Measurement of Absolute Poverty and Indicators of Poverty among Rural Households in Central Sulawesi, Indonesia

Diplomarbeit

vorgelegt von

Xenia Felice van Edig

aus

Frankfurt am Main

angefertigt

im Institut für Rurale Entwicklung

der Georg –August-Universität zu Göttingen

vorgelegt

im Institut für Geographie

der Georg –August-Universität zu Göttingen

2005

Abstract

Poverty is a widespread and pervasive problem in many parts of the world. Many development programs and projects focus on poverty reduction. A precise targeting of the poor is decisive for their success. Therefore, it seemed necessary to develop a tool or instrument which facilitates the process of selecting this target group, for example absolute poor households.

This study aimed to identify sets of indicators for poverty prediction in Central Sulawesi, Indonesia. Data was collected using two standardised, formal questionnaires from 281 randomly selected households. These questionnaires were a composite questionnaire measuring indicators of poverty and a benchmark questionnaire assessing the daily per capita expenditures. In the analysis two models with different initial sets of indicators and different types of regressions to generate optimal accuracy results were tested. In the first model (Model 1), all variables derived from the composite questionnaire could be possibly included in the model. In the second model (Model 7), only variables which were ranked as easy to verify were included. As to the regression models, ordinary least step regression as well as quantile regressions were used.

As a result from the descriptive data analysis it became clear that poverty is a severe problem in Central Sulawesi: 19.4% of the household were classified as poor regarding the international poverty line of 1 US $ (in purchasing power parities). Almost half of the population in the research area fall short of the international poverty line of 2 US$ (in purchasing power parity).

The econometric analysis showed that in order to develop low-cost, time-saving and easy-to-implement poverty assessment tools, the regression analysis presented in this thesis offers good possibilities of finding suitable indicators for poverty prediction in Central Sulawesi. When both models were compared in terms of their accuracy performance, a trade-off between accuracy and practicability was found. However, the model which includes only the variables which are easy to verify is more likely to be implemented from local organisations. The developed poverty assessment tools for this region could be instruments for the selection of a target group for local organisations whose aim it is to reduce poverty.

Thus the tested indicator-based poverty assessment tools can contribute to poverty reduction in terms of an easy identification of the poor.

Acknowledgments

I would like to express my appreciation to those who have contributed directly or indirectly to this work. I am grateful to Prof. Manfred Zeller, former director the Institute of Rural Development (IRD), for his supervision and support. I would also like to thank Prof. Gerold, Professor at the Institute of Geography for his assistance.

I would like to express my gratitude to all members of the IRD and STORMA project. I am particularly thankful to Dr. Stefan Schwarze for his support and assistance in Indonesia and Germany. Gabriela Alcaraz V. is acknowledged as well for providing with the computer programs.

I would also like to extend my appreciation to Nunung Nuryartono who translated my questionnaires into the local language “Bahasa Indonesia”. My Indonesian team namely Neta, Mina, Ucok, Masnun, Ade, Bahar, Adidano, Anshar, Niken, Yanti, Siadin, Agus, Kevin, Hudaya and Wida have been of tremendous help in the completion of this research work. Last but not least I wish to thank my family and friends for their moral support.

Table of contents

List of tables

List of Figures

List of Abbreviations

ADB: Asian Development Bank

A.s.l.: above sea level

BPAC: Balanced Poverty Accuracy Criterion

°C: Degree Celsius

CIA: Central Intelligence Agency

CGAP: Consulting Group to Assist the Poor

DCI: Direct Calorie Intake

FEI: Food Energy Intake

FGT: Foster-Greer-Thorbecke

FPL: Food Poverty Line

GDP: Gross Domestic Product

GNP: Gross National Product

Ha: hectare

IDR: Indonesian Rupiah

IFPRI: Institute for food policy research

ITCZ: Inner Tropical Convergence Zone

Km: kilometre

LSMS: Living Standard Measurement Study

M: meter

MDG: Millennium Development Goal

NGO: Non-Governmental Organisation

OLS: Ordinary Least Squares

OPL: Overall Poverty Line

P.: page

PAT: Poverty assessment tool

PIE: Poverty Incidence Error

PPP: Purchasing Power Parity

Pred. Pov. Incidence: Predicted Poverty Incidence

SUSENAS: Survei Sosial Ekonomi Nasional

UN: United Nation Organisation

UNDP: United Nations Development Program

Chapter 1. Introduction

Poverty is a widespread and pervasive problem in many parts of the world. Many development programs and projects focus on poverty reduction, and a range of policies seek to directly target the poor with services, such as credit, extension, education, or with transfers in cash or in-kind. A precise targeting of the poor is decisive for their success. Hence a project or program that seeks to reduce poverty in a certain area has to find out who belong to the target population, i.e. who are the poor. Therefore, it is necessary to have a tool or instrument which facilitates the process of selecting this target group, for example absolute poor households.

Since it is difficult to find out whether a household is poor or not the IRIS[1] centre at the University of Maryland in collaboration with the Institute of Rural Development, University of Göttingen has embarked on an undertaking of developing and testing different poverty assessment tools, which should meet the needs of projects especially those dealing with micro enterprises. Some of these tools, more precisely two very promising types of regression models were tested in Central Sulawesi outside the 'official' study of IRIS centre. The aim was to test these regression models in another region of the world and also to test them with a smaller sample size. Instead of using 800 households per country, this research only employs data from 281 households.

The field-survey for gathering the empirical data was undertaken in the frame of STORMA. STORMA is an interdisciplinary Research Program on Stability of Rainforest Margins, which is funded by the German Scientific Council (Deutsche Forschungsgemeinschaft, DFG). Its aim is to study the process of changing land use systems, the increase of land used for farming and how these threatens the integrity of Lore Lindu National Park. In other words the identification of processes of destabilisation and the determination of factors for stabilisation are the research objectives of STORMA. Scientists from two German universities (namely Georg-August-Universität Göttingen and Universität Kassel) and two Indonesian universities (Universitas Tadulako Palu and Institut Pertanian Bogor) jointly undertake the program. Beside its concentration on scientific research, STORMA seeks to provide policy relevant information to various decision makers (Zeller et al. 2002). The research on absolute poverty was undertaken within sub-project A4 which focuses on the economic analysis of land use systems of rural households.

[1] IRIS is a research and advisory centre at the Department of Economics, University of Maryland

Since poverty still remains a severe problem in the region and the conversion of forestland into agricultural land use is still going on, the reduction of environmental degradation as well as the improvement of people's livelihood through rural development should be the important goals for poverty reduction strategies of future development programs and projects in the region. It is therefore particularly important that local NGOs (non governmental organisations) have applicable, cheap and time saving tools for poverty assessment in Central Sulawesi.

This thesis has therefore the objectives to measure and assess absolute poverty and to define suitable indicators of absolute poverty among rural household in Central Sulawesi, Indonesia. For the purpose of clarifying these objectives, this study tries to answer the following research questions:

➔ What is the extent and depth of absolute poverty among rural household in the vicinity of Lore Lindu National Park, Central Sulawesi, Indonesia?

➔ What is the optimal set of indicators for predicting absolute poverty in terms of accuracy?

➔ Which conclusions can be drawn for developing practical assessment tools in Central Sulawesi?

The developed tool for poverty assessment takes into consideration the absolute concept of poverty, which is discussed in more detail in Chapter 2. The regression models help to find a set of 15 indicators, which can predict whether a household belongs to the absolute poor or not. For this reason the tool presented is an indicator-based approach for assessing absolute poverty.

The outline of the thesis is as follows: First a short introduction about the research background is given. The second chapter focuses on a literature review on definition the of the term poverty, on poverty measurement and poverty assessment. The third part of this thesis gives an introduction about Indonesia, Central Sulawesi and the research area in the vicinity of the Lore Lindu National Park, with special emphasis on poverty and rural development. How poverty is measured in Indonesia is a major question of chapter three. Chapter four gives an overview on the survey undertaken and its methodology as well as the contents of the questionnaires. Chapter five presents the methods to identify suitable poverty indicators. In chapter six, the regression models and their results are shown. In chapter seven the results are summarized and conclusions are drawn.

Chapter 2. Literature review

This chapter provides a literature review on the concept of poverty, the definition of poverty, poverty measurement and poverty assessment. It provides definitions about terms that are used in later quantitative analysis. The chapter is structured into 4 parts.

2.1 The concept of poverty

The poverty of a large part of the world's population is one of the biggest problems in our time (Witt 1998). Since the beginning of the 1990s, more attention has been drawn on combating poverty than before (Aho et al. 1998). Hence, poverty reduction has been a main goal of development policies, programs and projects (Zeller et al. 2001) and it has become a major concern of governments and donors (Aho et al 1998). This target is also defined in the Millennium Development Goals (MDG) of the United Nations. The eight MDGs are: "eradicate extreme poverty and hunger, achieve universal primary education, promote gender equality and empower women, reduce child mortality, improve maternal health, combat HIV/AIDS, malaria, and other diseases, ensure environmental sustainability, develop a global partnership for development. (…) The first Millennium Development Goal calls for halving the proportion of people living in extreme poverty – and those suffering from hunger – between 1990 and 2015" (World Bank 2005). Furthermore the Asian Development Bank (ADB) sees the reduction of poverty in its borrowing countries as an overarching goal (David 2000).

To alleviate poverty, it has to be defined who are the poor and how to measure poverty. Poverty is a multidimensional phenomenon (Witt 1998, Hebel 2004). An overall valid poverty theory do neither exists in economic science nor in social science (Hatzius et al. 1994). Consequently, there is no uniform definition of the term poverty in the literature, but a kind of "agreement" that poor people have to live a degrading life (Schubert 1994). Nevertheless, due to the various dimensions of poverty, it is primarily important to clarify the term poverty.

First of all poverty is related to a lack of something, for example of resources, money or social aspects. This lack can be differentiated in absolute, relative, subjective and objective approaches (Eichler 2001). The subjective or utility perspective on poverty focuses on how persons or groups consider themselves poor or deprived. Methods like the Participatory Poverty Appraisal refer to this approach. Concepts as poverty lines and basic needs belong to

the objective or welfare perspective on poverty (Lok 1995). The differences between the relative and the absolute definition of poverty are discussed in Chapter 2.2.

Generally, poverty can be seen as an insufficient realisation of the objectives of a human being concerning his or her ability to live, i.e. sustainment and way of life, in other words a deficient satisfaction of needs (Hatzius et al. 1994).

According to Witt (1998) two main criteria of poverty can be distinguished: On the one hand the lack of ability to fulfil the basic needs of a person and on the other hand the lack of resources a person has access to. Thus concepts of poverty mostly focus either on the utilisation of goods or on the supply with goods (Hatzius et al. 1994). Moreover, poverty has social as well as economic aspects. The economic aspect can influence decisions regarding consumption or whether to save money resulting to a reduction in the possibility of investing in any kind of capital (Witt 1998).

Thus, "poverty refers to forms of economic, social and psychological deprivation among people (…)" (Ahmed 2004, p.1). The reason can be a lack of ownership or access to resources. The term deprivation is mostly used in sociology and psychology. This deprivation can be seen absolutely in the way rural poverty in developing countries is often understood. The aspects of this deprivation could be:

- Insufficient access to productive resources like land
- Low income level
- Unemployment
- Under-nourishment
- Insufficient supply with education and health services

(Hatzius et al. 1994). Deprivation can also be seen under a relative perspective which is not further pointed out here, because the emphasis of this thesis lies on absolute poverty.

Dimensions as income, consumption, nutrition, health, education, housing, etc. have to be considered in the concept of poverty (Ahmed 2004). To incorporate also such dimension of poverty, the composite questionnaire, including indicators of several dimensions of poverty, was implemented for the survey in Central Sulawesi (see also Chapter 4.4.1).

Poverty can also be seen as a "(…) violation of peoples most basic rights." (Simmons 1995, p. 6) Such basic rights could be "a home, (…), enough to eat, (…), equality of opportunity, an

education, health care" (Simmons 1995, p.5) etc. Furthermore, very direct problems like hunger or sickness can result from poverty (Witt 1998).

In reality the individual human being itself is affected by poverty, but nonetheless poverty is mostly measured in aggregates of individuals like at the household or family level (Hatzius et al. 1994). In the study conducted in Central Sulawesi, the aggregation level for poverty measurement was the household level.

Altogether, poverty can be described as a "(…) state of long-term deprivation of well being, a situation considered inadequate for a decent life. Poverty is thus synonymous with lack" (Larivière et al. 1998, p.15). In any case, poor people do not attain a certain standard of living. Therefore, it is important to measure the household opportunity for consumption (Ravallion 1992).

2.2 Definition of poverty

In an economic way, the term poverty can be described as a situation where people cannot achieve a minimum living standard. Therefore, what is the minimum living standard has to be defined (Witt 1998). It has to be asked on which level of welfare (well-being) is a person not poor. For the measurement of well-being different conceptual approaches are used. For example household income or household consumption can be used as measures. In developing countries poverty comparison pays high attention to nutritional attainments (Ravallion 1992).

In general, two alternative poverty concepts can be differentiated:

2.1.1 Absolute poverty

The concept of absolute poverty is the concept which builds the basis for the poverty assessment in this thesis.

In the concept of absolute poverty the minimum living standard of an individual is measured by its existence minimum. This can be done in two different ways on the one hand in a direct way, with different material criteria of subsistence a human has to afford and on the other hand in an indirect way by defining a minimum income value, which meets the needs of a decent life (Schubert 1994, Boltvinik undated). For the subsistence criteria method Schubert (1994) has listed 'hard' material basic needs like:

- Nutrition: Food should be enough, balanced and around 2350 kcal per day
- Health: Health services should combat widespread diseases. Beside mother and children health care, nutrition and hygienic advisement should be provided
- Dwelling: The dwelling should provide a permanent shelter against climatic and other influences
- Drinking water: Clean drinking water should be available within 200m in urban areas and not too time-costly in rural areas.

According to this concept, an individual is only poor if there is no guaranty for one or more of these criteria to be met. These criteria can be seen as average requirements and are therefore only useable as an orientation concerning the poverty line.

Less easy to fix are the immaterial or 'soft' basic needs. Schubert (1994) has listed such a standard only for education:

- Basic Education: Basic education should be functional, flexible and cheap and children, youth and adults should be given the opportunity of education.

One reason why other immaterial basic needs are not defined is because of the different value systems in different societies.

Not provided basic needs as an existential threat without any relation parameter can doubtless be seen as absolute poverty. Nonetheless, some problems occur while implementing this concept concerning the definition of a poverty line. Neither the goods, which guarantee physical or biological subsistence, nor the quantities that provide a sufficient supply, are definable without considering the social environment and the value system within a society (Hatzius et al. 1994). Thus the level of household's welfare which is chosen to be the threshold for poverty is simply a social convention (Pradhan et al. 2000).

For the minimum income value, a 'basket' of goods and services can be defined as those goods, which are considered as necessary to live. People who do not have all these goods are considered as absolutely poor (Witt 1998). In other words, people who do not have enough income to buy all these goods and services from the basket are seen as poor (Schubert 1994). Hence in the basic needs approach the necessary goods and services which meet private minimum demand as well as the essential services like clean drinking water, health services, schools etc. are listed, but often the basket of basic needs only meets the economic dimension of poverty (Hatzius et al. 1994). Problems with this method can exist with the cultural value

level. Goods which are considered as necessary for physical existence, might be considered differently in different societies. Beside measuring primary poverty in terms of the necessary goods and services, the basket should also cover the so called secondary poverty which represents the cost of participating in the 'normal' life within a society, and this cost can be of course very different, too. The valuation of the components of the basket is done through prices. Distortions occur when the prices do not reflect the real relations in shortage of goods. It is also a problem to define representative goods and services. Additionally, the preferences of consumption change in time and evaluating a new 'basket' is always costly. The basket of basic needs method has also some other difficulties: the subsistence criteria are chosen arbitrarily and the weight of the different criteria is not clearly defined (Schubert 1994).

Another method of defining a minimum income value is to define a certain per capita national product as benchmark, which is likely to cover all costs for basic needs. With such an exogenous method the arbitrariness and the possibility of over valuing physical basic needs are high, because the costs for social and cultural basic needs are often not monetarily measurable (Schubert 1994).

A different possibility to define income-orientated absolute poverty lines is the expenditure ratio of the income. If an individual spends, for example, more than a third of his or her total income on food, then this person is deemed poor (Schubert 1994).

The term 'absolute' denote that people are identified as poor in relation to a defined scale, for example the basket of goods and services, and not in relation to other people's situation, as done in the relative concept of poverty (see Chapter 2.1.2).

Further absolute poverty can be subdivided in a narrow and in a broader sense. Primary absolute poverty, i.e. the narrow sense of absolute poverty, only includes the physical ability to survive. Social as well as cultural dimensions are included in the so-called broader sense of absolute poverty which is also termed secondary absolute poverty (Schubert 1994, Witt 1998).

The most important issue of measuring poverty in an absolute way is defining an existence minimum or minimum standard of basic needs *ex ante* (Witt 1998).

Altogether, "(…) absolute-poverty (is an) approach which identifies a certain number of basic needs that must be completely satisfied in order for people not to be found poor: food, clothing, housing, etc. It is claimed that that these needs are the same everywhere, even if the

way in which they are satisfied varies from one county to another according to climate, the culture and the economic situation" (Larivière et al. 1998, p. 16).

In the concept of absolute poverty, poverty does not vary with the overall living standards. This is especially relevant for the low-income countries (Ravallion 1992).

Poverty can also be seen as an existentially emergency situation. This perspective deals with the physical existence minimum. It connotes that physical maintenance is not guaranteed in the long run. This view on poverty deals with a very direct meaning of absolute poverty. Such an approach is only useful for the identification of those who need the most in emergency situations like environmental catastrophes or wars (Hatzius et al. 1994).

2.1.2 Relative poverty

Since the emphasis of this study is on the assessment of absolute poverty, the term 'relative poverty' is only explained in a short form.

The concept of relative poverty defines the situation of an individual or the situation of a group of persons in relation to the average living standard of the society they live in. Here the focus lies on the economic inequality within a population. In theory relative poverty is only eliminated if there is a total equal distribution within a society (Witt 1998). Here a differentiation between subjective relative poverty and objective relative poverty can be made. Subjective relative poverty can be measured by interviews on how a person ranks herself in relation to others. It is rather difficult to interpret the results. For the measurement of objective relative poverty, subsistence criteria, income related methods or combined methods are used. For example, objective relative poverty measures the extent to which a household 's financial resources falls below an average income threshold for an economy. The measurement of relative poverty always needs a reference person, group or country. Here the problem exists that neither the reference person or persons nor the critical values for the delimitation of the allowance of differences within a society can be defined without certain value judgements. Most of the critical values deal with income or capital related thresholds. For example the bottom quantile of the income distribution or an income less than 40% of the average income of the society could be such a critical value. Another possibility is to refer to disparity measures on the income distribution in a country. For these measures the Gini-Coefficient and the Lorenz Curve are quite important (Schubert 1994).

One important tool to measure relative poverty is the

Human Development Indicator (HDI)

This indicator was developed by the United Nation Development Program (UNDP). The combination of subsistence and income criteria should provide information about the relative poverty of different countries expressed through a single value. The base for the HDI is a humane life referring to the different opportunities for deeds of a human being. Three options are especially important: (Schubert 1994, World Bank, 2005a)

- Long healthy life
- Knowledge and the possibility to gain more knowledge
- Decent standard of living

To measure these three important aspects of HDI the variables

- live expectancy at birth
- percentage of illiterate adults
- per capita income (GDP per capita in PPP US$)

are used. The HDI measures the relative 'distance' from the country values to the best-achieved values worldwide. These distances are aggregated to one HDI value. The biggest problem of the HDI is how to weight the different part indicators. Also for the definition of a critical HDI value, clear and objective criteria are missing (Schubert 1994).

Indonesia is ranked in the medium category of this index. The value is > 0.5 and < 0.8. The higher the value of the Index the better is the wealth status of a country (World Bank 2005a).

In industrialized countries it is more common to use the concept of relative poverty. Here mostly also the poor people have enough resources to survive. In these countries poverty is mostly a problem of distribution. In developing countries the concept of absolute poverty is more relevant (Witt 1998).

Both absolute and relative concepts of poverty definition can be seen on a microeconomic and on a macroeconomic level. The microeconomic level deals with individuals or households, who cannot satisfy their basic needs or not enough in relation to other persons. The macroeconomic level deals on the country level, so it means that the 'average person' of a country lives below the existence minimum, or in relation to others, not enough above it (Schubert 1994).

2.2. Measurement of poverty

As been mentioned in Chapter 2.1, there is no totally valid and value free guideline on how to measure poverty (Schubert 1994). One reason for poverty measurement can be poverty comparison, either in qualitative and quantitative aspects (Ravallion 1992). In the following, different tools of poverty measurement are presented. Primarily, the Foster-Greer-Thorbecke measurements of poverty are presented. Moreover, the concepts of poverty lines and poverty indicators are presented as crucial components of the study accomplished. Additionally, the poverty profiles method is presented to complete the picture of instruments for poverty measurement.

2.2.1 Foster-Greer-Thorbecke (FGT) measurements

The most popular measurements of poverty, which are often used, are the so-called Foster-Greer-Thorbecke (FGT) poverty indices (Ebert et al. 2000).

Foster et al. (1984) developed the following decomposable poverty indices:

Headcount Index

One of these indices is widely known as the headcount index (Ahmed 2004). The headcount index H is a measure of the prevalence of poverty.

H = q/n = proportion of the total population deemed to be poor

H is "given by the proportion of the population from whom consumption (or another suitable measure of living standard) y is less then the poverty line z. Suppose q are the poor in this definition in a population of size n" (Ravallion 1992, p. 36).

Thus the headcount index shows the percentage of the population below a certain threshold, and the poverty line respectively (Lok 1995).

For some purposes the headcount index is a good measurement. It is definitely easy to understand and therefore also easy to communicate. According to Ravallion it is better to use at least two poverty lines, for example an absolute and a relative one.

According to A. Sen (1976) there are two axioms violated by the headcount ratio:

"Monotonicity axiom: Given other things, a reduction in income of a person below the poverty line must increase the poverty measure.

Transfer axiom: Given other things, a pure reduction in income of a person below the poverty line to anyone who is richer must increase the poverty lines" (p. 219). Starting from this critique Sen has developed the first axiomatic valid tool to measure poverty.

Headcount ratios for Indonesia and Central Sulawesi are presented in Chapter 3.1.2. In Chapter 4.5 headcount ratios for the districts in the research area are displayed.

Poverty Gap Index

The poverty gap index PG is a measure of the depth of poverty (Ravallion 1992). The poverty gap refers to amount of income that would be necessary to be transferred to the poor, who are living below the poverty line, to attain the income level that would bring them up to the poverty line (Schubert 1994). In other words, the poverty gap index is based on aggregate poverty deficit of the poor relative to the poverty lines. Therefore, it depends on the distance of the poor below the poverty line (Ravallion 1992). In other words it "measures the degree to which the mean income of the poor differs from the established poverty line" (Lok 1995, p. 11).

For the purpose calculation the consumptions are arranged in an ascending order: the poorest has Y_1, the next poorest has Y_2 and the least poorest has Y_q (which is by definition not greater then the poverty line.), z is the poverty line.

$$PG = \frac{1}{n} \sum_{i=1}^{q} \left[\frac{z - Y_i}{z} \right]$$ = Mean proportionate poverty gap across the whole population; zero gap is assumed for the non-poor

(Ravallion 1992)

"PG also has an interpretation as an indicator of the potential for eliminating poverty by targeting transfer to the poor." (Ravallion 1992, p.37). PG does not capture any differences in severity of poverty (Ravallion 1992).

Sen (1976) criticises that the poverty gap ratio is violating the transfer axiom, even if it satisfies the monotonicity axiom.

Poverty gap ratios for Indonesia and Central Sulawesi are presented in Chapter 3.1.2.

Foster-Greer-Thorbecke P_2 Measure

The FGT P_2 measure seeks to indicate the severity of poverty (Ravallion 1992).

" (…) The poverty gaps of the poor are weighted by those poverty gaps in assessing aggregate poverty." (Ravallion 1992 p. 38-39) It "captures differences in income between the poor." Thus it is a distributional sensitive measure (Lok 1995, p.11).

$$PG = \frac{1}{n} \sum_{i=1}^{q} \left[\frac{z - Y_i}{[z]} \right]^2 = \text{Mean of the squared proportionate poverty gaps}$$

P_2 is a good measurement to compare policies that are aimed to reach the poorest. A disadvantage of this measure is that it is not easy to interpret.

Real incomes are the basis for measurement. However, the difficulty of real incomes is that they sometimes do not include the non-market and subsistence income (Lok 1995). These indices need poverty lines for their computation (Ahmed 2004).

2.2.1. Poverty lines

Poverty lines are lines dividing the poor from the non-poor. To draw a poverty line, physical as well as social-cultural basic needs have to be defined very precisely. Poverty lines were also used in the very early attempts to measure poverty since the end of the 19th century (Schubert 1994).

The poverty lines often build the basis to measure poverty (Ahmed 2004). There are different ways to fix a poverty line and as Ravallion (1992) says: "poverty lines exist, but views differ on their location." (p. 25)

Again absolute poverty lines can be distinguished from relative poverty lines (Ravallion 1998). Due to the aforementioned emphasis of this thesis, the focus will be on the absolute poverty lines.

Aabsolute poverty lines are fixed in terms of the living standard indicators they use as well as over the entire domain of the poverty measurement or comparison. One has to be aware that poverty lines can change between countries or between urban and rural areas (Ravallion 1992).

"The most common approach in defining an absolute poverty line is to estimate the costs of a bundle of goods deemed to assure that basic consumption needs are met in the specific domain (…)"(Ravallion 1992, p. 26). As mentioned previously the definition of basic needs is quite difficult due to the different value systems.

In developing countries the component, which generally seen to be the most important, are the food expenditures for a recommended food energy intake. But of course additional non-food goods are also very important (Ravallion1992).

The poverty line can be estimated with three methods as done by Ahmed 2004 in Bangladesh. These three methods are the Direct Calorie Intake method (DCI), the Food Energy Intake method (FEI) and the Cost of Basic Needs method (CBN). In practice a certain amount of arbitrariness is unavoidable in defining any poverty line (Ravallion 1992).

Direct calorie intake method (DCI)

With this measure poor households are defined as poor, if their per capita energy intake is less than the standard per capita requirement of energy. It is concluded that the DCI results in a consistent poverty line in the way that it reflects the same nutrient intake (Ahmed 2004). Therefore, any household whose calculated kilocalorie intake per capita is less than a predetermined threshold (2112 for urban and 2122 for rural areas when using Bangladesh as an example following David 2000) is considered poor. All the members of a poor household are counted as poor (David 2000). A weakness of this simple and easy to implement tool is that it only measures under-nourishment and not poverty as a multidimensional phenomenon (Ahmed 2004, David 2000).

Food energy intake method (FEI)

This method sets the poverty line at the income or consumption level where the basic needs are met. Here the poverty line is estimated on the basis of the relation between food energy intake and expenditures for consumption (Ahmed 2004). More precise, the “daily per capita kcal intake (x) and monthly per capita expenditure (y) are calculated from each sample household. A simple linear regression at the natural log of y on x, ln = a + bx + r, with r as residual is fitted to the household values. The poverty line is estimated by substituting 2112 or 2122 kcal in place of x in the fitted equation. Households or more precise members of households whose monthly per capita expenditures are less than the estimated poverty line are considered poor.” (David 2000, p. 4). In this poverty line non-food items are also included as long as the total expenditures for consumption are taken as reference (Ravallion 1992). When it is converted into expenditures levels, inconsistency problems can occur due to different preferences for calorie sources, which differ with price levels and market conditions (Ahmed 2004).

An advantage of the method is that there is no need to adjust the poverty line for inflation. In a way it also considers local tastes and prices. The disadvantage lies on the other hand on the different consumption behaviour Ravallion (1992) concludes that this method is fine for setting a single poverty line. A problem is that it varies a lot between regions, sectors and times. Different tastes, activity levels, relative prices, public provided goods etc can also influence the shift of this kind of poverty line.

Cost of basic needs method CBN

The CBN method was introduced in the 1990s. Computing the costs of a food and non-food basket establishes the poverty line, so that the predetermined requirements concerning the nutrition but also the basic non-food consumption are included (Ahmed 2004). David describes the method as follows: "A food bundle is chosen on actual consumption pattern, e.g. from a consumption or expenditure survey. The bundle values F_1, F_2 … F_n are expressed as per capita quantities that collectively provide 2122[1] per day. The unit price of these food items are not used directly to estimate the food poverty line, but are first adjusted through regressions, controlling for total consumption, education and occupation in such a manner that the resulting prices P_1 P_2 … P_n are supposed to represent the prices paid by the poor. The food poverty line is F_1 P_1 + F_2P_2 + …+ F_nP_n. (…) The next step is to compute a cost of non-food basic needs which when added to the corresponding food poverty line gives a (total) poverty line" (David 2002, p.4). The non-food components generally are estimated through regressions or non-parametric techniques (David 2002). The CBN method is consistent in terms of an assumed living standard. For this method more data is required than for the DCI and FEI methods. Possible problems could occur with the welfare maximizing behaviour of the consumer. Another problem could be that a fixed consumption bundle might not be representative for the poor. Also the consumption between urban and rural areas differs and this difference is not taken into consideration (Ahmed 2004).

Altogether poverty lines are mostly "established by costing minimum basket of goods for basic human survival, using consumption/expenditures data of non-poor households" (Lok 1995, p. 10).

In the accomplished study three different poverty lines were used. These were the international poverty lines of 1US$ and 2US$ in purchasing power parities (PPP) and the

1 here for Bangladesh

national poverty line for Indonesia. Poverty incidences in Indonesia and Central Sulawesi referring to these three poverty lines are presented in Chapter 3.1.2 and 4.5.

Beside poverty lines there are also other important instruments for poverty measurement that exists:

2.2.2. Indicators of poverty

Indicators of poverty should – as the word indicator suggests - indicate about a person's or households' level of living standard or income and about the social conditions of the poor. Similar to poverty profiles (see 2.2.3), poverty indicators were developed later than poverty lines to measure poverty and then combining basic needs and income related measures (Schubert 1994). Poverty indicators can be a constitutive part of poverty reduction strategies. They try to measure poverty as a multidimensional phenomenon. The indicators vary between the subjective and objective perspective on poverty, while they often have the same scale in the relative and absolute approach (Lok 1995). Beside monetary indicators, also indicators like 'being single parent', 'being disabled' or 'being dependent on public transfers' etc can be objective. A subjective indicator would be 'feeling powerless". Poverty indicators face difficulties in differentiating chronic from temporary poverty.

Because poverty can be seen as an extreme form of underdevelopment, some indicators for poverty measurement can be the same as development indicators. This is especially valid for social indicators like 'access to basic social services' or 'child mortality rates'. Sometimes indicators of vulnerability are used as proxies for poverty indicators. Here it is very important to consider the degree of correlation. Even if both poverty and vulnerability are often related, they are not the same. Poverty is related to deprivation, while vulnerability is a "function of external risk, shocks, stresses or defencelessness (…)" (Lok 1995, p. 9). When choosing poverty indicators the prevalence of poverty is also important. Indicators are different for local poverty and poverty a widespread phenomenon across a country (Lok 1995).

Of course it is impossible to capture all multiple the facets of poverty via poverty indicators at the same time. For this reason their outreach depends on their underlying assumptions.

Income or expenditure-related indicators as per capita income, wage for unskilled labour, income at the poverty line etc. can be powerful indicators, as also argued in Chapter 4.4 and Chapter 6.

(Schubert 1994). For income related measures, real income is used. The remaining problem is that they often do not consider income from subsistence or non-market income. Other problems with income related indicators are that they neither account for free public services or goods nor for distribution. Also consumption pattern can change for different reasons. This is especially problematic for the 'basket of basic needs'. The Gross National Product per capita measures harbours also a lot of disadvantages (Lok 1995), which are not further discussed here.

