QUANTITATIVE AND QUALITATIVE METHODS FOR POVERTY ANALYSIS

Contributors

Germano Mwabu
Enos H. N. Njeru
Christopher B. Barrett
Mary Omosa
Antony K. M. Kilele
Godfrey K. Ndeng'e
Nelson Mango
Josephat Cheng'ole
Gatarwa Kariuki
Wesley Ongadi
Willis Oluoch-Kosura
Paswel P. Marenya
Frank Place
Damiano K. Manda

The workshop from which these proceedings are derived was facilitated by the Kenya Institute for Public Policy Research and Analysis (KIPPRA) and sponsored by USAID's Strategies and Analysis for Growth and Access (SAGA) project. The project was directed by Prof. Chris Barrett of Cornell University (USA).

Strategies and Analysis for Growth and Access (SAGA) is a project of Cornell and Clark Atlanta Universities, funded by cooperative agreement No. HFM A 00 01 00132 00 with the United States Agency for International Development (USAID). In Kenya, SAGA is implemented through a collaboration among Cornell and Clark Atlanta universities, the Institute of Policy Analysis and Research, the Kenya Institute for Public Policy Research and Analysis, Tegemeo Institute of Agricultural Policy and Development, and the University of Nairobi Department of Agricultural Economics.

QUANTITATIVE AND QUALITATIVE METHODS

KIPPRA 2005

QUANTITATIVE AND QUALITATIVE METHODS FOR POVERTY ANALYSIS

PROCEEDINGS OF THE WORKSHOP HELD ON 11 MARCH 2004, NAIROBI, KENYA

Edited by
Walter Odhiambo
John M. Omiti
David I. Muthaka

KIPPRA 2005

Kenya Institute for Public Policy Research and Analysis
Bishops Garden Towers, Bishops Road
PO Box 56445, Nairobi, Kenya
tel: +254 20 2719933/4, 2714714/5, 2721654, 2721110
fax: +254 20 2719951
email: admin@kippra.or.ke
website: http://www.kippra.org

ISBN 9966 949 81 X

QUANTITATIVE AND QUALITATIVE METHODS FOR POVERTY ANALYSIS

QUANTITATIVE AND QUALITATIVE METHODS FOR POVERTY ANALYSIS

Proceedings of the Workshop Held on 11 March 2004, Nairobi, Kenya

Edited by
Walter Odhiambo
John M. Omiti
David I. Muthaka

KIPPRA
2005

Published 2005

Bishops Garden Towers, Bishops Road
PO Box 56445, Nairobi, Kenya
tel: +254 20 2719933/4; fax: +254 20 2719951
email: **admin@kippra.or.ke**
website: http://www.kippra.org
ISBN 9966 949 81 X

QUANTITATIVE AND QUALITATIVE METHODS FOR POVERTY ANALYSIS

CONTENTS

Acknowledgements

The workshop from which these proceedings are derived was facilitated by the Kenya Institute for Public Policy Research and Analysis (KIPPRA) and sponsored by USAID's Strategies and Analysis for Growth and Access (SAGA) project. The project was directed by Prof. Chris Barrett of Cornell University (USA).

Strategies and Analysis for Growth and Access (SAGA) is a project of Cornell and Clark Atlanta Universities, funded by cooperative agreement No. HFM A 00 01 00132 00 with the United States Agency for International Development (USAID). In Kenya, SAGA is implemented through a collaboration among Cornell and Clark Atlanta universities, the Institute of Policy Analysis and Research, the Kenya Institute for Public Policy Research and Analysis, Tegemeo Institute of Agricultural Policy and Development, and the University of Nairobi Department of Agricultural Economics.

We acknowledge the contribution of Dr Walter Odhiambo of KIPPRA, Dr John M. Omiti of IPAR, and David I. Muthaka of KIPPRA in compiling and editing these proceedings. We would also like to acknowledge the contribution of Felix Murithi of KIPPRA in the editorial production of these proceedings, and Janet Hou, a student at Cornell University, for the editorial input during preparation of these proceedings.

Finally, we sincerely thank all those who contributed to the success of this project, and especially the participants of the workshop held on 11 March, 2004 at the Grand Regency Hotel, Nairobi.

All views, interpretations, recommendations, and conclusions expressed in this volume are those of the authors and not necessarily those of the supporting or cooperating organizations.

KIPPRA

June 2005

Abbreviations and Acronyms

ASAL	Arid and semi-arid lands
BASIS	Broadening Access and Strengthening of Input Systems
CBS	Central Bureau of Statistics
CBN	cost of basic needs
CRSP	Collaborative Research Support Program
ERS	Economic Recovery Strategy
FEI	food-energy-intake
FEMNET	African Womens Development & Communication Network
ICRAF	International Centre for Research in Agro-Forestry
IDS	Institute for Development Studies
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
IPAR	Institute of Policy Analysis and Research
KARI	Kenya Agricultural Research Institute
ETRI	Kenya Typanosomiasis Research Institute
KIPPRA	Kenya Institute for Public Policy Research and Analysis
OECD	Organization for Economic Cooperation and Development
PARIMA	Pastrol Risk Management (project)
PPA	Participatory poverty assessment
PRSP	Poverty Reduction Strategy Paper
SAGA	Strategies and Analysis for Growth and Access
SFR	Soil Fertility Replenishing
SLF	Sustainable Livelihoods Framework
UoN	University of Nairobi
USAID	United States Agency for International Development
WAU	Wagenigen Agricultural University
WMS	Welfare Monitoring Survey

I: BACKGROUND

Poverty is an intractable challenge for most African countries. It is not only spreading fast, but it is also becoming severe in many locations. In response, governments and development partners have renewed their interests and re-committed themselves to poverty reduction. A number of things symbolize this commitment. Most countries have, with the support of development partners, formulated poverty reduction strategy papers (PRSPs) and have embarked on far-reaching programmes for economic growth and poverty reduction. And as part of a global process, a number of these countries have also committed themselves to the realization of Millennium Development Goals (MDGs), the first of which calls for substantial poverty reduction. While experiences differ from country to country, there is no doubt that most African countries are tackling poverty head-on.

Success on poverty reduction in most developing countries will, however, depend on the availability of reliable, accurate and timely information on the nature and causes of poverty. Policy makers and development partners require information on the poor, especially their population sizes and location.

Issues of the severity and dynamics of poverty are also receiving increasing attention in analysis, and there is also a growing urge to understand the causes of poverty as a step in formulating strategies for helping people out of poverty or to avoid it. All these demand a rethinking of the methods that social scientists use in the analysis of poverty. Fortunately, there have been significant advances in these methods in recent times. Economists have predominantly utilized quantitative household data obtained from structured surveys. While these approaches are able to quantify crucial dimensions of poverty, they fail to convey other less readily measurable dimensions such as

the texture of poverty (i.e. the pain of deprivation, acute tensions, violence and emotions associated with poverty, etc). Other social scientists, mainly sociologists, anthropologists and psychologists have advanced other approaches using participatory methods, ethnographic and social analyses. These methods predominantly use qualitative data. However, one could similarly critique qualitative methods used by non-economists.

The seemingly differing positions of practitioners and professionals in the analysis of poverty suggest that there is no single perfect approach to poverty analysis. It would appear, however, that the approaches are not in conflict, but are complementary in as much as they attempt to capture the many dimensions of poverty. This calls for efforts to integrate qualitative and quantitative approaches or to "sequentially" or "simultaneously" mix the approaches.

It was against this background that Cornell University and Kenya Institute for Public Policy Research and Analysis (KIPPRA), with the support of USAID's Strategies and Analysis for Growth and Access (SAGA) project, organized a one-day workshop in Nairobi to discuss issues on qualitative and quantitative poverty analysis. The workshop sought answers to the following key questions:

(i) How do quantitative and qualitative approaches differ? What are the similarities?

(ii) How can the gap between quantitative and qualitative approaches be bridged?

(iii) What are the experiences in using quantitative and qualitative approaches in Kenya?

Forum participants included policy makers, senior government officers, researchers from public and private universities and institutions, and representatives from the private sector and civil society. The format of the meeting comprised presentation of papers (eight papers were presented) and discussions.

There were three main sessions as follows:

Session 1: Methods for poverty analysis

Session 2: Case studies

Session 3: Plenary panel discussion and way forward

II: INTRODUCTION AND OFFICIAL OPENING SESSION

Chair: *Professor W. Oluoch-Kosura, Department of Agricultural Economics, University of Nairobi*

The Chairman called upon the Acting Executive Director of KIPPRA, Dr. Hezron Nyangito, to make welcoming remarks. Dr. Nyangito formally welcomed participants to the workshop and gave some brief remarks about KIPPRA's involvement with other research organizations and its participation in SAGA projects. He then invited Prof. Christopher Barrett to give a brief of the SAGA project. The Permanent Secretary, Ministry of Planning and National Development, Mr. David S. Nalo, then gave his speech as the Chief Guest.

Welcoming remarks: Dr. Hezron Nyangito, Acting Executive Director, KIPPRA

Dr. Nyangito started by thanking all participants for attending the workshop and thanked all the institutions collaborating on the SAGA projects. These institutions include Cornell University, the Institute for Policy Analysis and Research (IPAR), Kenya Institute for Public Policy Research and Analysis (KIPPRA), Tegemeo Institute (Egerton University), and the University of Nairobi. He highlighted KIPPRA's involvement in poverty analysis since the inception of the Institute in June 1999, and underscored the importance of collaboration between institutions, citing KIPPRA's benefits from collaboration with the Central Bureau of Statistics (CBS), IPAR, the African Economic Research Consortium (AERC), and Cornell University, among others. He noted that the Permanent Secretary, Ministry of Planning and National Development, who was the chief guest, helped in poverty mapping while he was at the Central Bureau of Statistics, and which was done together with KIPPRA. The Acting Director finally thanked the Permanent Secretary for attending the workshop.

SAGA Project brief: Prof. Chris Barrett, Cornell University

In his remarks, Prof Barrett gave a brief of the SAGA project. SAGA (Strategies and Analyses for Growth and Access) is a project of the United States Agency for International Development (USAID), created by its Africa Bureau with an intention of linking American researchers with their counterparts in Africa, especially through the Secretariat for Institutional Support for Economic Research in Africa (SISERA). It is through SISERA that SAGA has established partners in African countries including Ghana, Kenya, Madagascar, Mali, Senegal, South Africa, and Uganda.

The SAGA project involves four themes: Education; Health and Nutrition; Empowerment and Institutions; and Vulnerability and Poverty Dynamics. SAGA organizes its presentations around these themes. Therefore, the purpose of this particular workshop was to share with the participants on where the efforts of poverty analysis are: integrating qualitative and quantitative methods for data collection in poverty research and analysis.

Speech by the Chief Guest, Mr. David S. Nalo, Permanent Secretary, Ministry of Planning and National Development, Kenya

The Permanent Secretary started by thanking the workshop organizers for inviting him to address and officiate over the workshop. He commended the re-union between institutions and researchers in sharing their works, saying that such a culture was good for the continuity of knowledge as there had been decay in knowledge, and the integration of research work in policy making. He highlighted the poverty and income inequality status in Kenya as revealed by different reports, including the Kenyan Human Development Report. The Permanent Secretary noted that the poor have real needs that could not be easily captured using statistical surveys alone.

To understand the underlying causes of poverty and the impact of various growth strategies on the well-being of the poor requires that there be integration of qualitative and quantitative methods in data collection and analysis. He observed that over the years, data collection methodologies have been overemphasizing the use of quantitative techniques, which tended to leave out certain issues that need deeper understanding than surveys can provide. Noting that there was no universally accepted definition of poverty, the Permanent Secretary observed that some definitions used income, while others used basic needs approach. Mother Teresa, he noted, considered a person as poor

if that person is deprived of love from the community at large. This, he said, provides a dilemma for researchers and statisticians, and wondered how such different dimensions could be quantified into meaningful categories.

In conclusion, the Permanent Secretary noted that researchers must come to terms with the fact that there is no single way of measuring poverty. Therefore, both qualitative and quantitative approaches were theoretically and practically valid, while acknowledging that both approaches had strengths and weaknesses. The challenge was, therefore, how to integrate the two approaches in data collection and analysis to exploit their respective strengths. He identified a number of areas in which integration of the approaches could particularly be useful. These include areas of governance and corruption, budget tracking, security, gender, intra-household relational aspects and coping mechanisms.

III: SESSION 1

METHODS FOR POVERTY ANALYSIS

Chair: Prof. W. Oluoch

Department of Agricultural Economics

University of Nairobi

1. QUANTITATIVE POVERTY ANALYSIS[1]

Prof. Germano Mwabu

Department of Economics, University of Nairobi

Introduction

Poverty is a complex human phenomenon associated with unacceptably low standard of living. It has multiple dimensions, manifestations and causes (World Bank, 2000). Poverty analysts from a variety of disciplines have been constantly asking questions about this phenomenon, sometimes out of curiousity, but often with the aim of providing information that can be used to overcome it. Quantitative methods help provide answers *only to certain questions* about poverty and can only provide partial information about it. Needless to say, no single approach to poverty appraisal can capture all the essential aspects of poverty.

Choice of methods of poverty analysis is dictated by the issues of interest to a researcher and his/her research skills. Because of the complexity of the poverty phenomenon, researchers have come to appreciate the need to *specialize* in acquiring skills that are necessary for understanding only certain dimensions of poverty, and to concentrate their work on areas of poverty appraisal in which they have comparative advantage. As Barrett (2001) has observed, the type of poverty appraisal that has been undertaken over the past decades has been subject-driven, and researcher-directed. This is of course no accident; the concept of comparative advantage suggests that there is efficiency to be gained from specializing in certain approaches to poverty appraisal. Quantitative poverty analysis is a particular area of

---

[1] This is a revised version of the paper prepared for the KIPPRA-Cornell SAGA Workshop on *"Quantitative and qualitative methods for poverty analysis"*, 11 March, 2004, Nairobi. I am very grateful to Paul Kimalu of KIPPRA and workshop participants for helpful comments.

poverty research in which investigators with quantitative skills specialize.

In view of efficiency gains from specialization, it is noteworthy that recent literature has strongly advocated *mixing* of qualitative and quantitative skills in poverty appraisal (Kanbur, n.d). Two types of mixing have been suggested, namely, *sequential* and *simultaneous* mixing. Sequential mixing is consistent with the idea of specialization in poverty appraisal along disciplinary lines because it entails separate applications of quantitative and qualitative skills in an attempt to understand the same or different aspect of poverty. The outcome of sequential mixing of quantitative and qualitative skills is essentially a comparative appraisal of poverty, whereby results from different approaches are compared and synthesized. This would be precisely the outcome of comparing or synthesizing results from specialized poverty research across disciplines.

The advantage of specialization is a better understanding of a particular dimension of poverty; the disadvantage of specialization is that it facilitates only a superficial understanding of the overall poverty phenomenon. To a certain extent, simultaneous mixing overcomes this problem by providing different perspectives on the same dimension of poverty or a better perspective on different dimensions.

Simultaneous mixing is another way of saying that researchers have convex preferences over quantitative and qualitative approaches to poverty appraisal. In other words, researchers consider a combination of quantitative and qualitative methods to be more effective than specialized methods in the analysis of poverty. As a positive matter, this view is not an accurate description of the practice of poverty analysis. Wherever it is found, simultaneous mixing is often a case of incomplete or imperfect specialization. In practice, the dominant mode of poverty analysis is either quantitative or qualitative. The advantages of comparative advantage dictate that simultaneous mixing occurs only at the extreme ends of the qualitative-quantitative spectrum.

However, there is the question as to whether thorough mixing of quantitative and qualitative methods in poverty appraisal should be encouraged by public policy despite its failure to evolve autonomously. In view of the existing disciplinary divide (Kanbur, n.d.), created by the necessity to specialize in certain aspects of poverty research, such a policy would be difficult to implement. Its theoretical appeal is also weak in view of the gains from specialization.

In what follows, I outline questions or issues that can best be addressed by quantitative or predominantly quantitative methods.

Questions related to poverty measurement

Quantitative approaches are best suited to answering questions related to poverty measurement. These are inherently quantitative issues, in the sense that they must be addressed using numerical information derived from sample surveys. Such data are analyzed using statistical techniques, with the interpretation of the results being guided by a discipline-specific perspective, rather than by a broad social science model (Kanbur, n.d.). Although qualitative (non-numerical) data can also be used to supplement the work of poverty measurement, they are not the main focus in this type of poverty analysis. Further, even when such data are collected, they are often converted into numerical data, amenable to statistical analysis.

The key questions related to poverty measurement include the following:

- What is the magnitude of poverty in the population?
- What is the trend of this magnitude over time?
- Who in the population is most vulnerable to poverty?
- Given that the determinants of poverty are known (perhaps through qualitative approaches), to want extent would poverty change if each of the determinants were to be modified by public policy?
- Who would benefit from particular antipoverty programmes, and to what extent?

These and similar questions are best addressed using statistical techniques applied to data derived from probability household sample surveys. The key to answering the above questions quantitatively lies in the choice of a convenient metric for measuring the standard of living, and in using the same metric to devise a yardstick for determining who is poor and who is not poor.

Economists use income as the preferred metric of standard of living so that a person with a higher income is deemed to enjoy a higher standard of living, *ceteris paribus*. A cut-off level of income (e.g., *one* dollar a day), is typically chosen as the *poverty line* to differentiate between the poor and the non-poor, with persons falling below this line being classified as poor.

The setting of the poverty line provides an excellent example of thorough *simultaneous mixing* of qualitative and quantitative methods in poverty analysis. Although the poverty line is a *numerical* parameter, calculated using statistical methods, it is *subjectively* chosen; for example, value judgments are used to declare that a standard of living based on *less than one* dollar a day is socially unacceptable. The same value judgements can be used to choose other poverty lines, such as *two* dollars a day, or a *median* income. However, beyond this, the rest of the work in poverty measurement is inherently quantitative, in the sense that numerical data and statistical techniques are heavily used. To concretize the discussion, I briefly review the main statistical approaches to poverty measurement in relation to specific questions raised above.

Among the various methods of quantifying poverty, the FGT formula (Foster, Greer and Thorbecke, 1984) is the most widely used. The formula has been successful in providing a quantitative description of the spread, the depth and severity of income poverty in populations. The inter-temporal trends in these various measures of poverty indicate, in a simple way, the changes in a population's standard of living over time. The spatial and social profiles of poverty measures show regions and social groups that are most vulnerable to poverty, and therefore suggest appropriate targets for anti-poverty programmes.

In addition to describing poverty, researchers and policy makers are interested in understanding the causes of poverty, and in isolating its main causes. Econometric techniques are appropriate for this purpose. Using these methods, lack of human capital has been identified as the main source of poverty in Kenya and in other African countries (Kimalu *et al*., 2001). Although qualitative assessment can also successfully identify human capital as the main determinant of poverty, it lacks the policy precision of econometric techniques, and cannot be used to show how changes in various factors would affect a given poverty magnitude. For example, econometric methods can be used to simulate how provision of free education or social health insurance would affect poverty across regions and social groups.

Policy makers and researchers are interested in comparing poverty dynamics in rural and urban populations. Dominance methods of poverty analysis are very helpful in providing this type of information (Sahn and Younger, 2000). Although the quantitative methods discussed here have mainly been applied to analyze income poverty, they have been recently extended to analyze nutrition and health poverty (Sahn, 2003). With well-chosen assumptions, quantitative methods can be used to provide valuable information about non-income dimensions of

poverty, including those that appear to be inherently qualitative, such as ill health, malnutrition, and lack of capabilities.

I provide below a brief example of a concern of policy makers that can be addressed only via quantitative poverty analysis. Policy makers might be interested in knowing the *future* effect on poverty reduction of *current* public programmes (e.g. free primary education or subsidized primary healthcare). The policy makers' problem in this case is to determine the current poverty status and its trend if certain policy measures are implemented. However, data are typically lacking to make such an assessment. In particular, household survey data for the current period may not be available for computation of the poverty status of the population because such data is only occasionally collected. What is usually available to policy makers is a household survey collected in a previous period. It can be shown that if planners' projections of future income inequality and growth are available, survey data from a previous period can be used to estimate poverty for the current and future periods.

Indeed, most statistical government agencies routinely make projections of trends in per capita income over the next 2-5 years. Although, projection for trend in income inequality is typically not done, its extrapolation from existing information is straightforward. Projections in income statistics are based on presumed effects of public policies that are programmed for implementation during the plan period. Without the aid of quantitative methods, effects of such programmes on poverty cannot be assessed. Consequently, effective poverty reduction policies may never be implemented and ineffective ones may be executed. To concretize the discussion, consider the following equation (Mwabu *et al*., 2003).

$$\text{Poverty\_2007R}_i = \text{Poverty\_2002Ri}^*(1 + \tau_i) \qquad (1)$$

where

Poverty_2007R_i is the head-count index for region i (province or district) in 2007 (the current or future period); Poverty_2002R_i is the head-count index for region i (province or district) in 2002 (the previous period); τ_i is the percentage change in the poverty index for region i (nation, province or district) over the period 2002–2007. The term τ, is obtained from econometric estimates of the effects of growth and inequality on poverty (Mwabu *et al*., 2003) as shown in equation (2).

$$\text{Poverty rate for year j} = \alpha + \beta\,(\text{GDP growth}) + \delta\,(\text{Gini coefficient}) + \varepsilon_j \qquad (2)$$

where

β and δ are the effects of growth and distribution, respectively, on poverty for year j; α is a constant term, and ε is the error term.

Typically, equation (2) is estimated using data for countries other than the country for which poverty is being assessed; for example, if changes in poverty in Kenya are being assessed, growth and inequality effects derived from Africa-wide data can be used. Therefore, simplicity in measuring poverty using equation (1) is based on the strong assumption that effects of *growth* and *inequality* on poverty in one country are applicable in another. Under this assumption Mwabu *et al*., (2003) used equation (1) to track changes in Kenyan poverty quite well between 1994 and 2000, therefore illustrating its usefulness as a poverty monitoring tool. In other words, the changes in poverty predicted using equation (1) were very close to actual changes computed from survey data.

Therefore, quantitative data and methods can be used to inform policy making in poverty concerns in which qualitative analysis would not be very helpful. There is need also to indicate that there are areas of poverty concerns in which quantitative methods and data would not be of much use to policy makers. For example, if policy makers are interested in measuring non-income dimensions of poverty such as powerlessness and voicelessness (World Bank, 2000) or loneliness, regression methods or the FGT index would not be suited for that purpose primarily because these aspects of deprivation are inherently hard to quantify. Instead, subjective information would be a better reflection of the extent of such deprivations. Moreover, quantitative data may not portray as accurately as the qualitative data, why people like or dislike certain antipoverty programmes.

Conclusion

Quantitative poverty appraisal is one of the many specializations in the field of poverty research. The specialization exists because of the complexity of the poverty phenomenon, and the complexity of the methods themselves. Because of the complexity of the poverty phenomenon, researchers must specialize in methods for its analysis, with any simultaneous mixing of the methods occurring only at their margins. No single researcher can fully master all the techniques required to analyze the various dimensions of poverty. Therefore, it

may be concluded that poverty analysis will continue to be subject-driven and researcher-directed.

References

Barrett, C. (2001). "Integrating Qualitative and Quantitative Approaches: Lessons from the Pastoral Risk Management Project", in Kanbur, Ravi (Ed.). Q-Squared, New Delhi: Permanent Black.

Foster, J., Greer J., and Thorbecke, E. (1984). "A Class of Decomposable Poverty Measures." *Econometrica*, 52, pp761-765.

Kanbur, Ravi (Ed.). Q-Squared: Qualitative and Quantitative Methods of Poverty Appraisal, New Delhi: Permanent Black (not dated).

Kimalu, P. K., Nafula, N., Manda, D.K. and Mwabu, G. (2002). *A Situational Analysis of Poverty in Kenya*. KIPPRA Working Paper No. 6., Nairobi: Kenya Institute for Public Policy Research and Analysis.

Mwabu, G., Kimenyi, M.S., Kimalu, P., Nafula, N. and Manda, D.K. (2003). "Predicting Household Poverty: A Methodological Note with a Kenyan Example", *African Development Review*, June.

World Bank (2000). *World Development Report*, Oxford: Oxford University Press.

Sahn, David and Stephen Younger (2000). "Making Multidimensional Poverty Comparisons", Cornell University, WP No. 98.

Sahn, David (2003). "Inequality of What", Cornell University, mimeo.

2. BRIDGING THE QUALITATIVE-QUANTITATIVE METHODS IN POVERTY ANALYSIS

Prof. Enos H.N. Njeru

Social Sector Program Coordinator, Institute of Policy Analysis and Research (IPAR)

Introduction

Poverty is primarily a social problem; as such it requires meticulous definition, identification of constituent parameters and verifiable and measurable indicators. The constituent parameters should essentially single out the major causal factors. Knowledge of the latter, in effect, serves as good basis for identification of perceived solutions and methodologies to guide implementation of the proposed remedial strategies.

Definition

Social scientists have looked at poverty from three broad definitional approaches, viz. absolute, relative and subjective poverty.

Absolute poverty

This refers to subsistence poverty, based on assessment of minimum subsistence requirements, involving a judgement on basic human needs and measured in terms of resources required to maintain health and physical efficiency. The resources in question include quality and quantity of food, clothing and shelter, all perceived as necessary for a healthy life. These basic life necessities are then priced and the total figure or price constitutes the poverty line. Those with incomes below the poverty line are the poor. Poverty begins below and ends above the poverty line in question.

Operationalization and measurement of absolute poverty has been based on a number of indicators such as "Level of living index", focusing on such basic needs as:

- *Nutrition:* Indicated mainly by caloric and protein intake.
- *Shelter*: Reflected by the quality of dwelling and absence or presence and the degree of overcrowding.
- *Health*: As reflected, for example, by the health status of the population, which includes the overall physical, mental and the social well-being of the individuals in the population, and other trends indicated by infant mortality rates, access to and quality of available medical facilities.

The basic human needs have also been broadened beyond physical survival to include "basic social and cultural needs", such as the need for education, security, leisure and recreation:

- *Education*: As indicated by the proportion of the population enrolled in schools.
- *Security*: The number of violent deaths relative to the population size and also cases and types of theft, mugging, rape, etc have been taken to reflect the socio-cultural and security status of the resident populations.
- *Leisure*: The amount of leisure time, relative to work time has been considered as a good indicator of life consolations away from propensities towards socio-economic inadequacies.

The concept of absolute poverty has been widely criticized especially against its assumption of universal applicability. It assumes, for example, that there are minimum basic needs uniformly applicable to all social and economic categories in all societies.

It is, however, recognized that there are variations of diets, shelter, security, leisure and recreation, depending on the diversity of cultures and modes of production, and the degree of socio-cultural change towards modernity and globalization. African pastoral societies, for example, look at their basic necessities through adequacies in livestock numbers, unlike the urban dwellers among whom TVs, videos, radios, good housing, leisure, security and education among others would count as basics. The concept of adequate provisioning is also increasingly changing according to needs of specific population categories (e.g. youth, women, aged). The changing needs patterns also vary from one society and culture to another.

Relative poverty

This refers to the use of relative standards in both time and place in the assessment of poverty, viewed as an improvement over the concept of absolute standards. In application, relative poverty is based on judgments of members of particular societies, regarding what they see as reasonably acceptable standards of living and styles of livelihoods.

The notion of relative poverty is therefore elastic and receptive to conventional and rapid changes. In some cases, people might be viewed as relatively poor because they lack running water, washing machines, modern medical facilities, higher educational institutions such as universities, tourist and holiday facilities, and cars for personal use. Yet, these are luxuries to some sectors of the population.

Acceptable standards are in themselves problematic between inter-societal, ethnic, religious and other social groups. Relatively acceptable standards of life style to slum dwellers are not acceptable to higher residential class area residents. To engage in meaningful comparison of relative poverty, there may be need to differentiate between local, national and international levels of poverty measurement.

Subjective poverty

Closely related to relative poverty, subjective poverty has to do with whether or not individuals or groups actually feel poor. This is because those defined as poor by the standards of the day will probably have low self-esteem, and therefore see themselves as poor.

A moderately-well-to-do person, who might have done much better before, but currently experiencing cash-flow problems may subjectively feel poor. However, he or she may be way ahead of other members of society, who may not see him as poor. Groups or societies seen as relatively poor by majority standards may also not see themselves as poor. They may either be having different assessment standards or lower estimates of acceptable living standards. This is often a problem with rural populations, who might just be content with provision of a few key services such as running water.

The poverty debate

Poverty debate and analysis is understood to incorporate various dimensions. According to OECD (2001), for example, poverty is multidimensional in that it encompasses deprivations that relate to human capabilities, including consumption and food security, health, education, rights, voice, security, dignity and decent work. As such, any poverty reduction efforts should incorporate environmental sustainability and reduced gender inequality, both viewed as integral in any meaningful treatment of poverty. In making proposals for poverty reduction, OECD lays emphasis on sound government policies coherently applied to development, focusing on the key policy areas with strong poverty reduction impacts. The areas in question include debt relief, trade, investment, agriculture, environment, migration, health research, security and arms sales. In the case of Kenya, poverty incidence is said to have increased from 44.8 per cent in 1992 to 45.0 per cent (1994) and to 52.3 in 1997 (Government of Kenya, 2000). The poor in this case experience difficulties in accessing such human capabilities as education and health, which constitute critical aspects of human security, freedom and overall empowerment.

Substantivists among cultural anthropologists and other poverty analysts support the presentation of the relationship between poverty and human security as resulting in social relations that require protection of the affected human beings from abused freedoms. In this case, human security becomes a crucial component in explaining and analyzing different aspects of vulnerabilities and dimensions of poverty in time and space. Therefore, people without socio-economic and politico-civil freedoms cannot access the requisite opportunities and choices for enabling them to escape the poverty trap (UNDP, 2000).

In its differential impact dimensions, as will be clarified in this paper, poverty limits access to the different freedoms in different ways and with different impacts. This way, poverty translates into and is also essentially one of the key outcomes of structural violence, a constraint to human potential, caused by social dynamics in societal structures (Fiske, 1999). Structural violence as part of human insecurity exists in circumstances where human beings are unable to realize their full potential, resulting in unequal access to resources, political power, education and healthcare. Other notable outcomes include the resultant minimal access to legal representation, which in itself is a standing form of structural violence embedded in the attendant social structures and often causing direct violence, conflict and ultimately, poverty. With

marginal opportunities for peace in such situations, the affected societies lack potential for self-realization and development (Mwagiru, 2000).

Using a gender mainstreaming perspective (the process of ensuring that gender is taken into account in all legislation, policies, processes, practices, and programmes in all areas and at all levels), the African Women's Development and Communications Network (FEMNET, 2003) advocates incorporation of gender perspectives in poverty analysis. In their view, poverty is multidimensional, encompassing low incomes and consumption, low achievement in education, poor health and nutrition, low asset acquisition and ownership, and other forms of human development. FEMNET takes issue with the traditional conceptualization of poverty in that it tends to concentrate on income poverty as a measure, ignoring other dimensions with immense gender disparities. Here, attention is drawn to the fact that women in Kenya constitute a slightly higher proportion of the total population (50.1%) in comparison to men (49.9%) and that the national poverty rate estimated at 52.3 per cent in 1997, increased to 56.8 per cent by the year 2000. Yet, despite the numerous policies, poverty remains widespread in Kenya, afflicting disproportionately more women than men. The Welfare Monitoring Survey of 1997 (Government of Kenya, 2000) noted that prevalence of poverty among female-headed households was relatively higher than in male-headed households, while still slightly more severe for female-headed households where husbands were away.

Conceptualizing poverty and human security

Proactively pursuant to strategies meant to augment poverty reduction efforts, a United Nations Trust Fund was established in 1999 with the overall task of translating the concept of human security into concrete activity structures. The UN's conceptualization of human security focused on efforts aimed at safeguarding human societies against threats to human life, livelihoods and dignity. The most common threats include violent conflicts, environmental degradation, refugee phenomena, use and trade in illicit drugs, and diseases such as HIV/AIDS, among other characteristics of population disempowerment. It is these same factors that are considered central to poverty causation. Human security here was understood to encompass absence or reduction of dangerous situations that make human life difficult and sometimes impossible (Sadako, 2003). In agreement, the UN Secretary-General, Kofi Annan, during the 2000 Millennium Summit in New York, referred to a world that embodies the twin ideals of "freedom from fear", and "freedom

from want". Implied here is the need to match freedom from physical and psychological insecurity with freedom from insecurity of livelihoods, and therefore poverty.

Civil society organizations play a crucial role in eradication and prevention of violent conflicts and poverty, leading to increased human security, strengthening of people's aspirations, and helping to take the concept of human security one notch higher by removing the security debate from its traditional focus on "state security" to encompass issues of well being, livelihoods and overall improvement in people's lives (Sen, 2002; Mark and Dewit, 2002). The Japanese Ministry of Foreign Affairs looks at poverty and human security using a "protection-empowerment" model, therefore, providing a useful framework for understanding not only conflict prevention and transformation, but also the need for institutions, norms and processes for shielding people from pervasive and critical threats and vulnerabilities. States are therefore challenged to develop "top-down" structures and systems that guarantee the rule of law, accountable and transparent institutions, and protective infrastructures. In initiating and facilitating "bottom-up" systems that give citizens an opportunity to participate in defining their priorities and setting up initiatives to better their lot, states make a key contribution to poverty reduction efforts. We now know that participatory processes for local level development work best in situations where the actors are protected against threats to their lives and resources.

