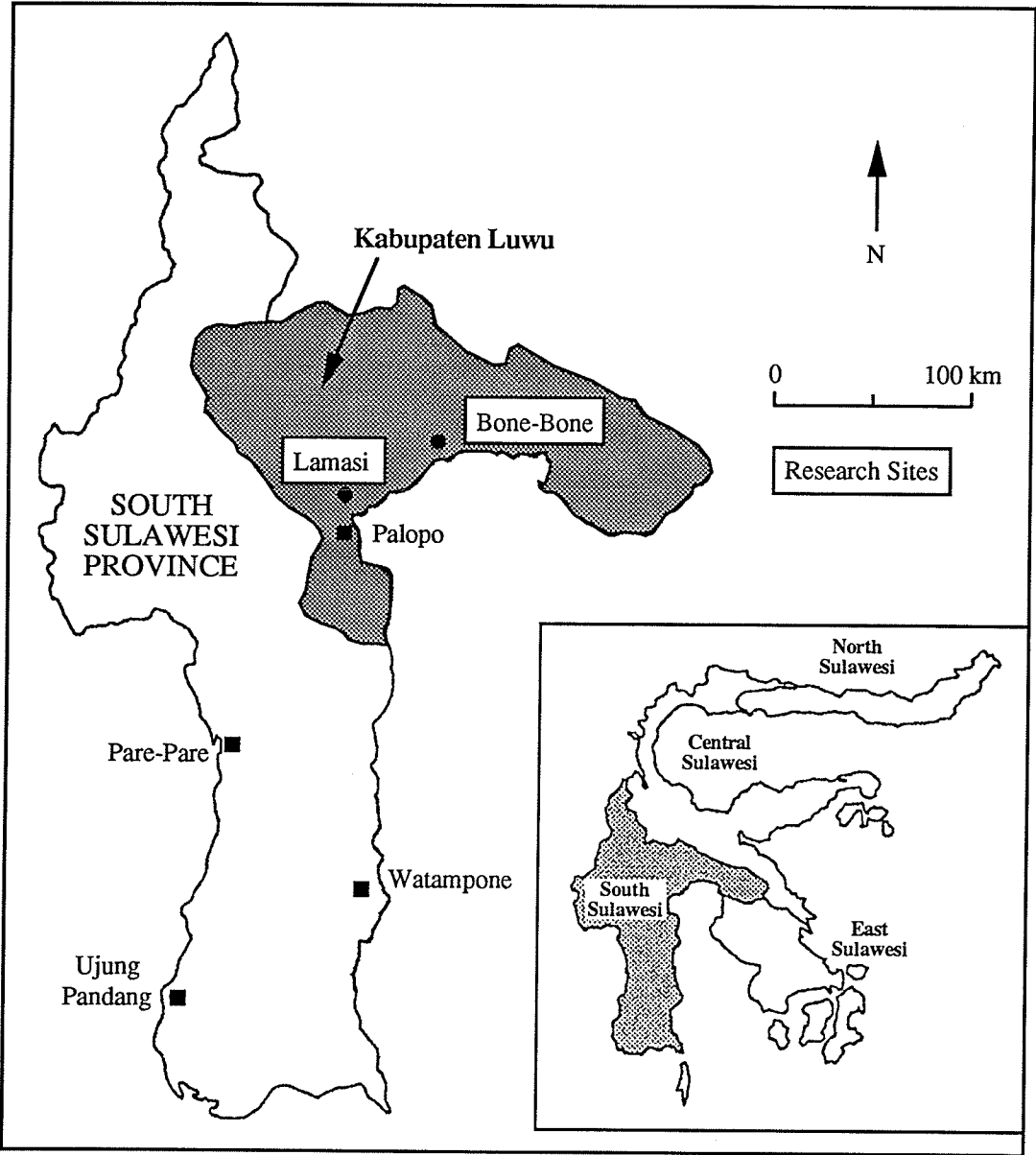
was fully cleared by an estate company, preparing it for agriculture and for the subsequent creation of full irrigation facilities via the Luwu Irrigation Scheme. Settlers have been able to expand farming practices over the years to multiple and continuous cropping systems. Cropping of rice, for example, has become possible even during the "dry season." Principally the planted fields produce rice, with oil palm, cocoa, coconut and vegetables on a lesser scale. Animal husbandry of cattle, pigs, chickens, ducks and goats also occurs to a lesser extent. Intensive agriculture on transmigrant sites in Luwu thus is being carried out on tropical soils that have been cleared of forest stands.

The Luwu Irrigation Scheme itself was begun in the early 1970's to control regular flooding of the rivers in this deltaic area, and to provide water supplies for irrigation and domestic use for transmigrants who were already in the area since 1938. Built also to create an incentive for additional transmigrants to be attracted to the irrigated Luwu area, the Scheme was a joint project developed by the Indonesian Ministry of Public Works, Directorate General of Water Resources Development, Luwu Irrigation Project; by the Ministry of Home Affairs, Directorate General of Regional Development; and by the Ministry of Foreign Affairs, Directorate General of International Co-operation. Regarding the agricultural activity in this area, most of the land is developed and irrigated with a mono-cropping pattern of rice fields. These rice fields make up approximately 3,886 hectares out of a total command area of 4,473 ha. On average, the transmigrant farmers in the scheme own 1.27 ha per household and the average size of the household family currently living within the Luwu Irrigation Scheme is about 6 persons (Gany, 1993: 252).

Kabupaten Luwu is comprised of several *kecamatan* (municipalities). Two of these, Lamasi and Bone-Bone, were selected for the research (Figure 3.3), mainly for ease of comparison and accessibility. The first *kecamatan*, Lamasi, located near Palopo and the major administrative city within the *kabupaten* of Luwu, is also one of the original transmigration sites in South Sulawesi. Bone-Bone, a more hinterland location within Luwu and a more recent transmigration site, is the second *kecamatan* chosen for research. The two transmigration sites are approximately 90 kilometres apart, linked by a major paved highway. Within both sites, only those villages serviced by the Luwu Irrigation Scheme were surveyed.

The first site, *kecamatan* Lamasi, was chosen for this research because it was an older transmigration site, dating back to 1938-39 and developed under the *kolonisasi* programme instigated by the then Dutch Colonial government. When migrants first arrived in the Lamasi area, they were allowed to choose land plots to settle on and were given free access to adjacent forest areas to use without restriction. As the years progressed, however, the forest stands became fragmented and depleted with increasing numbers of people using its resources. In 1970, the Government of Indonesia placed restrictions on forest use and limited transmigrants to two hectares of land for cultivation and homestead under the transmigration programme (personal interview).

Figure 3.3 Location of the Two Research Sites Kabupaten Luwu, South Sulawesi Province



Lamasi is also adjacent to the Luwu's administrative capital, Palopo, which has full access to the irrigation waters of the Luwu Project. Thus, the growth of *kecamatan* Lamasi has been strongly influenced by trading and agricultural sales, since it is so near to Palopo. The population of Lamasi has increased from 33,790 within 6 *desa* (villages) in 1980, to 41,521 within the current number of 17 *desa*. The population count by gender in Lamasi is 20,664 women and 20,877 men (Table 3.2).

Table 3.2 Population by Gender and Ratio in *Kabupaten* Luwu (1991)

Kecamatan	Male	Female	Total	Women/1000 Population
Bassesangtempe	7,136	7,151	14,287	501
Larompong	13,610	15,764	29,374	537
Suli	10,192	10,647	20,839	511
Bajo	7,649	8,452	16,101	525
Belopa	13,169	13,968	27,137	515
Bupon	23,152	21,315	44,467	479
Bua	9,676	10,256	19,932	515
Walenrang	18,193	17,946	36,139	497
Lamasi ***	20,877	20,644	41,521	497
Malangke	17,681	16,733	34,414	486
Sabbang	27,965	26,453	54,418	486
Limbong	6,346	6,186	12,532	494
Masamba	17,235	17,793	35,028	508
Sukamaju	17,494	17,033	34,527	493
Bone-Bone ***	16,938	16,498	33,436	493
Wotu	18,373	18,751	37,124	505
Mangkutana	23,689	24,325	48,014	507
Malili	16,448	15,444	31,892	484
Nuha	15,139	15,716	30,855	509
Wara	22,624	23,235	45,859	507
Wara Utara	23,997	23,759	47,756	498
Total	347,583	348,069	695,652	10,546

SOURCE: Statistics Office, *Kabupaten* Luwu

Currently, Lamasi is comprised of transmigrants from many different points of origin, including Java, Toraja, Timor, South Sulawesi, Yogyakarta, and from local areas. Such a heterogeneous population, with different cultures and work habits, make it difficult to organize social activities (personal interview with *kepala desa*). The homes within the villages of Lamasi are relatively close together, because, Lamasi being an older site, accommodation has been made to absorb the living requirements of the descendants of original transmigrants. Compared with Province of South Sulawesi's 1989 statistics for rapid rise in unemployment numbers (9,789 in 1984 to 38,738 in 1988) (Giesen *et al.*, 1991: 20), Lamasi appears to have a similar situation with its large number of unemployed people. The incentive to look for employment or create new possibilities seems to be lacking here (personal interview).

Kecamatan Bone-Bone, the second site to be surveyed for this study, was also begun around 1938 during the Dutch *kolonisasi* policy. However, it was not seriously developed until the early 1970's. At this time the Bone-Bone area was cleared of forest cover and developed using Luwu's irrigation-based incentives for attracting newcomers. This site is, therefore, a newer venture in transmigration development than the Lamasi site. It is also more remote since it is further from an urban centre. The population is listed as 33,436, with 16,498 women and 16,938 men (Table 3.2). The majority of Bone-Bone settlers appear to originate from the island of Java, thus bringing with them an industrious and congenial work-ethic.

The homes within Bone-Bone are more distant from each other than in Lamasi, and, noting that this transmigration site is relatively newer, it is less crowded. Access for

domestic water is from individual wells, built by each owner upon arrival. Although land certificates were issued, it was found that some of the land was not free from former claims, as some owners report negotiations were still pending from aboriginal claims after all these years.

3.2.3 Selection of the Sample Population

The two *kecamatan*, Bone-Bone and Lamasi, were chosen since they fit the requisites on several counts: 1) both are transmigration sites with heterogeneous populations; 2) both are part of, and are served by, a large-scale "development" project, the Luwu Irrigation Scheme; and 3) both are fairly static in terms of in-migration (i.e. most of the land within each *kecamatan* is occupied).

Both *kecamatan* Bone-Bone and *kecamatan* Lamasi have numerous individual villages (*desa*) within their jurisdiction, some having irrigation-fed fields and some having only rain-fed fields. Since this research is integrated with major development impacts, only those villages served by the waters of this irrigation scheme were targeted.

Kecamatan Bone-Bone and *kecamatan* Lamasi both have large populations: 33,436 and 41,521 respectively, but because the research was meant to focus on women and their adaptation to a new environment, there was the need to determine how to target women within the transmigration settlements. This was accomplished by acquiring, also from each *kecamatan* office (*kantor*), current statistics on the numbers of families within each village (*desa*). Additionally, the family numbers of those villages served by Luwu Irrigation waters were selected for the sample population.

From the large populations of both *kecamatan*, it became obvious that a fairly large sampling of the population would be necessary. Also it was assumed each family (*keluarga*) or household would have a female head. Therefore, using current statistics obtained from both *kantor kecamatan*, the number of households possible within the sample population was determined: Bone-Bone 4,595 *keluarga* + Lamasi 5,387 *keluarga* = 9,982 *keluarga* (households).

In terms of the number of interviews to be carried out, it was decided to use a goal of 200. This number was based on a similar, earlier study of the same area, using a random sample of 253 households (Gany, 1993: 168). Justification for the selection of that random sampling number included the fact that the average characteristic of transmigrants does not differ much from one place to another within the study area. Additionally, taking a larger number of samples would be no guarantee of obtaining a better result and would be more costly. Practical reasons and cost/time constraints were the determination factors.

Using a goal of 200 individual interviews for the survey, the following calculations were made to determine how many interviews should be carried out in Bone-Bone and in Lamasi respectively:

Number of Transmigrant Households in **Bone-Bone** ÷ Total Transmigrant Households in both *Kecamatan* x Desired Number of Interviews = $(4595 \div 9982) \times 200 = 92$

Number of Transmigrant Households in **Lamasi** ÷ Total Transmigrant Households in both *Kecamatan* x Desired Number of Interviews = $(5387 \div 9982) \times 200 = 108$

Further, it was necessary to determine the number of interviews to be carried out within each individual village. This was accomplished by dividing the number of

households in each village by the number of households in either *kecamatan* and then multiplying the desired number of interviews for that *kecamatan*. For example, the number of interviews to be carried out in *desa* Sidomakmur (part of *kecamatan* Bone-Bone), was $(239 \div 4595) \times 92 = 5$.

This research focuses on women in a human-resettlement development project, and so the questionnaire was directed to the female head of households chosen in a systematic sampling procedure. Since the population numbers varied for each village, so, too, did the subsequent interview interval. The systematic sampling method was chosen for its ease of use and because it should yield uniform coverage of population. In the attempt to achieve uniform coverage of the villages surveyed within Bone-Bone and within Lamasi, the first observation chosen in each village was usually the house nearest the main road entry to the village. After that, subsequent households were selected from prior calculation of the appropriate interval until the desired number of observations (200) was reached.

3.3 *Acquisition of the Data*

Collection of information from many sources within the Republic of Indonesia was done from May 11, 1993 to September 10, 1993. However, the field survey itself was carried out during June and July at two of the transmigrant sites served by the Luwu Irrigation Project Scheme in South Sulawesi Province.

To facilitate some understanding of the language used primarily in the country, an introductory course in the Bahasa Indonesia language was undertaken in Canada prior to

entering Indonesia. Interpreter assistance was sought once in Indonesia to help in the administration of the interviews, since most Luwu Irrigation transmigrants speak only the Bahasa Indonesia language or Bahasa Bugis language, while others know only Javanese.

Because transmigration remains a sensitive issue, there was the need for ethical considerations, confidentiality and anonymity. Prior to each interview, research objectives were conveyed orally to potential participants in order to obtain informed consent, and all interviewees were assured that confidentiality and anonymity of their responses would be maintained. Gathered household demographic data were used in reports in a generalized form without identifying household units or individuals.

3.3.1 Primary Sources

The survey as primary source of data consisted of three major activities:

1. the preparation of the questionnaire as the main survey tool;
2. the collection of data in the field using the questionnaire;
3. informal interviews and observations

1. *Survey Tool:* The frequent contradiction between norms and social reality within any given society made it necessary to conduct formal interviews during field research. Thus a formal, prepared questionnaire (see Appendix) was used as the survey tool in this research. A variety of question types were used: choice, fixed response, and rating scale.

The questionnaire consisted of three parts. The first part sought to gain information about experiences that transmigrant women encountered through the resettlement from the Inner Islands to the Luwu area. Questions focused on factors that

determined their decision to move and on important changes for the women as a result of the move.

The second part of the questionnaire was the household survey that sought detailed information on the social and economic characteristics of the transmigrant women's household. The third section in the questionnaire attempted to determine how transmigrant women interact with their surrounding natural environment. Several of the questions are hypothetical which asked transmigrant women to project themselves into future environmental situations. It should be noted that some sections of the questionnaire were not entirely applicable to this thesis, but had to be included in the questionnaire itself. This was necessary because the balance of the data gathered from the questionnaire was used to write an initial report requested of this researcher by Indonesian officials.

To aid in the administration of the questionnaire to the sample population by the interpreters, the questionnaire itself was translated in full into the Bahasa Indonesia language before going into the field.

2. *Data Collection:* Data collection was carried out in the field during June and July 1993 with the help of four research assistants. Prior to going out into the field, an information meeting was held to explain to the research assistants the objectives of the field survey. Further, the survey tool was reviewed in detail with the assistants, and important details and processes emphasized and explained.

The questionnaire was administered, as a pre-test, to a small sample of respondents (12) living in the Luwu transmigrant community where the survey was to take place. Where necessary, changes were made to make sure that questions were eliciting required

information. Each questionnaire was pre-numbered to aid in the co-ordination and control of the interviews.

3. **Informal Interviews and Observation:** There was an attempt, on a small scale, to verify various responses that were indicated during the initial interviews. It was felt that verification or responses was necessary because there was some doubt about the credibility of recording methods used during the initial survey sessions. Verification was done one month after the main survey was completed, with formal interviews, with unstructured interviews, and with informal observations. Eight women heads of transmigrant households within the Luwu Irrigation Scheme were randomly chosen for verification of responses, four from Bone-Bone and four from Lamasi. An alternate interpreter was also hired to help. It was found, after perusing these completed additional eight questionnaires, that there was no appreciable difference noticed in these responses as compared to the original responses. Therefore the confidence of the responses in the original field survey seemed adequate for use in the final analysis.

The information collected via the formal questionnaires was stored and analyzed using the EXCEL 4.0 programme for Microsoft™ Windows™. Supportive analyses were also made from information gleaned during participant observations and informal interactions with the interviewees.

3.3.2 *Secondary Sources*

In addition to gathering primary data from the field, related data and other information was obtained from various sources:

- Governmental Statistics Centre, Ujung Pandang, South Sulawesi
- Department of Women's Studies, UNHAS²³, Ujung Pandang, South Sulawesi
- Environmental Studies Centre, UNHAS, Ujung Pandang, South Sulawesi
- Sulawesi Regional Development Centre (SRDP)²⁴, Ujung Pandang, South Sulawesi
- Administration offices of Luwu Irrigation Project at *kecamatan* Lamasi and *kecamatan* Bone-Bone;
- Disaster Research Unit, University of Manitoba, Winnipeg, Canada;
- Elizabeth Dafoe Library, University of Manitoba, Winnipeg, Canada.

3.4 *Limitations of the Study and Analysis*

With every research project, particularly where primary data is solicited, constraining parameters can exist which tend to limit the full potential of the fact-finding process. Limiting factors were experienced also within the scope of this research study. Firstly, there were limitations encountered due to constraints in time and financial resources. These limitations allowed for only four months of research in Indonesia, which was insufficient time to fully assimilate the real problems or successes associated with transmigration on a longitudinal²⁵ basis. The field study also occurred during the "dry" season. Chambers noted that this can result in a "dry season bias" (1983: 20). Since Sulawesi Island experiences marked wet-dry tropical seasons, spending research time only during the dry season, when people's general outlook is optimistic, admittedly lessens the chance of a balanced view of the whole transmigration picture at Luwu. This dry season

²³ Hasanuddin University in Ujung Pandang, South Sulawesi Province.

