

**THE IMPLEMENTATION AND INSTITUTIONALISATION
OF AGROFORESTRY IN WESTERN KENYA:
A GENDER AND AGENCY ANALYSIS**

by

Helen Victoria Hambly

A Dissertation submitted to the Faculty of Environmental Studies and the Faculty of
Graduate Studies in partial fulfilment of the requirements for the degree of
Doctor of Philosophy

York University, North York, Ontario, Canada

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ABSTRACT

This study analyses agroforestry project implementation and efforts to institutionalise new and improved agroforestry technologies at the local level. It concentrates on the case of the CARE Agroforestry Extension Project (AEP) in Siaya District, in western Kenya, which is one of the oldest and largest agroforestry projects in sub-Saharan Africa.

Farmers in western Kenya have used trees for centuries. In the early 1980s, fears of an impending “woodfuel crisis” in the region catalysed the set-up of agroforestry research and development projects to promote technologies such as tree nurseries, alley-cropping, multipurpose woodlots and “green” fencing with trees. Women’s groups have been the primary means through which agroforestry projects have been implemented in western Kenya.

The theoretical framework of this dissertation combines insights from policy and project implementation, gender relations and institutional and organisational studies. Its research methodology involved in-depth interviews with 96 male and female farmers and 33 women’s groups in Siaya District, as well as discussions with representatives of government and non-governmental organisations. Quantitative data provided baseline information about the farmers, women’s groups and agroforestry adoption. Qualitative data was analysed with NUD*IST (Non-Numerical Data Indexing, Search and Theorizing) software to explore farmer perceptions, organisational relationships and project processes.

The analysis covers 12 years of the implementation of the AEP, investigating its content and context between 1983 and 1995. The author argues that the project failed to

recognise farmers as social agents who act both in appreciation of, as well as in opposition to, the structures of a project that seeks to institutionalise agroforestry. Institutional analysis in agroforestry can be improved by investigating policy and project implementation. However, gender relations influence farmers' agency and should be incorporated into implementation analysis.

This study concludes that efforts to institutionalise agroforestry at the local level failed to take into account the extent to which agroforestry was already being practised by farmers, the abandonment of some agroforestry technologies and the collapse of women's groups. On these fronts, in fact, there was de-institutionalisation as a result of project implementation.

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FOREWORD

This dissertation responds to the requirements of the Ph.D. program in Environmental Studies at York University, Canada. The Ph.D. program (FES) offers an opportunity to pursue interdisciplinary research that brings theory into practice and bases practice in theory. My Ph.D. Program Plan concentrated on the field of “Environments, Institutions and Interventions”. This area, according to the FES guidelines,

... focuses on the relationship between human institutional frameworks and the social and cultural construction of human environments. In these terms, “environment” refers to the individual, social, organisational, built, and natural situations that are initiated by the direct and indirect interventions of human institutions in their settings (e.g., through analysing, understanding, criticising, organising, planning, designing, policy making and managing).

My Program Plan set as its main objective the analysis of agroforestry research and development institutions in sub-Saharan Africa from a theoretical viewpoint of feminist political ecology. This dissertation represents the final step of my Program Plan. It follows completion of approximately eighteen months of course work and comprehensive examinations in four areas: 1) Gender, Environment and Development, 2) Land Rights, Markets and Expropriation, 3) The State and Women’s Agency in Africa, and 4) Rural Planning and Women’s Role in Agriculture. As recognized in my Program Plan, and subsequently, explained in the course of this dissertation, an interdisciplinary approach and the need to connect theory and practice are fundamental to advancing environment and development studies.

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1. INTRODUCTION

Agroforestry is viewed as one of the most potentially sustainable land use options for sub-Saharan Africa¹. However, the weakness of supportive institutions at the national and local levels is considered a major limitation to agroforestry among resource-poor farmers (Thompson, 1992; Follis and Nair, 1994; Cooper *et al.*, 1996). Policy prescriptions for institutional development in agroforestry often fail to recognise the role that farmers and social relations play in creating and reproducing supportive institutions, particularly at the local level. Farmers, both male and female, are active in defining the forms and uses of agroforestry technologies and the extent to which local organisations involved in agroforestry activities succeed or fail. In this respect, local people ultimately establish the integrity of the often elusive institutional linkages that have been sought in agroforestry research and extension (Kaimowitz, 1990; Hoekstra, 1994). The extent to which research and development policy, and their associated projects, can claim to strengthen or build effective or supportive institutions at the local level is an important area of social science research work in agroforestry.

¹ Agroforestry is commonly defined as the intentional mix of agriculture and forestry on the same land management unit (Nair, 1989). It has also been defined as phases in the development of a productive agroecosystem for increased social, economic and environmental benefits (Leakey, 1996). Its technologies include multipurpose tree species, and tree, crop and/or livestock mixtures. Agroforestry can help farmers to produce food, woodfuel and/or construction materials, and generate income from the sale of agroforestry products, while protecting and improving their ecosystem (see also Annex 1).

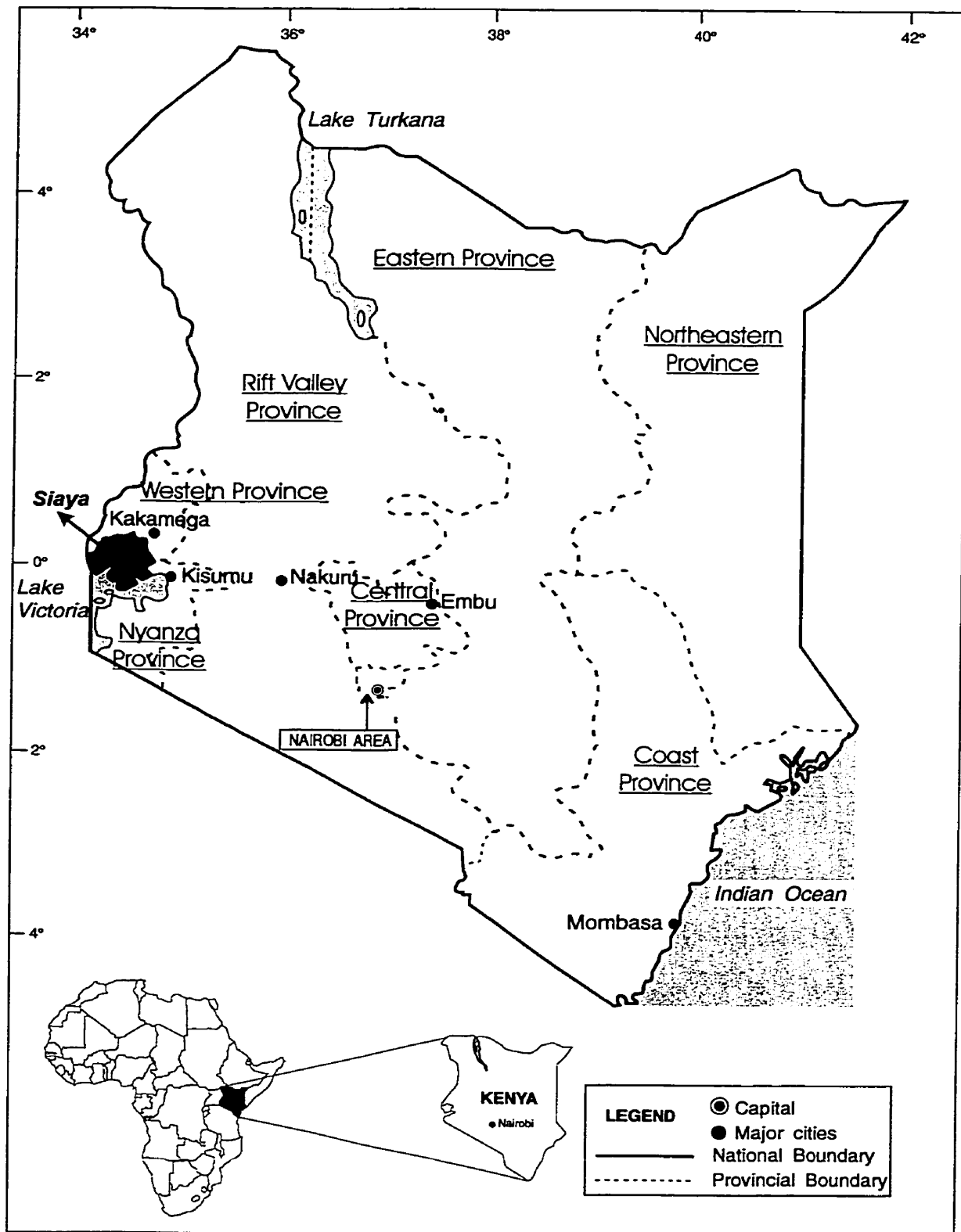
This dissertation explores agroforestry project implementation and efforts to institutionalise new and improved agroforestry technologies at the local level. The context of the study is one of sub-Saharan Africa's longest-operating agroforestry development projects, the CARE Agroforestry Extension Project (AEP) in Siaya District, western Kenya (see Figure 1.1). The dissertation addresses two deficiencies in implementation studies and one major gap in the institutional analysis of agroforestry. The first deficiency is the failure to conceptualise project clients or beneficiaries as social agents who act both in appreciation of, as well as in opposition to, the structures of a project. The second is the failure of implementation analysis to fully draw upon the contributions of gender and development analysis, and therefore the lack of an appreciation for the diversity that exists among and between project participants and their organisations (Young, 1993; Levy, 1998). Grindle (1980) observes that implementation analysis investigates "what happens, and why", but must also explore "to whom does it happen?" The major gap within contemporary institutional analysis in agroforestry addressed by this study is the lack of attention to the cognitive, or meaning-centred, dimension of institutions. Currently, most agroforestry research focuses on the regulative and normative side of institutions, including land tenure, research and extension support, marketing and pricing, and, to a lesser extent, organisational governance.ⁱ Relatively little work has been done to incorporate the cognitive context, or the "third pillar" of institutions referred to by Scott (1995:38) and elaborated by Zucker (1988) and Tolbert and Zucker (1996). Yet, the cognitive aspect of institutionalisation at the local level would encompass farmers'