In contrast, social indicators measure goods and services in terms of human welfare. They add a qualitative dimension to the income measures. With the social indicators, two types of indictors can be distinguished: the basic need ones (like nutritional indicators) and the ones related to quality of life (like mortality).

Income indicators as well as social indicator assume homogeneity within households. But often there are huge intra-household differences. To deal with these problems conventional indicators have to be disaggregated, for example by gender. Another general problem of poverty indicators is the fact that the cheaper they are, the less accurate they are. This can also be observed in the study conducted in Indonesia (see Chapter 6). In developing countries the data availability and reliability is always a problem (Ravallion 1992). Further, a big problem of the poverty indicators is how to weight the different part indicators (Schubert 1994, Lok 1995).

Beside social and income related indicators, which are used most often, there some other types of indicators. Mixed indices that combine different aspects like it is done in the composite questionnaire (see Chapter 4.4.1) are often used for international comparison. So called process indicators refer mainly to structural inequalities. Proxy indicators, like presence or absence of health services instead of maternal health mortality are mostly used because appropriate data on more precise indicators is lacking (Schubert 1994, Lok 1995).

In Chapter 4.5 different indicators of poverty related to the diverse dimensions of poverty in Central Sulawesi are presented.

2.2.3 Poverty profiles

Poverty profiles define the characteristics of the poor. They can be seen as a combination of subsistence and income related measurements. Such a profile should draw a quantitative and qualitative picture of the poor. These should be imbedded in an economic, institutional and

social framework (Schubert 1994). According to Ravallion et al. (1994) “a poverty profile shows how a measure of poverty varies across subgroups of a population, such as region of residence or sector of employment” (p.75). Thus, poverty profiles can be seen as analytical tools. They should provide information to the questions: who are the poor? where do they live? what are the main characteristics of their poverty? and why are they poor? Poverty profiles give the possibility to analyse certain sub-groups within a society. Service records, field surveys and policy analysis are the data sources. Such profiles can give a snapshot of the poverty situation in a country, but also can indicate poverty trends. Therefore, poverty profiles provide information about the extent, depth and severity of poverty. Hence, they can be guides for poverty assessment as well as for poverty reduction strategies. Poverty maps are one part of poverty profiles (Lok-Dessalien, undated). For Indonesia, Suryahdi et al. (2003) started to develop a poverty map.

For the construction of poverty profiles the definition of the national poverty line is important, which is in most countries income-related. Three main working steps can be distinguished: analysing information on poverty and disaggregating the data, e.g. by gender, determining short and long-term poverty trends and linking this information to the economic, institutional and social frame conditions. Information for constructing a poverty profile should be both qualitative and quantitative with respect to income and consumption characteristics of the poor, indicators of their human capability, their access to public services, their assets and employment characteristics, the housing indicators of the poor, the information whether they have access to credit, their natural resource environment and their participation opportunities. Altogether poverty profiles should contribute to build national capacity in terms of handling poverty (Lok-Dessalien, undated).

The results displayed in Chapter 4.5 which are pointing out characteristics of poor households in Central Sulawesi could be taken as a starting point for creating a poverty profile. Additional, secondary data from different source like NGOs or statistical offices etc. Would be needed.

These three tools (poverty lines, indicators of poverty and poverty profiles) can be used to get a snapshot of individuals, groups or countries and furthermore they enable researchers to draw relations between groups or countries or through the time (Schubert 1994).

Also time can play an important role in the measurement of poverty. It can make a great difference to an individual, if he or she is poor only for a limited period of time or if he or she faces poverty chronically (Witt 1998).

2.3 Assessment of poverty

With poverty assessment methodological and conceptual uncertainties have to be faced (Ravallion 1992). Zeller et al. (2001) enumerate three general approaches of assessing poverty. First they describe the "construction of a poverty line and (the) computation of various measures that take into account the way in which household expenditures fall short of the poverty line" (p. 3). Here the practice is to use total household expenditures as measure to evaluate its living standard. The criterion used is, whether the household income is sufficient to meet food and other basic needs. The aforementioned 'basket of basic needs' or monetary poverty line is applied. This "basket of foods and services corresponding with the local consumption pattern and satisfying a pre-set level of basic needs for one person is constructed and ranked at local consumer prices to compute its minimum costs" (Zeller et al. 2001, p. 3-4). The value of this basket represents the poverty line, mostly presented as daily per capita expenditure. This method of poverty assessment is widely accepted to measure poverty. According to Zeller et al (2001) the disadvantages of this method are the steep data requirements and the problems occurring with the recall method for food and non-food expenditures as well as the verifiability of the expenditure data. Other problems can be the valuation of home produced food, especially if market prices are lacking and also the difficulty of getting high value items like the costs for housing. Moreover, the analysis of expenditure data requires advanced skills in statistics. The Living Standard Measurement Survey of the World Bank is one of the most common examples of this kind of assessment and is going to be presented at the end of this section.

As second group of approaches to assess poverty Zeller et al. (2001) list the Rapid Appraisal (RA) and the Participatory Appraisal (PA), which both seek input from community members. RA and PA are subjective and relative proceedings: people rank their status in relation to other community members. Both appraisals are using techniques like 'wealth ranking' and 'community mapping` for their data collection. While PA has the objective of the empowerment of the target group, RA wants to provide data about a community in a relative short time. Both approaches need the participation of the community members, but have very

different time requirements. The Participatory Appraisal as well as the Rapid Appraisal has a high value in identifying vulnerable groups within a community. For a general poverty assessment for a region, a nation or for international comparison, they are not really applicable, not only because the subjective rating of the community members are not easy to verify, but also because of the costly fact of the survey that it necessitates a very skilled communicator.

The third type of poverty assessment discussed by Zeller et al. (2001) is "the construction of a poverty index using a range of qualitative and quantitative indicators" (p. 3). These indicators should describe the different dimensions of poverty. With such a tool, credible information can be obtained quickly and inexpensively. Examples of these indicator-based poverty assessments are the HDI (see 2.1.2) and the Housing Index. For the latter, indicators like 'condition of roof' are obtained. Regarding this Index, a point of critique is that it captures only one dimension of poverty. In general, the main problem of these indicator-based tools is the arbitrariness of weighting the different indicators. The Poverty Assessment Tool (PAT), a tool to assess relative poverty, using Principal Component Analysis (PCA) developed by Zeller et al. at the International Food Policy Institute (IFPR) in cooperation with the Consultative Group to Assist the Poor (CGAP) is based on the third approach.

In the current study, a tool is tested, which is based on the first approach for defining and measuring poverty. This, the definition whether a household is poor or not follows the approach of taking the daily per capita expenditures of the household members as benchmark. Furthermore, the new tool seeks for indictors that can assess whether a household falls below pre-set threshold, here the international poverty line. How this was done and which indicators were the most appropriate to assess poverty in Central Sulawesi is described in Chapters 5 and 6.

Living Standard Measurement Study of the World Bank and direct measurement of expenditures

What follows is a presentation of the method that refers to the first approach discussed above. Furthermore, it is important to mention that the benchmark questionnaire (Chapter 4.4.2) of the study conducted in Indonesia was based on the Living Standard Measurement Studies.

The Living Standard Measurement Studies (LSMS) of the World Bank were launched in 1980. In a typical LSMS country study about 1,600 to 3,200 households are interviewed. The LSMS are large-scale surveys with the aim to satisfy the data requirements of decision makers

and to monitor and evaluate the impact of development policies. The LSMS contain four multidisciplinary questionnaires, which cover different aspects of well-being. These four questionnaires are a household questionnaire, a community questionnaire, a price questionnaire and an optional questionnaire on education and health. With the data gathered it is possible to draw a general picture of the household situation and behaviour, so that the household living standard can be monitored and evaluated. The household questionnaire gathers detailed household information including information on monetary spending, values of food, gifts, passions and durable goods. Particular attention is drawn on consumption, but also income data is important. On the individual, level information on wages, other remunerations and employment characteristics are collected. On the household level, information about agriculture and non-agriculture activities and therefore income information are gathered, as well as about transfers. Within this questionnaire household variables like education, health care, fertility and migration are also asked for (Larievière et al. 1998a).

As aforementioned, in addition to the household questionnaire there, is a community questionnaire, a price questionnaire and an optional questionnaire on health and education. The context of these questionnaires is not further stressed out here. The household and other data gained with this kind of survey are essential for policy-decisions. The purpose of the LSMS is to "collect information to describe poverty and monitor it over time" (Grosh et al. 2000, p. 30). In other words, its aim is the measurement of living standards in developing countries, especially those of the poor. Therefore, LSMS have a high need of data on many aspects of living standards. The analysis of this data therefore, needs also more sophisticated models than descriptive statistics. In general, the mathematical background of LSMS is the statistical theory from the 1920s.

Even, if the samples of the LSMS are relatively small they seek to be national representative due to many control procedures, which guarantee a high quality of data. The interviewer training is quite extensive, lasting about one month. It is suggested that one supervisor controls every two or three interviewers. Beside the direct control of the questionnaires after the interviews, the supervisor has the task of visiting about 25% of the households again and checking the accuracy of the interviews. Furthermore he or she has to attend to some of the interviews personally. The interviewees themselves are not asked at once, but several small interview sessions are conducted. The data is entered directly after the interviews, so that the interviewer can get back to the household, if the data entry program finds an error (Grosh et al.2000).

The household questionnaire, where some parts are used for the survey accomplished in Indonesia, contains a so-called *essential core* and some additional modules. First a household roster collects basic information about all household members like age, sex, nationality, relation to household head, material status etc. Furthermore, detailed information about the household's consumption expenditures are gathered, because they are the most important indicator of household's welfare. A basic indicator of the living standard of a household is the condition of the dwelling a household lives in. Therefore, the LSMS also collect housing data as data about the dwelling, the source of drinking water, toilet facility, electricity connection etc. The education of the household members can be determinant as well as key indicator. Here, data on school enrolment of the children is one of these indicators. Also the employment status of all household members at working age like occupation, number of hours worked in the last week, wages etc., can provide information about a household's situation. Especially poor people only have their labour as income source. Of course, it is also important to know, whether a household receives any in-kind payments. In many countries, the government or NGOs transfer money or in-kind assistance to poor households. Also information about community kitchens, free textbooks etc. are gathered in this section. Moreover, it is also asked, whether the household uses social service programs like public schools, public health services, agricultural extension services etc. To value for example home production, local prices have also to be asked. In the LSMS surveys the data on prices are mostly collect at the community level. Furthermore, meta-data about the household, for example if it fits in the sample frame and what is the outcome of the interview, is collected.

For the LSMS, further information on anthropometrics measurements of children between 0 and 5 years, children's immunization status, data on households assets (especially durable goods), internal household transfers or whether the household has to pay any rental payments, are recommended in addition to the *essential core* (Grosh et al. 2000).

2.4 Summary

As a result from the literature review, it is to assert that neither a uniform definition of poverty nor an overall accepted way of poverty measurement exists. Main problems are the multidimensionality of the phenomenon as well as the existence of different value systems across the world.

For this thesis the following aspects are crucial: The concept of absolute poverty refers to a pre-set threshold. In case of the current study the international poverty line of 1 US$ PPP is this reference. This poverty line refers to a ‘basket’ of goods and services that meet the basic needs. Further, the analysis done for Central Sulawesi deals with income poverty.

Two of the FGT-measures presented are important for answering the first research question on extend and depth of poverty in Central Sulawesi. These measures are the headcount index H which measures the incidence of poverty by displaying the percentage of the people in a country or region with an income below the poverty line, and the poverty gap ratio (PG) which aggregates the shortfall of the income of all poor the poor taken together from the poverty line (Sen 1976) and therefore is a measure for the depth of poverty in a country or region.

Furthermore, indicators of poverty are important tools in the context of this thesis. Indicators of poverty are useful to identify poor households – as households are the used aggregation level for the poverty measurement done in Central Sulawesi. Moreover, poverty indicators can cover more dimensions of poverty than pure income or expenditure related poverty measures do.

Chapter 3. Geographic, socio-economic and poverty characteristics of Indonesia and the research area in Central Sulawesi

This chapter gives an overview on the environmental situation and the social conditions of Indonesia, Central Sulawesi and the research area around the Lore Lindu National Park. It specifically focuses on site, poverty and rural development.

3. 1 Indonesia

With over 234 million inhabitants, Indonesia is the fourth populous nation in the world. It is the largest country in South East Asia (The Nature Conservancy 2005). In the last years Indonesia has been facing a process of political and economical transformation (Kreisel et al. 2004). The population growth is 1.45% (2005 est.) (CIA 2005).

Indonesia is the world's biggest archipelago. It consists of over 17.500 islands. It is located between 6 degrees north and 11 degrees south latitude and spans from 9 degrees to 141 degrees east longitude. Indonesia builds a bridge between Asia and Oceania/Australia (UNDP 2005). The total area of Indonesia is 1,919,440 square kilometres: 1,826,440 square kilometres land and 93,000 square kilometres water. It spans over a length of 5110 km, one eighth of the world's girth (CIA 2005, Röll 1979).

Figure 1: Map of entire Indonesia

Source: CIA 2005

The Dutch colonized Indonesia in the early 17th century and stayed in the country for about 300 years. It was not part of the colonial policy to include the Indonesian people in the government or to provide education for them. In the Second World War, between 1942 and 1945, the Japanese occupied the country. The modern Republic of Indonesia was born on August 17 in 1945. After the independence, the majority of people were illiterate and poor. Only few people had political information. Due to both Dutch and Japanese occupations the traditions and legal structure of the country was influenced highly authoritarian manner. Additionally there was a lack of democratic institutions. After the independence, it took four years more until also the Netherlands accepted Indonesia as an independent republic. The first years from 1950-1957 were characterized by strong commitments to the concept of democracy by the elite. The following years were dominated by the 'guided democracy' of the first President Sukarno (1957-1968). This leadership was followed by another authoritarian regime, which was in contrast to the first years, characterised by economic growth but also by a restrictive policy. This was the leadership of Soeharto (1966-1998), which came to power by a coup (UNDP 2005a).

Since October 2004 S.B. Yudhoyono is the elected president of the Republic of Indonesia. He won the election in competition with the former president Megawati (CIA 2005).

Indonesia is home to about 17% of the world's animals and plant species (The Nature Conservancy 2005).

The country hosts about 300 linguistic groups, where the majority belongs to the Malay language family. The languages, as well as the population are highly ethnically heterogeneous (UNDP 2005b).

3.1.1 Climate

There are two tropical seasons in Indonesia. They are characterised by variations of the equatorial air, the Walker circulation, and meridian air flows the Hardley circulation, which follows a north-south movement. This two air streams influence the displacement and intensity of the Inner Tropical Convergence Zone (ITCZ). Due to that there are rainy and dry seasons. In general these seasons change every six month. There is a dry season between June and September, which is influenced by the Australian continental air masses. The rainy season, which is between December and March, results from Asian and Pacific air masses, which consist a lot of vapour and therefore brings rain to the whole country. The times in-

between can be seen as transitional times. The relative humidity in Indonesia ranges between 70% and 90%. The average temperature varies because of the heterogonous landforms in Indonesia, between 28°C in the coastal flatlands and 23-26°C in the mountainous regions (UNDP 2005c).

3.1.2 Economy and Poverty in Indonesia

The discussion about the problem of poverty in Indonesia was launched quite late by a speech President Soeharto held in 1992. There he announced that in the year 1990, 15 percent of Indonesia's total population was poor. After that announcement, poverty has become a matter of public concern in Indonesia. In contrast, the discussion about inequality within the society has been openly going in for already two decades in connection with the disparities in wealth distribution that came with the economic growth (Asra undated). Thus since the 1960s, poverty reduction has been subsumed under the goal of overall economic development (Schwinghammer 1997). In the early years of the leadership of President Soeharto (since 1967), Indonesia faced an impressive economic growth mainly due to a growing overseas demand for Indonesian's industrial raw materials (Asra 2000). This economic growth was associated with a reduction of overall poverty in Indonesia (Schwinghammer 1997, Sumarto et al. 2004).

Indonesia has a lot of natural resources: petroleum, tin, natural gas, nickel, timber, bauxite, copper, fertile soils, coal, gold and silver. Despite the fact that Indonesia is an oil exploiting, country it became a net oil importer in 2004 due to a declining production and a lack of new exploration investment. The Indonesian prices for petroleum do not also reflect the world market prices because they are highly subsidised by the government. The arable land amounts to about 11.32%. Permanent crops are grown on 7.23% of the area (2001). In 1998 the irrigated land was about 48,150 square kilometres (CIA 2005). The main crops are rice, cassava, peanuts, rubber, cocoa, coffee, palm oil and copra. Other important agrarian products are poultry, beef, pork and eggs. The Gross Domestic Product (GDP) is about $827.4 billion (2004 est.) and has a real growth rate is about 4.9% (2004 est.) Agriculture contributes with 14.6%, industry with 45% and services with 14.6% to the GDP (2004 est.). The labour force of Indonesia numbers around 111.5 million people (2004 est.). Thereto the agricultural sector contributes 45%, the industry 16% and services 39% (1999 est.). In 2004 the unemployment

rate was estimated to be 9.2% and the inflation rate of consumer prices to be 6.1% (CIA 2005).

While the 1970s showed an overall decline in poverty, the 1980s were characterised by a decline especially in rural poverty as well as by fundamental structural changes (agriculture lost its momentum, for example), even if the overall economic growth went slower than in the 1970s. In the 1980s also the growth rates for employment opportunities decline. Before 1980 the urban areas had a lower poverty incidence than the rural areas. In the 1980s and early 1990s the situation occurred the other way round. Since 1993 poverty incidence has been higher again than in urban areas. The decline especially in rural poverty contributes to the overall reduction in aggregated poverty between 1976 and 1996. The reason for the huge decline of rural poverty in this period was the development in the agricultural sector, which was partly financed by oil revenues. In particular these were the improvements in rice productivity and very high growth rates of other food crops, such as corn and soybean. Another important factor for the decline of rural poverty was the increase in the availability of off-farm wage employment, in processing, transport or trade. Summing up this period, one can say that between 1970 and 1996 the Indonesian economy was dominated by an impressive economic growth, a decline of poverty (from 40% in 1976 to 11% in 1996) and apparent structural changes in Indonesia's economy (Asra 2000).

In mid 1997, Indonesia like other Asian countries, faced a severe financial crisis, which led to economic distortions. One indicator of that was the high fluctuation in the exchange rate of the national currency Rupiah (IDR). Within this crisis the headcount poverty rate changed quickly. In the year of the crisis more households had to face poverty than before. After the crisis, poverty decreased when the economical situation stabilised. Therefore, for many of these households it was only short time poverty. Thus poverty can sometimes be seen as a fluid condition, because of the transition in and out of poverty (Widyanti et al. 2001). Nonetheless, the chronic poverty especially increased during the crisis. Also the number of vulnerable households, those that have a high risk of becoming poor in near future, tripled in this period. The crisis had a substantial social impact. Between 1997 and 1998 16 % of the rural population moved from being non-poor to poor (Suryahadi et al. 2001). Admittedly, not all regions were affected in the same way. Modernised areas (Java and urban areas) were hidden harder than many rural areas (Brodjonegoro 2002). By all means, the crisis brought attention back to the issue of poverty reduction (Sumarto et al 2004).

After the crisis, since mid 1998, Indonesia has restored its financial as well as its economic stability. Also domestic prices and real wages have recovered (Widyanti et al. 2001). Nevertheless, Indonesia has a high unemployment, a fragile banking sector, endemic corruption, inadequate infrastructure, a poor investment climate and unequal distribution among the regions (CIA 2005).

The national poverty rate declined again in the first half of 1999. Altogether, "the pre-crisis poverty rate doubled during the crisis." (Widyanti et al. 2001, p. 6). The headcount poverty rate rose, according to Suryahadi et al. from 15.7 % in February 1996 to 27.1 % in February 1999. This value differs between urban and rural areas. In the rural areas the rate increased about three quarters (Suryahadi et al. 2001). One problem with respect to Indonesia's development is that even if its economy is rapidly growing, not all parts of the country gain the benefits (Daimaon 2001)

In general, East Asia is performing quite well and quickly on its way toward achieving the Millennium Development Goals (MDG). While there is an uneven progress in achieving the goals, the East Asian countries are performing well in poverty reduction. Many are on a successful way towards universal primary education as well as in bridging the gender gap. In the region the proportion of the people living in extreme poverty has fallen from 29.6% in 1990 to 14.9% in 2001 (World Bank 2005c).

Indonesia has not achieved the goal of universal primary education yet, but it is likely to achieve it by 2015. Unfortunately, the progress in achieving gender equality in secondary education is rather slow. The intensive development in the Indonesian education sector already started in the 1970s with a program of primary school construction and teacher recruitment. The primary enrolment rose from rose from 13.1 Mio in 1973/74 to 26.4 Mio in 1986/87 to 28.7 Mio in 2001. For further development, Indonesia announced a program to achieve universal primary education by 2010. Also the enrolment in junior secondary schools increased in the past decades from 1.5 Mio enrolments in 1973/74 to 6.1 Mio in 1986/87 to 9.4 Mio in 2001. The main problem of the Indonesian education system is a huge lack of quality in teaching as well as a lack of adequate schooling materials (World Bank 2003).

Altogether, there are high disparities in achieving the MDGs until 2015 in the different regions but also within the countries themselves, especially in such a heterogeneous country like Indonesia.

3.1.3 Poverty measurement in Indonesia

The Badan (former Biro) Pusat Statistik (BPS, the Central Statistic Agency) published its first poverty figures for Indonesia in 1984. Then it differentiated between two poverty lines the *batas miskin* ('poor line'), which can be seen as overall poverty line (OPL) and the *batas sangat miskin* ('very poor line'), which can be seen as the food poverty line (FPL). The *batas sangat miskin* refers to the level of income needed to cover expenditures on the food component of the expenditure basket reflected in the OPL (Asra undated).

Before 1993, the BPS used the cost of calories method, a variation of the food energy intake method that is heavily dependent upon unit price of calories. This method allows different patterns in calories consumption. This (food) poverty line referred to the total expenditures needed to satisfy a daily energy requirement of 2,100 calories per capita. The total expenditures were an anticipated value, which was used for the computation and it was assumed that all expenditures were spent on calories. The data used to compute the poverty line was taken from the SUSENAS (Survei Sosial Ekonomi Nasional) survey, which is conducted every time in about 65,000 households (Asra 2000). Besides this kind of measurement, Sayogo developed a 'rice indicator' as a measure for wealth. He fixed a poverty line from 240 kg per household and year as extreme poor and 340 kg per household and year as threshold for being deemed as poor. Although, rice is very important in Indonesia, this indicator was not very suitable for poverty measurement. On the one hand especially extreme poor households sometimes have to rely on cheaper food like cassava, and on the other hand the there was an ongoing diversification of consumption patterns in Indonesia at that time. Another reason why the rice indicator lost its explanatory power, was that prices for other goods rose more than the rice price in the 1980s (Schwinghammer 1997). After 1993 the BPS started to use another method to derive the poverty line, which was the basic needs approach. This approach was used for the calculation of a food bundle as well as for non-food items. For the food bundle 52 food items were chosen for both rural and urban areas. The quantities selected were those who meet the 2,100 calorie requirement. The prices for deriving the poverty lines were taken from the SUSENAS survey. For the non-food goods, 46 items representing housing, clothing, education, health, transportation, durable goods and other essential goods, were considered. These items were not exclusively those of the poor, like it was before 1993. Furthermore, they were the same for urban and rural areas. The new method allowed different consumption patterns. Thus, it had the possibility of location specific poverty lines. The poverty lines are built from a ratio of urban to rural overall poverty lines.

The overall poverty line was computed by adding the food poverty line to the non-food threshold.

In 1998 there was an urgent demand for poverty monitoring after the economic crisis, so a smaller survey with a sample size from about 10,000 households was conducted. This survey did not allow the computation of poverty lines by provinces. In 1999 a SUSENAS survey was conducted again. Both BPS approaches for calculating the poverty line are lacking comparability across regions. This is mainly a problem of the differences of cost of living, especially the differences between rural and urban areas and is a problem of a lack of adequate data. Price data have been collected since the 1960s, but its quality is not sufficient for constructing appropriate price indices for Indonesia (Asra undated and 2000). Poverty lines should be comparable across regions and throughout time (Widyanti 2001), and for this the official Indonesian poverty estimates are problematic. Beside the problem of comparability, the official poverty lines in Indonesia seem to be lower than they reasonably could be for the given economic situation in Indonesia. The reason for this outcome can be seen in the very stringent allowance of non-food items for the OLP. In rural areas, for example, the non-food component in the OPL was between 3% and 11% in the period from 1980 to 1996, even if this share did not reflect the real consumption patterns (Asra 2000). The newer Indonesian poverty measurement can be summarised as follows: “According to the consumption-based measure of poverty, a household is considered poor if its current per capita consumption falls below a certain threshold, which is referred to as the poverty line” (Suryahadi et al 2001, p. 2). This threshold is derived from a basic needs approach.

Altogether, on can say that the different approaches to measure poverty in Indonesia lead to differences between the different poverty lines from 10 – 20 %. The data basis of almost all approaches is the SUSENAS survey. Most of the differences between the poverty lines are caused by the varying allowance for non-food items. Anyway, all poverty measures of poverty in the last decades show that poverty in Indonesia declined, at least until the economic crisis. The measurement of poverty in this country is especially complex, because of huge differences between the regions in the country (Schwinghammer 1997).

In the following tables the poverty situation in Indonesia and Central Sulawesi, the research area, are summarised:

Table 1: Percentage of Indonesian population below different poverty lines for Indonesia

Poverty line	Year	Headcount index (%)
National	1996	15.7
National	1999	27.1
1 US$ PPP	2002	7.5
2 US$	2002	52.4

Source: World Bank 2004

In the research area the average expenditure are 8825 IDR (weighted 8459) per capita and day in 2005. Concerning the expenditures for food they account for an average of 66% of the household's total expenditures. In Table 4 different poverty lines for Central Sulawesi for 1999 are shown.

Table 2: Percentage of population in Central Sulawesi living below different poverty lines in 1999

Region	Poverty line (IDR per capita and day)	Headcount index (%)
Central Sulawesi	Not specified	28.0
Rural	2560	Not specified
Urban	2708	Not specified

Source: Suryahadi et al 2001

The following table gives an overview of the poverty situation found in the sample in 2005 (q.v. Chapter 4). The poverty lines presented here were deflated with the concept of Purchasing Power Parity (PPP). PPP is used to translate a common poverty into local currencies. This is done through a consumer price index.

Table 3: Percentage of poor households in Central Sulawesi for alternative definitions of poverty

Poverty line	IDR per capita and day	Headcount Index (%)	Headcount index (%) weighted[2]
Central Sulawesi	3911	34.1	37.3
1 US$ PPP	2723	19.4	20.6
2 US$ PPP	5445	47.0	48.5

Source: own data

The poverty gap ratio shows, as aforementioned (Chapter2.1.2), the mean distance below the poverty line expressed as a percentage of the poverty line. The mean is taken from the entire population. The non-poor are counted as having a zero poverty gap or in other words a zero shortfall from the poverty line. The poverty gap ratio therefore represents the depth of poverty (UNDP 2005d). In the Table 4 the poverty gap ratios for the entire Indonesia between 1993 and 2002 in relation to the international poverty line of 1 US$ PPP are listed.

Table 4: Poverty gap ratios for Indonesia

Year	Poverty gap ratio (in %)
1993	2.7
1996	2.2
1998	5.6
1999	2.3
2000	1.0
2002	0.9

Source: UN 2005

In this table the influence of the economic crisis is very apparent again, looking at the poverty gap ratio of 1998. Also the positive development concerning poverty after the crisis can be observed.

For Central Sulawesi the poverty gap ratios that are derived from the survey conducted in 2005 are presented here for three different poverty lines. For the calculation the sampling weights were included.

[2] The sampling weights are explained in Chapter 4.1

Table 5: Depth of poverty in Central Sulawesi

Poverty line	Poverty gap ratio (in %)
Central Sulawesi	0.355
1 US$ PPP	0.206
2 US$ PPP	0.490

Source: own data

It seems that the situation regarding the depth of poverty has gone better, at least in Central Sulawesi. Anyway there occur differences between the various poverty lines. The mean distance to the international poverty line of 1 US$ PPP (2723 IDR) is 0.206%, which is equal to an amount of 5.6 IDR, meaning that the average extremely poor household has to live with about 2118 IDR per capita and day. The mean distance to the regional poverty line for Central Sulawesi is deeper: The average poor household living below this poverty line (3911 IDR) has a daily per capita expenditures of 3897 IDR, 13.9 IDR less than the threshold. The highest (or deepest) mean distance occur in relation to the international poverty line of 2 US$ PPP (5445 IDR). Like presented in Table 3, 48.5% of the population around the Lore Lindu National Park live below this poverty line. On the average these households live with an amount of about 5418 IDR per capita and day, 26.7 IDR less than this poverty line. It seems like the mean distance to a certain poverty line gets higher, when the value of the poverty line is higher.

3.2 Sulawesi, Central Sulawesi and the Lore Lindu National Park

Sulawesi belongs to the five major islands of Indonesia (UNDP 2005). The area of Sulawesi is about 187,880 km^2 and it has about 6000 km coastlines (Rhee et al. 2004). “Even in a country known for its unique natural resources, the island Sulawesi stands out as one of the most extraordinary places on Earth, with an astonishing 98% of mammal species and 27% of bird species that exist nowhere else on the world” (The Nature Conservancy 2005). It does not have the richest terrestrial biodiversity, but an extremely high proportion of faunal endemics. Furthermore, it harbours a great marine biodiversity.

The geologic history can be seen, as the main reason for it is unique natural and biotic diversity. As a consequence of continuous northern movement of the Gondwanic plate million years ago, the shape resulted from a submarine collision between the Oriental and the Gondwanic plate. The major contact zone of ‘welding’ of the geological disparate ‘arms’ of

Sulawesi is located in the province of Central Sulawesi. Central Sulawesi is characterised by diverse habitat and richly bio diverse mountains from two previous landmasses (Rhee et al. 2004). The altitude in Sulawesi ranges mostly above 500m above sea level (a.s.l.). In 20% of the area even over 1000m a.s.l. The highest mountains are located in North and Central Sulawesi.

Sulawesi's population is quite sparse, but highly ethnically heterogeneous. Since 1970 the process of converting natural forest to other forms of vegetation, like it took place over a period of hundreds of years, has accelerated due to governmental supported commercial logging, transmigration and intensified crop production. Nowadays, the entire Sulawesi has lower deforestation rates than elsewhere in Indonesia. The reason is mainly because the lowland forests were cleared in the 1980s and the lowland area of Sulawesi is anyway only 25% of the total area (Rhee et al. 2004).

The research area is located in Central Sulawesi, just on the south of the equator. The climate in the region is classified as tropical rainy after Köppen. The annual precipitation is > 2500 mm, but because of the mountainous area the rainfall distribution is very heterogeneous. There are not distinct dry seasons in the area, but greater rainfall in November and December as well as from March to June, because of the movement of the ITCZ. The mean annual temperature ranges between 25° and 26° C (Kleinhans et al. 2004). The regional capital Palu is one of the driest places in Indonesia, because of its location on the coast and two mountain chains in the south of it.