²⁴ Sulawesi Regional Development Project is a co-operative development venture of the Government of Indonesia, the Government of Canada, and the University of Guelph, Canada.

²⁵ Over a longer period of time.

also meant transmigrants were busy in the field leaving little time to spend with researchers.

Secondly, limitations were experienced due to language and cultural differences. Some misinterpretations of questions and objectives of the questionnaire occurred in the field because of this language difference. For example, question #42 of the questionnaire was understood incorrectly by one of the assistants, which negates its use in the analysis. After completion of the field work, all responses in each questionnaire were translated into English. This process of translation, too, can most often be subject to alterations of exact meaning. There is the acknowledgement also that observations during the informal interviews may have been interpreted along Western biases.

Thirdly, a limitation that can only be referred to as "gender-related" was encountered in this field study. Female researchers sometimes have limited accessibility to "rough" field areas. At times it seemed that there was preferential treatment given during this field study because both major researcher and the interpreters were female and urban-based, and only the best answers were presented by the respondents. Therefore it is felt that some answers or observations may not have reflected some of the real facts.

Additionally, some women respondents found it intimidating to respond to questions without their husband's affirmation to each answer they gave. In most societies, particularly Muslim communities, women still have inferior status and are subordinate to men. Of course, there were variations and exceptions within this study, but quite often women were shy or hesitant in speaking forthrightly to a foreign researcher.

Fourthly, and related to the previous limitation, it was found that the transmigrant respondents often did not readily disclose to a foreigner researcher their actual economic situation. Where questions of finances or employment were administered, or during informal interviews, there was some reluctance to answer. Poverty in any country may be a subject of shame (Chambers, 1983: 22). Therefore politeness and timidity at times may have influenced the answers or impressions given by the women respondents; they did not want to offend.

Lastly, on the practical side, there was a limited amount of information about the pre-migration situation for women and their families. No studies were carried out during the time transmigrants left their original home in the Inner Islands to come to Bone-Bone or to Lamasi. Additionally, many women could not remember some facts of their household situation prior to transmigrating; it was too long ago. Therefore, for some questions within the survey that were meant to compare before and after concerns of the transmigrant women (questions #25, 30 and 31, for example), the responses were incomplete.

3.5 *Summary*

Chapter Three provided an amplification of the specific problem within this study of transmigrant women's adaptation to a new and different environment. The initial discussion of the guidelines or hypotheses served as the introduction to the study area and study objectives.

The chapter attempted to give a full description of the geographic field area and the sample population on several fronts since the transmigration setting can be a heterogeneous complexity. Heterogeneity of the population forces researchers to use the survey and statistical techniques for the acquisition of primary data. Even though they are limited, less reliable and less able to generate insight than is commonly believed of them, questionnaire surveys remain the tool for gathering a broad range of data. Within this study, the questionnaires were used to gain a profile of the transmigrant community in their adaptation to a new environment.

A description of the several limitations encountered within the study was also given. The limitations, particularly those related to language differences, can be a formidable hurdle when carrying out research in a society speaking other languages. Beyond simple communicating, a knowledge of the language is the key to the entire world of categories and meanings (Murphy, 1989: 246) that are important facets of the transmigrant or any other community.

Primarily, the aim of Chapter Three was meant to serve as an introduction, and as a conduit, to the analysis of the data in Chapter Four. The data collected in the field should be representative of the transmigrants within two areas of the Luwu Irrigation Development Scheme on Sulawesi Island, Indonesia.

CHAPTER 4

THE ANALYSIS

4.1 *Chapter Organization*

This chapter presents the data and its analysis, collected during the field survey at the Luwu Irrigation Project in Indonesia, to show ways women depend on their physical environment. The first part of the chapter outlines the statistical data presented in a descriptive format. A general profile of the sample population is given, together with the socio-economic composition of the transmigrant households and with their environmental interactions.

The second part of Chapter 4 contains the presentation of the main analysis of the data. The hypotheses advanced by this thesis are tested and the results interpreted. Finally, a short summary of the data analysis is given.

4.2 *Descriptive Statistical Data*

The descriptive statistical data section presents a compilation and explanation of the data results from the actual field survey. In relation to the thesis' main theme, women and the environment whose dynamics are directly impacted by large development schemes such as transmigration and resettlement, this section is further divided into three subsections, each described with statistical data. Firstly, a profile of the transmigrant women respondents is presented. Secondly, Luwu women's involvement with the transmigration programme is tabulated. The third subsection presents data regarding

transmigrant women's interaction with their physical environment in the Luwu resettlement area.

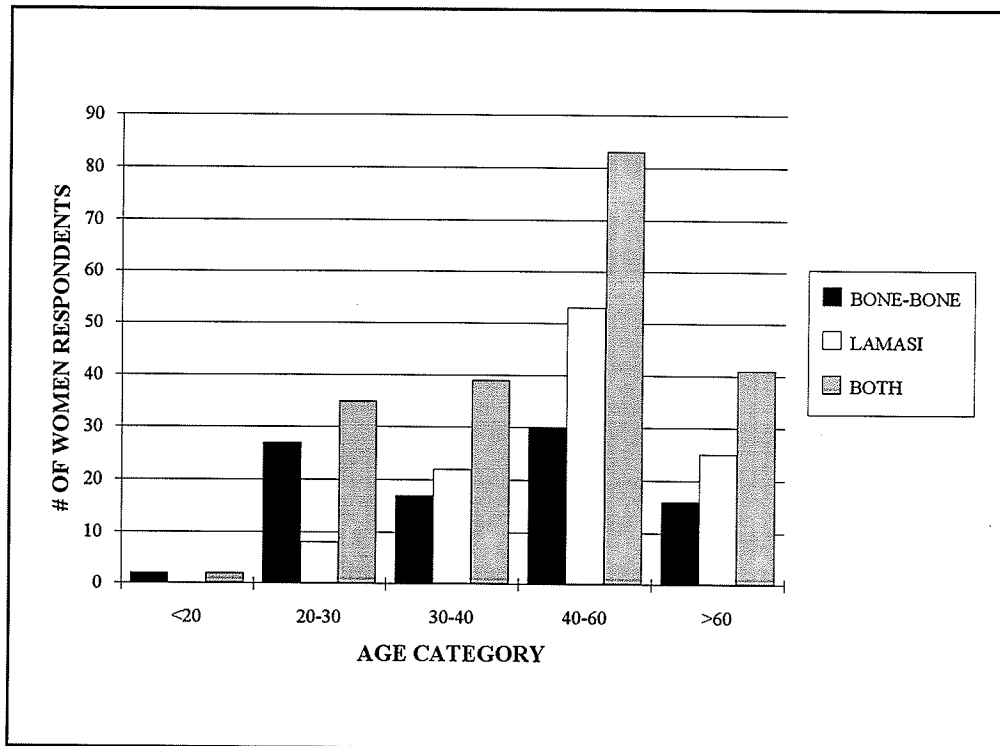
For some questions within the survey tool, answers were not given if the question was not understood by the respondent or if the respondent chose not to answer at all (which was their option). In such cases, statistics are presented as percentages. Additionally, data from both sites, Lamasi and Bone-Bone, were generally merged to create the figures and charts for the analysis. This does not imply that the two sites are homogeneous in character. To analyze and compare each separately, however is beyond the scope of the research objectives.

4.2.1 Profile of Luwu Transmigrant Women

Age: Because the transmigration scheme requires settlers to be married and registered for resettlement as a household unit, the primary data collected in this study was based on the household unit and focused on the female head as respondent. At the time of this 1993 field survey, the ages of these respondents ranged from less than 20 to over 60. Figure 4.1 gives a summary of the respondents' ages, with a comparison between *kecamatan* Bone-Bone and *kecamatan* Lamasi. Most of the transmigrant women within the Luwu Irrigation Scheme are in the 40 - 60 age category and therefore could have been part of the major influx of transmigrants in the early 1970's when the development of the Luwu Irrigation Project occurred. At that time, these women would have been newly-married and in their very early twenties. Alternately, they were, quite

possibly, young daughters of the first transmigrants during the 1940 influx into the Luwu region.

Figure 4.1 Respondents' Age (1993)
n = 200

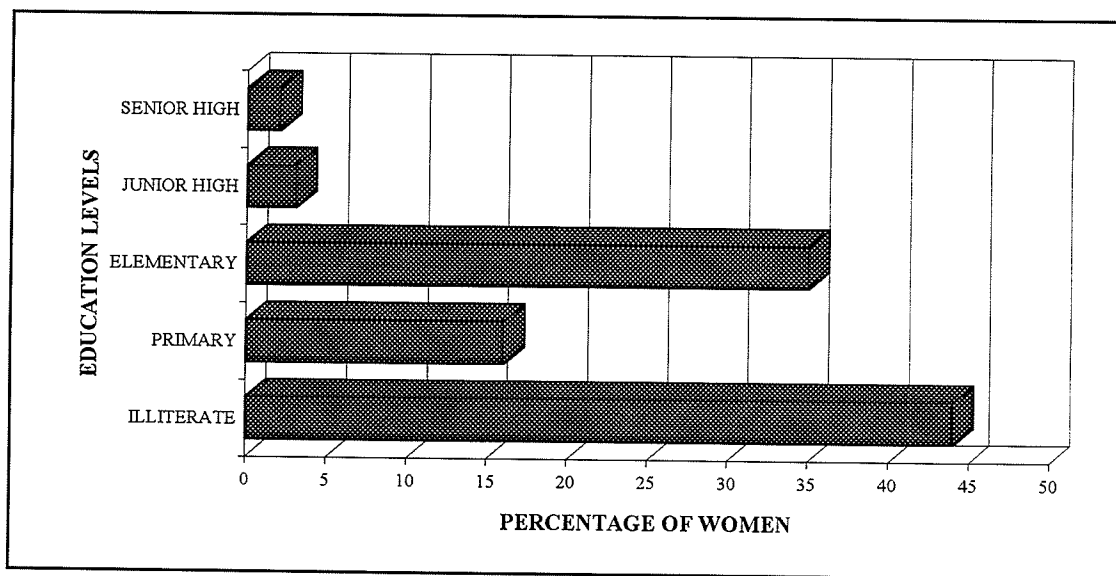


SOURCE: Research Data

Marriage: Women within the Luwu Irrigation Scheme villages marry at an early age level. Of those surveyed, 88 percent indicated that they were married under the age of 20, the rest marrying between the ages of 20 - 30 years. The predominantly young age for women in these transmigration sites compares with the average marriage age for all Indonesian women which is at 21.1 years (UNDP, 1994: 144). One quarter of the respondents experienced a change in marital status after moving to the Luwu area, which included nine re-marriages, one divorce, and the balance of changes being first marriages or widowhood.

Education Level: The women respondents were asked to indicate their achieved level of education. It was found that an overwhelming 44 percent are still illiterate, with an additional 35 percent of the respondents only having completed, and graduated from, the elementary (Grade 6 Canadian equivalent) school level known as Tamat SD (Figure 4.2). When the illiterate numbers are included with those respondents who attended, but did *not* graduate, from the SD level, a total of 142 is noted from the data, comprising 72 percent of the transmigrant women in this low educational range. This percent is much higher than the figures for illiterate and non-graduated SD women in the whole of South Sulawesi Province whose rate is 59.72 percent (Central Bureau of Statistics, 1991: 102). Only 5 percent indicated their education included any secondary classes from junior or senior high school.

Figure 4.2 Education Level of Luwu Transmigrant Women
n = 200



SOURCE: Research Data

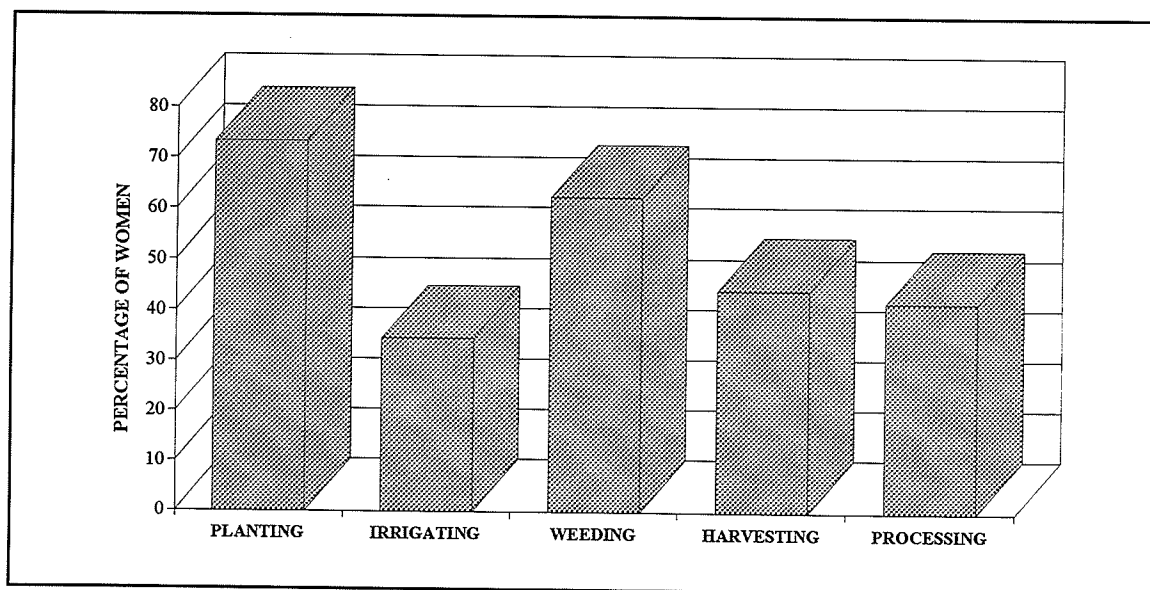
When queried about educational aspirations, 30 percent of the women interviewed indicated they would like to further their education if they had the opportunity. Areas they would like to pursue include (in rank order): agriculture, home industry, health care, teaching, forestry, and science. Those women who indicated no aspirations for further education represented all age categories within the survey and came from both *kecamatan*.

Household Dynamics: As female heads, the women respondents from the Luwu area were asked about the dynamics of their households. At the time of this survey the household size for both *kecamatan* Bone-Bone and *kecamatan* Lamasi averaged to be 4.9 persons. Lamasi, the research site closest to the urban and administrative city of Palopo, averaged 4.4 persons per household unit, whereas the more remote site of Bone-Bone had a slightly higher average number of persons per household for which female heads are responsible. Respondents were asked who made final decisions in the following household concerns: meal planning, purchase of clothing, other major purchases, other small purchases, cash crop varieties, food crop varieties, discipline of children, schooling of children, and to use family planning. It was found that nearly all women still make the final decisions only on domestic concerns within the family and household. Those decisions regarding matters outside the home, such as crops, are made by the husband, and matters relating to the family are decided on jointly by the husband and wife.

Field Work: In addition to having primary responsibility for family and domestic chores, the majority of women respondents also indicated that they usually help their husband or son (if they were widowed) with work in the field, planting, weeding, harvesting and processing of the rice crops. This intensive, "stoop" labour in the rice

field is summarized in Figure 4.3. The figure shows the highest incidence of labour for transmigrant women is in planting (73.3%) and weeding of rice (62.4%), followed by harvesting (44.2%) and processing (41.8%). Only 17.5 percent of the women (not reflected in Figure 4.3) indicated that they did not help with work related to field crops. These were women in the older age categories of either 40 - 60, or more than 60 years. Rice is the chief grain grown in this area as a monoculture cash crop. Ninety-eight percent of the transmigrant households within the Luwu Irrigation Scheme grow rice for monetary income. Other crops also grown for selling, but on a much smaller basis, are chocolate, mixed vegetables, soy beans, peanuts, coffee and fruit, such as coconut, banana, jackfruit and oranges. Six women reported they were involved in some form of "horticulture" which includes the growing of flowers and ornamental plants.

Figure 4.3 Transmigrant Women's Work in the Fields
n = 165



SOURCE: Research Data

Family Land Size: To further develop the profile of Luwu women, information was sought regarding the family land holdings for crop growing and for the house/yard; this showed a variety of sizes. Although transmigration policies specify land plots should be 2 hectares per family upon arrival at the transmigration site, most are not that size. The data gleaned from the individual women respondents show that very few households own more than 2 hectares and most households own less than 2 hectares (Table 4.1). It should be noted that women respondents from Lamasi, the older of the two *kecamatan*, reported a greater number of land holdings that were less than 2 hectares in size (96 holdings or 48.7 percent), whereas only 65 holdings or 32.9 percent in Bone-Bone are this diminished size.