“internalisation” of rules and norms as evident in their individual and group behaviour as well as in their motivations and perceptions of an agroforestry project.

1.1 The Research Problem and Questions

The promotion of agroforestry policy for environmentally and economically sound “sustainable” development through the implementation of a project is very difficult (Morss, 1984; Fowler, 1991; Madeley, 1991).² One problem for a project is the long time frame required for trees to produce and yield benefits for the agroecosystem and its users (ICRAF, 1989; Izac and Swift, 1994). In addition, there are the uncertainties of planning and delivering a project in an unpredictable environment, which may involve major climatic irregularities, political disruptions and economic collapse that can drastically affect the production, use and sustainability of annual and perennial tree and food crops (Bates, 1989; Cooper *et al.*, 1996). Finally, there is concern as to whether or not the agroforestry technologies being promoted were ever ecologically and/or socially appropriate for their intended user group (Rocheleau, 1991; David, 1995). Admittedly, one individual cannot possibly examine in sufficient depth all the factors (technical, historical, etc.) that define agroforestry or an agroforestry project. However, some issues have been neglected more than others, and those include agroforestry project implementation.

² The conventional definition of a project is “... a special kind of investment. The term connotes purposefulness, some minimum size, a specific location, the introduction of something qualitatively new, and the expectation that a sequence of further development moves will be set in motion” (Hirschman, 1968:2).



Map 1.1. Map of Kenya (including provinces and major cities)

Implementation analysis is useful to agroforestry because it operates on the premise that the delivery of policies or projects is affected by problems created by the individuals and organisations that manage and participate in the project. Brinkerhoff (1996:1395) believes that this recognition has motivated a surge of interest in implementation studies. Implementation analysts have proposed alternative approaches to explain how and why implementation occurs the way it does, and why policies or projects lead to outcomes that may not have been anticipated in the diagnosis or design stages. Implementation studies do not duplicate or substitute for project evaluation; on the contrary, the evaluation and impact assessments of projects become ingredients of implementation analysis. The study of implementation explores the course taken by a project and its outcomes throughout the process of project delivery over a long term, and uses this analysis to improve policy decision making.

The main research problem addressed in this study is determination of the extent to which the implementation of an agroforestry research and development project institutionalises agroforestry at the local level. This requires in-depth analysis of the project and its efforts to strengthen institutions at the local level. Such efforts may include, for instance, extension of new and improved agroforestry technologies or techniques to farmers, linkages with non-governmental organisations (NGOs) or public sector agencies at the local level, or material support to farmers for agroforestry.

The posing of the research problem in this manner does not mean that the tools needed for an analysis of agroforestry project implementation and institutionalisation are

in place. The relevant literature on institutions, technology and agricultural development furnishes a range of “neo-institutional” frameworks that cut across some of the boundaries of economics, political science and sociology (Bates, 1989:4; Scott, 1995:24).ⁱ However, a fairly orthodox view of institutions as the governance, enforcement or standardisation of rules and roles still prevails in the hallways of national and international research institutes and the field offices of development organisations.ⁱⁱ Sociologist Richard Scott (1995:35) submits that regulations and norms are only part of what constitutes institutions because individual and shared human experience create meanings for the institutions in people’s lives and livelihoods. This cognitive dimension goes beyond seeing institutions as “rules of the game” or the power or authority to enforce those rules, and examines the “internalisation” of roles and rules in society, economy and polity (Tolbert and Zucker, 1996).ⁱⁱⁱ The ways in which people interpret, negotiate and reproduce institutions, both as individuals and as groups of individuals within organisations, explain the form and function of institutional processes (DiMaggio and Powell, 1983:143).

In agroforestry, a wider view of institutions is useful for exploring why some project activities succeed while others fail. To date, institutional analysis of agroforestry has been restricted to the regulative and normative dimensions of institutions. This includes land and tree tenure issues (Fortmann, 1985; Raintree, 1987) as well as agroforestry policy and planning as described by Raintree and Young (1983), Raintree (1987), Budd *et al.* (1990) and Arnold and Dewees (1995). As elaborated in Chapter 2, some contributions from institutional and organisational studies view institutions as a

process, and the product of a process, through which social meaning and experience are generated and reproduced. Successful implementation of an agroforestry development project would contribute to *institutionalising* agroforestry by recognising how farmers generate and reproduce a meaning and purpose for agroforestry that is consistent, or at odds, with what a project sets out to achieve.^{iv}

This broader definition of institutions complements the work of agroforestry researchers such as Rocheleau (1991) and Cashman (1992), who contend that farmers in Africa constantly determine for themselves the relevance of traditional and new or improved agroforestry technologies. It cannot be over-emphasised that the perception of farmers as agents, and not as passive recipients of technology, is a conceptual starting point that contradicts their image, particularly that of women farmers, as victims of deforestation, land degradation and woodfuel deficits in sub-Saharan Africa (Fairhead and Leach, 1998).