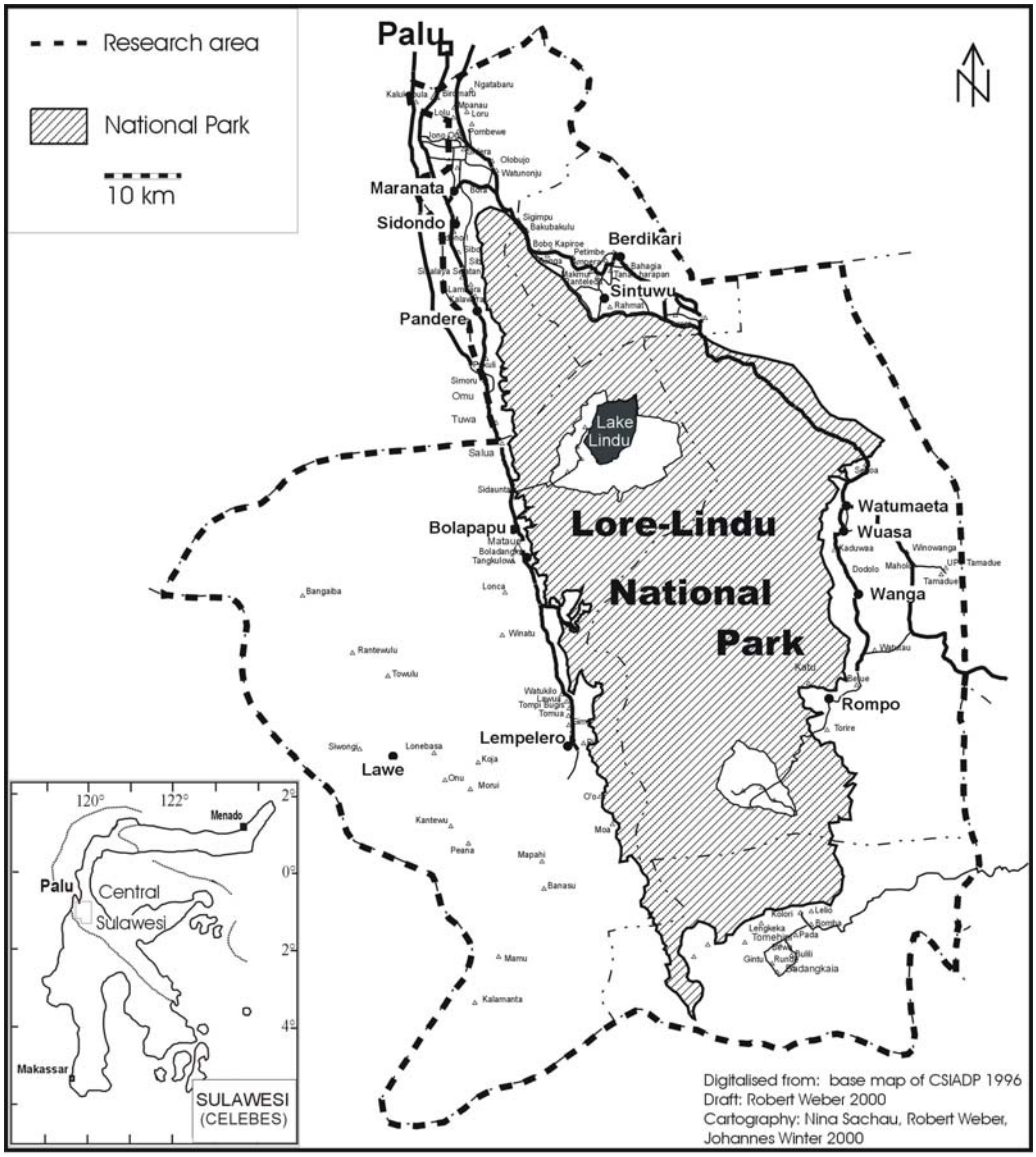
Lore Lindu National Park

In 1977 the UNESCO declared an area of 217,991 ha in Central Sulawesi as Man and Biosphere Reserve. The aim was to "protect landscape wildlife values and social customs in the adjoining communities" (Rhee et al. 2004, p. 3-61). The Indonesian Government in partnership with The Nature Conservancy converted this Biosphere Reserve into Lore Lindu National Park in 1992 (The Nature Conservancy 2005). The altitude of the park ranges between 500 and 2600m a.s.l. and the typical landscapes within the park are sub-mountain forest and low land rainforest. The Park harbours some of the last intact forest tracks in Sulawesi, but suffers from illegal logging. For the preservation of Lore Lindu National Park the participation of the surrounding communities in park management is very important (RHEE et al. 2004). This is forced by creating so-called Community Conservation Agreements (The Nature Conservancy 2005a).

The area in the vicinity of the Lore Lindu National Park has been mainly cultivated in the last 100 years. Due to migration in the last two decades, the growing population pressure has a high impact on the natural resources and therefore also on the rainforest margins (Kreisel et al. 2004).

In the vicinity of the park, 117 villages with approximately 120,000 inhabitants are located (ANZDEC 1997). The park provides water resources for about 300,000 people in the area. Although, the villagers use the park traditionally, illegal harvesting of forest resources and agricultural conversion threatens wildlife and forest. This process is mainly driven by severe poverty in the surrounding villages (The Nature Conservancy 2005a).

Figure 2: Map of the research area



Source: STORMA

There are high deforestation rates along the park boarder. The main cause of deforestation is the smallholder conversion of forest area into agricultural land use. One possible reason may be that the research area is highly affected by migration and therefore high land requirements exist. The clearings are mainly done, because area for cash crop production as cocoa plantation is needed. This tendency has increased dramatically after the economic crisis. The landscape at the forest margins is a patchwork of different land-use systems. The predominating land use systems in the area are rice paddies, agro-forestry and annual cropping (Kleinhans et al 2004).

The conservation of the remaining tropical rainforest is not only important in terms of biodiversity or carbon sequestration, but also in terms of hydrological functions. The tropical rain forest has a high impact on watershed hydrology. Shorter vegetation like annual crops leads to more run off. The deforestation has a high influence on water availability, and therefore water supply, as well as on water quality. Higher sediment transport is especially caused by deforestation and has a negative impact on water quality. In the research area the problems of water scarcity and poor water quality will come in near future. This trend is also influenced by the occurrence of the El Nino phenomenon in the area, which causes droughts in the region (Keil et al. 2003, Kleinhans et al 2004).

Chapter 4. Methodology of field research and results of descriptive data analysis

Chapter 4 contains 4 sections. First the sampling frame, which was developed by Zeller et al. in 2000, is going to be presented, then the course and schedule of the survey will follow. In the third part both of the questionnaires used in the household survey in 2005 are going to be introduced. The last part will visualise the living situation of the respondents by means of descriptive statistics derived from the collected data.

The research area is located in the vicinity of Lore Lindu National Park. It is characterised through a high variety in ecological conditions as well as various agricultural and socio-economical conditions (Zeller et al. 2002a).

4.1 Sampling frame

Due to the general consensus in STORMA all projects had concentrate on the same sub-set of villages in the research area. For the selection of these villages the stratified random sampling method was chosen as sampling frame (Zeller et al. 2000). According to Ravallion the stratified random sampling method allows to sample different sub-groups of the population with different, but known, chances of being selected. Within any given sub-group, each element of the population has an equal chance to be randomly selected (Ravallion 1992). Zeller et al. did this in the preparation phase for STORMA. It is noted that the use of sampling weights is recommended for the regression analysis. However, as the software package SAS does not allow to combine the regression routine MAXR with sampling weights, I had to omit the inclusion in the regression analysis presented in Chapter 5.

The research area consists of five sub-districts (*kecamatan*) with 117 villages (*desa*). For 115 of these villages detailed socio-economic information from a study by ANZDEC exists. These 115 villages were used to define the sampling frame.

The method of stratified random sampling was mainly chosen because it guarantees that also infrequent types of elements of the population also are included in the sample. Another reason is the higher efficiency compared to the simple random samples, i.e. the same precision can be achieved with a smaller sample.

As selection criteria three categories were chosen:

1. Proximity of the village to the Lore Lindu National Park. Here two groups were differentiated:
    - ⇨ First group: 58 villages, which are close to and affected by the Park
    - ⇨ Second group: the remaining 57 villages
2. Population density
    - ⇨ First group: below or equal to the median population in all of the 115 villages
    - ⇨ Second group: above the median of to the median population in all of the 115 villages
3. Ethnical composition of the village population:
    - ⇨ First group: >= 75% of the village population belong to an indigenous ethnicity
    - ⇨ Second group: >= 75% of the village population are migrants
    - ⇨ Third group: remaining villages

Theoretically there would result 12 distinct strata. For a variety of reasons described in Zeller et al (2000), only 10 of them were taken into account for further sampling.

In the next step 80 villages were selected, because it was deemed that this would be enough to cover the diversity of the area in terms of physio-geographical, agro-ecological and socio-economical pattern.

Due to the probable higher influence on the Park, villages close to the Park were sampled disproportionally more. Sampling weights were adjusted for this disproportionate sampling in each strata. They were calculated as follows:

$W_1 = [(n_i/N) / (s_i/S)]$

n_i= number of element in the strata i, N= number of elements in the sampling frame, s_i= size of sample having elements belonging to strata I, S= total sample size

The sum of all weights for each sample element has to be equal to the sample size.

Furthermore, two smaller sub-samples (of 12 and 20 villages) were chosen out of the 80 villages. The smaller one with 12 villages was finally taken as the research villages. These villages are namely Maranata, Sidondo II and Pandere in *kecamatan* Sigi Birommaru, Bolapapu[3], Lemperlero and Lawe[4] in *kecamatan* Kulawi, Berdikari[5], Sintuwu in *kecamatan*

[3] Bolapapu, due to an administrative reform is now two villages namlely Bolapapu and Namo

Palolo and Wuatumaeta, Wuasa, Wanga and Rompo[6] in *kecamatan* Lore Utara. Additionally, Nopu[7] (Palolo) was sampled purposely because it is quite a young village, which directly borders to the National Park. Therefore, it features on-going processes of destabilisation that can be observed and this is from special interest of STORMA research.

The sampling on the household level was again done randomly and with the help of an explorative household survey. In some large villages it was necessary to first make a sub-sample of the hamlets and select the household out of this sub-sample. Generally the sample-size within the villages was determined by the share of the village population in the overall strata the village belongs to (Zeller et al. 2002).

4.3 The Survey

Household surveys generally are the most important data source for poverty comparison and poverty measurement. They can tell directly about the distribution of living standard in a society or in a certain region, for example how many households do not attain a certain consumption level (Ravallion 1992). For the measurement of people's living standards, traditional costly large-scale surveys were undertaken. Therefore, there is a need for more practical tools for measuring and assessing poverty (Aho et al. 1998). The background of the survey was to test a new tool for poverty assessment. This tool was developed in order to meet the requirements of the US Congress, which wanted USAID to develop and certify a low-cost and easy-to-implement poverty assessment tool with a high accuracy. In cooperation with IRIS (research and advisory Centre at the University of Maryland) different tools were developed and tested. The official project was accomplished in Uganda, Peru, Kazakhstan and Bangladesh (Zeller et al. 2004). The survey in Indonesia can be seen as additional test for two of the nine IRIS regression models with a smaller sample.

The legal text of the US Congress contains two definitions of the term very poor:

1. Living in the bottom 50% below the poverty line established by the national government or
2. Living on the equivalent of less then US$1 per day (in purchasing power parity)

---

[4] Nowadays, Lawe belongs to *kecamatan* Pipikoro
[5] Berdikari, due to an administrative reform is now two village namely Berdikari and Sejadra
[6] Rompo actually belongs to *kecamatn* Lore Tengah
[7] Nopu was a former hamlet (*dusun*) of Rahmat, in 2004 it became an independent village

(Povertytools 2005). The first definition refers to the national poverty lines of the countries, the second definition refers to the international poverty line.

For the international poverty line of 1US$ PPP, the headcount index is 19.4% (respectively weighted 20.6%) surveyed in the research area in 2005.

The survey done in Central Sulawesi, Indonesia was a quantitative study. In general, quantitative methods can measure key variables associated with the basic dimensions of poverty and therefore can provide information for the construction of a profile of poverty. With quantitative data the poor can be characterised and an impact evaluation of poverty policies can be done (Ravallion 1992). The observation unit in the survey conducted in the vicinity of Lore Lindu National Park were households.

"The household can comprise one person or a group of people who meet certain criteria: for instance, living under the same roof or in the same building, recognizing the authority of the same individual (the head of the household), sharing meals, having a common source of income or pooling resources so as to satisfy the household's essential needs" (Larivière et al. 1998a, p. 24).

The survey was a cross-sectional survey, which means that the households were only visited once. Originally, it was planned to ask first the composite questionnaire and exactly two weeks later the benchmark questionnaire, but this was not further seen as necessary after the experiences in other countries. So, when possible, both questionnaires were asked within the same interview session.

Especially in a cross-sectional survey the recall technique is used to gather information. Here, in a personal interview, "an interviewer asks household members to recall the value of variables such as quantities, prices and amounts spent on different goods consumed, bought, produced or sold by the household during a given period of time" (Larivière et al. 1998a, p. 28). Of course, short recall periods provide more reliable data.

The two questionnaires which are described below in more detail focused on indicators of poverty, considering the different dimensions of poverty, and on consumption expenditures which were aggregated on household level.

In December 2004 I selected 19 potential enumerators out of about 50 applicants. The main criterion for the selection was experience in living or working in the rural area of Sulawesi. Applicants with former experience surveys or with other useful skills for a household survey were preferred (like knowledge of the local languages, mathematical skills, knowledge in

socio economics of rural development etc.). Preference was also given to people who were recommended by other Indonesian assistants working for STORMA. An Indonesian-English translator guaranteed the communication.

In January 2005 I provided a three-week 'training' for the enumerators. In the training, the questionnaires which were already adapted to the local situation together with an Indonesian colleague in Germany were discussed and further changes were made to meet the current situation in Central Sulawesi. The enumerators had to do several role games to simulate the interview situation. At the end of the training fifteen enumerators did the pre-test in Kalwara (*kecamatan* Sigi-Birumaro). The village of Kalware is located in the research area but is not included in the sample. There my team and me had extraordinary good conditions. The village head (*kepala desa*) provided very good help to our team. There the enumerators conduct the interviews in teams of two persons accompanied by Dr. Stefan Schwarze, Anastasia Wida, who was responsible for the data entry in Palu, Kristina A. Rissi (my research assistant) and translator and me, to supervise the first interviews and to get an impression about the interviewing skills of the trainees. After the pre-test, further adoptions in the questionnaire were made and problems with certain questions were discussed. After the pre-test 10 people (7 male and 3 female) were employed as enumerators. Moreover, two persons (both male) were employed as field supervisors. Besides of doing the household interviews, they had the task of controlling all questionnaires of their team in the field. For the data entry in Palu two persons (one male and one female) were employed as data entry operators.

In February 2005 the survey was conducted in the first sample village, namely Pandere. In the first village the whole team of 10 enumerators and 2 supervisors did the interviews. After the first village the group was split into two teams, each consisting five enumerators and one supervisor. First the survey was conducted in *kecamatan Sigi* Biromaru, then in *kecamatan* Kulawi and Pipkoro and then in *kecamatan* Palolo, Lore Utara and Lore Tenga. My field assistant and I visited the teams regularly in the field to solve problems and provide the interview material.

Due to the fact that various households refused to answer STORMA questionnaires any more, a number of 281[8] valid interviews were carried out.

[8] during the analysis two household were dropped because of outliers in the data set

4.4 The questionnaires

What follows is the presentation of the contents and the aim of both questionnaires used in the research area. The full questionnaires are presented in Annex 1 and 2. In developing the questionnaires for the purpose of field survey, I obtained generic questionnaires from the poverty assessment research of the IRIS center and the Institute of Rural Development. While left the structure of the questionnaires the same, a major part of my research was to adapt the questions to the local socio-economic context of the research area.

4.4.1 Composite questionnaire

The composite questionnaire collects information about indicators of poverty. Because of the complex phenomenon of poverty it tries to capture the different dimensions of poverty. In the further analysis this information is connected with the information from the benchmark questionnaire, which just focuses on the economic dimension of poverty. Therefore, it has to be asked what the dimension of poverty can be. The composite questionnaire first collects information about the household composition, in the same way it is done for the LSMS surveys of the World Bank. For a household survey this information is very important. For example, it often is the case that poor households contain more members than wealthier households, which live under more favourable conditions. Beside demographic information about every household member like age, marital status, relation to household head etc., information about the occupation of the household members and their educational status is obtained. As a next step, the composite questionnaire collects summary information about the household's expenditures. From expenditure as well as income data very powerful indicators can be derived because this determines the economic dimension of poverty. The economic dimension determines in a high degree the well-being of humans. Also this dimension is seen as most important in many poverty reduction programs. A sufficient income determines the access to most goods and services, which are necessary to live a decent life. Therefore, this section of the questionnaire gives an overview on what the household can spend money for and how much money it can spend on items like food, transport, fuel, utilities, education, health, its home, on durable goods, if the household send remittances to relatives and also what other expenditures it has (like for social events, leisure, gifts, taxes etc.). Also the value of home produced food and goods (for own consumption) are obtained. Of course, the benchmark questionnaire collects all this information a lot more detailed, but it is also very

important to know, whether the household has an overview upon its expenditures. In this first part also the question 'Suppose you were given an additional IDR 30,000, tomorrow, how much of this amount you would spend on food?' is asked. This question aims to get an impression which share of the expenditure is spent on food: If a high share of this additional money would be spent on food, a poor household can be expected. If additional money would be spent on luxury items, a better-off household is expectable. In general, poor households spend a higher share of their overall expenditures on food than richer household do (compare Engel's law).

A next section asks information on housing indicators and wages. Housing indicators are very good indicators in terms of verifiability. Indicators, which can provide important information about a household's wealth status, are such easy-to-obtain indicators like type of roofing, type of flooring or type of exterior walls. Poor households are more likely to use cheap or natural building material than richer households, who might also want to demonstrate their higher wealth status. Besides housing indicators like walls, roof and floor, this section also asks about utilities. Telephones are in general very scarce in the region, but utilities like piped water and electricity are available in less remote areas. The questions dealing with wages want to find out, for which amount of money the main income-earning persons (female and male) in a household would work. However, this question did not work out since I found out that there is not much variability in wages and minimum wage in the region is acceptable. Hence, the results do not differ that much between poor and non-poor households.

The next part of the composite questionnaire deals with food consumption. The frequencies of food consumption and the types of food consumed were observed here. Luxury foods (especially meat) were asked as well as foods like broken rice or cassava, which are not very well accepted within the society and therefore only consumed by the very poor. In this section the opinion also of the households about their food situation was asked. These questions refer especially to food scarcity. So it was asked for example, if adults ate less food, if meals were skipped or if a household member lost weight because of a lack of money to buy new food

Section G is about vulnerability, social capital and reliance on networks in case of shocks. Information on events like marriages, inheritances etc., but also questions about any in-kind payments to the household from social safety net programs were asked. In the first analysis of the data it was found out that these programs were still missing their target group because still more better-off households seem to have better access to these programs like Shaban found out in 2001. Therefore, I took these indicators out of the model because they could provoke

misleading results. Beside those aspects, the section gathered information on how the people sensed their social environment within the village.

Part H deals with estimates of objective and subjective poverty. A huge part of this section is self-assessment by the household. It was asked, if the household expenses on food, clothing, health care, children's education and housing were meeting the household's needs or not. The ladder of life was another tool for self-assessment, where the respondent had to say on which step of the ladder he or she would locate his or her household given that at the bottom of the ladder stand the poorest people and at the top stand the rich. To have a reference the household was also asked to locate two given households with different amounts of money on the ladder. Further the household is asked to compare certain aspects of its living standard with the situation from seven years ago.

The asset section was asked together with the benchmark questionnaire. Nonetheless, it should be presented here, because important indicators can be also derived from asset ownership. Assets are often correlated with the wealth status of a household. The reason for that is that a lot of durable goods are very expansive in purchase. An example for this is a refrigerator. Other information, e.g. on land ownership etc. were taken from a baseline study conducted by Adhitya Wardhono in spring 2004 in the same households.

4.4.2 Benchmark questionnaire

The benchmark questionnaire enumerates the per capita daily expenditures. The national currency IDR is converted into US$ with the Purchasing Power Parity (PPP). The expenditure questionnaire was derived from the consumption model from the *Living Standards Measurement Study* Survey from the World Bank (discussed in Chapter 2.3.1). In the following it is explained why the measurement of consumption expenditures instead of the measurement of income is used.

Many of the variables used in any analyses of poverty and living standards are based on income and spending (Ravallion 1992). The household income is the sum of monetary and non-monetary incomes of all household members. In other words, it is all cash and in kind revenue. Because of the unreliable nature of household's income declaration, the variable 'income' is very difficult to measure in practice, so the better indicator is consumer's spending. Spending or expenditures are often used as an approximate variable of annual

income. Consumer spending can be seen as the total spending within a certain reference period of:

- ⇨ "Households members' monetary spending on goods and services meant for consumption;
- ⇨ The value of self-generated consumption originated in households production or households stocks;
- ⇨ The value of donations received in kind for consumption within the period"

(Larivière et al. 1998a. p. 26).

"Consumption should cover all monetary expenditures on goods and services consumed plus the monetary value from in kind, such as food produced on the family farm and the value of owner occupied housing" (Ravallion 1992, p. 12). "Although income and wealth are what enables the people to obtain goods and services, it is those good and services themselves that directly generate economic well-being" (Grosh et al. 2000, p. 91). Of course, the measurement of income or consumption only covers a narrowly economic aspect of poverty. These measures are only concerned with the material basis of living standards. Dimensions like the deprivation from health, education, political liberty etc. are also very important aspects of poor people's livelihood should not be forgotten (Grosh et al. 2000).

The consumption module is supposed to measure the consumption of all different items (food and non food goods as well as services) detailed and aggregated. The aggregates represent the total value of consumption at suitable prices (Grosh et al. 2000). As also done in the consumption module in the LSMS, the expenditure questionnaire collected data on how much a household spends on various goods and services. The measurement of consumption "consider(s) the level of living a measure of economic input, and consumption data show the level of living by measuring what people acquire. Both can be defended as approximations to utility. "The "indirect" utility function expresses welfare in terms of resources (positively) and prices (negatively)" (Grosh et al. 2000, p. 93).

Unknown prices, for example, lead to valuation problems. The valuation of benefits from public services can also be very difficult. Consumption varies over the life cycle, so one has to be aware of different consumption behaviour (Ravallion 1992). To measure the expenditures, recall questions were asked to the respondents. Interviewee recall is always an imperfect method but necessary to gain the information about a certain time. Therefore, it is

necessary to adjust these recall periods. For food, those periods are mostly shorter than e.g. for clothes (Ravallion 1992).

In benchmark questionnaire information was asked about weekly expenditures, expenditure on food as well as on non food items, information on durable goods (like their resale value), if a household gave or received any remittances, what is spent on education, health and housing and whether a household member received in-kind payments. As part of the research project A4, these expenditure items were converted into daily values, and then added up to obtain an aggregated measure of daily per-capita expenditures. The cleaning and aggregation of the expenditure data was not part of my thesis research.

4.5 Results from descriptive data analysis: Current situation in the research area

Before presenting the results of the regression analysis, an overview about the overall situation in the research area and the living conditions there will be given.

As explained before, there are 6 districts within the research area. The *kecametan* (district) Sigi Biromaru is the closest to Palu, the capital of Central Sulawesi. This district is located mainly in the Palu valley. Rice is cultivated on predominantly irrigated rice fields. Other crops like coconut, several vegetables or cocoa are grown as well. The research villages Maranata, Pandere and Sidondo II have considerably good infrastructural connections to the regional capital.

The *kecamatan* Kulawi borders directly with the Lore Lindu National Park. The area is more mountainous compared to Sigi Biromaru. In villages like Lempelero some *dusun* (hamlet) are very difficult to reach.

Pipikoro is the most remote *kecamatan* in the sample. Only one of the sample villages (Lawe) is located in this district. The road access is very bad and it is impossible to reach Lawe by car. The district is located in a mountainous region at the western border of Kulawi district.

The *kecamatan* Palolo also borders with the National Park, but towards the eastern side. Especially, in Nopu it is possible to observe the current influence of agricultural expansion into the National Park. In Palolo many cocoa plantations exist. According to Kreisel et al. (2004), the population size doubled in the last two decades in this district. The landscape is quite divers with lowland floodplains, terraces, rivers and mountainous areas with valleys (Kleinhans et al. 2004).

On the way to *kecamatan* Lore Utara the consequences of illegal logging in the Lore Lindu National Park can be observed when passing the illegal village Dongi-Dongi. In Lore Utara the cultivation of vegetables is very pronounced. The population size has tripled in the last two decades with in this *kecamatan* (Kreisel et al. 2004).

Rompo, the only sampling village located in Lore Tengah, is about three hours drive from Palu. On the way one passes degraded areas where the rainforest is destroyed, but no cultivation of the land is possible.

Poverty across the districts

In the following tables it poverty is distribution across the research area is displayed. In Table 6 the 1 US$ PPP poverty line (2723 IDR) is indicated, with a headcount index for the entire sample of 19.4% (not weighted) or 20.6% (weighted). To present the situation in a more detailed manner the table shows the proportion of non-poor and poor households itemised for each district.

Table 6: Regional distribution of extreme poverty (1 US$ PPP poverty line as reference)

District	Headcount index (%)	Head count index (%) weighted	Share of foods (%)	Share of foods (%) weighted
Lore Utara	10.2	10.6	60.65	60.9
Palolo	8.2	9.5	60.58	60.5
Sigi Biromaru	15.6	15.1	65.98	65.92
Kulawi	35.2	33.8	73.56	73.26
Pipikoro[9]	61.5	61.5	82.12	82.12
Lore Tengah[10]	26.7	26.7	61.53	61.53

Source: own data

Most of the absolute poor households, i.e. those households with daily per capita expenditure below US$ 1 in purchasing power parities (PPP), interviewed, are living in *kecamatan* Kublai (not considering *kecamatan* PaciCorp).

The results for the 2US$ (PPP) are presented in the next table. 47% (not weighted) or 48.5% (weighted) of the sample households live below this poverty line. Also for the poverty line of 5446 IDR, the results for each *kecamatan* are listed.

[9] Lawe is the only sample village in *kecamatan* Pipikoro
[10] Rompo is the only sample village in *kecamatan* Lore Tengah

Table 7: Regional distribution of poverty (2US$ PPP poverty line as reference)

District	Headcount Index (%)	Headcount Index (%) weighted
Lore Utara	37.3	38.5
Palolo	29.5	28.5
Sigi Biromaru	46.8	47.4
Kulawi	64.8	63.3
Pipikoro	100	100
Lore Tengah	46.7	46.7

Source: own data

In the research area 34.1% (not weighted) or 37.3 % (weighted) of households live below the national poverty line for Central Sulawesi of 3911 IDR.

For the calculation of the descriptive statistics, the data is weighted according to the sampling weights. The term ‘percentage of poor households’ refers to those household living below the international poverty line of 1US$ PPP.

Obviously, poor and non-poor households have certain characteristics. Several examples will be presented, which give account to the different dimensions of poverty (see also 4.4.1).

Household composition

In practice, differences in the household composition between non-poor and poor households can be observed. In many countries, poverty is positively correlated with household size.

Table 8: Household size of sample households in percent

Household size	Percent of non-poor households	Percent of poor households
1	2.3	0
2	8.7	6.5
3	13.2	1.1
4	26.4	16.7
5	18.4	16.1
6	12.5	25.7
7	5.2	22.6
8	8.3	5.4
9	3.1	2.2
10	1.1	1.4
11	0.5	1.1
12	0	0
13	0.3	0
14	0	1.1
Total	100	100

Source: own data

Reasons for this phenomenon could be that poor household on the one hand do not have access to family planning programs and might be vulnerable to social and religious pressure, especially in traditional societies as they also to be found in the research region. Furthermore, the education level, particular of poor women is very low. On the other hand families with many children are more likely to become poor, because children also causes costs, however also provide great pleasure their parents. Obviously, the latter of course is not measurable by the concept of income poverty.

A larger household size usually means to have more dependents. This can be seen from the next table.

Table 9: Number of dependent persons younger than 14 and older than 60 years

Number of dependent persons younger than 14 and older than 60 years	Percent of non-poor household	Percent of poor households
0	18.7	7.7
1	26.9	12.5
2	29.1	30.2
3	15.2	25.5
4	7.3	18.0
5	2.0	6.1
6	0.8	0
Total	100	100

Source: own data

Considering the gender aspect, it can be observed that in poor households there are more females than in non-poor households (Table 10). Certainly, this is related to a bigger household size in general, but another reason could be that the inferior working and education conditions for females are even more apparent in poor households. Beside having less money at their disposal, these conditions are also related to the position of women in the Indonesian society.

Table 10: Total number of females in the household

Total number of females in the household	Percent of non-poor households	Percent of poor households
0	3.5	0
1	25.9	17.7
2	32.9	32.8
3	22.0	26.1
4	8.8	21.2
5	6.2	1.1
6	0.8	1.1
Total	100	100

Source: own data

Perception of one's own living standard

During the interviews it was asked for the subjective opinion regarding the development of the overall living standard (Table 11) as well as the development of several aspects of living in the last 7 years. Some of those aspects are presented in Table 12.

Table 11: Development of the living standard in the last 7 years

Living standard is	Total (in %)		Non-poor households (in %)		Poor households (in %)	
	no	yes	no	yes	no	yes
…worse or much worse compared to 1997	89.9	10.1	89.8	10.2	90.6	9.4
…the same as in 1997	85.2	14.8	86.7	13.3	79.5	20.5
…better than in 1997	29.6	70.4	29.5	70.5	29.9	70.1
…much better than in 1997	95.2	4.8	100	0	94.0	6.0

Source: own data

As shown in Table 11, most people in the region feel that their living standard has improved during the last 7 years. There are almost no differences between the poverty groups.

Table 12 there are 4 important aspects of well-being listed: food, drinking water, heath and the housing situation. Altogether, it seems that these aspects have improved during the last 7 years. There are slight differences in the perception of the two poverty groups regarding these aspects. 67, 7 % of the poor households (5 % more than those of the better-off households) feel that their food situation is better than 1997. Poor households as well perceive more improvements concerning the health situation of adult males. Regarding drinking water and the health situation for adult females, better-off households seem to have had more improvements than the poor households. 41.3% of the non-poor households feel that the male adult health situation is the same as in 1997. 10.6% of the better-off households believe that the situation is worse or much worse compared to 1997. With respect to the health situation of adult females, 51.9 % of the poor households conceive that the situation is the same as it was in 1997. Only 4.1 % of the poor households feel a worsening in their situation. As to the housing situation, 3.9% of all households perceive the situation to be worse or much worse than in 1997, 25.3 % thought that it remained the same and 8.6 % even feel that the housing situation improved much in the last 7 years. For 9.5 % of the non-poor household their

housing situation improved in the last 7 years, but only 5.3 % of the extreme poor households had this impression.

Table 12: Subjective perception regarding four aspects of well-being

Aspect of living standard	Total (in %)		Non-poor households (in %)		Poor households (in %)	
	no	yes	no	yes	no	yes
Food situation is better than 1997	36.7	63.3	37.9	62.1	32.3	67.7
Drinking water situation is better than 1997	46.2	53.8	45.3	54.7	49.6	50.4
Health situation of adult males (older than 21) is better than 1997	50.4	49.6	51.9	48.1	44.7	55.3
Health situation for adult females (older than 21 years) is better than 1997	51.1	48.9	49.6	50.4	57.0	43.0
Housing situation is better than 1997	37.9	62.1	39.3	60.7	32.5	67.5

Source: own data

Housing Conditions

The housing conditions of a household can provide objective information regarding a household's poverty status.

As presented in the following Tables 13 and 14 Poor households are less provided with the utilities electricity and piped water. One reason is presumably the need to pay fees for those services regularly, which poor households cannot afford. Another reason might be that poor households are likely to live in poorer villages which receive getting such public services later than the wealthier, politically connected villages. Nevertheless, the access to clean drinking water is quite good in parts of the research. It could be assumed that due to several development projects the situation improved as water-tanks were built in parts of the research area (as done by CARE).