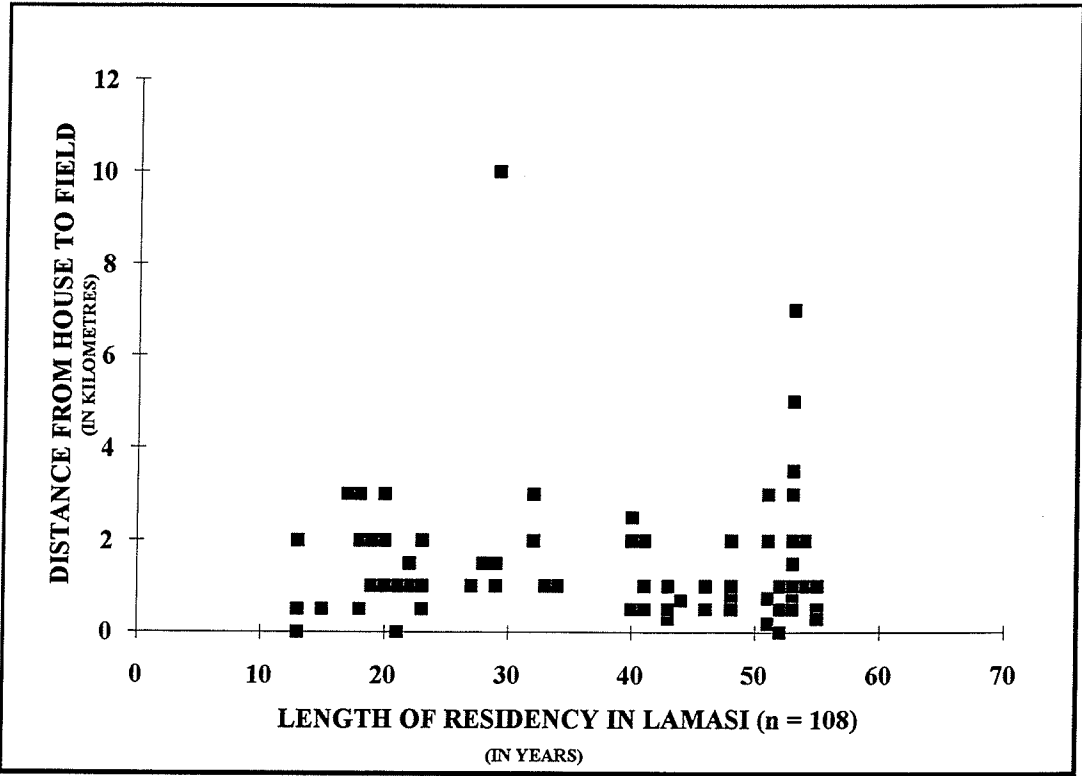
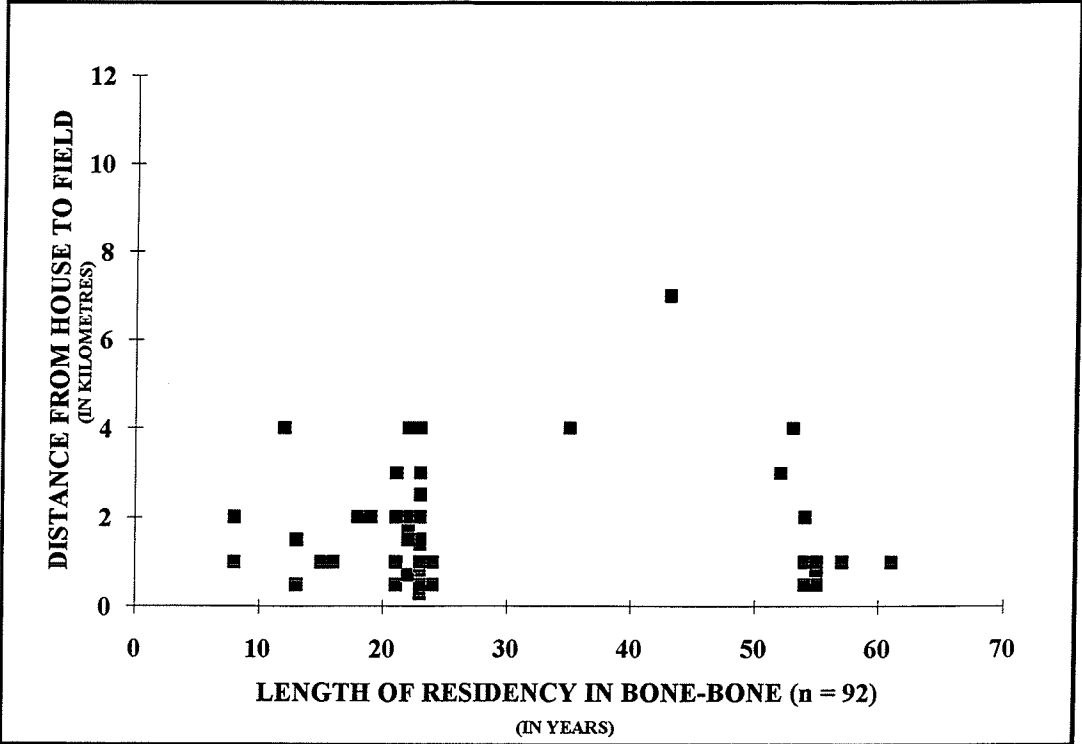
Table 4.1 Size of Land Holdings in Luwu, 1993
n = 197

Kecamatan:	<2 Hectare	2 Hectares	>2 Hectares
Bone-Bone	65	16	9
Lamasi	96	9	2

SOURCE: Research Data

Travel Distances: Since women, to a large extent, help in the growing of the main cash crops and the food crops in Luwu's transmigration villages, it is relative to know what distance they must travel from their home to the field. Of the 200 Luwu women responding to this issue, 133 Luwu women indicated that they live within two kilometres of their field work. Thirty-two women walk approximately two kilometres and twenty-eight need to walk more than two kilometres to the field. For each of the two *kecamatan* surveyed, the scattergram in Figure 4.4 compares the distance women indicated they had

Figure 4.4 Comparison of Distance from House/Field with Length of Residency



SOURCE: Research Data

to walk from house to field, to the length of women's residency. There seems to be a slight increase in distance for Lamasi women who have lived in the area for a longer time.

Employment: Many women in Luwu's transmigration sites also reported that they were involved in forms of income-generating activities other than field cash cropping. Employment outside the household is sought by 59.5 percent of the transmigrant women. Among the employment opportunities performed by them are: cottage industry, trading, rice mill labour, running a small shop, farming or planting rice for others, taking care of chickens or cows, raising pork, sewing for others or massage for babies, and, interestingly, being a brick-maker/layer. Sixty-four percent of these women reported that their employment was available throughout the year, providing the opportunity to earn additional family income. Of the 87 responses to the question regarding their portion of generated family income, sixty-three of the women earn between 1 - 20 % of their family income, twenty-one earn between 20 - 30%, and three contribute between 30 - 50% of family income with their jobs. When queried as to the dispensation of their income, only three women are able to keep their earned income for themselves and four women give their income to their husband. The majority of women, 118 (94.4 percent) of the 125 women who responded to this question, use their earned income for family expenses or place it into a savings account (presumably to be used later for family expenses).

Family Planning: Finally, an important aspect of transmigrant women's profile is their perception and implementation of family planning. Access to family planning information by women within the Luwu villages surveyed seems to be expanding, as 69.2

percent of the women indicated that they did indeed receive such information, mainly from family planning officers who conduct seminars on the topic in the villages or from the radio and television media. Alternately, there are still 31.8 percent of the women who reported not having accessibility to family planning education. Many of this latter group were older women, past their child-bearing age, who perhaps did not seek out such information.

When asked what they considered to be the ideal number of children per family, 85 percent of the 200 respondents indicated only three or fewer children (Table 4.2). Whether this near consistent response is due to their own developed conviction or to the government's effective family planning programme is unclear. However it is obvious that, even though they do not all limit their family size, most women seem to realize the urgency to do so. Perhaps this realization is from their inherent perception of the serious impacts by a growing human population on their local physical environments. Reasons given for the necessity of limiting the number of children per family were varied. From the 182 responses to this query, 64.8 percent stated that living quarters were already too crowded, 47.3 percent said that it is expensive to feed more children, and 4.9 percent suggested that they did not need extra hands for agricultural work.

Table 4.2 Ideal Number of Children as stated by Luwu Transmigrant Women
n = 200

Ideal # of Children:	1	2	3	4	5	6	Other Responses*
% of Respondents:	1.5	57.5	26	5.5	4	1.5	4
* includes statements by respondents like "many children" and "big family"							

SOURCE: Research Data

Out of the 30 respondents indicating their ideal of number of children per family to be four or more, 27 women, or 90 percent, were found to be in the 40 and over age categories. These older-age categories include women who responded to the query of family size without specific numbers and who stated their preferred family composition included "many" children or a "big family." Additionally the data on these older women almost consistently indicate that they arrived in the Luwu region during the formative years of the transmigration sites (1938 - 1960's) when there still was the perception of unlimited ecological resources and unlimited space to expand into.

4.2.2 *Luwu Women's Experience with Transmigration*

Place of Origin: Table 4.3 shows the transmigrants' place of origin. Java Island appears to be the major source of transmigrants to Luwu, since 75.5 percent of the respondents come from there. Bali Island was the original home of 11 percent of the respondents. The transmigrants who moved to Luwu from the local surrounding areas make up 11.5 percent of the total surveyed. Interestingly, these transmigrants of local origin settled exclusively into Lamasi, the *kecamatan* nearer to the urban centre of Palopo. The

Table 4.3 Luwu Transmigrants' Place of Origin
n = 200

Place of Origin	Percentage of Respondents
Java Island	75.5
Bali	11
Local	11.5
Other	2

SOURCE: Research Data

remaining two percent making up the "other" category arrived in Luwu from Surinam and Central Kalimantan.

Reasons for Move: Reasons for moving to the Luwu area are shown in Table 4.4. The government sponsorship proved to be the most reported reason for 33 percent of the transmigrants. Spontaneous transmigration, or unsponsored resettlement, occurred with 16 percent of the women and their families. Persuasion from relatives, or "chain migration," prompted 14 percent of the respondents to move, and perception of new opportunities resulted in 20.5 percent to transmigrate to Luwu. The 16.5 percent listed as "other" reasons were explained as family-related, such as the respondents arriving in Luwu as young daughters together with their parents.

Table 4.4 Reasons for Migrating to Luwu
n = 200

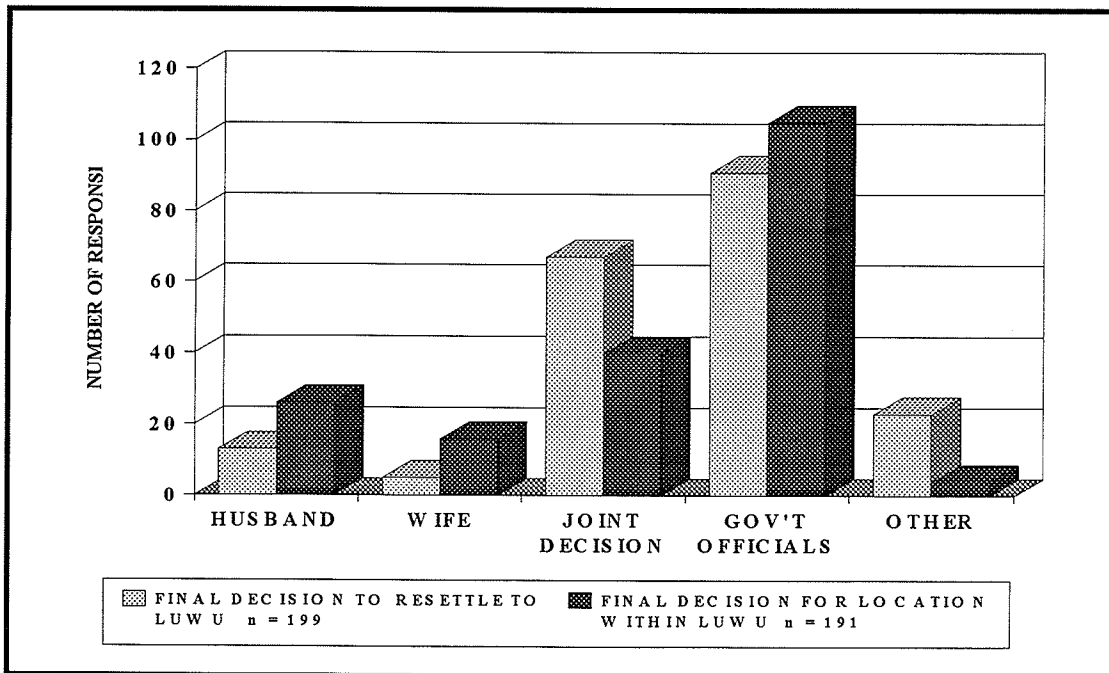
Reasons for Move	Percentage of Repondents
Government Sponsored Move	33
Spontaneous Move	16
"Chain Migration"	14
New Opportunities	20.5
Other *	16.5
* Includes respondent coming as a young girl with parents or migrating under the <i>kolonisasi</i> programme	

SOURCE: Research Data

Decision for Move: Decision-making within the transmigration process for women and their families proved largely to be imposed by government agendas. The data from this field research concerning the decision-making processes within the transmigration scheme reflect a pre-dominantly top-down administrative framework, as Figure 4.5 shows.

Outside of this dominant characteristic, the final decision to move to Luwu as transmigrants was generally not made by the woman herself, but was usually a joint decision by wife and husband. The "other" category indicated that the initial moving decisions were made by the respondent's parents or it was a "religious duty." Similarly, the final decision for the location of the transmigrants' homes within the Luwu area was obviously and pre-dominantly made by government officials following the Department of Transmigration policies and guidelines. The women transmigrants made this home-location determination for their families very infrequently, according to the 16 of the 191 responses to this query. In considering both final decisions and who made them, there appears to be a very close correlation between the two.

Figure 4.5 Who made the Final Transmigration Decisions?

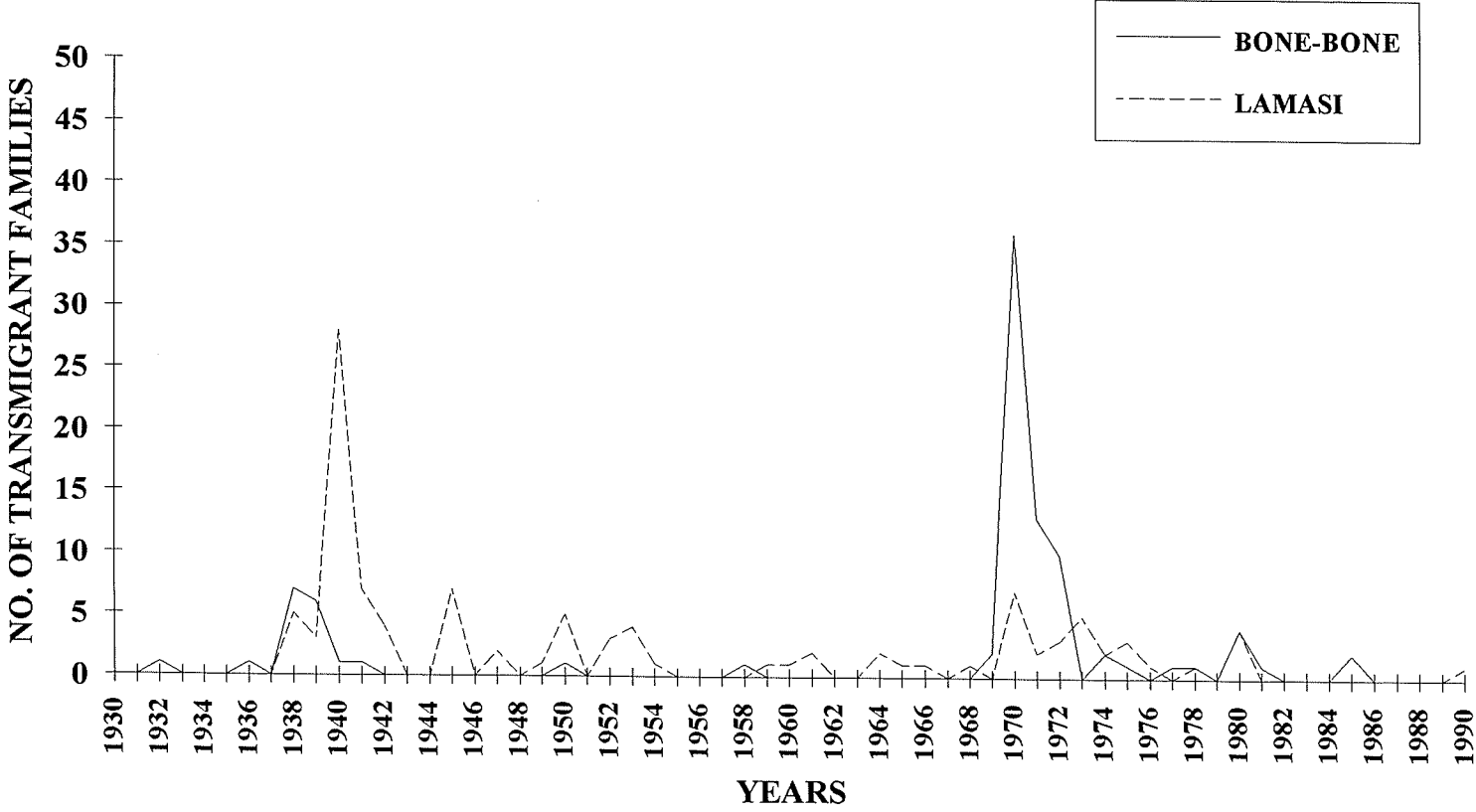


SOURCE: Research Data

Date of Move: The data from women respondents shows that both survey sites, Bone-Bone and Lamasi, reflect a profile of fairly steady influx of transmigrants towards the area of Luwu. Both also have a noticeable peak of sudden immigration, but in different years (Figure 4.6). The dramatic increase of transmigrants into the *kecamatan* Lamasi site seems to have occurred in 1940. For *kecamatan* Bone-Bone the major influx of transmigrants took place in the years 1970-72, showing a pull-factor to the area, most likely because of the newly-created the Luwu Irrigation Scheme. By this comparison then, it seems obvious that *kecamatan* Lamasi was settled extensively at an earlier time than was *kecamatan* Bone-Bone, and could be considered the "older" of the two.

Living Conditions: Usually living conditions for families at their place of destination have a direct impact on the success of a (trans)migration. Within the *kecamatan* Bone-Bone and *kecamatan* Lamasi, women respondents related, especially through the informal interviews, that generally their Luwu sites had not been sufficiently prepared prior to their transmigrated arrival. In many cases the individual families had to clear their plot of land from the forested areas, to build their own homes and to dig their own wells. Respondents that arrived with their families in both *kecamatan* prior to 1970 reported that they foraged freely from the "deep" surrounding forests for building materials, for fuel, for supplementary food stuffs, and for new land, when required. However, this privilege of unrestricted access to surrounding forest areas was indefinitely curtailed by the government in 1970, when the population pressure within original transmigration sites became greater than the natural resources could support.

Figure 4.6 Transmigration into Luwu
n = 200



SOURCE: Research Data

Despite this, responses by those women surveyed regarding living conditions indicated a positive change for women in their resettlement area upon arrival. The specific living conditions queried included: 1) Social: family cohesion, marriage cohesion, and community friendships; 2) Financial: employment for respondent, family income, savings, family land ownership; and 3) Health: respondent's health, husband's health, health of children, access to family health facilities, access to maternal care, adequate food, and nutritious food.