By highlighting the role of farmers as social actors, or what is referred to as placing an emphasis on *human agency*, attention is focused not only on farmers, but also on the gender relations implicit in socially constructed experience in agroforestry projects. The two concepts, human agency and gender relations, direct attention to power-charged social relations that affect both individual and group behaviour, and the structures around them. As discussed in Chapter 2, there is nothing new about either of these terms or their association (Stamp, 1993; Apter and Garnsey, 1994). It has long been recognised that farmers intentionally use their knowledge and capacity to practise agroforestry, and that

women farmers are primarily the agroforesters of rural Africa (Hoskins, 1979; Rocheleau and Edmunds, 1997). The challenge to this study is to use these concepts in the analysis of policy and project implementation to explain why farmers, both male and female, individually and collectively, act as agents to engage with, or possibly disengage from, project activities that do not meet their needs and interests. How and why this behaviour contributes to generating and reproducing a meaning for agroforestry within and beyond the project's lifetime are further questions to be explored in this study.

Two research questions are identified on the basis of the above discussion:

1. Why does the implementation of an agroforestry project contribute (or not contribute) to the institutionalisation of agroforestry at the local level?
2. To what extent do farmers' *agency* and *gender relations* influence the implementation of a project and its efforts to institutionalise agroforestry?

1.2 The Case Study

These research questions were addressed in the context of a case study of the CARE-Kenya Agroforestry Extension Project (AEP) in Siaya District, one of the oldest agroforestry development projects in sub-Saharan Africa and Kenya (Getahun, 1990; Kerkhof, 1990). The AEP is a good choice for this study for three main reasons. Firstly, the project has involved interaction between organisations at different levels. CARE itself is an international non-governmental organisation (NGO). As with other NGOs,

significant attention is paid to direct, on-farm interaction between CARE extension workers and farmers. Since 1983, the AEP has promoted agroforestry in western Kenya through assistance to 3000 small-scale farm households (Vonk, 1983).^v Over the course of project implementation, extension activities have involved individual farmers as well as approximately 300 groups of farmers referred to as “women’s groups” (CIDA, 1995:87).^{vi} The AEP has also made an explicit attempt to institutionalise its project activities by linking up with the government, both nationally and at the local level in Siaya (Buck, 1993:127; CIDA, 1995:81).^{vii} Collaboration with government research and development agencies, and with international research institutes such as the International Centre for Research on Agroforestry (ICRAF), based in Nairobi, Kenya, was also included in the project to assist in the identification and adaptation of new or improved agroforestry technologies to local conditions.

Secondly, the AEP was not limited to one agroforestry technology; instead, it employed a “menu” of techniques and, at one point in the project, a package of assistance to farmers via women’s groups. This “package” included technical advice and supplies for the production of tree seedlings, as well as equipment and other material support for agroforestry. The main agroforestry practices promoted in the AEP from 1983 to 1995 included the management of on-farm and community tree nurseries, alley cropping, improved woodlots, live fencing or boundary planting, and new species of multipurpose trees for fruit, fodder, timber and construction poles. It is, therefore, possible to investigate specific agroforestry techniques that were sustained, and others that were not, and how

they affected the overall implementation of the project. Annex 1 provides a more detailed description of agroforestry. The specific technologies promoted in the CARE AEP are spelled out in Chapters 4 and 5.

Finally, the CARE AEP is a strong case study for analysing project implementation and institutionalisation at the local level because it has a high reputation supported by a popular and academic literature.^{viii} The project has been referred to as “one of the most successful attempts at disseminating simple and appropriate agroforestry technologies in Kenya” (Cook and Grut, 1989:22). The project donors, the Canadian International Development Agency and CARE-Canada, which have invested an estimated ten million dollars in the project between 1983 and 1995, regard the project as successful insofar as it has generally achieved its objectives (CIDA, 1986; CIDA, 1995: 108-10). Furthermore, the project is cited as a favourable case of farmer adoption of agroforestry innovations (Feldstein *et al.*, 1989; Scherr, 1992a, 1992b, 1995). This image suggests that it will be possible to find evidence of how the project’s implementation has led to the institutionalisation of agroforestry in Siaya District.

It was due to the AEP’s considerable reputation that the author first visited the project in 1987. Subsequently, in 1991, came an opportunity to conduct field research on inter-household gender relations and agroforestry in Siaya District for the author’s Masters thesis (Hambly, 1992), when she found that the adoption of certain introduced agroforestry technologies was highly uneven at the inter-household level (see also Muturi, 1991; David and Swinkels, 1994; Scherr, 1995; David, 1995).^{ix} Like Diamond (1992),

who examined AEP activities in South Nyanza District, the author was concerned over social issues relating to agroforestry at the intra-household level. Beyond the agroforestry technologies promoted by the AEP, there appeared to be more systemic problems in the project's implementation that had led to difficulties in delivery of its promises.

1.3 Research Method and Approach

This study employs an inductive research approach based mainly on qualitative data and facilitated by a relatively new computer software programme for qualitative research. Rist (1994) contends that qualitative research is the most appropriate method for the analysis of policy and project implementation.

Qualitative research allows for the study of both anticipated and unanticipated outcomes, changes in understandings and perceptions as a result of the efforts of the program or policy, the direction and intensity of any social change that results from the program, and the strengths and weaknesses of the administrative/organizational structure that was used to operationalize the program. Policy makers have not equally grounded means of learning about program impacts and outcomes as they do with qualitative research findings. (Rist, 1994:551)

As Patton (1990) and Yin (1993) observe, the qualitative case study starts with specific observations, then uses the data to seek or build towards patterns or generalisations about individual cases. Unlike a hypothesis-testing or deductive research strategy, which sets out variables in advance of the data collection, an inductive approach uses an explicit theoretical framework to provide a lens through which qualitative and quantitative data are interpreted to arrive at concepts and variables (Huberman and Miles, 1994).

Qualitative research requires multiple sources of data (Brannen, 1992; Silverman, 1993). As indicated above, a large amount of information on the CARE AEP is available from documents ranging from internal project reports to evaluations to case studies and academic theses. This substantial information base is important because of the diversity of viewpoints on the project generated over a relatively significant period of time. In addition, fieldwork was carried out in Siaya District in 1995 to interview farmers, women's groups and local officials and project staff involved in the AEP. Table 1.1 summarises the different sources of data and specific methods employed in this study.^x Further explanation and justification for these methods are provided in Chapter 3.

Finally, the computer software known as NUD*IST (Non-Numerical Unstructured Data Indexing, Searching and Theorising) was used to work with the large volume of text-based data collected from multiple informants.^{xi} NUD*IST has received good reviews (Tesch, 1990; Weitzmann and Miles, 1995; Burgess, 1996). Its advantage is that it rapidly facilitates the searching, sorting, multiple coding, cross-referencing, storage and retrieval of text-based data. The software is described in more detail in Chapter 3.

Table 1.1 Research Strategy: Level of Project Implementation, Type of Respondents and Method of Data Collection

Level of project implementation	Type and number (n) of respondents	Data collection method
Household	Individual male and female farmers once (or still) involved in the AEP (n=54); farmers who have not been involved in the AEP (n=42)	In-depth farmer interviews/ discussions; observations
Sub-location	Groups of farmers involved in the AEP (n=11); informal discussions with women's group leaders (n=18)	Group interviews/ discussions; observations; attendance at community meetings (baraza)
District	Government officials; project staff; public servants; other NGOs (n=25)	Formal and informal interviews; NGO visits; organised workshop on preliminary results (Siaya)
National	Government officials; national and international researchers; other NGOs	Formal interviews; attendance at seminars, conferences; archival research and secondary literature review; seminar to present research proposal (ICRAF); seminar to present preliminary research results (University of Nairobi)

1.4 Relevance and Overview of the Study

This study will give two reasons for concluding that the AEP has not contributed to institutionalising agroforestry in Siaya District over a 12-year span (1983-1995). The first is rather simple, but as will be explained later, requires restating and further research. The AEP cannot claim that its activities institutionalised agroforestry in a context where endogenous institutions sustain farmers' interest in, and need for, agroforestry. Secondly,

and more unexpectedly, as DiMaggio (1991:13) contends, the project experienced *de-institutionalisation* insofar as farmers ceased to create collectively, then individually, a meaning and purpose for their agroforestry activities. This study found that the de-institutionalisation was manifested in the breakdown of intra-organisational linkages, including a lack of trust relations, erosion of shared meaning and purpose for agroforestry within women's groups and an abandonment of agroforestry by farmers who once had been considered "adopters" of new and improved technologies. Nevertheless, the process of de-institutionalisation is not entirely a negative trend for the future of agroforestry in Siaya District. While a serious collapse of some agroforestry activities has occurred among women's groups and individual farms, there is evidence of farmers' agency and organisational changes that can potentially improve farmers' lives and sustain some forms of new and improved agroforestry even across generations (Izac and Swift, 1994).