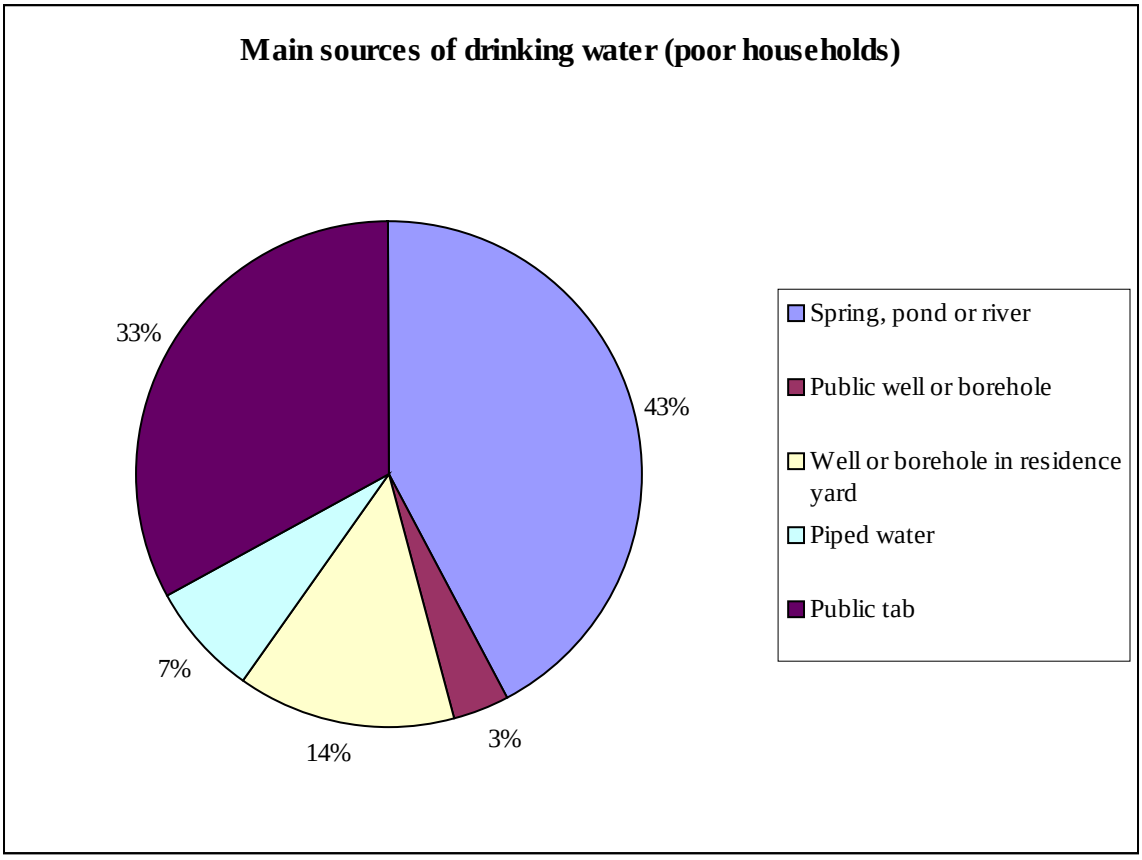
Table 13: Piped water

Piped water	Percentage of non-poor households	Percentage of poor households
No	69.2	87.9
Yes, shared	3.3	3.3
Yes own	27.4	8.8
Total	100	100

Source: own data

The overall supply of piped water is not as good as with electricity (see Table 14). 73.1% of all interviewed households do not have piped water.

Figure 3: Main sources of drinking water for poor households



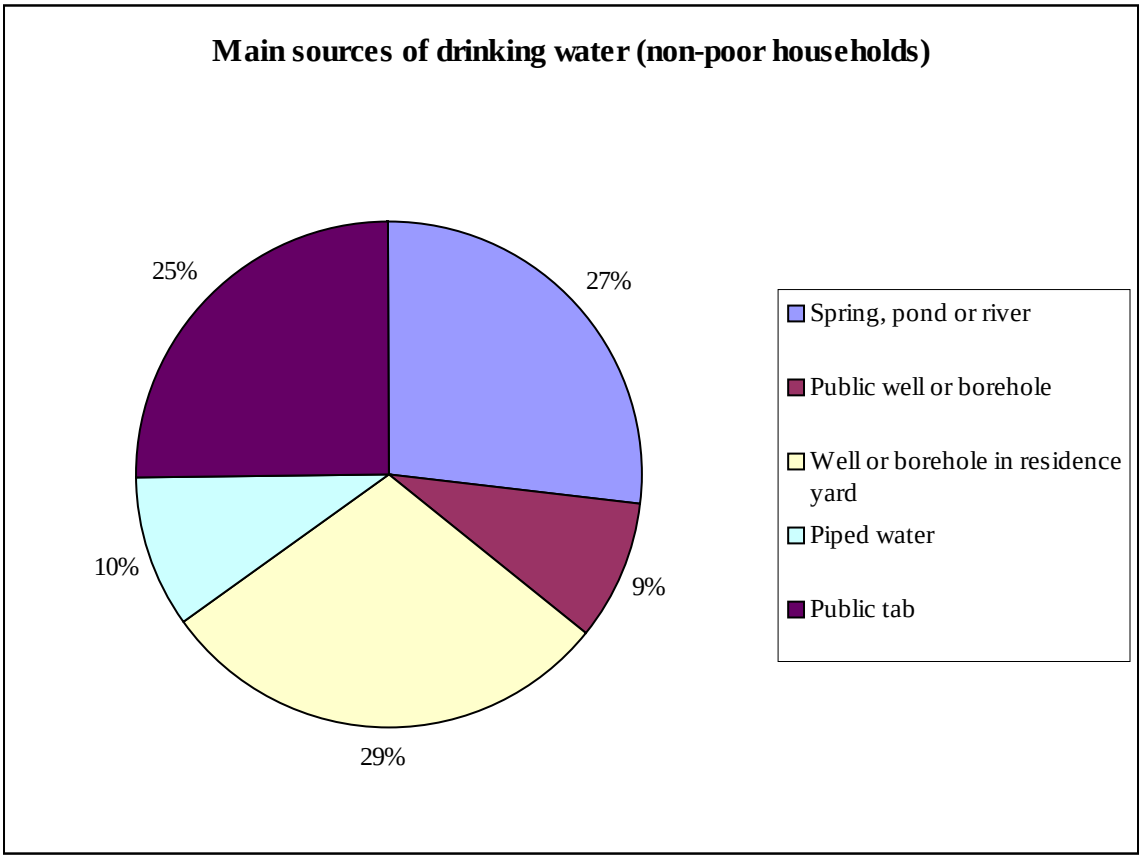
Source: own data

In Figure 3, different sources of drinking water of poor households are displayed. The most important drinking water sources for poor households are springs, ponds and rivers as well as public taps. It seems that the projects which assisting in the provision of drinking water,

generate benefits. In spite of this many of the poor households still rely on ponds, springs and rivers. Problems arise when the water is contaminated with pesticides etc., or if it is used as toilet, especially in the case of small rivers.

For comparison, the drinking water sources of the non-poor households in the sample are presented in 4.

Figure 4: Main sources of drinking water for non-poor households



Source: own data

It is interesting to see that many of the households which are better off, still rely on ponds, springs and rivers. An explanation could be that some the research villages and hamlets are located in rather remote areas. It is also interesting, that the percentage of non-poor households, who use public taps as the main source of drinking water is almost equal to the percentage of poor households. In general, it to assert that the public tap is the most important source of drinking water in the region.

The provision of electricity in the research area is quite high in general. In total, 53.8% of the interviewed households have their own electricity connection and another 11.1% use a shared

electricity connection. Additionally, 3.7 % of all households have electricity because they have their own generator. 32.5 % of all interviewed households have no electricity at all.

Table 14: Electricity

Electricity	Percentage of non-poor households	Percentage of poor households
No	25.1	60.6
Yes, shared connection	11.4	9.9
Yes, own connection	60.6	27.4
Generator	2.8	2.0
Total	100	100

Source: own data

As aforementioned the housing condition itself can be a good indicator of the household living conditions. As an example the distribution of households using bamboo for the exterior walls from poor and non-poor households will be presented in Table 15. The total share of households using bamboo for their exterior walls was 18.7%.

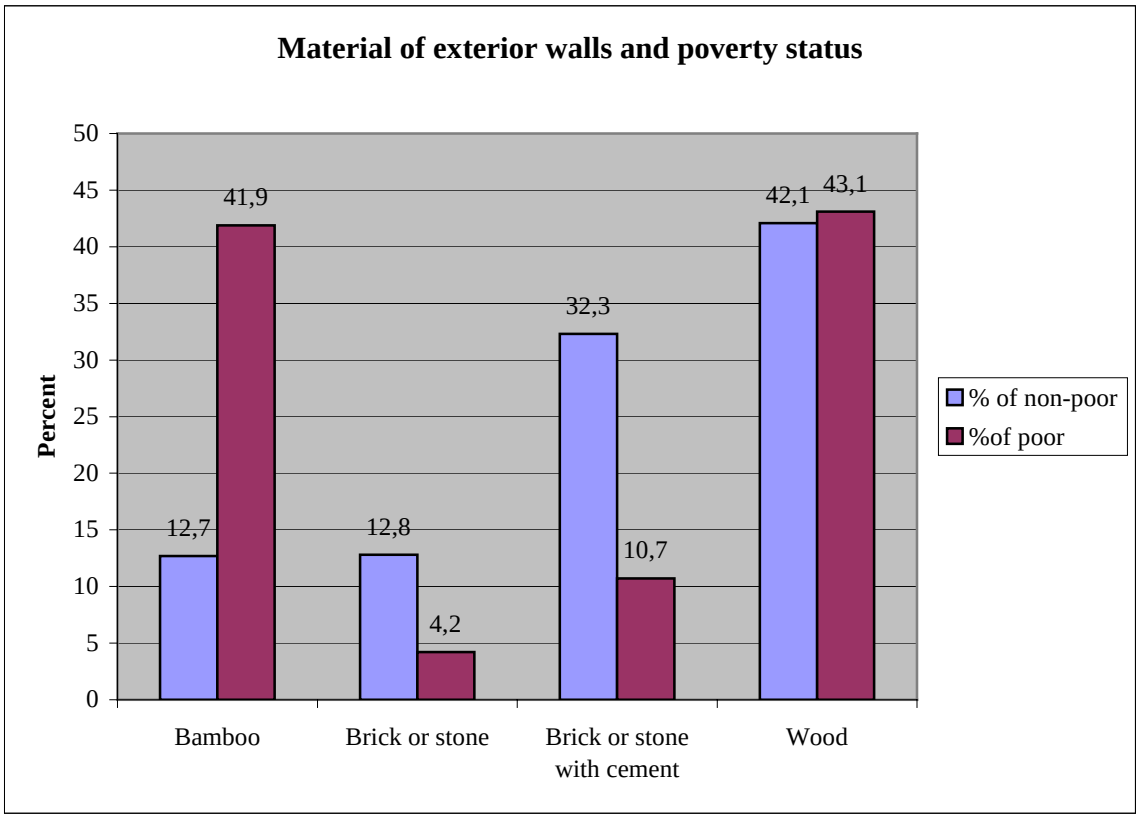
Table 15: Bamboo used as exterior wall material

Material of exterior wall is bamboo	Percentage of non-poor households	Percentage of poor households
No	87.3	58.1
Yes	12.7	41.9
Total	100	100

Source: own data

While almost 90% of the non-poor households do not use bamboo for their exterior walls, over 40% of the absolute poor households do. Richer households often build their houses with bricks or stones with cement (as presented in Figure 3). In general, wood is the preferred housing material in the region. In the figure below, different housing materials used are summarised and itemized by the poverty status of the households.

Figure 5: Material of exterior walls and poverty status



Source: own data

Food security

Regarding the food security in the region, the situation does not seem too grave. Only 7.1% of all households surveyed, replied that they had to skip meals because of food scarcity. A reason could be that most households are farmers and therefore can produce their own food. Interesting to note is the perception of a lot of non-poor households a with respect to their food situation. Referring to the question, how many days they did not have enough to eat in the last 30 days, the relative amount of poor households is higher, who answered the questions positively (19.8% of the poor households and 16.8% of the non-poor households), but some of those non-poor households (25.6% of the non-poor households, who answered the question with yes) said that they did not have enough to eat for 7 to 30 days, while none of the poor households answered with this number of days. Most of the poor households who answered this question with “yes” did not have enough to eat for 1-3 days.

Table 16: Household felt worry that food would run out, before there is money to buy new food

In the past 12 month household felt worried because of food would run out before it had money to buy new food	Percentage of non-poor households	Percentage of poor households
No	48.2	45.2
Yes	51.8	54.8
Total	100	100

Source: own data

Nevertheless, Table 16 shows clearly that the preoccupation with food insecurity is not only a concern of extremely poor households: 52.4% of all households worried that their food would run out, before they had money to buy new food. This could indelicate that actual non-poor households have also to face phases of uncertainty or even temporary poverty. As it was shown in Table 5, the percentage of household living with 2US$ PPP or less is rather high. By now, the weaknesses of the concept of absolute poverty become apparent: on the one hand such a measure only represents one point in time and on the other hand, due to the *ex ante* determined threshold, it is obvious that it is very difficult to come up with the complexity of poverty, especially regarding the time factor. The time factor is generally also a problem of cross-sectional household surveys.

Table 17: Loss of weight of adult because of food scarcity

Any adult household member lost weight because of food scarcity in past 12 month	Percentage of non-poor households	Percentage of poor households
No	94.3	92.4
Yes	5.7	7.6
Total	100	100

Source: own data

In Table 17 another indicator of food security is presented. Only 6.1% of the households had an adult member who lost weight because of food scarcity.

This indicates the difficulty of verifying some indicators, especially when they are related to recall periods. This problem is discussed in more detail in Chapter 5. Even if a lot of

households are afraid of becoming food insecure, the analysis show that there is enough food available for the majority of the households.

Occupation and landownership

As already mentioned, most of the households in the research area are farm-households (73.2% of the non-poor households and 87.1% of the households deemed poor). Nevertheless, there are some differences in the distribution of agricultural land:

Table 18: Land types owned

	Irrigated rice field ownership		Lowland ownership		Upland ownership	
	yes	no	yes	no	yes	no
Percentage of non-poor-households	40.2	59.8	38.2	61.8	47.9	52.1
Percent of poor households	30.7	69.3	16.7	83.3	65.2	34.8

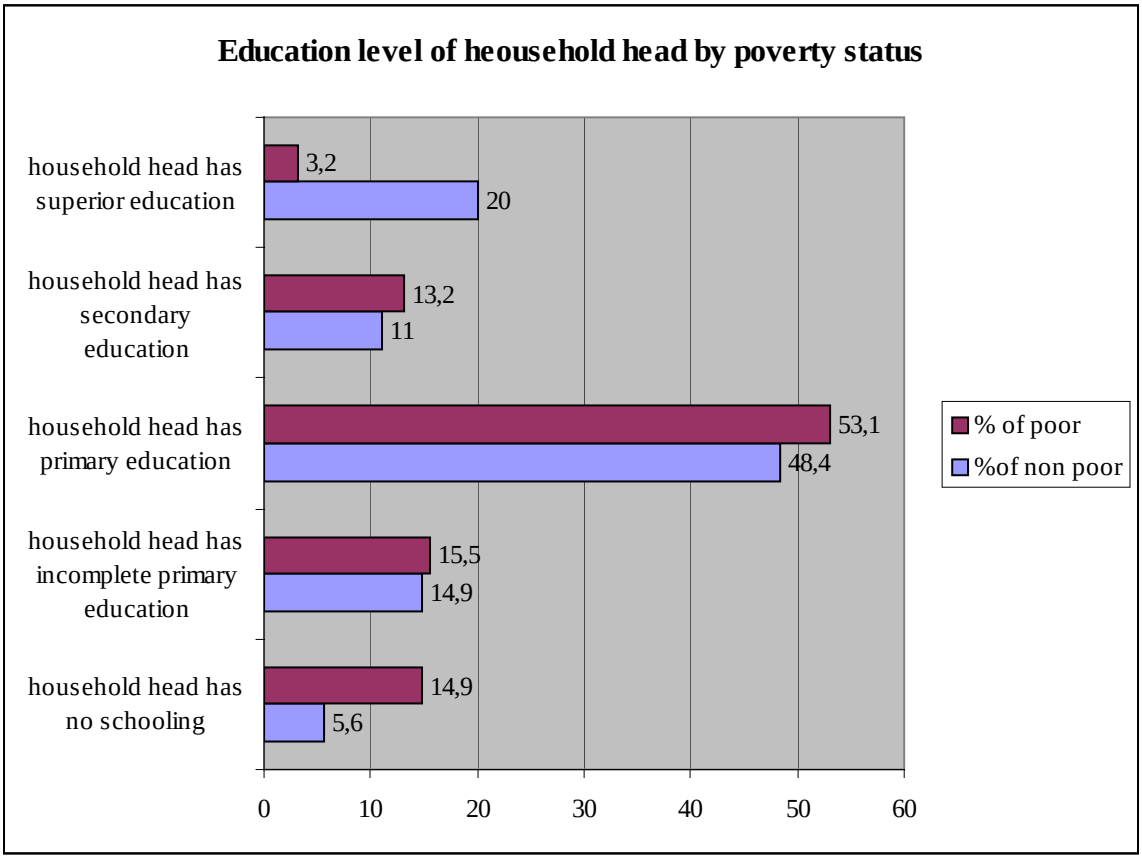
Source: own data

These results show that the majority of the more valuables agricultural areas, like irrigated rice fields and lowland areas, where for example cocoa trees could be grown, are owned by the non-poor households. Poorer households mostly own land which is less-easy to cultivate located in the mountains. It is possible that areas, which in fact belong to the Lore Lindu National Park, are included in the cultivated uplands.

Education

It can be stated that the educational background is different between poor and non-poor households. The majority of household heads in the area attended at least primary school: 50.6% of the household heads quote their level of education as ‘complete primary education’. In the following figure the overall education situation is graphically described.

Figure 6: Education level of household head and poverty status



Source: own data

The most common educational level within both groups is ‘completed primary education’. The share of household heads from poor households who have no primary education is with 14.9% much higher compared to non-poor households (5.6%). Especially the in case of the secondary education, the influence of the sampling weight can be observed: When taking it out of the computation, the share of non-poor households with secondary education (12.4%) is higher than the share of poor household heads with secondary education (9.3%). Nevertheless, there are no big differences concerning the share of household heads with secondary education. The greatest difference can be observed in the superior education.

With respect to the education level of the spouses the differences in the higher education are considerable: only 6.8% of the spouses in poor households attended secondary school. In 15.6% of the households with expenditures higher than 2723 IDR spouses have secondary education. For superior education, the gap is even more pronounced. Only 0.9% of the poor spouses have an education level higher than secondary education. For the non-poor households the share is almost ten times higher (8.5%).

In general, it can be concluded that the education status of poorer households is inferior compared to better off households.

Assets and durable goods

In general, better-off households own more assets than poor households. Some assets such as refrigerators are very luxurious and only owned by few households. Only 8.6% of the non-poor households own a refrigerator. A very common asset is the furniture set (consisting of a sofa and chairs). A set is owned by 71.8% of all households. More non-poor households own a set (79.1%) than poor households (43.8%).

In the following two tables two 'assets' (motorcycles and chickens) are presented.

Table 19: Motorcycle ownership

Motorcycle ownership	Percent of non-poor households	Percent of poor households	Total share (%)
No	67.9	100	74.5
Yes	32.1	0	25.5
Total	100	100	100

Source: own data

Table 19 indicates that motorcycles are luxury items, even if they are a common mean of transport in Indonesia. However, they are only owned by better-off households. The high purchase price could explain this.

Table 20: Chicken ownership

Chicken ownership	Percent of non-poor households	Percent of poor household	Total share (%)
No	37.6	54.2	51.8
Yes	62.4	45.8	49.2
Total	100	100	100

Source: own data

In Table 20 it can be seen that the share of poor households, who own chicken, is higher than that of the better-off households owning chicken. Nonetheless, there are also differences between poor and non-poor households: The number of chicken owned varies a lot with

respect to the wealth status of a household. The number of chicken owned by poor households tends to be smaller than the number of chicken owned by more wealthy households. Most of the chicken-owning households have on average 2-3 chickens.

Chapter 5. Methods for the identifications of poverty indicators

For the analysis of the data, the Ordinary Least Squares (OLS) regression models are used. In the regression equation the dependent variable (or regressand) y (here daily per capita expenditures) is explained by a function of x . X are the independent or predictor variables, here the different variables derived from the indicators. The OLS models minimize the sum of the squared prediction errors (Davidson 2000). In other words the linear regression curve is the one, in which the sum of the squared discrepancies of curve to the observed values is minimised (Draper et al. 1981).

To find a suitable initial set of indicators for Model 1, one-step OLS was conducted. The regression models run in SAS, using the MAXR technique, which seeks to maximise the explained variance of the depended variable. This study searches for a set of the 15 best indicators for predicting a poor household in Central Sulawesi. Therefore, MAXR seeks for an optimal improvement of R^2 within a set of 15 variables. R^2 is the ratio of the variance in the dependent variable that is explained by the model and its regressors, divided by the overall observed variance of the dependent variable. The coefficient can range between 0 and 1. Consequently, an R^2 with the value of 1 would mean, that the predicted values for the dependent variable for all households are the same as the observed values. An R^2 value of 0.7 would imply that 70% of the observed variance in the dependent variable is explained by the model and its regressors. The MAXR procedure seeks to maximise R^2 and considers all combinations among pairs of regressors to move from one step to the next. First, MAXR tries to find a one-variable model, which provides the highest R^2. In the next step another variable is added. This variable has to be the one, which yields the greatest improvement in R^2. Within this two variable model, each variable is compared with each variable not in the model. MAXR 'decides' after each comparison, whether to remove a variable and replace it or not in order to get a maximal R^2. This procedure is done until no more maximisation is possible or a certain amount of variables (e.g. 15) is reached. In the selection process of the indicators this MAXR procedure was used. However, an important drawback of this procedure is that cannot handle the inclusion of sampling weights.

After obtaining the results from a regression, a number of checks and related adjustments have to be made. One such check is whether the coefficient carries a sign that concurs with what one would expect from theory. For example the variable 'bed ownership yes, no' has to have a positive sign, because richer households are more likely to have beds compared to poorer households. On the opposite the variable 'share of total expenditures on food' has to

have a negative sign, because poorer households normally spend a higher share of their total expenditures on food than richer households do.

Any of those variable sets found can be described as a poverty assessment tool for the purpose of identifying the poverty status of a household. The variables or indicators are derived from the composite questionnaire. The dependent variable (per capita daily expenditures) is, like any other variable defined in monetary values (as expenditures or values of assets), converted into the natural logarithm in IDR, the national currency of Indonesia. All ordinal variables, such as the 'type of wall', with lower values indicating inferior material and higher values indicating superior materials, are converted into dummy variables (for each sub-type) (Zeller et al 2005).

In the analysis presented here, the first step done was to try out different ways to generate an initial indicator set for Model 1. Because of the comparatively low sample size (281 households) it was not possible to take all 278 regressors (including 9 control variables).

The different ways of selection were:

- A: The best 86 indicators of all variables were selected by the MAXR technique from SAS. The adjustments to check, whether the sign of the regression coefficient is theoretically right, were done within the 15 best variables out of 86 best indicators presented by SAS.
- B: Before creating a set of the 86 best indicators, a regression with all variables was run and adjustments were done within 5, 10 and 15 best indicator-sets.
- C: This was the method which determined the number of variables taken for all methods (86 variables). All variables were split into seven dimensions, namely 'education', 'food, health and clothing', 'demography and occupation', 'assets and durable goods', 'agricultural assets and land ownership', 'housing' and 'finances, social capital and others'. The best indicators were selected by MAXR out of each dimension. Adjustments were made within the dimensions. All the variables of one dimension were included in the selection process. The adjustments were done until every sign was fitting and MAXR could not be improved anymore.

Table 21: Number of indicators in dimensions of selection

Dimension	Total number of variables in this dimension	Number of selected variables
Education	38	13
Food, health and clothing	43	12
Demography and occupation	33	9
Assets and durable goods	49	12
Agricultural assets and land ownership	38	6
Housing	36	17
Finances, social capital and others	31	17
Total	269	86

- D: In this method, the best indicators again from each of the dimensions were taken. The number of indicators from each dimension was the same as in method C, but this time no adjustments were done within those dimensions. Again only the best 15 variables out of the set with the best 86 variables were adjusted.
- E: In this set there are no adjustments at all. It is the best set of 86 variables without changing anything. Out of these set 15 indicators were chosen again as best from SAS MAXR. E is not a data set, which can be used to run the models properly. It was created just as a reference.

In all steps for the selection of an indicator set, an INCLUDE statement was included for nine regressors as control variables. These variables were: household size, household size squared, the age of the household head and age of household head squared. These variables take into account the influence of demographic factors that in previous research have been found to be powerful variables in explaining per capita expenditure at the household level and additionally five regional dummies which seek to capture regional agro-ecological, cultural and socio-economic differences between regions (Zeller et al. 2005).

For making good and valid predictions, a regression model or poverty assessment tool needs certain accuracy. In the following, seven measures of accuracy performance that are used in the models are presented:

- *Total Accuracy* is the percentage of the total sample of 281 households whose poverty status is correctly predicted by the regression model.
- *Poverty Accuracy* is accuracy among the very poor. It is expressed as a percentage of the total very poor. This measure refers to the households correctly predicted as very-poor.
- *Non-poverty Accuracy:* The accuracy among the not very poor is expressed as percentage of the total number of not very poor. This measure refers to the households correctly predicted as not very-poor.
- *Undercoverage* represents the error of predicting very-poor households as being not very-poor, expressed as a percentage of the total number of very-poor households.
- *Leakage* reflects the error of predicting not very-poor households as very poor, expressed as a percentage of the total number of very poor households.
- *Poverty Incidence Error* (abbreviated in tables as PIE), defined as the difference between the predicted and the actual (observed) poverty incidence (here headcount), measured in percentage points.
- *Balanced Poverty Accuracy Criterion* (abbreviated in tables as BPAC), defined as: Poverty Accuracy minus the absolute difference between Undercoverage and Leakage, each expressed as a percentage of the total number of the very poor. When Undercoverage and Leakage are equal, the BPAC is equal to the Poverty Accuracy. BPAC is measured in percentage points (Zeller et al 2005 /The IRIS Centre 2005).

For the comparison between the different methods to create a set of the 15 best indicators, (preliminary) accuracy tests with these sets were done. The results can be summarised as follows:

Table 22: Accuracy performance of different selection methods

	Method A	Method B	Method C	Method D	Method E
Total accuracy	84.41%	84.41%	84.34%	84.34%	84.34%
Poverty accuracy	40.74%	40.74%	37.04%	40.74%	44.44%
Non-poverty accuracy	96.04%	95.6%	94.27%	94.71%	93.83%
Undercoverage	59.26%	59.26%	62.96%	59.26%	55.56%
Leakage	16.67%	16.67%	18.52%	22.22%	25.93%
PIE	- 8.19%	- 8.19%	- 8.54%	- 7.12%	- 5.69%
BPAC	- 1.85%	- 1.85%	- 7.41%	3,70%	14.82%

In the first two Methods (A and B) SAS MAXR selected the same indicator set, even if the previous adjustments were different. The method E, which has no adjustments at all, appears to be the method that has the highest accuracy in predicting the poor. Nonetheless, for the further calculation of Model 1, method D, where first the best variables within each dimension without adjustments are selected - referring to the amount of variables in method C, to create a set of 86 indicators - and then adjustments are done within the variables selected as best 15 by the MAXR procedure, is taken. Even, if the total accuracy is a little lower than in the case of method A, B and C, the method D occurs to provide the highest BPAC within the feasible methods.

The full list of all variables as well as the variables of method D is listed in Annex 3 and 4.

Chapter 6. Regression Models to Assess Poverty in Central Sulawesi

With the data gathered during the field survey in Central Sulawesi the dependent variable lnpbench (natural logarithm of the daily per capita expenditures) as well as a lot of potential poverty indicators were acquired. After the cleaning procedure which was done with SPSS, there were 278 usable regressors. For a lot of variables dummy variables where created. The dummy for the most common answer was left out. Out of these 278 regressors, 9 variables were selected as control variables, as aforementioned. During the survey 281[11] households in rural Central Sulawesi were interviewed. So, the amount of regressors almost equals the amount of observations. In order to have enough degrees of freedom for the model estimation, the number of regressors had to be reduced for the different regression model.

In the analyse indicators two types of difficulties have to be faced: On the one hand there is a certain difficulty of the indicator itself in terms of time, money and social costs. Social costs especially occur with cultural sensitive questions. Different indicators are not equally easy to survey. The difficulties of the indicators vary with different socio-economic context. Some difficulties also depend on the skill-level of the enumerators and are as well affected by the intellectual skills and the educational level of the respondent and can also be influenced by the interview situation (Zeller et al. 2005).

Another difficulty can be the verifiability of the indicators. Such a perspective can be useful to see whether an indicator is operational. Here one again can see the aspects of time, money and social costs. First of all subjective and objective indicators have to be distinguished. Indicators derived from self-assessment (either from respondent and enumerator) are typical subjective indicators and therefore very hard to verify. Objective indicators use scales, which can, in general, be verified. Examples are ‘the material of exterior walls’, ‘the age of person (in years)’ or ‘the size of a room (in square meters)’. These indicators are directly measurable. But also objective indicators vary in their verifiability. Indicators, which have to do with any actions or states that occurred in the past, are also hard to verify (Zeller et al. 2005).

In the following, two regression models are presented. Model 1 works with the full set of indicators (respectively 86 variables). Therefore, also indicators come into the model, which have a high difficulty in themselves or are very hard to verify. Model 7 is the most restrictive model of all regression models which were tested in IRIS studies. It only allows variables in the model, which are ranked easy-to verify. Nonetheless, it is the model that is most probable

[11] During the analysis two outlier were dropped

to be applied in practise, because difficult expenditure related variables, for example, do not have to be calculated. Because of this characteristic Model 7 was chosen to be tested in Central Sulawesi, because the research done with STORMA should also provide applicable results for local NGOs.

6.1 Model 1

Model 1 includes the initial set of indicators. In the case of Indonesia there were 86 variables plus 9 control variables. As aforementioned, the best method for gaining this set was method D. The regressions to create this set were one-step OLS (ordinary least square) regressions. The pre-selection of indicators is presented in Chapter 5.

Table 23: Model 1- One Step OLS, indicator selection Method D

Variables	Model performance (%)	
BEST15 indicators: R^2 adjusted = 0.461		
• Maximum education of females is secondary/post primary education • Number of days in the past 7 days were any of 4 superior foods was eaten (large fish, beef/pork/buffalo meet, chicken/duck or egg) • Household had to eat less food, for less than ten days in the past 12 month • Average clothing expenditures per capita, past 12 month • Household thinks that its health care expenditures are above its needs • Total value of metal pots owned by the households • Household agree that people in the neighbourhood are basically honest and can be trusted • Household agree that I it would lose a pig or goat somebody would help to look or it • Expenditures on other expenditures, social events and leisure in past 12 month • Total value of received dowry in past three years • Sum of total expenditures in past 12 month • Total value of remittances sent divided by total household expenditures • Total value of remittances received divided by total household expenditures • Total value of expenditures for transport • Household made a recent home improvement	Total Accuracy: Poverty Accuracy: Non-poverty Accuracy: Undercoverage: Leakage: Pred. Pov. Incidence: PIE: BPAC:	84.43 40.47 94.71 59.26 22.22 12.10 -7.11 3.70

Source: own data

Concerning the advantages and disadvantages of this model, some of the indicators should be discussed exemplarily here. While it is probably easy to find out the highest education level of females in a household, it is more difficult to obtain, which kinds of food were eaten or which expenditures were made in a certain recall period. It is likely that households give wrong information, on purpose or not, if the question is about actions or states in the past. Also subjective indicators like how the households feels its surrounding (e.g. 'neighbourhood is basically honest and can be trusted') is hard to verify, especially if it is a cross-sectional survey, where the households are visited once and the interviewer stays too short in the village to get an overall impression about the intra-community relation. The advantage of the indicators included in Model 1 is the good accuracy performance (especially in the second step), mainly due to the expenditure variables, which of course influence the variable 'daily per capita expenditures' very directly.