As a result of irrigation-based resettlement to Luwu, the female heads categorized living conditions as generally much improved, improved, or no change, compared to the living conditions at the point of origin. Table 4.5 summarizes the averaged ratings (between 1 and 5) in each category. Although many conditions lean towards the no change (3) category overall, it appears that living conditions for women coming to Luwu have improved (indicated by the average 2 in the Table). Marriage cohesion and family savings indicate a definite improvement with a less than 2 average rating. These findings coincide with a recent study of Luwu transmigration where the majority of settlers, or 93 percent, considered Luwu location to be their new home where conditions were better than had been in their former place of residence (Gany, 1993: 351).

Of the responses within all living conditions categories, though, there were 26 that indicated that the situation had deteriorated for the women after the transmigration experience. By comparison, it was found that 61.5 percent of these negative responses were made by women who arrived in Luwu during the period 1938 to 1950 and who were

in the 40 - 60 or over 60 age level at the time of the survey. It should be noted that the point of origin for these same women was almost exclusively the crowded islands of Java and Bali. Also, twenty-two, or 84.6 percent of the women noting deteriorating living conditions had some level of educational training and were not illiterate.

Table 4.5 State of Living Conditions at Luwu, with Average Ratings between 1 and 4
n = 200 (for each condition)

Social Conditions:	<u>Averages</u>
Family Cohesion	2
Marriage Cohesion	1.92
Community Friendships	2.03
Health Conditions:	
Respondent's Own Health	2.25
Husband's Health	2.35
Children's Health	2.22
Access to Family Health Facility	2.28
Access to Maternal Care	2.41
Adequate Food	2.26
Nutritious Food	2.28
Financial Conditions:	
Self-Employment	2.12
Family Income	2.13
Family Savings	1.23
KEY 1 = MUCH IMPROVED 2 = IMPROVED 3 = NO CHANGE 4 = DETERIORATED	

SOURCE: Research Data

New Diseases: When asked the specific question about acquiring any new diseases in the new area, 24 women within the formal and informal interviews, cited instances of family members contracting typhoid (12), malaria (9), persistent cough and frequent colds (4), gastro-intestinal ailment (1), elephant foot (1), and black magic (2), blood clotting disease (1), and mental illness (1). All women indicated that these new illnesses suffered within their family were more prevalent today than before relocation.

Responsibilities: Main responsibilities within the households surveyed appear to show a dramatic increase for transmigrant women after moving to the Luwu area. It should be remembered that increased household duties performed by women are related to using increased amounts of environmental resources. Such duties include food collection and meal preparation, fetching water and firewood, and cultivating food and cash crops. Increased work, in numbers of hours Luwu transmigrant women performed these duties are tabulated in Table 4.6. The data show increases for women within each of the two *kecamatan*. Obviously *kecamatan* Lamasi women have experienced a more marked work load increase than *kecamatan* Bone-Bone women. This is confirmed by a separate question within the survey tool which asks for women respondents to indicate detrimental changes for them following the move to Luwu. Of the fifty-seven women who indicated increased workloads, 30 were from *kecamatan* Lamasi and only 27 from *kecamatan* Bone-Bone. Additionally, Luwu transmigrant women generally reported that they have to walk further and further (up to 5 km) to gather forest products for fuelwood and other domestic purposes from the dwindling and fragmented forest stands (informal interview).

Table 4.6 Time Increases for Women's Main Responsibilities¹
After Transmigration to Luwu n = 190

Task:	Time Increases (in percentages)	
	Bone-Bone	Lamasi
Food Preparation	32.24	42.89
Fetching Water	19.25	36.83
Collecting Firewood	21.11	31.43
Tending Food Crops	37.11	46.11
Cultivating Cash Crops	20.49	34.53

SOURCE: Research Data

¹ as related to the environmental resources

Overall, one reason attributable to the reported work increase is the maturation of many young women over the years and their assumption of the female head role in the household. The exception to this increase was noted in the decreased performance of these main duties currently by older respondents who had relinquished such continuous responsibilities to younger female members of the family.

The women respondents were also asked to indicate the number of hours spent on domestic duties before and after the resettlement experience. Most of the women found this question quite difficult to answer as they could not always remember their previous situations in detail. Understandably, the women, while performing each responsibility, could be too busy to be cognizant of how many hours they spend on each domestic chore; it is obvious that they are pre-occupied mainly with getting the job done, let alone calculating or remembering the time spent. However dubious the responses, the tabulations made from the data that were collected for this survey indicate overall that each environment-related household task demanded an increased amount of time for both

Bone-Bone and Lamasi women to complete following relocation. Other detrimental changes occurred for some women respondents, perhaps not as a result of the relocation, but in the aftermath of relocation to Luwu. These negative changes were articulated as disappointment in the land quality and land quantity and as personal obstructions when their husband died or they could not have children.

Alternate to the detrimental changes and disappointments in the domestic sphere, transmigrant women at Luwu also indicated other important personal changes for them after relocation which were more positive in nature. Of one hundred and ninety-two responses, 18.2 percent of the women said they experienced more independence in their new place of residence, and 22.9 percent responded they had more freedom of choice. Economic security for Luwu women and their families was cited in 58.9 percent of the responses. When queried about feelings of security about their future at Luwu (#16 of the questionnaire), all women respondents said "yes." Among the many reasons for their positive response, the home managers stated most frequently that they now had their own land which enabled them to experience independence and "stability for life." Many women expressed happiness that their family could be together and that they felt safe in this peaceful place. Others were grateful for the uncomplicated simple lifestyle, and still others indicated they were afraid to go elsewhere. Most wished to remain in the Luwu area for the rest of their lives.

4.2.3 Transmigrant Women's Response to their New Physical Environment

The environmental portion of the survey attempted to determine the dynamics between transmigrant women at the Luwu Irrigation Scheme and their physical environment. Since transmigrants are generally placed within an agrarian setting, such as the Luwu Irrigation Scheme, they become dependent on the natural resources in their local surroundings in order to survive. Consequently transmigrant women, usually having sole responsibility for the nurturing of their family, will need ready access to potable water, food products, fuel and shelter. Otherwise states of vulnerability for women and their families can occur in the resettlement area.

Table 4.7 Transmigrant Women's Access to Environmental Resources (in percentages)
n = 200

Resources:	Access Upon Arrival		Access Today		
	Yes	No	Improved	No Change	Worse
Clean Water	61.1	38.9	52	47	1
Sufficient Fuel	88.8	11.2	24.9	70	5.1
Forest Products (food, fuel, selling)	64.9	35.1	56.5	36.7	6.8
Land	50	50	45.9	47.6	6.5
Shelter	39.2	60.8	66.2	32.3	1.5
Sewage Disposal	43.8	56.2	50.3	48.6	1

SOURCE: Research Data

Access to Environmental Resources: Access to resources providing transmigrants with clean water, sufficient fuel, forest products and land was largely reported to be adequate upon arrival in the Luwu region (Table 4.7). However, a few respondents felt that there was a definite reduction currently in the quality and availability of forest

products, sufficient fuel and additional land. When queried as to the reason for the perception of lessened quality and quantity of these natural resources, one hundred and forty-nine, or 74.5 percent of the respondents felt it was because too many people need to use the same resources. Forty-seven respondents indicated that they felt the forest had been cut down too rapidly.

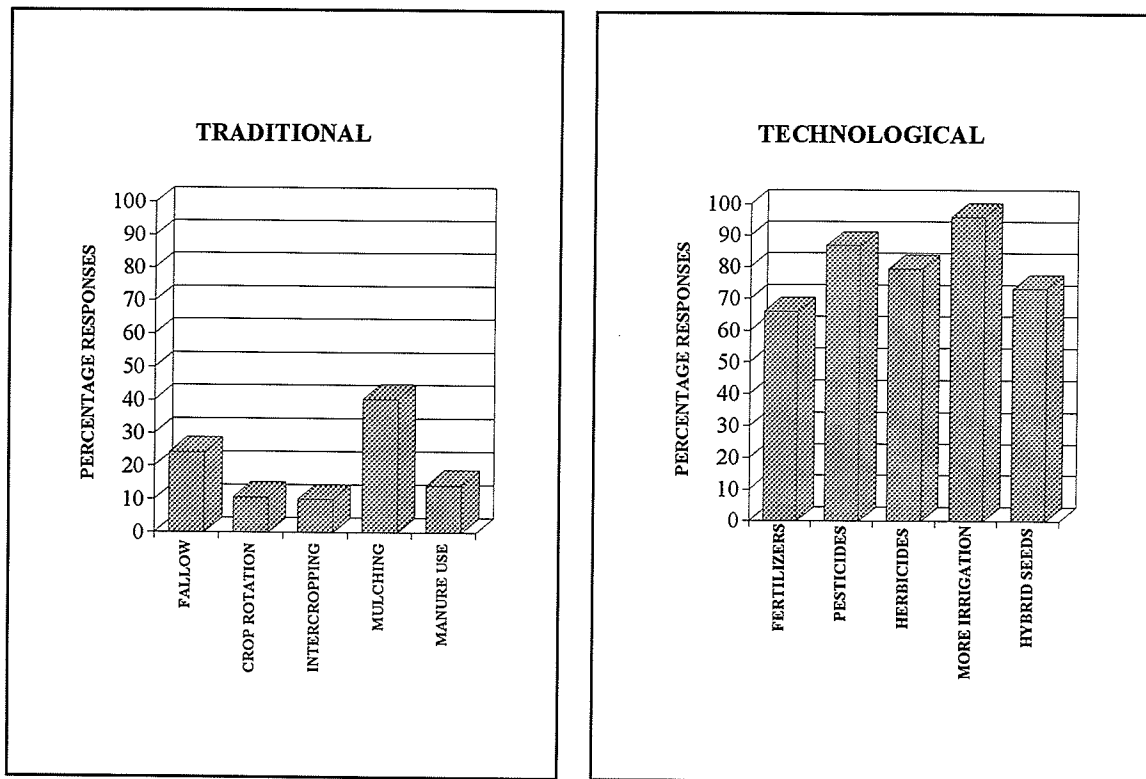
Land Stewardship: In exploring their own stewardship of the land they cultivate, the transmigrant women were asked about methods they use for crop enhancement. Figure 4.7 shows tabulated data comparing traditional and current technological enhancements used by farms in Luwu's transmigration cropping methods. Very few respondents reported using soil resource conservation methods such as fallow, crop rotation, intercropping, mulching or manure use. In fact, most respondents stated that they readily use pesticides, herbicides, hybrid seeds, and fertilizers to boost crop production. For example, the data in Figure 4.7 indicate that for soil enhancement, the incidence of chemical fertilizer use (at 66%) is four and one-half times that of traditional manure use (at 14.4%). The fertilizer reportedly used by at least eighty-nine transmigrant farms is urea²⁶. Other types of fertilizer reported by at least five respondents to be used in Luwu are TSP²⁷ and KCL²⁸. The data also show heavy use of pesticides (86.9 percent), herbicides (79.4 percent) and hybrid seeds (73.1 percent).

²⁶ A soluble weakly basic nitrogenous compound, the chief component of mammalian urine and an end product of protein decomposition, created by synthesis from carbon dioxide and ammonia; widely available for transmigrants by purchase from local governments.

²⁷ Trisodium phosphate.

²⁸ Potassium Chloride.

Figure 4.7 Methods of Crop Enhancement Reported by Luwu Women
 n = 200



SOURCE: Research Data

Environmental Awareness: The field survey attempted to determine the level of environmental awareness among transmigrant women. To the question, "Do you believe the environment around the Luwu area can sustain a growing population?", an overwhelming one hundred and eighty-seven, or 94 percent, of the respondents answered "yes." However, the data itself which was gathered on their understanding of environmental concepts as posed by the questionnaire, indicated major incongruities (Figure 4.8). The figure shows that concepts relating to women's direct interaction with the land, such as soil erosion and deforestation, were among the more frequently

understood. The last two concepts, nature conservation and shrinking biodiversity, are more abstract in nature and seem to be understood by only a few transmigrant women. These more abstract concepts were rated as being understood, respectively, by 30.5 percent and 29.5 percent of the women respondents.

The last portion of the survey also included two hypothetical questions for transmigrant women, regarding care-taking of their immediate natural environment. They were asked to place themselves mentally into an empowered position, where they would be responsible for the welfare of 5 hectares of forest and for the cleanliness of the water within Luwu rivers. These two areas of concern directly affect the female heads of households in their daily need for potable water, for food and fuel, and the questions were meant to ascertain foresightedness of transmigrant women.

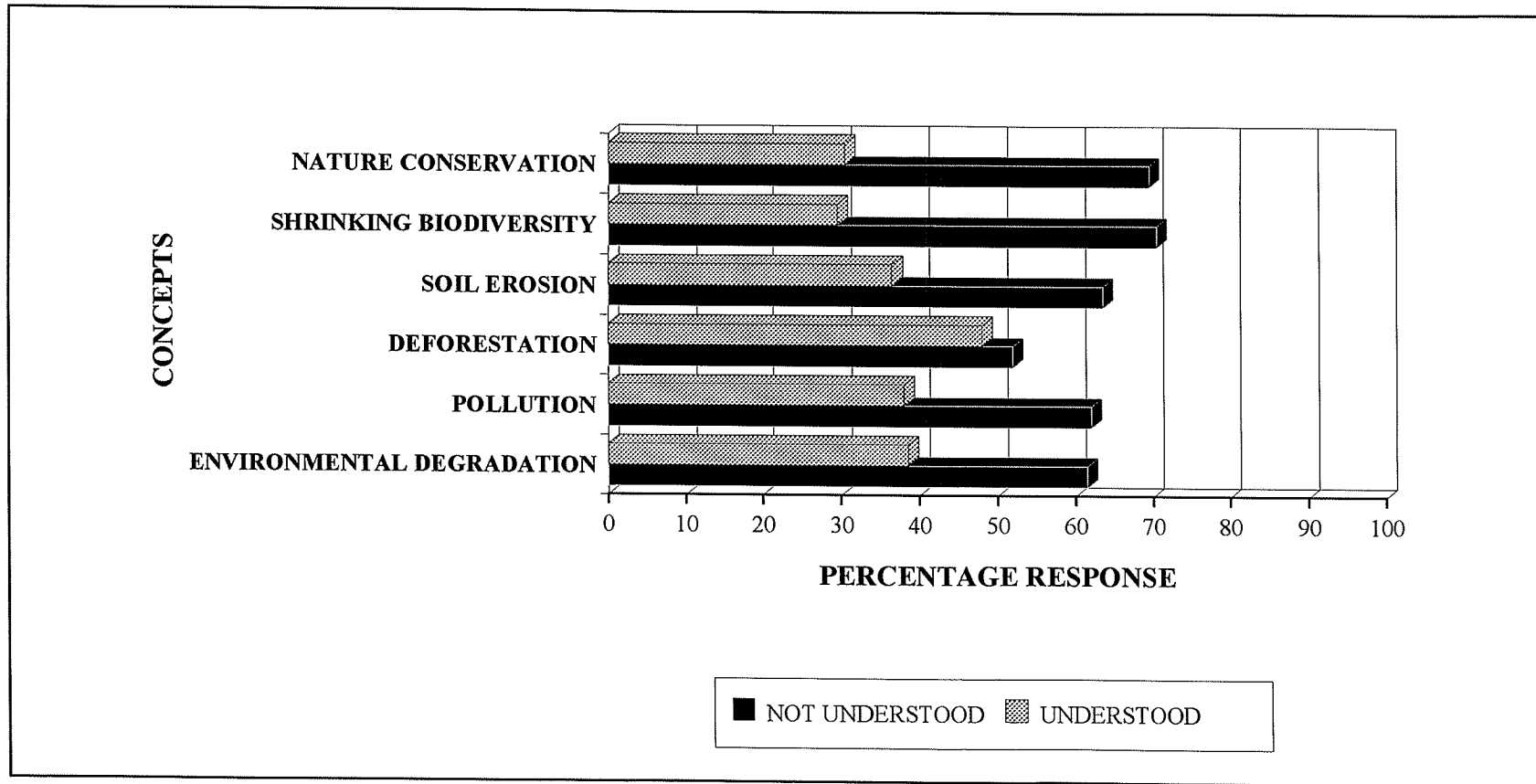
For the hypothetical question on the care-taking of the 5-hectare forest plot, the women respondents indicated "yes" to given options with the following results. Each percentage of is out of 200 responses:

Leave the trees alone	28.5%
Cut trees to plant cash crops	17%
Cut trees to sell the wood	3.5%
Cut trees to plant food crops	52%

Similarly, for the question on ways to keep the waters within Luwu rivers clean, the following "yes" responses were given. Each percentage is out of 200 responses:

Prevent dumping garbage into the river	88.5%
Prevent large-scale alteration of river flow	4%
Preserve the trees	5.5%
Prevent use of pesticides	4%

Figure 4.8 Transmigrant Women's Understanding of Environmental Concepts
n = 200



SOURCE: Research Data

4.3 Main Analysis

This second part of Chapter Four contains the main analysis. This analysis was achieved by applying the data, as discussed in the previous descriptive statistical section, towards the two hypotheses advanced by this thesis. Together with the tests of the hypotheses, results and interpretations of this main analysis are provided. In some cases analysis of data objectively collected via the questionnaire is supplemented and tempered by information which was collected in a more subjective mode during informal interview episodes. It should also be remembered that some of the data may be skewed because of the nature of agrarian-based Indonesians. The nature of transmigrant women-farmers and of their families, for example, is not given easily to complaining and, where survey questions dealt with difficult or sensitive issues, positive or at least agreeable answers may have been given to "save face."

4.3.1 Testing of the Hypotheses, and the Results

Hypothesis One: Transmigration gives women continual access to necessary environmental resources (basic needs) for sustaining their families. This first hypothesis is related to one of the underpinning objectives of the transmigration policy. That objective is to alleviate some of the economic and environmental pressure on the heavily populated Inner Islands by attempting to equalize the demographic numbers via transmigration to the Outer Islands. The government, perceiving too many people on the Inner Islands and available resources on the Outer Islands, instituted the transmigration policy (Colchester, 1986c: 100). Therefore the Luwu region seemed one of many

plausible destinations where transmigrants, especially female heads of households, could regain access to required environmental resources, such as fresh water, fuel, shelter and land to grow enough food for their family.