In general terms, the contributions of this study can be grouped under three headings:

- 1) It widens the focus of institutional analysis in agroforestry by creating links between key research areas;
- 2) It identifies key features of institutionalising (or rather, as determined at the end of this dissertation, de-institutionalising) agroforestry at the local level;
- 3) It contributes to the body of knowledge about qualitative data analysis in environmental and development studies.

Firstly, as already mentioned, this study uses a theoretical framework based on implementation analysis informed by two guiding concepts – human agency and gender relations – to examine the process of institutionalising agroforestry at the local level. Neither of these concepts has been explicitly brought to bear on the analysis of policy or project implementation, particularly in the context of sub-Saharan Africa. Also, the conceptualisation of farmers as social agents who can participate in, but still resist the structure of, a research and development project is relatively neglected in agroforestry research. To bridge this gap, the author links the context of agroforestry extension and development with three distinct areas of social science: 1) policy and project implementation analysis, 2) institutional and organisational studies, and 3) feminist perspectives on environment and development. Figure 1.2 illustrates the conceptual links made in this analysis.

Secondly, this study contributes to agroforestry research by identifying four features of the process of institutionalising agroforestry at the local level:

- 1) The expansion and contraction of women's groups that play a pivotal role in agricultural activities in Siaya and in the AEP (Chapter 7);
- 2) The power relations within and between organisations in the project (Chapters 5 and 8);
- 3) The inconclusive nature of agroforestry adoption and project impact at the household level (Chapter 6);

4) The consequences of farmers' agency in the process of implementing the AEP (Chapter 8).

Identification of these key trends, or patterns, in the project infers that implementation of the AEP has not necessarily strengthened institutions that support agroforestry in Siaya District. Instead, as stated earlier, *de-institutionalisation* has taken place.

Lastly, this study makes some contribution to the use of qualitative research methods, and in particular the use of qualitative data analysis computer software that holds promise for implementation studies and agroforestry research based on the case study method.

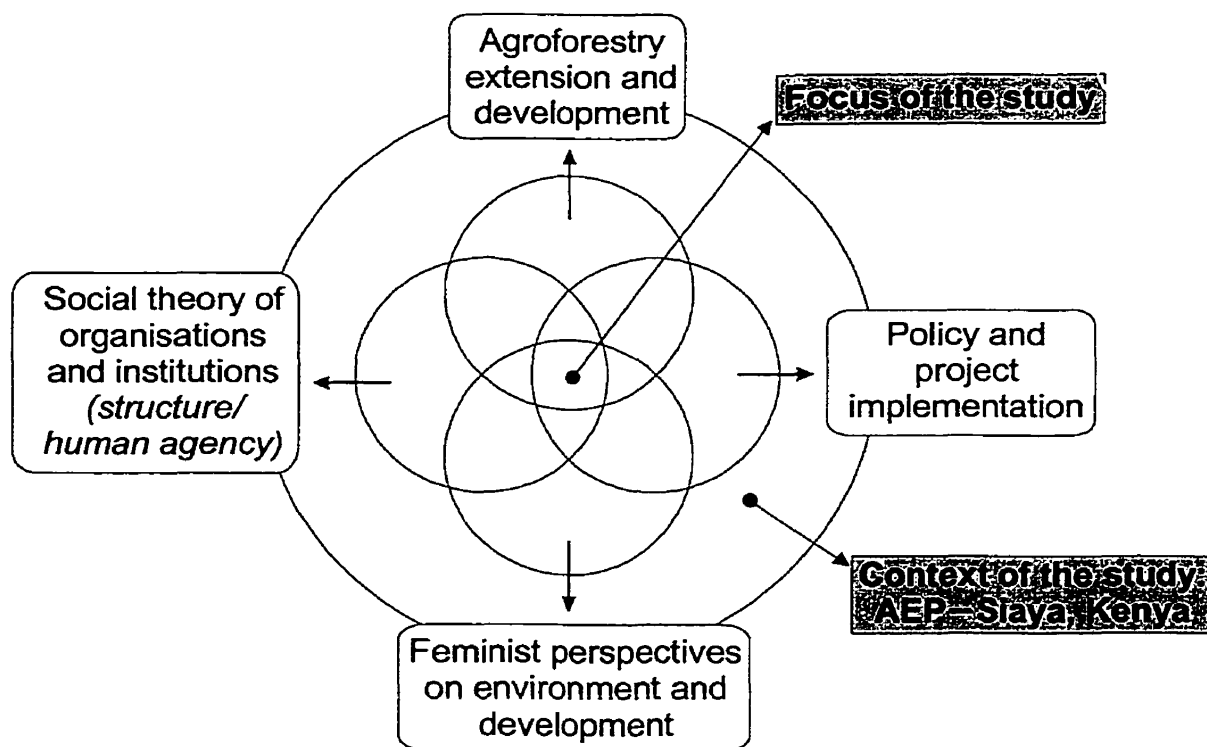


Figure 1.2. Conceptual Links and Focus of the Study

1.5 Overview of the Dissertation

This dissertation is organised into nine chapters. The first chapter has introduced the topic and presented an overview of the study, including the research problem and core questions guiding the study. It has also provided a brief outline of the case study and the research methods and approach employed. The relevance and contributions of the study of project implementation and the institutionalisation of agroforestry at the local level have also been introduced.

The next two chapters provide some background. Chapter 2 reviews the relevant literature and presents the theoretical approach of the study. Chapter 3 describes the research methodology in greater detail, including a detailed justification for using the qualitative data analysis software, NUD*IST.

Drawing on data from colonial administration and post-colonial government archives, oral histories and the analysis of secondary literature, Chapter 4 discusses the historical and environmental context of agroforestry in Siaya District. It places the CARE AEP in the context of wider shifts in development policy and planning as related to agriculture and forestry, mainly in western Kenya. The chapter traces the reasons for promoting agroforestry as an overlap of traditional and modern land use practice among Siaya District's main ethnic group, the Luo.

Moving on to a more contemporary context, Chapter 5 maps the course of the CARE AEP and identifies the project's partners and organisational relations in Siaya

District. Important landmarks in project implementation are established to assist in the interpretation of what happened while the AEP was being implemented.

The next two chapters seek to locate the meaning and experience of agroforestry among farmers and women's groups. Chapter 6 is mainly based on the results of in-depth interviews with farmers. The extent of agroforestry adoption and abandonment among farms once or still active in the CARE AEP, and those farms that have not participated in the project, are discussed. The extent to which agroforestry is being sustained at the level of the household is also considered. Chapter 7 focuses on the results of group interviews and other fieldwork. Issues within and among the women's groups are identified. The reaction of the project to group problems and the reasons for group survival and collapse are addressed.

Chapter 8 examines the content and context of the AEP implementation in order to come to terms with what happened, to whom and why, in the project between 1983 and 1995. The chapter specifically identifies farmers' agency and the influence that gender relations had on the implementation of the project, and the project's reaction to pressures for change.