Protected and empowered people make better choices to shape their destinies. The state, jointly with civil society actors and the private sector, therefore have an important role to facilitate realization of these ideals. Without protection and empowerment, poverty can hardly be alleviated. Improved people's well-being therefore calls for an all-rounded approach to guarantee people the freedom they need as the basic ingredient to their participation in own development (UNDP, 2001). For Kenya, in the last four decades, most members of the population have experienced isolation from the non-protective and dis-empowering state due to conflicts over resources and increased poverty.

Poverty has been seen as a cause of conflicts and insecurity. External factors such as globalization and structural adjustments have played a significant role, contributing further to more complexities in manifestation of poverty. In order to reverse the subsequent trends of poverty and human insecurity, there is need to embrace a protection-empowerment approach in which strengthened institutions and development structures adopt a rights-based approach, with popular

participation, and improvement of the welfare of the poor and vulnerable clearly constituting key policy and development emphasis.

This latter position tallies well with the Human Development Report's definition of poverty as denial of opportunities and choices most basic to human development, which include choice to lead a long, healthy and creative life and enjoy a decent standard of living, freedom, dignity and self-respect (UNDP, 2001). The poverty of choices and opportunities, which focuses on empowerment and actions to enhance opportunities, is referred to as human poverty and captures poverty beyond income and expenditure, as distinguished from poverty of income. Similar parameters in assessing poverty are used in presenting poverty as existing where the basic material needs of an individual or a household are not adequately met, and a poverty line used to distinguish between the poor and non-poor, as the proportion of the population lying below the poverty line is categorized as poor, and the poverty is either absolute or relative.

Qualitative research

Qualitative research is good for social science research/data gathering. Qualitative techniques act as complementary, or even alternatives, to conventional quantitative approaches. Qualitative research enables a researcher to gain empathic understanding of social phenomena, to facilitate recognition of subjective aspects of human behaviour and experiences, and to develop insights into group's lifestyles and experiences that are meaningful, reasonable and normal to those concerned (e.g. hospital inmates when a researcher gets close to them through qualitative approaches). Below is a presentation of selected key qualitative approaches.

Key informant interviews

Key informants are knowledgeable and other persons strategically positioned to provide specific types of information on particular situations, depending on their status in society or organizational hierarchies, with respect to the purpose of the assessment. They could be experts, with required knowledge on particular issues and situations. The key informants can be carefully identified in the project areas, ensuring gender equity, and in consultation with area representatives.

At the community level, participant selection criteria include:

- Length of stay in the community,

- Prestige and respect commanded within the community, often taking into account socio-metric networks enjoyed by the individual, and
- Knowledge and willingness to discuss poverty issues with the assessing team.

After the selection, issues of poverty to be presented for analysis and discussion include:

- Definition of poverty and its causes,
- Identification of key behavioural characteristics of the poor,
- Impact of poverty,
- Access to resources and trends in the quality of services, and
- Explanation of mechanisms used by target communities in coping with poverty challenges.

In-depth interviews

These are usually undertaken where analysts/researchers have previously studied the situation; for alertness and sensitivity to inconsistencies, and for notes on omissions and problems for clarification. They facilitate collection of in-depth data not otherwise known, advancing deeply into personality structure of target groups (through interviewer guided and discussion-based experiences). Subject characteristics include involvement in particular experiences, and ability to express oneself with liberty.

Participant observation

This is undertaken through attempted close attachment or membership to study areas, either as *complete participant* (wholly concealed identity, objectives unknown to subject population, interacting with them as naturally as possible), or as *participant observer* (conscious systematic sharing of activities and interests, with trust, freedom, openness, not hiding or pretending) ensuring rapport, meaning and learning language and symbols, taking detailed accurate field notes, or taping with consent of other actors.

Narrative interviews

This is the analysis of personal accounts and situations through narratives or free "story telling". It allows researchers to develop vivid insights into segments of target group's lives, and it involves life stories with more narrative and less interviewing. There is little interviewing through "question-answer interviews"; facilitator/interviewer is passive but stimulating, friendly, permissive, and not authoritarian.

Case study analysis

This involves selection of a typical case (poverty-stricken in this case) within the study area and using any of the above suitable methods to make a comprehensive analysis of the poverty situation in question. This approach can be good as a prelude to main research, post-research analysis and explanations and supplementary information. It helps gain more insight into structure and process, formulate suitable hypotheses, operationalize research variables, develop suitable research designs, provide more detail explanation, beef up quantitative findings, and help ascertain feasibility of planned studies.

Case study analysis is good for description and evaluation of causality (especially where complex researches are not ideal for survey or experimental study designs). Units of analysis/study include whole units (e.g. community and single unit such as family and household).

Triangulation

As a methodology, this involves application of as many of the above methods as are suitable for the tasks in question.

Participatory poverty assessment methodologies

Participatory methodologies involve active exchange of ideas and role-taking and play, based on equitable and institutional partnerships between researchers and representatives of target groups. Participation begins with initial identification of the problem, diagnosis of the problem and design, actual research/analysis, report preparation and dissemination of findings. Where the target populations are rural communities, for example, their consultatively selected representatives work together with the researchers to formulate the training and data

gathering methodologies, leaving none of the tasks exclusively in the hands of the "experts". As such, there are no experts.

Participatory approaches simply imply equitable incorporation of the target group representatives in the delivery process, without undue dominance on the part of the facilitators. Participatory analysis or research promotes collaborative action between communities and other target groups with governments, donors and resource persons. It promotes ownership for intervention, promotes collaboration and co-operation between researchers, practitioners and lay people.

Common participatory approaches to poverty assessment, among others, include the following:

Focus Group Discussions (FGDs)

This approach begins with selection of social groups, with specific social category delineation. Participants' composition is guided by homogeneity, cohesiveness and knowledge of the issues involved. Examples of these groups include: groups of women only; groups of men only; groups of youth (girls or boys only); groups of female elders; and, groups of male elders, among others.

It is important to separate the groups in order to pertinently capture and reflect the views and experiences of particular social categories such as sexes and age-groups, as will be found in given poverty set-ups. Ideal group size is 10, but can vary between 5 and 12. Discussion topics include identification of major problems in the area (e.g. poverty in terms of definition and coping strategies) and proposed solutions.

Discussion is moderator-facilitated/generated through raising pertinent/topical issues for debate, keeping discussion interesting, encouraging non-talkers and controlling dominant individuals. FGDs are a good pre-research method for identification of main study indicators, post-research explanation of trends and variances, reasons and causes through participants' mutual stimulation and exchange of views, and they can act as change agents—changing group members' opinions through direction, intensity and content of the discussion. They are also a good source of valuable information on dominant values, beliefs and norms.

Timelines

These are lists of key events in the history of the communities or target groups that facilitate identification of the past trends and problems facing the group, focusing more on those related to poverty. Key among these would include droughts, famines, and unpredictable commodity price fluctuations and inflation. Useful timelines for the last 30 years or so in the history of the areas in question could be reconstructed with facilitation of key informants and talented community members.

Trend analysis

These differ from timelines in the sense that they address the key changes that have taken place in the area in question, in relation, for example, to affordability of essential goods and services. Participating group members should also be asked to provide underlying reasons for such variations. This helps in identification of goods and services important to them and how the changes relate to poverty onset, experiences and outcomes.

Gender analysis

This approach can take the form of visuals depicting household properties and roles performed by women and men, such as cultivation, baby care, herding, shoe repair, laundry, carpentry, tailoring, ploughing and house construction. More telling would be ownership visuals depicting farming tools (*pangas*, *jembes*, shovels and axes), houses, ornaments, cattle, land, radio, children, money, utensils, cattle and money. The reasons given for different associations and categorization of ownership, use and roles are important for inferences regarding gender differentials in terms of poverty and its impacts.

Social mapping

This represents a geographical representation of the locally available community resources and services. The villages or represented community members are in small groups instructed to draw the social maps of their areas. Small coloured manila paper markers are then used to show households and key resources, located in different places. Various features to be included could include roads, swamps, valleys, rivers, wells, boreholes, mountains, schools, churches and health

facilities. The combined visual impacts and analysis tells a lot about poverty presence or absence.

Seasonal calendar

This consists of community or village-based seasonal calendars drawn by the community representatives, indicating seasonal variations on an annual/12 month calendar, with specific reference to poverty or other strongly notable community livelihood features. The seasonal calendars can be used to indicate visual appearances of when the highest and lowest supplies regarding rainfall, certain or all food commodities, incomes, diseases, and other acute problems are/were recorded, followed by poverty-related analysis based on the information extracted from the exercise.

Wealth ranking

This is often based on social mapping, following which households are identified alongside various socio-economic groups. The households or individuals owning them are therefore ranked according to community perceptions of wealth and the lack of it, to identify the rich, poor and the very poor individuals and households.

6 Overall assessment

In addition to the above participatory approaches, the people in groups could be drawn into general and specific discussions of poverty, by definition and who within their areas is (or are) regarded as poor and why (i.e. causes of poverty, who is affected most and why, and the overall gender disparities). The participants can also make useful suggestions regarding recommendations for viable poverty reduction interventions that are responsive to specified local resource utilization. A combination of qualitative and quantitative approaches would certainly optimize the quality and value of the analysis.

References

African Women's Development and Communications network (FEMNET, 2003).

Fiske, D. W. (1 986). "Specificity of Method and Knowledge in Social Sciences" in Galtung, J. (1999) "Cultural Violence", *Journal of Peace Research*, Vol. 27, pp291-305.

Mark, A. and Dewit, D. (2002). "CCHS and Human Security." *Human Security Bulletin*, Vol. 1. No. 2., July 2002.

Mwagiru, M. (2000). Conflict, Theory, Processes and Institutions of Management. Nairobi: Watermark Printer.

Government of Kenya (2000). Welfare Monitoring Survey 1997. Nairobi: Central Bureau of Stastics.

Government of Kenya (2000). The Interim Poverty Reduction Strategy Paper 2000-2003.

Sadato, O. (2003). Empowering People for Human Security. Payne Lecture, Stanford University, 28th May 2003.

Sen, A. (2002). Basic Education and Human Security. Statement delivered in Kolkata, 2-4 January 2003.

UNDP (2000). Human Development Report. New York: Oxford University Press.

UNDP (2001). Human Development Report. New York: Oxford University Press.

3. MIXING QUALITATIVE AND QUANTITATIVE METHODS IN ANALYZING POVERTY DYNAMICS[1]

Christopher B. Barrett
Cornell University

Overview

Persistent poverty has plagued rural Africa for generations and, by some accounts, is becoming more widespread and entrenched. As a consequence, governments and donors have renewed and intensified their commitment to poverty reduction. This is reflected around the continent in poverty reduction strategy papers (PRSPs), efforts at decentralizing public goods and service delivery and the rise of participatory poverty appraisals intended to empower the poor, and a range of other policy changes. In some cases, one can legitimately wonder about the extent to which these reforms are heartfelt, rather than merely rhetorical and political, and the extent to which national and international elites are prepared to make sacrifices to advance an authentic poverty reduction agenda. But as one who has worked on problems of African poverty for two decades now, I feel quite comfortable asserting that there has been a palpable increase in recent years in the attention paid and sincerity surrounding questions of poverty reduction on the part of policy makers and development partners.

---

[1] This work reflects many important lessons I have learned from collaborators on various projects in rural Ethiopia, Kenya and Madagascar. In particular, I thank Abdillahi Aboud, Larry Blume, Paul Box, Layne Coppock, Getachew Gebru, Johannes Lehmann, Peter Little, Winnie Luseno, Hussein Mahmoud, Nelson Mango, David Mbugua, John McPeak, Bart Minten, Festus Murithi, Hezron Nyangito, James Nyoro, Willis Oluoch-Kosura, John Omiti, Alice Pell, Max Pfeffer, Frank Place, Jean Claude, Randrianarisoa, Jhon Rasambainarivo, Susan Riha and Kevin Smith for all they have taught me. These research collaborations have been made possible by generous funding from the Pastoral Risk Management Project of the Global Livestock Collaborative Research Support Program funded by the Office of Agriculture and Food Security, Global Bureau, United States Agency for International Development, under grants DAN-1328-G-00-0046-00 and PCE-G-98-00036-00, the Rural Markets Natural Capital

Increased attention paid to the blight poverty leaves on society places an onus on researchers to generate relevant, accurate and timely analysis of the nature and causes of persistent poverty. Policy makers and donors need to know who are the poor, how large are their numbers, how deep is their poverty, and where they can be found. These questions have been probed in depth for decades, typically using cross-sectional methods of data collection and analysis. What is new and exciting is the question of poverty dynamics: who among the poor will naturally pull themselves up by their bootstraps and exit poverty; and who will stay poor for a long period—a lifetime or more—unless communities, governments and development partners take appropriate interventions.

There seems to be a fundamental difference between short-term deprivation—transitory poverty (where the poor have every expectation of becoming non-poor reasonably soon)—and long-term deprivation (the chronic or persistent poverty that too often brings hopelessness). While any sort of poverty is plainly undesirable, persistent poverty strikes most of us as especially odious. Widespread concern nonetheless falls short of offering a clear and sensible strategy for combating persistent poverty. This requires careful study of the etiology of persistent poverty—its correlates and causes—and rigorous evaluation of alternative means of helping people avoid or escape persistent poverty. This demands rethinking of the methods social scientists deploy in studying poverty.

To be sure, there have been notable advances in recent years in the toolkit analysts use in studying poverty. Economists have made important advances in studying African poverty over the past decade, due in no small part to broad-scale use of the rigorous Foster-Greer-Thorbecke (1984) class of poverty measures, the increasing availability of nationally representative survey data—even panel data offering multiple longitudinal observations on individuals and households and important efforts at disseminating cutting edge analytical methods through the African Economic Research Consortium (AERC) and several leading universities around the continent, including the University of Nairobi. At the same time, social scientists coming from

---

and Dynamic Poverty Traps in East Africa project, funded through USAID grant LAG-A-00-96-90016-00 to the BASIS CRSP, USAID's Strategies and Analyses for Growth and Acess (SAGA) cooperative agreement number HFM-A-00-01-00132-00, and a Coupled Natural and Human Systems grant for the Homeostasis and Degradation in Fragile, Tropical Agroecosystems project funded by the Coupled Natural and Human Systems program of the Biocomplexity Initiative of the National Science Foundation (Grant BCS-0215890). The views expressed here and any remaining errors, however, are mine and do not represent any collaborator, or any official agency.

anthropological and sociological traditions have likewise pushed forward the frontiers of our understanding of poverty, especially through the development, refinement and dissemination of various participatory methods and careful ethnographic and social analysis.

The need for rethinking of methods arises not due to any failure on the part of researchers analyzing poverty to develop their disciplinary toolkits. Rather, the need for some rethinking of methods arises from the complex, multidimensional nature of the concept of poverty itself. Poverty reflects at once (i) resource insufficiency, commonly manifest in low incomes and expenditures, (ii) vulnerability to adverse shocks such as illness, violence and loss of livelihood, and (iii) powerlessness in the political, social and economic life of one's community and country (World Bank, 2001). No single measure, no matter how cleverly designed nor carefully measured, could ever provide an encompassing treatment of so complex a concept.

As a result, all the different measures and methods we presently use are flawed, even when practised skilfully. Consider, for example, some of the flaws of the metrics economists commonly use. Household expenditures increase with purchases of alcohol, firearms and tobacco and with the need to pay for medical treatment for ill or injured family members or for reconstruction of homes damaged in civil unrest or natural disasters. Since we commonly interpret higher expenditures to reflect a higher level of well-being, expenditures are vulnerable to increased payments for "bads" rather than "goods". Similarly, income measures of well-being can rise as people substitute work for leisure in response to increased stress, a phenomenon I previously termed "immiserized growth" (Barrett, 1998). Yet because longer hours worked translate into higher income, our conventional inference that higher incomes means superior welfare runs afoul of reality. One could similarly critique qualitative methods used by non-economists. And there has indeed been much inter-disciplinary sniping over the years about the shortcomings of different methods.

But just because the practitioners of different methods of poverty analysis have commonly been in conflict, does this mean that the methods are necessarily in conflict? The fundamental claim of this paper is that all of our extant (and prospective) social scientific methods are more narrow than the complex concept of poverty they try to elucidate, too narrow indeed to be fully up to the important task of providing a full and accurate characterization of the nature and etiology of persistent poverty.

Therefore, there exists some inherent complementarity between qualitative and quantitative methods. The situation is rather like the parable of the blind men and the elephant. One, holding the trunk believed the beast to be a mammoth python, while another, touching an enormous leg, thought it a tree, and a third, feeling the thick hide of the animal's torso, was sure he had hold of a rhinoceros. Each had discovered an important but incomplete truth. Without sharing their findings, they could never divine the majesty of the complex beast, the elephant. So too must we learn how to integrate methods in field-based research—what Kanbur (2003) terms "simultaneous mixing"—or to iterate between methods—"sequential mixing"—so as to significantly improve the quality of our analyses of poverty, perhaps especially poverty dynamics.

This paper outlines my current thinking and recent experience in mixing qualitative and quantitative methods of data collection and analysis so as to gain a firmer and more useful understanding of poverty dynamics, especially in rural Kenya. The next section explores the very real differences between qualitative and quantitative poverty analysis methods. These differences make them useful complements. Then I briefly discuss key lessons I have learned from four multi-year research projects in Kenya, in which I have tried to implement mixed qualitative and quantitative research methods with a range of colleagues from animal science, anthropology, economics, geography, range science, sociology and soil science.

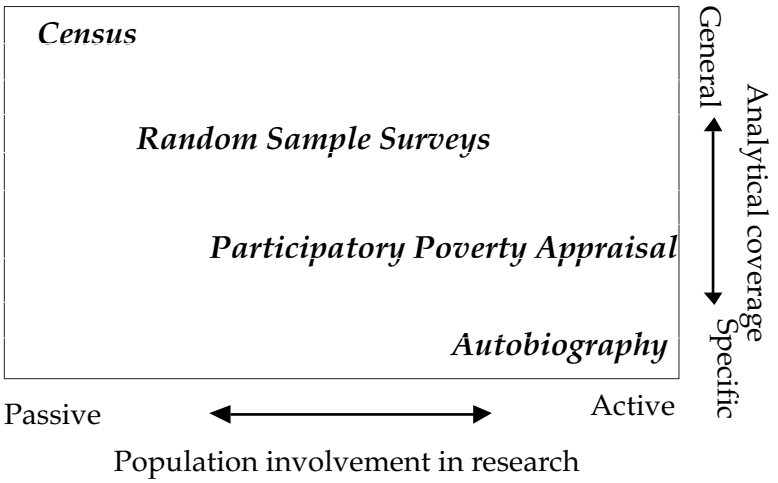
Real and false differences

Qualitative and quantitative methods differ in important ways, but one must be careful to identify precisely the dimensions of those differences. My contention is that the differences between qualitative and quantitative methods are commonly misunderstood and that this misunderstanding impedes fruitful mixing of methods.

So what are the important dimensions of difference between the methods? Kanbur (2003) goes into this issue in far greater detail than I have space for here. But let me emphasize four key differences between qualitative and quantitative methods.

The first is with respect to data collection methods. The breadth versus depth dichotomy advanced by Carvalho and White (1997)—or even a unidimensional continuum ranging between these two end points—appears unhelpful, incorrect, or both. In my experience, it seems that a more apt representation might be Euclidean, ranging from specific

Figure 3.1: Differences according to data collection method



to general coverage on one axis and from passive to active population involvement in the research on the other axis, as depicted in Figure 3.1. Qualitative autobiography would occupy one corner (specific/active) of that box, a quantitative census the opposite corner (general/passive), with considerable opportunity for creative combination of qualitative and quantitative methods in between. Where one locates one's work within that grid ought to depend upon the objectives of the research, the nature of the subjects, and the human and financial resources available to do the job.

The second dimension along which important differences arise concerns the type of data one collects. There exist three basic data types: (i) categorical data, including such data as identifying characteristics (e.g. gender, race, religion, clan, ethnicity), explanations and histories, can be distinguished from (ii) ordinal data—have things improved, stayed the same or gotten worse? What are your greatest fears for which a clear ordering exists among categories but there is no measurable "distance" between categories, and (iii) cardinal data (e.g. incomes in monetary units, children's weight or height measures) for which numeric ratios and intervals hold precise meaning. Note that the difference is *not* between the numeric and the non-numeric. Categorical and ordinal variables can be given numeric representation. Quantitatively-minded social scientists do this all the time using dummy variables. But those of us who like to use relatively more

sophisticated econometric techniques in analysis tend to depend more heavily on cardinal data.

The third dimension of important difference concerns the method of analysis one applies to data of whatever sort, collected by whichever means. The deductive tradition of economics differs markedly from the inductive tradition of anthropology. This difference is of course closely related to the specific-general data collection methods distinction drawn earlier, for one tends to collect data according to the analytical methods one plans to employ later. Where the general-to-specific deductive approach most economists follow emphasizes the universally applicable signal in a given data set and has desire aggregability properties, the specific-to-general, inductive approach followed by most ethnographers and historians allows for fresh insights and honours the idiosyncratic elements of any given person or community's experience.

Finally, and closely related to the preceding three differences, quantitative analysts commonly rely on deductive methods and general, random sampling to be able to speak to larger-scale decision-making units: national governments and international donors. Policy-oriented poverty economists like to try to capture "the big picture" and attempt to "speak truth to power". Qualitatively-oriented researchers, meanwhile, are far more likely to be concerned about returning research findings directly to the population under study and to using the research experience to empower the poor directly, rather than trusting that policy changes on high might filter down to improve the lot of the poor within a reasonable period of time. The ultimate audience for research therefore commonly differs somewhat between poverty researchers from the qualitative and quantitative traditions. Of course, this also helps account for the primacy of economic analysis in high-level policy debates about poverty and the striking under-representation of good qualitative analysis in those forums.

Having tried to define the meaningful differences between qualitative and quantitative methods of poverty analysis, it is important as well to debunk a few myths about differences that I do not believe to exist. Claims of ethical superiority—typically that qualitative methods are somehow less "extractive" than quantitative methods based on closed-ended survey instruments and complex statistical analysis—typically reflect highly selective association of particular research projects with general research methods. Research ethics are indisputably important and poverty analysts bear an obligation to do no harm to the population under study and, preferably, to serve as a truthful and energetic advocate for the poor. I do not believe there exists any robust correlation of researchers' behaviour with research methods (i.e. neither

qualitative nor quantitative methods can defensibly claim ethical superiority over the other). There is much good and bad practice on both sides.

Nor is one approach necessarily more contextual than another. Quantitative researchers can probe extensively as to the history and genesis of current conditions. I already took issue with the mistaken perception that "qualitative" research is inherently non-numerical. The best social analysis uses numbers to reflect inherently cardinal concepts, whether or not it uses statistical methods to make inferences about key hypotheses. Finally, and relatedly, math does not equal rigor. It is erroneous, yet I believe a common hubris of economists that analyses based on careful statistical methods are somehow more "rigorous" than equally careful textual, historical or ethnographic analysis.

In short, bad practice is bad practice, whatever the method. There is no unconditional superiority of one class of methods, be they qualitative or quantitative, over another. Rather, the germane questions appear to be:

- When and how is good practice within a given class of methods still wanting?
- Does another class of methods, well applied, fill in the blanks? and
- How can one method validate the findings of another?

The specifics of the answers to these questions depend very much on the precise question and site of one's research. But I have become convinced that in much poverty research, mixed methods approaches can work, each enhancing the efficacy of the other and reducing its weaknesses. To adapt and extend Leamer's (1983) famous injunction, it is sometimes important to take the "con" out of econometrics and to push beyond the "part" of participatory methods. Much of the challenge lies in reconciling vocabulary and data that do not correspond across different units or methods or analysis and in stimulating a culture of respectful inquiry that feeds on the creative tension of mixing methods.

Lest I be misunderstood, let me be clear that I am not arguing that all poverty analysis needs to employ mixed methods. There are some classes of analysis that really lend themselves only to qualitative or quantitative analysis. For example, measurement of levels, change in and distribution of incomes or expenditures is a difficult and inherently quantitative task to which qualitative analysis contributes little directly, although parallel qualitative analysis can enrich inference in causal, as distinct from descriptive, analysis of such data. So too with dietary intake and anthropometrical data to establish nutritional status;

these are inherently quantitative pursuits. It is equally true that "power" is a terribly elusive concept to operationalize quantitatively and therefore studies of power relations and how individuals and communities organize politically to meet their basic needs and to advance their economic interests are best done qualitatively. Just because it is feasible to mix methods and desirable to do so in many circumstances does not mean that bread-and-butter disciplinary methods are outdated. Indeed, they are the bedrock of mixed methods of poverty analysis.

Examples from research in rural Kenya

For the remainder of this paper, I wish to share with you some of the lessons I have learned about mixing methods from four ongoing, multi-year collaborative research projects funded by the US government, three by the United States Agency for International Development (USAID) and one by our National Science Foundation. The results from these projects remain preliminary at this point, so I do not focus on core research findings so much as on the process sequential or simultaneous mixing of qualitative and quantitative research methods.

The PARIMA Project

The Pastoral Risk Management (PARIMA) project, funded by the Global Livestock Collaborative Research Support Program (GL CRSP), operates in southern Ethiopia and northern Kenya. It is an interdisciplinary project with four lead investigators drawn from four separate academic fields (anthropology, economics, range science and sociology) and a variety of local and external collaborators across several disciplines. The project began in 1997 and is presently funded through 2006. PARIMA set out to improve understanding of the etiology of vulnerability among pastoralists in arid and semi-arid lands (ASAL) of East Africa and, derivatively, what sorts of policies, projects and technologies might best reduce that vulnerability.

ASAL pastoralists are extraordinarily poor, with their poverty manifest in powerlessness (in national and often local politics), meager opportunities (the harsh climate limits agricultural options while poor infrastructure and low incomes limit non-farm ones) and tremendous vulnerability (to drought, flood, banditry, political violence, human and livestock disease, grain or livestock price shocks). PARIMA has concentrated on the latter two manifestations of pastoralist poverty,

opportunities and vulnerability, and on interactions among these. In complex adaptive systems such as East African pastoralism, vulnerability can lead to sudden shifts in the opportunities faced by individuals, households or communities and, reciprocally, new opportunities can fundamentally reshape the risks these peoples face. Indeed, through multiple research methods the project has begun to uncover, if not yet fully explain, the stochastic poverty traps that appear to characterize these systems (Barrett and McPeak, 2003; Barrett *et al*., forthcoming; Lybbert *et al*., 2004; McPeak and Barrett, 2001).

PARIMA has employed what Kanbur (2003) terms "simultaneous mixing" or "Bayesian integration", in which we follow an iterative approach, using one method to inform another, then back to the first, etc, keeping multiple methods interactive throughout the research process to update researchers' priors continuously. We have found that this built-in feedback loop yields a reasonably homeostatic (i.e. self-regulating) research mechanism that keeps pushing us towards our research objective and prevents us from drifting far from relevant or rigorous findings.

The feedback loop depends fundamentally on multi-faceted integration of qualitative and quantitative methods to ask and answer several generic questions:

(1) What does it mean to be poor or vulnerable in this setting? How does this vary across individuals, households, and communities and over time? (i.e., are we asking the right questions of the right people at the right time?)

(2) Derivative from 1), are we measuring the correct variables and in the right manner? (i.e., which data collection method and what data type(s) best fit the question(s) at hand?)

(3) Is our inference of the qualitative and quantitative data on those variables consistent (a) across research methods (a test of robustness) and (b) with local expressions of understanding of the problem(s) (a test of relevance)?

Procedurally, this qualitative-quantitative integration has taken place roughly as follows:

Participatory appraisal and detailed direct field observation by team members preceded questionnaire design and survey site selection. This underscored issues the importance of which we had not previously appreciated. It helped us design a locally acceptable survey strategy (e.g. safeguarding project field staff against misperceptions of ethnic bias). "Ethnography" precedes "participatory", which in turn precedes

"sampling" in the dictionary. Based on our experiences, I believe that sequencing generally ought to apply in the field, as well. Start by reviewing the relevant ethnographies of the area so as to be able to interpret well the products of participatory methods, then use the tools of survey-based data analysis to explore more precisely hypotheses that emerge from the participatory rural appraisal (PRA) exercises.

We, therefore, began analysis on the basis of ethnographic and participatory rural appraisal (PRA) qualitative data to draw out patterns and explanations from a relatively small sample of non-representative respondents. This helped to clarify oft-misunderstood dynamics, for example with respect to the driving factors behind diversification out of pastoralism (Little *et al*., 2001), the role of ethnometeorological practitioners in providing climate forecasts in pastoral communities (Luseno *et al*., 2003), or the absence of classical tragedy of the commons effects in southern Ethiopian rangelands (Lybbert *et al*., 2004), and to identify issues we had not sufficiently emphasized before, such as human health (Smith *et al*., 2000). We then presented these findings, our assessments of the extant literatures, and a draft Phase II, survey-led research design to a workshop of largely external stakeholders (donors, local and national governments, NGOs, and local researchers) for their feedback and some on-the-spot revision and re-presentation by our team, with further feedback. For the past four years we have therefore been following up the initial qualitative work with collection and preliminary analysis of quantitative data generated by repeated quarterly surveys among almost 750 individuals in 330 households across 11 sites in southern Ethiopia and northern Kenya. We have used this method effectively to explore whether pastoralists use and might benefit from modern climate forecasting techniques (Luseno *et al*., 2003, Lybbert *et al*., 2003), what constrains poor pastoralists from making better use of livestock marketing channels (Barrett *et al*., 2003; Barrett and Luseno, 2004; Osterloh *et al*., 2003).

This is not, however, a strictly sequenced process, but a simultaneous process of ongoing dialogue between the qualitative and quantitative components of the project. We follow up quantitative survey analysis with qualitative exploration of anomalous results and puzzles and, reciprocally, follow up interesting qualitative findings with structured survey modules; for example, by asking individuals to report how many animals they owned and then adding up across individuals within households, we inadvertently discovered systematic overlapping claims to animals, revealing the importance of complex property rights in animals defined by the social origins of the livestock. This is both a potential (partial) explanation of the pastoralist marketing puzzle—

why pastoralists' sales of livestock are typically weakly responsive to changing market or ecological conditions—and a natural adaptation to the market problem, where breeding stock are largely unavailable for purchase, so communities tie others' hands to prevent the export of fertile heifers. Similarly, our questionnaires integrate open-ended questions that are designed to explore matters tough to frame precisely through traditional survey instruments (e.g. historical perceptions, indigenous climate forecasting methods).

And we simultaneously pursue studies of livestock marketing through quantitative analysis of price data and household and market-level surveys of transactions data and through intensive participant observation and interviewing of traders so as to understand the social relationships that underpin trader networks. I have found that this ongoing, creative tension between qualitative and quantitative methods helps illuminate both key findings that hold up across disciplinary research traditions and findings that, while interesting, appear fragile and therefore a risky foundation for policy prescription.

Moreover, the research is intended to be integrated with the project's outreach activities, which include community-level participatory identification of priority needs so as to help spark pilot activities to be accompanied by qualitative action research. We try to follow the traditions of bidirectional research-extension linkages, in which findings flow both from practitioners to researchers and vice versa. We use quantitative evidence derived from past survey rounds to inform focus group and community discussions, returning research findings directly to studied communities. It helps to have the subject groups themselves engaged in attempting reconciliation and explanation of data from different sources and methods. Reconciling individual and group level responses is not always simple. Individuals may either deceive or speak more frankly in private, so one can never really be sure whether privately or publicly collected data offer more reliable representations of elusive truths, and therefore the value of mixing methods and the forums from which we derive data and analyses.

Let me offer a specific example of a mixed qualitative-quantitative tool that has proved quite useful (Smith *et al*., 2000, 2001). Our team developed an open-ended technique for getting people to identify and rank threats that concern them. We did this first in purposively/opportunistically-selected focus groups, in which the field leader (an anthropologist) took notes on explanations of these assessments and on the context. We recorded these ordinal data in numeric form, and

then subsequently constructed a simple (pseudo-cardinal) index. Having georeferenced all the points using a handheld global positioning system (GPS) unit, the geographer on our team could construct contour maps of risk assessment, polygonal maps of ethnic territories, and link these to extant biophysical data (e.g. rainfall), permitting quite useful and original spatial analysis. For example, we found that perceived vulnerability to drought is *positively* correlated with mean rainfall because of the differential mobility associated with various chosen activities. This led to a more fundamental, if not entirely original, insight that vulnerability to specific forms of risk is endogenous even when the biophysical shock itself (e.g. low rainfall) is exogenous. We could then also analyze the data using limited dependent variable econometric methods, using the ethnographic notes from the original focus group interviews to provide causal explanations of the observed statistical correlations. This process uncovered important structural patterns of heterogeneous risk assessment between men and women, rich and poor, Ethiopia and Kenya, pastoralists near and far from towns, etc. Since rangelands policies have historically treated pastoralists as a homogeneous population, this analysis has revealed unintended distributional and targeting effects of past policies (e.g. borehole development, and pasture improvement). Of course, the lingering questions from the first round of work concerned the representativeness of risk assessments by purposively selected groups and the intertemporal stability of risk assessments. We therefore built the participatory risk assessment instrument into individual-level questionnaires fielded every three months over the course of two years so as to track more micro-level and temporal variation in risk assessment and to match randomly sampled individuals' ex-ante risk assessment to their *ex post* experiences of shocks. We are now analyzing those data and should have results to share within a few months.

The BASIS CRSP Project

The Rural Markets, Natural Capital and Dynamic Poverty Traps in East Africa project, funded by USAID's Broadening Access and Strengthening of Input Systems - Collaborative Research Support Program (BASIS CRSP) from 2000-2004 is likewise an interdisciplinary project with a variety of local and external collaborators (e.g. ICRAF, KARI and University of Nairobi) across several disciplines covering two sites in the central and southern highlands of Madagascar, three sites in the central and western highlands of Kenya, and the northern Kenyan rangeland sites also covered by PARIMA. Through empirical

analysis using mixed qualitative and quantitative methods of data collection and analysis, the BASIS project aims to identify best-bet strategies to help poor smallholders escape the interrelated problems of chronic poverty and on-farm natural resource depletion. We are trying to determine the incidence, severity and causal linkages behind prospective "poverty traps", as well as to identify the most promising approaches to reducing the incidence and severity of chronic poverty, especially in ways that support agricultural productivity growth and repletion of degraded soils.