As a development scheme, transmigration fulfils yet another major objective of the programme itself, that of the "development" of Indonesia's hinterland in the Outer Islands. By resettling thousands of people to the Outer Islands it becomes a necessity to develop infrastructure to meet the social and economic needs of the newcomers. For example, primary and secondary roads were built to gain access to potential transmigration sites themselves. Social services such as schools were set up. Infrastructure for economic development in the Luwu region, specifically, was instigated by the building of large irrigation schemes so that crops such as rice could be grown year-round. It is known that large development schemes can impinge on, and wipe out, areas of important environmental resources such as fresh water and forest products upon which many agrarian-based women and their families depend on for survival.

Firstly, women as environmental educators, communicators and information specialists are key agents in the process of more sustainable development (Rodda, 1991: 103). Therefore women, as female heads of their families, generally know the basic needs for their family's survival and it would seem logical to consult with them regarding decision-making in any consideration of pending resettlement. The data gathered for this thesis however shows that women were mostly not included in the decision-making aspects of the transmigration process. Decisions for families to be resettled to the Luwu area and the decisions for individual families' home location were shown to have been

made in a pre-dominantly top-down administrative framework (Figure 4.6). Thus it appears that transmigrant women were, in most cases, not consulted nor did they have adequate information regarding potential environmental resources needed for their family at the relocation site. This situation can hardly support the hypothesis since transmigrant women generally have not had the individual opportunity in the decision-making processes to select their new home location which would best suit their environmental resource needs.

Secondly, the size of individual family land holdings must be considered in finding support of Hypothesis One. Transmigration policies specified that each family receive from the government a small standard house on 0.25 hectare of land in the newly established village, together with 1.00 hectare of cleared land that could be potentially used for an irrigated paddy field, and another 0.75 hectare of upland for orchards and other upland crop cultivation (Gany, 1993: 84). These together make up the 2 hectares of land promised each transmigrant family as a starting point of access to environmental resources.

Women respondents of this survey provided data that show today's family land holdings are in most cases less than 2 hectares in size (Table 4.1). Specifically, 161 of the 197, or 81.7% of the respondents each own and/or cultivate land holdings which are less than 2 hectares. Many of the present family land holdings are reported to be as small as .75 hectare, .50 hectare or even .25 hectare. These are not sufficient in size to support the agrarian-based lifestyle they are expected to pursue. This information complements the earlier survey findings established by Gany (1993: 287, 350) in similar transmigration

sites of South Sulawesi and Sumatra. Additionally, information received during the informal interviews revealed that one of the reasons some transmigrant families did not receive 2 hectares of land upon arrival was because settlement with aboriginal land claims had not been finalized.

If in reality most families received 2 hectares of land upon arrival in the Luwu region, then fragmentation of that size land plot has taken place over the years. Fragmentation of land holdings can result for several reasons. Growth of one's family, especially if several sons are born to the transmigrant couple, cause the initial allotment of 2 hectares to be divided up. Decreased size of land holdings could easily happen over time since borders around transmigration sites are fixed and do not allow for legal expansion. Fragmentation of initial land holdings also occurs when households sell off some of their allotted land for income to neighbours or to other interested parties. The informal interviews with women respondents showed that this had happened in some cases where emergency cash was badly needed by households. The data indicates that the resulting fragmentation of land holdings to less than 2 hectares was most prevalent in *kecamatan* Lamasi which is the older and more populated area. The fact that Lamasi is very close to the large urban service centre of Palopo encourages more young people to remain living at home or to remain in the transmigration site vicinity, thereby adding to the demographic pressure.

For families owning the exact 2 hectare land holdings, data from *kecamatan* Bone-Bone respondents shows no families in this category for those that came prior to the Irrigation Scheme, but shows the greater number (16) still in that intact 2-hectare size in

those families that arrived in 1970 and after. *Kecamatan* Lamasi, on the other hand, shows a reverse situation where land-holdings of 2 hectares are within families that arrived as early as 1930 - 1945 and only one in that category arriving after the Irrigation Scheme was developed during 1969 - 1970.

Alternately, the balance of respondents who indicated their family land holdings were 2 or more hectares in size make up only 18.3 percent of those interviewed. However, when compared with their year of arrival to the Luwu region, some trends in relation to the hypothesis emerge. For families transmigrating to the Luwu region as early as 1938 and up to the 1969/70 Luwu Irrigation Scheme implementation, it seemed possible to acquire their allotted 2 hectares of land and subsequently either buy or claim more land, thereby ensuring ample environmental resources for themselves. In *kecamatan* Bone-Bone, at least 6 of those surveyed were able to do this. *Kecamatan* Lamasi respondents, on the other hand, showed only one such larger land-size situation. Women whose families own more land usually have access to more environmental resources or to financial assets for acquiring those needed resources. For women, then, whose families arrived early enough, transmigration has given them a "head start" on their access to needed environmental resources. Fragmentation has not as yet become as prevalent in *kecamatan* Bone-Bone since the data shows that more 2-hectare plots of land holdings are still intact and women still have fair access to environmental resources to sustain their families. Support for Hypothesis One from consideration of land holdings is therefore of a varying nature. It appears that initially women acquired access to needed environmental resources through transmigration. However the continuation of that access is dependent

on several factors which can include size of initial land allotment, size of subsequent family, and the financial needs within each family.

A third important issue related also to land size and, therefore, to the hypothesis is the matter of continual access to water resource which women use in their homes. All women respondents, except for six, use well water as their primary source for household purposes. The wells in both *kecamatan* Bone-Bone and *kecamatan* Lamasi are individual in nature, usually having been built by the transmigrants themselves upon arrival at the transmigration sites. These deep water wells are located on each household site, some within the confines of the house or just outside. It was stated by 61.1 percent of the women respondents that they had access to clean water upon arrival at the transmigration sites (Table 4.7). In the current situation fifty-two percent also report that access to clean water has improved. However, a comparative 48 percent describe no change or a worsening in access to good quality water.

Whether these latter two groups are referring to drinking water or irrigation water is not clear from the data captured on the questionnaire. Water within the Irrigation Scheme channels cannot be used for human consumption, but is used for irrigation purposes, for swimming in by humans and animals, and occasionally for washing laundry. Information on the deteriorating quality of some of the potable water within Luwu Irrigation Scheme transmigration sites emerged not through formal data collected but more during the informal interviews. Subdivision of original land plots, due to demographic pressure occurring especially in *kecamatan* Lamasi, has caused wells providing water for household purposes to be located more closely together than before. Additionally, the

pesticides, herbicides and fertilizers used extensively in the fields find their way into the water table, only to emerge in these wells. Although quantifiable data was not collected on contaminated well water, informal observations indicated that this was the case. One such well, intended for domestic purposes, was observed to be obviously contaminated and currently unusable because of the water's murky colour and offensive odour. Other transmigrants were coping with the contamination of well-water by filtering the water and then boiling it for consumption or other household uses. All water is boiled by the transmigrants before drinking it, and this, too, requires additional fuel, either wood or chemical fuel.

The data in Table 4.7 suggest that most women initially did have adequate water and land resources in their newly relocated area. However nearly one-half of the families (47.6 percent) now are affected by the obvious land fragmentation from population pressures. In regards to access to clean water, 38.9 percent of the respondents indicated this was not available initially, and currently 48 percent said there was no change in the access or quality. Findings such as these therefore cannot support the hypothesis that women will have continuous access to environmental resources in their relocation area.

Use of field land raises a fourth important issue, when considering Hypothesis One. The Luwu Irrigation Scheme, developed on a large-scale, was meant in essence for transmigrant families to grow rice as a cash crop. The stated aim was to help transmigrant peasants become self-sufficient by growing rice year-round in an irrigation-based agricultural system. The Luwu Irrigation region in the Lamasi and Bone-Bone areas, for example, has mainly a mono-cropping pattern of paddy rice with an annual

cropping intensity of 142 percent. The average paddy production in 1992 was 4.28 ton per hectare of unhusked rice for the wet season crop and 4.50 ton per hectare for the dry season crop (Gany, 1993: 252). Since 98 percent of women respondents within the field survey reported rice to be the major crop grown in their fields, it is obvious that rice has indeed become a monoculture crop in the area, supported more by technological and chemical soil-crop enhancements, (such as fertilizers, pesticides, herbicides, and hybrid seeds) than by traditional methods (Figure 4.7). Instead, use of chemicals by transmigrants on land decreases quality of land and water, therefore Hypothesis One cannot be supported.

A fifth and last issue related to Hypothesis One is the matter of how forested areas were eliminated in preparation for the transmigration sites and the Luwu Irrigation Scheme. Since a tropical forest is rich in biodiversity and has proven resources to sustain aboriginal populations at least, transmigrants could have benefitted greatly from the varied and plentiful forest products. Women, being mainly responsible for gathering and preparing food for their family, need such elements on a daily basis. Access to forest products was reported by 64.9 percent of the respondents to be adequate upon arrival in the Luwu region (Table 4.7). Given the evidence of forest clearance for the preparation of transmigration sites and of subsequent fragmentation of land due to population pressures within the transmigration sites, trees have been eliminated on an on-going basis. The data show that 75 percent of the transmigrant women surveyed indicated that they felt the declining quality and quantity of forest products are due to the fact that too many people need to use the same resources. Forty-seven percent of the respondents also

thought that the forest had been cut down too rapidly. Therefore, in terms of forest and forest products, this access will not be on-going, and Hypothesis One cannot be supported. Obviously any remaining trees are being cut down within the confined transmigration sites in the search for additional fuel requirements and in the sub-division of assigned land plots as families grow.

Hypothesis Two: Ecologically sustainable use of environmental resources by transmigrant women is positively correlated with the amount of education and training they have received. The supposition here is that higher educated transmigrant women will better use and manage their physical environment than will illiterate or poorly educated women. The education level of Luwu's transmigrant women is summarized in Figure 4.2. While 44 percent of the respondents are illiterate (i.e. without any formal education), a further 16 percent completed only a primary level of schooling (Grade 3 Canadian equivalent). These figures suggest that at least 60 percent of transmigrant women in the area of the Luwu Irrigation Scheme have had little or no school education. In finding support for Hypothesis Two, the various levels of education among Luwu's transmigrant women were compared with environment-related issues.

Firstly, given that demographic pressure on environmental resources in confined transmigrant areas can result from large-sized families, the education levels of the respondents were cross-tabulated with their perception of what the "ideal" number of children per family is. This analysis could perhaps have been strengthened by querying each respondent on the actual number of children she had and then comparing that number with her perception of the "ideal" number. However, the responses showing

transmigrant women's perceived "ideal" number of children as presented in Table 4.8 indicates some support for this issue. Although most illiterate women overwhelmingly think that it is ideal to have only 2 or 3 children per family, there are still those that indicate having large families is desirable. For example, fifteen (16 percent) of the illiterate respondents believe it is desirable to have 4, 5, 6 or even more children (i.e. "a big family"). Alternately, women respondents with a high school education, none indicated the desirability to have more than 3 children. In fact, the women with this level of education indicated a major preference to limit the number to two children, although none preferred a one-child family. From these statistics, it is possible to suggest that the more educated transmigrant women perceive the reasons for limiting their family size and that these reasons may be related to easing demographic pressures on their limited environmental resources.

Table 4.8 Expressed Ideal Number of Children compared with Respondent's Level of Education n = 198

Education Level	Expressed Ideal Number of Children						TOTAL
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6+</u>	
Illiterate	2	43	28	7	4	3	87
Elementary	1	65	21	4	3	8	102
High School	0	7	2	0	0	0	9
Total	3	115	51	11	7	11	198

SOURCE: Research Data

For further support for Hypothesis Two with the data in Table 4.8, the Chi Square Test was applied to the data of observed frequencies in the table and their related expected frequencies. The χ^2 statistic for the data above is 10.277 with 10 degrees of freedom. The Chi Square Test resulted in 0.4166. However, within the range of expected frequencies that was produced, it was found that more than 1/5 of them were less than the value of 5 and that too many of the expected frequencies were less than 1. Because of these restrictions (Ebdon, 1981: 67), the Chi Square Test results could not be used to validate support for the hypothesis on this point.

Secondly, the levels of education among Luwu's transmigrant women were also cross-tabulated with the responses regarding environmental resource stewardship. As indicated in Figure 4.7, technological soil enhancements, which can be detrimental to soil over time (Shiva, 1991: 119), far outweigh the use of traditional soil practices in the farm fields of the Luwu Irrigation Project. Table 4.9 shows a comparison of the education level of the women respondents with the technological soil enhancements used by their families. When the prevalent incidence of pesticide and herbicide use is cross-referenced with levels of education of the respondents, consistent support for Hypothesis Two is found. The data indicate a decreased use of pesticide and herbicide among families where the women hold a higher level of education. However, the remaining comparisons show a fluctuating myriad of results. One reason for this might be because the number of women with a higher education level (high school) is very small and a few tallied numbers can create a very high percentage within that category (e.g. the high percentage of more irrigation and hybrid seed users). Also, illiterate and less educated women may

have indicated "yes" to the prevalent use of pesticides and herbicides mostly to appear to be current and knowledgeable with technological land methods.

Table 4.9 Comparison of Technological Field Practices and Transmigrant Women's Level of Education (observed frequencies)
n = 198

<u>Education Level:</u>	<u>Pesticide</u>	<u>Herbicide</u>	<u>Fertilizer</u>	<u>More Irrigation</u>	<u>Hybrid Seed Use</u>	<u>Total</u>
Illiterate	79	73	54	83	56	345
Elementary	87	79	69	98	78	411
High School	6	6	7	10	9	38
<u>Total</u>	172	158	130	191	143	794

SOURCE: Research Data

For more concrete support to this hypothesis, the Chi Square Test also was applied to the observed frequencies of data in Table 4.9 and the related expected frequencies from Table 4.10. The degrees of freedom in this case are 8, with the Chi Square Test

Table 4.10 Comparison of Technological Field Practices and Transmigrant Women's Level of Education (expected frequencies)
n = 198

<u>Education Level:</u>	<u>Pesticide</u>	<u>Herbicides</u>	<u>Fertilizer</u>	<u>More Irrigation</u>	<u>Hybrid Seed Use</u>
Illiterate	74.7355	68.6524	56.4861	82.9912	62.1348
Elementary	89.0327	81.7859	67.2922	98.8678	74.0214
High School	8.2317	7.5617	6.2217	9.1411	6.88438

calculated to be 0.8947. The calculated value of Chi Square was greater than the critical value at the significance level of 0.05, which then invalidates the null hypothesis (Ebdon, 1981: 171) that there would be no difference among women of varying levels of

education in the way they apply technological field practices. Therefore this set of data can be used in support of the hypothesis, since the calculations show it can represent the total population. The hypothesis, in this case, can be accepted statistically.

Support for Hypothesis Two was also sought in the stewardship responses that women gave when queried hypothetically what they would do if charged with the direct responsibility of sustainable care for a plot of forested land (question #48 of the survey tool). Only 55, or 27.5 percent, of respondents suggested it was best to leave the forest trees as they are. These 55 responses came from the following education categories:

Illiterate level	40.2%
Primary level	9.4%
Elementary level	21.4%
Junior high level	0.0%
Senior high level	75.0%

It is interesting to note, of those women who *did* respond to this hypothetical question, that there is a high percentage of illiterate transmigrant women (40.2%) who place significant value on the preservation of forest trees, as do the higher educated women (75.0%). This data does not significantly support Hypothesis Two, but could further a theory that even illiterate women may be more connected to, and knowledgeable of, their environment than is usually recognized. This can also be deducted from the various reasons given for preserving forest trees which are listed below and in order of the respondents' education level:

- Illiterate level:
 - to prevent degradation, such as erosion and flooding
 - we need everlasting, uninterrupted forest
 - many trees give us a good supply
 - for species variety
 - keeps flora and fauna stable
- Primary level:
 - for better environmental situation
 - for everlasting forest
- Elementary level:
 - for enough food
 - for flood protection
 - everlasting tree growth needed
 - for environmental maintenance
 - to prevent erosion and flooding
- Senior high level:
 - to prevent erosion
 - for good environment
 - need forest for water and shade

Most of the reasons that the other 72.5 percent of the transmigrant women gave for cutting the forested plot of land were reasons that spoke of need for additional land to grow food "for eating" and crops "for increased income." Having more land opened would mean more "money for life." Such reasons were emitted from all the levels of education represented among the respondents.

Similarly, the respondents were asked about a second hypothetical situation (question #49) where they would be charged with the primary stewardship, as "supervisor," of keeping the Luwu rivers clean. One hundred and ninety-six of the two hundred transmigrant women queried said that they would prevent the dumping of garbage into the rivers. This answer was drawn from the following levels of education:

Illiterate	88.5%
Primary level	87.5%
Elementary level	88.6%
Junior high level	100%
Senior high level	75.0%

This consistent and high percentage response is probably due to the fact that transmigrants who came to the Luwu area generally are hard-working, tidy and self-respecting people. Refuse, being a highly visual item, is generally not strewn about on transmigration sites, even into the rivers. The other suggested alternatives in this hypothetical question regarding the maintenance of Luwu's rivers: preserve the trees, prevent use of pesticides, or prevent large-scale alteration of river flow, also did not result in data suitable to suggest support for Hypothesis Two.

It was noted during the field survey that the respondents had some difficulty with hypothetical questions wherein they were asked to project their minds into the future. This finding is compared to an earlier study done on value orientations held by Indonesian peasants. Reported on by Koentjaraningrat (1978: 356), the study found that most of plans, decisions and orientation of action by Indonesian agrarian people "are focused on perception of the present, and there is little interest to plan the future." This notion perhaps explains the widely fluctuating responses to the foregoing hypothetical questions.