Finally, Chapter 9 summarises the research findings and identifies their relevance, strengths and limitations. Policy implications and some recommendations for future research and development activities conclude the dissertation.

Notes

ⁱ The geographic coverage of the institutional literature on agroforestry is quite wide. The reader is referred to work from Niger (Thompson, 1992), Java and Gambia

(Schroeder and Suryanata, 1996), Ecuador (Follis and Nair, 1994) and the Dominican Republic (Current *et al.*, 1995). Sub-Saharan Africa has received relatively extensive attention in institutional analyses, in particular on land and tree tenure by Fortmann (1985) and Raintree (1987), and agroforestry policy, priority setting and planning procedures (Raintree and Young, 1983; Raintree, 1987; Budd *et al.*, 1990; Hoekstra, 1994; Franzel *et al.*, 1996). Although most of these studies have examined the economic and/or legal (tenure) basis for agroforestry institutions, the politics of agroforestry in terms of governance and political struggle are the focus of Thompson (1992) and Schroeder and Suryanata (1996), respectively.

ii To date, agriculture-related studies of institutions have encompassed various sub-themes, ranging from the enforcement of environmental policy (World Bank, 1997) to market behaviour (Bates, 1995) to the organisational culture of local resource user groups (Uphoff, 1992b).

iii This perspective comes partly from the author's current work with an international research centre, the International Service for National Agricultural Research (ISNAR), which is part of the Consultative Group for International Agricultural Research (CGIAR) and whose mandate is the strengthening of national agricultural research policy and management.

iv "The game" is a classic analogy employed in institutional theory, and organisational behaviour and implementation analysis (Bardach, 1977; Axelrod, 1984; Aumann and Hart, 1994).

v One of the earliest uses of the term "institutionalisation" is found in Selznick (1957:16). He identifies institutionalisation as a process involving "what happens to an organisation over time." Selznick considered institutionalisation to be influenced by an organisation's history and environment, and the vested interests of its membership. Goetz (1997:5-9) elaborates several definitions of institutions and institutionalisation which have been examined in the discourse of gender analysis. Institutionalisation as "mainstreaming" gender equity has been a key focus of gender perspectives on institutions as a process of structuring social transactions and maintaining social order (Goetz, 1997:8). However, the process is not necessarily a healthy one, as explained in this dissertation. The contrasts with a framework that sees the process of institutionalisation as organisations maturing and improving over time (Scott, 1995:18-9).

vi The term "household" is used in this study to describe the house or compounds (groups of houses) that feed and shelter the resident family members. In western Kenya, households may have more than one wife/mother (that is, they may be polygamous). In most households there is a varying number of residents, as members of the extended family (paternal relatives, including grandchildren, nieces or nephews) may live there at a particular point in time.

^{vii} As in other well-populated areas of Kenya, women's self-help groups are widespread throughout Siaya District. In 1995, 2105 women's groups were registered with the District Office of the Ministry of Culture and Social Services. The author estimates that 1000 more groups had been formed by that year under the auspices of district churches (Republic of Kenya, 1994a; FGCSP, 1983, 1995; District Office, 1995; discussions with local officials).

^{viii} Specifically, Buck (1993:127) states that the ultimate goal of the project is to "build institutions" and CIDA (1995:81) states that it is to "improve institutional capacity."

^{ix} The AEP has been the subject of at least three M.Sc. and Ph.D. dissertations (van Schaik, 1986; Diamond, 1992; Hambly, 1992) and several case studies (Feldstein *et al.*, 1989; Vonk and Safman, 1991; Arum, 1993; Buck – various; Scherr – various). Siaya District, and more generally western Kenya, feature in a number of relevant natural resource management, ethnobotany and anthropological studies, including Troup (1922), Whisson, (1964), Odinga (1967), Ogot (1967), Hay (1972), Bookman (1973), Hay (1976), Ocholla Ayayo (1976); Okeyo (1980), Cohen and Odhiambo (1989), Omamo (1995), and Kokwaro and Johns (1998). The evaluations commissioned by the project or its partners include CDP Consultants (1985), CIDA (1986), Fowler *et al.* (1986), Nyamai and Kimmondo (1988), Scherr (1989a), Scott and Masai (1989), Alitsi and Oteku (1990), Scherr and Alitsi (1990), Smillie (1990), Okonya *et al.* (1991), CIDA (1995).

^x The author first travelled through western Kenya in 1987 as part of a regional project to survey environmental organisations for the United Nations Environment Programme. In 1991, she lived in Siaya for 11 months. Later, in addition to the four months spent on Ph.D. field research in 1995, the author continued to visit Siaya from her marital home in the neighbouring area of Samia, in the southern part of Busia District.

^{xi} Briefly, the women's groups involved in this study represent 11% of the estimated 300 women's groups believed to have been supported by the AEP in Siaya District (CARE, 1991b; CARE, n.d.). This is more than ten per cent of the 230 groups involved in the survey by Scherr and Alitsi (1990). The author also interviewed ten per cent of the AEP farmers earlier surveyed by Scherr and Alitsi (1990). Copies of raw questionnaires from the 1989/90 CARE/ICRAF adoption survey were kindly made available to the author (see Chapter 3).

^{xii} NUD*IST was developed by regional and urban planning researchers at La Trobe University in Australia. Its most common applications seem to be in the health sciences (e.g. client perceptions of service) and in social welfare. To the best of the author's knowledge, the software has not yet been used in the study of agroforestry. NUD*IST can manage vast quantities of data for qualitative data analysis – a big change from the old-style "cut-and-paste" methods. The speed of its operations can, with proper thought and organisation on the part of the researcher, increase the depth at which indexing and

searching for relevant trends and patterns is performed in data files. NUD*IST is considered to be superior to most other qualitative data analysis packages currently available (Huberman and Miles, 1994; Burgess, 1996). It also has some drawbacks, which are discussed in Chapters 3 and 9 of this dissertation.

2. PROJECT IMPLEMENTATION AND INSTITUTIONS: DEBATES AND CONCEPTUAL FRAMEWORK

2.1 Introduction

The aim of this chapter is to review the relevant implementation studies. Although global in perspective, the review is related, where possible, to examples from sub-Saharan Africa, and particularly Kenya. Implementation, whether of a policy or project, is explored here as a process of change characterised by uncertainties and implicating institutional structures, resources and relationships among diverse actors and organisations. As explained below, there are three broad generations of policy and project implementation analysis; furthermore, it is the author's opinion that a fourth domain is in the process of emerging.ⁱ The birth of this fourth generation is the outcome of addressing the theoretical weaknesses in the application of implementation analysis to development and environmental policy and projects. The discontinuities in contemporary implementation analysis benefit from a connection with two relevant fields of study: 1) institutional and organisational studies, and 2) feminist perspectives on development and environmental issues.

The major transitions in policy and project implementation studies are discussed in the pages that follow. The concept of an agroforestry project as a social structure and farmers as actors, both individually and as groups (organisations), is also explored. This examination is aided by conceptualising agroforestry institutions as social constructs built on three types of pillars: regulative, normative and cognitive. Emphasis is given to cognitive institutions for two reasons: firstly, because the cognitive domain has received

less attention in the analysis of agroforestry institutions; and secondly, because the cognitive, or meaning-centred, context of institutions fits well with the concept of farmers' actions, or agency, in agroforestry. The final part of the conceptual road map for this study is a review of relevant literature on development and environmental policy and project approaches written from a feminist perspective. An argument is made for approaching implementation studies from a feminist perspective with a view to addressing gender relations in agroforestry project implementation. The chapter ends with a summary of the theoretical approach to the case study.