Normally, the model calculated with one step OLS does not have a high poverty accuracy and a low BPAC. This is confirmed by looking at the accuracy results in the above table. In the second step a smaller sub-sample is used where more poor households come in. Thus the second step is improving the accuracy among the poor.

The 86 variables from method D were also used for the two-step OLS of Model 1. As first step the results of one step OLS were used. The two-step OLS method for the regression models to assess poverty is a bit arbitrary, because the cut-off point (the percentile which determines the sub-sample) is defined by searching for the best BPAC. The BPAC is the most important criterion for this kind o poverty assessment tools. SAS provides a list of the best 15 variables for the second step. The adjustments done in the second step are always done in the percentile, which at that time provides the highest BPAC. In the case of Model 1, the highest BPAC was finally reached at 32 percentile. The following indicators were selected for this:

Table 24: Model 1- Two Step OLS, indicator selection Method D[12]

Variables	Model performance (%)	
BEST15 indicators: R^2 adjusted = 0.5545, 32 percentile		
• Maximum education of females is secondary/post primary education • Household member lost weight because of food scarcity • Food expenditure share of total consumption expenditures in percent • Household eats rice mixed with maize because of food scarcity • Age of youngest household member • Percentage of dependents younger than 18 and older than 60 years (in relation to household size) • Household head works outside of agriculture • Trunk or suitcase ownership • Total value of furniture sets owned by household • Household agrees that people in the neighbourhood are basically honest and can be trusted • In the last three years household had borrowed money from informal market • Sum of total expenditures in past 12 month • Total value of expenditures for transport • Household made a recent home improvement • Exterior walls are out of brick or stone	Total Accuracy: Poverty Accuracy: Undercoverage: Leakage: PIE: BPAC:	91.76 75.93 24.07 18.52 -1.07 70.37

Source: own data

Obviously, the BPAC was improved a lot in the two step OLS. The model's accuracy performance was further improved by using quantile regressions run with STATA. The best accuracy results were achieved by applying the two-step quantile regressions. In contrast to the OLS regression (see Chapter 5), the quantile regressions minimize the absolute sum of errors to the median or any other quantile. Therefore, they are also called least absolute value models (Stata 2003, Koenker et al. undated).

6.2. Model 7

In Model 7 only those variables are used which are easy to verify. Therefore, variable set 'E' was used, in which it was searched for the best-to-verify variables in the whole set of 278 variables. The variables were ranked in categories from 1 (very hard to verify) to 5 (very easy

[12] Two outlier households were dropped in the second step

to verify). Every indicator ranked with four or five was taken into the first step of Model 7. Together, there were 92 indicators, so only ca. a third of all variables.

Of course, the criterion of verifiability determines in a way the accuracy of the model. The accuracy performance is especially lower due to the lack of 'strong' indicators, in particular the expenditure related indicators.

Table 25: Model 7 - One step OLS[13]

Variables	Model performance (%)	
BEST15 indicators: R^2 adjusted = 0.5145		
• Total number of rooms of the house • Metal cooking pots ownership • Clock ownership • VCD-Recorder ownership • Motorcycle ownership • Cow ownership • Household uses other cooking fuel than collected wood • Toilet is own pit toilet • Water from well in residence yard • Household head sleeps in bed with thin mattress out of fibres • Household cooks in separate kitchen • Household has own or shared electricity (including generator) • Percentage of dependents younger than 18 and older than 60 years (in relation to household size) • Household made a recent home improvement • Number of trunks and suitcases owned	Total Accuracy: Poverty Accuracy: Non-poverty Accuracy: Undercoverage: Leakage: Pred. Pov. Incidence: PIE: BPAC:	87.1 44.44 97.33 55.56 11.11 10.75 -8.6 -5.55 E-17

Source: own data

To make clear again, what is meant by the term easy-to-verify indicators, a few examples are given: the interviewer can easily obtain the total number of rooms during the interview. Also assets are normally obvious, whether they exist in a household or not. Also, whether a household has access to different utilities is quite easy to observe, for example by looking if electricity cables exist. Cow ownership for example could be verified by asking a neighbour, if it is not apparent. Also ages of persons in the household are more easily to obtain than expenditures for transport (a variable from Model 1).

[13] Model 7 was calculated with the data from 279 households

In the same way as in Model 1, the BPAC, as most important accuracy measure, can be improved for Model 7 by applying the two- step OLS regression. For Model 7 the best BPAC, after adjustments were made occurred to be in percentile 38. Therefore, the cut-off for the sub-sample to improve the accuracy among the poor was the 38 percentile. The variables are the following:

Table 26: Model 7 -Two Step OLS

Variables	Model performance (%)	
BEST15 indicators: R^2 adjusted = 0.5244, 38 percentile		
• Total rooms of the house • Stove ownership • Bicycle ownership • Motorcycle ownership • Cow ownership • Number of chicken owned • Lock of main entrance door is padlock • Exterior walls are out of brick or stone • Household uses other cooking fuel than collected wood • Lighting source is shared electricity connection • Household cooks in separate kitchen • Household head works outside of agriculture • Toilet is shared (pit toilet or improved latrine) • Age of youngest household member • Ratio of dependents younger than 18 and older than 60 years	Total Accuracy: Poverty Accuracy: Undercoverage: Leakage: PIE: BPAC:	91.04 68.52 31.48 55.56 -3.23 51.85

Source: own data

The accuracy performance of Model 7 was also further improved by using quantile regressions. For Model 7 the best accuracy result was achieved with the one step quantile regression.

6.3 Summary of accuracy results

In the following tables the accuracy performance of both models are summarized. The different accuracy measures are compared between the four regression types. As aforementioned the balanced poverty accuracy criterion (BPAC) is the most important accuracy measure in analysing these models. Thus, the higher the value of the BPAC, the

better is the quality of the tool. Therefore, the value of the BPAC is the most important measure in order to define which regression analysis was the best for each model.

Table 27: Summary accuracy results for Model 1

	Per-centile	Total Accuracy (in %)	Poverty Accuracy (in %)	Non-Poverty Accuracy (in %)	Under-coverage (in %)	Lea-kage (in %)	PIE (in %)	BPAC (in %)	Actual Head-count (in %)	Predicted Head-count (in %)
One step OLS[14]	/	84.43	40.47	94.71	59.26	22.22	-7.11	3.70	19.22	12.10
Two step OLS[15]	32	91.76	75.93	/	24.07	18.52	-1.07	70.37	/	/
One step Quantile[16]	/	88.53	68.52	93.33	31.48	27.78	-0.72	64.81	19.35	18.64
Two step Quantile[17]	/	92.11	69.63	95.11	20.37	20.37	0	79.69	19.35	19.35

Source: own data

In the Table 27 a comparison of the different regression methods used for Model 1 is presented. The best accuracy performance was reached with the two-step Quintile method. Here, the BPAC reached almost 80 percent. For the use of the model both variable lists (from one and two step regressions) and their coefficients are needed (q.v. Chapter 6.4).

Table 28: Summary accuracy results for Model 7

	Per-centile	Total Accuracy (in %)	Poverty Accuracy (in %)	Non-Poverty Accuracy (in %)	Under-coverage (in %)	Lea-kage (in %)	PIE (in %)	BPAC (in %)	Actual Head-count (in %)	Predicted Head-count (in %)
One step OLS	/	87.1	44.44	97.33	55.56	11.11	-8.6	-5.55 E-17	19.35	10.75
Two step OLS	38	91.04	68.52	/	31.48	55.56	-3.23	51.85	/	/
One step Quantile	/	89.61	74.07	93.33	25.93	27.78	0.36	72.22	19.35	19.71
Two step Quantile	/	89.61	75.93	92.89	24.07	29.63	1.07	70.37	19.35	20.43

Source: own data

[14] 281 households
[15] Two outlier households were dropped
[16] Two outlier households were dropped
[17] Two outlier households were dropped

For Model 7, the accuracy results are not as good as that from for Model 1. The main reason for this phenomenon is, that powerful expenditure indicators are not included in Model 7, which of course influence the dependent variable 'daily per capita expenditures' the most. Anyway, the Model 7 also reaches to a certain extent good accuracy results. In the one-step Quantile method Model 7 achieves a BPAC of 72.22 %, which is very high as well.

6.4 How to use a low cost tool for poverty assessment

Of course it is very important to know how to apply these models in practise. This will be explained next exemplarily for Model 7. Characteristic for Model 7 is that only variables are included which were ranked as easy to verify. Hence, results from Model 7 are more likely to be applied by local NGOs in Central Sulawesi than Model 1, which, although it has a better accuracy performance, is more time intensive and therefore more costly, especially because of the expenditure variables.

To use the Models in practise, the constant regression coefficient, and the coefficient of each variable used is needed. These coefficients are provided in the SAS output.

For the calculation, all values of the indicators multiplied by the coefficient have to be added to each other. The result of that equation is a value, which can define whether the household is poor or not. If only one step is required that value would equal the predicted natural logarithm of the per capita daily expenditures (lnpbench). On the strength of the worse accuracy performance of Model 7 in the one step OLS, also the second step has to be considered: In the first iteration the value calculated from the regression equation has to be compared with the value (lnpbench) at the cut-off. This value is derived from the two step OLS. In the recent study this value is 8.35 at the cut-off point at percentile 38. This equals a transformed value of 4230.18 IDR. If a household is below that cut-off value, it has to come into the second iteration. The second iteration is for improving the accuracy among the poor.

For a better understanding, an example will be calculated. The regression equation is calculated as follows:

$Y = ß_0 + (ß_1 * x_1) + (ß_2 * x_2) + \ldots + (ß_{15} * x_{15})$

Y: predicted lnpbench (natural logarithm of daily per capita expenditures)

$ß_0$: constant regression coefficient (intercept)

$ß_{1:}$ regression coefficient for variable 1

x_1: value of the variable 1

Table 29: Variables and their coefficients of one-step OLS regressions for Model 7

Variable name	Coefficient from regression model (ßi)	Variable value (x_i)	Explanation	Calculation of predicted values
Intercept ($ß_0$)	10.42384		Constant regression coefficient	
Age of household head	-0.2092	59	Household head is 59 years old	-1.23428
Age of household head squared	0.0001815	3481	59 squared = 3481	0.6318015
Household size	-0.33009	7	7 household members	-2.31063
Household size squared	0.01557	49	7 squared = 49	0.76293
District Lore Utara	-0.1425	1	Household lives in district Lore Utara	-0,1425
District Palolo	-0.39967	0	Household doesn't live in district Palolo	0
District Sigi Biromaru	-0.75771	0	Household doesn't live in district Sigi Biromaru	0
District Kulawi	-0.54191	0	Household doesn't live in district Kulawi	0
District Pipikoro	-0.51665	0	Household doesn't live in district Pipikoro	0
Total number of rooms	0.05019	4	Dwelling has 4 rooms	0,20076
Metal cooking pot ownership	0.19478	0	Household doesn't own metal cooking pot	0
Clock or watch ownership	0.1401	0	Household owns clock or watch	0
VCD-Recorder ownership	0.31491	0	Household doesn't own VCR	0
Motorcycle ownership	0.20235	0	Household doesn't own motorcycle	0
Cow ownership	0.21482	0	Household doesn't own cow	0

Household uses other cooking fuel than collected wood	0.20555	0	Household doesn't use other cooking fuel than collected wood	0
Toilet is own pit toilet	-0.27415	1	Household has own pit toilet	-0.27415
Water from well in residence yard	0.16186	0	Household doesn't get its drinking water from well in residence yard	0
Household head sleeps in bed with mattress out of thin fibres	-0.22723	0	Household head doesn't sleep in bed with mattress out of thin fibres	0
Household cooks in a separate kitchen	-0.30423	0	Household doesn't cook in separate kitchen	0
Household has own or shared electricity connection (incl. generator)	0.13892	1	Household has own or shared electricity connection or generator	0,13892
Percentage of dependents younger than 18 and older than 60 years (in relation to household size)	-0.00362	0	No dependents younger than 18 and older than 60 are living in the household	0
Household made a recent home improvement	0.2277		Household did not made a recent home improvement	0
Total number of trunks or suitcases owned	0.10318	0	Household owns one trunk or suitcase	0
Predicted value of natural logarithm of daily expenditures				8.196
Transformed predicted value in IDR				3626.42

The predicted daily per capita expenditure for this household which is one of the interviewed households is 3626.42 IDR. Therefore, it is smaller than the cut-off value of 4230.18 IDR. Hence, the household is included in the second iteration. The variables used for the sub-sample in the second iteration are obtained from the two-step OLS regression.

Table 30: Variables and their coefficients of two-step OLS regressions for Model 7

Variable name	Coefficient from regression model (ßi)	Variable value (xi)	Explanation	Calculation of predicted values
Intercept (ß0)	9.65897		Constant regression coefficient	
Age of household head	-0.01925	59	Household head is 59 years old	-1.13575
Age of household head squared	0.00030142	3481	59 squared = 3481	1.04924302
Household size	-0.31577	7	7 household members	-2.21039
Household size squared	0.01277	49	7 squared = 49	0.62573
District Lore Utara	-0.15643	1	Household lives in district Lore Utara	-0.15643
District Palolo	-0.0248	0	Household doesn't live in district Palolo	0
District Sigi Biromaru	-0.05451	0	Household doesn't live in district Sigi Biromaru	0
District Kulawi	0.16696	0	Household doesn't live in district Kulawi	0
District Pipikoro	-0.06546	0	Household doesn't live in district Pipikoro	0
Total number of rooms	0.10376	4	Dwelling has 4 rooms	0.41504
Stove ownership	0.23041	0	Household doesn't own stove	0
Bicycle ownership	0.35890	0	Household doesn't own bicycle	0
Motorcycle ownership	0.71038	0	Household doesn't own motorcycle	0
Cow ownership	0.47001	0	Household doesn't own cow	0
Number of chicken owned	0.01453	0	Household doesn't own chicken	0
Lock of main entrance door is padlock	0.118133	1	Lock of main entrance door is padlock	0.118133
Exterior walls are out of brick or stone	0.19609	0	Exterior walls of the household's dwelling are not out of brick or	0

			stone	
Household uses other cooking fuel than collected wood	0.71309	0	Household doesn't use other cooking fuel than collected wood	0
Main lightening source is shared electricity connection	-0.24055	0	Household's lighting source is shared electricity connection	0
Household cooks in a separate kitchen	-0.28469	0	Household doesn't cook in separate kitchen	0
Household head is working outside of agriculture	0.46073	0	Household head is not working outside of agriculture	0
Toilet is shared pit toilet or improved latrine	-0.27415	0	Household doesn't have shared pit toilet or improved latrine	0
Age of youngest household member	-0.02201	20	Youngest Household member is 20 years old	-0.4402
Ratio of dependents younger than 18 and older than 60 years (in relation to household size)	-0.13247	0	No dependents younger than 18 and older than 60 are living in the household	0
Predicted value of natural logarithm of daily expenditures				7.627
Transformed predicted value in IDR				2052.88

The transformed predicted value of 2052.88 IDR is smaller than the value of the international poverty line for Indonesia, which is 2723 IDR; thus the household is predicted as poor. When the transformed predicted value is compared with the actual daily per capita expenditure of 2252.01 IDR for this sample household, acquired in the field survey in Indonesia, it can be found that the prediction of the model was rather good as the deviation is about ten percent (or about 200 IDR) between actual and predicted value.

As mentioned in Chapter 6.3 the best BPAC was reached with the one-step quantile regression. If the software is available to calculate these regressions, only the one-step set of variables is needed for achieving the best results for Model 7. Nonetheless the above-described procedure is valid for different tools using two step OLS (i.e. for different composition of indicators) to predict, whether a household falls under a certain threshold.

Chapter 7. Conclusions

As argued by A. Sen (1999), income poverty respectively the measurement of poverty in economic terms falls short of defining and understanding poverty in all dimensions. In Chapter 2, some of the disadvantages of the commonly used income poverty measurement and its poverty lines were discussed. Nonetheless a poverty line – despite its pitfalls – is commonly used to define poverty – including in the definition of the major development goals, such as the first MDG. Thus the income poverty definition was adopted for this thesis.

The indicator-based approach for poverty assessment presented in this thesis, provide a possibility to connect several dimensions of poverty like health, housing, education, food security, social capital etc. with the measurement of poverty in economic terms. The aim of the thesis was to find different sets of indicators which can predict whether a household in Central Sulawesi, Indonesia falls short of the international poverty line of 1 US $ in PPP or not. The results and how to apply the developed poverty assessment tools were presented in Chapter 6.

Coming now to the first research question “What is the extent and depth of absolute poverty among rural households in the vicinity of Lore Lindu National Park, Central Sulawesi, Indonesia?“ it can be first ascertained that the headcount index and therefore the extent of poverty is 19.4% and 20.06% (weighted) respectively. Thus one fifth of the population in Central Sulawesi is living with 2723 IDR or less each day. Regarding the 2 US$ PPP poverty line, one has to realise that almost half of the population live below that threshold. Concerning the national poverty line for Central Sulawesi, it can be asserted that 34.1% (37.3% weighted) of the population fall short of this threshold.

As for the depth of poverty it was found that the depth, expressed as poverty gap ratio, is in the case of all three poverty lines lower than 0.5%. Comparing the observed values in Central Sulawesi with the values from entire Indonesia (both presented in Chapter 3.1.3), it can be assumed that poverty ratios are getting smaller and therefore the aggregate shortfall of all the poor taken from the poverty line is getting smaller. Unfortunately, no direct comparison is possible because data on former poverty gap ratios for Central Sulawesi is not available. Beside the depth of poverty, it would be interesting to have a look on, how ‘high’ are the people above the different poverty lines. Such a measure could give information about the vulnerability of the households, thus how likely it is that they fall short of the poverty line.

Turning to the second research question “What is the optimal set of indicators for predicting absolute poverty in terms of accuracy?“ the answer is clear: In terms of the set of regressors, a broader but more complex set of regressors (such as Model 1) offers a better choice for accurate poverty indicators but also entails the use of less operational ones. Hence, there is a trade-off between accuracy and practicability. In terms of the regression approach used, the two-step quantile is superior for Model 1. Next, two step OLS also offers quite good accuracy results. While Model 1 has big advantages in terms of its accuracy performance, it has many disadvantages in its applicability. The main problem here is the verifiability of the indicators. Indicators, which are related to states or actions in the past, i.e. recall-indicators are not easy to verify. Expenditure related indicators are quite difficult to obtain: expenditures are mostly laborious to survey especially if they cover big expenditure groups with a lot of different items (like food expenditures or sum of total expenditures). Beside the difficulty of recall periods, the reliability of expenditure indicators - if the expenditures are not surveyed in detail, but are approximate estimates - is questionable. Model 7 instead includes only variables, which are easy to verify but are less accurate in predicting the daily per capita expenditures. It is obvious that an indicator like ‘material of exterior walls’ is very easy to obtain, but less likely to explain a fixed threshold of expenditures. Nonetheless, the indicators show a good tendency and if they are combined correctly they are able to predict the daily per capita expenditures rather well.

This leads to the third research question: “What conclusions can be drawn for developing practical poverty assessment tools in Central Sulawesi?”

In order to develop low-cost, time-saving and easy-to-implement poverty assessment tools, the regression analysis presented in this thesis offers good possibilities of finding suitable indicators for poverty prediction in Central Sulawesi. The choice for one of the two indicator sets presented has to consider the purpose of the tool. If a local NGO or any other organisation concerned with poverty reduction prefers to use an easy-to-implement and low-cost poverty assessment tool over a somewhat more precise, but more complex tool, the optimal choice may be the tool developed from indicators found in Model 7 computed with one-step quantile regressions. These indicators are easy to obtain and therefore it is also comparatively easy to train the enumerators. Only the categories of the different variables however, for example housing materials, have to be clarified.

Altogether, poverty assessment by means of a small number of indicators, found by regression analysis, faces limitations in terms of accuracy. It is possible however to identify

an absolute poor household through such an indicator set. It is proposed that future research in the Lore Lindu area – in collaboration with NGOs or other development institutions – test the recommended model presented here, and clarify how accurate this tool is in practice. This would require another survey but on a different random sample of households, and to apply the two questionnaires in the annex 1 and 2.

Furthermore, it would be interesting to see, whether certain indicators or at least indicator types are the same across regions within Indonesia. Therefore, similar empirical data compared to the one used in this thesis, but enumerated from other regions of Indonesia, would be needed.

References

AHMED, Faizuddin. 2004. Practices of Poverty Measurement and Poverty profile of Bangladesh. ERD Working Paper Series No. 54. Asian Development Bank. Manila

AHO, Gilbert, LARIVIÈRE, S. and F. MARTIN (editors). 1998. Poverty Analysis Manual – With Applications to Benin. United Development Program, Université Nationale du Bénin, Université Laval (Canada)

ANZDEC. 1997. Summary Environmental Impact Assessment of the Central Sulawesi Integrated Area Development and Conservation Project in the Republic of Indonesia

ASRA, Abuzar. 2000. Poverty and inequality in Indonesia – Estimates, decomposition and key issues. Journal of the Asia Pacific Economy 5. 1/2, p: 91-111, Taylor and Francis Ltd.

ASRA, Abuzar. (Undated). Urban rural differences in costs of living and their importance on poverty measures. Asian Development Bank. URL:http://www.adb.org/Documents/EDRC/Staff_Papers/Asra01.pdf (17.10.05)

BOLTVINK, Julio. (Undated). Poverty Measurement Methods – An Overview. URL: http://www.undp.org/poverty/publications/pov_red/Poverty_Measurement_Methods.pdf (24.10.05)

BRODJONEGORO, Bambang P.S. 2002. The Impact of the Asian Economic Crisis on Regional Development Patterns in Indonesia. EADN Regional Project on Asian Financial Crisis. EADN R1-1 URL:http://www.eadn.org/The%20Impact%20of%20the%20Asian%20Economic%20Crisis%20on%20Regional%20Development.pdf

DAIMON, Takeshi. 2001. The Spatial Dimension of Welfare and Poverty: Lessons from Regional Targeting Program in Indonesia. Working Paper No. 8. Graduate School of International Relations, International University of Japan, Niigata, Japan URL: http://www.iuj.ac.jp/research/wpdv008.pdf

DAVID, I.P. 2000. Poverty Statistics and Indicators: How often should they be measured?. Asian Development Bank (http://unstats.un.org/unsd/methods/poverty/Sid%20Aug%202000%20Povnote.PDF) (14.08.05)

DAVIDSON, James. 2000. Econometric Theory. Blackwell Publishers. Oxford, Malden

DRAPER, Norman Richard and Harry SMITH. 1981. Applied Regression Analysis, John Wiley & Sons, Canada

EBERT, Udo and Patrick MOYES. 2000. The representative income of the poor is a measure for poverty: A simple axiomatisation of the Foster, Greer and Thorbecke poverty ordering. Volkswirtschaftliche Reihe des Instituts für Volkswirtschaftlehre I. Universität Oldenburg

EICHLER, Daniel, 2001. Armut, Gerechtigkeit und soziale Grundsicherung – Einführung in eine komplexe Problematik. Westdeutscher Verlag. Wiesbaden

FOSTER, J.E., J. GREER and E. THORBECKE. 1984. A class of decomposable poverty indices. Econometrica 52, No.3: 761-766 URL: http://www.jstor.org/view/00129682/di952671/95p02737/0

GROSH, Margaret and Paul GLEWWE, 2000. Designing Household Survey Questionnaires for Developing Countries – Lessons from 15 years of the Living Standard Measurement Study Vol. 1, The World Bank . Washington D.C.

HAZIUS, Thilo and Rainer MARGGRAF. 1994. "Konzepte der Armutsmessung" in SCHÄFER, Hans Bernd (Editor), p. 119-163, Schriften des Vereins für Socialpolitik Bd. 234. Ducker & Humboldt. Berlin

HEBEL, Jutta. 2004. Poverty: Concepts and Analysis. In: Poverty Alleviation: Concepts and Experiences – Focused on Cases in Indonesia. Curillier Verlag. Göttingen

KEIL, Alwin, KLEINHANS, Alexander, SCHWARZE, Stefan, BIRNER, Regina, GEROLD, Gerhard and Sance LIPU. 2003. Forest Conservation, Water Availability and Water Use in Central Sulawesi, Indonesia.b Die Erde 134 2003 (4), Beitrag zur physischen Geofigureie, p. 411-427

KLEINHANS, Alexander and Gerhard GEROLD. 2004. The Effects of Rainforest Conservation on Water Balance, Water Yield and Seasonal Flows in a Small Tropical Catchment in Central Sulawesi. In GEROLD, Gerhard, FREMEREY, Michael and Edi GUHARDJA (editors), Land Use, Nature Conservation and Stability of Rainforest Margins in Southeast Asia. Springer. Berlin

KOENKER, Roger and Kevin F. HALLOCK. Undated. Quantile Regressions - An Introduction. Paper prepared for Journal of Economic Perspectives; Symposium of

Econometric Tools. URL: http://www.econ.uiuc.edu/~roger/research/intro/rq3.pdf (04.11.05)

KREISEL, Werner, WEBER, Robert and Heiko FAUST, 2004. Historical Impact on Use and Management of Natural Resources in Rainforest Margins of Central Sulawesi. In GEROLD, Gerhard, FREMEREY, Michael and Edi GUHARDJA (editors), Land Use, Nature Conservation and Stability of Rainforest Margins in Southeast Asia. Springer. Berlin

LARIVIÈRE, Sylvian, MARTIN, Frédéric and Anastase NTEZIYAREMYE. 1998. Different Approaches to Analyzing Living Standards and Poverty: Historical Background. Chapter 1 in AHO, Gilbert, LARIVIÈRE, Sylvian and Frédéric MARTIN (editors). Poverty Analysis Manual – With Applications to Benin. United Development Program, Université Nationale du Bénin, Université Laval (Canada)

LARIVIÈRE, Sylvian, MARTIN, Frédéric and Anastase NTEZIYAREMYE 1998a. A Review of Empirical Approaches to Living Standards and Household Poverty. Chapter 2 in AHO, Gilbert, LARIVIÈRE, Sylvian and Frédéric MARTIN (editors). Poverty Analysis Manual – With Applications to Benin, United Development Program, Université Nationale du Bénin, Université Laval

LOK, Renata. 1995. Technical support document: Poverty – Module 1: Poverty Indicators. SEPED/BPPS; UNDP (13.09.1995) URL: http://www.undp.org/poverty/publications/tsd/tsd1/tsd1.pdf

LOK-DESSALIEN, Renata. (Undated). Poverty Profiles – Interpreting the data. URL: http://www.undp.org/poverty/publications/pov_red/Poverty_Profiles.pdf

PRADHAN, Menno, SURYAHADI, Asep, SUMARTO, Sudarno and Lant PRITCHETT. 2000. Measurements of poverty in Indonesia 1996, 1999, and Beyond. SMERU Working Paper

RAVALLION, Martin. 1992. Poverty Comparison – A Guide through Methods and Concepts. LSMS Working Paper 88. The World Bank. Washington D.C.

RAVALLION, Martin and Benu BIDANI. 1994. How robust is a poverty profile. The World Bank Economic Review. Vol. 5. No.1: 75 – 102. The World Bank. Waschington D.C.

RAVALLION, Martin, 1998. Poverty Lines in Theory and Practise. LSMS Working paper 133. The World Bank. Washington D.C.

RAWLINGS, John O., PANTULA Sastry G and David A. DICKEY. 1998. Applied Regression Analysis – A Research Tool. Springer. New York

RHEE, Steve, KITCHENER, Darrell, BROWN, Tim, MERRIL, Reen, DILLS, Russ and Stacey TIGHE. 2004. Report on Biodiversity and Tropical Rainforests in Indonesia, USAID Indonesia

RÖLL, Werner. 1979. Indonesien – Entwicklungsprobleme einer tropischen Inselwelt. Klett. Stuttgart

SCHWINGHAMMER, Eva. 1997. Neue Wirtschaftskonzepte in Indonesien und Malaysia – Vorraussetzungen und Auswirkungen im Vergleich. Mitteilungen des Instituts für Asienkunde Nr. 278. Hamburg

SCHUBERT, Renate. 1994. "Armut in Entwicklungsländern – Begriff, Ausmaß, Konsequenzen. In SCHÄFER, Hans Bernd (Editor), p. 13-39, Schriften des Vereins für Socialpolitik Bd. 234. Ducker & Humboldt. Berlin

SEN, Amartya. 1976. Poverty: An Ordinal Approach to Measurement. Econometrica. Vol. 44, Number 2, March 1976, p 219-231

SEN, Amartya. 1999. Development as Freedom. Oxford University Press

SIMMONS, Pat. 1995. Words into Action – Basic rights and the campaign against world poverty. Oxfam publication. Oxford

SHABAN, Ahmed A. Abu. 2001. Rural poverty and poverty outreach of social safety net programs in Central Sulawesi – Indonesia. MSc Thesis supervised by Prof. Zeller, IRE, Goettingen

STATA Base Reference Manual 2003. Vol. 3 N-R Release 8. Stata Press. Texas

SUMARTO, Sudarno, SURYAHADI, Asep and Alex ARIFIANTO. 2004. Governance and Poverty Reduction: Evidence from Newly Decentralised Indonesia. SMERU Working Paper

SURYAHADI, Asep and Sudarno SUMARTO. 2001. The chronic poor, the transient poor, and the vulnerable in Indonesia before and after the crises, SMERU working paper

SURYAHADI, Asep, WIDYANTI, Wenefrida, PERWIRA, Daniel, SUMARTO, Sudarno, EBERS, Chris and Menno PRADHAN. 2003. Developing a Poverty Map for

Indonesia: An Initiatory Work in Three Provinces. SMERU research report http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN018665.pdf

THE IRIS CENTRE. 2005. Developing Poverty Assessment Tools Project – Note on Assessment and Improvement of Tool Accuracy. URL: http://www.povertytools.org/documents/Assessing%20and%20Improving%20Accuracy.pdf

WIDYANTI, Wenedfrida, SUMARTO, Sudarno and Asep SURYAHADI. 2001. Short-term poverty dynamics – Evidences from Indonesia, SMERU working paper

WITT, Matthias. 1998. Der *Fondo de Inversión Social* – Ein effizientes entwicklungspolitisches Instrument zur Bekämpfung der Armut in Bolivien? Göttinger Studien zur Entwicklungsökonomie 6. Vervuert. Frankfurt am Main

World Bank. 2003. Education Notes: EFA in Indonesia – Hard Lessons About Quality http://siteresources.worldbank.org/EDUCATION/Resources/Education-Notes/EdNotesIndonesia.pdf (15.10.05)

World Bank. 2004. World Development Report 2005 – A Better Investment Climate for Everyone. Washington DC

ZELLER, Manfred, SHARMA; Manohar, HENRY, Carla and Cécile LAPENU. 2001. An operational tool for evaluating poverty outreach of development policies and projects. FCDN Discussion Papers No. 111. Food and Nutrition Division. International Food Policy Research Institute. Washington, D.C.

ZELLER, Manfred, SCHWARZE, Stefan and Teunis VAN RHEEN. 2002. Statistical Sampling Frame and Methods Used for the Selection of Villages and Households in the Scope of the Research Program on Stability of Rainforest Margins in Indonesia (STORMA). STORMA Discussion Paper Series Sub-program A on Social and Economic Dynamics in Rainforest Margins, No. 1, Universities of Göttingen and Kassel, Germany and Institute Pertanian Bogor and Universitas Tadulako, Indonesia.

ZELLER, Manfred and Teunis VAN RHEEN. 2002a. Economic analysis of land use systems of rural households. Final Report of project A4 for the first phase from July 2000 to June 2003 within the scope of the Sonderforschungs-program (SFB) on Stability of Rainforest Margins (STORMA). Submitted to Deutsche Forschungsgemeinschaft (DFG). Göttingen: Institute of Rural Development, University of Göttingen.