Thirdly, support for the Hypothesis Two was sought by the comparison of transmigrant women's level of education with their understanding of environmental terms. The terms presented were: environmental degradation, pollution, deforestation, soil erosion, shrinking biodiversity and nature conservation. Figure 4.8 shows the compilation of instances each environmental concept was understood by Luwu's transmigrant women in general; Table 4.11 gives a further comparison with the education levels. The first four environmental concepts, as presented in the survey, appear to be understood on an increasing basis from illiterate respondents upward to women with a senior high school

education. For example, the concept of deforestation seems to be understood by 46 percent of illiterate women, followed by a drop to 28.1 percent by women of primary schooling (Grades 1 - 3 Canadian equivalent). With women of elementary education (Grades 4 - 6 Canadian equivalent) and upward, the percentage of understanding appears to rise, from 51.4 to 66.6 percent.

Table 4.11 Luwu's Transmigrant Women of Varying Education Levels responding "Yes" to Understanding of Environmental Concepts (in percentages)

Education Level:	Environmental Degradation	Pollution	Deforestation	Soil Erosion	Shrinking Biodiversity	Nature Conservation
Illiterate	37.9	41.4	46	34.5	35.6	37
Primary	28.1	21.9	28.1	25	6.3	6.9
Elementary	40	37.1	51.4	40	31.4	33.9
Junior High	66.6	66.6	66.6	66.6	33.3	33.3
Senior High	66.6	66.6	66.6	66.6	33.3	0
	n = 198	n = 198	n = 198	n = 198	n = 198	n = 175

SOURCE: Research Data

The figures in Table 4.11 indicate that, while the environmental concepts of a more visible nature (i.e. pollution, deforestation, soil erosion) appear to be better understood, the last two concepts - shrinking biodiversity and nature conservation - seem to be less understood by women of all levels of education. The former are environmental concepts whose effects can impact transmigrants directly as opposed to effects of shrinking biodiversity and nature conservation concepts which incur a lag time in their impact. The data show there is less understanding of the latter even among respondents of high school levels. These last two concepts are also more abstract and hypothetical

in nature, and therefore perhaps less understood by transmigrant women, or less thought about in general. It is interesting to note that illiterate respondents' understanding to all environmental concepts within this question is very nearly consistent, ranging from 37.9 percent for environmental degradation, upwards to 46 percent for deforestation, and falling to 37 percent once more. Again, this could be an indication that illiterate peasant women, even within a transmigration setting, may be more environmentally conscious than they are given credit for.

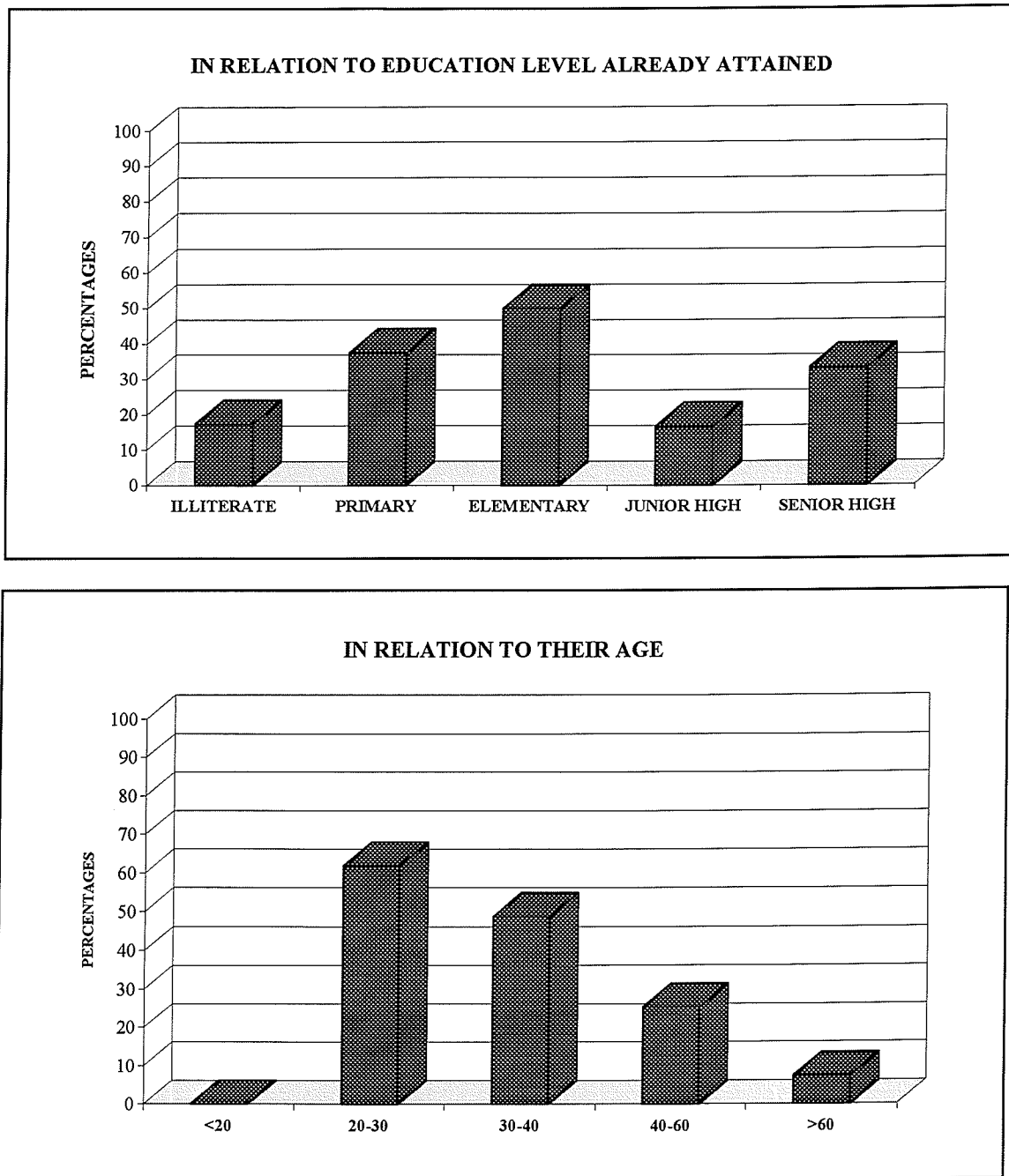
Despite the questionable nature of the data capture procedure (as described in Chapter 3), there appears to be a trend in support here for Hypothesis Two. For most of the environmental concepts as presented, the more educated respondents with some high school education appear to understand their meaning, than do the respondents with only primary or elementary schooling. If one considers, however, the remaining percentage of respondents from Table 4.11 who responded that they did not understand the environmental concepts, there appears to be a large number of women transmigrants among all levels of education who did not understand the concepts. Perhaps this is because the terms for these environmental concepts originate in the North and are not within the vocabulary framework of Indonesian transmigrants. Perhaps *their* understanding of environmental concepts differs entirely from those in the North or varies according to their own experience.

In addition to the subjective interpretation of this set of data, the Chi Square Test was also applied. At the 0.05 significance level with 20 degrees of freedom, the critical value of χ^2 is 31.41 (Ebdon. 1981: 171). Since the calculated value of χ^2 is greater than

this, the null hypothesis can be rejected (i.e. there is no correlation of women's level of education to their sustainable use of environmental resources), and Hypothesis Two can be supported.

Fourthly and last, in addition to the data analysis finding support of varying degrees for Hypothesis Two, that ecologically sustainable use of environmental resources is positively correlated with transmigrant women's education level, it is also applicable to question transmigrant women's aspirations toward increasing their education level. There were several of Luwu's transmigrant women who indicated during the field survey that they did indeed have aspirations to further their education. Such aspirations were voiced by 30 percent of the women respondents, in particular by those with the elementary education level and by those in the 20 - 30 year age category (Figure 4.9). Most of the areas of study they would like to pursue: agriculture, home industry, health care, teaching, forestry, and science (in rank order), possibly reflect a close association both to the environmental resources at hand and to women's field of expertise and their experience. Perhaps there are greater numbers of younger women having educational aspirations than the older women because the former see a greater need to use their environmental resources more wisely, given the geographic parameters of transmigration sites. Among those women who wished they could attain further education, several doubted their ability to do so. This could indicate a low self-esteem and a lack of self-confidence among the transmigrant women.

Figure 4.9 Education Aspirations of Luwu's Transmigrant Women
n = 198



SOURCE: Research Data

Alternately, women in the older age categories (40 - 60 and >60 age) indicated a lessened desire to take further education - they may be resigned to the environmental resources situation. Several said that they did not want to take further schooling because of advanced age or lack of incentive. Low indication of education aspirations by women with junior high school level (16.6 percent) may not be truly indicative of the sample population, since there were only a few women in the sample with either a junior high or a senior high education level. Such low numbers probably skewed the numbers in the percentage analysis of Figure 4.9, whereas the greater numbers of women respondents surveyed who had a primary or elementary education or who were illiterate issued percentages that can be read with more confidence. It is these latter figures that could be used to substantiate support for Hypothesis Two, indicating that as transmigrant women achieve more education, they are made more aware of issues also relating to learning about ecologically sustainable use of environmental resources.

CHAPTER 5

SUMMARY AND CONCLUSION

Over the years Indonesia's programme of transmigration has resulted in varying degrees of success for national development. Social, economic and environmental difficulties associated with transmigration in the past have been dealt with exhaustively in related literature. However, more research needs to be done specifically on how development-oriented relocation, such as transmigration, can impact the women involved and their access to necessary environmental resources, which may have been altered. Drawing from the strength of primary field data, this research project has sought to address such an impact, using information gathered from irrigation-based transmigrant women and their families adapting to the new physical environment at *kabupaten* Luwu, South Sulawesi Province.

This final chapter summarizes major findings from the hypotheses about transmigration impacts on women and the environment. Because the field research was carried out in Indonesia, reference is also made to the policy implications that the findings could have for government and other development organizations. Finally, further research directions are suggested in the conclusion to this chapter.

5.1 *Important Findings*

The analysis of this data also attempted to give some indication of the women's vulnerabilities and strengths while adjusting over time to a new and changed physical environment at the Luwu Irrigation Scheme of South Sulawesi Province. Secondly, the

data analysis was used to find support for two important hypotheses which guided the whole research endeavour. Although the survey took place in two separate *kecamatan* within the irrigation scheme, differences between the two were not significant enough, in most cases, for substantial comparison within the hypotheses. The most obvious difference was the in the population numbers; Lamasi having a population of 41,521 and Bone-Bone 33,790, while both are approximately equal in size.

Hypothesis One sought validation from the data collected that transmigration gives women, as primary caregivers of their families, continual access to necessary environmental resources in their new location. Since the survey included many women of the more mature age categories (40-60 and >60), it was not surprising that many of them reported access to adequate environmental resources for themselves and their families upon their early arrival in the Luwu transmigration sites. However, this continual access to environmental resources by transmigrant women and their families is currently being undermined by several indicators which emerged from the results of the data analysis. It seems these indicators have developed over time and today may affect women's continual access to environmental resources in a negative way. These indicators include land fragmentation, consistent monoculture of rice cropping with its related and widespread chemical enhancements, and deforestation within the transmigration sites of Lamasi and Bone-Bone.

Pressure on land is found in the on-going fragmentation of land holdings, leading to more intensive use of land as a resource on fields and leading to crowding, especially within *kecamatan* Lamasi. It was found that *kecamatan* Lamasi had a high degree of

fragmentation and therefore a lessened chance of land ownership for subsequent generations. Most of the land holdings are less than 2 hectares which is not sufficient to sustain a growing family. Size of land holdings in *kecamatan* Bone-Bone, on the other hand, were still relatively large enough with sufficient resources to raise a family. Conditions were not as crowded, and women and their families were generally more optimistic and more industrious. Therefore, by comparison of the two *kecamatan*, women's access to continuous and adequate land resources depends to a large degree where the transmigration site is located.

Similarly, findings of pressure on land resources from irrigation-based transmigration at Luwu were deducted from women's responses about land use. Transmigrants' dependency on the mono-culture of rice-growing, with its related use of chemical crop enhancements and irrigation networks indicates intensive use of the land. This is typical for cash cropping projects, but is known not to be sustainable over a long period of time.

Over the years forest resources have diminished in the Luwu area, first of all due to initial site preparations for the transmigrants before they arrived. Newly arrived transmigrants used forest products also for building and enlarging their homes. Two-thirds of the women respondents indicated their family had to build their own homes upon arrival. The remaining areas with forest products were then intensively used for fuelwood, for food, and for further clearance to acquire more agricultural land development.

Increasing populations within the transmigration sites in the Luwu area have also put pressure on water supplies and sanitation systems. Although there was only a small percentage of women reporting potable water diminishing in quality and quantity, these small numbers could be indicators of a potential decrease in continual access to this precious resource. Unless curtailed or altered, the necessity to use the land so intensively will threaten women's (and their families') continual access to necessary life-giving resources on the transmigration sites. Therefore Hypothesis One cannot be accepted where large populations intensively use and depend on land within restricted geographical parameters for their basic needs.

Hypothesis Two attempted to show that higher educated transmigrant women would better use and manage their physical environment than would the illiterate or poorly education women. The main problem in extracting support for Hypothesis Two was that the sample population contained very few women with educational levels above elementary schooling. Because of this it is difficult to make any strong assumptions in support for the hypothesis, and the analysis therefore resulted in varying affirmations and refutations of the hypothesis as stated. For example, larger family sizes, which usually result in greater demographic pressure, were preferred by illiterate transmigrant women, whereas these same women indicated substantial knowledge of reasons for forest preservation. However, the data analysis showed environmental concepts, as presented in the field survey, proved to be understood better by transmigrant women with a higher education. The analysis also indicated that more younger respondents had some aspirations to further their education and other training. Given the restraining

geographical parameters of transmigration sites, Hypothesis Two shows, to a varying degree, that further education of the women could prove to be a useful key to environmental sustainability of water, food and fuel resources, and could address their vulnerability should these resources become diminished even further.

The fundamental fact which should be clearly established in any transmigration planning is that the carrying capacity of the Outer Islands, such as Sulawesi, is limited partly because of relatively infertile tropical soils. Since they are agrarian-based, transmigrant women depend to a large extent on their immediate environmental surroundings for ready access to food, fuel, water and shelter. However just as any large-scale development project involves an act of destruction, development of a transmigration site will inevitably involve altering local ecosystems. This in turn may increase women's vulnerabilities by the lessening of natural resources such as forest products and good water quality. Transmigration sites such as Lamasi and Bone-Bone cannot continue to support a growing population within their borders because these sites have limited space and thus limited resources.

In spite of the optimism expressed by women surveyed in this research, three-quarters of them also believe that currently there are too many people within Luwu who depend on the same resources. In terms of natural resource deterioration, the irrigation waters today are becoming polluted due to waste disposal and the very heavy fertilizer, pesticide and herbicide use by farmers. Additionally, women indicated that they depend on their individual wells for their domestic water source, but the quality of this water, too,

is becoming questionable and less in quantity. Similarly, it is becoming increasingly more difficult to acquire forest products within the vicinity.

Luwu's transmigrant women indicated that they are worried about future land tenure and natural resources, not so much for themselves but for their children and grandchildren. Population growth in transmigration areas has been rapid not only because of net migration but also because of the large number of births associated with the government's emphasis upon the recruiting of young married couples for the programme. Densely populated transmigration sites, such as the villages within Lamasi, are facing a critical point in terms of the intensive use of the natural resources upon which women depend. There is the spectre of land shortages due to fragmentation, resulting in poverty and natural resource depletion.

There were also some negative socio-economic findings for transmigrant women at Luwu. Women here still face a multiple role: household manager and associate wage earner. Women, who constitute half of the population, provide the principal labour force in agriculture and in the every day toil of food preparation, water and fuel fetching and child rearing. Not only do they produce most of the food for family consumption, but they also provide the labour for additional cash crops. The research findings show that transmigrant women's workload increased substantially. Being bodily tired can produce additional vulnerabilities in women and leave little energy for attending classes or meetings to learn new skills and new technology. Transmigrant women tend to marry at a younger age than the national average in Indonesia. This inevitably has led to domestic responsibilities being assumed at a correspondingly earlier age.

Assuming the home manager position at so early an age also seems to have decreased educational opportunities for transmigrant women, since the survey found the representative illiteracy rate for women within Luwu's transmigration sites to be only 44 percent. Educational opportunities probably also are curtailed for women also because of social and cultural contexts and because of the sheer isolation of the sites. Whatever the reasons are, the effects of illiteracy can have far-reaching social impairment.

In terms of decision-making power, this study found that transmigrant women at Luwu have less than their husbands. While a multitude of lineage systems are represented in Indonesia, all ethnic groups adhere to a patriarchal system of authority, especially in decision-making. This was evident in Luwu's transmigrants. It was found that men (husbands and government officials) were most likely to make critical and major decisions regarding relocating to the Luwu area and regarding the location of the prospective home within the transmigration site. This indicates little or no control by women in deciding which location would best suit the environmental resource needs of the family.

5.2 *Policy Implications for Government and other Development Agencies*

Many aspects of the transmigration programme, as a government large-scale development project, have contributed to environmental degradation and emerging hardships for women on many specific sites within Indonesia. Concurrent with many of these issues are the immediate needs of those who live within the project's vicinity, the women and their families who require daily access to a sound environmental resource

base. Unfortunately, much of this base is currently dwindling on the earlier irrigation-based transmigration sites. Based on the findings of this study, policy development should include the following specific areas of immediate concern:

1) Environment

Often deforestation and associated future transmigration development are examples of projects that can impact local ecosystems and local first peoples. Instead of the usual "top-down" administrative structure, these projects continue to need national and local, or "bottom-up" deliberations, using information from not only government officials but also from women, from the young and the old, and from first peoples. Also non-government organizations, since they most frequently work at the "grass-roots level," can act as catalysts effecting the dissemination of environmental information and ideas from women and village elders to development planners. By emphasizing the human aspects in development, natural resource management should focus on resource users, rather than resources. Thus development must be considered inherently participatory (Steady, 1993: 439).

Environmental issues should top all development agendas at each level so that negative impacts of projects will be minimized on the environment and on women. Any large-scale development or resource extraction needs environmental preservation criteria through the circular design of integrating resources (Singh, 1994a: 23). Such design recognizes that sustainability in nature involves the regeneration of nature's processes and a human subservience to nature's laws of return. Since any development is based on environmental resources, environmental impact assessments should be carried out and

seriously integrated into projects, so that any harvesting of natural resources will be balanced with adequate, sustainable replacement.