2.2 Policy and Project Implementation Studies

It is acknowledged in global development circles that seemingly good policy and planning can, and does, go wrong in its application (Morss, 1984:467; Patton, 1986:108; Madeley, 1991:8). The failure of policies and projects is a complex issue that often implicates both the substance of the policy or project as well as the process of implementation (Found, 1991:229; Brinkerhoff, 1996a:1395). Researchers or analysts who specialise in implementation do not seek to pass judgement on the merits of a policy or project, but rather to investigate the details of what happens to a particular policy or project, and why it happens. Project implementation is conceptualised in this study as a disorderly process involving decision making, negotiation and action by multiple actors and organisations while being simultaneously affected by interests in and outside the project. While most implementation analysts use policy as their starting point, this study begins at the project level and makes inferences to arrive at the policy level. As Crosby (1996:1405) and

Brinkerhoff (1991:12) have suggested, the relation between policy and projects is a continuum in which neither is distinct from the other. The author views this continuum as a running scale between the macro and micro levels. This study's focus on the project is also appropriate in the context of agroforestry because it is at the field level that agroforestry is carried out and where the process of change envisioned by policy is translated into reality.

Implementation has not been recognised sufficiently among academics as a distinct area of study. As a middle ground between planning and evaluation, implementation is recognised as essential, but it seems to have been considered too complex and unpredictable to yield theories. Some analysts, such as Morah (1990:19), avoid this problem by referring to implementation analysis and evaluation research as complementary debates in academia. This study's view of implementation is perhaps broader because it can use the evaluation and impact assessment exercises performed in the course of delivering a project as data for its analysis. With these considerations in mind, let us now elaborate the background to the study of policy and project implementation.

Policy and project implementation analyses constitute a relatively small, but well-established and increasingly international area of study.ⁱⁱ "Implementation is in," declared Berman (1978:158), and nearly 20 years later a special issue of the journal *World Development* projected a similar impression (Brinkerhoff, 1996a). The number of key references and empirical works to support and sustain this field of study has grown, as is

evident from the literature reviews offered by Morah (1990) and Najam (1995). From these and other key texts, including Grindle (1980), Morss and Gow (1985) and Goggin *et al.* (1990), three generations of implementation studies can be roughly delineated, although they do not appear in a strict chronological order.

2.2.1. Generations of Implementation Analysis

Najam (1995) notes that the first generation of implementation studies originated in the early decades of the twentieth century, when implementation was conceptualised as a “machine-like” set of formal administrative tasks.ⁱⁱⁱ Implementation as “scientific management” assumes that policy or project content, including its goals and tasks, are fixed and therefore predictable. In this approach, resources are easily controlled and managerial behaviour is implicitly rational and objective throughout the course of delivering a policy or project (Gulick and Urwick, 1937). The content of the policy and project is unquestionably relevant to its beneficiaries and there is an implicit capitulation to bureaucratic and authoritarian delivery mechanisms. This approach to project implementation is exemplified by the “top-down” delivery of rural development services under colonial administration in countries such as Kenya (Leonard, 1977; Bates, 1989).

From the late 1960s onwards, a second generation of implementation analysts, influenced by systems theory and the concept of turbulent environments, recognised that managerial rationality has limits and that the vast amount of information needed to analyse implementation makes it a far more complex area of analysis than previously thought (Pressman and Wildavasky, 1973; Bardach, 1977).^{iv} Recognition of the importance of the

environment, or context, of project implementation involved identification and consideration of a myriad of historical, ecological, economic, political and socio-cultural variables. As a result, implementation analysts sought improved models and tools for dealing with the complexity of implementation, to help individual implementers (read “managers”) maintain a high degree of objective rationality in such conditions. Analysts belonging to this second generation saw as their task the identification of empirical relationships and information about current situations which could be used to simulate explanatory models and anticipate future consequences (Simon, 1976). As Najam (1995:6) observes, this “empirical tradition” of implementation studies was instrumental in fracturing the linear, mechanistic mindset of policy formulation and project management processes. Implementation began to be viewed as a process of diverse economic, political and social interests in which uncertainties could arise. The assumption that policy and project management could be treated like a “scientific” formula began to be challenged for the first time by, for instance, the role of culture in creating inconsistencies and surprises along the course of policy and project implementation (Heginbotham, 1975; Warwick, 1982).

Nevertheless, most implementation analysts of that time still sought to model the complexity of the implementation process for prediction purposes. Theoretical tools emerged, such as Bardach’s (1977) adoption of the compelling metaphor of implementation as a “game” to focus attention on the complexities of how players, rules and tactics could contribute towards understanding policy outcomes. In rural development,

the practical expression of this second generation of implementation analysis was an emphasis on increasingly comprehensive or integrated approaches to development policy and the planning of development projects (Lele, 1975). The deficiencies in integrated rural development approaches in Kenya, for instance, are well- documented (Leonard, 1984; Maos, 1984; Conyers, 1985). Livingstone (1981) has shown how various elements of a major IRD project in western Kenya, including family planning, a maize credit scheme, supply of agricultural inputs, tea expansion (through credit), women's programmes and a functional literacy project, were characterised by a serious lack of co-ordination, bureaucratic inertia, redirection of resources to other areas and local disengagement from the programmes. All of these issues were recurrent themes in the 1980s literature on policy and project implementation, based on the implicit assumption that such complexity could at least be modelled, if not controlled (Grindle, 1980).

Eventually, the conviction that implementation could be simulated, predicted or addressed in its complexity gave way to the current, third generation of implementation studies concentrating on the need and search for a "theory of implementation" (Goggin *et al.*, 1990). Most often, implementation analysts conclude that it is impossible to arrive at a theory. They are more likely to decide, like Morah (1990), that implementation analysis only offers a set of guidelines, or to quote Najam (1995), a list of "defining variables". Even the guidelines for implementation analysis vary on a case-by-case basis (Najam, 1995:56). Some fieldworkers in development and environment programmes have termed implementation modelling extremely "messy" (Afiff and Grenier, 1995). Not only is an

implementation model unlikely to fit more than one case, but "... simply tinkering with existing operating routines or refining the analysis of policy options ..." would be underestimating what can be learned from implementation analysis (Brinkerhoff, 1996a:1395). This does not mean that analysts do not agree on the basic elements of implementation. For instance, two widely accepted variables of implementation analysis are: 1) the *content* of the policy or project, and 2) its *context*. While there is a divergence of opinion over the weight given to each variable, both interact to define policy or project implementation (Found, 1991). As the two different models offered by Grindle (1980) and Najam (1995) suggest (see Figures 2.1 and 2.2), the requirements of the case or location dictate the balance between the two variables on the one hand; and on the other, the emphasis on elements such as the importance of clients, coalitions during the course of implementation, commitment among stakeholders in the project, and capacity (as knowledge and resources) for project implementation.