ZELLER, Manfred. 2004. Review of poverty assessment tools. Report submitted to IRIS centre and USAID as part of the Developing Poverty Assessment Tools Project. URL:http://www.povertytools.org/documents/Review%20of%20Poverty%20Assessment%20Tools.pdf

ZELLER, Manfred, JOHANNSEN, Julia and Gabriela ALCARAZ V. 2005. Developing and testing poverty assessment tools: results from accuracy tests in Peru – Final Report March 2005. USAID, EGAT, and AMAP

Internet resources:

CIA 2005: URL: http://www.cia.gov/cia/publications/factbook/geos/id.html (24.06.2005)

IRIS centre: URL:http://www.iris.umd.edu/StaticReader.aspx/About_IRIS.htm (16.09.05)

IRIS centre a): URL:http://www.iris.umd.edu/Reader.aspx?TYPE=PROJECT&ID=477f5ad2-9ae4-402b-b5d8-83f15390d16d (16.09.05)

MDG :URL:http://www.undp.org/mdg/SGFirstProgressReportonMDGs.pdf (16.10.05)

OECD: URL:http://stats.oecd.org/mei/default.asp?lang=e&subject=8&country=IDN (26.10.2005)

Povertytools 2005: URL:http://www.povertytools.org (16.08.05)

STORMA: URL: http://www.storma.de (24.06.05)

World Bank 2005: URL:http://www.worldbank.org/WBSITE/EXTERNAL/EXPOVERTY/0,„print:Y… (15.06.05)

World Bank 2005a: URL: http://info.worldbank.org/etools/kam2005/html/hdi.htm (24.10.05)

World Bank 2005b: URL:http://ddp-ext.worldbank.org/ext/MDG/regions.do (16.10.05)

World Bank 2005c: URL:http://ddp-ext.worldbank.org/ext/MDG/homePages.do (16.10.05)

The Nature Conservancy 2005: URL:http://www.nature.org/wherewework/asiapacific/indonesia/files/indonesi_summary.pdf (09.07.2005)

The Nature Conservancy 2005a: URL:http://www.nature.org/wherewework/asiapacific/indonesia/files/lore_lindu_summary.pdf (09.07.2005)

UN 2005: URL:http://millenniumindicators.un.org/unsd/mi/mi_series_results.asp?rowID=584 (09.11.05)

UNDP 2005: URL:http://www.undp.or.id/general/about_indonesia.asp (21.06.2005)

UNDP 2005a: URL: http://www.undp.or.id/general/about_history.asp (26.10.2005)

UNDP 2005b URL:http://www.undp.or.id/general/about_culture.asp (21.06.2005)

UNDP 2005c: URL:http://www.undp.or.id/general/about_climate.asp (21.06.2005)

UNDP 2005d: URL: http://www.undp.org/hdr2003/indicator/indic_266.html (09.11.05)

Annex 1: Composite questionnaire

Composite Survey Household Questionnaire

STORMA

Stability of Rainforest Margins

University of Goettingen/Kassel -- IPB/Bogor -- UNTAD/Palu (SFB 552)

A. Household Identification

Kecamatan / village / Dusun / RT: ……..……../……..……../……../……..

Date of Interview (mm/dd/yy): ……./…..…../…..…..

Household Code: ……. (put this number on top/ buttom of every page)

Name of Household Head (first name, family name) : .....I.D. Code : 01

Name of Respondent: ……

Name of Interviewer: ……

Name of Supervisor: …….

Date questionnaire checked by supervisor (mm/dd/yy): ……./…..…../…..…..

Supervisor signature: ……..

Consent form – for the respondents taking part in the Poverty assessment tools study

We are researchers from the STORMA project, which is a collaboration of the Tadulako University, the Universities of Goettingen and Kassel - Germany, and of the Institut Pertanian Bogor. We have already visited your household a few times during the last four years. This time we are conducting a study to develop a tool that will better measure poverty. This tool is being tested in several countries and regions. The results of these tests will help to improve the survey instruments for subsequent use.

If you agree to participate in this study you will be asked to answer the survey questions asked by the interviewer. This interview will take about 2 hours. You will be asked a few questions about yourself and family members, and then about your expenditures, food consumption, housing and other assets. The interviewer will retun the next days and ask you another set of questions about expenditures. That interview will take no more than 1 hour.

You are free to ask questions at any time. You may withdraw from participation without penalty. Should you feel uncomfortable with any question(s), you may refuse to answer it. All information collected in this study is confidential and will be used strictly for research purpose only. Your answers will be grouped with data others provide for reporting and presentation and your name will not be used. Given these procedures, the risks involved in participating in this study are minimal.

STORMA is a research project that gathers information about the socio-economic situation of the people living near Lore Lindu. IT IS NOT A NGO OR DEVELOPMENT PROJECT, WHICH MEANS THAT THERE IS NO AND THERE WILL NOT BE ANY TRANSFER OF MONEY INVOLVED. AFTER STORMA THERE MAY ALSO NO OTHER DONOR COMING IN AND PAYING FOR PROJECTS IN YOUR VILLAGE.

RESPONDENT: Please check appropriate line below

Consents ☐ Declines ☐

Interviewer Statement:

My signature below attests that I am an interviewer in the research project identified above. I have read the consent form to the participant who has tik mark the box above. That participant has indicated a willingness to be a part of this research study by checking the box above.

Signature of Interviewer: Date: __/_____/____

Household ID:

B. Household Roster

B1. Household members from last survey

(*Interviewer: Please fill in prior information on ID, name and age*)

ID	Name	Age in complete years	Still member of your household? Yes.....1 No 2	If answer to B1d=2 (no): Why not? Code B1e	If answer to B1d=1 (yes): For children age 6-18 years old only: Still going to school? Code B1f	If answer to B1f>1: Why? Code B1G	For members age 14 years or older: Main occupation in the last 12 months? (in term of time allocation) Code B1h	Clothing and footwear/ sandals expenses for last 12 months IDR
B1a	B1b	B1c	B1d	B1e	B1f	B1g	B1h	B1i

Code B1e:
1=Marriage
2=Job opportunity
3=Death due to accident
4=Death due to illness
5=other
(specify):

Code B1f:
1=Regularly
2=Not regularly
3=Child attended school before, but not in this year
4=Child never went to school

Code B1g:
1=Cannot afford expenses
2=Child must work
3=Too young
4=other
(specify):

Code B1h:
1=Self-employed in agriculture
2=Self-employed in non-farm enterprise
3=Government employee
4=Daily labourer in agriculture
5=Daily labourer outside agriculture
6=Salaried worker in agriculture
7=Salaried worker in non-agriculture
8=Domestic worker
9=Student
10=Unemployed, looking for a job
11=Unwilling to work or retired
12=Unable to work (handicapped)

B1. Household members from last survey continued

(*Interviewer: Please fill in prior information on ID, name and age*)

ID	Name	Age in complete years	Still member of your household? Yes.....1 No 2	If answer to B1d=2 (no): Why not?	If answer to B1d=1 (yes): For children age 6-18 years old only: Still going to school?	If answer to B1f>1: Why?	For members age 4 years or older: Main occupation in the last 12 months? (in term of time allocation)	Clothing and footwear expenses for last 12 months
				Code B1e	Code B1f	Code B1G	Code B1h	IDR
B1a	B1b	B1c	B1d	B1e	B1f	B1g	B1h	B1i

B2. New household members

Are there any members of your household not mentioned in B1? (1=yes, 2=no)

If 1 (yes) continue with the following table.
If 2 (no) go to B14.

Member I.D. 1=Head 2=Spouse	Name	Sex 1=Male 2=Female	Age in years yy	Relation with household head Code 1	Marital status Code 2	Able to write? 1=Yes 2=No	Level of schooling Code 3	For children age 6-18 years old only: Still going to school? Code 4	If answer to B1f>1: Why? Code 5	Main occupation in the current year: *Primary Secondary* Code 6	Clothes/ footwear expenses in last 12 months Rp.:
B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13

Code 1:
1=Son or daughter
2=Father or mother
3=Grandchild
4=Grandparents
5=Mother-, father-, so and daughter-in-law
6=Other relative
7=Other non-relative

Code 2:
1=Unmarried
2=Married
3=Widow/widower
4=Divorced or Separated

Code 3:
1=Never attended
2=Some SD
3=Completed SD
4=Attended SMP
5=Completed SMP
6=Attended SMA
7=Completed SMA
8=Attended academy c university

Code 4:
1=Regularly
2=Not regularly
3=Child attended school before, but not in this year
4=Child never went to school

Code 5 ::
1=Cannot afford expenses
2=Child must work
3=Too young
4=other (specify):

Code 6:
1=Self-employed in agriculture
2=Self-employed in non-farm enterprise
3=Government employee
4=Daily labourer in agriculture
5=Daily labourer outside agriculture
6=Salaried worker in agriculture
7=Salaried worker in non-agriculture
8=Domestic worker
9=Student
10=Unemployed, looking for a job
11=Unwilling to work or retired
12=Unable to work (handicapped)

B3	Does some member of your family *(not a household member at present!)* work somewhere else in Indonesia or in a foreign country, and did he or she send you money during the past 12 months? If no, skip to section C.	☐	Yes .....1 No.....2
B4	Where does this person work?		In Jakarta .....1 Elsewhere in Indonesia .....2 In a foreign country 3
B5	How much money did this person send you during the past 12 months?		Rupiah
B6	Interviewer: In case there is a second relative working somewhere else and sending money, ask B6 and B7 Where does this (second) person work?		In Jakarta .....1 Elsewhere in Indonesia .....2 In a foreign country 3
B7	How much money did this (second) person send you during the past 12 months?		Rupiah

C: Summary questions on expenditures of household

Interviewer: We only ask for expenditures by the household and its members for consumption. Do exclude all expenditures for business, trade or any other microenterprise (agricultural or non-agricultural). With the following sentences and example, you should be able to make clear the difference. If not, continue the explanation until the difference between household and enterprise expenditures is known to the respondent. Only then begin with this section.

We would like to ask you about the expenditures that your household does for consumption, such as food, shelter, clothing, social events, and other living expenses. Rural example: Therefore, expenses such as for irrigation water are excluded, but expenses for your own drinking water are included. Urban example: Therefore, expenses for buying goods and materials for a handicraft or trade microenterprise are excluded from the following, but expenses for soap or furniture for your own household are included.

QID	Questions.	Response	Response code
	Interviewer: recall period refers to the average week (C1 and C2)) during past 12 months (need to prompt accordingly).		
C1.	How much does your household usually spend **per week** for buying food? *(Interviewer: Value of barter exchange included/food does not include cigarettes and alcohol)*		Rupiah
C2.	What is the value of food that your household produces on your farm or garden, or gathers from the forest and then consumes usually consumes **per week**?		Rupiah
	Recall refers to Average Month in past 12 months for C3 thru C6		
C3.	How much does your household usually spend each month on **Utilities** (e.g. Electricity, phone, water and sanitation, etc.)? MONTH		Rupiah
C4.	How much does your household usually spend each month on **Transport** (including fuel used for transport) (e.g. transport to work or school, transport for leisure, etc.)? MONTH		Rupiah

QID	Questions.	Response	Response code
C5.	How much does your household usually spend each month on **Fuel** (excluding fuel used for transport)? (e.g. fuel i.e. oil, wood, gas for cooking, heating, cooling, etc.) MONTH		Rupiah
C6.	What is the value of other **goods** (*not food*, e.g. wood for fire/cooking) that your household usually produces on your farm or garden, or gathers from the forest and then usually consumes? MONTH		Rupiah
	Recall period is PAST 12 MONTHS for C7 thru C12.		
C7.	How much did your family spend in the last 12 months (i.e. covering the last completed school year) on **School/education** (e.g. *school enrolment fees, books, uniforms and other school supplies)*?		Rupiah
C8.	How much did your household spend in the last 12 months on **Health (e.g. medicaments, visit to clinics, traditional healers or doctors, etc.)**?		Rupiah
C9:	How much did your household spend in the last 12 months on **Home (e.g. repair and maintenance, but excluding rent)**?		Rupiah
C10.	How much did your household spend in the last 12 months on durable goods **(Furniture, appliances etc.)**?		Rupiah
C11.	How much did your household send to your relatives in the last 12 months who do not live in your household **(remittances sent)**?		Rupiah
C12.	How much did your household spend in the last 12 months on **Other expenditures (e.g. social events, leisure, gifts given, taxes)** ?		Rupiah
C13.	Suppose you were given an additional IDR 30,000 tomorrow, how much of this amount you would spend on **food**? *Convert the amount in to percent*		Rupiah
	Recall period is past 3 years.		

QID	Questions.	Response	Response code
C14	Considering your household's preparation for the Idul Fitri/ christmas during the last three years, in how many years did you buy new clothes for all household members (including any children)? *Survey firm, consider this question in case of an important annual event with significant clothing expenditures as part of a general social norm!*)		Number of years If not bought any years write "0" (zero), if bought 2 years write "2" (max is 3).

D: Housing Indicators and Wages

Section Housing indicators (*Referring to the dwelling in which the family currently resides.)*

QID	Questions	Response	Response code
D1.	Some people own their houses fully, others own them partially but are still paying them off, or rent them, or simply live in a place they do not own without paying rent. What best characterizes your situation? *(Circle appropriate)*		Own.....1 Own with mortgage/loan to pay.....2 Rent.....3 Live with/ given by friends and relatives (without paying rent).....4 Squatting.....5 Other (*specify*).....6
D1a.	If this house including the land plot would be sold at present, how much do you think the seller would obtain? Note to interviewer: If sales price is not known, ask for an estimate of replacement cost of building a similar house on the same plot.		Rupiah
D2.	***Interviewer: Gather this information through observation only.*** What kind of lock does the main entrance door of the house have?		No lock.....1 Padlock ……..2 Keylock……..3
D3.	How many rooms does the dwelling have? (*Interviewer: Include detached rooms in same compound if same household. Exclude bathrooms, toilet, and kitchen*)		Number
D4.	What is the size of these rooms in square meter? **Interviewer: Ask and put it in square meter (if the respondent says 2**		Square meter

QID	Questions	Response	Response code
	times 3 meters put in 6 square meter)		
D5.	What type of roofing material is used in house?	☐	*Straw* ..... *1* *Bamboo* ..... *2* *Clay bricks* ..... *3* *Pressed bricks* ..... *4* *Corrugated iron* ..... *5* *Black wood* *6*
D6.	What type of exterior walls does the house have?	☐	*Bamboo* ..... *1* *Corrugated Iron* ..... *2* *Wood* ..... *3* *Brick or stone* ..... *4* *Brick or stone with cement plaster* *5*
D7.	*What type of flooring does the house have?*	☐	*Earth* ..... *1* *Bamboo* ..... *2* *Wood* ..... *3* *Cement* ..... *4* *Cement with additional covering* ..... *5* *Ceramics* *6*
D8.	What type of cooking fuel source is primarily used?	☐	Collected wood ..... 1 Purchased wood ..... 2 Charcoal ..... 3 Kerosene ..... 4 Gas 5

QID	Questions	Response	Response code
			Electricity from public grid.....6
D9.	*What is the main source of lighting for your main living rooms?*	☐	*cannot afford lighting at night .....1* *Candles/ Battery-driven lights .....2* *Solar energy.....3* *Kerosene .....4* *Petromax.....5* *Electricity (shared connection).....6* *Electricity (own connection).....7* *Generator.....8*
D10.	What is your primary source of drinking water?	☐	Pond or river .....1 Spring.....2 Public well/borehole—open.....3 Public well/borehole—sealed with pump .....4 Public tap……5 Well/borehole in residence yard-open...6 Well/borehole in residence yard- sealed with hand pump.....7 Well/borehole in residence yard- sealed with electric pump.....8 Piped water.....9
D11.	What type of toilet facility do you have?	☐	Bush, field, or no facility .....1 Shared pit toilet .....2 Own pit toilet .....3 Shared improved latrine .....4 Own improved latrine 5
D12a.	*Have you made a recent home improvement in the last three years?* ***Interviewer, If no, skip to Question 13.***	☐	Yes .....1 No.....2

QID	Questions	Response	Response code
D12b.	If yes, how much did it cost in total?		Rupiah
D13.	On what does household head sleep? ***Note to interviewer: Codes 2 to 4 assume that individual sleeps on mattress that is on the floor, i.e. with no bed.***		Floor....1 Thin sleeping mat made of fibers....2 Kapok mattress....3 Foam mattress....4 Bed with thin sleeping mat made of fibers....5 Bed with kapok mattress....6 Bed with foam mattress....7 Spring bed....8
D14.	Where do you usually cook your meals?		In the living room....1 In the room, but separated....2 Separate kitchen....3
D15.	Do you have any of the following utilities inside your house?		
	D15a. Piped Water in the house:		No....0 Yes, shared....1 Yes, Own connection....2
	D15b. Electricity		No....0 Yes, shared....1 Yes, Own connection....2 Generator....3
	D15c. Telephone (fixed land line)		Yes, Own connection....1 No....2

D16.	*SECTION WAGES* Interviewer: income is here defined as cash-income! *If the **main income-earning male member** of your household were offered a job that paid IDR 12000 and strictly required that he would do hard physical work for 8 hours on next working day (Exclude Sunday, or any other holiday), would he accept it?*		Yes....1 No....2

D16a.	*SECTION WAGES* Interviewer: income is here defined as cash-income! *If the **main income-earning male member** of your household were offered a job that paid IDR 6000 and strictly required that he would do hard physical work for 8 hours on next working day (Exclude Sunday, or any other holiday), would he accept it?*	☐	Yes .....1 No.....2
D17.	*What is the minimum wage he would accept for doing 8 hours of hard work next working day (Exclude Sunday, or any other holiday)?* **Interviewer: Write 8888 if respondent is not willing to do any hard physical work for any level of wage.**	☐	Rupiah
D18.	*If the main income-earning **female member** of your household were offered a job that paid IDR 12000 and strictly required that she would do hard physical work for 8 hours on next working day (Exclude Sunday, or any other holiday), would he accept it?*	☐	Yes .....1 No.....2
D18a.	*If the main income-earning **female member** of your household were offered a job that paid IDR 6000 and strictly required that she would do hard physical work for 8 hours on next working day (Exclude Sunday, or any other holiday), would he accept it?*	☐	Yes .....1 No.....2

D19.	*What is the minimum wage she would accept for doing 8 hours of hard work next working day (Exclude Sunday, or any other holiday)?* **Interviewer: Write 8888 if respondent is not willing to do any hard physical work for any level of wage.**		Rupiah

E: Food Consumption

Note to interviewer: This section has a skip pattern that must be followed exactly.

QID	Questions	Response	Response code
E1.	Did any special event occur in the last two days (for example, family event, guests invited, holiday festivity)? ***Interviewer: If "Yes," the "last two days" in Question E1a should refer to the two days preceding the special event.***		Yes .....1 No.....2
E1a.	How many meals were served to the household members during the last 2 days?		# of meals
E2.	Were there any special events in the last *seven days*? **Interviewer: If "Yes," the "last seven days" in Question E3, E4 and E5 should refer to the week preceding the special event.**		Yes .....1 No.....2

QID	Questions	Response	Response code
E3.	During the last seven days, for how many days were the following foods served in a main meal eaten by the household?		
	a. Large fish, like Ikan mas	☐	# of days served
	b. Beef, pork, or buffalo meat	☐	# of days served
	c. Chicken/duck	☐	*# of days served*
	d. eggs	☐	*# of days served*
E4.	During the *last seven days*, for how many *days* did a main meal consist of rice and any vegetables (without any fish, egg, meat or any other animal protein) *only?*	☐	*# of days served*
E5.	During the *last seven days*, for how many *days* did a main meal consist of rice (just with chili) *only*?	☐	*# of days served*
E6.	How often do you usually purchase rice? *(Interviewer: recall period is last 12 months)*	☐	Daily.....1 Twice a week .....2 Weekly .....3 Fortnightly.....4 Monthly.....5 Less frequently than a month .....6 Never.....7
E7.	During the *last 30 days*, for how many days did your household not have enough to eat everyday? ,	☐	*# of days*
E8.	We will now ask you about the amount of rice that you have in the house. For how many days will your stock of rice last?	☐	*# of weeks*

QID	Questions	Response	Response code
	Now I will ask you questions about the food eaten in your household in the last 12 months. *For all following question up to E14!*		
E9.	I will read 4 choices for your response. Please tell me, which of the following best describes the food consumed in your household: Interviewer: Make sure that all the positive responses are due to lack of home-produced food or money to buy food and that the interviewee is referring to the last twelve months. Please mark only one answer. Positive responses on food insecurity imply therefore that the household does not produce enough of its own food AND lacks money to buy food.	☐	We always ate enough of what I wanted.....1 We had enough food but not always the kinds we wanted.....2 Sometimes we did not have enough food.....3 Often we did not have enough food.....4
E10.	In past 12 months were you and your household members worried that your food would run out before you had money to buy more?	☐	Yes.....1 No.....2
E11.	In past 12 months did you have to eat the same foods daily because you did not have money to buy other foods?	☐	Yes.....1 No.....2
E12.	In the past 12 months how often did you have to borrow food from relatives or neighbors to make a meal?	☐	Never.....1 Rarely (only 1 to 6 times a year).....2 Sometimes (7to 12 times).....3 Often (a few times almost every month).....4 Mostly (this happens a lot).....5
E13.	In past 12 months have you or any other adult in your household eaten less food than you wanted to because you did not have enough money to buy food? ***Interviewer, if "no" go to E14***	☐	Yes.....1 No.....2

QID	Questions	Response	Response code
E13a.	If yes to E13, how often did this occur during the past 12 months?	☐	More than half the time.....1 Less than half the time but more than 30 days last year.....2 Less than 30 days but more than 10 days last year.....3 Less than 10 days last year.....4
E13b.	Did you or another adult in your household skip meals during the past 12 months because you did not have enough money to buy food? ***Interviewer, if no go to E14***	☐	Yes.....1 No.....2
E13c.	How often did this occur during the past 12 months?	☐	More than half the time.....1 Less than half the time but more than 30 days last year.....2 Less than 30 days but more than 10 days last year.....3 Less than 10 days last year.....4
E13d.	Did you or another adult in your household stop eating for an entire day (during the past 12 months) because you did not have enough money to buy food? ***Interviewer, if no go to E14***	☐	Yes.....1 No.....2
E13e.	How often did this occur during the past 12 months?	☐	Less than half the time but more than 30 days last year.....1 Less than 30 days but more than 10 days last year.....2 Less than 10 days last year.....3
E14.	Did you or any other adult household member lose weight during the past 12 months because you did not have enough money to buy food?	☐	Yes.....1 No.....2

QID	Questions	Response	Response code
E15.	In the past 12 months how often did you eat any of the following foods because other food was scarce: ***Cassava*** ***Broken rice*** ***Beras jagung***		Never.....1 Rarely (only 1 to 6 times a year).....2 Sometimes (7to 12 times).....3 Often (a few times almost every month).....4 Mostly (this happens a lot).....5

G. Vulnerability, Social Capital and Reliance on Networks in Case of Shocks

QID	Questions	Response	Response code
G1	Major events and past shocks: **During the last three years,** did any of the following events occur in your household?		
G1.1	Marriage of a first degree relative (of the household head or spouse), *if yes* how many marriages?		# of marriages. **If no, write "0"**
G1.3	We inherited major funds or assets		Rupiah ***If no, write "0"***

QID	Questions	Response	Response code
G1.4	We received dowry	☐	Rupiah ***If no, write "0"***
G1.5	Did your household give dowry in the past 3 years? *Interviewer: If yes, prompt for its value.*	☐	Rupiah ***If no, write "0"***
G1.6	During last 3 years, have you or any of your household members received in-kind services or cash from social safety net programs (e.g. receipt of free or subsidized food or non-food items, school feeding, cash, ,medicine etc.)?	☐	Yes .....1 No.....2
G1.7	If yes to G1.6, what were the two most important programs during the past three years for the household?	First: ☐ Second: ☐	Receipt of subsidized food (grain, milk, etc.)……..1 Eating/ received food in a "social" community kitchen……2 School feeding program for children…..3 Cash…….... 4 Non-food items……5

G2.B Please tell me whether in general you agree or disagree with the following statements:

QID	Questions -> Statement *(to be read out slowly to respondent)*	Response	Response code
G2b1	*Most people in this village/neighborhood are basically honest and can be trusted*	☐	Strongly agree ..... 1 Agree..... 2 Disagree ..... 3 Strongly disagree..... 4
G2b2	People are always interested only in their own welfare.	☐	

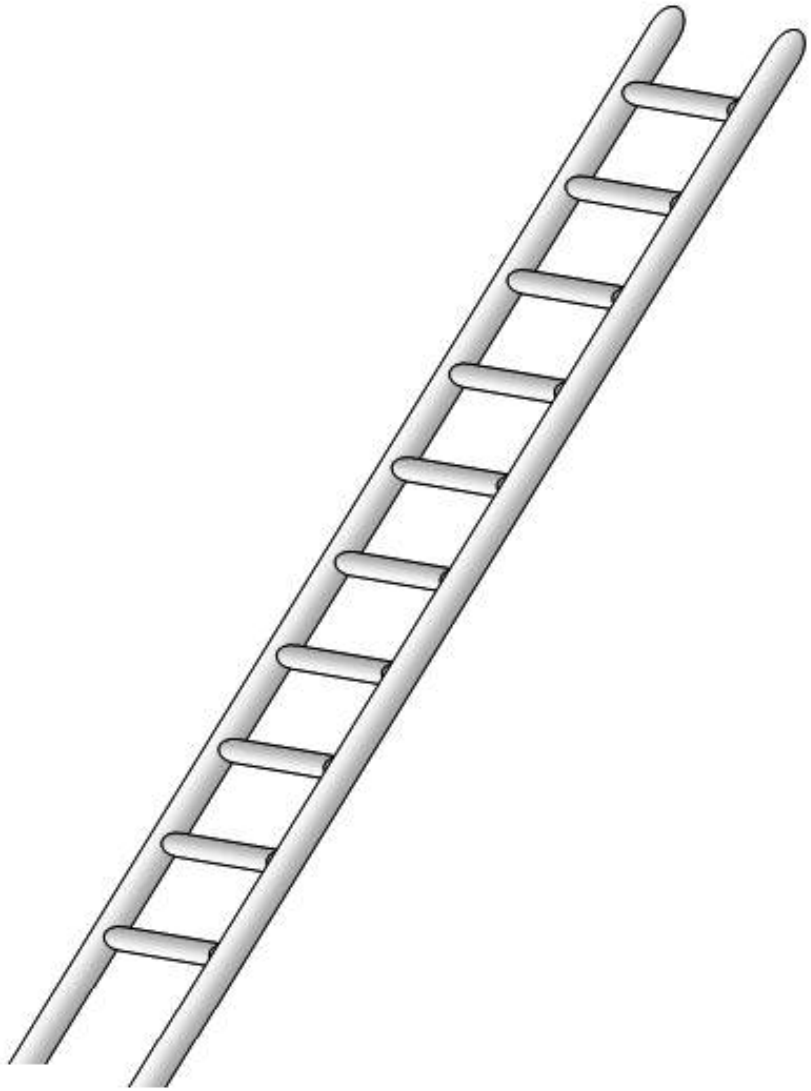
G2b3	If I have a problem, there is always someone to help me.		
G2b4	I feel accepted as a member of this village/neighborhood		
G2b5	If you lose a goat or pig, someone in the village would help look for it or would return it to you.		

H. Estimates of objective and subjective poverty

ID	Questions	Response	Response code
H1.	Concerning your expenses for food, which of the following is true (reflects most accurately the situation of your household)?		Your expenses are below the household's needs .....1 Your expenses are on the average comparable to your household's needs .....2 Your expenses exceed your households needs.....3
H2.	Concerning your expenses for clothing, which of the following is true (reflects most accurately the situation of your household)?		Your expenses are below the household's needs .....1 Your expenses are on the average comparable to your household's needs .....2 Your expenses exceed your households needs.....3
H3.	Concerning your expenses for health care, which of the following is true (reflects most accurately the situation of your household)?		Your expenses are below the household's needs .....1 Your expenses are on the average comparable to your household's needs .....2 Your expenses exceed your households needs.....3

ID	Questions	Response	Response code
H4.	Concerning your expenses for your children's education, which of the following is true (reflects most accurately the situation of your household)?	☐	Your expenses are below the household's needs .....1 Your expenses are on the average comparable to your household's needs .....2 Your expenses exceed your households needs.....3
H5.	Concerning your expenses for **housing**, which of the following is true (reflects most accurately the situation of your household)?	☐	Your expenses are below the household's needs .....1 Your expenses are on the average comparable to your household's needs .....2 Your expenses exceed your households needs.....3
H6.	**How much does your household need (not spend!) per month to live (*in order to meet all basic needs adequately*)? *Interviewer: Explain basic needs, e.g. health, primary school education, adequate shelter, clothing, food***	☐	Rupiah

Self-assessment with ladder of life **-> Interviewer, Show the respondents a picture of a ladder with 10 steps*:***



ID	Questions	Response	Response code
H7.	Here is a picture of a 10-step ladder. Imagine that at the bottom, on the first step, stand the poorest people, and on the highest step, the tenth, stand the rich. On which step of this ladder are you located today? *Interviewer: this is the subjective reference of the respondents.*		# of steps, at which household is ranking itself
H8.	Where on the ladder would you locate a household (husband, wife, 3 children or other dependents) who has an income equal to IDR 800000 per month?		# of steps, at which a household with 800000 Rupiah per month is located
H8a.	Where on the ladder would you locate a household (husband, wife, 3 children or other dependents) who has an income equal to IDR 400000 per month?		# of steps, at which a household with 400000 Rupiah per month is located
H9.	How do you compare today's living standard of your household with its living standard seven years ago? *Interviewer: We do not ask of how the respondent's living standard is today, or has been seven years ago. We ask about the perceived change in the household's living standard compared to 7 years ago.*		Much worse ..... 1 Worse ..... 2 About the same as 7 years ago ..... 3 Better ..... 4 Much better 5
H10.	Where on the ladder would you locate your household 7 years ago? (Interviewer, help the respondent to remember this year (21.5.1998: Suharto stepped down and Habibie became the new president)		# of steps, at which household is ranking itself seven years ago
H11.	How do you compare today's access to **food** of your household with its access 7 years ago?		Much worse ..... 1 Worse ..... 2 About the same as 7 years ago ..... 3 Better ..... 4 Much better 5
H12.	How do you compare today's access to **clothing** of your household with its access 7 years ago?		Much worse ..... 1 Worse ..... 2 About the same as 7 years ago ..... 3 Better ..... 4 Much better 5

H13.	How do you compare today's access to **housing** of your household with its access 7 years ago?	☐	Much worse ..... 1 Worse ..... 2 About the same as 7 years ago ..... 3 Better ..... 4 Much better 5
H14.	How do you compare today's access to **drinking water** of your household with its access 7 years ago?	☐	Much worse ..... 1 Worse ..... 2 About the same as 7 years ago ..... 3 Better ..... 4 Much better 5
H15.	How do you compare today's access to **health care** of the **adult (aged >21 years) male** household members with their access 7 years ago?	☐	No adult males aged > 21 years now .... 0 Much worse ..... 1 Worse ..... 2 About the same as 7 years ago ..... 3 Better ..... 4 Much better 5
H15a.	How do you compare today's access to **health care** of the **adult (aged >21 years) female** household members with their access 7 years ago?	☐	No adult females aged > 21 years now . 0 Much worse ..... 1 Worse ..... 2 About the same as 7 years ago ..... 3 Better ..... 4 Much better 5
H15b.	How do you compare today's access to **health care** of the **male children (aged 7 to 21 now!)** in your household with their access 7 years ago? *Note: Do also include children which are not member of the household anymore.*	☐	No children aged 7 to 21 years now ..... 0 Much worse ..... 1 Worse ..... 2 About the same as 7 years ago ..... 3 Better ..... 4 Much better 5
H15c.	How do you compare today's access to **health care** of the **female children (aged 7 to 21 now!)** in your household with their access 7 years ago? *Note: Do also include children which are not member of the household anymore.*	☐	No children aged 7 to 19 years now ..... 0 Much worse ..... 1 Worse ..... 2 About the same as 7 years ago ..... 3 Better ..... 4 Much better 5
H16.	How do you compare today's access to **education** of the **male children (aged 13 to 19 years now!)** in your household with their access 7 years ago? *Note: Do also include children which are not member of the household anymore.*	☐	No children aged 13 to 19 years now .... 0 Much worse ..... 1 Worse ..... 2 About the same as 7 years ago ..... 3 Better ..... 4 Much better 5

H16a.	How do you compare today's access to **education** of the **female children (aged 13 to 19 years now!)** in your household with their access 7 years ago? *Note: Do also include children which are not member of the household anymore.*		No children aged 13 to 21 years now.... 0 Much worse ..... 1 Worse..... 2 About the same as 7 years ago..... 3 Better ..... 4 Much better..... 5

I. Voluntary monetary savings and informal lending and debt

We know that the following questions on savings and debt are sensitive. We assure you that the answers will not be shared with anybody else, and that this is fully kept confidential. *Interviewer: Please make sure that the environment of the interview assures confidentiality before beginning with this section.*

I1. Informal savings and credit

QID	Questions	Response	Response code
I1.1	Did you borrow from traditional moneylenders in the past 3 years for food, emergencies or social events? If yes, what was the amount of the largest loan during the past 3 years? *Interviewer: If there was frequent borrowing from moneylenders, ask for the largest loan from moneylender during the past 3 years.*		Rupiah ***If no, write "0"*** ***No response write "88 88 88"***
I1.2	Are there debts owed <u>to</u> other households <u>by</u> your household at present? ***Interviewer: If yes, write the value of the savings, if no write "0".***		Rupiah **If no, write "0"** ***No response write "88 88 88"***
I1.3	Are there debts owed <u>by</u> other households <u>to</u> your household at present? ***Interviewer: If yes, write the value of the savings, if no write "0".***		Rupiah **If no, write "0"** ***No response write "88 88 88"***

Interviewer: Please record if the respondents do not want to give an answer

Annex 2: Generic Benchmark questionnaire

Generic Benchmark Household Questionnaire

STORMA

Stability of Rainforest Margins

University of Goettingen/Kassel -- IPB/Bogor -- UNTAD/Palu (SFB 552)

1. Household Identification

Kecamatan / village / Dusun / RT: ……..……../……..……../……../……..