Studying poverty dynamics is even more complicated than measuring welfare at a single point in time, no matter which method(s) one employs. Repeated observations on the same respondents create longitudinal observations on a cross-section, in the case of the BASIS project, of households. Intertemporal comparisons of real (i.e., inflation-adjusted) measures of income or expenditures depend fundamentally on the deflators used. Problems of sample attrition, household splitting or consolidation—especially if these phenomena prove non-random[2]—changing survey designs and survey implementation teams, etc. can all affect inference by subtly changing the statistical representativeness of the panel sample, the definition of variables, or both. Furthermore, life cycle effects may come into play if households tend to, for example, accumulate assets through their adult working years and then decumulate assets later in life, although the limited direct evidence on the importance of these effects suggests they may be limited in developing country settings.[3] We suspect that life cycle effects may be further attenuated in rural Africa by the advent of the HIV/AIDS pandemic, which commonly necessitates rapid liquidation of assets to meet healthcare costs.

Furthermore, the causal mechanism underpinning observed welfare dynamics—and, derivatively, what policy might do to prevent descents into poverty and to facilitate climbs out of it—do not automatically appear even when we measure income, expenditure or asset transitions accurately. For example, while we know that just over 10 per cent of our Vihiga District sample fell into poverty between 1989 and 2002, while just over 20 per cent climbed out of poverty over the

---

[2] See Alderman *et al.* (2001), Falaris (2003) and Rosenzweig (2003) for discussions of the problems of sample attrition and endogenously changing household structure, and some suggestive empirical evidence on attrition bias in panel data sets from developing countries.

[3] Deaton (1992, 1997).

Figure 3.2: Qualitative sampling design based on income transition matrix: Stratification based on poor/nonpoor status and inter-temporal welfare change

	Poor$_t$	**Non-poor$_t$**
Poor$_{t+1}$	Decline	Decline
	No change	
	Improvement	
Non-poor$_{t+1}$	Improvement	Deline
		No change
		Improvement

same period, our quantitative survey data do not give us a clear indication as to why these transitions occurred for the particular households we see crossing the poverty line over time.

In order to breathe life into these numbers, to crosscheck their accuracy and to gain deeper insights into the causality behind observed welfare transitions, we followed up the panel survey data collection with qualitative poverty appraisals in each site. This involved both community-level focus group meetings and key informant interviews to try to establish local conceptualizations of poverty and community-level phenomena that have affected the observed trajectories of most households (Mango *et al*., 2004).

We followed up these group meetings with in-depth case studies of selected households so as to construct social-historical profiles of distinct household types characterized by observed welfare transitions. We constructed household-level real per capita income transition matrices—reflections of income status above or below the poverty line in each survey period—for each site to establish which households had been poor in each survey period, which had exited poverty from one round to the next, which had fallen into poverty and which had consistently stayed non-poor. We wanted to be sure to interview households representing each quadrant of this matrix defined by current

and past position relative to an income poverty line. We then further broke down the sub-samples who remained poor in both periods and those who were non-poor in both periods according to the direction of change in their income between periods: those with significant per capita income losses between periods, no significant change, and those who enjoyed significant per capita income gains from one survey round to the next (Figure 3.2).

Since our interest lies in welfare dynamics, and because some dynamics do not involve crossing the poverty line, we needed this further decomposition to capture the full range of measurable movements around, towards and away from the poverty line. In these household level interviews—and subsequent closing community meetings—we focused especially on understanding the historical context underpinning local households' strategies to improve their welfare and the pathways by which certain households collapse into or escape from poverty. By complementing our quantitative work with follow-up qualitative work[4], we were able to get an independent check on our statistical findings, an improved understanding of what lay behind observed changes in household well-being over time, and a set of human interest stories that are somewhat easier to communicate to policy makers and interested laypeople than are econometric results (Barrett *et al*., forthcoming).

The BASIS CRSP project therefore offers an example of sequential mixing of methods, where we use the intermediate outputs from quantitative, survey-based analysis as an input into qualitative work based on ethnographic interviewing techniques, participatory appraisal methods and historical analysis. The qualitative results are now being used to specify econometric models for more refined quantitative analysis of the survey panel data. This method of sequentially mixing offers considerable promise for shedding light both descriptively and analytically on poverty dynamics, not just in rural Africa, but anywhere.

The SAGA project

The USAID Strategies and Analyses for Growth and Access (SAGA) cooperative agreement, which links US-based researchers at Cornell and Clark Atlanta Universities with partner research institutions in

---

[4]The qualitative work was generously supported by Canada's International Development Research Centre (IDRC) and the Rockefeller Foundation, as well as the USAID BASIS CRSP.

Kenya, among other countries, takes a "bottom-up" perspective on the problem of persistent poverty and stagnant economic growth in sub-Saharan Africa, an approach that starts from the capabilities of individuals, households and communities—their productivities, their vulnerabilities, their institutions and their environment—and which considers in detail how economic and social development can and do play out at the ground level. A bottom-up approach naturally invites complementary research from the social sciences other than economics. While we maintain a firm foundation in economics, anthropologists, geographers, political scientists and sociologists are actively involved as full research partners. We also emphasize dynamic issues because although economic growth and poverty reduction are inherently dynamic concepts, the existing debate on policy reform and poverty has paid scant attention to the dynamics of income, wealth and human development. Understanding these dynamics will lead to a structural foundation for growth and development at a micro level.

In Kenya, the SAGA research programme was developed through a consultative process among the participating institutions[5] in which we identified key policy-oriented research topics that could usefully feed into the PRSP and Kenya Rural Development Strategy (KRDS) processes. We settled on two core themes around which each participating institution's SAGA research is built: (i) reducing rural risk and vulnerability, and (ii) empowerment of the rural poor. These themes take aim squarely at the problem of chronic poverty as experienced by many rural Kenyans today. The research follows the simultaneous mixing design in that the institutions work in parallel on common topics following their own chosen methods, with regular interaction to facilitate feedback between, for example, those doing quantitative, survey-based work on the role of producer groups in improving small farmers' livelihoods and those doing qualitative case study research on how decentralization of agricultural extension services might (or might not) accomplish that same goal. We remain at a relatively early stage in the process, but there is considerable promise in learning to integrate methods and products across researchers and institutions in this manner.

The NSF Biocomplexity Project

[5] The SAGA Kenya partners with Cornell and Clark Atlanta are the Institute for Policy Analysis and Research (IPAR), the Kenya Institute for Public Policy Research and Analysis (KIPPRA), Egerton University's Tegemeo Institute for Agricultural Policy Research, and the University of Nairobi's Department of Agricultural Economics.

In 2003, a group of biological and social scientists at Cornell, ICRAF and KARI began a five-year research project aimed at uncovering the coupled dynamics of human and natural systems in farming communities in Kenya's central and western highlands with an eye towards getting a better sense of what interventions might help stem the interrelated problems of declining soil fertility and persistent poverty among smallholder farmers. Poverty dynamics in Kenya's rural highlands depend fundamentally on the interplay between agricultural productivity, the evolution of the soils, trees and waters on which crop and livestock productivity depend, and the status of rural financial, labour, land and product markets. This necessarily involves a great deal of interdisciplinary collaboration on technical questions surrounding the evolution of soil quality and farm productivity. But the NSF project, which links with and builds on the BASIS project, combines not only soil and animal scientists' experimental data with economists' observational data, almost entirely based on cardinal data collected using randomized designs and analyzed deductively, we also integrate open-ended discussions with farmers and focus groups intended to understand better smallholders' perceptions of the soils they work, how they perceive their farm management decisions to affect the future state of the natural resource base and their own farm's productivity, and the constraints they face in managing livestock, soils, trees and water as they think best. This "cognitive mapping" of the coupled dynamics of human and natural systems as perceived by and acted upon by smallholders has become an intrinsic component of, and check on, our efforts to map those dynamics using more traditional, quantitative methods.

The way forward: Walking on two legs

An old proverb, the origins of which I cannot recall exactly, says "a man can stand on one leg, but he needs two to move forward". This strikes me as an apt insight with respect to the analysis of poverty dynamics today. The social sciences have a range of proven methods available for use and one can reasonably stand by any one of them to replicate the sorts of descriptive analyses with which we have all become familiar. The challenge, however, is to move forward, to push beyond the descriptive to do truly analytical work as to the causality behind persistent poverty and, derivatively, what interventions at which scales, on what timing and by which actors are most likely to yield permanent improvement in the standards of living of Kenya's, or Africa's, poorest peoples. From my perspective, there is little choice but to work harder at integrating qualitative and quantitative techniques, through

simultaneous or sequential mixing of methods. The best development scholars increasingly recognize the inherent complementarity of qualitative and quantitative methods in tackling so complex a concept and intractable a problem as persistent poverty.

Let me close with a few practical suggestions based on my limited experience in trying to mix methods in poverty research in rural Kenya. As Kenya launches its upcoming participatory poverty appraisal, it ought to situate this exercise within the sampling frame used for its upcoming nationally representative statistical survey. That way, both efforts will be focusing strictly on the same population and inferences can be directly and fruitfully compared across methods. Similarly, upcoming survey rounds should include more open-ended and subjective questions about categorical and ordinal data, such as respondents' perceptions of risk and their sense of the causal mechanisms behind their current state of well (or not-so-well) being. Above all, it is essential to build multidisciplinary teams, to keep them operational for a period of several years, and to create and maintain incentives for regular feedback within the group and between the researchers and the communities under study. No one discipline or set of individuals has a monopoly on useful data, methods or theories relevant to the challenge of combating persistent poverty. But it takes some time to establish mutual trust, a common vocabulary, shared insights on the mechanisms at work in the populations being studied, and common data storage and use protocols, among others. Experience tells me that such investments pay handsome dividends. But they tend to require leadership and some active effort at organizing to facilitate and encourage such multidisciplinary collaboration.

I have been fortunate to be a part of teams supported with multi-year research funding from the US government for precisely such purposes. Such projects are distressingly rare, however. Governments and donors need to establish and fund multidisciplinary research apparatus capable of tackling the disparate dimensions of persistent poverty as manifest across nations as diverse as Kenya. This requires a change from the usual donor "hire a consultant" mindset. It also demands some real attention be paid to reconstituting graduate training in the social sciences in local universities, which have fallen into disrepair after years of underfunding, politicization and general neglect. These multidisciplinary teams need to draw increasingly from a skilled cadre of committed local researchers working independently and in concert with government and donors, perhaps backstopped by expert expatriate collaborators to help guide the effort and keep teams up-to-date with the most recent methodological advances in the disciplines.

The promise of mixed methods of social science research on poverty is considerable. This is not, however, an easy path to follow and will take some concerted effort on the part of researchers and the donors and governments that oversee and fund research. In Kenya and many other countries in which poverty is widespread and stubbornly persistent, the returns to simultaneous or sequential mixing of qualitative and quantitative methods of analysis strike me as quite high on average.

References

Alderman, H., Behrman, J., Kohler, H.P., Malucio, J.A. and Watkins, S. (2001). "Attrition in Longitudinal Household Survey Data: Some Tests for Three Developing-Country sample", *Demographic Research*, 5, pp78-124.

Barrett, C.B. (1998). "Immiserized Growth in Liberalized Agriculture", *World Development*, Vol. 26, No. 5, May 1998): pp743-753.

Barrett, C.B., Chabari, F., DeeVon, B., Little, P. D. and Coppock, D.L. (2003). "Livestock Pricing in the Northern Kenyan Rangelands," *Journal of African Economies*, Vol. 12, No. 2, June 2003: pp127-155.

Barrett, C. B. and Luseno, W.K. (2004). "Decomposing Producer Price Risk: An Analysis of Livestock Markets in Northern Kenya", *Food Policy*, Vol. 29, No. 4 (August 2004), pp393-405.

Barrett, C.B., Marenya, P.P., McPeak, J. G., Minten, B., Murithi, F.M., Oluoch-Kosura, W., Place, F., Randrianarisoa, J. C., Rasambainarivo, J., and Wangila, J. (forthcoming). "Welfare Dynamics in Rural Kenya and Madagascar", *Journal of Development Studies*.

Barrett, C. B. and McPeak, J.G. (2003) "Poverty Traps and Safety Nets", in Alain de Janvry and Ravi Kanbur (Eds.), Poverty, Inequality and Development: Essays in Honor of Erik Thorbecke, Amsterdam: Kluwer (forthcoming).

Carvalho, S. and White, H. (1997). "Combining the Quantitative and Qualitative Approaches to Poverty Measurement and Analysis", World Bank Technical Paper 366.

Deaton, A. (1992). "Household Saving in LDCs: Credit Markets, Insurance and Welfare", *Scandinavian Journal of Economics*, 94, 2: pp253-273.

Deaton, A. (1997). *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy*. Baltimore: John Hopkins University Press.

Falaris, E. (2003). "The Effect of Survey Attrition in Longitudinal Surveys: Evidence from Peru, Cote d'Ivoire, and Vietnam", *Journal of Development Economics* 70, 1: pp133-157.

Foster, J., Greer, J. and Thorbecke, E. (1984). "A Class of Decomposable Poverty Measures", *Econometrica* Vol. 52, No. 3: pp761-766.

Kanbur, R. (Ed) (2003).*Q-Squared: Combining Qualitative and Quantitative Methods in Poverty Appraisal*. Delhi: Permanent Black.

Little, P. D., Smith, K., Cellarius, B.A., Coppock, D.L. and Barrett, C.B. (2001). "Avoiding Disaster: Diversification and Risk Management Among East African Herders", *Development and Change*, Vol. 32, No. 3: pp401-433.

Luseno, W. K., McPeak, J.G., Barrett, C.B., Gebru, G. and Little, P.D. (2003). "The Value of Climate Forecast Information for Pastoralists: Evidence from Southern Ethiopia and Northern Kenya", *World Development*, Vol. 31, No. 9: pp1477-1494.

Lybbert, T.J., Barrett, C.B., Desta, S. and Coppock, D.L. (2004). "Stochastic Wealth Dynamics and Risk Management Among a Poor Population", *Economic Journal*, Vol. 114, No. 498 (October 2004), pp750-777.

Lybbert, T.J., Barrett, C.B., McPeak, J.G. and Luseno, W.K. (2003). "Bayesian Herders: Updating of Rainfall Beliefs in Response to External Climate Forecasts", Cornell University Working Paper.

Mango, N., Mulindo, J.C., Kariuki, G. and Ongadi, W. (2004). "Social Aspects of Dynamic Poverty Traps: Cases from Vihiga, Baringo and Marsabit Districts, Kenya", mimeo.

McPeak, J. G. and Barrett, C.B. (2001). "Differential Risk Exposure and Stochastic Poverty Traps Among East African Pastoralists", *American Journal of Agricultural Economics*, Vol. 83, No. 3: pp 674-679.

Osterloh, S.M., McPeak, J.G., Mahmoud, H., Luseno, W.K., Little, P.D., Gebru, G. and Barrett, C.B. (2003). "Pastoralist Livestock Marketing Behavior in Northern Kenya and Southern Ethiopia: An Analysis of Constraints Limiting Off-Take Rates", Report to the USAID Global Livestock Collaborative Research Support Program.

Rosenzweig, M.R. (2003). Payoffs from Panels in Low-Income countries: Economic Development and Economic Mobility", *American Economic Review* 93(2): pp112-117.

Smith, K., Barrett, C.B. and Box, P.W. (2000). "Participatory Risk Mapping for Targeting Research and Assistance: An Example Using East African Pastoralists", *World Development*, Vol. 28, No. 11: pp1945-1959.

Smith, K., Barrett, C.B. and Box, P.W. (2001). "Not Necessarily in The Same Boat: Heterogeneous Risk Assessment Among East African Pastoralists", *Journal of Development Studies*, Vol. 37, No. 5: pp1-30.

World Bank (2001). World Development Report 2000-2001, Oxford: Oxford University Press.

Observations and comments from participants

- Using the analogy of the elephant as earlier demonstrated by Barrett, Prof. Mwabu criticized the simultaneous mixing method in poverty analysis. His argument was that not all problems could be analyzed through mixing qualitative and quantitative methods. His suggestion was that it would be helpful if one clarified problems that should be addressed through simultaneous mixing.
- A participant suggested that there is need to explore the lessons that can be learnt from other countries on administering mixing survey.
- A number of comments were made on the rationale of using say the US$ 1 per day as a measure of poverty. A participants noted that the 1$ per day was in Kenya not even adequate for transport, let alone food.
- Prof. Mwabu observed that a particular problem defines the type of method that can be used. Some methods are very useful in some cases but at times limiting. For instance, in nutrition and health surveys, where there are nutritional shortfalls, can one be able to quantify?
- A participant observed that economists are usually worried with one side of the policy debate (quantification).
- A participant observed that there are few incentives for most academics to work together; that is, multidisciplinary work has to get incentives right. For instance, can non-governmental organizations work with the Central Bureau of Statistics?

IV: SESSION 2: CASE STUDIES

Chair: Dr. Hezron Nyangito, Acting Executive Director, Kenya Institute for Public Policy Research and Analysis (KIPPRA)

4. RESEARCHING POVERTY IN RURAL KENYA: METHODOLOGICAL CONCERNS ARISING FROM METHODS ADOPTED

Dr. Mary Omosa, Institute for Development Studies, University of Nairobi

Introduction

According to the 1997 Welfare Monitoring Survey III, over 2.5 million households in Kenya live below the poverty line. In other words, almost one in every two Kenyans is poor and three quarters of them live in the rural areas (Government of Kenya, 2001). Subsistence farmers (47%) and farmers engaged in food crop production (46%) have the highest proportions of poor people as compared to groups engaged within the public (16%) or private (31%) sectors. In spite of this, most poverty reduction interventions have not managed to bring an end to poverty and its manifestations (Omosa, 2002). One of the main constraints is the inability of these strategies to make a difference to the lives of poor people, a failure that has been attributed to the elusive nature of poverty. This is further compounded by the fact that some positive impacts go unnoticed due to the inability of measures employed to capture the impact appropriately.

This paper looks at how the Sustainable Livelihoods Framework could be applied in poverty studies in rural Kenya. This is discussed in the context of a study focusing on the impact of Soil Fertility Replenishing (SFR) technologies on the poor in western Kenya, under the auspices of the International Centre for Research in Agro-Forestry (ICRAF), the International Food Policy Research Institute (IFPRI), Wageningen Agricultural University (WAU), and the Institute for Development Studies, University of Nairobi (IDS/UoN).[1] The paper examines the extent to which the Sustainable Livelihoods Framework can be used to measure and analyze poverty, and some of the apparent

[1] Researchers: Frank Place (ICRAF); Michelle Adato (IFPRI); Paul Hebinck (WAU); Mary Omosa (IDS/UoN).

challenges in using this approach. These observations are discussed in light of the various livelihood strategies that households pursue and the general efforts by the Kenya government to alleviate poverty. The suitability of the Sustainable Livelihoods Framework (SLF) generally lies in its ability to go beyond conventional measures of poverty by combining both qualitative and quantitative data collection approaches with a primary focus on how the poor conceptualize poverty and in the context of their own livelihoods.

"Livelihoods" is used here to refer to a people's way of life; it covers what people do for their survival and how they go about fulfilling their needs. This entails striving to make a living, attempting to meet various consumption and economic necessities, coping with uncertainties, responding to new opportunities and making a choice between different value positions (Long, 1997). Therefore, in addition to meeting various basic needs, livelihood is also about the management of relationships, the affirmation of personal significance and group identity, and the interrelation of each of those tasks to the other. As such, livelihoods is about what image people would want to project of themselves, and the value system informing this perceived identity (Omosa 1998; Omiti and Omosa, 2002).

The suitability of the Sustainable Livelihoods Framework in poverty analysis and research must therefore be judged in light of its ability to capture the choices that households make, in an attempt to meet their basic needs. The question therefore is: how successful is the Sustainable Livelihoods Framework as a methodological and analytical tool in studies on poverty?

The rest of this paper looks at the components of this framework, how they have been applied in measuring poverty among the poor in western Kenya, and some of the emerging issues and the way forward. The paper departs from the premise that the impact of SFR technologies on the poor can only be understood in the context of the people's livelihoods. Special emphasis is placed on understanding the livelihood strategies that people pursue, the changes that have taken place over time, and what is contemplated for the future. The general conclusion is that an improved understanding of livelihoods will result in the development of a richer set of indicators against which to measure and analyse poverty in rural Kenya.

The Sustainable Livelihoods Framework

In the western Kenya study, several approaches were used in an attempt to capture the impact of SFR technologies on poverty reduction and within the Sustainable Livelihoods Framework. In the first instance, a meeting was held with representatives from various interested parties for purposes of putting research questions in context so as to operationalize the Sustainable Livelihoods Framework (SLF). Among the key issues that were discussed was what the people defined as poverty and who in their view was poor amongst them. This was followed by another meeting where the researchers synthesised the issues raised and re-formulated the questions in line with discussions held (Adato, 2000). Thereafter, respondents were randomly selected from both Luhya and Luo villages with at least two years of exposure to agro-forestry systems. A control group was also similarly selected from villages outside of the pilot areas. At the household level, respondents were stratified into poor and non-poor based on participatory village wealth ranking exercises and quantitative surveys that had been undertaken in the preceding agricultural season. The households were stratified further into male and female headed (Place, 2000). Selected households were then engaged in a year-long in-depth study that combined physical observation with focus group discussions and case history accounts. In the latter case, the day's context or activity set the theme for discussion and on the basis of the key components of the SLF. Both notebooks and tape records were used to document responses.

In an attempt to research poverty, key issues that were focused on sought to bring out the variations in perspectives and what informs them. Within the socio-political perspective we looked at differences in access to power and social groups, the value attributed to livelihood assets and outcomes and nature of social organization in existence. The economic environment within which people operate was also considered with a major focus on assets, consumption and pricing. The role and performance of institutions was considered important, and especially the governance structures, policy making processes and the extent to which they influence decisions at the household level. The primary objective was to explain what poverty was, who attempts to get out of it and how, who succeeds and who fails, and why. Below, we take a step-by-step analysis of the SLF and how it was applied to research into poverty issues and the poor in particular.

Livelihood context

The context of the people being studied was fundamental to understanding livelihoods and the poverty situation in particular. A livelihood context was used to refer to the totality of a people's surroundings and it included the broad political and economic structures and the immediate physical, social and cultural environments within which these communities live (Hebinck, 2002). A significant recognition of the SLF therefore is the fact that livelihood contexts are dynamic and they vary enormously, largely because they are location specific. These contexts are shaped by a people's history, cultural, economic and political relationships, and by the natural environment. In other words, livelihood can only be captured and understood in particular contexts and a clear understanding of such a context is important in poverty research. In other words, a livelihood context can be a source of vulnerability to various shocks or its total absence.

A good understanding of the context within which people live and how this comes to shape the opportunities that face them and the livelihood strategies that they are likely to pursue, is central to researching poverty. Generally, issues relating to this context are best captured using qualitative approaches such as life history accounts, key informant interviews and group discussions.

Livelihood assets

Resources and livelihoods are inter-linked and this relationship determines who owns what and what it is that they own. According to the Sustainable Livelihoods Framework, some of the key resources that therefore need to be looked into in measuring poverty include natural capital, social capital, human capital, physical capital and financial capital. Data relating to each of these assets was captured in the first instance using a survey questionnaire and this was preceded by community-based wealth rankings. An analysis of each of these asset portfolios provided a useful starting point in efforts aimed at understanding how and in what combinations assets translate into being or not being poor. Emerging concerns were taken up for further discussion with the individuals concerned using life history accounts. The multiple nature of the assets that people own and the diversity in life trajectories provided room for a holistic approach to poverty analysis and this in turn brought out some of the strengths that exist even among the poorest members of the community. Therefore, the Sustainable Livelihoods Framework begins from the premise that the poor have strengths and these constitute the starting point and a core component

of attempts to understand the nature of their deprivation and what is likely to help get them out of poverty.

On the other hand, the strengths of these assets were also looked at in the context of the vulnerabilities within which they operate, such as trends, shocks and local cultural practices that may affect livelihoods, poverty included. It was also found necessary to position the viability of these assets within existing policy and institutional frameworks because these define people's livelihood options (Carney, 1998). This is because policies and institutions determine who gains access to what assets, the effective value of the assets gained, and which livelihood strategies are therefore open or attractive to pursue. In many ways, the Sustainable Livelihoods Framework puts emphasis on the crucial linkage between the micro and the macro in poverty analysis and research.

Livelihood outcomes

Therefore, according to the Sustainable Livelihood Framework, studying poverty must take into account people's views with regard to how they perceive their situation, including what they see as the factors that render them poor. In other words, the SLF allows for the application of a "negotiated" set of indicators to measure poverty. These indicators are seen as negotiated because they are derived from among the people being researched and they are arrived at using the people's own description of self and their surrounding, therefore the need for supportive data collection approaches. In the western Kenya study, this involved focusing on people's understanding of what it means to be poor and how to escape from poverty, and a look at people's beliefs about the causes of poverty as an entry point to assessing what constitutes poverty and for whom in particular.

As a methodological and analytical tool, the Sustainable Livelihoods Framework and the combination of both qualitative and quantitative study tools in particular, provides a basis for understanding poverty amid the complexity of rural livelihoods. This includes linking, holistically, the variety of ways through which rural people manage to make a living and the contexts within which they must operate. The framework also pays attention to the processes that shape these endeavours, and the role of institutions and individuals that appear external to the communities under consideration but which nevertheless influence what goes on and indeed, what comes to constitute poverty. Again, some of these processes are best captured when using

methodologies that allow for flexibility both in the mode of application and in sampling.

Below is a pictorial presentation of what are considered to be important components of the Sustainable Livelihoods Framework: the livelihood context, assets, the intervening situation as expressed in policies and institutions, the strategies that people end up applying, and the eventual outcomes, and how they come to impact the relevance of SFR technologies on the poor in western Kenya. This model was applied with the following questions/issues in mind, and while using both qualitative and quantitative techniques of data collection and analysis:

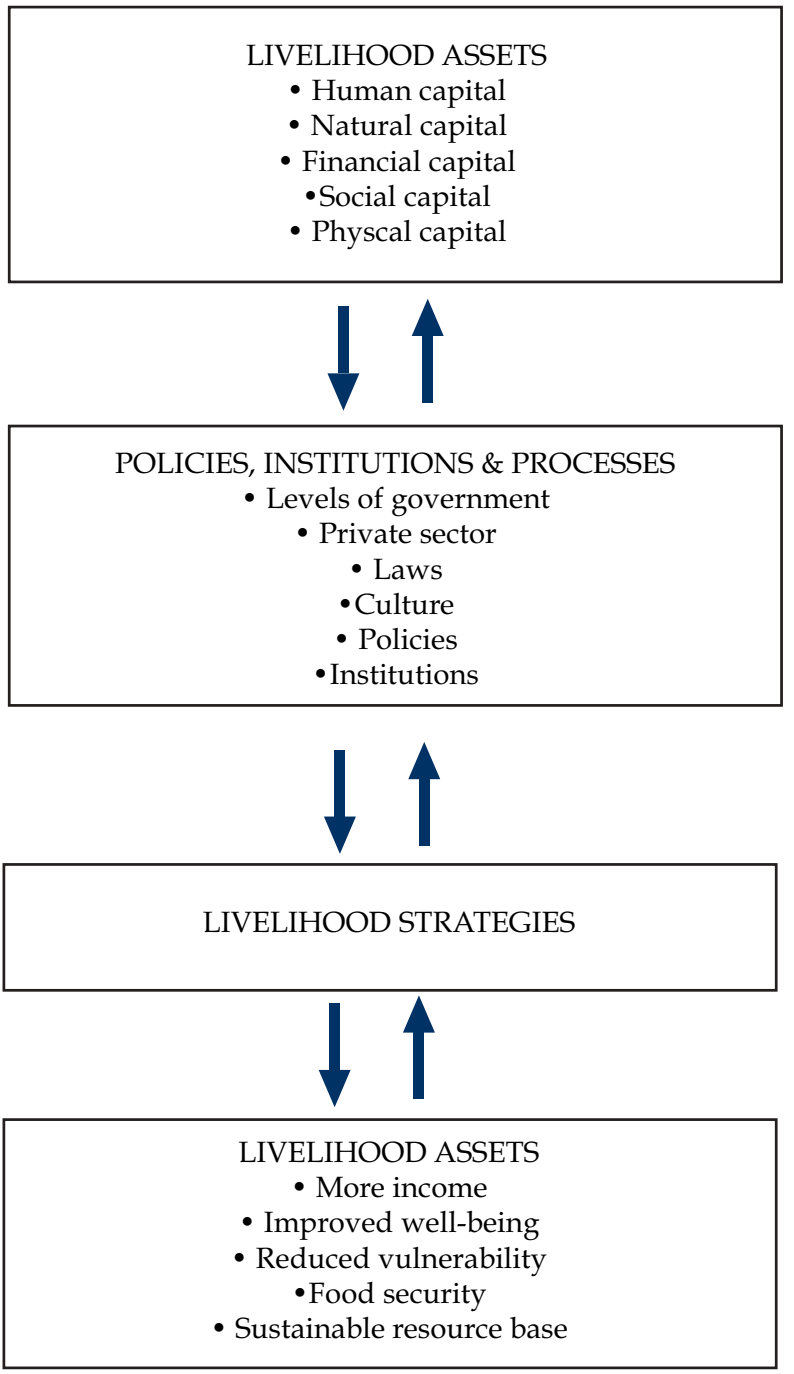
- What is the ability of SFR technologies in reducing poverty?
- What is the relationship between types of adoption, livelihood strategies and outcomes?
- What processes mediate the ability of different social groups to improve their livelihoods?
- What is the effect of SFR technologies on people's productive and risk-mitigating assets?
- What is the effectiveness of different approaches at reaching the poor?

The remaining discussion in this paper focuses on how the SLF has been applied in understanding and assessing the impact of soil fertility replenishing technologies on poor households and individuals (Place *et al*., 2003). The overall aim of this multi-country project was to assess the impact of agricultural technologies on poverty reduction, and how different technologies and dissemination pathways interact and affect people's livelihood strategies, asset portfolios, and livelihood outcomes.

Who is poor and how?

It was generally observed that poverty or being poor is a slippery concept. Most of the people interviewed, the poor included, were reluctant to classify themselves as poor. Instead, the poor described their condition as a result of lacking in the various things and this they felt was different from being poor. Poverty was instead conceptualized as a state of being unable to and this, it was felt can only be the case for people that are physically disabled. However, differentiation among members of the community was acknowledged. Therefore, whereas conventional poverty was real and evident, there was an attempt by all

Figure 3: The Sustainable Livelihoods Framework



Source: Adapted from Carney (1998), p.5.

people, the poor included, to run away from both the state of being poor and the reference to being poor.

Nevertheless, poverty was generally viewed as lacking physical resources or social networks or both. Some of these included lack of land, inability to feed one's family, inability to pay for basic services including education and health, wearing of tattered clothes, having unemployed children and living in housing with a leaking roof. It was also observed that incidence of poverty is cyclic especially between generations and this had continued to trap some people in poverty for long periods.

Therefore, the impact of external intervention gave some members of the community an amount of social capital, especially in terms of their being seen as successful farmers and people who attract visitors from "far away". Indeed, some of these visits were so eventful that several families had named their children after these personalities. On the other hand, the decision to adopt or not to adopt and in turn an attempt to escape from poverty had brought about disagreements, some of them at the level of the family unit. In one particular case, both husband and wife were pursuing different farming practices just because they needed to be different and even be seen to be pursuing different livelihood strategies. In this particular case, it was the man who came into contact with the new SFR technologies and because he had been a drunkard and with low social esteem within his community, the wife was not convinced that his farm practices were anything to emulate. Instead, she viewed them as a continuation and probably even a perpetuation of his wayward ways. However, adoption of the SFR technologies had resulted in status inversion and this particular farmer was perceived as depicting a fair description of a successful farmer and therefore a departure from his old position of low social esteem.

However, some among the poor found it difficult to participate because they lack sufficient land or they could not attend demonstrations/field days due to restrictions from their spouses or due to their heavy domestic workloads. Therefore, the fact that adoption is pervaded with ongoing social processes suggests that the success of these SFR technologies in poverty reduction is dependent on the entire social framework within which it takes place. For instance, it was reported that attendance of training sessions is dependent on who does the invitations and who else is likely to attend. Some of the characteristics that are found to be important include political alignment and perceived social standing, all of which determine processes of exclusion and inclusion and therefore the extent of one's poverty.

It was also noted that despite the fact that the success of SFR is dependent on how well the practices are implemented, there is a tendency to adapt to one's circumstances, including taking up these technologies in isolation. There are various reasons to explain the above scenario, among them inability to afford. Most farmers argued that some of the technologies are labor-intensive or they require that land is left fallow for a period of time, requirements unlikely to be met by resource-poor households. Therefore, the extent to which these technologies can impact positively on the lives of the resource poor is limited. Even then, some among the poor have indeed already benefited in terms of realizing better yields. The resilience in human capability is easily detected in terms of people's ability to choose and bring to fruition those technologies that suit their circumstances, however poor.