Both Najam (1995) and Grindle (1980, 1996) concur that two key aspects affect the success of implementation: 1) the influence of power relations; and, related to this, 2) the issue of popular participation in policy and project implementation. Grindle (1980) highlights the "power capabilities" among individuals and organisations (or stakeholders) involved in implementation as a key methodological step in implementation analysis. Thus, implementation is seen as "a political calculus of interests and groups competing for

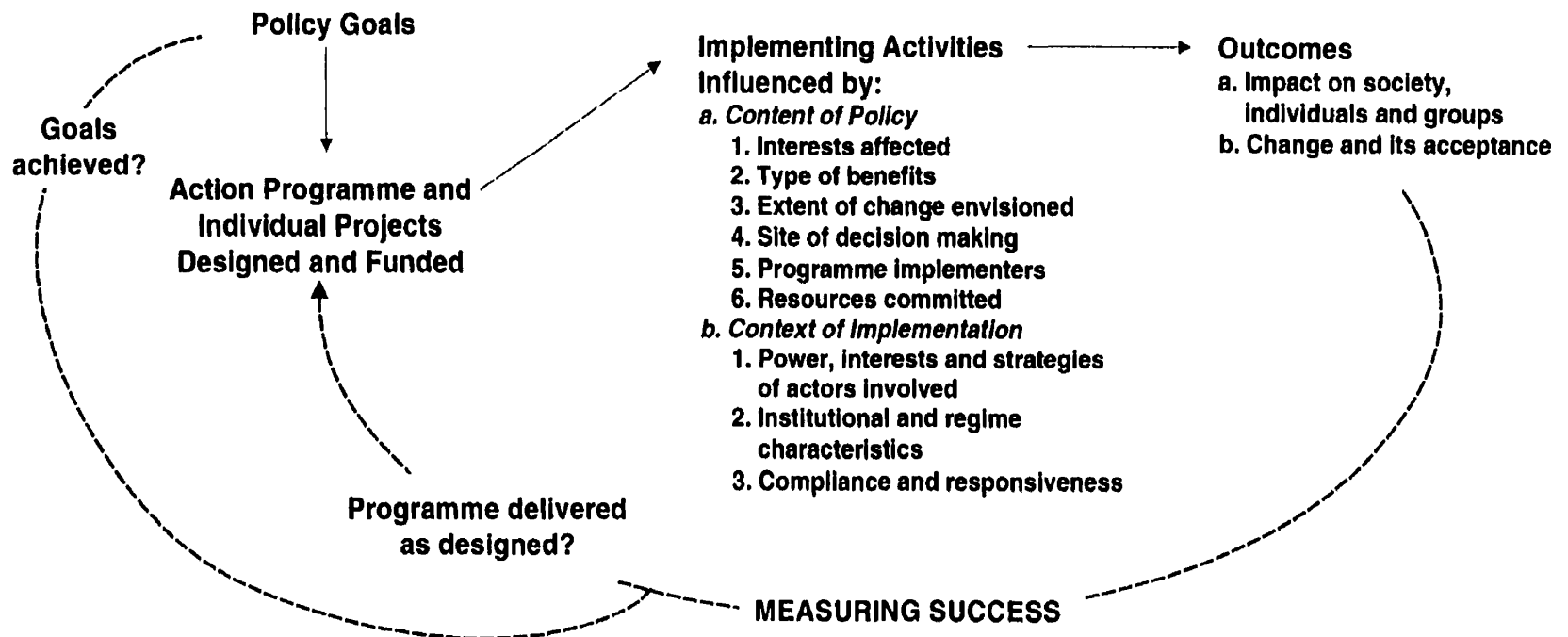


Figure 2.1. Implementation as a Political Process (Grindle, 1980)

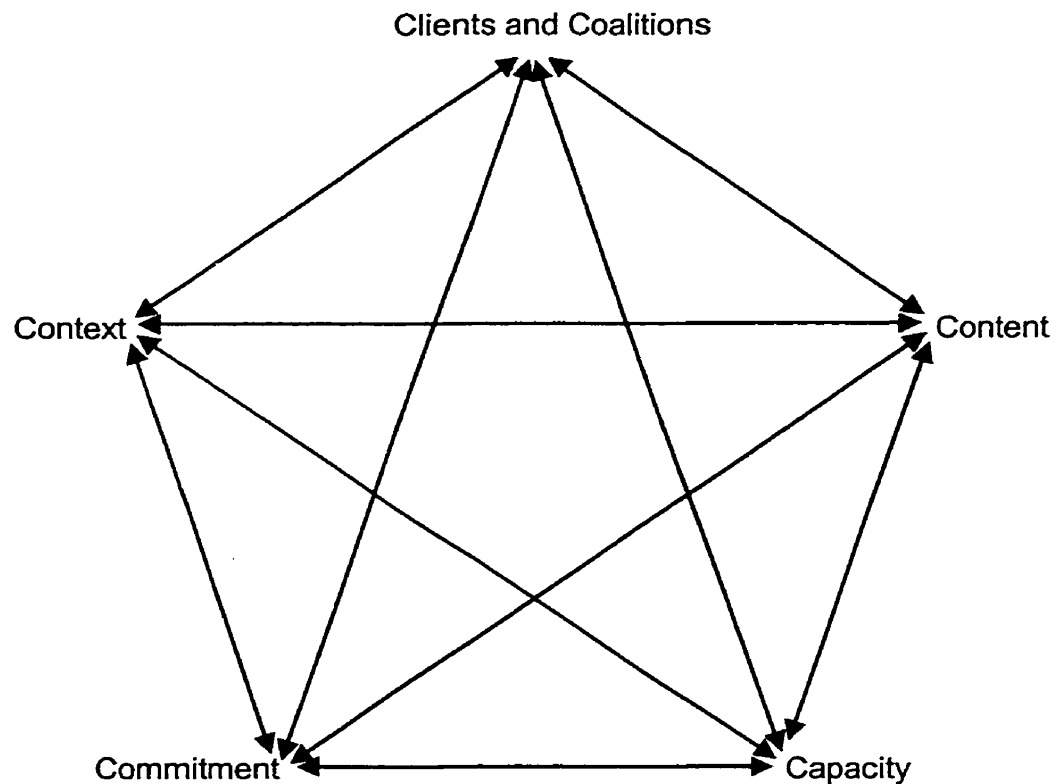


Figure 2.2. The 5-C Protocol for Implementation (Najam, 1995)

scarce resources, the response of implementing officials and the actions of political elites” (Grindle, 1980:12). Grindle’s (1996) comparative case studies of development policy in Kenya and Mexico show how State intervention in policy formulation in Kenya often overwhelms the implementation of policy. However, other implementation analysts (e.g. Honadle and van Sant, 1985) focus less on higher-level political power in the implementation process and more on the power relations expressed through transactions between agencies, including the partnerships and co-operation required for allocation of scarce resources and the sustainability of action desired by policy and projects.

The second point of divergence among implementation analysts is over popular participation in policy and project implementation. Recently, implementation analysts have found that stakeholder involvement in the implementation process and the role of the target group in defining and reaching policy goals are positive factors for success (Found, 1997). As Najam (1995:13) elaborates, the “top-down vs. bottom-up” debate in implementation has tended to divide, not unite, implementation theorists. Rein and Rabinovitz (1978:328) once argued that “an open and complex decision-making process that functions at many levels is always in danger of eroding consensus and distorting its initial priorities.” Other analysts argue that programmes simply erode over time due to lack of interest among the target population (MacLaughlin, 1976:169; Warwick, 1982). The form, degree and influence of beneficiary involvement in the implementation process are widely debated, which suggests that implementation analysts cannot supply easy answers to the question of participatory implementation (Bullock and Lamb, 1984; Love, 1992). Participatory development is not always understood in the same way by all people, and there are observable difficulties in generating and sustaining genuine popular participation in research and development projects (White, 1994; Pretty, 1995; Found, 1997).

2.2.2. Transitions in Implementation Analysis

Conditions are now ripe for the evolution of a fourth generation of implementation analysis because of three transitions. Firstly, implementation analysis is being applied to more complex issues, typically encompassing subjects that lie well outside its origins in

the realm of public administration and management studies. For instance, Found (1991), Najam (1995) and Brinkerhoff (1996a) all see the study of implementation as relevant to the analysis of global environmental problems. For these analysts, the fate of national-level action plans and the demands placed on newly instituted environmental policies reinforce the need to consider the interdisciplinary nature of environmental issues and the adjusted spatial and temporal frames in which the analysis is carried out. For example, analysts investigating the implementation of sustainable development policies or projects may need to address their content and context beyond the immediate generation, or across the geographic area, on which they are focused.