Because knowledge of biodiversity is important for wise management and use of earth's resources, government must aspire towards an environmentally knowledgeable population. The uprooting of thousands of families through transmigration has caused the loss of site specific ecological knowledge that women (and first peoples) develop over time in their continual search for clean water, food, and fuel sources. When thrust into a new environment, it takes generations to develop a sensitivity for wise use of resources in unfamiliar ecosystems. It is paramount that education curricula include comprehensive environmental components, and that this environmental education and all public education become universally available to every citizen within the borders of Indonesia.

2) Women in Development

Full and equal integration for women into Indonesia's development programmes is possible from their *empowerment* which is a process that involves their improved status, health, education and employment prospects and the guarantee of choice in regard to family planning. For women, their empowerment as persons would stimulate them to use their potential and eradicate their present feelings of low self-esteem and doubt about their ability. Such feelings of inadequacy and inability surfaced frequently among transmigrant women during this survey and need to be remedied.

Empowerment for women can concurrently be achieved for those in Luwu's transmigration sites, indeed for all women of Indonesia, when the high rate of illiteracy among women is dramatically lowered. The representative rate of women's illiteracy at

44 percent at Luwu is still very high. Additionally, information collected during this survey included a small number of transmigrant women who indicated a high motivation or aspirations for the chance to further their knowledge in various fields. Wherever there is an indication of a desire to learn, it is the government's responsibility, as present central and major decision-maker in the country, to seize the opportunity for empowerment of its own people through universal education, especially if that desire is environmentally-related.

5.3 *Directions for Further Related Research*

The need to promote environment-sensitive and gender-sensitive development has never before been so compelling in the history of humankind. It is suggested that research to further these sensitivities could be carried out in several areas. First, more individual field studies are needed in locations where rural women must adapt to, and use, new environmental resources intensively. Further to this, women and environment field research could include, for example, subsequent impacts of water pollution and soil degradation specifically on the health of women and their families residing within irrigation schemes. Because findings of this study on Luwu's transmigrant women cannot be transferred in their entirety to other geographic locations within Indonesia or elsewhere, there is a need for site-specific information from other transmigration sites. Continued studies are needed on impacts of large-scale projects such as irrigation schemes also on ecosystems. For Indonesians, this is particularly critical because of the great diversity in

ecological conditions within areas currently being used or being opened up for the redistribution of the country's increasing population numbers.

Second, for Indonesia more research is needed regarding the viability of transmigration sites having bases other than large irrigation projects. The government is already placing large numbers of transmigrants on timber estates whose objectives apparently include the restoration and management of forest resources. Other transmigration bases being considered are shrimp pond projects and palm oil plantations. It would be viable to see whether these alternative bases provide basic environmental resources for women heads of households, without major environmental impacts. Research into how successful environmental management programmes meet women's survival needs could be beneficial also in providing the government, and the women themselves, with continued motivation to protect their environment.

Third, in view of increasing concern of social scientists for the environment and for the regeneration of human settlements on the receiving end of development, which often are related to the clearing of forested areas, site-specific studies on the role of women in forestry is possible. Rural women's autonomy and power, often unrecognized, over labour, land and capital resources could be studied here, as well as rural women's methods of information dissemination among themselves and to superiors.

Fourth, more research is needed to underscore the environmental and economical benefits of raising women's literacy rate. Low literacy levels of women go hand in hand with poverty and cultural mores, particularly in rural areas where low enrollment and high dropout rate frequently result from the (often unspoken) belief that it is more important

to educate boys. Even though rapid expansion of education does not solve all problems, investing in women's education nonetheless is a sound and cost-effective strategy. Research in this area could be beneficial to governments already faced with massive unemployment and underemployment, cutbacks in education budgets and overwhelming debt burdens. Since the Indonesian government faces such problems, policies that favour education for women bring long-term benefits and a wise investment in environmental resource rehabilitation and use.

Last but not least, Indonesia's traditional peoples' use of environmental resources remains a largely untapped source of site-specific ecological wisdom. Due to rapid encroachment into traditional people's lifestyle by outsiders, their knowledge of ecosystems within areas of proposed transmigration sites needs urgently to be sought out before it, too, is lost. Agricultural practices from the Inner Islands are not automatically transferred to Outer Islands where future transmigration sites are still being located. As a result there is a need to carry out integrative research in local peoples' expertise and experimentation to find productive eco-technologies suitable within each of Indonesia's diverse ecosystems and social systems. Research into traditional women's knowledge and use of water and food source, for example, would be investing in the wisdom of women and in ecologically-wise use of environmental resources.

Findings of this thesis support other research studies that promote re-examined notions of large-scale development. Initially aspiring toward industrialization, urbanization and consumer societies (which can also be seen as contributory causes to

poverty and inequality), development currently must reintegrate equitable relationships between human beings and nature, human beings and governments, laws and political systems. One of the most important keys to ecologically sustainable development is a re-orientation of development strategies that concentrates resources on empowerment of women and on environmental preservation. When given the opportunity, women can be involved successfully in irrigation-based human resettlement, such as transmigration, through the phases of planning, health education, construction, maintenance, administration and evaluation of their settlement area. Long-term objectives would be realized and ecological sustainable development accomplished.

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APPENDIX

This questionnaire is specifically prepared for the field research of Julianna E. Enns (student) for a Master of Arts (M.A.) degree at the University of Manitoba, Canada. The general objective of this questionnaire is to conduct a Geographical analysis on irrigation-based human resettlement and women's adaptations within a transmigration environment.

Daftar pertanyaan ini khusus disusun untuk studi lapangan dari Julianna E. Herfst (Mahasiswa Kanada) dalam rangka program "Master of Arts (M.A.) di Universitas Manitoba. Tujuan umum studi ini adalah untuk mendalami peranan wanita dalam mendukung adaptasi lingkungan terhadap program penempatan penduduk pada daerah transmigrasi yang mendapatkan manfaat prasarana irigasi.

The Study Area: **The Luwu Irrigation Project in South Sulawesi Province.**
Lokasi Studi Lapangan: **Proyek Irigasi Luwu di Provinsi Sulawesi Selatan**

Beginning Date: **May 11, 1993**
Tanggal Mulai Studi Lapangan: **11 Mei 1993**

This questionnaire is directed to the head females of households within the Luwu Irrigation Project area.

Daftar pertanyaan ini ditujukan kepada ibu rumah tangga yang berada di dalam kawasan Proyek Irigasi Luwu.

IRRIGATION-BASED RESETTLEMENT SURVEY - LUWU, SULAWESI
QUESTIONNAIRE

DAFTAR PERTANYAAN UNTUK PENELITIAN LAPANGAN PADA DAERAH
PENEMPATAN TRANSMIGRASI BERFASILITAS IRIGASI DI KABUPATEN LUWU,
PROVINSI SULAWESI SELATAN

1. Name of settlement:
Nama lokasi penempatan kampung:

2. Geographical location of home: IN THE FOREST
Kondisi geografis tempat tinggal: DI HUTAN

ON RIVER DELTA
DI DELTA SUNGAI:

OTHER
LAIN-LAIN:

3. Household water source: WATER COMPANY PIPE
Umber air bersih: AIR LEIDENG:

WELL
SUMUR:

RIVER
SUNGAI:

RAINWATER
AIR HUJAN:

OTHER
LAIN-LAIN:

4. Interviewer's name:
Nama pewawancara:

5. Interview number:
Nomor urut wawancara: _____

6. Date of interview:
Tanggal wawancara:

To the head females of households: This is a study into the relationships between women in an irrigation-based resettlement and their environment. Your voluntary participation and responses within this study will be kept strictly confidential. At any point during the interview you have the freedom to choose not to answer a question and/or to withdraw from the interview itself.

Kepada segenap ibu rumah tangga yang akan diwanancarai: Maksud wawancara ini adalah untuk mendalami seluk-beluk mengenai peranan wanita pada daerah transmigrasi yang mendapatkan manfaat prasarana irigasi beserta dampak lingkungannya. Tanggapan maupun jawaban anda yang berhubungan dengan wawancara ini akan tetap kami rahasiakan. Dalam wawancara ini, anda tidak dipaksa untuk menjawab pertanyaan-pertanyaan yang diajukan serta anda dapat menarik diri dari wawancara ini jika anda merasa tidak berkenan.

PART I : RESETTLEMENT SURVEY
BAGIAN I : KEADAAN PENEMPATAN PENDUDUK

I would like to ask you some questions about your resettlement experiences.

Saya akan menanyakan kepada anda beberapa pertanyaan yang menyangkut pengalaman anda dalam mengikuti program penempatan penduduk di daerah ini.

7. When did you move to Luwu Irrigation Site?
 Kapankah anda mulai tinggal di daerah Luwu?
8. Where did you move from?
 Dari mana anda datang?
9. What prompted your move to Luwu? (check one)
 Atas desakan atau pertimbangan apakah anda memutuskan untuk berpindah ke daerah Luwu? (pilih salah satu):
 - a) Sponsored by government?
 Ditunjang oleh pemerintah?:
 - b) Spontaneous decision?
 Dengan kemauan sendiri?:
 - c) Relatives persuaded us to move?
 Melalui ajakan keluarga?:
 - d) Perceived new opportunities/jobs?
 Tertarik dengan kesempatan kerja?:
 - e) Other?
 Lain-Lain?:
10. How many times had your family moved before settling to Luwu?
 Sudah berapa kali keluarga anda berpindah tempat tinggal sebelum menetap di daerah Luwu ini?

11. Who made the final decision for your family to be resettled to Luwu? (Check one)

Dalam rangka penempatan di daerah Luwu ini, siapakan yang mengambil keputusan keluarga untuk ikut pindah? (pilih salah satu)

- a) Husband
Suami:
- b) You
Anda sendiri:
- c) Joint decision by your husband and you
Keputusan bersama suami:
- d) Government officials
Petugas pemerintah:
- e) Other
Lain-lain:

12. Did your whole immediate family unit come with you when you resettled to Luwu?

Apakah semua anggota keluarga di rumah tangga anda turut bersama anda ketika pindah ke daerah Luwu ini?

- | | |
|----------|-------------|
| Yes | No |
| Ya | Tidak |

13. Who made the final decision where you would be located upon arrival at Luwu? (Check one)

Siapakah yang menentukan lokasi lahan yang akan anda tempati sewaktu baru tiba di daerah Luwu? (pilih salah satu)

- a) Husband
Suami:
- b) You
Anda sendiri:
- c) Joint decision by your husband and you
Keputusan bersama suami:
- d) Government officials
Petugas pemerintah
- e) Other
Lain-lain:

14. Since being resettled to Luwu, what are important changes for you as a person? (Check all appropriate items)
Sejak pindah bertempat tinggal di Luwu ini, perubahan apa saja yang anda rasakan penting secara pribadi? (beri tanda perubahan yang dimaksudkan)

- a) More independence
Bertambah beban pekerjaan:
- b) More freedom of choice
Lebih merasa bebas menetapkan sesuatu:
- c) Economic security
Lebih mantap kehidupan keluarga:
- d) Other (please specify)
Lain-lain (agar dijelaskan):
- e) Other (please specify)
Lain-lain (agar dijelaskan):

15. What are detrimental changes for you as a person? (Check all appropriate items)
Perubahan kehidupan apakah yang terasa memberatkan kehidupan pribadi anda sejak anda pindah? (beri tanda perubahan yang dimaksudkan)

- a) Increased workload
Bertambah beban pekerjaan:
- b) Other (please specify)
Lain-lain (agar dijelaskan):
- c) Other (please specify)
Lain-lain (agar dijelaskan):

16. Do you feel secure in your future at Luwu?
Apakah anda sudah merasa mantap bertempat tinggal di daerah Luwu ini untuk seterusnya?

Yes	No
Ya	Tidak

16.1. Please explain why or why not.
Agar dijelaskan kalau "Ya" kenapa, dan kalau "Tidak" kenapa:
.....
.....

PART II : HOUSEHOLD SURVEY

BAGIAN II : KEADAAN RUMAH TANGGA

This section will focus on information about the social and economic characteristics of your household.

Bagian ini khusus untuk menampung keterangan mengenai keadaan sosial ekonomi rumah tangga.

17. Please check off the individuals who were part of the respondent's household before being relocated to Luwu and those who are part of the household today. (If more than one, please indicate how many). Also state each person's present age.

Terdiri dari siapa-siapa saja anggota keluarga di rumah tangga anda sebelum pindah ke Luwu, dan siapa-siapa saja anggota keluarga yang saat ini masih bersama anda. (jika lebih dari satu orang, agar disebutkan jumlahnya) Supaya dijelaskan juga umur masing-masing orang tersebut saat ini.

	Before Relocation	After Relocation	Present Age
	<u>Sebelum pindah</u>	<u>Sesudah pindah</u>	<u>Umur saat ini</u>
a) Spouse Suami
b) Daughter(s) Anak perempuan
c) Son(s) Anak laki-laki
d) Brother(s) Saudara laki-laki
e) Sister(s) Saudara perempuan
f) Respondent's father Bapak anda (sendiri)
g) Respondent's mother Ibu anda (sendiri)
h) Spouse's father Bapak mertua
i) Spouse's mother Ibu mertua
j) Granddaughter Cucu perempuan
k) Grandson Cucu laki-laki

- | | | | | |
|----|-----------------------|-------|-------|-------|
| l) | Grandmother | | | |
| | Nenek | ..... | ..... | ..... |
| m) | Grandfather | | | |
| | Kakek | ..... | ..... | ..... |
| n) | Daughter-in-law | | | |
| | Anak tiri perempuan | ..... | ..... | ..... |
| o) | Son-in-law | | | |
| | Anak tiri laki-laki | ..... | ..... | ..... |
| p) | Sister-in-law | | | |
| | Ipar perempuan | ..... | ..... | ..... |
| q) | Brother-in-law | | | |
| | Ipar laki-laki | ..... | ..... | ..... |
| r) | Other relative | | | |
| | Keluarga lain-lain | ..... | ..... | ..... |
| s) | Lodger | | | |
| | Orang mondok/indekos | ..... | ..... | ..... |
| t) | Servant | | | |
| | Pembantu rumah tangga | ..... | ..... | ..... |
| u) | Other (specify) | | | |
| | Lain-lain (jelaskan) | ..... | ..... | ..... |

18. In which age category do you belong?

Termasuk kategori umur berapakah anda pada daftar urutan berikut ini?

- a) less than 20
kurang dari 20 tahun
- b) 20 - 30
antara 20 - 30 tahun
- c) 30 - 40
antara 30 - 40 tahun
- d) 40 - 60
antara 40 - 60 tahun
- e) more than 60
lebih dari 60 tahun

19. At what age were you married?

Pada umur berapakan anda kawin/nikah?

- a) less than 20
kurang dari 20 tahun
- b) 20 - 25
antara 20 - 25 tahun
- c) 25 - 30
antara 25 - 30 tahun
- d) 30 - 35
antara 30 - 35 tahun
- e) more than 35
lebih dari 35 tahun

20. Did your marital status change after moving to Luwu?

Apakah status perkawinan anda ada mengalami perubahan sejak anda pindah ke Luwu?

- | | |
|----------|-------------|
| Yes | No |
| Ya | Tidak |

20.1. To what? Dalam hal apa saja?

- a) Married
Kawin
- b) Divorce
Cerai
- c) Remarriage
Kawin lagi
- d) Other
Lain-lain

21. What was your level of education before and after arriving at Luwu? (Write "1" beside the education level before coming to Luwu and "2" beside today's education level of the respondent)
Apakah tingkat pendidikan anda sebelum dan sesudah tiba di Luwu? (bubuhkanlah angka "1" di samping kolom tingkat pendidikan sebelum pindah ke Luwu, dan angka "2" untuk tingkat pendidikan terakhir setelah pindah ke Luwu)

Illiterate - Buta huruf:

Elementary - Sekolah Dasar:

- Class 1 Kelas 1
- Class 2 Kelas 2
- Class 3 Kelas 3
- Class 4 Kelas 4
- Class 5 Kelas 5
- Class 6 Kelas 6
- Class 6 graduate Tammat SD

Secondary - Sekolah Lanjutan Tingkat Pertama (SLTP):

- Class 1 Kelas 1
- Class 2 Kelas 2
- Class 3 Kelas 3
- Secondary school graduate Tammat SLTP

High School - Sekolah Lanjutan Tingkat Atas (SLTA):

- Class 1 Kelas 1
- Class 2 Kelas 2
- Class 3 Kelas 3
- High school graduate Tammat SLTA

Other (please specify) - Lain-lain (agar dijelaskan):

.....

22. Do you have aspirations to further your own education?

Apakah ada terkandung dalam hati anda suatu kehendak atau hasrat untuk mengikuti suatu pendidikan atau melanjutkan pendidikan/ketrampilan tertentu?

- Yes No
 Ya Tidak

**22.1. If yes, what would you like to study?
 (Check off all applicable responses)**

Kalau jawabannya "Ya" pendidikan/ketrampilan apa yang anda kehendaki? (beri tanda pendidikan yang dimaksudkan)

- a) Agriculture
 Pertanian
- b) Forestry
 Kehutanan
- c) Teaching
 Keguruan
- d) Health Care
 Kesehatan
- e) Engineering
 Keteknikan
- f) Science
 Ilmu pengetahuan (sains)
- g) Home Industry
 Industri rumah tangga
- h) Other (please specify)
 Lain-lain (agar dijelaskan)

23. As a result of resettlement to Luwu, how have living conditions for you and your family changed in the following areas? (Please check off each living condition)

Sejauh mana penempatan anda di daerah Luwu telah memberikan pengaruh terhadap tingkat kehidupan anda dan keluarga anda dalam hal-hal berikut ini. (Supaya diberi tanda masing-masing kondisi kehidupan)

	Much improved- Banyak kemajuan	Improved- Cukup kemajuan	No change- Tidak berubah	Deteriorated- Memburuk	Greatly Deteriorated- Sangat memburuk
<u>SOCIAL - SOSIAL:</u>	(1)	(2)	(3)	(4)	(5)
a) Family Cohesion Hubungan keluarga
b) Marriage Cohesion Hubungan perkawinan
c) Community Friendships Persaudaraan
<u>FINANCIAL- KEUANGAN:</u>	(1)	(2)	(3)	(4)	(5)
d) Employment for yourself Pekerjaan anda
e) Family income Pendapatan anda
f) Savings Tabungan
g) Family land ownership Pemilikan tanah
<u>HEALTH - KESEHATAN:</u>	(1)	(2)	(3)	(4)	(5)
h) Your own health Kesehatan diri
i) Your husband's health Kesehatan suami
j) Health of children Kesehatan anak-anak
k) Access to family health facilities Jangkauan fasilitas untuk kesehatan keluarga
l) Access to maternal care Jangkauan terhadap kesejahteraan ibu

- m) Adequate food
Pemenuhan pangan
- n) Nutritious food
Makanan bergizi

24. In the relocation area, did you or your family acquire any diseases/illnesses that you were not familiar with?
Apakah anda atau anggota keluarga anda pernah sakit atau terkena penyakit yang belum pernah anda kenal sebelumnya, setelah bertempat tinggal di Luwu?