Findings, however, also show that higher yields and raised incomes have not always translated into improved welfare, at least as is commonly understood. In some instances, additional incomes have resulted in men taking a second wife or by them entering the commodity market, and this has taken away the control that women had over subsistence production. Therefore, no matter the quality of assets acquired, there are variations across individual households, and the extent to which assets accumulated stand to benefit members of a household and the poor in particular is dependent on how they organize resources at their disposal and therefore their livelihood strategy.

Conclusion

The Sustainable Livelihoods Framework was considered a suitable approach in analyzing and researching rural poverty. One, the framework is people-centred, holistic in approach, dynamic and it acknowledges that the poor have answers to their problems. Secondly, it puts emphasis on vulnerability to several phenomena and how these shape livelihood strategies and technology choices, all of which come to determine outcomes, poverty reduction included. Furthermore, the ability to look beyond aggregated households by considering the significance of social differentiation presents a more realistic picture of rural livelihoods and the poverty situation in particular. Therefore, the Sustainable Livelihoods Framework adopts a definition of poverty that goes beyond income and consumption data to include asset base, social relationships, vulnerability impacts, and perceptions.

The main strength of the Sustainable Livelihoods Framework is its ability to focus on poverty in its socio-cultural, economic and political

context amid being open to a combination of qualitative or quantitative techniques of data collection. This offers an opportunity for a more comprehensive analysis of poverty by bringing on board an all round view of the circumstances of the poor, including how they see it themselves. This approach therefore enables the researcher to avoid jumping to uninformed and/or isolated conclusions.

References

Adato, M. (2000). Planning Workshop for Case Study 6. Maseno and Nairobi, Kenya.

Carney, D. (1998). Sustainable Rural Livelihoods: What Contribution Can We Make? Papers Presented at the Department for International Development's Natural Resources Advisers' Conference. Department for International Development (DFID).

Hebinck, P. (2002). The Sustainable Livelihoods Framework. Draft Report, May.

Long, N. (1997). "Agency and Constraint, Perceptions and Practice: A Theoretical Position", In: H. de Haan and Long, N. (eds), *Images and Realities of Rural Life*, Wageningen Perspectives on Rural Transformations. Assen: Van Gorcum: pp1-20.

Omiti, J. and Omosa, M. (2002). The Impact of HIV/AIDS on Rural Livelihoods: A Desk Review. Ministry of Agriculture and Rural Development, Kenya.

Omosa, M. (1998). *Re-Conceptualising Food Security: Interlocking Strategies, Unfolding Choices and Rural Livelihoods in Kenya*. Wageningen: Wageningen Agricultural University.

Omosa, M. (2002). Export Horticulture and Livelihood Strategies: A Focus on the Opportunities and Constraints Facing Smallholder Farmers in Kenya. Overseas Development Group (ODG) and Institute of Development Studies (IDS), Sussex.

Place, F. (2000). Assessment of the Impact of Agroforestry-based Soil Fertility Replenishment Interventions on the Poor in Western Kenya. Case Study 6, Research Proposal.

Place, F., Adato, M., Hebinck, P., and Omosa, M. (2003). *The Impact of Agroforestry Soil Fertility Replenishment Practices on the Poor in Western Kenya*. FCND Discussion Paper No. 160. Washington DC: International Food Policy Research Institute.

5. POVERTY MAPPING: THE CASE OF KENYA

Anthony K.M. Kilele and Godfrey K. Ndeng'e
Central Bureau of Statistics, Kenya

Introduction

Kenya, like many other developing countries, is currently refocusing its development policies towards poverty reduction. The emphasis on poverty reduction is primarily a response to the fact that, despite many efforts to improve the well-being of the poor in the past, the majority of the people still live in poverty. Therefore, finding ways to reduce poverty and inequality in Kenya is a huge challenge facing both local and national policy decision-makers. Poverty is a multi-faceted problem and its levels tend to vary considerably over space. Providing information on the spatial heterogeneity of poverty can greatly assist in tackling the challenge of identifying who the poor are, where they live, and what causes their poverty.

A principal development objective of the Government of Kenya is to generate a desired pattern of overall and broad-based income growth with special emphasis on accelerating the growth of incomes of target poor groups. However, policies intended to help the poor cannot succeed unless the government, together with other stakeholders, know where the poor are and how they are likely to respond to different growth strategies.

The recently launched poverty mapping work is the first in a series of efforts aimed at showing the spatial distribution of the poor in Kenya at various administrative levels, namely the national, regional, district, division, location and constituency levels. Prior to this research, poverty estimates were only known at the national, provincial and district levels. These earlier survey poverty estimates assumed and treated sub-district administrative areas as homogeneous. But generally, districts are not necessarily homogeneous within a province and similarly within districts, divisions and locations could be very much different. Such

aggregated level poverty estimates conceal significant variations in poverty at the lower administrative levels.

Rationale for poverty mapping

The plight of the poor has brought the issue of poverty to the fore in almost all socio-economic and political debates in the world today. The initial and early thinking by development planners was that fruits of economic growth would trickle down to the poor, but this has instead resulted in persistent and deepening levels of poverty. During the early 1970s, and up to mid 1990s, the so-called poverty and social services programmes in Kenya often missed the poor partly because of lack of a well-constructed poverty profile.

Measures to improve the quality of life by reducing poverty are therefore receiving greater attention than ever before the world over. This is demonstrated by the recent adoption of renewed poverty reduction strategies under the Poverty Reduction Strategy (PRS) process. The process presents a range of challenges, ranging from facilitating and managing effective participation, to identifying policies for pro-poor growth and establishing adequate systems for public expenditure management. The PRS processes are being built on existing national strategies, with serious attention being paid to broadening participation and sharpening poverty diagnosis and monitoring.

Before the research on poverty mapping in Kenya, poverty estimates were available only at the district level. This is because detailed data samples collected through the Welfare Monitoring Survey series were not representative at the sub-district level. This problem has partly been circumvented by applying a statistical approach that enables combination of detailed welfare information from the Welfare Monitoring Survey III with the complete geographical data coverage provided by the 1999 population and housing census.

Background of the approach

The poverty mapping research summarized in this paper is a result of a broader collaborative research effort between Central Bureau of Statistics (CBS), International Livestock Research Instiute (ILRI), and the World Bank under a broader research project started in 2001 to produce high-resolution poverty maps for Kenya, Uganda and Tanzania. The underlying methodological approach was developed at

the Development Research Group, Poverty Unit (DECRG-PO) of the World Bank.

The spatial distribution of poverty remains one of the oldest of puzzles and yet one of the most contemporary issues. The incidence of poverty in an area could be attributed to a variety of lifestyle and environmental factors, including where people live. Characteristics of these locations (including socio-demographic and environmental exposure) offer a valuable source for poverty research studies such as the determinants of poverty. Welfare and poverty always have a spatial dimension.

Traditional survey methods, which are generally costly and time-consuming, usually provide information at the regional or national level only. The utilization of small area estimate techniques developed for poverty mapping makes it possible to use small sample surveys and census population data to estimate poverty rates for small geographical areas such as division, location and sub-location. This paper attempts to present some of the results of poverty mapping focusing more on the methodology used.

The results show that there is considerable heterogeneity in poverty levels between districts in the same province, divisions in the same district, and locations in the same division. The results also pinpoint certain areas where the poor are mainly concentrated. While the results do not explain why particular areas are poorer than others, such detailed information can be linked with other socio-economic and geographic information to make it more useful in targeting the poor. Poverty maps make it easier to integrate data from various sources such as surveys, censuses and satellites and from different disciplines such as social, economic, and environmental data. Researchers can therefore use poverty maps to investigate the relationship between growth and distribution within broad areas such as the province or district. Therefore, identifying spatial patterns of poverty using maps provides new insights into the causes of poverty; for example, how much physical isolation and poor agro-ecological endowments impediments are there to escape poverty. This in turn can affect the type of interventions to consider.

The allocation of resources can be improved using poverty maps, which can assist in where and how to target anti-poverty programmes. Geographic targeting, as opposed to across the board subsidies, has been shown to be effective at maximizing the coverage of the poor while minimizing leakage to the non-poor. Research examining narrow geographic targeting at the community level can assist in the

implementation of anti-poverty programmes, for example, by promoting subsidies in poor communities and cost recovery in less poor areas.

The Bureau expects other institutions to use poverty maps to strengthen the design of poverty interventions in the country. Detailed information on the spatial distribution of the poor will greatly assist policy makers, implementers and development partners to design specific social and geographic based pro-poor policies and programmes. It is expected that with increasing attention being given to poverty targeting below the district level under the ERS/PRS process, the utilization of detailed poverty maps will provide development planners both in the government (central and local), private sector, NGOs and civil society with a powerful tool to help them achieve their targeting objectives.

Summary of major highlights

The poverty maps themselves provide information rather than answers. Below are some of the major highlights from the Volume I:

- Pockets of high poverty incidence—that is, relatively small areas with a very high proportion of the population falling below the poverty line—are not concentrated in any one region of Kenya. There are 34 districts that have at least one location with more than 70 per cent of the population living below the poverty line and a total of 248 locations (12% of the total number of locations captured in this analysis) demonstrating this unenviable statistic.
- Poverty density "hotspots"—relatively small areas with very high numbers of poor people—also occur in many areas of Kenya: 60 per cent of the rural poor are found in 35 per cent of the 422 divisions and in 31 per cent of the 2,070 locations included in this analysis. In Kenya's least-poor areas, the poverty gap is typically around 5 per cent of the poverty line; in the poorest areas, poverty gaps reach 50 per cent.
- Central Province, with roughly one million poor people, ranks as the least poor Province, with most locations having a poverty incidence of less than 40 per cent. One district, Thika, accounts for 43 per cent of the urban poor in Central Province; a second, Nyeri, accounts for another 21 per cent.
- Nairobi has 880,000 people living below the poverty line; poverty rates range from 32 per cent in Westlands to 59 per cent in Makadara

across divisions, and perhaps not surprisingly from 8 per cent in Nairobi West to 77 per cent in Makongeni across locations.

- Coast Province has a rural poor population of roughly 909,000 people. Two-thirds of the rural poor are found in two districts—Kilifi and Kwale. In the impoverished district of Kilifi, there is a high depth as well as incidence of poverty; three-quarters of the population falls below the poverty line in 24 out of 34 locations and the location-level poverty gap ranges from 27 to 44 per cent.
- Of the 2.5 million rural poor in Eastern Province, 64 per cent (1.6 million people) live in four districts: Kitui, Machakos, Makueni and Meru North (Eastern Province has 13 districts).
- With a rural poor population of 2.4 million, Nyanza Province has very high poverty rates across most divisions and locations. Poverty gaps are also very high: South Asembo Location in Bondo District, for example, has a poverty gap of 34 per cent, meaning that the average adult below the poverty line would require an additional Ksh 421 per month to get out of poverty.
- Rift Valley has the largest population of Kenya's seven provinces. The estimated number of rural poor from this analysis is 2.7 million, plus 450,000 urban poor. Several of the Rift Valley's 18 districts, with relatively low poverty according to district-level welfare estimates, demonstrate huge spatial variability. Magadi Division is the poorest in Kajiado District, with 57 per cent of the population living in poverty. But even within Ngong Division, its nine locations have rural poverty rates ranging from 11 to 64 per cent.
- Western Province, with an estimated 1.8 million poor people, is fairly uniformly and deeply poor. There are no divisions or locations with poverty incidence point estimates of less than 60 per cent and poverty gaps are uniformly high, typically over 35 per cent.

Overview of the methodology

The main idea behind the methodology is to apply a regression analysis technique to data from the 1997 Welfare Monitoring Survey to obtain parameter estimates related to household expenditures and associated explanatory variables such as a number of socio-economic variables like household size, education levels, housing characteristics, and access to basic services. While the census does not contain all household expenditure data, it does contain these socio-economic variables. Therefore, we can statistically infer census household expenditures by

applying the WMS III based estimated relationship together with comparable socio-economic variables from the 1999 population census. This in turn allows for estimation of poverty statistics at the sub-district level(s) such as administrative divisions and locations.[1]

The poverty mapping analysis is based upon a statistical technique,[2] sometimes referred to as *small area estimation*, that combines household welfare survey and census data (both collected at approximately the same time) to estimate welfare or other indicators for disaggregated geographic units such as communities. This method is elaborated fully in Hentschel *et al*., 2000 and Elbers *et al*., 2002, and is briefly summarized here.

The first step of the analysis involves estimating a regression model of log per capita expenditure using the survey data, employing a set of explanatory variables that are common to both the survey (i.e., WMS III) and the census. Next, parameter estimates from that regression are used to predict log per capita expenditure for every household in the census. Finally, "welfare indicators" are constructed for geographically defined sub-groups of the population using these predictions.[3]

The approach is simplified by breaking it down into three stages. The first stage analysis deals with the survey data and the second stage analysis concerns the census data. In addition, there is a "zero stage" associated with defining and selecting the set of comparable variables common to both survey and census before the 'real' analysis can begin.

Zero stage

In the zero stage, variables within the census and welfare monitoring surveys are examined in great detail. The objective of this stage is to determine whether the variables are statistically similarly distributed over households in the population census and in the household sample survey. For example, there are questions in both the population census and in the Welfare Monitoring Survey about household size, level of

[1] For details of the methodology refer to the CBS report, see Government of Kenya (2003).
[2] J. Hentschel et al., 2000.
[3] We use the term "welfare indicator" to refer to any function of the distribution of expenditure.

Box 5.1: Variables created from questions regarding source of water and sanitation

Category	Survey question	Census question	Comparable variable
Water questions	(a) What is the main source of drinking water during the DRY season? (b) What is the main source of drinking water during the RAINY season (The two had the same options)	Main source of water	Five new variables based on source of water were constructed
Response categories	1.Piped into dwelling or compound 2.Public outdoor tap or borehole 3.Protected well, rainwater 4.Unprotected well, rainwater 5.River, lake, pond 6.Vendor, truck 7.Other From Survey wtriv=(5) wtwel=(3, 4) wtbor=(2) wtpip=(1) wtgod=(1, 2)	1.Pond 2.Dam 3.Lake 4.Stream/river 5.Spring 6.Well 7.Borehole 8.Piped 9. Jabias/tanks 10.Other From Census wtriv=(1, 2, 3, 4) wtwel=(5, 6) wtbor=(7) wtpip=(8) wtgod=(7, 8)	wtriv wtwel wtbor wtpip wtgod

education of the household head, and type of housing. However, the exact questions and manner in which the answers are recorded differ in some cases (e.g. the exact number of years of schooling for the household head may be asked and recorded in the survey, while whether they have an education at a primary, secondary or higher level is what is recorded in the census). In many cases, there are also discrepancies between identically defined variables due to regional variation in interpretation, rendering certain variables comparable in some provinces and not in others (specific examples are given in Box 1).

For example, during the 1997 WMS III, respondents were asked to state their main source of water during the *dry* and the *rainy* season,

while in the 1999 census respondents were asked what their dominant source of water was (Box 5.1). The first challenge in constructing comparable water source variables therefore arose from the different ways in which the question was asked. The survey had two questions on water while census had only one. It was necessary to establish which of the two survey questions (*rainy* or *dry*) was more comparable to the census question. The census was conducted in the month of August, when many parts of the country are dry, while the survey was undertaken from March-July, a time when large parts of the country are generally wet. It was then established that the *dry* season prevailed for the longest time in a year in majority of the regions. Therefore, the survey question on source of water during the dry season was then equated to the census question on main source of water because for the majority of the year, many parts of Kenya experience dry weather conditions.[4]

The second challenge in designing comparable variables in this example arose due to the lack of similarity in the design of the pre-coded response categories in the survey and census questionnaires. The response categories were differently coded as shown in Box 1. A close look at the response categories in the survey indicated that public outdoor tap water and borehole water together formed one response category, implying that borehole water in the survey could not be compared with that of the census. Further, the category of water from the well in the census could not be properly matched with that of water well in the survey because in the survey, well water is represented by two categories (protected and unprotected well plus rainwater). However, five water-related variables were created as shown in Box 1.

The set of common variables was initially identified by systematically comparing the questionnaires (and using the interviewer manuals) of the census and survey. Four main qualitative criteria were used: (a) Are the questions and answers identically worded? (b) Are the criteria pertaining to the questions and answers identical (e.g. employment questions are asked of people 10 years and older in both data sets)? (c) Are the answer options identical? (d) Are the interviewer instructions pertaining to the questions identical? In some cases, common variables were constructed by combining information from several questions. In those cases, the criteria were critical towards determining how the variables could be constructed.

---

[4] Obviously this is not as true for areas such as the coastal belt and the Lake Region and a few highland areas where the *dry* season might not exactly correspond to the non-long rainy season.

The next step was to investigate whether these common variables were statistically similarly distributed over households in the population and those sampled by the survey. This assessment was based on the following statistics for each variable obtained from both the survey and the census for each stratum: (i) the mean, and (ii) the standard error. First, the census mean for a particular variable was tested to see if it lay within the 95 per cent confidence interval around the household survey mean for the same variable. Second, for dummy variables, means were checked to ensure they were not smaller than 3 per cent and not larger than 97 per cent, so that the variables constructed contain some variation across households.[5]

Harmonizing sampling frame differences

The 1997 Welfare Monitoring Survey (i.e. WMS III) was designed to be representative at the district level; it was based on a frame that was designed using the 1989 census. As of 1999, more districts had been created and the clusters used in the survey in 1997 no longer belonged to the same districts, divisions or locations. This problem was compounded by the fact that the 1997 survey had no identifiers at the division, location and sub-location level. Therefore, an effort was made by the research team to rematch the clusters by identifying their current districts, divisions, locations and sub-locations. In addition, the WMS survey had only collected data by rural or urban strata, while the census had two additional categories: peri-urban, and forests or national parks. A comparison of the census means indicated that the peri-urban areas were much more like rural areas than urban, and therefore they were merged with rural areas in the analysis.

First stage

The first stage estimation involves modelling per capita household expenditure at the lowest geographic level for which the survey is representative. In Kenya, this is at the district level, broken down into urban and rural sectors. But due to small sample sizes at the district level, models were run only at the provincial level. The first stage begins with an association model of per capita household expenditure for a household h in location c, where the explanatory variables are a set of observable characteristics:

[5] Such variables generate observations with high leverage in the first stage regressions, such as being the only household sampled in a stratum to have access to electricity.

(1) $\ln y_{ch} = E[ln\ y_{ch}|x_{ch}] + u_{ch}.$

The locations correspond to the survey clusters as they are defined in a typical two-stage sampling scheme. These observable characteristics must be found as variables in both the survey and the census or in a tertiary data source that can be linked to both datasets.[6]

Using a linear approximation to the conditional expectation, we model the household's logarithmic per capita expenditure as

(2) $\ln y_{ch} = x'_{ch}\beta + u_{ch}$

The vector of disturbances, $\boldsymbol{u}$, is distributed $F(0, \sum)$. The model in (2) is estimated by Generalized Least Squares using the household survey data. In order to estimate the GLS model, we first produce an estimate of $\sum$, the associated error variance-covariance matrix. We model individual disturbances as,

(3) $u_{ch} = \eta_c + \varepsilon_{ch}$

where η_c is a location component and ε_{ch} is a household component. This error structure allows for both spatial autocorrelation (i.e. a "location effect" for households in the same area), and heteroskedasticity in the household component of the disturbance. The two components are independent of one another and uncorrelated with observable characteristics.

In order to estimate $\sum$, we proceed as follows: The model in (2) is first estimated by simple OLS, weighted with the survey sampling weights. The residuals from this regression serve as estimates of overall disturbances, given by $\hat{u}_{ch}$. We decompose these into uncorrelated household and location components:

(4) $\hat{u}_{ch} = \hat{\eta}_c + e_{ch}$.

The estimated location components, given by $\hat{\eta}_c$, are the within-cluster means of the overall residuals. The household component estimates, e_{ch} are the overall residuals net of location components. We allow for heteroskedasticity in the household component, modelling e^2_{ch} using a selection of variables that best explain its variation. We choose variables, $\mathbf{z}ch$, that best explain variation in e^2_{ch} out of all potential explanatory variables, their squares and interactions.

---

[6] The explanatory variables are observed values and therefore need to have the same definitions and the same degree of accuracy across data sources. Note that these variables need not be exogenous.

For the main regression, given by equation (2), a stepwise regression procedure in SAS was used to select a subset of variables from the set of "comparable" variables, which provided the best explanatory power for log per capita expenditure. All household survey variables that were significant at the 5 per cent level were selected for the regression. The details will be contained in a forthcoming technical working paper documenting the actual details and procedures.[7]

The regression models for the urban areas are more successful in explaining the variation in household expenditures than those for the rural areas. The adjusted R^2 ranges from .32 to .49 urban areas and .31 to .49 in rural areas. The explanatory power is highest in Nairobi.[8] Only Coast Province had over .40 R^2, the rest of the rural areas had an R^2 of less than .36.

In general, household size, education of household members, sex and the marital status of the household head, and some variables concerning housing characteristics (such as floor and wall materials) and access to services (such as principal source of energy and water) are key variables chosen in most regressions. We note that, on average, household size and head of household being female have a negative correlation with per capita household expenditure. Education has positive association with household expenditures. Walls of brick and cement floors in main rooms, cooking with electricity, roof of iron and connection to main sewer are associated with increased expenditures in urban areas. Lighting with kerosene, cooking with wood, and using well water has a negative association with expenditures. There are also few parameter estimates, the signs of which depend on region or whether the model is for rural or urban areas; for example, roofing with iron in urban areas is negatively associated with expenditures in some regions and positive in others. We remind the readers here that our regressions are association models, and therefore the parameter estimates of the independent variables cannot be interpreted as causal effects.

---

[7] "Poverty Mapping in Kenya", Technical Paper (CBS/World Bank, forthcoming).

[8] In comparison, the adjusted R^2 ranges from 0.27 to 0.55 in Mozambique, 0.45 to 0.77 in Ecuador, and from 0.445 to 0.638 in urban areas and 0.239 to 0.460 in rural areas in Madagascar (Mistiaen *et al.*, 2002).

Second stage

The second stage has been automated using estimates produced in stage zero and one. In the second stage analysis we combine the estimated first stage parameters with the observable characteristics of each household in the census to generate predicted log expenditures and simulated disturbances. We conduct a series of simulations, where for each simulation r we draw a set of first stage parameters from their corresponding distributions estimated in the first stage. We simulate a value of expenditure for each household, y^r_{ch}, based on both predicted log expenditure, $x'_{ch}\beta^r$, and the disturbance terms:

$$(7) \qquad y^r_{ch} = \exp(x'_{ch}\beta^r + \eta^r_c + \varepsilon^r_{ch})$$

Finally, the full set of simulated per capita expenditures, y^r_{ch}, are used to calculate estimates of the welfare measures for each spatial sub-group.

We repeat this procedure 100 times drawing a new $(\alpha^r, \beta^r, \sigma^2_\eta)^r$ and disturbance terms for each simulation. For each subgroup, we take the mean and standard deviation of each welfare measure over all 100 simulations. For any given location, these means constitute our point estimates of the welfare measure, while the standard deviations are the standard errors of these estimates.

There are two principal sources of error in the welfare measure estimates produced by this method.[9] The first component, referred to as *model error* in Elbers *et al*., (2002), is due to the fact that the parameters from the first-stage model in equation (2) are estimated. The second component, termed *idiosyncratic error*, is associated with the disturbance term in the same model, which implies that households' actual expenditures deviate from their expected values. While population size in a location does not affect the model error, the idiosyncratic error increases as the number of households in a target sub-group decreases.

Conclusion and way forward

The poverty mapping estimates and their corresponding poverty maps do not explain why particular areas are much poorer than others or even what might be done about it. This information can, however, be

[9] A third potential source of error is associated with computation methods. Elbers *et al.* (2002) found this component to be negligible.

linked with other information to make it much more useful and powerful for addressing critical issues of targeting facing policy makers and planners. Combining location-level poverty estimates with more in-depth household and community-level data opens up opportunities for examining the relative contribution of spatial/community level factors (such as market access or agricultural potential) to relative poverty levels compared to household-level factors such as level of education or household size. Such an analysis can lead to much more specific, targeted poverty policies and ideas towards new community level approaches for tackling the root causes of poverty and ultimately for designing and implementing pro-poor development strategies that are both effective and inclusive.

The Central Bureau of Statistics is currently working on a Volume II. The volume will attempt to present some of the results already produced in volume one this time by constituencies. There will be in addition some socio-economic profiles by constituency using all other variables included in the population and housing census data. Our hope is that the emerging results will stimulate and ignite the debates on why poor people are found where they are and also provide the foundation for more detailed analyses.

No doubt the information on the spatial distribution of living standards provided by these poverty maps is crucial to both Kenyan policy makers and researchers. "Poverty mapping—the spatial representation and analysis of indicators of human well-being and poverty—is becoming an increasingly important instrument for investigating and discussing social, economic and environmental problems in many countries of the world" (Henninger and Snel, 2002).

The Henninger and Snel review of the uses and impacts of poverty maps in other parts of the world concludes that:

- Poverty maps have become important tools in *implementing poverty reduction programmes*, including international efforts (such as the World Bank-initiated poverty reduction strategies for Highly Indebted Poor Countries) as well as purely national initiatives. One such example comes from Nicaragua, whose poverty reduction strategy relies heavily on poverty maps to allocate US$ 1.1 billion in capital spending over five years.
- Poverty maps help *improve targeting of public expenditures* by identifying where the neediest populations are located. For instance, in Guatemala, poverty mapping is being used to restructure the National Public Investment System to improve geographic targeting

of hundreds of millions of dollars (US$576 million in fiscal year 2002) of annual expenditure.

- *Emergency response and food aid programmes* are beginning to make use of newer, more data-intensive mapping methods. In South Africa, information from a poverty mapping initiative was combined with data on sanitation and safe water supplies to create a geo-referenced strategy for containing a cholera outbreak in KwaZulu Natal Province in early 2001. Implementation of this strategy effectively contained the disease in three months, with one of the lowest fatality rates (0.22%) ever recorded. Cambodian poverty maps are being used to identify the poorest communities for distribution of US$ 50 million in a World Food Programme food aid, especially "food for work" interventions.
- In several countries, high-resolution poverty maps are contributing to *state- and local-level decision-making*. Brazil's largest state, Minas Gerais, is using poverty maps to redistribute state-wide tax revenues totalling US$ 1 billion annually towards poorer municipalities that are making an effort to invest in health, education, sanitation and environmental conservation.
- In the cases studied, the production and distribution of poverty maps resulted in *increased transparency of public decision-making*, by raising awareness of poverty, igniting policy debates at local and national levels, and encouraging broader civil society participation in decision-making. One such instance was reported from Panama, where officials of the Social Investment Fund indicated that the use of poverty maps in decision-making helped them resist pressure from politicians to alter funding allocations once they had been made (Henninger and Snel, 2002).

High-resolution poverty maps also provide important tools for researchers interested in poverty, allowing them to investigate the relationship between growth and distribution inside a country and the spatial factors behind differential poverty levels. In particular, poverty mapping provides a means for integrating biophysical/environmental information with socio-economic indicators to provide a more systematic and analytical picture of human well-being and equity. For example, such high resolution data for a welfare measure will allow an investigation of the links between geographic characteristics and poverty; an analysis that needs to be done at a scale that provides enough variation in critical spatial variables such as temperature, altitude, access to markets and ethnicity, among others, to examine the importance of these factors in determining land-use patterns and

relative poverty levels. Therefore, if such "mapable" geographic and socio-economic factors are in fact largely determining the degree of expenditure/welfare levels, this might not show up in the results of typical household-level studies that are confined to a small area—simply due to lack of variation.

At the same time, household-level census or survey data that can be aggregated to the same broader level of observation (e.g. a location) can be used to capture "traditional" determinants of poverty, such as level of education. The premise behind a spatial analytical approach, therefore, is that apart from traditional household-level factors, spatial factors are likely to be crucial in understanding levels of poverty at the broader landscape or community-level. Using GIS, it will be possible to examine climatic characteristics (both level and variability for rainfall), as well as soil and slopes, allowing a more in-depth examination of the linkages between poverty and environmental degradation than was previously possible.

References

Elbers, C., Lanjouw, J.O. and Lanjouw, P. (2002. "Micro-Level Estimation of Poverty and Inequality", *Econometrica* (forthcoming).

Henninger, N. and Snel, M. (2002). Where are the Poor? Experiences with the Development and Use of Poverty Maps. World Resources Institute (WRI)and UNEP/GRID-Arendal. Washington DC: WRI.

Hentschel, J., Lanjouw, J.O., Lanjouw, P. and Poggi, J. (2000). "Combining Census and Survey Data to Trace the Spatial Dimensions of Poverty: A Case Study of Ecuador", *The World Bank Economic Review* 14(1): pp147-65.

Government of Kenya (2003). "Geographic Dimensions of Well-being in Kenya: Where are the Poor: From Districts to Locations".

Mistiaen, J., et al. (2002). Putting Welfare on the Map in Madagascar, In: Africa Region Working Paper Series 34, The World Bank.

6. SOCIAL ASPECTS OF DYNAMIC POVERTY TRAPS: CASES FROM VIHIGA, BARINGO AND MARSABIT DISTRICTS, KENYA

Nelson Mango, Josephat Cheng'ole, Gatarwa Kariuki and Wesley Ongadi

Introduction

The biggest challenge facing Kenya today is high levels of poverty among its citizens. Poverty has been persistent in Kenya despite government's effort to combat it through national development programmes. Results from studies show that the poverty situation has deteriorated over time and especially in the 1990s. The deterioration in living standards in the country is reflected in the rising number of people without food, and inadequate access to basic necessities such as education, safe water, sanitation, and health facilities (Manda *et al*., 2001). Most of the poor live in the rural areas and they include subsistence farmers and pastoralists.

Kenya's current Poverty Reduction Strategy Paper (PRSP) perceives poverty as inadequacy of incomes and deprivation of basic needs and rights, and lack of access to productive assets, social infrastructure and markets. The minimum level of consumption at which basic needs are assumed to be satisfied is known as the *poverty line* (Manda *et al*., 2001). In monetary terms, absolute poverty is pegged at Ksh 1,239.00 per person per month in the rural areas and Ksh 2,648.00 per person per month for the urban areas (Government of Kenya, 1997).

This paper is an effort to provide the sociological dimension of poverty dynamics in some three sites in Kenya. In these sites, quantitative[1] surveys preceded the qualitative work. Although economic factors are certainly significant in explaining the poverty levels among rural agricultural households, they fail to account for all causes of household poverty and why some households become and remain poor while others come out of poverty yet they seem to operate within the same economic environment. Sociological factors are also significant and, for some groups like pastoral communities, may even outweigh economic considerations. Furthermore, in many cases, they establish the context in which the economic factors become significant. Clearly, the economic environment, though necessary, is not sufficient to account for poverty levels within rural households.

In order to understand these dynamics, the study focused on the following three sites: Madzuu in Vihiga District, Dirib Gombo in Marsabit District and Ng'ambo in Baringo District. In these sites, the study acts as a complement to an earlier survey analyses that focused on the quantitative factors determining poverty traps among rural households.

The main objectives of this social component of the study were:

(1) To characterize, identify and analyze dynamic poverty processes using social and historical methods, with particular attention being given to the effects of shocks on welfare dynamics and the relationship between natural resources management practices, changes in natural capital and human welfare dynamics.

(2) To identify existing and potential strategies for households to escape poverty traps and to understand the constraints in employing them.

Following a brief overview of the research methods and study sites, the paper gives an account of household level factors affecting welfare change in the research areas. This is determined by exploring in detail the poverty dynamics at household level by looking at strategies that were deployed by some households that have managed

[1] The quantitative and qualitative study is part of a collaborative project that involves Cornell University, World Agroforestry Centre (ICRAF), Kenya Agricultural Research Institute (KARI), and University of Nairobi (UoN), institutions that have come together to undertake research on rural poverty traps in East Africa. Broadening Access and Strengthening of Input Systems (BASIS) and Collaborative Research Support Program (CRSP) of USAID are funding the study. The work is also being supported by supplementary grants from IDRC (Canada) and the Rockefeller Foundation.

to move out of poverty 10 to 20 years ago and reasons for descent into poverty by certain households over the same period. Strategies for remaining non-poor and reasons for remaining poor by some households over the same period are also determined. The last part of the paper tries to understand the links between natural resource management and poverty at household level.

Research methods

The overall approach to the research was qualitative. In all the three sites, the study began with a one-day farmers' workshop. These workshops acted as a forum for giving feedback on results of the quantitative work that had been carried out in the sites, while at the same time introducing the qualitative study. During the workshops, community-level focus group discussion was the main method that was used to gather information from farmers. Sub-group discussions and presentation of various topics closely related to the research theme in plenary sessions were used to solicit farmers' views on a wide range of important concepts related to poverty processes. The workshops sought to understand the main causes of poverty and general poverty trends in the communities living in the three sites. Further, the discussions helped identify the strategies employed to escape from poverty at the community and household levels. The community members in each of the three sites were assembled at one central place and with the use of pre-set guidelines gave data on poverty trend lines and timelines on poverty-inducing natural or artificial occurrences.

The workshops were then followed with case studies of selected individual households. Ethnographic interviewing technique was the basic methodology applied in carrying out the case studies. Through a historical analysis, household-specific histories of welfare and natural resource management dynamics were explored. Other techniques included taking count of critical events that influenced farmers' welfare, life histories of individual households and listening to farmers' narratives. The procedure used in identifying the households for the case studies borrowed heavily from the earlier quantitative work. Purposive sampling technique was used in selecting, from quantitative survey samples, households to be interviewed for the qualitative work. The households were selected using poor-non-poor matrices constructed from the quantitative panel data on per capita household income of the previous BASIS study. In each site two households were to be selected for interviewing from (i) poor- non-poor and (ii) non-poor-poor cells of the transition matrix for the site. Also to be sampled

were two households each from the poor-poor cell who (iii) enjoyed an increase in income per capita between the two survey periods, (iv) experienced no significant change in income per capita between the two survey periods, and (v) who suffered decrease in income per capita between the two survey periods. This was to be repeated on the non-poor-nonpoor cell, covering two households each who (vi) experienced an increase in income per capita between the two survey periods, (vii) suffered a decrease in income per capita between the two survey periods, and (viii) experienced no significant change in income per capita between the two survey periods. Based on these categories, a total of 16 households were to be selected for interviewing in each of the three sites.