Date of Interview (mm/dd/yy): ……./…..…../…..…..

Household Code: ……. (put this number on top/ bottom of every page)

Name of Household Head (first name, family name) : .....I.D. Code : 01

Name of Respondent: ……

Name of Interviewer: ……

Name of Supervisor: …….

Date questionnaire checked by supervisor (mm/dd/yy): ……./…..…../…..…..

Supervisor signature: ……..

Comments:

Household ID:

1. Weekly Expenditures:

1.1. In the past 7 days, has any member of your household spent money on any of the following items?			1.2. How much did your household spend for [ITEM]?
ITEM	Yes ..... 1 No..... 2	CODE	IDR
1. Tobacco, cigarettes		101	
2. Newspapers or magazines		102	
3. Gambling		103	
4. Fares for busses, taxis, etc.		104	
5. Gasoline		105	
6. Regular worship		106	
7. Alms		107	
8. Shoe shines		108	

1.3. How many [MEALS/SNACKS] were eaten by household members outside of the home during the past 7 days? (Including meals in restaurants, other people's houses and those eaten in social community kitchens, school feeding programs etc.)		1.4. What was the value of these [MEALS] eaten outside of the home in the last 7 days?
MEALS/SNACKS	NUMBER	IDR
A. Breakfast		
B. Lunch		
C. Dinner/supper		
D. Snack or beverages (including alcohol)		

Household ID:

2. Food Expenditures:

			PURCHASES DURING LAST 14 DAYS				PURCHASES TYPICAL MONTH		HOME PRODUCTION				GIFTS
	2.1. Has your household consumed [ITEM] during the past 12 months? Please exclude from your answer [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-10. Yes..1 No...2		2.2. Have the members of your household bought any [ITEM] during the last 14 days? Yes..1 No ...2 (>>5)	2.3. How much did you pay in total?	2.4. How much did you buy? *Kode 2.4 B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.5. How many months in the past 12 months did your household purchase [ITEM]?	2.6. How much do you usually spend on [ITEM] in one of the months that you purchase it?	2.7. How many months in the past 12 months did your household consume [ITEM] that you grew or produced at home? If none, write 0 and >> 10.	2.8. How much did you consume in a typical month? *Kode2.8B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.9. What was the value of the [ITEM] you consumed in a typical month from your own production?	2.10. What is the total value of the [ITEM] consumed that you received as a gift over the past 12 months[1]? If none, write 0.
CODE	ITEM	CONSUMED	BOUGHT	IDR	A. AMT	B. UNIT	MONTHS	IDR	MONTHS	A. AMT	B. UNIT	IDR	IDR
	CEREALS	-	-	-	-	-	-	-	-	-	-	-	-
1	local Rice												
2	IR- Rice												
3	Broken Rice												
4	Maize (beras jagung)												
5	Other Cereals												
	EDIBLE OIL	-	-	-	-	-	-	-	-	-	-	-	-
6	Palm Oil with trade mark												

Household ID:

			PURCHASES DURING LAST 14 DAYS				PURCHASES TYPICAL MONTH		HOME PRODUCTION				GIFTS
	2.1. Has your household consumed [ITEM] during the past 12 months? Please exclude from your answer [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-10. Yes..1 No...2		2.2. Have the members of your household bought any [ITEM] during the last 14 days? Yes..1 No ...2 (>>5)	2.3. How much did you pay in total?	2.4. How much did you buy? *Kode 2.4 B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.5. How many months in the past 12 months did your household purchase [ITEM]?	2.6. How much do you usually spend on [ITEM] in one of the months that you purchase it?	2.7. How many months in the past 12 months did your household consume [ITEM] that you grew or produced at home? If none, write 0 and >> 10.	2.8. How much did you consume in a typical month? *Kode2.8B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.9. What was the value of the [ITEM] you consumed in a typical month from your own production?	2.10. What is the total value of the [ITEM] consumed that you received as a gift over the past 12 months[1]? If none, write 0.
CODE	ITEM	CONSUMED	BOUGHT	IDR	A. AMT	B. UNIT	MONTHS	IDR	MONTHS	A. AMT	B. UNIT	IDR	IDR
7	Palm Oil home made												
8	Palm oil from factory wsithout trademark								[redacted]	[redacted]	[redacted]	[redacted]	
9	Other Oil								[redacted]	[redacted]	[redacted]	[redacted]	
	VEGETABLES	-	-	-	-	-	-	-	-	-	-	-	-
10	Potatoes												
11	Sweet Potatoes												
12	Cassava												
13	Flour (tepung)												
14	Other roots and				[redacted]	[redacted]				[redacted]	[redacted]		

Household ID:

			PURCHASES DURING LAST 14 DAYS				PURCHASES TYPICAL MONTH		HOME PRODUCTION				GIFTS
	2.1. Has your household consumed [ITEM] during the past 12 months? Please exclude from your answer [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-10. Yes..1 No...2		2.2. Have the members of your household bought any [ITEM] during the last 14 days? Yes..1 No ...2 (>>5)	2.3. How much did you pay in total?	2.4. How much did you buy? *Kode 2.4 B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.5. How many months in the past 12 months did your household purchase [ITEM]?	2.6. How much do you usually spend on [ITEM] in one of the months that you purchase it?	2.7. How many months in the past 12 months did your household consume [ITEM] that you grew or produced at home? If none, write 0 and >> 10.	2.8. How much did you consume in a typical month? *Kode2.8B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.9. What was the value of the [ITEM] you consumed in a typical month from your own production?	2.10. What is the total value of the [ITEM] consumed that you received as a gift over the past 12 months[1]? If none, write 0.
CODE	ITEM	CONSUMED	BOUGHT	IDR	A. AMT	B. UNIT	MONTHS	IDR	MONTHS	A. AMT	B. UNIT	IDR	IDR
	tubers												
	VEGETABLES												
15	Water spinach												
16	Bitter gourd												
17	White cabbage												
18	Carrots												
19	Tomatoes												
20	Other vegetables												
	ANIMAL ORIGIN	-	-	-	-	-	-	-	-	-	-	-	-

Household ID:

			PURCHASES DURING LAST 14 DAYS				PURCHASES TYPICAL MONTH		HOME PRODUCTION				GIFTS
	2.1. Has your household consumed [ITEM] during the past 12 months? Please exclude from your answer [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-10. Yes..1 No...2		2.2. Have the members of your household bought any [ITEM] during the last 14 days? Yes..1 No ...2 (>>5)	2.3. How much did you pay in total?	2.4. How much did you buy? *Kode 2.4 B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.5. How many months in the past 12 months did your household purchase [ITEM]?	2.6. How much do you usually spend on [ITEM] in one of the months that you purchase it?	2.7. How many months in the past 12 months did your household consume [ITEM] that you grew or produced at home? If none, write 0 and >> 10.	2.8. How much did you consume in a typical month? *Kode2.8B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.9. What was the value of the [ITEM] you consumed in a typical month from your own production?	2.10. What is the total value of the [ITEM] consumed that you received as a gift over the past 12 months[1]? If none, write 0.
CODE	ITEM	CONSUMED	BOUGHT	IDR	A. AMT	B. UNIT	MONTHS	IDR	MONTHS	A. AMT	B. UNIT	IDR	IDR
	FOODS												
21	Beef/Buffalo												
22	Mutton / Goat/Lamb												
23	Pork												
24	Chicken/duck												
25	Other meat												
26	Small fish												
27	Big fish												
28	Dry fish												

Household ID:

			PURCHASES DURING LAST 14 DAYS				PURCHASES TYPICAL MONTH		HOME PRODUCTION				GIFTS
	2.1. Has your household consumed [ITEM] during the past 12 months? Please exclude from your answer [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-10. Yes..1 No...2		2.2. Have the members of your household bought any [ITEM] during the last 14 days? Yes..1 No ...2 (>>5)	2.3. How much did you pay in total?	2.4. How much did you buy? *Kode 2.4 B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.5. How many months in the past 12 months did your household purchase [ITEM]?	2.6. How much do you usually spend on [ITEM] in one of the months that you purchase it?	2.7. How many months in the past 12 months did your household consume [ITEM] that you grew or produced at home? If none, write 0 and >> 10.	2.8. How much did you consume in a typical month? *Kode2.8B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*	2.9. What was the value of the [ITEM] you consumed in a typical month from your own production?	2.10. What is the total value of the [ITEM] consumed that you received as a gift over the past 12 months[1]? If none, write 0.
CODE	ITEM	CONSUMED	BOUGHT	IDR	A. AMT	B. UNIT	MONTHS	IDR	MONTHS	A. AMT	B. UNIT	IDR	IDR
29	Eggs												
30	Milk Powder								[redacted]	[redacted]	[redacted]	[redacted]	
31	Baby Formula								[redacted]	[redacted]	[redacted]	[redacted]	
32	Other milk product				[redacted]	[redacted]			[redacted]	[redacted]	[redacted]	[redacted]	
	FRUITS	-	-	-	-	-	-	-	-	-	-	-	-
33	Bananas												
34	Papaya												
35	Jeruk												
36	Jeruk manis												

Household ID:

			PURCHASES DURING LAST 14 DAYS				PURCHASES TYPICAL MONTH		HOME PRODUCTION				GIFTS
	2.1. Has your household consumed [ITEM] during the past 12 months? Please exclude from your answer [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-10. Yes..1 No...2		2.2. Have the members of your household bought any [ITEM] during the last 14 days? Yes..1 No ...2 (>>5)	2.3. How much did you pay in total?	2.4. How much did you buy? *Kode 2.4 B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.5. How many months in the past 12 months did your household purchase [ITEM]?	2.6. How much do you usually spend on [ITEM] in one of the months that you purchase it?	2.7. How many months in the past 12 months did your household consume [ITEM] that you grew or produced at home? If none, write 0 and >> 10.	2.8. How much did you consume in a typical month? *Kode2.8B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.9. What was the value of the [ITEM] you consumed in a typical month from your own production?	2.10. What is the total value of the [ITEM] consumed that you received as a gift over the past 12 months[1]? If none, write 0.
CODE	ITEM	CONSUMED	BOUGHT	IDR	A. AMT	B. UNIT	MONTHS	IDR	MONTHS	A. AMT	B. UNIT	IDR	IDR
37	Jeruk bali												
38	Other Fruits												
	SPICES & CONDIMENTS	-	-	-	-	-	-	-	-	-	-	-	-
39	Red Onion												
40	Garlic												
41	Kemeri												
42	Ginger												
43	Ketumba												
44	Coconut Milk												

Household ID:

			PURCHASES DURING LAST 14 DAYS				PURCHASES TYPICAL MONTH		HOME PRODUCTION				GIFTS
	2.1. Has your household consumed [ITEM] during the past 12 months? Please exclude from your answer [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-10. Yes..1 No...2		2.2. Have the members of your household bought any [ITEM] during the last 14 days? Yes..1 No ...2 (>>5)	2.3. How much did you pay in total?	2.4. How much did you buy? *Kode 2.4 B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.5. How many months in the past 12 months did your household purchase [ITEM]?	2.6. How much do you usually spend on [ITEM] in one of the months that you purchase it?	2.7. How many months in the past 12 months did your household consume [ITEM] that you grew or produced at home? If none, write 0 and >> 10.	2.8. How much did you consume in a typical month? *Kode2.8B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.9. What was the value of the [ITEM] you consumed in a typical month from your own production?	2.10. What is the total value of the [ITEM] consumed that you received as a gift over the past 12 months[1]? If none, write 0.
CODE	ITEM	CONSUMED	BOUGHT	IDR	A. AMT	B. UNIT	MONTHS	IDR	MONTHS	A. AMT	B. UNIT	IDR	IDR
45	Chilies (Cabai rawit)												
46	Chilies (Cabai keritin)												
47	Salt												
48	Moto												
49	Others												
	SWEETENERS	-	-	-	-	-	-	-	-	-	-	-	-
50	White sugar												
51	Brown sugar												

Household ID:

			PURCHASES DURING LAST 14 DAYS				PURCHASES TYPICAL MONTH		HOME PRODUCTION				GIFTS
	2.1. Has your household consumed [ITEM] during the past 12 months? Please exclude from your answer [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-10. Yes..1 No...2		2.2. Have the members of your household bought any [ITEM] during the last 14 days? Yes..1 No ...2 (>>5)	2.3. How much did you pay in total?	2.4. How much did you buy? *Kode 2.4 B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.5. How many months in the past 12 months did your household purchase [ITEM]?	2.6. How much do you usually spend on [ITEM] in one of the months that you purchase it?	2.7. How many months in the past 12 months did your household consume [ITEM] that you grew or produced at home? If none, write 0 and >> 10.	2.8. How much did you consume in a typical month? *Kode2.8B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.9. What was the value of the [ITEM] you consumed in a typical month from your own production?	2.10. What is the total value of the [ITEM] consumed that you received as a gift over the past 12 months[1]? If none, write 0.
CODE	ITEM	CONSUMED	BOUGHT	IDR	A. AMT	B. UNIT	MONTHS	IDR	MONTHS	A. AMT	B. UNIT	IDR	IDR
	BEVERAGES	-	-	-	-	-	-	-	-	-	-	-	-
52	Tea/coffee-prepared												
53	Tea leaves/ coffee powder to be prepared at home												
54	Bottled Bevs (Cola, Fanta etc.)												
55	Beer												
56	Palm wine												
57	Cap tikus												
58	Other alcoholic												

Household ID:

			PURCHASES DURING LAST 14 DAYS				PURCHASES TYPICAL MONTH		HOME PRODUCTION				GIFTS
	2.1. Has your household consumed [ITEM] during the past 12 months? Please exclude from your answer [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-10. Yes..1 No...2		2.2. Have the members of your household bought any [ITEM] during the last 14 days? Yes..1 No ...2 (>>5)	2.3. How much did you pay in total?	2.4. How much did you buy? *Kode 2.4 B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.5. How many months in the past 12 months did your household purchase [ITEM]?	2.6. How much do you usually spend on [ITEM] in one of the months that you purchase it?	2.7. How many months in the past 12 months did your household consume [ITEM] that you grew or produced at home? If none, write 0 and >> 10.	2.8. How much did you consume in a typical month? *Kode2.8B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.9. What was the value of the [ITEM] you consumed in a typical month from your own production?	2.10. What is the total value of the [ITEM] consumed that you received as a gift over the past 12 months[1]? If none, write 0.
CODE	ITEM	CONSUMED	BOUGHT	IDR	A. AMT	B. UNIT	MONTHS	IDR	MONTHS	A. AMT	B. UNIT	IDR	IDR
	beverages												
	PREPARED FOODS CONSUMED	-	-	-	-	-	-	-	-	-	-	-	-
59	Maize soup (binte)												
60	Kaledo												
61	Mie instan												
62	Nasigoreng, Nasi Bungkus, Nasikuning												
63	Fried bananas												

Household ID:

			PURCHASES DURING LAST 14 DAYS				PURCHASES TYPICAL MONTH		HOME PRODUCTION				GIFTS
	2.1. Has your household consumed [ITEM] during the past 12 months? Please exclude from your answer [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-10. Yes..1 No...2		2.2. Have the members of your household bought any [ITEM] during the last 14 days? Yes..1 No ...2 (>>5)	2.3. How much did you pay in total?	2.4. How much did you buy? *Kode 2.4 B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.5. How many months in the past 12 months did your household purchase [ITEM]?	2.6. How much do you usually spend on [ITEM] in one of the months that you purchase it?	2.7. How many months in the past 12 months did your household consume [ITEM] that you grew or produced at home? If none, write 0 and >> 10.	2.8. How much did you consume in a typical month? *Kode2.8B* *1 = kg* *2 = liter* *3 = ikat* *4= buah* *5 = kati* *6 = ekor* *7 = bungkus* *8 = sisir* *9 = butir* *10 = botol* *11 = tabung* *12 = batang* *13 =tandan*		2.9. What was the value of the [ITEM] you consumed in a typical month from your own production?	2.10. What is the total value of the [ITEM] consumed that you received as a gift over the past 12 months[1]? If none, write 0.
CODE	ITEM	CONSUMED	BOUGHT	IDR	A. AMT	B. UNIT	MONTHS	IDR	MONTHS	A. AMT	B. UNIT	IDR	IDR
64	Biscuits and cakes												
65	Misc. other food expenses												
	FREQ. BOUGHT COOKING FUELS	-	-	-	-	-	-	-	-	-	-	-	-
66	Firewood												
67	Spiritus												
68	Kerosene												
69	Other fuel (e.g. gas)												
70	Candles												

Household ID:

3. Non-Food Expenditures:

			12 MONTHS	GIFTS 12 MONTHS	
3.1. In the following questions, I want to ask about all purchases made for your household, regardless of which person made them. Has your household bought, spent money on or received gifts of [ITEM] during the past 12 months? Please exclude from your answer any [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-4.			3.2. How much did your household spend for [ITEM] during the past 12 months?	3.3. Did you receive any [ITEM] as a gift during the past 12 months?	3.4. What is the value of all the [ITEM] that you received as a gift during the past 12 months?
CODE	ITEMS	YES…1 NO…2 (>>Q3.3)	CURRENCY	YES…1 NO…2 (>>NEXT ITEM)	CURRENCY
1.	Personal care items (soap, shampoo, toothpaste, etc.)				
2.	Cosmetics				
3.	Women’s clothing				
4.	Men’s clothing				
5.	Children’s clothing				
6.	Women’s footwear				
7.	Men’s footwear				
8.	Children’s footwear				

Household ID:

			12 MONTHS	GIFTS 12 MONTHS	
3.1. In the following questions, I want to ask about all purchases made for your household, regardless of which person made them. Has your household bought, spent money on or received gifts of [ITEM] during the past 12 months? Please exclude from your answer any [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-4.			3.2. How much did your household spend for [ITEM] during the past 12 months?	3.3. Did you receive any [ITEM] as a gift during the past 12 months?	3.4. What is the value of all the [ITEM] that you received as a gift during the past 12 months?
CODE	ITEMS	YES…1 NO…2 (>>Q3.3)	CURRENCY	YES…1 NO…2 (>>NEXT ITEM)	CURRENCY
9.	Cloth and sewing supplies				
10.	Tailoring expenses				
11.	Laundry				
12.	Personal services (haircuts, shaving, manicures, etc.)				
13.	Books (e.g. novel , newspaper, magazine, tabloid. Excluding textbooks)				
14.	Postal expenses, telegrams, etc.				
15.	Entertainment (cinema, cassette/ VCD rentals, cultural and sporting events, etc.)				
16.	Household cleaning articles (soap, washing powder, bleach, broom etc.)				
17.	Kitchen supplies (napkins, matches, bags, etc.)				

Household ID:

			12 MONTHS	GIFTS 12 MONTHS	
3.1. In the following questions, I want to ask about all purchases made for your household, regardless of which person made them. Has your household bought, spent money on or received gifts of [ITEM] during the past 12 months? Please exclude from your answer any [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-4.			3.2. How much did your household spend for [ITEM] during the past 12 months?	3.3. Did you receive any [ITEM] as a gift during the past 12 months?	3.4. What is the value of all the [ITEM] that you received as a gift during the past 12 months?
CODE	ITEMS	YES…1 NO…2 (>>Q3.3)	CURRENCY	YES…1 NO…2 (>>NEXT ITEM)	CURRENCY
18.	Toilet supplies (cleanser, etc.)				
19.	Electrical items (light bulbs, cords, plugs, batteries, etc.)				
20.	Repairs and maintenance of household articles (e.g. nails, hammer, cutlass, scicors)				
21.	Household linens (sheets, blankets, towels, etc.)				
22.	Small kitchen appliances (blender, mixer, etc.)				
23.	Dishes (crockery, cutlery, glassware, etc.)				
24.	Kitchen utensils (pots, pans, buckets, tools, etc.)				
25.	Small electrical items (radio, walkman, watch, clock, etc.)				
26.	Sports and hobby equipment				
27.	Toys				

Household ID:

			12 MONTHS	GIFTS 12 MONTHS	
3.1. In the following questions, I want to ask about all purchases made for your household, regardless of which person made them. Has your household bought, spent money on or received gifts of [ITEM] during the past 12 months? Please exclude from your answer any [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-4.			3.2. How much did your household spend for [ITEM] during the past 12 months?	3.3. Did you receive any [ITEM] as a gift during the past 12 months?	3.4. What is the value of all the [ITEM] that you received as a gift during the past 12 months?
CODE	ITEMS	YES…1 NO…2 (>>Q3.3)	CURRENCY	YES…1 NO…2 (>>NEXT ITEM)	CURRENCY
28.	Musical instruments				
29.	Vehicle repair, maintenance, parts and licenses (do not include gasoline)				
30.	Repair and maintenance of the house				
31.	Insurance (auto, property)				
32.	Health insurance				
33.	Membership fees (e.g. to coperation)				
34.	Excursion, holiday (including travel and lodging)				
35.	Charity, donations (e.g. for Aceh)				
36.	Tax (Income tax, Land tax, Housing and property taxes)				
37.	Gambling losses				

Household ID:

			12 MONTHS	GIFTS 12 MONTHS	
3.1. In the following questions, I want to ask about all purchases made for your household, regardless of which person made them. Has your household bought, spent money on or received gifts of [ITEM] during the past 12 months? Please exclude from your answer any [ITEM] purchased for processing or resale in a household enterprise. IF THE ANSWER TO Q.1. IS YES, ASK Q.2-4.			3.2. How much did your household spend for [ITEM] during the past 12 months?	3.3. Did you receive any [ITEM] as a gift during the past 12 months?	3.4. What is the value of all the [ITEM] that you received as a gift during the past 12 months?
CODE	ITEMS	YES…1 NO…2 (>>Q3.3)	CURRENCY	YES…1 NO…2 (>>NEXT ITEM)	CURRENCY
38.	Cash losses				
39.	Contributions to PKK				
40.	Deposits to savings accounts				
41.	Legal or notary services (e.g. ID Card, liscence etc.)				
42.	Marriages, births and other ceremonies				
43.	Female/ male dowry/ brideprice/ groomprice				
44.	Funeral expenses				

Household ID:

4. Durable Goods:

Interviwer: Do only mention things that have "some" value

Does your household own any of the following assets <u>at present</u>? (read Code 1)	Number owned?	When was it acquired?	Estimate current sales value using method: 1) Use price if bought 2004 or 2005 2) If older or not being paid for ask current sales value 3) If sale is impossible ask about costs to replace it	
			<u>Method</u>	<u>Value in Rp.</u>
…..	…..	…..	…..	…….
…..	…..	…..	…..	…….
…..	…..	…..	…..	…….
…..	…..	…..	…..	…….
…..	…..	…..	…..	…….
…..	…..	…..	…..	…….
…..	…..	…..	…..	…….
…..	…..	…..	…..	…….
…..	…..	…..	…..	…….

Code 1:

1= Trunk / Suitcase
2= Buckets / Pots
3= Metal cooking pots
4= Stove / Gas burner
5= Bed
6= Cupboard
7= Set
8= Fans
9= Iron
10= Wall clock / Watch
11= Radio
12=Cassette player /CD player (music)
13= Video player (VCR,VCD, etc)
14= Television
15= Sewing/knitting machine
16= Bicycle
17= Camera, video camera
18= Refrigerator
19= Washing machine
20= Motorcycle
21= Other Motor vehicle
22= Satellite dish
23= Computer (including Fax, Scanner, printer etc.)

Household ID:

4. Durable Goods:

Interviwer: Do only mention things that have "some" value

Does your household own any of the following assets <u>at present</u>? (read Code 1)	Number owned?	When was it acquired?	Estimate current sales value using method: 1) Use price if bought 2000 or 2001 2) If older or not being paid for ask current sales value 3) If sale is impossible ask about costs to replace it <u>Method</u>	<u>Value in Rp.</u>
…..	…..	…..	…..	……
…..	…..	…..	…..	……
…..	…..	…..	…..	……
…..	…..	…..	…..	……
…..	…..	…..	…..	……
…..	…..	…..	…..	……
…..	…..	…..	…..	……
…..	…..	…..	…..	……
…..	…..	…..	…..	……
…..	…..	…..	…..	……

Code 1:

1= Trunk / Suitcase
2= Buckets / Pots
3= Metal cooking pots
4= Stove / Gas burner
5= Bed
6= Cupboard
7= Set
8= Fans
9= Iron
10= Wall clock / Watch
11= Radio
12=Cassette player /CD player (music)
13= Video player (VCR,VCD, etc)
14= Television
15= Sewing/knitting machine
16= Bicycle
17= Camera, video camera
18= Refrigerator
19= Washing machine
20= Motorcycle
21= Other Motor vehicle
22= Satellite dish
23= Computer (including Fax, Scanner, printer etc.)

Household ID:

5. Remittances:

5.1. During the past 12 months, has any member of your household provided money or goods to person who are not members of your household? For example, for relatives living elsewhere, child support or alimony, or to friends and neighbors?

YES…1
NO…2 (>>NEXT SECTION) ☐

	5.2. What are the names of the persons to whom household members have sent assistance during the past 12 months? LIST ALL NAMES BEFORE GOING TO 3-5	5.3. How much money have members of the household sent to [RECIPIENT] in the past 12 months?	5.4. Did you also send any food or other goods to [RECIPIENT] in the past twelve months? Yes…1 No…2 (>> next person)	5.5. What is the approximate value of the food or other goods sent?
	NAME	AMOUNT		AMOUNT
A.				
B.				
C.				
D.				

Household ID:

6. Education:

(Also from adults)

6.1. During the past 12 months, has your household had any expenses on education (fees, uniforms, textbooks, or other materials) for any of its members YES…1 NO…2 (>>NEXT SECTION) ☐

6.2. How much has your household spent in the last 12 months on each of the following education expenditures:

	CURRENCY
A. Tuition and other required fees	
B. Uniforms and other clothing	
C. Textbooks and exercise books	
D. Other educational material (stationary like paper, pens, etc.)	
E. Meals and lodging at school	
F. Transportation to and from school	
G. Other expenses (extra classes, optional fees)?	

Household ID:

7. Health:

7.1. During the past 12 months, has your HH had any expenditures on health, such as fees for visits to doctors, health clinics, or traditional practitioners, or to pay for medicines or other materials?

YES…1
NO…2 (>>NEXT SECTION) ☐

7.2. In the past 12 months, did you or any member of your household… IF THE ANSWER TO Q.1 IS YES, ASK Q.2-3.		7.3. How much did your household spend for [ITEM] during the past 12 months for all costs associated with these visits/stays **including medicines prescribed during these visits even if purchased elsewhere**. Exclude transport costs. Exclude costs reimbursed by insurance.
	Yes.....1 No.....2	CURRENCY
A. Visit any public hospital or health station to obtain outpatient health care?		
B. Visit any private hospital or health station to obtain outpatient health care?		
C. Visit any private doctor to obtain outpatient health care?		
D. Visit any private nurse, paramedic, poysandu or midwife to obtain health care?		
E. Visit any traditional health practitioner to obtain health care?		
F. Stay at a public hospital or health clinic overnight?		
G. Stay at a private hospital or health clinic overnight?		
H. Purchase any medicines on your own, i.e. without a prescription/consulting a doctor first?		

Household ID:

8. Dwelling:

Serial #	Questions	Response		Response Code
8.1	Is this dwelling owned by a member of your household? Interviewer: If no go to “8.5”	☐		Yes.....1 No.....2 > go to 8.4
8.2	If you sold this dwelling today, how much would you receive for it?	☐		Rupiah
8.3	Estimate please, the amount of money you could receive as rent if you let this dwelling to another person.	☐	A. Rupiah	Rupiah
		☐	B. Time unit	Day.....1 Week.....2 Fortnight.....3 Month.....4 Quarter.....5 Half Year.....6 Year.....7
8.4	Do you rent this dwelling for goods, services or cash? Interviewer: If no go to “8.9”	☐		Yes.....1 No.....2 > go to 8.9
8.5	How much does your household pay in cash to rent this dwelling? Interviewer: If does not pay in cash write zero “0”.	☐	A. Rupiah	Rupiah
		☐	B. Time unit	Day.....1 Week.....2 Fortnight.....3 Month.....4 Quarter.....5 Half Year.....6 Year.....7
8.6	Does your household pay any of the rent by goods or services? Interviewer: If no go to “8.9”	☐		Yes.....1 No.....2 > go to 8.9

Household ID:

Serial #	Questions	Response		Response Code
8.7	What is the approximate value of the goods and services paid by your household? Interviewer: If does not pay in kind write zero “0”.	☐	A. Value of kind	Rupiah If does not pay in kind write zero “0”.
		☐	B. Time unit	Day.....1 Week .....2 Fortnight.....3 Month.....4 Quarter .....5 Half Year.....6 Year.....7
8.8	Does your rent include any of the following?			
	A. Furniture	☐		Yes.....1 No.....2
	B. Electricity	☐		Yes.....1 No.....2
	D. Water	☐		Yes.....1 No.....2
8.9	How much did your household pay in the past 12 months for the following services. ***Interviewer: If the household did not pay anything, write zero “0”.***			
	A. Electricity	☐		Rupiah If the household did not pay anything, write zero “0”.
	B. Water	☐		Rupiah If the household did not pay anything, write zero “0”.
	C. Telephone	☐		Rupiah If the household did not pay anything, write zero “0”.