Yes No
Ya Tidak

24.1. If yes, what were they?
Jika jawabannya "Ya," penyakit apa?

24.1. Have they become more prevalent today?
Apakah penyakit tersebut sudah umum saat ini?

Yes No
Ya Tidak

25. What were your main responsibilities for your household before resettlement and what are they today at Luwu? (Please check off appropriate items)
Apakah kewajiban anda di rumah tangga sebelum pindah ke Luwu dan apa kewajiban di rumah tangga anda saat ini? (agar diberi tanda pada daftar berikut)

RESPONSIBILITY	Before resettlement	Today
<u>KEWAJIBAN</u>	<u>Sebelum pindah</u>	<u>Sekarang ini</u>
a) Child care Membesarkan anak
b) Discipline of children Mendidik kedisiplinan anak
c) Food preparations Penyediaan makanan
d) Fetching water Mangambil air
e) Collecting firewood Mangumpulkan kayu bakar
f) Cleaning house Kebersihan rumah

- g) Animal care
Memelihara ternak
- h) Tending food crops
Bercocok tanaman pangan
- i) Cultivating cash crops
Bercocok tanaman keras
- j) Other (please specify)
Lain-lain (agar dijelaskan)

26. If you are presently employed outside the home to supplement family income, what type of work do you do? (Check off)
 Kalau anda pada saat ini bekerja di luar untuk mendapatkan tambahan pendapatan keluarga, pekerjaan apakah yang anda lakukan? (agar ditandai yang sesuai)

- a) Cottage industry
Industri ringan (bahan kerajinan)
- b) Trading
Berdagang (berjualan)
- c) Rice mill
Penggilingan padi
- d) Small shop
Buka warung
- e) Sewing
Menjahit pakaian
- f) Construction works
Pembangunan jalan (pekerja bangunan)
- g) Civil servant
Pegawai negeri
- h) Other (specify)
Lain-lain (agar dijelaskan)

27. Is your employment available to you throughout the year?

Apakah kesempatan kerja anda tersebut berlangsung terus (ada pekerjaan) sepanjang tahun?

Yes No
Ya Tidak

28. Approximately what percent of total family income is earned by you? (Check off)

Kira-kira berapa persen dari jumlah seluruh pendapatan keluarga, pendapatan yang anda peroleh dari hasil bekerja tersebut? (pilih salah satu)

- a) None - Tidak ada
- b) 1-20%
- c) 20-30%
- d) 30-50%
- e) more than 50% - Lebih dari 50%

29. What do you do with your earned income? (Check off)

Anda pergunkan untuk apakah pendapatan yang anda peroleh? (agar diberi tanda pada daftar berikut)

- a) Keep it yourself
Disimpan untuk keperluan sendiri
- b) Give it to husband
Diberikan kepada suami
- c) Used for family expenses
Dibelanjakan untuk kepentingan keluarga
- d) Other (please specify)
Lain-lain (agar dijelaskan)

30. Before resettlement to Luwu, approximately how many hours did you spend per day on each of the following domestic activities? How many hours do you spend on them today?

Sebelum anda pindah ke daerah Luwu, kira-kira berapa jam sehari waktu yang anda pergunakan untuk kegiatan rumah tangga seperti urutan berikut ini? Berapa jam waktu yang anda pergunakan untuk kegiatan tersebut pada saat sekarang ini?

	No. of hours before resettlement Jumlah jam sebelum pindah ke Daerah Luwu	No. of hours today Jumlah jam saat ini
a) Child care Mengasuh anak
b) Collecting food (include shopping) Mengadakan bahan makanan
c) Fetching water Mangambil air
d) Collecting firewood Mangumpulkan kayu bakar
e) Meal preparations Menyiapkan makanan (masak/manghidangkan dsb.)
f) Helping parents Membantu orang tua
g) Cleaning house Membersihkan rumah
h) Tending garden & food crops Berkebun di pekarangan
i) Cultivating crops for sale Memelihara tanaman keras
j) Leisure/visiting Bersantai/berkunjung (ke keluarga/tetangga dsb.)
k) Sleeping (napping) Tidur siang
l) Other (please specify) Lain-lain (agar dijelaskan)
m) Other (please specify) Lain-lain (agar dijelaskan)

31. Before resettlement to Luwu, who made final decisions in the following household concerns? [Please circle one of: 1) Mostly by respondent; 2) Mostly by respondent's husband; 3) Together by respondent and husband; 4) Other]

Sebelum pindah ke Luwu, siapakah yang bertanggungjawab terhadap hal-ikhwal rumah tangga seperti dalam daftar berikut? [Agar dilingkari yang sesuai: 1) umumnya oleh responden sendiri; 2) umumnya oleh suami responden; 3) responden bersama suami; 4) lain-lain.]

	<u>Respondent</u> <u>Responden</u>	<u>Husband</u> <u>Suami</u>	<u>Together</u> <u>Bersama</u>	<u>Other</u> <u>Lain-lain</u>
a) Meal planning Perencanaan menu	1	2	3	4
b) Purchase of clothing Membeli Pakaian	1	2	3	4
c) Other major purchases Membeli barang utama	1	2	3	4
d) Other small purchases Membeli barang kecil	1	2	3	4
e) Cash crop varieties Menetapkan jenis tanaman pangan	1	2	3	4
f) Food crop varieties Menetapkan jenis tanaman keras (untuk dijual)	1	2	3	4
g) Discipline of children Kedisiplinan anak-anak	1	2	3	4
h) Schooling of children Sekolah anak-anak	1	2	3	4
i) Number of children Penetapan jumlah anak	1	2	3	4
j) To use family planning Penggunaan alat KB	1	2	3	4

32. Who makes final decisions in these same household concerns today? [Please circle one of: 1) Mostly by respondent; 2) Mostly by respondent's husband; 3) Together by respondent and husband; 4) Other]

Sekarang ini, siapakah yang bertanggungjawab terhadap hal-ikhwal rumah tangga seperti dalam daftar berikut ini? [Agar dilingkari yang sesuai: 1) umumnya oleh responden sendiri; 2) umumnya oleh suami responden; 3) responden bersama suami; 4) lain-lain.]

	Respondent <u>Responden</u>	Husband <u>Suami</u>	Together <u>Bersama</u>	Other <u>Lain-lain</u>
a) Meal planning Perencanaan menu	1	2	3	4
b) Purchase of clothing Membeli Pakaian	1	2	3	4
c) Other major purchases Membeli barang utama	1	2	3	4
d) Other small purchases Membeli barang kecil	1	2	3	4
e) Cash crop varieties Menetapkan jenis tanaman pangan	1	2	3	4
f) Food crop varieties Menetapkan jenis tanaman keras (untuk dijual)	1	2	3	4
g) Discipline of children Kedisiplinan anak-anak	1	2	3	4
h) Schooling of children Sekolah anak-anak	1	2	3	4
i) Number of children Penetapan jumlah anak	1	2	3	4
j) To use family planning Penggunaan alat KB	1	2	3	4

33. Do you have access to family planning education?

Apakah anda mendapatkan latihan atau ketrampilan keluarga berencana?

Yes No
Ya Tidak

33.1. If yes, please specify sources of information: [Check off]

Jika jawabannya "Ya," agar disebutkan dari mana mendapatkan ketrampilan tersebut:

- a) Family planning worker
Petugas keluarga berencana
- b) Radio-TV
Melalui Radio atau Televisi
- c) Neighbours
Melalui tetangga
- d) Relatives
Melalui keluarga dekat
- e) Friends
Melalui teman-teman
- f) Billboards
Melalui papan pengumuman (reklame)
- g) Other
Lain-lain

34. How many children do you think make the ideal number for a family to have?

Menurut anda, berapa jumlah anak yang sebaiknya dipunyai oleh suatu keluarga?

.....

35. If you now consider a smaller family more desirable, why?

Sekiranya anda menganggap keluarga kecil lebih baik, kenapa anda berpendapat demikian?

- a) Living quarters are already too crowded
Tempat tinggal sudah cukup sempik
- b) Don't need extra hands for agricultural work
Sudah tidak perlu lagi tambahan tenaga untuk mengelola tanah pertanian yang dimiliki
- c) Too expensive to feed
Sangat besar biaya untuk menghidupi keluarga
- d) Other (specify)
Lain-lain (agar dijelaskan)

36. If you now consider a larger family more desirable, why?
 Sekiranya anda menganggap keluarga besar lebih baik, kenapa anda berpendapat demikian?
- a) Have enough room for them
 Rumah masih cukup lapang
 - b) Need extra hands for agricultural work
 Perlu tambahan tenaga untuk bercocok tanam
 - c) Can afford them today
 Masih mampu menanggung (menghidupi) anak banyak
 - d) Other (specify)
 Lain-lain (agar dijelaskan)
37. How many hectares of land does your family own?
 Berapa hektar tanah yang dimiliki keluarga anda?
38. Approximately what percentage of this land is cultivated:
 Lira-kira berapa bagian (persen) tanah tersebut yang sekarang ini ditanami dengan:
- a) For cash crops
 Tanaman keras (tanaman untuk dijual)
 - b) For family food
 Tanaman pangan
39. What is the main crop grown for sale? (Check one)
 Tanaman pokok apakah yang mempunyai harga baik untuk dijual? (agar ditandai salah satu)
- a) Rice
 Padi
 - b) Cassava
 Ubi kayu (ketela pohon)
 - c) Other (please specify)
 Lain-lain (agar dijelaskan)

40. Do you help your husband in the cultivation of crops?

Apakah anda membantu suami anda untuk bercocok tanam atau mengelola pertanian?

Yes No
Ya Tidak

40.1. If yes, what do you do? (Check off all appropriate responses)

Jika jawabannya "Ya" membantu dalam hal apa saja? (beri tanda pekerjaan yang dimaksudkan]

- a) Planting
Menabur benih
- b) Irrigating
Mengatur air/menyiram tanaman
- c) Weeding
Menyiangi rumput
- d) Harvesting
Manuai (memanen)
- e) Processing
Mengolah hasil panen
- f) Other (specify)
Lain-lain (agar dijelaskan)

41. What is the distance in kilometers from your home to the land that you cultivate for crops?

Kira-kira berapa kilo-meter jaraknya tanah garapan dari rumah anda?

.....

42. Do you yourself own any land?

Apakah anda memiliki tanah sendiri?

Yes No
Ya Tidak

PART III - ENVIRONMENTAL SURVEY

BAGIAN III : KEADAAN LINGKUNGAN HIDUP

This part of the survey deals with the way you interact with your environment.

Bagian ini menampung keterangan mengenai hal-hal yang berkaitan anda dengan lingkungan hidup.

43. On the land that you cultivate, what methods do you use to conserve soil resources?

Bagaimana cara pengawetan tanah yang anda gunakan dalam bercocok tanam (bertani)?

	Yes <u>Ya</u>	No <u>Tidak</u>
a) Fallow Didiarkan "bero"
b) Rotate crops Tanaman bergilir
c) Intercrop Tumpang-sari
d) Mulch Menutupi rumput/jerami
e) Use manure Pupuk Kandang
f) Other (please specify) Lain-lain (agar dijelaskan)

44. Would you use any of the following on your land to increase productivity?

Apakah anda mempergunakan sarana/prasarana pertanian berikut ini untuk mengolah tanah untuk meningkatkan produksi?

	Yes <u>Ya</u>	No <u>Tidak</u>
a) Fertilizers Pupuk buatan
b) Pesticides Pestisida
c) Herbicides Herbisida
d) More irrigation Air irigasi
e) Hybrid seeds Bibit unggul

45. What natural resources did you have access to upon arrival at Luwu? Has there been a change in availability of these resources today? (Please check off which were available and if availability of these resources has changed today)

Sarana/sumberdaya apa yang anda dapat manfaatkan sewaktu anda pertama kali tiba di Luwu? Agar diberi tanda jika sumberdaya/sarana tersebut sudah berubah? (Tidak ada atau tidak dapat lagi dimanfaatkan saat ini)

AVAILABLE UPON ARRIVAL KETERSEDIAAN SEWAKTU TIBA		TODAY SAAT INI		
		Better available <u>Bertambah</u> (1)	No change <u>Tetap</u> (2)	Less Available <u>Berkurang</u> (3)
Yes <u>Ya</u>	No <u>Tidak</u>			
a) Shelter Perumahan
b) Clean water Air bersih
c) Sufficient fuel Kayu bakar
d) Sewage Disposal Pembuangan air
e) Forest products Hasil hutan
f) Land Lahan pertanian

46. If any of these natural resources have become less, please check off the reason(s) why you think this is.

Kalau sumberdaya alam berikut ini menjadi semakin berkurang, agar dijelaskan kenapa hal ini bisa terjadi?

- a) Too many people using the same resources
Banyak orang bersamaan memakai sumberdaya tersebut
- b) Forest has been cut down too rapidly
Penebangan hutan berlangsung tak terkendali
- c) Too expensive to bring in
Sudah terlalu mahal untuk mengusahakannya
- d) Inadvertent pollution
Pencemaran lingkungan tak terbendung
- e) Other (please specify)
Lain-lain (agar dijelaskan)

47. Do you believe the environment around the Luwu area can sustain a growing population?

Apakah anda berkeyakinan bahwa sumberdaya alam di sekitar Luwu ini dapat menghidupi (mencukupi) kebutuhan penduduk yang semakin bertambah?

Yes No
Ya Tidak

48. If you were given 5 hectares of forest by the authorities, what would you do with it? (Check off)

Seandainya anda diberikan oleh pemerintah tanah hutan sebanyak lima hektar, kira-kira akan anda pergunakan untuk apa? (agar diberi tanda pada daftar berikut)

- a) Leave the trees alone
Biarkan pohon-pohonnya tumbuh dengan baik
- b) Cut trees to plant cash crops
Menebang hutan dan menanaminya dengan tanaman keras
- c) Cut trees to sell the wood
Menebang hutan untuk dijual kayunya
- d) Cut trees to plant food crops
Menebang hutan untuk berladang
- e) Other (please specify)
Lain-lain (agar dijelaskan)

48.1. Explain your choice(s)

Agar dijelaskan alasannya kenapa anda memilih jawaban tersebut

.....

49. If you were in charge of keeping the water within Luwu rivers clean, what are some of the things you would do? (Check off)

Jika seandainya anda berwenang untuk mengatur atau mengusahakan agar sungai-sungai di sekitar Luwu ini tetap bersih, kira-kira apa yang akan anda lakukan? (agar diberi tanda pada daftar berikut)

- a) Prevent dumping garbage into the river
Melarang orang membuang sampah di sungai
- b) Prevent large-scale alteration of river flow
Mencegah peperubahan sungai besar-besaran (akibat ulah manusia)
- c) Preserve the trees
Melestarikan pohon-pohonan yang ada
- d) Prevent use of pesticides
Melarang penggunaan pestisida
- e) Other (please specify)
Lain-lain (agar dijelaskan)

50. Do you understand what is meant by the following terms?

Apakah anda mengerti istilah-istilah berikut ini?

Yes

No

Ya

Tidak

a) Environmental degradation

Pengrusakan (pencemaran) lingkungan

.....

.....

b) Pollution

Polusi

.....

.....

c) Deforestation

Pengrusakan hutan

.....

.....

d) Soil erosion

Erosi (penggerusan tanah)

.....

.....

e) Shrinking biodiversity

Penciutan potensi sumberdaya kidup

.....

.....

f) Nature conservation

Konservasi alam

.....

.....

51. Do you have any questions for the interviewer?

Apakah ada sesuatu yang akan anda tanyakan kepada pewawancara?

.....
.....

END OF SURVEY

SEKIAN

IMPORTANT!

PENTING UNTUK DIPERHATIKAN!

QUESTIONS FOR THE INTERVIEWER, SEE NEXT PAGE

PERTANYAAN UNTUK PEWAWANCARA, LIHAT HALAMAN BERIKUT

FOR THE INTERVIEWER:

UNTUK PEWAWANCARA:

52. Who was present during the interview?

Siapa-siapa yang hadir pada saat wawancara berlangsung?

- a) Respondent's husband
Suami
- b) Children
Anak-anak
- c) Neighbours
Tetangga
- d) Others (please specify)
Lain-lain (agar dijelaskan)

53. Approximately how many bystanders were present during the interview?

Ada berapa orang yang berdiri menyaksikan pada saat sedang berlangsungnya wawancara?

54. How would you rank this respondent's answers being influenced from prompting by others? (Check one)

Bagaimana penilaian anda terhadap jawaban orang yang diwawancarai (responden) dikaitkan dengan kemungkinannya dipengaruhi atau diumpam oleh orang lain? (pilih salah satu)

- a) Extremely influenced
Sangat tergantung atas pengaruh (umpan) orang lain
- b) Very influenced
Sangat terpengaruh orang lain
- c) Somewhat influenced
Terpengaruh orang lain
- d) Very little influenced
Sedikit ada terpengaruh
- e) No influence at all
Tidak terpengaruh sama sekali

55. By comparison within this village, how would you rank the physical quality of the respondent's home? (Check one)

Dengan mengambil perbandingan kondisi rata-rata yang dapat disaksikan pada desa ini, bagaimana pendapat anda mengenai kualitas fisik rumah tangga ini? (pilih salah satu)

Affluent						Destitute
Makmur	.....	.....	.....	.....	.....	Miskin
	1	2	3	4	5	