However, in our sampling, only Madzuu site in Vihiga District met the above set sampling criteria fully. In Ng'ambo site, Baringo District, non-poor-non-poor (increase) and non-poor-non-poor (decrease) sub-categories had only one household each. There were no cases for non-poor-non-poor (no significant change) sub-category. There were three cases in poor-poor (decrease) category and therefore the sample size yielded only 11 households. In this last category the three cases can be explained by the fact that during the selection, one case was not falling into this category, but after listening to the narrative and during the analysis, the case fell into this category. Dirib Gombo site in Marsabit District yielded 12 households because there were no households in poor–non-poor category, and there was only one household each in non-poor-non-poor (decrease), and poor-poor (no significant change) sub-categories.

The last phase of the study involved talking to key informants in order to corroborate and expand upon the key issues and details that emerged from the focus group and household interviews. Ethnographic interviewing technique was used to source information from the key informants. Other study techniques used to solicit information from key informants included recording oral histories that they gave, and reading of text to them based on our findings from case studies.

The study sites

The study was carried out in Vihiga District (Western Province), Baringo District (Rift Valley Province) and Marsabit District (Eastern Province). Vihiga District lies in the highlands of western Kenya, which is part of the Lake Victoria basin. The district is predominantly a high potential agricultural area covering approximately 563km^2. The annual rainfall range for the district is between 1800 mm and 2000 mm, its distribution

is bimodal, and the amount is considered adequate to support a range of crop and livestock species suitable for the area. Population growth rates are high despite a widespread incidence of HIV/AIDS, resulting in an extremely high population density of 800 to 1100 people per square kilometre (Kenya, 2001a). The average farm size has been declining steadily and is now 0.5 ha, and declining soil fertility is a widespread problem (Amudavi, 2002, Mango, 2002). A large proportion of the labor force is engaged in agricultural and livestock production activities. Poverty rates are among the highest in Kenya; in 1994, 53 per cent of the population fell below the rural poverty line, increasing to 58 per cent in 1999 (Government of Kenya, 1998, 2003a). HIV prevalence rates remain high, up from 12 per cent in 1994 to 25 per cent in 2000 (Government of Kenya, 2001b). Food insecurity is high with some areas experiencing up to 9 months of food deficiency. Madzuu, the research site, falls in Mungoma Location of Vihiga Division.

The second study site is located in Baringo District (Rift Valley Province)—Ng'ambo Location in central Baringo. Sampled households are spread within three villages—Ng'ambo, Loropil and Sintaan. The region represents the floor of the part of the Rift Valley lying between $36^{0}00'$, $36^{0}15'$ E and $0^{0}20'$, $0^{0}30'$N. The Ilchamus ethnic groups, who were originally pastoralists but are now embracing agro-pastoralism, inhabit the area. The community has kept and relied on livestock, whose mix has changed over a period of time. Initially, zebu cattle were the major livestock kept. There has been overgrazing and a change in vegetation cover from grassland towards bushland, and goats and sheep are the dominant livestock kept.

The area around Ng'ambo has been experiencing a cycle of droughts over the years. Very severe droughts tend to come every 10 to 15 years and small droughts just every three to four years. On average, the area receives a monthly rainfall within the 50-55 mm bracket. Available records indicate that the area receives heavy rainfall on an average 40-45 days a year. The population density is 76 persons/km^2, representing one of the most densely populated areas of Marigat Division. Besides livestock keeping, irrigated crop production can be regarded as the most important supplement livelihood, together with beekeeping, fishing and craft making.

Marsabit District in which the third study site was located, is one of the 13 districts that make up Eastern Province and covers a total area of 61,296km^2, which is about 11 per cent of the total area of Kenya (Kenya, 2001c). It is the second largest district in Kenya after Turkana District, and is located between latitudes $02^{0}45'$ and $04^{0}27'$ North and longitudes $37^{0}51'$ and $39^{0}21'$ East at an average altitude of 300-900m

above sea level over most parts; Mt. Kulal is the highest point at 2355m above sea level. Dirib Gombo[2], the research site, is one of the 28 locations that make up Marsabit District. It is found within Gadamoji Division and lies on the south-eastern windward slopes of Marsabit Mountain.

The terrain is of gently rolling slopes with several dry riverbeds that drain water during the rain season. It covers an area of 98.5km^2 with a population of 3,718. The population density for this area is 38 per km^2. Boran and Burji are the two main ethnic communities settled in Dirib Gombo. The Burji are predominantly farmers and keep oxen primarily for ploughing, while the Boran keep more livestock. The climate is characterized by low rainfall, which falls in two seasons, April/May and November/December, and high levels of evapotranspiration.

More than 97 per cent of the district is rangeland. Livestock keeping is the major economic activity with pastoralism being the dominant mode of production. Crop farming is practised on less than 3 per cent of the district's land (about 3,512ha).

Household level factors affecting welfare change

This section of the paper explores the social aspects of dynamic poverty traps through case studies of individual households in the research sites. Analytically, the section determines the strategies that have been deployed by certain households to escape from poverty and factors that have led to descent into poverty. Tallied to this are reasons for avoiding descent into poverty and remaining in poverty. In this section, an attempt is made to create a link between natural resources management and poverty dynamics.

Reasons for escape from poverty

In Madzuu, Vihiga District, acquiring good education and securing a well-paying job either in public or private sector were very important factors for people who were poor ten to twenty years ago, and are now not poor (i.e. they have managed to escape from poverty). Apart from education and getting employment, other strategies that have been used to move out of poverty by the Maragoli (of Vihiga District) include

[2] *Dirib* is Boran word for valley while *gombo* is a traditional salt licking container for animals carved out from a tree trunk. *Dirib Gombo* therefore means 'shaped like a valley'.

diversification in on-farm and off-farm enterprises such as buying more land to diversify in crop production, investing in dairy farming and other livestock, and owning other businesses such as shop-keeping. Earnings from such businesses have helped in stabilizing households and cushioning them from slipping into poverty. That education has been an important strategy for escaping poverty can be illustrated by the case of Okeny Lubete in Box 1 below.

The case of Okeny Lubete also illustrates how acquiring education can be a means to other strategies of escaping poverty. After acquiring his education, he was lucky to land a job as a primary school teacher. He invests part of his salary in a savings and credit cooperative society. This enables him to get a loan, which he uses to diversify his income earning activities. Ability to establish a wider network was also found to be a strategy for escaping poverty.

There are households that have managed to come out of poverty by establishing wider social networks, some of which go beyond the village. Social networks are vital as they act as linkages for acquiring certain commodities that one might not have; this includes securing employment. The case of Harrison Agade, a farmer in Vihiga, helps to illustrate this (Box 6.1). Agade did not go past primary education. However, through his own networks, he managed to escape poverty by securing employment in various companies. By establishing social networks, hard work, discipline and willingness to change professions, he moved from being a mere casual worker in various companies to a driver with a commercial bank that was well paying. He acknowledged that his life improved when he was employed in the bank. From his salary in the bank, he managed to educate his children, buy more land and venture into dairy farming. He also networked with his area Member of Parliament who secured employment for his son at the Central Bank of Kenya as an office messenger.

Getting employed in the government or private sector was found to be an important strategy for moving out of poverty among the Ilchamus of Baringo District. Either one had to go for formal employment himself or invest on the education of his/her children who, if lucky, can secure employment in the private or public sector. By sending remittances back home, they bail their parents out of poverty. (see the case of Alice Lenasieku in Box 6.2).

Other strategies that were used to escape poverty by some individuals included engaging in crop production at the irrigation scheme (see case study above). Income from crop harvest is then ploughed in restocking after drought or floods. Even though the social

Box 6.1: Poor-non-poor cases

Okeny Lubete was born in 1955 in Vihiga District. After his secondary education, he trained as a primary school teacher. He is married to a fellow primary school teacher and they have six children. He considered himself poor twenty years ago because he was coming from a poor household. The poverty in his parents' household could be attributed to family feud on land, and he had to flee from their home to Kitale, in the Rift Valley Province, where his father worked for a white farmer who paid him Ksh 3.00 per month. This was too low to secure his education. When they returned from Kitale, they found that his father's brothers had grabbed all the family land; they had nothing left other than the house his father had built in his grandfather's compound. Okeny formed a work group with other youth in the village through which they offered their labor to other village members. This way he secured money to go through primary and secondary schools. After his secondary education, he joined a primary teacher's training college and was employed as a primary school teacher upon graduation. He then got married to a fellow primary school teacher and they have got six children. He managed to escape from poverty through education. He states that:

"Compared to twenty years ago I am better off."

Okeny and his wife are members of a Teachers Savings and Credit Cooperative Society through which they acquire loans. They have used the loans to buy a two-acre piece of land, build a permanent house, and they have bought two crossbreed dairy cattle.

Harrison Otari Agade was born in 1949, in Kisienya Sub-location. He went to school up to Standard Eight and dropped out after the death of his father. In early 1970s to late 1980s he was very poor; he inherited only one acre piece of land from his father. Towards 1990, he decided to link up with his uncle who was working in Naivasha. His uncle helped him to secure a job at Pana Foods Company as a loader. In 1985 he left Pana Foods Company and joined Kenya Breweries Company, packaging department still as a loader. Agade's cousin had a petrol station in Kisumu and he asked Agade to manage it on his behalf. "My cousin understood my problems and thought it wise to help me. The petrol station job was a turning point in my life because while at the garage, I learnt how to drive and got driving licence", he said. Through his own networks with friends he managed to get a driving job with Cooperative Bank, at the Kisumu branch. According to him, this was a well-paying job that made him leave working at his cousin's petrol station. He worked in the bank for eleven years. "In the bank my life was better off because I was being paid well and I also received many allowances", he added. It is during this time (while he was working with the bank) that he managed to educate his children, build a small permanent house, and buy two crossbreed dairy cattle. He also used to lease land from neighbors and plant maize, as his family had grown larger. His eldest son is an office messenger at the Central Bank of Kenya and he helps him in paying school fees.

Though he had low education, good rapport with friends and relatives helped him move out of poverty. Apart from crop farming, he also owns two crossbreed dairy cattle, which gives him milk on a daily basis that he sells to villagers. He earns Ksh 140.00 from milk sale everyday.

Box 6.2: Poor-non-poor cases

Alice is a widow living in Sintaan Village of Ng'ambo Location. By 1984 she had sunk to the lowest levels of poverty having lost her livestock to Caprine Bovine Pleuro-Pneumonia (CBPP) and drought. This was the time she remembers going to stay with her parents until conditions improved and stabilized. By the time the 1999/2000 drought came, she had rebuilt her herd of livestock through remittances from her son who was now working as a primary school teacher. Though the drought of 1999/2000 claimed some of her livestock, she managed to pull through as the remittances cushioned her household from starvation. She also got some funds from Letboi Women Group, which she is a member. In addition, relief food was available and the family did not go without food for even a single day.

After the drought of 1999/2000, Alice decided to start a business of selling vegetables and fruits to boost her income. She started buying and selling vegetables within Longewan area, before she was given a tender to supply vegetables to a local secondary school. This was when she began buying vegetables from the irrigation scheme where there was a larger supply. She now supplies the school with half a sack of vegetables daily and sells the rest in the open-air market at Marigat shopping centre. Things have taken an upward trend for her because in 2002, another of her sons was employed as a prison warder thereby improving the income to her household.

In their women group, they are involved in making gourds for sale, fundraising for each of the members and general farming. They have leased land from the irrigation scheme where they grow Kenya Seed Company maize collectively then share the returns. She hopes to upscale her business and therefore acquire wealth for the household. As of now, she believes life is fairer than it was in 2002. "I have been poor, but I am no longer poor", she said.

Paul Lengusoranga is a man who has known the faces of poverty and wealth through the years. He was born in a poor family in Ng'ambo and therefore had to struggle for survival from an early age. In the 1970s, while a bachelor and staying with the mother (father passed away earlier on in life), Paul was out daily doing casual menial jobs. He used to work in the irrigation scheme for very little wages. He only managed to raise enough money to buy livestock when he got short stints at KARI-Perkerra and KETRI offices in Marigat. By the time he was marrying his first wife in the early 1980s, he had a few livestock to himself. Later on he began dryland farming and farming under irrigation. By 1990, Paul's household was considered among the wealthy households in the community. However, he had no child (wife was barren). The drought of 1991 forced him into poverty once again, as he was left with very few animals. He was lucky to find help from one of his *Ilparsaina* clan members who lent him a cow to milk. He finally managed to build a herd and flock from the animals and by mid-1990s, his household was wealthy again. He took a second wife. He is trying his hand at farming.

Paul owns land under irrigation and hires more. He plants Kenya Seed Company maize and some horticultural crops (melons, tomatoes and onions). The income from the 2003 harvest was used to purchase three head of cattle. The remaining goats have multiplied and together with a few purchases had a total of 30 by the close of November 2003.

system of helping one another is now breaking down, some individuals still get assisted to come out of poverty through donations and gifts from their clan members. The case of Paul Lengusoranga helps to illustrate this.

Breeding of the stock remaining after drought was also mentioned as a strategy of coming out of poverty. Other strategies of escaping from poverty in this site include: engaging in small or large-scale businesses, engaging in brewing local beer (though illegal and outlawed), belonging to an active women's group, and collective farming at the irrigation scheme (e.g. collective seed growing for the Kenya Seed Company) as is the case with Alice Lenasieku.

In Marsabit site there was no case of a household that successfully escaped from poverty.

Reasons for remaining non-poor

Diversification in income generating enterprises both on-farm and off-farm was found to be the main reasons for remaining non-poor in all the three sites. Households that have remained non-poor started their lives in a good note by first acquiring education that landed them in well-paying jobs. They also came from stable families with well-to-do parents. For instance Enane Lukose, a farmer from Vihiga District stated that:

"My father was a church minister. He was keen on my education and supported me up to college level. Now I am a retired school teacher and I still enjoy the benefits of my education through pension."

For individuals who are still in employment, they use their salaries to diversify in other income sources while retirees are covered by their pension. In households where the household head and his spouse are both in formal employment, they are better placed to remain non-poor as they are capable of combining their income to cushion themselves from falling into poverty. These households still use their savings to invest in other income-generating enterprises. They take loans from their respective savings and credit societies to initiate income-generating activities and also to educate their children. When their children complete schools and are lucky to secure employment, they send remittances back home to support their parents. In Vihiga District, some of the farm enterprises that households that remained non-poor diversify into include growing of coffee and tea, buying land in a settlement scheme in Lugari District, growing hybrid maize in large scale, and keeping high yielding crossbreed dairy cattle (Box 6.3). Zero-

grazing dairy cattle farming is considered to be a very capital-intensive adventure and therefore not an enterprise for the poor. However, it gives high returns.

Other income-generating activities off-farm that have made these households not to slip into poverty include engaging in businesses such as shopkeeping, plumbing, carpentry, and owning rental houses.

Among the pastoral communities such as the Ilchamus of Baringo District and the Boran of Marsabit District, households that managed to remain non-poor are those that ventured into crop farming. In Baringo, strategies such as owning a piece of land and practising horticulture and engaging in maize seed production for the Kenya Seed

Box 6.3: Non-poor-non-poor case

Jomo Opatia is a seventy-two years old farmer from Vihiga District. His wife Winnie is sixty-seven years old. Jomo was a registrar of the High Court, while his wife Winnie was a primary school teacher. They are all retired civil servants. They had six children, two died and the remaining four are all employed. He owns a permanent house.

He said that twenty years ago he was not poor because he was already working and had bought four acres of land where he planted tea. He also inherited six acres from his father. Of the six acres of land he planted coffee on four acres. He also owns crossbreed dairy cattle, which he keeps in a zero-grazing unit. Another six acres of land, which he owns, is in the settlement scheme in Lugari District and he has settled his eldest son there.

He said that because of education, he has been able to think ahead not to fall into poverty. He performed well in secondary school and was offered a job in the civil service immediately. While he and his wife were still in the service, they joined various savings and credit cooperative societies. They severally took loans in turn to finance their children's education and other development projects in the family. He has been able to avoid poverty through diversification in various enterprises and by educating his children who are all working. He owns a commercial plot in Bukuga Market where he has constructed a bar and a restaurant, which are both operating. He encourages his children to save and invest in business and farming.

Company within the Perkerra Irrigation Scheme were some of the ways of evading poverty. Horticultural crops, which have got high market value such as peppers, cabbages, kale and onions, were being produced in the irrigation scheme. These crops are mainly exported and fetch very good market prices. Proceeds from crop farming in the irrigation scheme are used to purchase livestock, pay for children's school fees and purchase other commodities. Monica Kararayo and Joyce Lebene

represent excellent examples of farmers who have managed to escape from poverty by engaging in farming at the irrigation scheme.

Monica remembers the late 1970s and early 1980s with a spit on the ground and a curse. During this period life was a nightmare to her, as her family had no iota of wealth (livestock). She told us that it took her ten years to come out of poverty twenty years ago. Since then she has never been poor. She now owns in excess of 20 head of cattle and more than 100 small stock. According to Monica, her household is one of the wealthiest in the region. Monica narrated to us that:

"Perkerra Irrigation scheme was the saviour of my household. My family and I entered into the production of pepper, which has got high market value, 20 years ago. We also planted maize for food and onions for sale though pepper provided the bulk of our income. With income from sale of the first crop, we bought one cow and two goats. With next income from crops we bought more goats."

For Monica and Joyce, investing in children's education has increased their opportunities to get employment in the government and private sector. Their children are working and they do send remittances back home that play an important role in acquiring wealth. Though some households blamed education as a contributor to their poverty, those households with educated children were on the wealthier side.

It appears that land outside the irrigation scheme did not play a big role in increasing household wealth mainly because no serious returns could be realized due to the high rainfall variability in Ng'ambo.

Belonging to an active women's group is also another strategy of avoiding being poor. Both Monica and Joyce are members of such groups; Monica's group is also involved in seed production for Kenya Seed Company.

In Dirib Gombo, engaging in mixed farming and remaining in employment were important strategies of remaining non-poor. In all the four case studies, the individuals are in employment or are retirees or their children are in employment. They have diversified their farming activities by practising mixed farming through keeping of livestock and engaging in arable farming, which include the growing of cash crops such as tea and *miraa (khat).* Some of these households whose farms are situated near boreholes grow high value crops such as kale and tomatoes through irrigation. The boreholes are being constructed and maintained in the area by Intermediate Technology Development Group (ITDG).

Some of the households that have remained non-poor invested in their children's education and the children are now employed in government and private sectors. They send remittances back home, which their parents plough into farming and use some to stock livestock. This way they are cushioned from falling into poverty. Meso Galmagar from Dirib Gombo, for instance, told us that the government employed his eldest son as a police officer and his son normally sends to him some money, which he uses to improve on his farming.

Reasons for falling into poverty

Twenty years ago, there were individuals who were not poor in Madzuu, but can be seen today as having fallen into poverty. From our case studies, we managed to identify nine most important factors that cast households into poverty in Madzuu.

The *first* and most important factor is death of major income earner in the family. Most households whose breadwinners die for whatever reason very quickly degenerate into poverty. This is because overcoming the effects of death is very difficult because it requires a lot of money. If the deceased was the sole income earner, then it takes longer for the family to recover or they just do not recover at all and fall into absolute poverty. So many children drop out of school particularly after their parents who had been paying for their school fees have died, as is the case with Abisai Oyengo (Box 4). When Oyengo's father died, his family started experiencing problems.

The *second* factor has to do with heavy funeral expenses when a member of the family dies; families incur heavy expenses during funerals when they loose one of their own. These expenses incurred are mainly related to buying the coffin and food for taking care of mourners and church ministers who conduct the funeral ceremony. In most cases, family members use most of the assets of the deceased to meet these expenses. In Madzuu, these expenses include slaughtering of livestock to feed mourners, and selling of livestock and other assets to raise money for meeting funeral-related expenses. During funerals, there is indiscriminate harvest of trees to provide firewood that is used in cooking and lighting fire for people to warm themselves at night, therefore interfering with the natural resources. This is what Abisai Oyengo and other people undergo when they lost their family members.

The *third* factor is loss of employment from the public and private sector through retrenchments and retirement. Mr. Richard Opatia, one of our respondents in Madzuu, went for an early retirement after regular

Box 6.4: Non-poor-poor case

Abisai Oyengo was born forty-three years ago in Madzuu and is married. He has four children (two girls and two boys) from his first marriage. His second wife has no child and his first wife separated from him because she felt he is an alcoholic and irresponsible. He inherited all the two acres of his father's land, as the only brother that he had, had died. Abisai attended primary school up to class seven after which he went to Murang'a District in Central Province where he was employed as a casual worker in a coffee plantation. He came back home after continuous malaria attack. He has a semi-permanent house and no livestock. Twenty years ago he was not poor because he was depending on his father who was working in Nairobi. More so, their land was giving high maize yields (20 to 30 bags per season) because of regular and continuous application of animal manure. His father could sell surplus harvest to support him and his siblings. The father had seven cattle that produced surplus milk and manure.

Following the death of his father, mother and brother, he has been left poor as all the cattle were sold to meet their funeral and medical expenses. He is unemployed and depends on low paying casual jobs in the village. His land is unproductive because he no longer has cattle to provide manure that he can use to rejuvenate soil fertility; he cannot afford to buy fertilizer. His sister, who supports him, fell sick sometime in 2002 and has not yet recovered and can no longer provide him with farm input. He rents out one and half acres of his land and works on half an acre, which yields half a bag of maize.

disease attack. He was working for the Ministry of Agriculture as a messenger. He told us that he opted for early retirement for fear of being sacked. Today, he lives in poverty, as he does not have a proper source of income.

The *fourth* factor is poor health and health-related expenses. Households that had a very sick member tended to drift into poverty as most family resources go towards meeting their medical expenses. People with poor health can also not participate in productive activities. Their family members and have to divide their time between taking care of them and engaging in productive work.

The *fifth* factor has to do with small land holdings. Reduction in land sizes is one of the major factors that have cast some households in Madzuu into poverty. Many of the households rely on farming as a source of income. Due to population increase and cultural requirement that every son must inherit a portion of his father's land, the sizes per household have seriously reduced. Average land size per household in Madzuu is estimated at 0.5 hectares. Richard Opatia, for instance, has only a quarter of an acre piece of land yet he supports many descendants.

The *sixth* factor is unproductive land. Because households own very small land sizes which they cultivate every season, soil fertility has gone down. Over-cultivation, coupled with non-use of soil fertility replenishment practices, is the main cause of very low yields from these plots. Maize yields from these plots are so low that they hardly support farm households for three months. People have to turn to buying maize from the markets. This has increased the level of poverty in individual households. (See the case of Abisai Oyengo, Box 4.)

Low level of education is the *seventh* factor that has cast some households into poverty. Richard Opatia was not poor ten to twenty years ago because the Ministry of Agriculture employed him. However, because of his low level of education, he could only be employed in the lowest cadre where he earned a very low salary. With his poor health and increased responsibilities, he fell into poverty. Similarly, Abisai Oyengo, though he was not poor initially as he used to receive support from his parents, could only be employed as a casual worker both in a coffee plantation in Murang'a District and in his own village because he had low level of education. When his parents died, he plunged into poverty.

The *eighth* factor is high dependency. This can be as a result of having a large family or taking care of other relatives' families. Richard and Abisai have got many dependants in their households to take care of. Ten to twenty years ago they did not have such dependants.

Land conflict is the *ninth* factor that plunges households into poverty. Because of high population densities, land disputes are very rife in Madzuu. During land subdivision, a lot of conflicts arise in most families and there are many land cases pending in court. In such families, people fear making long-term investment on the pieces of plots that they work on. Richard Opatia told us that one of the things that has cast his household into poverty is a long running legal case with his brother, who altered the boundary of his farm. "I spent all my retirement benefits fighting for my land," he said.

Alcoholism and other domestic problems create instability in families. Such families are not productive and in most cases end up in poverty.

Among the pastoral communities that we studied, frequent droughts and floods are the main factors responsible for people falling into poverty. Droughts are often accompanied by both human and livestock diseases; in Ng'ambo, it only requires a one-day heavy rainfall accompanied by flash floods and most households will be in poverty.

For households that fell in poverty in this area, they mostly attribute it to the droughts of 1991,1999/2000 and 2003. A lot of money was spent in healthcare for family members. Floods often sweep away crops and livestock to Lake Baringo. In Marsabit, floods were not mentioned as a real problem as such. However, frequent droughts and unreliable rainfall were a real concern.

In Marsabit, migrants were the ones who tended to fall into poverty; those who were rich in their original homeland found themselves landless in their new homes. They had to lease land from the natives to establish their own homes and to cultivate crops. Because of just being tenants, the incentive to invest in the land properly was lacking and was a root cause of falling into poverty. Mr. Dub Galma

Box 6.5: Non-poor-poor cases

Lopokoit Kamakil considers his household to be poor; he says he has only 6 goats. His poverty stemmed from the drought of early 1990s (most probably 1991). Before then, he had 30 goats, 20 sheep and 30 head of cattle. His relatives, mainly from the *Ilkapis* clan helped him with 2 goats, which he bred and built a flock within 5 years. He had even acquired some cattle before the 1999/2000 drought, in addition to the goats. All the animals died from the drought and he was left with nothing. He has no money to hire land in the irrigation scheme and only relies on the portion outside the scheme to grow maize, beans and vegetables for food. This, however, happens only when the rains are available. His crop for the year 2003 failed because the rains did not come as expected.

Kamakil only goes to the irrigation scheme to offer his services as a casual laborer. The jobs are not always available, and there are times when a week can pass without him getting anything to do within the scheme. These are the times when his wife has to go begging from relatives.

Halima Girma was born in 1973 in Sagante Location of Gadamoji Division, Marsabit District. She got married to Girma when she was 15 years old. Her parents were rich in terms of livestock and had eight acres of land, but her husband was poor when he married her. The only piece of land he owned was the quarter-acre plot where Halima lives with her children. Halima's husband became sick and died while in Nairobi. When he was alive he used to send money to them every month and she and her children lived comfortably. After her husband's death, life has never been the same again; she had nothing except the plot. She has four children, the first-born is a boy aged 14 years and the last-born is a girl aged 2 years. Three of her children are going to primary school thanks to the free primary education. Due to the difficulties she was facing in raising her children alone, Halima approached the community elders for assistance. They allocated her a small plot next to the community borehole where she plants kale, which she sells to support her children. She pays no rent on the plot but she has to pay for the water used. She sells her kale at Marsabit market and she makes one trip per week with average sales of Ksh 600 per trip. She says that although she works alone on the plot her crop output is increasing.

migrated from Ethiopia, where his parents had a good number of livestock—70 heads of cattle and 100 goats. In 1973, Somali raiders took away their animals. Later in the year the community (clan) contributed cattle to assist them build a new herd. Due to poverty and lack of land they left Ethiopia for Kenya and by the time they reached Marsabit in 1982, they had only 20 goats since most had perished on the way. They live in a grass-thatched house and they do not have land to farm. None of the members of the household belongs to a group. Dub's father has been sick for 4 years, his mother is aged and his son got "lost" in Nairobi where he went to look for casual work.

Also in Marsabit, death of a breadwinner was found to be a factor that plunges households into poverty (see the case of Halima Girma in Box 5). Other factors include drought that is accompanied by both livestock and human diseases.

Reasons for remaining poor

The main reason for remaining poor in all the three study sites is low levels of education that is insufficient for one to secure a well-paying job and to make informed decisions. However, there were also site-specific reasons that were advanced by individual households for remaining in poverty; for example, in Madzuu where people practise subsistence mixed farming, small land sizes that are unproductive was mentioned as one of the reasons for remaining in poverty, as they are cultivated continuously without soil replenishment practices.

Some households also mentioned prolonged illness of household heads as one of the reasons for remaining in poverty, as is the case with Kaulenti Chisenga (Box 6.6).

Other reasons include lack of resources to engage in modern farming techniques and to diversify into other income-generating activities, and frequent deaths of household members. Frequent deaths within Zablon Kuyabi's household (Box 6.6) is one of the reasons that have made him remain in poverty; he has depleted almost all his resources in meeting funeral expenses. He nowadays just relies on his daughter for his subsistence. Loss of employment, high dependencies due to bloated family size and land conflicts were also mentioned as some of the reasons that have kept people in poverty.

In pastoral communities, as found in Baringo and Marsabit Districts, the main reason that was cited for remaining in poverty other than low levels of education that can lead to well-paying jobs was prolonged drought that wipes out livestock and leads to crop failure.

Box 6.6: Poor-poor cases

Kaulenti Chisenga was born in 1947 in Madzuu and is separated from his wife. He has seven children (four sons and three daughters). All the three daughters are married though no bride wealth has been paid yet. Twenty years ago he was poor, which he attributes to his low level of education. He attended primary school up to class three and then dropped out following the death of his father who had been paying his school fees. This was the main cause of his being poor. He left for Nairobi where he was doing casual jobs that were low paying (earning Ksh 30.00 to Ksh 50.00 per day). He could not make any savings.

The other cause of poverty in Kaulenti's household is the small parcel of land he owns. He had four brothers with whom he had to share his father's land. After land subdivision, they ended up with very small parcels; Kaulenti himself got only three-quarter acre.

Kaulenti's ill health is another cause of poverty in his household. He has a back problem, which emanated from a dislocation of the backbone. He worked as a loader in trucks when he was in Nairobi. One day he attempted to carry a 135kg bag on his back and dislocated his backbone. This forced him to retire from this job. He spent all his benefits on treatment. Due to his poor health, his wife went to look for a job in Nairobi ten years ago never to come back.

Kaulenti experiences labor constraint in his farm. He is unable to hire labor because a big portion of his money goes to medical expenses. He depends on handouts from his relatives to supplement his subsistence. His family has remained in poverty due to low levels of education among the children. None of them went beyond primary school. In this household, indicators of poverty are very much visible: poor conditions of the house, mud walls that are not well maintained, leaking grass thatched roof, and old stools and seats that need repair. He does not own any livestock. The ones he had were sold out to meet medical expenses. He does not have sufficient food almost throughout the year. His land has been exhausted of nutrients as it has been tilled continuously for the last twenty years without nutrient replenishing techniques.

Diseases are very common in Kaulenti's household and its neighbourhood. Malaria attacks Kaulenti regularly and this, coupled with complication of his back, has cast him into poverty.

Zablon Kuyabi admitted that he is a poor man. He went to primary school up to class two in Kisienya. His household has been plagued by a series of deaths. In 1983 he lost his first-born son, then twin daughters at birth in 1985. In 1987 he lost a son to malaria. In 1994 he lost another son who was living in Nairobi. His sickness was not known. In 1995 the second last-born son died while in prison; he had been jailed for five years for robbery with violence. In 1999 he lost his fourth-born son to an unknown disease. In the year 2000, his daughter who was staying in Kisumu died, leaving behind two children. He suspects she was suffering from malaria. From 1996, his wife has been very sick and she is too weak to farm. He has only two sons left. One is serving a jail sentence for assaulting him and a neighbor, while the other ran away from home and has not been seen for the last ten years. He suspects he must have died as nobody hears from him. The remaining daughter is married and his son in-law volunteered to pay someone who planted tea for him on his half an acre plot. For the past twenty years he has been depending on his daughter and son in-law to give him food.

The death of his children has made him become poorer. One of the granddaughters he is living with is epileptic and cannot work on the farm.

In Baringo, households that rely on livestock are prone to loosing everything due to drought, and there is no other source of livelihood to turn to. Floods often sweep all their crops and livestock to Lake Baringo (as ir the case of Jacob Laboso in Box 6.7). Both livestock and human illnesses accompany the droughts and floods in Baringo.

In addition to the above mentioned factors, lack of land for immigrants, and insecurity (cattle rustling and ethnic clashes)are some of the reasons that have made poor people to remain in poverty in Marsabit. Diida Nega is not a native of Dirib Gombo. He migrated to Marsabit from Ethiopia. Because of his position as an immigrant, he cannot secure land of his own to invest properly in agriculture.

Poverty and natural resources management

Results from case studies analysis show that there is a direct correlation between households that have managed to escape poverty and natural resource management practices; households that have managed to escape poverty or have managed not to fall into poverty are the ones that are concerned with natural resources management, and have adopted ways of resource management depending on their ability to mobilize labor. They hire labor regularly to construct terraces and maintain them in their farms and also to plant trees. Terraces were found to be the most popular structures for controlling soil erosion in Vihiga District. Furthermore, they are easy to construct provided there is labor. Enane Lukose, a case of non-poor-non-poor in Vihiga District, has been practising soil and water conservation through terracing and afforestation in his farm practices for a long time. He hired labor to dig terraces on all his plots to conserve soil and water. In his compound, he has planted a lot of trees to provide timber and act as a windbreak. Okeny Lubete, a case of poor-nonpoor, also from Vihiga District has changed the land-use pattern on his farm. His father used to plant many crops in different plots of the farm but for him, he plants several crops in one plot to maximize profit. Because his farm is located on a sloppy area, he has constructed several terraces to stop soil erosion. The trees he has are just planted along the fence, as he has no space in his farm to plant them. However, he stated that he would have liked to plant more trees if he had a big parcel of land. His home is fenced with eucalyptus, jacaranda, grevillea and cypress trees. He said they act as a windbreak, therefore reducing soil erosion. Tree leaves are mixed with animal manure to give farmyard manure. The farmyard manure is spread on the farm to help improve soil fertility. He is able to maintain such a big

Box 6.7: Poor- poor cases in pastoral areas

Jacob Laboso traces all his poverty problems to two droughts. He had a well-off family until the drought of 1994 led to the death of all his livestock. It was after this, when reduced to a beggar, that he started working as a casual laborer at the Perkerra Irrigation Scheme. He raised enough capital to buy and sell green vegetables on a very small scale. Money from the petty business was not enough to care for his family's needs. He supplemented it by borrowing from his *Ilmurtanat* clan members and friends. By 1997 he had a few goats and sheep. When the drought of 1999/2000 came, it cleared them and he was left with nothing. His mother (a widow) saw the suffering he was undergoing and gave him a calf, which he has been rearing since then. His main benefactors after the last drought were the government, non-governmental organizations and his clan members. Their help to his household was in terms of food, money for paying for medical services and some materials for clothing.