Household ID:

9. In-Kind Payments:

9.1. During the past 12 months, did any member of your household work for a private company, the government or another individual? YES…1 NO…2 (>>END)	

9.2. If yes, what are the names of the household members who did such work?	9.3. Was any part of their payment received in the form of food, clothing, housing or transportation to and from work?	9.4. If yes, what was the value of these payments? Over what time interval?	
NAME	YES.....1 NO .....2 (>> next person)	A. AMOUNT	B. TIME UNIT
A.			
B.			
C.			
D.			

Time Units:	Day……1	Month…….4	Year…..7
	Week…. ...2	Quarter…...5	
	Fortnight…3	Half Year…6	

Household ID:

Annex 3: All possible independent variables and the initial sets of variables for Model 1 and Model 7

Variable name	Model 1 (Method D)	Model 7
Average age of all household members	Included, but dropped	-
Average age of adult household members	-	-
Age of household head	Control variable	Control variable
Age of youngest household member	Included, but dropped	Included
Age of oldest household member	-	Included
Household size	Control variable	Control variable
Dummy: household head is male	-	-
Number of female adult household members	-	Included
Number of male adult household members	-	Included
Percent of dependent household members younger than 15 and older than 64 years (in relation to household size)	-	Included
Percent of dependent household members younger than 18 and older than 60 years (in relation to household size)	Included	Included
Percent of dependent household members younger than 14 and older than 60 years (in relation to household size)	-	Included
Number of dependent household members younger than 15 and older than 64 years	-	Included
Number of dependent household members younger than 18 and older than 64 years	-	Included
Number of dependent household members younger than 14 and older than 60 years	-	Included
Number of children in school age (6-18 years)	-	-
Total number of females in the household	-	Included
Total number of males in the household	-	Included
Ratio of dependents younger than 15 and older than 64	-	Included
Ratio of dependents younger than 18 and older than 60	-	Included
Ratio of dependents younger than 14 and older than 60	Included, but dropped	Included
Household size squared	Control variable	Control variable
Ratio of male adults to female adults in the household	-	Included
Ratio of total male to total female household members	-	Included
Dummy: Any family member work somewhere else	Included	
In how many years household bought new clothes for Idul Fitri/ Christmas in last 3 years?	Included	-
Total number of rooms in the house	-	Included
Size of these rooms in square meters	Included	Included
Dummy: Household made a recent home improvement	Included	Included
Household has piped water (0 = no, 1 = shared, 2 = own)	-	Included
Household has electricity connection (0 = no, 1 = shared, 2 =	-	Included

own, 3 = generator)		
Dummy: The main income-earning male household member would work for 12,000IDR per 8 hours physical work	Included	-
Dummy: The main income-earning female household member would work for 12,000IDR per 8 hours physical work	-	-
Number of meals served during the last 2 days	-	-
Dummy: Special events in the last 7 days	-	-
Meals consists of plain rice just with chilli only in the last 7 days	-	-
Total number of days household had not enough to eat in past 30 days	-	-
Number of weeks stock of rice will last for	-	-
Dummy: Household was worried that food would run out before there was money to by new (within last 12 month)	-	-
Dummy: Same food daily because of a lack of money to by other (within the last 12 month)	-	-
Dummy: Any adult household member ate less food because of a lack of money to buy new (within last 12 month)	-	-
Dummy: Any adult household member skipped meals because of a lack of money to buy new (within last 12 month)	-	-
Dummy: Any adult household member stopped eating for an entire day because of a lack of money to buy new (within last 12 month)	-	-
Dummy: Any adult household member lost weight because of a lack of money to buy food (within last 12 month)	Included, but dropped	-
Step on the ladder of life were the household locate itself 7 years ago	-	-
Dummy: Household lives in own house	-	Included
Dummy: Trunk or suitcase ownership	Included, but dropped	Included
Dummy: Bucket ownership	-	Included
Dummy: Metal cooking pot ownership	Included	Included
Dummy: Stove ownership	-	Included
Dummy: Bed ownership	-	Included, but dropped
Dummy: Cupboard ownership	-	Included
Dummy: Set ownership	-	Included
Dummy: Fan ownership	-	Included
Dummy: Flat iron ownership	-	Included
Dummy: Clock or watch ownership	Included, but dropped	Included
Dummy: Radio ownership	-	Included
Dummy: VCR ownership	-	Included
Dummy: CD player ownership	-	Included
Dummy: TV ownership	-	Included
Dummy: Sewing machine ownership	-	Included
Dummy: Bicycle ownership	Included	Included
Dummy: Refrigerator ownership	-	Included
Dummy: Satellite Dish ownership	-	Included
Number of trunks and suitcases owned	-	Included

Number of buckets owned	-	Included
Number of metal cooking owned	-	Included
Number of stoves owned	-	Included
Number of beds owned	-	Included
Number of sets owned	-	Included
Number of cupboards owned	Included	Included
Number of clocks or watches owned	-	-
Dummy: Bull ownership	-	Included
Dummy: Cow ownership	-	Included
Dummy: Pig ownership	-	Included, but dropped
Dummy: Duck ownership	-	Included
Dummy: Chicken ownership	-	Included
Number of bulls owned	-	Included
Number of cows owned	-	Included
Number of pigs owned	-	Included
Number of ducks owned	-	Included
Number of chicken owned	-	Included
Number of relatives working elsewhere in Indonesia and send money to the household	-	-
Share of food expenditures from total consumption in %	Included	-
Dummy: Household did not eat for entire days in the last 12 month	-	-
Average age of all household members except household head	-	-
Number of steps on the ladder of life the household rates itself above or below the step identified as national poverty line	Included	-
Dummy: Respondent rates itself below the step reflecting the national poverty line	-	-
Dummy: Household agrees that the people in the village / neighbourhood are basically honest and can be trusted	Included	-
Dummy: Respondent agrees that people are only interested un their own welfare	-	-
Dummy: Respondent agrees that he or she would loose a pig or goat somebody would help to find it	Included	-
Dummy: Household feels that food expenses are below its needs	Included	-
Dummy: Household feels that food expenses are above its needs	-	-
Dummy: Household feels that clothing expenses are below its needs	-	-
Dummy: Household feels that clothing expenses are above its needs	-	-
Dummy: Household feels that health care expenses are below its needs	Included, but dropped	-
Dummy: Household feels that health care expenses are above its needs	Included	-
Dummy: Household feels that child education expenses are below its needs	-	-
Dummy: Household feels that child education expenses are above its needs	Included, but dropped	-

Dummy: Household feels that its housing expenditures are average	Included, but dropped	-
Dummy: Household feels that housing expenses are above its needs	Included	-
Number of organisations household is member in	-	-
Household rates itself above subjective poverty line (reference household with 2 adults and 3 dependent household members)	Included	-
Dummy: No lock at main entrance door	Included, but dropped	Included, but dropped
Dummy: Padlock at main entrance door	-	Included
Dummy: Roof is out of natural material (bamboo or straw)	Included	Included
Dummy: Exterior walls are out of bamboo	-	Included
Dummy: Exterior walls are out of brick or stone	Included	Included
Dummy: Exterior walls are out of brick or stone with cement	-	-
Dummy: Floor is earth or bamboo	-	Included, but dropped
Dummy: Floor is wood	-	Included
Dummy : Floor is cement	-	Included
Dummy: Household uses other cooking fuel than collected wood	Included	Included
Dummy: Kerosene is main lighting source	-	Included
Dummy: Electricity with shared connection is main lighting source	-	Included
Dummy: Household shares toilet (pit toilet or improved latrine)	-	Included
Dummy: Toilet is own pit toilet	-	Included
Dummy: Toilet is own improved latrine	Included	Included
Number of rooms per person	Included	-
Dummy: Main source of drinking water is water from pond, river or spring	-	Included
Dummy: Main source of drinking water is water from public well or borehole	-	Included
Dummy: Main source of drinking water is water from well in residence yard	Included	Included
Dummy: Main source of drinking water is piped water	-	Included
Dummy: Household head sleeps not in a bed	Included, but dropped	Included
Dummy: Household head sleeps in bed with thin mattress out of fibres	-	Included
Dummy: Household cooks in a separate kitchens	Included	Included
Number of days in the last 7 days household ate any of four superior foods (Large Fish; Beef, pork or buffalo meat; chicken or duck; eggs)	Included	-
Dummy: Household purchases rice fortnightly	-	-
Dummy: Household purchases rice monthly	-	-
Dummy: Household purchases rice less than monthly or never	-	-
Dummy: Household always ate enough from the food it preferred	-	-
Dummy: Household sometimes or often did not have enough to eat	-	-

Dummy: Household borrowed food from neighbours/relatives rarely	-	-
Dummy: Household borrowed food from neighbours/relatives often or mostly	-	-
Dummy: Household ate less food for more than 10 days in the last 12 month	-	-
Dummy: Household ate less food for less than 10 days in the last 12 month	Included	-
Dummy: Household had to skip meals during the last 12 month	-	-
Dummy: Household stopped eating for a whole day in the last 12 month	-	-
Dummy: Household ate cassava because of food scarcity	-	-
Dummy: Household ate broken rice because of food scarcity	-	-
Dummy: Household ate rice mixed with maize because of food scarcity	Included, but dropped	-
Natural logarithm of weekly food expenditures	Included	-
Natural logarithm of weekly value of food produced in farm or garden (for home consumption)	Included	-
Natural logarithm of monthly expenditures on utilities	Included	-
Natural logarithm of monthly expenditures on transport	Included	-
Natural logarithm of monthly expenditures on fuel	-	-
Natural logarithm of monthly value of other goods/ cooking fuel produced in farm or garden for home consumption	Included	-
Natural logarithm of expenditures on education/ school in last 12 month	Included	-
Natural logarithm of expenditures on health in last 12 month	-	-
Natural logarithm of expenditures on housing in last 12 month	Included	-
Natural logarithm of expenditures on furniture in last 12 month	Included	-
Natural logarithm of expenditures of remittances sent to relatives in last 12 month	-	-
Natural logarithm of expenditures on other expenditures, leisure, social events in last 12 month	Included	-
Natural Logarithm of the amount of money household would spend on food from additional 30,000 IDR	-	-
Natural logarithm of expenditures average clothing expenditures of female household members in last 12 month	Included, but dropped	-
Natural logarithm of expenditures average clothing expenditures of male household members in last 12 month	-	-
Natural logarithm of value of inherited major funds or assets in the last three years	Included	-
Natural logarithm of value of received dowry in the last 3 years	Included	-
Natural logarithm of value of given dowry in the last 3 years	Included	-
Dummy: Household borrowed money in case of emergency during the last 3 years	-	-
Dummy: Household lent money to other households	Included	
Dummy: Household has borrowed money from informal market	Included	-
Natural logarithm of value of money borrowed from traditional money lenders in the last 3 years for food, emergencies or social events	-	-

Natural logarithm of value of debts owed to other households by responding household	Included, but dropped	-
Natural logarithm of value of debts owed by other households to responding household	-	-
Dummy: Household is not member of any institution or organisation	-	-
Dummy: Cattle ownership	Included	Included
Number of cattle owned	-	Included
Natural logarithm of value of bulls owned	-	-
Natural logarithm of value of cows owned	-	-
Natural logarithm of value of pigs owned	-	-
Natural logarithm of value of ducks owned	-	-
Natural logarithm of value of chicken owned	-	-
Natural logarithm of value of trunks or suitcases owned	-	-
Natural logarithm of value of buckets owned	-	-
Natural logarithm of value of metal cooking pots owned	Included	-
Natural logarithm of value of stoves owned	-	-
Natural logarithm of value of beds owned	-	-
Natural logarithm of value of cupboards owned	-	-
Natural logarithm of value of sets owned	Included	-
Natural logarithm of value of fans owned	-	-
Natural logarithm of value of flat irons owned	-	-
Natural logarithm of value of clocks or watches owned	Included	-
Natural logarithm of value of radios owned	-	-
Natural logarithm of value of VCRs owned	-	-
Natural logarithm of value of CD players owned	-	-
Natural logarithm of value of TVs owned	-	-
Natural logarithm of value of sewing machines owned	-	-
Natural logarithm of value of refrigerators owned	Included	-
Natural logarithm of value of motorcycles owned	-	-
Natural logarithm of value of satellite dishes owned	-	-
Natural logarithm of value of cattle owned	Included	-
Natural logarithm of value of electric media assets owned	-	-
Natural logarithm of value of transport assets	Included	-
Natural logarithm of value of furniture owned	Included, but dropped	-
Natural logarithm of value of animals owned	Included	-
Dummy: Household head is not married (including widows and divorced or separated)	-	Included
Squared age of household head	Control variable	Control variable
Dummy: Household has own or shared electricity connection (including generator)	Included	Included
Natural logarithm of value of money received from a relative working elsewhere in last 12 month	-	-
Natural logarithm of value of total yearly expenditures	Included	-
Natural logarithm of value remittances sent divided by the Natural logarithm of total household expenditures	Included	-
Natural logarithm of value remittances received divided by the Natural logarithm of total household expenditures	Included	-

Ratio of remittances received to the remittances sent	-	-
Natural logarithm of amount the household needs to live per month	-	-
Dummy: Household head has uncompleted primary education	Included, but dropped	-
Dummy: Household head has no schooling	-	-
Dummy: Household head has completed secondary/ post primary education	-	-
Dummy: Household head has completed superior education	-	-
Count of household members older than 15 years with no schooling	-	-
Count of household members older than 15 years with completed primary education	-	-
Count of household members older than 15 years with uncompleted primary education	-	-
Count of household members older than 15 years with uncompleted secondary education	-	-
Count of household members older than 15 years with complete secondary education	-	-
Number of household members older than 15 years with no schooling, except household head	-	-
Number of household members older than 15 years with uncompleted primary education, except household head	-	-
Number of household members older than 15 years with completed primary education, except household head	Included	-
Number of household members older than 15 years with uncompleted secondary education, except household head	Included	-
Number of household members older than 15 years with completed secondary education/ post primary education, except household head	Included	-
Number of household members older than 15 years with completed superior education, except household head	-	-
Dummy: Median household member has secondary education completed	-	-
Dummy: Median household member has superior education completed	-	-
Dummy: Maximum education level of any household member older than 15 years is completed secondary education	-	-
Dummy: Maximum education level of any household member older than 15 years is completed superior education	-	-
Dummy: Median adult household member (older than 18 years) has secondary education completed	-	-
Dummy: Median adult household member (older than 18 years) has secondary education completed	-	-
Dummy: Maximum education level of adult household member (older than 18 years) is secondary education completed	Included	-
Dummy: Maximum education level of adult household member (older than 18 years) is superior education completed	-	-
Dummy: Spouse completed secondary/ post primary education	-	-

Dummy: Spouse completed superior education	-	-
Dummy: Median education of female household members is completed secondary level	Included	-
Dummy: Median education of female household members is completed superior level	-	-
Dummy: Median education of male household members is completed secondary level	-	-
Dummy: Median education of male household members is completed superior level	Included	-
Dummy: Maximum education of male household members is completed secondary level	-	-
Dummy: Maximum education of male household members is completed superior level	Included	-
Count of household members with higher education	-	-
Dummy: Maximum education of female household members is completed secondary level	-	-
Dummy: Maximum education of female household members is completed superior level	Included	-
Dummy: Household head is non-indigenous	Included	-
Total land owned (ha)	Included	-
Dummy: Household owns homestead land	-	-
Dummy: Household owns irrigated rice fields	-	-
Dummy: Household owns lowland area	-	-
Dummy: Household owns upland area	-	-
Dummy: Household owns other type of land	-	-
Area of homestead in ha	-	Included
Area of irrigated rice fields in ha	-	-
Lowland area in ha	-	-
Upland area in ha	-	-
Natural logarithm of value of homestead area	-	-
Natural logarithm of value of irrigated rice field area	-	-
Natural logarithm of value of lowland area	-	-
Natural logarithm of value of upland area	Included	-
Natural logarithm of value of other area	-	-
Natural logarithm of value of total area	-	-
Natural logarithm of value of minimum wage for male workers	-	-
Natural logarithm of value of minimum wage for female workers	Included, but dropped	-
Natural logarithm of value of livestock	-	-
Natural logarithm of total value of assets, except livestock	Included	-
Natural Logarithm of resale value of assets and livestock	Included	-
Dummy: Household has own or shared piped water	-	Included
Natural Logarithm of sum of clothing expenditures	-	-
Natural Logarithm of average clothing expenditures	-	-
Dummy: A first degree relative of household head or spouse got married in the past 3 years	-	-
Dummy: Household head is farmer	-	Included
Dummy: Household head is wage labourer in agriculture	-	Included
Dummy: Household head is working outside of agriculture	Included	Included
Dummy: Occupation of household head is other (including	-	-

domestic worker and not working)		
Dummy: District is Lore Utara	Control variable	Control variable
Dummy: District is Palolo	Control variable	Control variable
Dummy: District is Sigi Biromaru	Control variable	Control variable
Dummy: District is Kulawi	Control variable	Control variable
Dummy: District is Pipkoro	Control variable	Control variable

Annex 4: Model 1 variables

Variable label	N	Minimum	Maximum	Mean	Standard Deviation
Average age of all household members	281	10	84	28.06	11.47
Age of household head	281	21	87	46.74	14.46
Age of youngest household member	281	0	84	10.21	13.11
Household size	281	1	14		
Percent of dependent household members younger than 18 and older than 60 years (in relation to household size)	281	0	100	42.566	21.05
Ratio of dependents younger than 14 and older than 60	281	0	3	0.72	0.6
Household size squared	281	1	196	31.14	26.81
Dummy: Any family member work somewhere else	281	0	1	0.5	0.26
In how many years household bought new clothes for Idul Fitri/ Christmas in last 3 years?	281	1	3	2.78	0.51
Size of the rooms in square meters	281	6	209	45.5	28.09
Dummy: Household made a recent home improvement	281	0	1	0.4	0.49
Dummy: The main income-earning male household member would work for 12,000IDR per 8 hours physical work	281	0	1	0.19	0.4
Dummy: Any adult household member lost weight because of a lack of money to buy food (within last 12 month)	281	0	1	0.9	0.29
Dummy: Trunk or suitcase ownership	281	0	1	0.14	0.35
Dummy: Metal cooking pot ownership	281	0	1	0.2	0.4
Dummy: Clock or watch ownership	281	1	0	0.67	0.47
Dummy: Bicycle ownership	281	0	1	0.16	0.37
Number of cupboards owned	281	0	8	1.59	1.5
Share of food expenditures from total consumption in %	281	7.4	95.64	65.77	17.97
Number of steps on the ladder of life the household rates itself above or below the step identified as national poverty line	281	-8	6	-1.54	2.16
Dummy: Household agrees that the people in the village / neighbourhood are basically honest and can be trusted	281	0	1	0.8434	0.36

Dummy: Respondent agrees that if he or she would loose a pig or goat somebody would help to find it	281	0	1	0.73	0.45
Dummy: Household feels that food expenses are below its needs	281	0	1	0.23	0.42
Dummy: Household feels that health care expenses are below its needs	281	0	1	0.25	0.44
Dummy: Household feels that health care expenses are above its needs	281	0	1	0.04	0.2
Dummy: Household feels that child education expenses are above its needs	281	0	1	0.04	0.19
Dummy: Household feels that its housing expenditures are average	281	0	1	0.42	0.5
Dummy: Household feels that housing expenses are above its needs	281	0	1	0.03	0.18
Household rates itself above subjective poverty line (reference household with 2 adults and 3 dependent household members)	281	0	1	0.16	0.37
Dummy: No lock at main entrance door	281	0	1	0.33	0.47
Dummy: Roof is out of natural material (bamboo or straw)	281	0	1	0.2	0.4
Dummy: Exterior walls are out of brick or stone	281	0	1	0.1	0.3
Dummy: Household uses other cooking fuel than collected wood	281	0	1	0.12	0.33
Dummy: Toilet is own improved latrine	281	0	1	0.29	0.46
Number of rooms per person	281	0.14	4	0.85	0.53
Dummy: Main source of drinking water is water from well in residence yard	281	0	1	0.19	0.39
Dummy: Household head sleeps not in a bed	281	0	1	0.15	0.36
Dummy: Household cooks in a separate kitchens	281	0	1	0.11	0.32
Number of days in the last 7 days household ate any of four superior foods (Large Fish; Beef, pork or buffalo meat; chicken or duck; eggs)	281	0	19	4.19	2.98
Dummy: Household ate less food for less than 10 days in the last 12 month	281	0	10	0.15	0.36
Dummy: Household ate rice mixed with maize because of food scarcity	281	0	1	0.09	0.29

Natural logarithm of weekly food expenditures	281	8.52	12.61	10.8	0.73
Natural logarithm of weekly value of food produced in farm or garden (for home consumption)	281	3.49	12.43	9.62	1.84
Natural logarithm of monthly expenditures on utilities	281	3.27	14.388	8.22	2.92
Natural logarithm of monthly expenditures on transport	281	4.04	14.33	9.17	2.78
Natural logarithm of monthly value of other goods/ cooking fuel produced in farm or garden for home consumption	281	3.49	13.22	9.93	1.26
Natural logarithm of expenditures on education/ school in last 12 month	281	0.69	15.48	9.86	3.31
Natural logarithm of expenditures on housing in last 12 month	281	0.69	15.52	7.57	3.4
Natural logarithm of expenditures on furniture in last 12 month	281	4.75	15.04	7.21	3.4
Natural logarithm of expenditures on other expenditures, leisure, social events in last 12 month	281	4.55	14.51	9.93	2.37
Natural logarithm of expenditures average clothing expenditures of female household members in last 12 month	281	4.82	13.71	10.66	2.26
Natural logarithm of value of inherited major funds or assets in the last three years	281	1.79	17.22	6.98	2.22
Natural logarithm of value of received dowry in the last 3 years	281	5.75	16.81	6.43	2.36
Natural logarithm of value of given dowry in the last 3 years	281	5.53	16.3	6.15	2.29
Dummy: Household lent money to other households	281	0	1	0.13	0.33
Dummy: Household has borrowed money from informal market	281	0	1	0.13	0.34
Natural logarithm of value of debts owed to other households by responding household	281	5.63	17.37	6.58	2.51
Dummy: Cattle ownership	281	0	1	0.19	0.39
Natural logarithm of value of metal cooking pots owned	281	3.28	13.12	4.87	3.26
Natural logarithm of value of sets owned	281	5.56	15.03	10.28	3.05

Natural logarithm of value of clocks or watches owned	281	2.66	12.32	7.41	3.36
Natural logarithm of value of refrigerators owned	281	2.38	13.22	3.53	2.88
Natural logarithm of value of cattle owned	281	7.86	19.57	8.27	2.98
Natural logarithm of value of transport assets	281	8.08	18.4	10.55	3.48
Natural logarithm of value of furniture owned	281	6.68	15.73	12.62	1.97
Natural logarithm of value of animals owned	281	8	19.57	11.71	2.86
Squared age of household head	281	441	7569	2393.29	1488.39
Dummy: Household has own or shared electricity connection (including generator)	281	0	1	0.72	0.45
Natural logarithm of value of total yearly expenditures	281	13.95	17.60	15.7	0.61
Natural logarithm of value remittances sent divided by the Natural logarithm of total household expenditures	281	0.3	0.97	0.41	0.118
Natural logarithm of value remittances received divided by the Natural logarithm of total household expenditures	281	0.3	1.06	0.38	0.11
Dummy: Household head has uncompleted primary education	281	0	1	0.14	0.34
Number of household members older than 15 years with completed primary education, except household head	281	0	6	1.29	1.2
Number of household members older than 15 years with uncompleted secondary education, except household head	281	0	3	0.21	0.51
Number of household members older than 15 years with completed secondary education/ post primary education, except household head	281	0	4	0.51	0.84
Dummy: Maximum education level of adult household member (older than 18 years) is secondary education completed	281	0	1	0.23	0.42
Dummy: Median education of female household members is completed secondary level	281	0	1	0.18	0.38
Dummy: Median education of male household members is completed	281	0	1	0.16	0.36

secondary level					
Dummy: Median education of male household members is completed superior level	281	0	1	0.12	0.33
Dummy: Maximum education of male household members is completed superior level	281	0	1	0.25	0.44
Dummy: Maximum education of female household members is completed superior level	281	0	1	0.16	0.37
Dummy: Household head is non-indigenous	281	0	1	0.22	0.42
Total land owned (ha)	281	0	1453	201.57	213.56
Natural logarithm of value of upland area	281	8.42	18.64	11.92	3.78
Natural logarithm of value of minimum wage for female workers	281	8.85	10.31	9.68	0.34
Natural logarithm of total value of assets, except livestock	281	8.01	18.48	13.83	2.05
Natural Logarithm of resale value of assets and livestock	281	8.01	19.58	14.53	1.8
Dummy: Household head is working outside of agriculture	281	0	1	0.09	0.28
Dummy: District is Lore Utara	281	0	1	0.21	0.41
Dummy: District is Palolo	281	0	1	0.22	0.41
Dummy: District is Sigi Biromaru	281	0	1	0.28	0.45
Dummy: District is Kulawi	281	0	1	0.19	0.4
Dummy: District is Pipkoro	281	0	1	0.05	0.22

Annex 5: Model 7 variables

Variable label	N	Minimum	Maximum	Mean	Standard Deviation
Age of household head	279	21	87	46.74	14.49
Age of youngest household member	279	0	84	10.2	13.14
Age of oldest household member	279	21	88	50.8	15.29
Household size	279	1	14	5.15	2.13
Number of female adult household members	279	0	4	1.5	0.77
Number of male adult household members	279	0	5	1.73	1.01
Percent of dependent household members younger than 15 and older than 64 years (in relation to household size)	279	0	100	35.52	21.59
Percent of dependent household members younger than 18 and older than 60 years (in relation to household size)	279	0	100	42.62	20.9
Percent of dependent household members younger than 14 and older than 60 years (in relation to household size)	279	0	100	36.24	22.53
Number of dependent household members younger than 15 and older than 64 years	279	0	6	1.9	1.3
Number of dependent household members younger than 18 and older than 64 years	279	0	7	2.26	1.38
Number of dependent household members younger than 14 and older than 60 years	279	0	6	1.9	1.31
Total number of females in the household	279	0	6	2.39	1.25
Total number of males in the household	279	0	8	2.78	1.45
Ratio of dependents younger than 15 and older than 64	279	0	3	0.7	0.57
Ratio of dependents younger than 18 and older than 60	279	0	4	0.89	0.65
Ratio of dependents younger than 14 and older than 60	279	0	3	0.72	0.6

Household size squared	279	1	196	5.15	2.13
Ratio of male adults to female adults in the household	279	0	5	1.26	0.74
Ratio of total male to total female household members	279	0	7	1.46	1.07
Total number of rooms in the house	279	1	10	3.76	1.5
Size of these rooms in square meters	279	6	209	45.55	18.16
Dummy: Household made a recent home improvement	279	0	1	0.4	0.49
Household has piped water (0 = no, 1 = shared, 2 = own)	279	0	2	0.56	0.87
Household has electricity connection (0 = no, 1 = shared, 2 = own, 3 = generator)	279	0	3	1.37	0.94
Dummy: Household lives in own house	279	0	1	0.98	0.16
Dummy: Trunk or suitcase ownership	279	0	1	0.14	0.35
Dummy: Bucket ownership	279	0	1	0.96	0.2
Dummy: Metal cooking pot ownership	279	0	1	0.2	0.4
Dummy: Stove ownership	279	0	1	0.51	0.5
Dummy: Bed ownership	279	0	1	0.9	0.3
Dummy: Cupboard ownership	279	0	1	0.75	0.44
Dummy: Set ownership	279	0	1	0.73	0.44
Dummy: Fan ownership	279	0	1	0.09	0.28
Dummy: Flat iron ownership	279	0	1	0.24	0.43
Dummy: Clock or watch ownership	279	0	1	0.68	0.49
Dummy: Radio ownership	279	0	1	0.25	0.43
Dummy: VCR ownership	279	0	1	0.13	0.33
Dummy: CD player ownership	279	0	1	0.23	0.42
Dummy: TV ownership	279	0	1	0.35	0.48
Dummy: Sewing machine ownership	279	0	1	0.08	0.28
Dummy: Bicycle ownership	279	0	1	0.16	0.37
Dummy: Refrigerator ownership	279	0	1	0.07	0.26
Dummy: Satellite Dish ownership	279	0	1	0.13	0.33
Number of trunks and suitcases owned	279	0	7	0.2	0.64
Number of buckets owned	279	0	9	2.31	1.31
Number of metal cooking	279	0	5	0.45	1.1

owned					
Number of stoves owned	279	0	4	0.74	0.87
Number of beds owned	279	0	10	2.19	1.46
Number of sets owned	279	0	4	1.2	0.99
Number of cupboards owned	279	0	8	1.6	1.5
Dummy: Bull ownership	279	0	1	0.07	0.36
Dummy: Cow ownership	279	0	1	0.15	0.36
Dummy: Pig ownership	279	0	1	0.37	0.48
Dummy: Duck ownership	279	0	1	0.09	0.28
Dummy: Chicken ownership	279	0	1	0.44	0.5
Number of bulls owned	279	0	15	0,15	0.98
Number of cows owned	279	0	22	0.38	1.6
Number of pigs owned	279	0	9	0.84	1.51
Number of ducks owned	279	0	20	0.58	2.39
Number of chicken owned	279	0	50	2.95	5.8
Dummy: No lock at main entrance door	279	0	1	0.33	0.47
Dummy: Padlock at main entrance door	279	0	1	0.3	0.46
Dummy: Roof is out of natural material (bamboo or straw)	279	0	1	0.2	0.4
Dummy: Exterior walls are out of bamboo	279	0	1	0.13	0.34
Dummy: Exterior walls are out of brick or stone	279	0	1	0.1	0.3
Dummy: Floor is earth or bamboo	279	0	1	0.09	0.29
Dummy: Floor is wood	279	0	1	0.11	0.32
Dummy : Floor is cement	279	0	1	0.97	0.3
Dummy: Household uses other cooking fuel than collected wood	279	0	1	0.12	0.33
Dummy: Kerosene is main lighting source	279	0	1	0.28	0.45
Dummy: Electricity with shared connection is main lighting source	279	0	1	0.1	0.45
Dummy: Household shares toilet (pit toilet or improved latrine)	279	0	1	0.12	0.32s
Dummy: Toilet is own pit toilet	279	0	1	0.24	0.43
Dummy: Toilet is own improved latrine	279	0	1	0.29	0.46
Dummy: Main source of drinking water is water from pond, river or spring	279	0	1	0.27	0.44
Dummy: Main source of drinking water is water from	279	0	1	0.06	0.24

public well or borehole					
Dummy: Main source of drinking water is water from well in residence yard	279	0	1	0.19	0.39
Dummy: Main source of drinking water is piped water	279	0	1	0.15	0.36
Dummy: Household head sleeps not in a bed	279	0	1	0.15	0.36
Dummy: Household head sleeps in bed with thin mattress out of fibres	279	0	1	0.12	0.33
Dummy: Household cooks in a separate kitchens	279	0	1	0.11	0.31
Dummy: Cattle ownership	279	0	1	0.19	0.39
Number of cattle owned	279	0	115	0.87	6.96
Dummy: Household head is not married (including widows and divorced or separated)	279	0	1	0.09	0.29
Squared age of household head	279	441	7569	2393.76	1492.15
Dummy: Household has own or shared electricity connection (including generator)	279	0	1	0.72	0.45
Area of homestead in ha	279	0	80	5.71	9.1
Dummy: Household has own or shared piped water	279	0	1	0.3	0.46
Dummy: Household head is farmer	279	0	1	0.78	0.42
Dummy: Household head is wage labourer in agriculture	279	0	1	0.08	0.28
Dummy: Household head is working outside of agriculture	279	0	1	0.09	0.28
Dummy: District is Lore Utara	279	0	1	0.21	0.41
Dummy: District is Palolo	279	0	1	0.22	0.41
Dummy: District is Sigi Biromaru	279	0	1	0.28	0.45
Dummy: District is Kulawi	279	0	1	0.19	0.4
Dummy: District is Pipkoro	279	0	1	0.05	0.21