The floods of 2002 washed away his crop for that year when he had great hopes of a bounty harvest. The floods also carried away his one goat and its kid. He currently owns one cow and four sheep, rewards from the marriage of his daughter who was given away at the age of 15 years in early 2003. With these, Jacob considers himself poor.

Diida Nega was born in 1968 at Mega in Ethiopia. When he was growing up his parents were rich in terms of livestock; they had 50 heads of cattle and 20 goats. A few years later they lost their wealth of cows, sheep and goats through a severe drought, which killed many animals. This seems to coincide with the severe drought of 1973, which is associated with eclipse of the sun (*ola adun dote*) as reported in the community workshop.

Due to famine, Diida's parents left Ethiopia for Kenya when he was 10 years old. They had one cow, which they sold at 70 birr to get money to travel to Marsabit. When they got to Marsabit their father sought help from his brother-in-law who accommodated them. One month later he chased them away and they became stranded. His father (Nega Adi) went to the next village and requested one Halake Gurguro who belonged to his clan if he could accommodate them on his farm and the latter agreed. He showed them a portion of land, which they could use at no fee and this is where they have lived since.

After some time, Diida's father approached Osman Halima who lived next door for assistance. Osman sympathized with their situation and allocated them a 4-acre piece of land where they have ploughed and grown crops without having to pay for it. In the first season they got 5 bags of maize. Diida's eldest sister got married and the bridegroom paid 1 cow as bride price; the first cow they owned since coming to Marsabit. They later acquired another 2 cows, 10 goats and 15 hens. Their major problem was water—people (mainly women) have to walk for 9km to and fro to get 20 litres of water.

Diida experienced poverty ever since he was born in Ethiopia. Drought is one of the factors that has brought poverty to them since previously they had 50 heads of cattle all of which except one perished. He adds that they were in a situation different from his neighbours with respect to land since they did not have land of their own and they continue living on someone else's land. This makes it difficult for them to climb out of poverty.

plantation because he is financially stable; if the trees are to be cut then it is for firewood in the household and not for sale.

In Baringo District, natural resource management is not widespread; it is limited to construction and de-silting of water pans only. Community members carry out this activity collectively, and as Joyce Lebene, a case of non-poor-non-poor in Baringo, puts it: "Soils within the Ilchamus flats are under no threat of erosion and there has been no recognizable decline in soil fertility within the region."

In Marsabit District, sinking of boreholes to get water for human and livestock use and also for irrigation was a common activity. No one appeared to be conserving natural resources either in terms of soil and water conservation or planting of trees.

In all the three study sites, households that fell into poverty and those that have remained poor have not been very keen in conserving natural resources. These households have got their plots experiencing severe soil erosion and they are engaged in indiscriminate harvesting of trees in search of their subsistence without planting new ones. Majority of them are pre-occupied with activities aimed at achieving a day's meal and meeting other immediate pressing demands. They are always under pressure to cope as they lack resources to hire labor. In Vihiga, Abisai Oyengo, a case of non-poor-poor, has got terraces and trees in his farm that were constructed and planted by his late father, respectively. However, they are not well maintained because Abisai is busy with casual jobs on other people's farms. Abisai has never planted any trees, as he claims that tree seedlings are quite expensive. Similarly, Ateko Lupola and Zablon Kuyabi, both cases of poor-poor, had terraces in their farms initially but were unable to maintain them and some of the terraces got filled with soil. Zablon Kuyabi cannot do the work himself, and is not able to hire labor. Lupalo is unable to maintain the terraces because during the rainy season he is always busy on other people's farms doing casual jobs to be able to buy food. The increase in soil erosion has led to reduction in crop yields, therefore meaning hat he continuously has to buy food.

Ateko Lupalo cuts his trees for sale; this has increased soil erosion on his farm. The trees are cut for sale to earn money for buying food. He not able to buy tree seedlings to plant he is poor and has no money to buy seedlings.

In Baringo and Marsabit Districts, natural resource management is not really of serious concern to the poor. As such, there is still indiscriminate harvesting of trees for charcoal burning, which has led

to serious soil erosion. There is rampant cutting of trees for charcoal burning by poor people, which they sell and use the proceeds to buy food.

Synthesis site-specific results

In analyzing household level factors affecting peoples' welfare, results reveal that reasons that were advanced by households of falling into poverty are different from those given for escaping poverty. Similarly, reasons for remaining non-poor also tended to be different from reasons for remaining poor. While some of the reasons were similar in all the three study sites, there were also site-specific reasons for falling into poverty and escaping from poverty.

In both Vihiga and Baringo sites, investing in education that leads to a well-paying job both in the public and private sector and for making informed choices for those who remain in the village was found to be one of the most important strategies for escaping poverty. Other strategies were diversification in on-farm and off-farm enterprises, and having a wider social network for acquiring knowledge and information and engaging in cash crop farming (growing of tea and coffee in Vihiga and maize seed growing for Kenya Seed Company and horticultural farming in Baringo). Off-farm activities such as running petty and major businesses were found to be important strategies for escaping poverty in both sites. However, there were strategies that were unique to each site. In Vihiga, engaging in dairy farming by keeping crossbreed dairy cattle were other strategies that were used by those who escaped from poverty. In Baringo, breeding the remaining stock after drought, being a member of an active women's group, and brewing local beer were peculiar strategies for escaping poverty.

Diversification in income generating activities, both on-farm and off-farm, was found to be the main strategy that was used by households that remained non-poor not to slip into poverty in all the three sites. Other strategies include remaining in employment until one attains retirement age. Education, though a long-term investment was one way of remaining non-poor particularly when the children end up in well-paying jobs.

Death of a breadwinner, funeral expenses (including slaughtering of livestock) following death of a family member and poor health and health-related expenses were common factors causing households to fall into poverty in all of the three sites. Other factors that were common to the three sites and are low levels of education that cannot lead

someone to a well-paying job, large family size (high dependency), and loss of employment. Frequent droughts that wipe out livestock and lead to crop failure, livestock and human diseases that accompany droughts, and over reliance on livestock were serious factors that plunge households into poverty and are peculiar to Baringo and Marsabit only. Floods that wipe out livestock and other assets to the lake were a factor in falling into poverty and were peculiar to Baringo site only. Small farm sizes due to high population pressure, land conflicts, alcoholism (family instability), and loss of employment due to retrenchment and retirement made some households to fall into poverty in Vihiga only. In Marsabit, lack of land among immigrants, and insecurity were other causes of falling into poverty.

The main reasons for remaining poor in all the three study sites are low levels of education that is insufficient for one to secure a well-paying job and make informed decisions, lack of resources, and having limited social network. Poor health and frequent deaths in the family were other factors that kept people in poverty in the three study sites. People spent most of their resources in medical and funeral expenses. In Madzuu, lack of land and small land sizes that have been depleted of nutrients, loss of employment, high dependencies due to large family size, and land conflicts were some of the reasons of remaining in poverty. In Ng'ambo, other reasons for remaining poor included lack of land within the Perkerra Irrigation Scheme, frequent droughts that lead to livestock deaths and which sometimes come with both human and livestock diseases, and floods that sweep all the livestock and other properties into Lake Baringo when they occur.

On natural resource management, households that were able to escape from poverty in one way or another and those who have remained non-poor were more concerned with natural resource management. In Vihiga District, it was observed that due to high population densities, people own very small parcels of land, which they till every season. Because of this, the soils have been exhausted of nutrients and soil erosion is very high, as farmers do not use soil fertility amendment practices. The most popular natural resource management practices involve digging of terraces to reduce soil erosion and planting of trees where they have been cut. As population increases, forests get cleared to pave way for arable land. In the process, the benefits of having forests are lost forcing farmers to establish their own woodlots. However, those who escaped from poverty and remained non-poor were the ones using these methods of natural resource management. They were also capable of mobilizing labor to construct soil conservation structures and buy both organic and inorganic inputs for soil fertility

replenishment. The same was found in the Marsabit site. In Marigat, though people were aware of shrinking natural resource base, awareness has not been created enough to make people act. Natural resource management is limited to collective action of de-silting water pans. This is communally practised.

On the other hand, households that fell into poverty and remained poor showed very little concern to natural resources management (e.g. digging of terraces to conserve soil); this was not a priority in poor people's land because they are preoccupied with working in other people's farms for their subsistence, and as such do not have the time and resources or incentives to construct these structures in their own farms. In the event that there are no alternative employment opportunities in the village, they embark on indiscriminate use of natural resources (e.g. harvesting of trees for charcoal making and firing bricks in the kilns). Brick making is one way through which soils get mined indiscriminately, and this is very common in Vihiga, while cutting down of trees to make charcoal is common in Baringo and Marsabit Districts.

Conclusions

This paper has dwelt on social aspects of poverty dynamics in three sites in Kenya through the case study approach and has revealed the strategies used by people who were poor ten to twenty years ago to move out of poverty and reasons for falling into poverty by people who were not poor ten to twenty years ago. Similarly, reasons for remaining non-poor and poor by some households within the same period have been determined in this paper.

While some of the reasons were similar in all the three sites, there were also site-specific reasons for escape or descent into poverty. These differences can be explained by the fact that the communities studied tended to have different livelihood strategies and occupy different agro-ecological zones. The Maragoli of Vihiga District are mainly subsistence mixed farmers, while the Ilchamus of Baringo District are agro-pastoralists with pastoralism as the dominant activity. In Marsabit, the Boran are agro-pastoralists, while the Burji are arable farmers. Vihiga District is a high potential area with sufficient amounts of rainfall that can support agriculture throughout the year. However, high population densities have led to very small land sizes that are not economically viable. Baringo and Marsabit Districts fall in areas with very high rainfall variability, which exposes both livestock rearing and crop production to high risk; frequent prolonged droughts accompanied by both human

and livestock diseases are a major cause of poverty in these areas. Furthermore, floods are a major concern in Baringo District because they sweep away livestock and other properties into Lake Baringo when they occur.

The other cause of the difference can be explained by the factor that people's livelihood practices are embedded in their cultural repertoires. The Ilchamus, for instance, perceive their welfare to be fully tied to livestock; income from any other source must be translated into livestock for it to acquire a meaning. Because of these differences, interventions aimed at poverty alleviation should be locale-specific. Such interventions can be developed in partnership with farmers by borrowing heavily from their strategies of escaping from poverty. Participatory technology development enhances the pace at which such technological innovations are internalized by the society as it takes into account people's cultural repertoires.

In order to achieve this, there is need for locale-specific policy recommendations in addition to the generalized national policy recommendations. Policies aimed at providing healthcare should be encouraged as most assets, including land and livestock, are currently being lost as people look for ways of meeting the cost of treating their sick family members (cf. Kristjanson *et al*., 2003). This is because a sick society cannot be productive.

However, there are some general conclusions that can be drawn from this study for all the three sites. First, this study has shown that fighting poverty through agriculture alone is impossible and that other sources of income must be sought. Secondly, education for the entire population is important to enable people who are still of age to be employed elsewhere, while those who remain in the village can make informed choices that can enable them manoeuvre their way out of poverty. Earlier studies in Madzuu also indicated that good education would enable individuals to access more lucrative labor markets in the formal wage sector (Marenya *et al*., 2003). This enables them to secure considerable financial stocks, which they can use to undertake further investments in natural, physical, human and also social capital.

References

Amudavi, D. (2002). Voices of the Poor Livestock Keepers in the Lake Victoria Basin with a Focus on Natural Resource Management, Vihiga District. ICRAF Technical Report.

Government of Kenya (1997). Welfare Monitoring Survey III. Nairobi: Government Printers.

Government of Kenya(1998). Second Report on Poverty in Kenya, Volume 1: Incidence and Depth of Poverty. Nairobi: Ministry of Finance and Planning.

Government of Kenya (2001a). 1999 Population and Housing Census: Counting our People for Development, Volume I and II, Nairobi: Ministry of Finance and Planning.

Government of Kenya (2001b). AIDS in Kenya: Background, Projections, Impact, Interventions and Policy (6th ed). Nairobi: Ministry of Health in collaboration with the National AIDS Control Council.

Government of Kenya (2001c). District Agriculture Annual Report. Ministry of Agriculture and Livestock Development, Marsabit Kenya.

Government of Kenya (2003a). Interim Poverty Reduction Strategy Paper 2000-2003.

Kristjanson, P., Krishna, A., Radeny, M. and Nindo, W. (2003). *Pathways out of Poverty in Western Kenya and the Role of Livestock*. FAO/Pro-Poor Livestock Policy Initiative, Working Paper No. 5.

Manda, D.K., Kimenyi, M. S. and Mwabu, G. (2001). *A review of Poverty and Antipoverty Initiatives in Kenya*. KIPPRA Working Paper No. 3, Nairobi: Kenya Institute for Public Policy Research and Analysis.

Mango N.A.R. (2002). Husbanding the Land: Agrarian Development and Socio-technical Change in Luoland, Kenya. Published PhD Thesis, Wageningen University, Netherlands, pp322.

Marenya, P.P., Oluoch-Kosura, W., Place, F. and Barret, C.B. (2003). Education, Non-farm Income, and Farm Investment in Land-Scarce Western Kenya. Basis Brief No.14, Basis Collaborative Research Support Program (CRSP), University of Wisconsin, Madison, USA.

7. INDICES AND MANIFESTATIONS OF POVERTY: INFORMING ANTI-POVERTY POLICY CHOICES

Willis Oluoch-Kosura, Paswel P. Marenya, Frank Place and Christopher B. Barrett

Introduction

Kenya has entered the 21st century with over 50 per cent of its population classified as absolutely poor in that they live on less than a dollar a day; per capita income is lower than at the end of the 1960s. Income, assets and access to essential services are unequally distributed. The country has made important economic reforms, improving macroeconomic management, liberalizing markets and trade, and widening the scope for private sector activity in the hope of improving economic growth and welfare for Kenyans. Yet, despite these reforms, the country has experienced little growth and poverty continues to afflict an ever-larger segment of its citizenry, especially in rural areas.

Recent debate on the reasons for limited impact of economic reforms on poverty reduction has been of a "top-down' nature, where analysts consider a policy reform as an external shock and ask how its benefits and costs work their way through the economy to the poor. Increasingly, researchers are recognizing that macroeconomic and sectoral issues are only part of the basis for growth and poverty reduction. What is missing is a "bottom-up" perspective, which starts from the capabilities of individuals, households and communities. What are their productivities, their environment and how do economic and social developments play out on the ground and how can these developments be influenced?

Poverty is a complex, multifaceted concept reflecting a low level of well-being (World Bank, 2000). The human well-being itself is a multidimensional continuum from extreme deprivation (poverty) to a high attainment or experience of standard of living.

In economics, income or expenditure flows are commonly used as proxies for welfare. This approach is appropriately contested within

the social sciences, since well-being is experiential, value-laden, context- and situation dependent and reflects social and personal factors. Poverty is therefore more than lack of material needs, since material sufficiency alone does not guarantee well-being. While measurement of poverty is a critical empirical and policy concern, an important phenomenon that has gained currency in recent work on poverty analysis is that of poverty dynamics and poverty traps: who climbs above it, descends below it or oscillates around it—because poverty dynamics is the more fundamental policy concern. Identifying the right policy mix to help a given poor sub-population depends on an accurate understanding of rural poverty dynamics.

Transitory and chronic poverty

While even transitory poverty is plainly undesirable, the visible capacity of the transitorily poor to pull themselves up by their own bootstraps means that policy interventions on their behalf are not needed. Indeed, costly government interventions that risk disturbing their self-sufficiency may be undesirable. One problem is that transitory income can be readily overstated, leading to a policy bias against intervention to assist the poor.

The problem of getting estimates of transitory poverty rates correct matters because policy can make a great difference for the chronically poor, those who cannot climb out of poverty on their own without external assistance. Such assistance can come directly, in the form of transfers, or indirectly in the form of policy reforms that induce behavioural change that leads endogenously to the chronically poor exiting poverty. There is possibility that where households fall into poverty due to transitory phenomena, they can recover to non-poor status on their own. The role of safety nets is to keep them from crossing the critical threshold where their transition into poverty becomes chronic or permanent. Food aid programmes, and disaster assistance are common examples of formal safety net interventions by governments, international donors and other NGOs.

The second form of poverty reduction intervention is meant to lift people or to help them climb out of poverty. These are called *cargo nets* by Barrett (2003). Safety nets catch people, keeping them from falling too far; then people step off the net and climb back up on their own. On the other hand, examples of cargo net policies include land reform, school-feeding programmes, targeted subsidized micro-finance or agricultural input subsidization projects. Safety nets help those

suffering temporary setbacks from getting mired in a chronic poverty quicksand for the nonpoor and transitorily poor. Well-crafted and executed cargo nets are meant to catalyze the exit from poverty of those chronically poor.

Since there are no uniform policies that fit everyone who is poor, researchers and policy makers must be able to sort between the different types of the poor. Describing and therefore distinguishing the chronically poor from the transitorily poor is a considerable challenge. An analyst can determine *ex post* whether people recovered after falling below a poverty line, provided there is sufficient panel data on the same individuals or households.

By using extant data at any one point in time, it is difficult to tell from the data who will recover and who will not. This has generated much interest in identifying reliable proxies of "chronic" or "persistent" poverty. Analysts use past panel data to identify good predictors of future well-being to be able to predict which of today's poor are likely to become non-poor by some future date. If done accurately, such estimation can provide a basis for targeting interventions among the poor, enabling policy makers to distinguish between the non-poor and the transitorily poor, for whom cargo nets—as distinct from safety nets – are unnecessary and possibly even unintentionally harmful, and the chronically poor who need assistance if they are to escape poverty.

The crux of the matter appears to be the ability to disentangle the differences between those who are expected to remain poor unless they receive assistance, and those who would be expected to exit poverty on their own accord before long. This provides a powerful tool for guiding policy design because governments and donors faced with large numbers of chronically poor individuals or households face a different challenge than do those serving large numbers who are transitorily poor. Once it is possible to distinguish the transitorily or chronically poor using panel data and appropriate econometric methods, the next challenge is to identify the mechanisms that lead to chronic poverty so that interventions can effectively remove root causes of poverty rather than have mere palliative effects on poverty.

Those who find themselves in poverty by the reality of the family they were born into find it hard to escape poverty because they do not enjoy the education, health or nutrition required to accumulate critical human capital (physical stature, cognitive capacity and skills) needed to surmount poverty in their lives. Alternatively, they may start life without sufficient capital to add value to their human capital or because they cannot effectively employ the assets they own to generate income.

While it is true for some that their poverty is due to an unfavourable start in life, others fall into poverty because of external forces that come to bear on their lives. Natural disasters and civil strife can wipe out, in an instant, what has taken a household many years (even decades) to accumulate. Even brief disturbances can have long-term consequences; there occurs mutually reinforcing effects since those who start off on a weak foundation are more likely to suffer serious adverse shocks that make them suffer major setbacks even as they struggle to climb out of poverty (Barrett and Carter, 2001).

Asset-based views of poverty

It is generally accepted that many of the rural poor are in that state because they lack access to productive resources, including land, human, physical and financial capital needed to undertake high-return production strategies such as improved dairy management and cash crop production. They also face limited access to markets for their outputs. The foregoing is the result of the existence of only rudimentary market systems, which are unable to provide the requisite stimuli for the evolution of commercially-oriented smallholder production systems beyond the narrow, and subsistence-based strategies currently characterizing many areas of rural Kenya. Such thin or missing input and output markets generally encourage the mining of natural resources and the resultant degradation reduces the productivity of these resources. This spiralling effect further deepens poverty and makes it harder for individuals, households and communities to emerge out of the poverty trap.

The foregoing is predicated on the realization that the textbook assumptions of the absence of fixed costs, increasing returns to scale, or liquidity constraints usually do not hold in the real world where smallholder households operate. In a world where the foregoing assumptions hold true, no one is predisposed to remain poor. In such a world, smallholders would borrow against future earnings to invest in natural capital therefore improving agricultural labour productivity, per capita rural incomes and food security. However, poor communications and transport infrastructure, insecure claims to land and livestock and weak or non-existent contract monitoring and enforcement institutions result in factor market failures in rural communities. These incomplete markets, combined with scale dependent returns due to underlying agro-ecosystem biology, produce a positive correlation between *ex ante* wealth and the expected returns to assets, due in part to scale economies, in part due to wealthier

households' superior ability to overcome financial entry barriers to remunerative livelihood strategies, and in part to variation in the effective cost of factors of production and the price of marketed output.

Vulnerability as a poverty index

Vulnerability, as defined by Moser (1998), is "insecurity and sensitivity in the well-being of individuals, households and communities in the face of a changing environment, and implicit in this, their responsiveness and resilience to risks that they face during such negative changes." Exposure to risk is the probability of a shock or disaster occurring and its impacts in terms of severity on different areas and population groups. Vulnerability therefore can be viewed as a function of exposure to risk and inability to cope. The extent of vulnerability of a household or community depends on the assets they own, manage and control. These assets include natural resources, social relations, human resources and skills, physical assets, and financial resources**.**

Vulnerable people are more likely to draw from their productive assets more frequently, such as selling land and livestock or withdrawing children from school, in order to cope with a given level or kind of shock and support family subsistence. Additionally, such shocks as illness and droughts, accompanied by food shortages largely weaken the human capital base of households. These lead to inevitable asset de-accumulation, a fact that effectively undermines the ability of such individuals, households or communities to consolidate adequate productive capacity to enable them secure higher levels of production to enable them extricate themselves from poverty.

This means that even as policies and strategies are being devised to help halt the slide of vast segments of the rural populations into poverty, it must be recognized that these efforts will be undermined as long as the majority of the target populations remain vulnerable to all manner of risks, especially economic and market risks. How to address these vulnerabilities must be vitally integrated into rural development efforts.

The interrelationships between ownership of assets and vulnerability is clarified in this study by constructing asset vulnerability matrices following the Moser framework outlined in the table below:

Alternatively, vulnerability can be proxied by the degree of asset diversification and determining how the different asset categories

Table 7.1: Asset vulnerability matrix: Potential indicators of increasing and decreasing vulnerability for an individual, household, and community

Type of vulnerability	Indicator of increasing vulnerability	Indicator of decreasing vulnerability
Individual		
Labour	• Loss of permanent job • Decline in secure employment • Increase in short-term, casual, minimum wage employment • Acquisition of physical disability	•Increase in household members working especially women •Increase in home-based enterprises •Increase in jobs held by individual workers
Human capital	• Decline in access to or quality of social and economic infrastructure • Decline in school attendance or increase in dropout rate • Decline in health clinic attendance	• Substitution of private for public services, such as private water pumps, private healthcare
Household		
Labour	• Deterioration of housing stock • Threat of eviction (insecure tenure)	• Resolution of tenure insecurity
Household relations	• Erosion of household as a social unit due to change in structure, marital breakdown, or split households. • Household changes that reduce the number of earners to non-earners	• Household changes that increase the ratio of earners to non-earners
Community		
Social capital	• Decline in inter-household reciprocity • Erosion of community level organization	• Community-based solutions to crime • Inter-household reciprocity • Active community-based organizations

contribute to incomes. Those who solely rely on limited agricultural resources in locations with poor market access are likely to be vulnerable.

Important policy questions in the context of land-scarce smallholder agriculture

In many parts of Kenya, land, the most important productive asset, is increasingly becoming scarce. This is so despite the fact that land-based agricultural production offers the most realistic (in the short run) way out of poverty. This raises important questions, under conditions of dwindling farm sizes: what other *productive assets* available to the poor can be exploited to enable them command decent livelihood options capable of fuelling their exit from poverty?

It has long been observed that the poor rely on their labor more than any other asset for their incomes. Therefore, one of the most effective policies for reducing poverty among the rural poor may lie in bringing about conditions that will create demand for their labor. This is easy to appreciate when one considers the high population growth rate with the consequent reduction in per capita land ownership or access. Therefore, it is easy to envisage a situation where land *per se* will cease to be the most important asset in securing incomes even in those areas that currently enjoy low to medium population densities and therefore relatively higher per capita land ownership or access.

If lack of land among the poor need not mean perpetual confinement to inextricable poverty traps, then what assets are important in ensuring increased productivity, incomes and reduced risk and vulnerability? The answer to this question requires a careful examination of the entire portfolio of available and accessible assets (including those that are only potentially available and can be made accessible to the poor through deliberate policy interventions). Since the majority of the poor already lack land resources, it is important to begin placing policy emphasis on enabling them to access alternative productive assets.

Human and financial capital play a more prominent role than mere access to small parcels of land in high population density areas and in areas where per capita land availability is likely to fall. The adequate availability of human and financial capital will form the foundation upon which the productivity of the limited natural capital available to the poor can be raised ensuring overall rural and agrarian economic progress.

Rural financial markets hold the key to the transformation of subsistence to commercial production. The greatest impediment to the participation in high return (mostly capital intensive) productive activities among the rural poor is universally lack of affordable access to financial capital. This is occasioned by missing markets for financial products to cater for diverse investment requirements such as financing improved crop and livestock production or other non-farm productive enterprises. In addition, financial capital is required for investment in human capital such as education of children. Consumption credit, long ignored in most credit programmes, must be integrated in the financial market system if the risks and vulnerabilities associated with market-oriented livelihood strategies are to be dealt with and effectively mitigated.

Let us examine the role of education, non-farm employment and farm investments in shaping poverty traps in the following case study.

A case study of a land-scarce situation in western Kenya

The purpose of this case example is to illustrate the importance of education and non-farm development in a land scarce rural economy and to stimulate interest in an important research and development policy area, that of taking a multi-pronged approach and linking agricultural and overall rural development to the non-farm sector as the basis to sustainable agricultural productivity.

The case example presented below was derived from a study done at the University of Nairobi in collaboration with Cornell University and the World Agro Forestry Centre (Marenya *et al*., 2003*)*. The data was from a 13-year old panel data set available from 1989 (Oluoch-Kosura, 1989). The availability of this data afforded a unique opportunity for analyzing dynamic (temporal) poverty phenomena.

A noticeable phenomenon in the Madzuu site concerning indications of welfare is that those who seem to command above average physical assets are those who presently have formal wage employment or have retired from such, and have had above average formal education. Whether one is able to get into the lucrative formal non-agricultural wage sector depends on their educational endowments. A good education will enable individuals to access more lucrative labor markets in the formal wage sector. This enables them to secure considerable financial stocks, which they can use to undertake further investments in natural and human capital. In the current dataset, we notice that the rate of nitrogen application per hectare is nearly double

in those households where the head has secondary school education and beyond as opposed to those households where the head had mid-primary school education (Table 7.2). Also, an indication of wealth portfolio is ownership of a dairy enterprise (improved breeds); 40 per cent of those households where the head had secondary level education owned livestock enterprise as opposed to 13 per cent.

Table 7.2: Nitrogen application and improved dairy stock ownership by educational level of household head

Education level of household head	Nitrogen application (Kg/ha)	% households having improved dairy stock
Mid-primary	4	13
End of primary	11	3
Secondary	19	40

With only a fifth of the population completing secondary (high) school, the implication is that 80 per cent of the population cannot be readily absorbed in well-paying formal employment. In 1989, 4 per cent of all household members enumerated had formal skilled employment or self-employment (e.g. shop keeping). In 2002, the ratio has marginally increased to 5 per cent (Table 7.3); actually, of the 89 respondents interviewed, 55 had no record of formal employment, 29 had retired from formal employment and five are formally employed. Those self-employed were largely working on their farms (in 64% of the cases). Those employed in petty trades (with no fixed assets) constituted 8 per cent of the total and another 4.5 per cent engaged in skilled self-employment (masonry, carpentry, etc).

The foregoing observations are buttressed by the fact that only 23 per cent of all adult household members (beyond school going age) ranked farm produce as their most important source of income. Paradoxically, 64 per cent of all household heads in the 2002 re-survey spent most their time on their farm. This suggests that while farming activities absorb the bulk of labor, these activities rank very low in their income contribution. This means household members spend the bulk of their labor in farm operations for food subsistence and engage in largely unskilled non-farm activities for cash income mainly to supplement subsistence requirements that cannot be met from own production. This observation is plausible considering the average landholding sizes available for cultivation in the area. The mean size of

Table 7.3: Changes in wealth/welfare indicators between 1989 and 2002

Welfare indicator	1989	2002
Household members completed secondary (%)	18	16.5
Total landholding cultivated	0.5	0.3
Household members having skilled employment (%)	4	5
Primary school enrolment (%)	-	93
College graduates (% of all household members)	1	5
Secondary school enrolment (%)	21	25

total landholdings in 1989 was 0.5ha compared to 0.3ha in 2002 representing a 40 per cent reduction in total size of landholdings over the last 13 years (Table 7.3). This presents the possibility that diminution in landholdings is one of the factors holding many households in poverty.

This raises the question whether there is a minimum size of plot that can be economically operated in, for example, growing maize, tea or operating a dairy enterprise. This means that at the current levels of land availability and with the inexorable population increase, farm production may offer, even under intensification, only a very modest opportunity as the basis for enabling households secure productive livelihood sources. This justifies the investigation of alternative economic activities, which can yield adequate productivity from the limited land available for cultivation. It also means that more and more people must necessarily be absorbed in the non-farm sector both at the local level and beyond.

Implications for rural development policy

Smallholder farm development

Since the economy of Madzuu is still mainly based on smallholder agricultural production, it is apparent that the productivity of the natural resource base (mainly soils) must be raised beyond the current levels if the populations here and in other similar parts of the world are expected to generate for themselves adequate incomes to escape poverty. Adequate investments in mineral fertilizers, agroforestry

enterprises, soil conservation structures and other organic interventions are urgently needed. Such investments are still greatly lacking; for instance, fertilizer use in this region is currently estimated at less than 15kg of nitrogen per hectare against a recommended level of 50kg of nitrogen per hectare. Without significant investments at household level in soil fertility interventions (both inorganic and organic materials) no alternatives for improving smallholder farm productivity readily comes to mind. Yet as we have posited, due to lack of cash incomes to purchase inputs or hire labor, nearly all households do not have the ability to invest in their soils. With such a weak natural capital base, it is easy to predict that those households currently poor will remain so if no changes occur. These changes ought to involve building innovative policy structures that will foster the development of rural financial systems that can serve the rural poor and enable them to finance diverse productive activities in the farm sector and to finance short-term subsistence consumption. In the short term, such policies will entail substantial resource allocations. However, as their impact begin to be felt, the need for continued credit will be reduced and a self-sustaining agrarian and non-agrarian economy shall have been put in place.

Education and non-farm sector employment

Development policies aimed at increasing smallholder farm productivity, as the basis for dismantling chronic poverty, will inevitably be insufficient in achieving the foregoing aim. In view of dwindling farm sizes, it is important to create development initiatives, which will help relieve the pressure on land, which can no longer provide adequate economic opportunities for everyone. This is possible through enabling more and more people to be absorbed in other sectors. Improving educational attainments will be vital in this, together with expanding the range of lucrative non-farm opportunities in the area. Observed trends show that secondary school completion rates are declining; this must be related to the fact that between 1989 and 2002 the average cost of school fees in one year in a local district secondary school has increased 10 times. Given that 80 per cent of households' members do not have post-primary education, their employment now, and perhaps in future, remain limited to subsistence farming, and other unskilled activities, unless radical investments in human capital are made. Such radical investments will be multifaceted, including adult education and other avenues of training and informal education and finding ways of either lowering costs of educating children or providing credit support for child education from primary school to college.

A vital adjunct to improving human capital through education and training is the issue of how the other sectors of the local and national economy will be expected to grow to absorb greater numbers of well-educated manpower. As far as local non-farm wage employment opportunities are concerned, the best jobs available are limited to mainly primary school teaching and clerical jobs in local county authorities and government departments (which are currently laying off much of their staff). Private sector opportunities are even more limited, the most common being employed as taxi van drivers. Better-educated people, therefore, get better jobs in the far-flung and bigger cities of the country; for instance, there is a retired primary head teacher who has eight sons and all of them are formally employed; one is a doctor, another a government marketing officer, another is a teacher, another is a court clerk, another is an employee of fisheries department, and another is a secondary schools auditor. Another example of apparent escape from poverty trap can be seen from the experience of an administrative official, who in 1989 had a mud-walled tin-roofed house but now has a spacious 5 bed-roomed house. This must be attributed to his high profile job of being a location chief (a civil service job) since 1992 having previously worked as a mason/carpenter. In addition he operates a herd of 3 dairy cows, and on his maize plot, he uses Diammonium Phosphate (DAP) and urea and has a napier grass (fodder crop) plot fertilized with animal manure. It is not difficult to see why these individuals may be able to escape the cycle of poverty; the predominant factor here is their having had a reasonable formal education, and later wage employment.

Conclusions from case example

The inferences drawn from this case example lend weight to the assertion that putting emphasis on smallholder agricultural sector in a land-scarce situation as the major basis for improving incomes and poverty alleviation may be unsustainable in the long run as population increases and the major resource base—land—dwindles. Policies meant to drive rural transformation justifiably take due cognisance of agriculture, but where land sizes are decreasing, equal if not more emphasis (in relative terms) must be placed on the non-farm sector. Yet opportunities in the non-farm sectors will only be exploited by those who have acquired sufficient skills through formal education and other avenues of informal training to enter into more lucrative wage markets or self-employment poverty reduction strategies.

References

Barrett, C. B. (2003). "Rural Poverty Dynamics: Development Policy Implications", A Paper Presented at the 25th International Conference of Agricultural Economists, 17 August, Durban South Africa.

Barrett, C. B. and Carter M.R. (2001). "Can't Get Ahead for Falling Behind: New Directions for Development Policy to Escape Poverty and Relief Traps", *Choices*, 16, 4: 35-38.

Marenya. P.P., Oluoch-Kosura, W., Place, F and Barret, C.C. (2003). "Education, Non-farm Income and Farm Investment in Land-scarce Western Kenya", BASIS brief 14.

Oluoch-Kosura, W. (1989). Rural Factor Markets, Agricultural Investments and Productivity in Kenya. Nairobi: University of Nairobi, Department of Agricultural Economics and World Bank Offices Nairobi.

8. POVERTY IN KENYA: A REVIEW OF QUANTITATIVE AND QUALITATIVE STUDIES

Dr. Damiano Kulundu Manda

Department of Economics, University of Nairobi

Introduction

Poverty refers to lack of basic necessities of life and opportunities for human development. It is multi-dimensional and manifests itself in various forms (World Bank, 2000). This makes it hard to come up with a single definition, which comprehensively captures all the aspects of poverty even though it is widely viewed as lack of sufficient income to meet the basic human needs. Some groups in the population often face vicious circles of low income: illiteracy, premature death, early marriage, large family size, malnutrition, illness and injury, all of which lock them into unacceptably low standards of living.

Poverty is not a new phenomenon in Kenya. It has been a major concern of the government since independence in 1963 (Government of Kenya, 1965). Several programmes and campaigns have been directed towards alleviating poverty over time and across regions. The government has pursued poverty reduction through various development strategies with emphasise on economic growth, employment creation and provision of basic social services. In the first two decades after independence, the development strategy was based on the idea that poverty would be alleviated through rapid economic growth, as the poor would benefit from sustained growth. This expectation was, however, not realized even during this period (1960s and 1970s) when the country was experiencing strong economic growth. As a result, a growth-led poverty reduction strategy has been criticized on grounds that it ignores non-income aspects of poverty.

Even with considerable advances over the last four decades in terms of social and economic well-being, disease eradication, green revolution and technological and informational advances, a large proportion of people in developing countries remain desperately poor

(OECD, 2001). In Kenya poverty is still rampant and afflicts a large proportion of the population in both rural and urban areas. Estimates for the year 2001 show that about 56 per cent of the population live below the poverty line (Government of Kenya, 2000; Mwabu *et al*., 2003). It is also estimated that about 35 per cent of the rural population and 8 per cent of the urban population live in extreme poverty, and cannot meet their food needs even with their entire resources devoted to food. This continues to be a major impediment to human development and economic progress.

There is persistence of poverty in Kenya despite various efforts to alleviate it. The availability of household budget survey dataset, especially in the 1990s, and the renewed effort to tackle poverty through the Poverty Reduction Strategy paper can perhaps explain the increased and renewed interest in poverty research in the past decade. Starting the early 1990s the government intensified its poverty monitoring activities through Welfare Monitoring Surveys (WMS). Three such surveys (1992, 1994 and 1997) were carried out and have been used in the analysis of poverty (Government of Kenya, 2000a). Before the 1990s, most poverty research was based mainly on household surveys carried out in the 1970s and 1980s (Greer and Thorbecke, 1986a, 1986b; Collier and Lal, 1980). Other initiatives at monitoring poverty since the early 1990s have been through getting the views of the poor on how poverty affects them and what can be done to alleviate it through the participatory poverty assessment (PPA) surveys (AMREF, 1998; Narayan and Nyamwaya, 1996).

Poverty studies based on the PPA surveys are generally referred to as *qualitative poverty studies,* while those based on analysis of household budget surveys are generally referred to as *quantitative poverty analysis*. In the literature (Carvalho and White, 1997; Kanbur, 2003), quantitative approach to poverty measurement and analysis is defined as one that uses random sample survey and structured interviews to collect data—mainly quantifiable data—and analyze it using statistical techniques. On the other hand, qualitative approach is defined as one that typically uses purposive sampling and semi-structured or interactive interviews to collect data—mainly data relating to people's judgements, attitudes, preferences, priorities, and/or perceptions about a subject—and analyzes it through sociological or anthropological research techniques. However, these two definitions may be criticized on certain grounds. First, what is generally referred to as quantitative normally generates qualitative data and vice versa (Hentschel, 1999). Second, the differences between qualitative and

quantitative poverty studies are not just to do with data collection methodologies.

Given these definitions, it is important to mention that most of the quantitative poverty studies done in Kenya are based on the Welfare Monitoring Survey data carried out in Kenya in the 1990s, while qualitative studies are based on Participatory Poverty Assessment (PPA) surveys. The focus of this study is to review both the quantitative and qualitative studies done in Kenya with the aim of demonstrating the usefulness and difficulties associated with each approach, and hoping that the findings of this study will be useful in informing and giving direction to future research on poverty in Kenya. We focus mainly on poverty studies done in the 1990s.

Quantitative studies

Poverty may be defined in absolute or in relative terms (Kenya, 1998a); *absolute poverty* occurs when people cannot raise the income required to meet the expenditure for purchasing a specified bundle of basic needs, while people are in *relative poverty* when they cannot purchase a bundle of basic needs available to a reference social group (e.g. people within a median income). Most of the poverty studies based on household budget survey (e.g. Government of Kenya, 1998; Mwabu *et al*., 2000) estimate absolute poverty (i.e. a situation where individuals fail to raise the income required to meet a given level of basic needs expenditure, usually over a period of one month). To determine absolute poverty, an absolute poverty line must be estimated (i.e. the income level that enables an individual to just meet the cost of a specified bundle of basic needs).

Normally, the food-poor households are identified using a food poverty line, and the absolutely poor are identified using an overall poverty line. Households are deemed to be poor if they fall below the poverty line. The poverty lines (food and overall) are mainly derived using two methods: the cost of basic needs (CBN), and the food-energy-intake (FEI) methods. The critical role of a poverty line is to identify who the poor are in society.

Poverty lines

The minimum level of consumption at which basic needs are assumed to be satisfied is known as the *poverty line*. Most studies use the FAO/WHO minimum recommended daily average allowance of 2,250 calories per adult equivalent to derive food poverty line (Government

of Kenya, 1998; Mwabu *et al*., 2000; Oiro *et al*., 2004). Food poverty line is the amount of expenditure required to meet the recommended daily average allowance of 2,250 calories given the agreed food basket. For policy purposes, what matters is not the precise location of the poverty line, but rather the poverty comparisons across dates, sub-groups, and policies. The main concern is that comparisons should be consistent so that two individuals who enjoy the same standard of living should not be at different levels of poverty (Lipton and Ravallion, 1995). If they are, then measurement may seriously misinform policy.

As mentioned earlier, the two methods commonly used to derive poverty lines are the cost of basic needs (CBN) and the food-energy-intake (FEI) methods (Ravallion, 1994; Lipton and Ravallion, 1995). These two methods have previously been used to derive poverty lines for Kenya (Greer and Thorbecke, 1986a; Government of Kenya 1994; Mwabu *et al*., 2000; Oiro, 2003). A household with food expenditure less than the food poverty line is deemed to be food-poor. Overall poverty encompasses the food and non-foods consumed by households falling in the band of a certain percentage of the food poverty line. The hardcore poor are defined as those who would not meet their minimum calorie requirement even if they concentrated all their resources spending on food.

A poverty line may also be fixed as a fraction of mean income or as a multiple of the amount spent on food by people in the lowest segment (e.g. quantiles) of the household expenditure distribution. Such a poverty line is termed a *relative poverty line* because it is used to assess economic status of an individual or a household relative to a reference group in society. The core and key measure of poverty used in most studies is the absolute poverty as opposed to relative poverty, both of which can be expressed in monetary units. Absolute poverty measurement is preferred in the context of developing countries where the majority of the people live below the subsistence level because in such circumstances, one should be concerned with looking into the situation of those in absolute deprivation rather than relative deprivation. However, broad-based poverty, which includes non-monetary dimensions such as powerlessness, voicelessness, risk and vulnerability, cannot be as easily aggregated as is done with income poverty.

Constructing poverty lines

In this section, we discuss how the two methods—FEI and CBN—are used to construct poverty lines. We start with the FEI-based lines, followed by the CBN-based lines.

FEI- based lines: The food poverty line that is the cost of achieving K-calories of 2,250 per day per adult equivalent is normally obtained from equation 1 below. This equation was used by Foster, Greer and Thorbecke (1984) and by Greer and Thorbecke (1986a, 1986b) to estimate food poverty lines.

$$\text{Log Food expenditure} = \alpha + \beta \ (\text{calories}) + e \qquad (1)$$

This method, however poses various econometric problems mainly that of endogeneity (calories may be correlated with the disturbance term), and yields food poverty lines that are very close to lines obtained using other methods. This equation represents the cost of achieving a desired level of calories, which is analogous to the cost of producing a given level of output in production theory (Mwabu et al, 2000). Once the parameters of the cost-of-calorie function are estimated, the food poverty lines (the cost of achieving K-calories 2,250 per day per adult equivalent) can be obtained using the following formula:

$$\text{Food poverty line} = \exp[\alpha + \beta \ (\text{calories})] \qquad (2)$$

Mwabu *et al*., (2000) estimates the overall poverty line using the formula below. This equation is a quadratic Engel Curve from which they derived the overall poverty line after estimation of the parameters. The equation automatically includes allowance for non-food items (Ravallion, 1994):

$$\text{Log calories} = \gamma + \delta_1 \ (\text{Log total expenditure}) + \delta_2 \ (\text{Log total expenditure})^2 + v \qquad (3)$$

The CBN-based lines: Most of the studies also use the CBN-based lines alongside other FEI-based lines to obtain the food and overall poverty lines. To construct these lines requires the determination of a food basket assumed to be bought by all households; based on this basket of goods, a food poverty line is derived (Government of Kenya, 1998a). The overall poverty line is then derived by adding to the food poverty line the non-food expenditure for the household.

Below, the FEI and CBN overall poverty lines that were used to construct the poverty profiles in some of the previous studies (Mwabu *et al*., 2000 and Oiro *et al*., 2004) are presented at the national and regional

Table 8.1: Overall poverty lines at the national and region level

Poverty Study	Data used	Type of poverty line (Kshs per month)	
Government of Kenya (1994)		FEI	CBN
National	WMS I		
Urban		1269.3	1153.5
Rural		764.5	646.8
Oiro 2002			
National	WMS II	820	875
Urban		1348	1391
Rural		820	812
Mwabu et al., (2000)			
National	WMS II	780	870
Urban		793	1292
Rural		1067	817
Government of Kenya (1997)			
National	WMS II	na	na
Urban		na	1490.0
Rural		na	980.0
Government of Kenya (2000)			
National	WMS III	na	na
Urban		2648	na
Rural		1239	na

Source: The 1982 and 1992 estimates are from Government of Kenya (1994), text Table 4, text Tables 9 and 10, pages 39, 40, and 109; Government of Kenya (1997); Oiro et al., (2004), Table 3.2; and the 1994 estimate (column 4) are from Mwabu et al., (2000) text Table 3, page 7.; na = not available.

level . Only the overall poverty lines estimated in the previous studies are presented (Table 8.1).

As expected, rural poverty lines are lower than urban poverty lines as shown in Table 8.1. Also, at the national level, FEI lines are lower than CBN lines. The poverty lines in the table differ slightly even for studies that use the same data; for instance, the three studies (Mwabu *et al*., 2000; Oiro *et al*., 2004; Government of Kenya, 1997a) that use the WMS II of 1994 report different poverty lines such that the difference between poverty lines in the study by Mwabu *et al*., (2000) and Oiro *et al*., (2004) is due to slight difference in definition of data used in the two studies. First, calorie conversion factors used as the sources of calorie nutrients were different. Secondly, in controlling for outliers, a range of 1,000-5,500 K-calories were used in the Oiro *et al*., (2004)

compared with a range of 550-5,500 K-calories used by Mwabu *et al*., (2000). Thirdly, the welfare measure in Oiro *et al*., (2004) is consumption expenditure per capita, while in Mwabu *et al*., (2000), the welfare measure is consumption per adult equivalent. The differences between poverty lines across regions cause problems when comparing poverty rates across provinces because a mere change in area of residence influences poverty status (Mwabu *et al*., 2000).

The FEI and CBN poverty lines have inherent weaknesses as the bases for welfare comparisons. The FEI poverty line is computed under the strong assumption that food expenditure and calorie are not independently observed (Bouis and Haddad, 1992). As noted by Greer and Thorbecke (1986a), the use of fixed food weight-to-calorie factor for the whole country over time and over the entire income profile might be inappropriate due to changing food quality and food preparation methods. Bouis and Haddad (1992) state that household calorie availability has to be adjusted for various food losses that occur before the food is consumed.

A number of studies have questioned the reliability of calorie content as surrogate for calorie intake. Schiff and Valdes (1990) postulate that nutrient intake is affected by many variables such as non-nutrient food attributes (freshness of food product purchased and their cleanliness, to mention a few). The weaknesses of the CBN poverty line are described in Aigbokhan (2000). Because there is no agreement on an anchor for estimating the non-food component of the poverty line, there tends to be much arbitrariness in determining the level of poverty. This means that there may be as many poverty lines as there are variations in the assumptions used to determine the level of non-food component even for the same data set. It is evident that the main ingredients for poverty measure—the caloric requirement, the food bundle to achieve that requirement and the allowance for non-food goods—entail normative judgments. The next section presents the measures of poverty in previous derived studies based on these poverty lines.

Poverty measures

A *poverty measure* is an index that shows the magnitude of poverty in society. In the literature, a poverty measure is an aggregate indicator of the income dimension of poverty. Most of the studies based on household budget surveys employ a money metric measure of poverty. One poverty measure that has been found manageable in presenting

information on the poor in an operationally convenient manner is the FGT measure, developed by Foster, Greer and Thorbecke (1984).

The FGT index is used to quantify three well-known elements of poverty, namely: level, depth and severity of poverty (Jenkins and Lambert, 1997). The FGT formula that is normally used to measure overall income poverty is shown in equation (1).

where

P_α = a measure of absolute poverty, including food poverty;

Y_i = total expenditure of household i;

Z = poverty line, expressed in per adult equivalent;

N = total number of households;

q = the total number of poor households;

α = FGT parameter, which may be interpreted as a measure of poverty aversion, $\alpha \geq 0$.

In this equation, $Y_i = Z$, P_α is zero. This means that there are no poor people in the population. As the FGT parameter approaches infinity, P_α also approaches infinity. This implies that the poorest household wholly accounts for the magnitude of poverty in the population. Finally, if $Y_i > Z$, P_α is also zero because by definition there is no poverty when household income is above the poverty line.

The Head Count Ratio ($P_\alpha = 0$ in Equation 1): The headcount ratio is the most popular of the FGT measures used in most studies. It is the ratio of the number of poor individuals to the total number of the total population. However, the ratio ignores the inequality among the poor and it also forces the overall poverty index to remain the same even when the welfare of the poor has improved or worsened.

Another shortcoming of the headcount ratio is that an income transfer from a very poor person to a person just below the poverty line (enabling him/her to cross the line) would lead to reduction in poverty despite the decline in the income of the poor.

Poverty Gap ($P_\alpha = 1$) in Equation 1): This measures the shortfall of the average income of the poor from the poverty line. It can be used to estimate the resources that would bring the expenditure of every poor person up to the poverty line, thereby eliminating absolute poverty. Its main weakness is that in using it to assess welfare, it treats all poor people as same.

Poverty Severity (P_α = 2 in Equation 1): This gives the severity of poverty among the poor. Poverty severity is measured by the square of the poverty gap, which increases more than proportionately with poverty gap. The severity index as measured by $P_\alpha = 2$ is greater than the poverty gap, which, as one would expect, indicates that the poverty is severest among the very poor.

Poverty estimates

Poverty in Kenya has attracted considerable research attention in the last three decades involving individual academic researchers, donors and the government. Most of the estimates generated from these research efforts are based on household budget survey data and provide a fairly good account of poverty trends in the country over this period. Table 8.2 shows a summary of poverty estimates from previous studies done in Kenya, where available poverty estimates since the 1970s clearly point to a rapidly deteriorating situation in the country, especially in the last two decades.

A Government of Kenya (2000c) study based on WMS III shows that the number of people below the poverty line had sharply increased to about 52.3 percent of the population. It also shows that the 52.9 per cent of the rural population and 49.2 per cent of the urban population are poor. Poverty estimates for 2001 (Mwabu *et al*., 2003) show that the poverty situation had deteriorated further with 56 per cent of the people classified as poor. The increase in poverty in the country is easily observed from the rising number of people without adequate food and nutrition, and with inadequate access to basic necessities such as education, safe water and sanitation, employment, health facilities and decent housing.

Poverty profiles

Using similar but modified method as in the section on estimates above, poverty can be estimated for various provinces (regions), socio-economic groups and by employment status. A number of studies provide poverty profiles in Kenya showing how the FGT index varies with social and economic characteristics of households and individuals (Foster, Greer and Thorbecke, 1984; Greer and Thorbecke, 1986a, 1986b; Mwabu *et al*., 2000) and detailed poverty profiles conditional on being in employment (Oiro *et al*., 2003).

Table 8.2: Summary of previous poverty estimates for Kenya

Author	Reference year	Data source	Poverty incidence
Collier and Lal (1980)	1974/75	Integrated Rural Survey (IRS) Smallholder	34.2% of smallholder population; 29% for all population
Vandermoortele	1976	IRS 1974/75; Nairobi Household Budget Survey (1974); Social Accounting Matrix	33.1% of smallholder household; 15.3% of urban households
Greer and Thorbecke (1980)	1974/75	IRS (1977)	38.6% of smallholders
Jamal (1981)	1976		32% of population
Bigsten (1987)	1976	National accounts	40%
World Bank (1991)	1981/82	1981/82 Penal survey and complementary statistics	22% of rural population
World Bank (1995) & Mukui (1993)	1981/82 1992	1981/82 rural survey and 1992 WMSI	Rural: 48% for 1981/82 and 46% for 1992; Urban: 29.3% for 1992
Narayan and Nyamwaya (1996)	1994	Participatory Poverty Assessment	Widespread poverty in rural areas results similar to 1992 WMS I above
Government of Kenya (1997) results for WMS II	1994	1994 WMS I	46.8% rural population 29% urban population 40% national estimates
Mwabu et al., (2000)	1994	1994 WMS II	39.7% rural population 28.9% urban population 38.8% national population
Government of Kenya (2000a) results for WMS III	1997	1997 WMS III	52.9% rural population 49.2% urban population 52.3% national population

Source: Adopted from Government of Kenya (1997) and updated.

Note: Some of the sources quoted above may not be in our reference list, unless quoted in the text of our study. n.s: not shown.

Poverty profiles can be used to target poverty alleviation programmes to population groups that are most affected by poverty; for instance, the overall poverty rate amongst the employed is a good summary measure of the extent to which employment creation can reduce poverty. Table 8.3 shows poverty estimates by region as reported in previous studies for the 1980s and 1990s; it includes national and regional absolute poverty measures.

As shown in the table, substantial regional differences in the incidence of poverty exist in Kenya. First, poverty is largely a rural phenomenon with almost half the population classified as poor in the 1990s. Rural poverty is marked by its common connection to agriculture and land, whereas urban poverty is more heterogeneous in how incomes are generated. The rural poor depend very much on agriculture than the non-poor (Quibria and Srinivasan, 1991; Reardon *et al*., 1992). Also, the few non-farm activities in the rural areas derive their prosperity on forward and backward production linkages with agriculture. Therefore, poverty in the rural areas tends to be explained more by low access to physical assets (particularly land), non-farm employment opportunities and healthcare and schooling, than the labor market distortions as in the urban sector.

The rural-urban dichotomy, however, tends to divert attention from even much sharper regional disparities in poverty levels; for instance, in some countries, poverty incidence has been found to be lower in large cities than other urban areas, as Bidani and Ravallion (1993) have observed and Ravallion and van de Walle (1994) for Indonesia and Tunisia, respectively. A comprehensive study of this kind is yet to be carried out in Kenya, and research in such areas would go a long way in providing crucial information for policy purposes.

Large disparities in rural poverty incidence have also been documented for a number of countries including Kenya. The regional disparities are strongly associated with rainfall and dependence on rain-fed agriculture (Webb *et al*., 1991). In Kenya, for example, poverty varies by province with the most hit being North Eastern, Western and the Rift Valley provinces. In addition, very large proportions of the population in arid and semi-arid areas of the country – like Marsabit, Turkana, Isiolo, Samburu and Tana River districts—experience a higher incidence of poverty than other areas of the country (Government of Kenya, 1998).

It is clear that there are areas of high concentration of poverty in Kenya. Previous studies (Ravallion, 1996; van de Walle 1995; Wodon, 1995; Jalan and Ravallion, 1995) identify two sets of determinants of

Table 8.3: Overall poverty estimates in Kenya (percentage), 1981-1997

	1981/82	1992	1994a	1994b	1997
Central	25.7	35.9	31.9	31.79	25.7
Coast	54.6	43.5	55.6	41.36	51.9
Eastern	47.7	42.2	57.8	44.96	53.1
Rift Valley	51.1	51.5	42.9	38.31	44.1
North Eastern	Na	Na	58.0	51.33	Na
Nyanza	57.9	47.4	42.2	38.31	56.7
Western	53.8	54.2	53.8	40.58	53.62
Nairobi	Na	26.5	25.9	22.30	50.2
Rural	48.8	46.3	46.8	39.70	52.9
Urban	Na	29.3	28.9	28.63	49.2
National	46.8	46.3	46.8	38.80	52.3

Source: Kenya, 1994; 1997; 2000a; Mwabu et al, 2000. Na = not available.

why poverty tends to be concentrated in certain areas. The first set is based on individualistic model in which poverty arises from low household-level endowment of privately held productive resources including human capital. According to this model, poor areas exist because people with poor endowments tend to live together. Anti-poverty policies influenced by this model emphasize raising the endowments of poor people, such as by enhancing access to schooling.

The second set of determinants is based on a geographical model in which individual poverty depends heavily on geographic capacity and mobility is limited. In this case, the marginal returns to a given level of schooling, of a loan, depend substantially on where one lives and limited factor mobility entails that these differences persist. The relevant geographic factors include local agro-climatic conditions, local physical infrastructure, access to social services and the stock of shared local knowledge about agro-climatic conditions and about the technologies appropriate to those conditions. If the model is right, then the policies called for entail either public investment in geographical capital or (under certain conditions) proactive efforts to encourage migration. However, the individualist model begs the questions of why

individual endowments differ persistently and why residential differentiation occurs, while the geographic model begs the questions of why common endowments differ, and why mobility is restricted. Nevertheless, knowing which model dominates is very important for anti-poverty policy formulation.

In Table 8.4 using both CBN and FEI poverty lines, it is shown that pastoralists have the highest incidence of poverty, followed by subsistence farmers. However, it is surprising that skilled private sector workers have a higher incidence of poverty than skilled public sector workers. This finding can be explained by the fact that skilled public sector workers receive fringe benefits such as free or highly subsidized housing and medical care. Furthermore, workers in the public sector have greater opportunities to earn extra income from rent-seeking activities.

Household heads without any education have a slightly lower incidence of poverty as compared with households with pre-school education (Table 8.4). It is quite clear that as education level rises, the incidence of poverty falls, which has the implication that in order to eradicate poverty, the government should invest more in education. The current government policy of free primary schooling receives strong support from this finding.

Agricultural workers have the highest incidence of poverty followed by persons engaged in casual work. Still, there are pockets of better-remunerated persons in agriculture; it is clear from the table that the agricultural sector contains a large portion of the working poor. Evidence based on this data shows that employed persons in the different sectors who are non-poor have other sources of income, better pay and own property as well. This provides an explanation as to why their expenditure is above the poverty line.

Table 8.5 is extracted from Oiro *et al*., 2003, Table 3.4. As shown in the table, pastoralists have the highest headcount poverty index of approximately 71 per cent, followed by subsistence farmers, while the lowest incidence of poverty is found among the business operators.

Pastoralists also have the highest poverty gap rate (36-38%) followed by subsistence farmers—a poverty gap of 23-25 per cent. On the other hand, skilled public sector workers have the lowest poverty gap of 6-7 per cent. The order applies to severity index, (P_{α}=2), where pastoralists are still ranked first, followed by subsistence farmers. The table also shows that workers in the informal sector have higher poverty indices compared with their counterparts in the formal sector. Persons in casual wage employment have the next highest poverty incidence

after those in agriculture. For overall employment, approximately 50 per cent of the employed live below the poverty line.

Quantitative correlates of welfare

Previous studies using household budget survey data have analyzed the determinants of poverty (Mwabu et al, 2000; Oyugi *et al*., 2001; Geda *et al*., 2001). Without giving much detail, we summarize the findings of this studies.

The studies generally use regression analysis for the determinants of poverty with dependent variable(s) ranging from household consumption expenditure (Mwabu *et al*., 2000) to a combination of continuous and qualitative dependent variable (Geda *et al*., 2001) of whether a person is poor or not. Also, the unit of analysis in this studies range from the individual, and household to the meso level.

The studies generally show that poverty status is highly correlated with the level of education, household size and the type of occupational activity, and it is most prevalent in rural areas. Poverty falls as the level of education increases and rises with the size of the household and with engagement in subsistence agricultural activities. Extreme poverty falls rapidly as education increases and as farm household shift to non-agricultural activities. Gender does not have an effect on poverty status, but food poverty tends to decline with proportion of men in a household. Finally, the cost of obtaining water and firewood are positively correlated with poverty, poverty depth and severity. Assets such as land and livestock are negatively associated with poverty instance and severity. However, this could be due to the fact that it is not possible to differentiate between the types of land (i.e. whether it is productive or unproductive land).

Qualitative studies

This section discusses the outcomes of poverty studies based on participatory poverty assessment; for instance, in tackling poverty it is important to get ideas from the poor themselves. The Central Bureau of Statistics, individual researchers and institutions have undertaken poverty assessment studies that have adopted a community participatory approach to incorporate the views of the poor in assessing poverty in Kenya (Narayan and Nyamwaya, 1996; AMREF, 1998; Government of Kenya, 1997b; 2002). Three participatory poverty assessments (PPAs) have been conducted (i.e. in 1994, 1996 and 2001).

Table 8.4: Poverty profiles of household heads

Main occupation of household head	Poverty Line (FEI)		Poverty Line (CBN)	
	Non-poor	Poor	Non-poor	Poor
Unpaid family worker	62.8	37.2	60.5	39.5
Commercial farmer	57.5	42.5	55.8	44.2
Subsistence farmer	41.8	58.2	39.6	60.4
Pastoralist	28.8	71.2	28.1	71.9
Skilled public sector worker	79.5	22.5	76.1	23.9
Unskilled public sector worker	59.3	40.7	57.8	42.2
Skilled private sector worker	68.9	31.1	67.9	32.9
Unskilled private sector worker	52.4	47.6	50.3	49.7
Business person	68.8	31.2	67.1	32.9
Education level of household head				
Pre-school	41.0	59.0	41.0	59.0
Std 1-8	40.8	59.2	45.1	54.9
KCPE	55.8	44.2	53.1	46.9
Form 1-4	65.4	35.5	62.3	37.7
KCSE/KCE/KACE	75.3	24.7	73.6	26.4
Trade Test Cert. I - III	74.4	25.6	72.0	28.0
Post-secondary certificate	86.6	13.4	85.0	15.0
University and above	90.1	9.9	90.1	9.9
None	40.4	59.6	38.8	61.2
Employment sector of household head				
Public sector	72.3	27.7	70.9	29.1
Formal sector, own business	91.6	8.3	8.3	16.7
Formal sector, employee	63.7	36.3	61.9	38.1
Informal sector, own business	67.3	32.7	65.7	34.3
Informal sector, employee	64.2	35.8	61.0	39.0
Casual labour	42.2	57.8	39.8	60.2
Unpaid family labour	62.8	37.2	60.5	39.5
Agriculture	40.7	59.3	38.8	61.2
Gender of household head				
Male	51.7	48.3	49.6	50.4
Female	52.2	47.8	50.3	49.7
Location of household head				
Urban	46.2	53.8	44.2	55.8
Rural	82.2	17.8	80.9	19.1

Source: Oiro et al., 2004, Table 3.3

Table 8.5: Poverty by sector of employment and main occupation

Main occupation	Poverty measure (%)					
	P_α=0		P_α=1		P_α=2	
	FEI	CBN	FEI	CBN	FEI	CBN
Unpaid family worker	37.2	39.5	13.34	14.89	6.98	7.85
Commercial farmer	42.5	44.2	12.39	14.32	5.38	6.35
Subsistence farmer	58.2.	60.4	22.94	25.19	12.53	13.94
Pastoralist	71.2	70.9	35.95	38.18	23.02	24.74
Skilled public sector worker	22.5	23.9	6.11	7.16	2.68	3.16
Unskilled public sector worker	40.7	42.2	14.47	16.13	7.48	8.44
Skilled private sector worker	31.2	32.9	9.83	11.20	4.63	5.35
Unskilled private sector worker	47.6	49.7	17.43	19.37	9.23	10.35
Business person	31.2	32.9	11.27	12.55	5.95	6.68
Sector of employment						
Agricultural sector	59.28	61.24	24.39	26.62	13.80	15.23
Formal sector	31.97	33.63	10.23	11.63	4.93	5.66
Informal sector	33.26	35.07	11.94	13.32	6.31	7.08
Casual labor	57.71	60.00	23.40	25.35	12.99	14.36
Overall employment	48.31	50.18	18.83	20.71	10.35	11.50

Source: Oiro et al., (2004), Table 3.4

Prior to the first poverty assessment (PPA I) study undertaken in Kenya in 1994, all poverty related studies used quantitative techniques for data collection and analysis. PPA uses interactive methods to validate the information usually collected using quantitative techniques.

The PPAs cover only a few districts; for instance, the second PPA covered only seven districts—Mombasa, Taita Taveta, Makueni, Kajiado, Nyeri, Nakuru and Kisumu (both rural and urban areas were covered). This is unlike the household surveys, which cover most of the districts in the country. The PPAs were used to collect in-depth information to supplement the poverty estimation based on household survey data. Wide ranges of methods are used in collecting the data. These include social mapping, wealth ranking, gender analysis, focus

group discussions, key informant interviews, mini case studies, key probes, household questionnaire and observations, among others.

Methodology

Study sites: The PPA information is normally carried out in fewer clusters (villages) and districts. The former are selected through the Central Bureau of Statistics (i.e. the Ministry of Planning and National Development) using systematic random sampling. The villages are divided according to agro-ecological zones and using other criteria. The sampling procedures are aimed at offering diverse perspectives on poverty in a given district and the rural-urban dimensions of poverty.

Social mapping: This is a geographical presentation of resources and services available in a community. In each cluster, community members draw social maps. The community members identify persons they believe are quite familiar with the villages to draw the social maps. In each of the villages, the households and the key resources are identified. In many of the villages, the resources identified and included in the maps are roads, swamps, valleys, rivers, wells, boreholes, mountains, schools, health facilities and churches.

Wealth ranking: As a follow-up to the social mapping and identification of households, the research team discuss with the community members the various socio-economic groups. Wealth ranking involves ranking of individuals or households based on community perspectives of wealth or lack of it (Munguti, 1998). The socio-economic categories identified in most cases are classified as the rich, poor and very poor households.

Seasonal calendar: In addition, community members draw seasonal calendars indicating the seasonal variations. Important seasonal variations identified in many of the villages include rainfall, expenditures, incomes, diseases and food availability. The seasonal calendars show times of acute problems (shortages of food, incomes, etc) in the community, harvest times and other community activities.

Trend analysis. The trend analysis addresses the changes that have taken place in relation to the affordability of essential goods and services. The underlying reasons for such variations given by the various groups are noted. Through this process, people are able to identify the basic goods and services, which are important to them. The important changes noted in many of the villages are, prices, income levels, food availability, etc.

Timelines: Timelines for a long period of say thrity years are provided by key informants. These are lists of key events in the history of the community, which help identify past trends and problems, especially those that are related to poverty. Some of the most common timelines are drought, famine and price increases. However, most of the community members were only able to remember key events in the last 10 years.

Gender analysis: Using visuals, household properties are shown to the community representatives and notes taken: ownership, use and roles performed by women, men or both. Based on the categorization of ownership, use and roles, the research team is able to infer the gender differences in causes and impact of poverty. The ownership visuals used depict farming tools (*jembes*, *pangas* and shovels), house ornaments, cattle, land, radio, utensils, children, sofa sets, money, bicycles and sheep and goats. Some of these visuals are also utilized to identify uses of household items. The visuals depict roles, for instance washing clothes, carpentry, tailoring, ploughing, milking and house construction.

Pair-wise matrix ranking: Pair-wise matrix ranking involves ranking of the identified need/problems by a community using a matrix. The process begins by asking the community members to identify the major problems/needs in the community. These are written down on a manila paper and are paired down using the pair-wise matrix methodology. The problems are then ranked using scores and the outcome discussed with the community to validate if they are indeed a true reflection of what the community feels it needs (i.e. problems).

Focus group discussions: In each of the villages, Focus Group discussions (FGDs) are held. The groups comprise women only, men only, young women and young men. The FGDs are each held separately so as to reflect the views of the different genders and age groups. The topics discussed included the identification of major problems, definition of poverty and coping strategies.

Key informant interviews: Key informants are identified in each village and issues on poverty discussed with them. The criteria used in the selection of key informants include: length of stay in the community —that is those who have lived long in the community; respected community members; and willingness to discuss issues of poverty with the research team

The above participatory techniques are used to define poverty and its courses, identify behavioural characteristics of the poor, discuss the impact of poverty, discuss access to resources and trends in the

quality of services, and to explain the mechanisms used by communities in coping with poverty.

Perceptions of poverty

According to the participatory poverty studies, the communities surveyed defined *poverty* as follows. First, poverty was considered as the inability of an individual or a household to afford basic necessities such as food, clothing, housing, health and education for children. It was also defined as a condition in which an individual or household cannot generate new income but instead disposes off basic possession to pay for medical and education services. Finally, it was defined as a condition where the individual or household owns few possession or none at all.

There is no doubt that the participatory poverty assessment studies have enriched our understanding of the poverty situation in Kenya as seen by the poor. According to these studies, the five leading manifestations includes: begging and dependence on external assistance especially for food; poor shelter and clothing; poor health; engagement in odd jobs; and negative effects on children such as dropping from school, child labour and idleness.

About 77 per cent of those interviewed felt that poverty had worsened over time. Poverty has many facets; in addition to low income and assets, participatory assessment drew attention to exclusion and isolation and lack of trust in public agencies. This is not unique to Kenya, since the poor in other countries like Ethiopia point out that new ways have to be found that allow them to participate in development programmes and ensure that such programs reach their intended beneficiaries (World Bank, 2000).

In the participatory poverty assessment studies (AMREF, 1998), some Kenyan communities claimed that neither the district authorities nor the local government in their areas had initiated effective poverty alleviation measures. The communities attributed the lack of anti-poverty policy measures to their non-involvement in the development process. In many countries, Kenya included, the consensus in the field of development is that the beneficiaries of anti-poverty programmes should be involved in their design and implementation. The poor can provide the data and detailed insights into the causes, nature and extent of poverty, and what can be done to effectively tackle it.

According to the PPAs studies, the poor in Kenya recognize the gravity of the poverty situation and the seriousness of the challenges that poverty presents. The range of poverty based on the poor in the study communities (PPA II results) show that the poor and very poor range between 44 per cent to 83 per cent. On average about 67 per cent of the households were regarded as poor and 315 as very poor and only a few (1%) were considered as rich. The communities perceive poverty to be on the increase (Government of Kenya, 1997b)

The PPA studies use interactive techniques to identify what communities see as the major causes of poverty. Different districts put emphasis on different causes of poverty depending on the unique environmental, economic, political, historical, demographic and individual characteristics. However, most communities identified the following as major causes: inadequate rainfall, floods, wildlife menace, livestock diseases, poor soils, lack of employment opportunities, increasing commodity prices, poor extension services, inadequate productive land, corruption, over reliance on cash crops, landlessnesss, HIV/AIDS, and slow growth of the industrial sector. Other causes include high dependency ratio, ethnic clashes, insecurity, and eviction of squatters from forests (Government of Kenya, 1997b).

Who is affected most by poverty?

Different community groups have divergent views as to who is most affected by poverty; for example, some people argue that the head of household is most affected because he/she should shoulder the entire household burden. Others argue that it is the women who are most affected, while others argue that it is the divorced and/or unmarried women who have children and are living on their father's land who are most adversely affected by poverty. Others indicated that it is the old (the elderly people) who are affected most by poverty.

What emerges from this studies is that women, and by extension children, are most affected by poverty.

Comparison of PPA and household survey findings on poverty

In this section we compare findings based on the household survey (quantitative) and PPA (qualitative) studies in Kenya. Quantitative approaches mainly use household surveys to answer questions related to poverty measurement and numerical information. The data are analyzed using statistical techniques, with the interpretation of the results being guided by a discipline-specific perspective, rather than

by a broad social science model (Kanbur, 2001). Qualitative data can be used to supplement the work of poverty measurement, but must be converted into numerical data, amenable to statistical analysis.

Quantitative poverty measurement attempts to answer several questions including the following: What is the magnitude of poverty in a given country, region and among certain groups in the population? How has magnitude of poverty changed over time? What are the determinants of poverty and to want extent would poverty change if each of the determinants were to change? Who in the population is most affected by poverty?

Quantitative estimates of poverty are therefore useful for comparison purposes. The quantitative poverty studies use income as the preferred proxy (or measure) of the well-being of the people with a higher income taken to indicate a higher standard of living. These are mainly used to describe poverty based on a poverty line. In addition to describing poverty, researchers and policy makers are interested in understanding the causes of poverty, and in isolating the main causes.

PPAs have been designed mainly to do the following: to enrich the poverty profiles by illustrating local experience and understanding of poverty and vulnerability; to improve the understanding of the impact of public expenditure by eliciting the perception of the poor on accessibility and relevance of services; to contribute to policy prescription on the economic and regulatory framework by demonstrating the impact of regulation on poor households and communities; to support policy analysis of social safety nets by examining local experience of the operation of formal and informal safety net systems and the coping strategies used by the poor; and, to assess the capacities of the poor to act independently through community organization.

The PPAs have the following advantages: they benefit from the strength of the case-study methods and also of participatory approaches in investigating issues in an exploratory, open-ended way; they provide inductive elements that complement the deductive (hypothesis testing style of the survey and statistical analysis) as they are intended to promote more use of better information. They can also use statistical data to contextualize and add weight to field results in addition to promoting information and insights from participatory fieldwork. Also, they can be used in identifying and highlighting the range of both final and intermediate processes and issues that are important in poverty reduction, which include not only the multi dimensionality of poverty, but also the factors that cause poverty or make poverty reduction possible, including policy implementation issues.

With regard to the relationship between participatory poverty assessments (PPA) and household survey finding as on poverty trends, it important to mention the following: First, the two sets of findings are not directly comparable because they differ in many respects which include:

- *The dimension of poverty to which they refer*. Studies based on household surveys mainly estimate income poverty; in PPA studies, "poverty" is defined in various ways highlighting its multi-dimension nature. For instance, in this study, poverty was considered as the inability of an individual or a household to afford basic necessities such as food, clothing, housing, health and education for children; it was also defined as a condition in which an individual or household cannot generate new income but instead dispose off basic possession to pay for medical and education services; and finally, it was defined as a condition where the individual or household owns few possession or none at all.
- *Underlying assumptions about the relationships between household consumption and the well-being of household members*. Households, as mentioned above, use income to capture the well-being of individuals and households. However, this may not capture the well-being of the household very well because there are other things such as social exclusion, deprivation, and insecurity, which are not well proxied by income or expenditure, and yet contribute a lot towards the well-being of an individual and a household.
- *Approach to sampling the population*. Household surveys are normally representative samples of the entire population and the coverage is normally wide (covering most of the parts of a country). PPAs may not be a representative of the population due to their in-depth nature of data collection—their coverage is normally limited to a few places (e.g. a few districts).
- *Total reference period*. The reference period for household surveys and PPAs are normally different. Also, time intervals over which change is assessed is not the same for the two. In particular, PPAs time reference is normally longer, and in some cases it involves getting information on events that happened several years back to explain poverty situation.

Second, the two sets of findings can be used to complement each other. Such complementary use has offered more and better information on poverty in Kenya than either set on its own. For instance, the overall evidence of worsening food security, which increases people's vulnerability and changes in their livelihood strategies and the strong

focus on gender issues and inequality in the PPA can complement findings based on household surveys. Secondary sources and suggestions from various analysts and observers based on the Kenyan PPA datasets highlight a wide range of options for complementary use.

Conclusion

This study has reviewed the quantitative and qualitative studies done in Kenya, especially since the 1990s. Quantitative studies use household surveys and statistical techniques to estimate poverty lines, incidence of poverty, poverty profiles and to analyse determinants of poverty. Findings from these studies show that the poverty situation has worsened over time and both in the rural and urban areas. Certain groups of people, including subsistence farmers, pastoralist and large households, are generally poor, while high education is associated with less poverty.

The PPA studies on the other hand capture some of the poverty dimensions that are not easily captured in quantitative studies. They are used to collect in-depth information meant to supplement the poverty estimation based on household survey data using a wide range of methods of data collection.

Although the findings of the two sets of studies are not directly comparable due to the fact that they differ in various aspects, the findings can be used to complement each other. Therefore, there is a wide scope of options for complementary use of the two approaches.

References

Aigbokhan, E. B. (2000). "Poverty, Growth and Inequality in Nigeria: A Case Study", AERC Research Paper No. 102 .

Alderman, H., Behrman, J., Kohler, H.P., Maluccio, J.A. and Watkins, S. (2001). "Attrition in Longitudinal Household Survey Data: Some Tests for Three Developing Countries-Country Samples, Demographic Research, 5(1): pp78-124.

AMREF (1998). Mombasa District: Participatory Poverty Assessment Report.

Bidan, B. and Ravallion, M. (1993). "A New Regional Poverty Profile for Indonesia", *Bulletin of Indonesia Economic Studies*, Vol. 29, No. 3.

Bigsten, A. (1987). "Welfare and Economic Growth in Kenya", 1914-76, *World Development*, Vol. 14, No. 9.

Bouis, H.E. and Haddad L. J. (1992). "Are Estimates of Calorie- income Elasticities too High", *Journal of Development Economics*, 39(2), 333-64.

Cavalho, S. and White, H. (1997). Combining the Quantitative and Qualitative Approaches to Poverty Measurement and Analysis, World Bank Technical Paper No. 366.

Coller, P. and Lal, D.(1980). Poverty and Growth in Kenya, World Bank Staff Working Paper No. 389, Washington DC: World Bank.

Foster, J., Greer, J., and Thorbecke, E. (1984). "A Class of Decomposable Poverty Measures", *Economica*, Vol. 52.

Geda, A., Niek de Jong, Mwabu, G. and Kimenyi, M. S. (2001). *Determinants of Poverty in Kenya: Household-level Analysis*, KIPPRA Discussion Paper No. 9, Nairobi: Kenya Institute for Public Policy Research and Analysis.

Government of Kenya (2000a). Second Report on Poverty in Kenya: Incidence and Depth of Poverty", Vol. 2, Nairobi: Ministry of Finance and Planning.

Government of Kenya (2000b). The Interim Poverty Reduction Strategy Paper 2000-2003. Preliminary Draft Paper Prepared by the Government of Kenya.

Government of Kenya (1998). The First Report on Poverty in Kenya, Volume 1: Incidence and depth. Nairobi: Central Bureau of Statistics.

Government of Kenya (1997a). The Second Participatory Poverty Assessment Study, Kenya Volume, Nairobi: Government Printer.

Government of Kenya (1997b). Copying Without Coping: What Poor People Say about Poverty in Kenya. Nairobi: Government Printer.

Government of Kenya (1994). Kenya Poverty Profiles, 1982-1992, Nairobi: Ministry of Planning and National Development.

Government of Kenya (1965). Sessional Paper No. 10 of 1965 on African Socialism and Planning, Nairobi: Government Printer.

Greer, J. and Thobecke, E. (1986a). "Food Poverty Profile Applied to Kenyan Smallholders", *Economic Development and Cultural Change*, Vol. 35, No. 1.

Greer, J. and Thorbecke, E. (1986b). "A Methodology for Measuring Food Poverty Applied to Kenya", *Journal of Development Economics*, Vol. 24.

Hentschel, J. (1999). "Contextuality and Data Collection Methods: A Framework and Application to Health Service Utilization", *Journal of Development Studies*, 35: pp64-94.

Jalan, J. and Ravallion, M. (1995). "Are there Dynamic Gains from a Poor Area Development Program?", Mimeo.

Jenkins, S.P. and Lambert, P.J. (1997). "Three I's of Poverty with an Analysis of UK Poverty Trends", *Oxford Economic Papers*, Vol. 49, pp317-327.

Kanbur, Ravi (Ed.) (2003). Q-Squared: Qualitative and Quantitative Methods of Poverty Appraisal, New Delhi: Permanent Black.

Kanbur, Ravi (Ed.) (2001). Q-squared? A Commentary on Qualitative and Quantitative Poverty Appraisal.

Lipton, M and Ravallion, M. (1995). "Poverty and Policy", in Belrman and T. N. Srinivasan (eds), *Handbook of Development Economics*, Vol. 3, North-Holland, Amsterdam.

Munguti, K.J. (1998). "The Face of Rural Poverty: The Case of Makueni District, Kenya", in Bahemuka, J Nganda B. and C. Nzioka, *Poverty Revisited: Analysis and Strategies Towards Poverty Eradication in Kenya*. Nairobi: Ruaraka Printing Press.

Mukui, J. T. (1993). Kenya Poverty Profiles, 1982-1992. Prepared for the Ministry of Planning and National Development, Nairobi.

Mwabu, G., Masai, W., Gesami, R., Kirimi, J., Ndeng'e, G., Kiriti, T., Mainora, J. and Munene, F. (2000). Poverty in Kenya: Profiles and Determinants, Department of Economics, University of Nairobi and Ministry of Finance and Planning, mimeo.

Mwabu, G., Kimenyi, M.S., Kimalu, P., Nafula, N. and Manda, D.K. (2003). "Predicting Household Poverty: A Methodological Note with a Kenyan example", *African Development Review*, Vol. 15, No. 10.

Narayan, D. and Nyamwaya, D. (1996). Participatory Poverty Assessment Study, Kenya. World Bank Environment Department Papers No. 34.

OECD (2001). The DAC Guidelines: Poverty Reduction

Oiro, W. M., Mwabu, G., and Manda, D.K. (2004). *Poverty and Employment in Kenya*, KIPPRA Discussion Paper No. 33, Nairobi: Kenya Institute for Public Policy Research and Analysis.

Quibria, M. G. and Srinivasan, T.N. (1991). Rural Poverty in Asia: Priority Issues and Policy Option, Manila Asian Development Bank, Mimeo.

Ravallion, M. (1996). "Poor Areas", World Bank, Mimeo.

Ravallion, M. (1994). *Poverty Comparisons*, Chur, Switzerland: Harwood Academic Publishers.

Ravallion, M. and Van de Walle (1994). "A Profile of Poverty in Tunisia", Poverty and Human Resources Division, The World Bank.

Reardon, T., Delagado, C. and Matlon, P. (1992). "Determinants and Effects of Income Diversification Among Farmer Households in Burkina Faso, *Journal of Development Studies*, Vol. 28, No. 2.

Schiff, M. and Valdes, A. (1990). "Nutrition: Alternative Definitions and Policy Implications", *Economic Development and Cultural Change*, 38(2), 281-92.

van de Walle, D. (1995). "Rural Poverty in an Emerging Market Economy: Is Diversification into Non-Farm Activities in Rural Vietnam the Solution?", Public Economic Division, Policy Research Department, World Bank, Washington DC, Mimeo.

Webb, P., Bistrat, G. and Coppock, D.L. (1991). "Food Sustainability and Sustainable Growth for Pastoral Systems in Semi-Arid Africa", in Vosti *et al*., (1992). Agricultural Sustainability, Growth and Poverty Alleviation: Issues and Policies. Proceedings of the Conference held on 23-27 September, 1991, Feldating.

Wodon, Q. (1995). "A Profile of Poverty in Bangladesh Poverty and Human Resource Division", Policy Research Department, World Bank, Washington DC.

World Bank (2000). *African Development Indicators 2001*, Washington DC: World Bank.

World Bank (1995). Kenya: Poverty Assessment Report, Washington DC: World Bank.

Observations and comments from participants

- A participant observed that the use of 25-year interval in the pathways out of poverty study might have yielded biased results as some people might have moved in and out of poverty. Another concern was on the replicability of the model, as the unit of observation were likely to move in and out. The concern was whether the model could be able to project forward. Another observation was on the selection of households, which was not random. The use of 25 years was justified through the argument of a generation. Also, 10 years was said to be little time for ample observation of subjects, and might not be representative enough. The trends of economic changes are said to be observable after about 25 years. The 25 years methodology, as earlier presented, was adopted from India, with plausible results.
- The predictive power of some of the survey methods was questioned. Are surveys viable if they are not regularly conducted? The observation was that surveys are costly and cannot be done every year. On the other hand, results of survey done years apart would have results that cannot be comparable.
- There has been reluctance within some disciplines to integrate quantitative and qualitative approaches. This was a lesson for all to learn and that both approaches should be used right from data collection to analysis.
- On the poverty mapping presentation, where qualitative and quantitative methods resulted in different estimates of poverty, a policy challenge was identified in respect of which estimate to be used for reflecting the poverty status of a particular area. On policy formulation, poverty mapping was observed as being very important. Participatory research was also highlighted as being important, especially on contribution to targeting (e.g. in schools, roads, health facilities, as identified by the community). It was observed that such aspects are never included in the current estimation of poverty levels yet they contribute to poverty levels. An example was given where a community cannot access the market due to poor roads. Their produce rots or fetches low prices; therefore leading to low incomes and consequently poverty. If roads were identified as part of poverty, then it would be easy to intervene in poverty reduction.
- Researchers were challenged that they do not go back to the community to report research findings. The argument was that

some answers reside with the community, and that is where PPA works better.

- Whenever a study is undertaken, there is need to ensure that the team is multidisciplinary. This would improve implementation competence, and also ensure sufficient and relevant consultation is done.
- There is need to have feedback workshops for the respondents. There was need to pay attention to beneficiaries of policy. As research is supposed to support the communities, researchers should share their findings with the communities.
- There is need to include the policy aspect from the beginning of any study (i.e. to take on board policy users' concerns from the onset). The consumers of research output, the policy makers, have to be involved on the ground.
- The typology of policy is wide and varies at different levels. Examples of policy consumers include government, private sector, implementers and the beneficiaries.
- Questionnaire-based survey can lead to inaccurate responses. Other views from the participants were that informal, undocumented conversations are likely to be inaccurate.
- Sometimes the poor have high expectations about researchers, forcing researchers to give money to some households after observing their poverty status.
- Moving out of poverty is crucial. Rural financial markets (access to finance through savings and cooperarive societies or mobile banks) and management of terror (such as cattle rustling) could play a great role in poverty reduction.

SESSION 3: PLENARY PANEL DISCUSSION AND THE WAY FORWARD

Chair: Professor Chris Barrett, Cornell University

Panellists: Dr. John Omiti (IPAR); Dr. Paul Gamba (Tegemeo Institute); Mr. Fred Kilby (World Bank)

The Chairman spelt out the terms of reference for the panellists. According to the Chair, the panellists were to address three co-questions:

- What are the methodological gaps to be filled to make mixed methods work?
- How do we organize to employ mixed methods?
- When are the mixed methods appropriate?

Mr. Fred Kilby (World Bank, Nairobi)

- The World Bank welcomed the activities of Kenyan researchers and indicated that the Bank was ready to be involved. The use of mixed methods for poverty lines and maps for Kenya provides a better way of informing empirics. There is need for participatory research methods, for the donor community want participation of communities in finding solutions to their problems. There is an opportunity of trying out the methods especially now that Kenya is about to roll out a survey. Development partners and the World Bank want to support PPAs in Kenya and are keen to identify the leaders who can provide guidance. There is need for researchers to discuss and develop consensus on use of qualitative and quantitative methods in poverty analysis.
- There is need to bring in East African researchers, policy makers and data producers together to fight poverty reduction. In Kenya, there is ongoing work on the Poverty Analysis Data Initiative (PADI) and the World Bank is about to launch a regional poverty analysis project. There is need to build a network of regional researchers and make it have impetus in sharing information that can benefit

East Africa. To monitor poverty reduction, there is a lot to learn from other countries. Also, there is need to have specific modules for different regions, and even in universal languages such as Kiswahili.

- There is need to get information from other leading researchers and try to move forward the agenda on survey designs. The Ministry of Planning and National Development was asked to try and organize lectures with professionals in poverty analysis. There may be need to get input from overseas experts and to strengthen the link between policy making and research as this will provide more opportunities for engagement between local researchers. The World Bank wants to build capacity by funding graduate students from Kenya to do research on poverty analysis and provide opportunity to study abroad. Lastly, there is need for government to develop better data for analysis, and provide better data access.

Dr. John Omiti (IPAR)

Four areas of attention were identified:

(1) The issue of poverty mapping and profiles: estimation, representativeness of data, and data and information gaps.

(2) The need for more analysis of poverty dynamics (i.e. over time and space intergenerational and equity issues).

(3) The links to policies—poverty policies. In this case, three important areas of policy relevance are: how we should benchmark the poverty lines; targeting; and, how poverty should lead to public policy (e.g. in healthcare, education).

(4) The linkage to investment opportunities—diversification in cross and off-farm activities to structural transformation of the economy.

Dr. Paul Gamba (Tegemeo Institute)

- There is need to integrate poverty analysis methods and to know which method works best and for which particular purpose. There is also need to know how to tackle multiple entries into and exits from poverty. When the data is limiting, it means we can only deal with poverty at a particular point. There is need to establish and share panel datasets. On methodologies, a key issue is how to deal

with new households over a period of time. The researcher should consider the relationship between initial endowments and poverty.

- For the policy makers, they usually request presentations that are not quantitative although they want to quote them. This shows a contradiction. The challenge, therefore, remains that of translating information the way policy makers want it. In education, making universal primary education available is a turning point if it will help people move from being poor to non-poor.

THE WAY FORWARD

- There is need to organize teams to enable the use of mixed methods. It was observed that organizations have been doing research on poverty in bits, some employing different methods. Research design should offer replicability, and generalizability of results is necessary to reduce research costs. Each of the methods has merits, but some areas of poverty might require specific techniques. However, the issue should be how the information generated is used practically (i.e. how all the works of research is linked to public use).
- The idea of starting a regional poverty analysis centre is appropriate because policy makers sometimes get confused when given information from different organizations. Networks should comprise all disciplines, especially in poverty analysis. Collaboration reduces cost as it avoids duplication. Harmonization of research activities would always be cost-effective. There is need for informed partnerships. However, there is need for clear guidelines on how this should be done.
- The problem with policy makers is that their understanding of research findings depends on the capacity of technocrats who advise them. Therefore, to penetrate them, researchers should interact with the technocrats.
- Researchers should assume a positive attitude when advising policy makers. On mixing methods, researchers should identify where and when appropriate. For instance, where poverty mapping exists, pockets of poverty can be seen, and the benchmarks of poverty exist. To update such information, there would be no need to use quantitative methods. One can evaluate and use qualitative methods.
- There is an opportunity especially with the commitment by the Ministry of Planning and National Development (through the

Minister and Permanent Secretary) for the need to have a research agenda in Economic Recovery Strategy. Although one cannot force people to talk to each other, donors are recognizing participatory research that is part of poverty reduction.

BIBLIOGRAPHY

Adato, M. and R. Meinzen-Dick, R. (2002). Assessing the Impact of Agricultural Research on Poverty using the Sustainable Livelihoods Framework. FCND Discussion Paper 128, Washington DC: IFPRI.

Akong'a, J. (1984). Culture and Social Development. A Paper Presented in a Seminar on Culture and Development, at Kilaguni Lodge, 13 April, 1984.

Alderman, H., Babita, M., Demombynes, G., Ntabiseng M., and Özler, B. (2002). "How Low Can You Go? Combining Census and Survey Data for Poverty Mapping in South Africa", *Journal of African Economies*, Vol, 1, Issue 3.

Ashley, C. and Carney, D. (1999). Sustainable Livelihoods: Lessons from Early Experience, Department for International Development.

Bahemuka, J., Nganda B. and Nzioka, C. (1998). *Poverty Revisited: Analysis and Strategies Towards Poverty Eradication in Kenya*, Nairobi: Ruaraka Printing Press.

Baker, J., and Grosh, M. E. (1994). "Measuring the Effects of Geographic Targeting on Poverty Reduction", Living Standards Measurement Study Working Paper 99. Washington DC: World Bank.

Barret, C. and Swallow, B. (2003). Fractal Poverty Traps. Cornell University and World Agroforestry Centre.

Baver, A. R. (1972). *Social Indicators. Massachusetts*: The MIT Press.

Bigman, D., and Fofack, H. (2000). "Geographical Targeting for Poverty Alleviation: An Introduction to the Special Issue", *The World Bank Economic Review*, 14(1): pp129-45.

Bryman, A. and Burgess, R.G. (1994). *Analysing Qualitative Data*. London: Routledge.

Bulmer, M. (1990). Sociological Research Methods. London: McMillan.

Burgess, R.G. (1984). In the Field. London: Allen and Unwin.

Burton, J. (1991). "Conflict Resolution as a Political System"' in Vamik Volkan et al.(eds), *The Psychodynamics of International Relationships*, Volume II, Unofficial Diplomacy at Work, Lexington, MA: Lexington Books.

Cain, M. and Finch, M. (1981). "Towards a Rehabilitation of Data", In Abrams P. Deem, R.; Finch; J. and Rock, P. (eds). *Practice and Progress of British Sociology: 1950-1980*. London: Allen and Unwin.

Clark, C. (ed.) (1976). *The Evaluation of Social Programs*. London: Sage Publications.

Clyde-Mitchell, J. (1983). "Case and Situational Analysis", *Sociological Review*, 31(2), 187-211.

Deaton, A. (1997). The Analysis of Household Surveys: A Microeconometric Approach to Development Policy. Washington DC: John Hopkins University Press and World Bank.

Deaton, A., and Zaidi, S. (2002). "Guidelines for Constructing Consumption Aggregates for Welfare Analysis", LSMS Working Paper, 135, Washington, DC: World Bank.

Denzin, N.K. (1970). S*ociological Methods*. Chicago: Aldine.

Douglas, J. (1976). *Investigative Social Research*. Beverly Hills, California: Sage.

Ellis, F. (2000). Rural Livelihoods and Diversity in Developing Countries. Oxford: Oxford University Press.

Fiske, D. and Shweder, R.A. (eds.) Metatherapy in Social Sciences. Chicago: University of Chicago Press.

Ghali, B.B. (1992). An Agenda for Peace: Preventive Diplomacy, Peacemaking and

Government of Kenya (2000). Government Expenditures on Basic Social Services in Kenya.

Government of Kenya (2000). "Second Report on Poverty in Kenya: Welfare Indicators Atlas",Vol. 3, Nairobi: Ministry of Finance and Planning.

Government of Kenya (1999). National Poverty Eradication Plan 1999-2015. Nairobi: Government Printer.

Government of Kenya (1997). Sessional Paper No. 4 of 1977 on AIDS in Kenya. Nairobi: Government Printer.

Government of Kenya (1996). Sessional Paper No. 2 of 1996 on Industrial Transformation to the Year 2020, Nairobi: Government Printer.

Government of Kenya (1996). Welfare Monitoring Survey 1994, Nairobi: Government Printer.

Government of Kenya (1995). Social Dimensions of Development. An Approach to Human Centered Development and Alleviation of Poverty.

Halfpenny, P. (1979). "The Analysis of Qualitative Data", *Sociological Review*, 27 (4): pp799-825.

Haralambos,M. and Heald, R. (1985). Sociology. Themes and Perspectives. London: Bell & Hyman.

Hebinck, P., Place, F., Omosa, M., and Adato, M (2002). Assessment of the Impact of Agroforestry-based Soil Fertility Replenishment Interventions on the Poor in Western Kenya. Second and Third Quarterly Report to the International Food Policy Research Institute, Washington DC.

Hentschel, J. and Lanjouw, P. (1996). "Constructing an Indicator of Consumption for the Analysis of Poverty", Living Standards Measurement Study Working Paper 124. Washington DC: The World Bank.

Jones, P. (1993). Studying Society: Sociological Theories and Research Practices. London: Collins Educational.

Kimalu, P. K. (2000). The Welfare Impact of Non-farm Activities in Kyuso Location, Mwingi District, MAResearch Paper, Economics Department, University of Nairobi.

Lundstrom et.al. (1990). Communicating for Development: A Practice Guide. A project of the Lutheran World Federation.

Makokha, J. (1985). The District Focus: Conceptual and Management Problems. Nairobi: Africa Press Research Bureau.

Mbatia, Paul Nyaga (1996). Provision of Healthcare by the State in Kenya: A Fragile State versus Civil Society. PhD Thesis, Department of Sociology, Indiana University.

Ministry of Health (2003). Health Facilities in Kenya. Health Information Systems Department Datasheet.

Ministry of Health and National Council for Population and Development (2001). Kenya Service Provision Assessment Survey, Nairobi.

Ministry of Health (1994). National Health Sector Strategic Plan 1994.

Moser, C. M. and Barrett, C.B. (2003). "The Complex Dynamics of Smallholder Technology Adoption: The Case of SRI in Madagascar", Cornell University Working Paper.

National Council for Formulation Development (NCPD) (1997). Reproductive Health Communication in Kenya: Results of a

National Information, Education and Communication Situation in Survey.

Nganda B. and Mwabu, G. (1998). "Health and Poverty in Kenya", In Behemuka et al., *Poverty Revisited: Analysis and Strategies Towards Poverty Eradication in Kenya*, Nairobi: Ruaraka Printing Press.

Njeru, E.H.N. (1998). "Women, Decision-making and Poverty", in Bahemuka *et al*., Poverty Revisited: Analysis and Strategies Toward Poverty Eradication in Kenya. Nairobi: Ruaraka Printing Press.

Obudho, R.A. and Aduwo, G.O. (1988). Urban and Regional Planning in Kenya: An Empirical Application of the District Focus Policy for Rural Development. Paper presented in an IGU Commission Conference on Urban Systems in Transition, Melbourne, Australia.

Omosa, M. (2001). The Impact of Agroforestry-based Soil Fertility Replenishment Interventions on the Poor in Western Kenya. Mid-Term Analytical Report to the International Food Policy Research Institute, Washington DC.

Orreko, C. and Mutiso, R. (eds.) (1991). *Working with Rural Communities*, Nairobi: Nairobi University Press.

Organization for Economic Cooperation and Development (OECD) (2001). The Development Assistance Committee (DAC) Guidelines.

Oyugi, N.L., Mwabu G. and Masai, W. (2001). "The Determinants of Poverty in Kenya", *African Journal of Economic Policy*, Volume 8, June 2000.

Ravi Kanbur (ed.). S-squared: Combining Qualitative and Quantitative Methods in Poverty Appraisal.

Sarantakos, S. (1993). *Social Research*. London: MacMillan.

Shofield, J.W. (1993). "Increasing the Generalizability of Qualitative Research", In Hammersley, M. (ed.), *Social Research: Philosophy, Politics and Practice*, London: Sage Publication.

Silverman, D. (1985). *Qualitative Methods and Sociology*. London: Grower.

Thorbecke, E. (1991). "Adjustment, Growth and Income Distribution in Indonesia", *World Development*, Vol 19.

UNDP (1994). *Human Development Report, 1994*, Oxford: Oxford University Press.

UNESCO (1981). Participation Needs and Village-Level Development. UNESCO Publication.

Walsh, D. (1972). "Sociology and the Social World"' In Filmer, P., *Sociological Theory*, London: Collier-McMillan.

Walter, Oyugi (1986). "Two Decades of Decentralisation Effort, in *African Administration Studied*, No. 26, pp137-161.

World Bank (2000). World Development Report 2000/1 , Oxford: Oxford University Press.

LIST OF PARTICIPANTS

Mr. David Nalo	Ministry of Planning and National Development
Dr. Christopher Barrett	Cornell University (USA)
Dr. Hezron Nyangito	KIPPRA
Prof. Germano Mwabu	KIPPRA
Dr. Walter Odhiambo	KIPPRA
Mr. Paul Kimalu	KIPPRA
Mrs. Eldah Bwonda	KIPPRA
Mr. David Muthaka	KIPPRA
Mr. Robert Chutha	KIPPRA
Mr. Felix Murithi	KIPPRA
Dr. John Omiti	IPAR
Prof. E. Njeru	IPAR
Prof. W.O. Kosura	University of Nairobi
Dr. Kulundu Manda	University of Nairobi
Dr. Joseph Karugia	Africa Economic Research Consortium
Dr. Rose Nyikal	University of Nairobi
Prof. Dorothy McCormick	University of Nairobi
Dr. Mary Omosa	University of Nairobi
Mr. Michael Odumbe	University of Nairobi
Dr. Alice N. Ondigi	Kenyatta University
Dr. Elizabeth N. Kuria	Kenyatta University
Dr. Festus Murithi	Kenya Agricultural Research Institute
Mr. Anthony K. M. Kilele	Central Bureau of Statistics, Kenya
Mr. Godfrey K. Ndeng'e	Central Bureau of Statistics, Kenya
Mr. Josiah W. Kaara	Central Bureau of Statistics, Kenya
Mrs. Mary M. Wanyonyi	Central Bureau of Statistics, Kenya
Mr. Stephen Macharia	Central Bureau of Statistics, Kenya
Mr. Henry G. Onyiego	Ministry of Health
Mrs. Grace Masese	Ministry of Local Government

Mr. Seth Oyango	Ministry of Livestock & Fisheries Development
Mrs. Grace A. Agili	Ministry of Agriculture
Dr. John Randa	World Bank
Mr. Kevin Smith	USAID
Ms. Claudia Schneider	UNDP
Mr. Frederick O. Ochieng	UNDP
Mr. Ojijo Odhiambo	UNDP
Mr. Joshua Ariga	Tegemeo Institute
Dr. Paul Gamba	Tegemeo Institute
Ms. Maren Radeny	ILRI
Dr. Nelson R. Mango	ILRI
Dr. Brent Swallow	World Agroforestry Centre (ICRAF)
Mrs. Leah Onyango	ICRAF/Maseno Univesity