Secondly, public policies and services are now not only managed by government bureaucracies. A “third sector” (a voluntary/not-for-profit sector) increasingly instigates and implements development and environmental policies and projects. The relation of the third sector to the State and its bureaucracy varies, but as Fowler (1993) observes, these organisations are distinct from government. Still, there is significant diversity within non-governmental organisations (Bratton, 1990; Korten, 1990; Attack, 1999).^v Ultimately, a wider type of public sector policy and project requires careful reassessment of some key concepts and approaches to implementation analysis. For example, Lipsky (1980:23-5) has identified the concept of the “street-level bureaucrat”, an individual, perhaps a junior civil servant, who plays a crucial role in facilitating or frustrating the regulations and procedures of policy implementation. In the light of a wider understanding of the implementing agencies within the public sector, it is useful to ask if NGO field-level

workers behave the same way – though without having the influence of an extended bureaucracy.

The third transition shaping studies of implementation is the movement beyond the simple dichotomy between project implementers and project beneficiaries. The recent trend towards participatory approaches to policy priority setting and project planning suggest that the differentiation between beneficiary and implementer will become even more blurred (Chambers *et al.*, 1989; Pretty, 1995). So far, implementation analysis has not responded to the possibility that policy or project beneficiaries can, or could be, *de facto* or *de jure* implementers whose actions define what happens, or does not happen, in project delivery. This is particularly true when project participants contribute resources as individuals or groups to the project, or manage activities designed to achieve self-reliance.

Overall, these three transitions have created the conditions for the emergence of a fourth generation of analysis that would be a further step beyond the structural-functional origins of implementation studies. As yet, however, there is little evidence that the analysts are moving beyond reforming policy and project implementation, to reinventing them. For example, in recent implementation literature, the approaches reviewed by Brinkerhoff *et al.* (1996) suggest that implementation studies can yield new tools and procedures for development management that will account for why the most thorough of policy development and planning processes fall short of their goals and objectives.^{vi} This approach would reform the existing development agenda, but not necessarily invalidate it. Yet, the “industry” of policies and projects that constitutes

international development work too often deserves the critiques it receives. Sachs (1992:1) flatly states that it is time to write the obituary of development. For Sachs (1992, 1993) as well as other scholars (Shiva, 1989; Arnfred and Bentzon, 1990) reformation of development processes will never lead to the release of control that is necessary to create and sustain new power-sharing structures. The fourth generation of implementation studies, if it evolves, will be based on a capacity to address power relations in the implementation process as well as to uncover dysfunctional policy and projects in order to transform the way in which development is understood and occurs.

As this discussion suggests, research into policy and project implementation has been conducted over several decades and is likely to continue to be a relevant area of study for the foreseeable future. However, this area of analysis has two “blind spots” which will be mentioned here and explored in more detail later in the chapter. Both of the gaps are particularly obvious when implementation studies overlap with the study of agroforestry in sub-Saharan Africa. The first blind spot is that implementation analysts tend to conceptualise policy and project participants as beneficiaries, and not as social agents. The view that people simply receive policies and projects neglects the extent to which people can, and do, resist or refuse to participate in policy and project implementation. The second weakness in implementation analysis is that it is largely blind to gender issues. Within the body of literature reviewed by Najam (1995) and Morah (1990), and most of the material used as references in this study, there is little evidence that policy and project implementation analysis has included the gender relations dimension. Studies by Snyder,

et al. (1996) and van Nostrand (1993) are important exceptions among implementation analysts. Staudt (1991) and Moser (1993) have investigated the relevance of policy implementation and the implementation of gender-sensitive development planning, but with few references to the specific guidelines or models of implementation studies carried out over the past three decades. This issue is discussed further in section 2.4, under the heading of Feminist Perspectives on Development and Environment Policy, where recent contributions to the debate concerning gender and institutions by Goetz (1997), among others, are reviewed.

2.3 Organisations and Institutions

Institutions exist in society to allocate resources and to create exchange mechanisms and support organisations. They are generally thought to respond to human biological, social and psychological needs (Scott, 1995).^{vii} It is possible to see institutions as social constructions having three dimensions, or what Scott (1995:38) refers to as conceptual “pillars.” As summarised in Table 2.1, institutions require “carriers” or different types of structures in society (Scott, 1995:52). These carriers can be grouped under three headings: 1) cultures that are wider than specific societies, 2) social structures (including policy and authority systems), and 3) routines (ingrained habits and patterns of behaviour).

The first pillar, referred to as the regulative view of institutions, is the classic notion of institutions as enforceable rules and procedures in society. The judiciary and legislative bodies governing society would fall into this category. Typically, the regulative view of

Table 2.1 Institutional Pillars and Carriers

Carrier	Pillar		
	Regulative	Normative	Cognitive
Cultures	Rules, laws	Values, expectations	Categories, typifications
Social Structures	Governance systems, power systems	Regimes, authority systems	Structural isomorphism (imitation)*, identities
Routines	Protocols, standard procedures	Conformity, performance of duty	Performance programmes, scripts (behaviour patterns and sequences)*

Source: Scott, 1995:52

Note: * definition added by author

institutions features in the institutional analysis of agroforestry and is evident in the emphasis on supportive land and tree tenure legislation, opening of markets for agroforestry products and improvement of planning procedures for agroforestry research and development (Raintree and Young, 1983; Fortmann, 1985; Raintree, 1987; Budd *et al.*, 1990; Arnold and Dewees, 1995).

The second institutional pillar is a normative view of institutions, which places less emphasis on the “rules” of society than on the norms and values that are culturally and historically encoded in these social rules (Scott, 1995:133-5). Not all societies share the same institutions since institutions are shaped by their particular historical and cultural contexts and therefore vary in time and space. This approach to institutions is

characteristic; for instance, Cashman (1992) suggests that the acceptance of new agroforestry technologies by farmers in West Africa can be explained by the compatibility of new technologies with the indigenous and prevailing norms and values of agroforestry. However, this perspective on institutions is unsettling because it avoids tackling the assumptions behind technological innovation as a driving force for social change (Appfel-Marglin and Marglin, 1990). Also, in this respect it is useful to recall the comments of Rocheleau and Juma-Field (1995) on the hypothesis of there being “more people and less erosion” in Machakos, Kenya (see the book with the same title by Tiffen *et al.*, 1993). Rocheleau and Juma-Field argue that “Akamba norms and values” with regard to soil conservation did not simply begin in 1930, the starting point of the book. This neglect of historical context, and an environment that transcends Machakos, are central to an explanation of how and why *fanya juu* (soil terraces) are maintained in the district.^{viii}

Finally, the cognitive view of institutions, which stresses the meaning-centred, experiential aspect of society, is the third pillar of Scott’s (1995) characterisation of institutions. Among cognitive institutional analysts, the phenomena of common identity and behaviour patterns, often involving trust relations, are crucial to social transactions that embed or internalise institutions in society (Zucker, 1988; Ciborra, 1993; Furlong, 1996; Tolbert and Zucker, 1996). Language, conversation and symbolic behaviour can be important expressions of the experience individually and collectively built up by organisations, which are subsequently perceived as institutions. In the area of agroforestry there is no work that specifically refers to the cognitive dimension of institutional analysis.

However, studies by Rocheleau (1991), den Biggelaar (1995) and Rocheleau and Edmunds (1997) are relevant insofar as they illuminate how groups of farmers generate a system of knowledge with specific language and repeated behaviour to support certain indigenous agroforestry practices.

Together, the three pillars represent different sides of what institutional analysis in agroforestry can be. In theoretical terms, the three pillars underlie the process of embedding and maintaining institutions in society, which is the specific interest of this study. This is what organisational theorists refer to as the process of “institutionalisation” (Powell and DiMaggio, 1991). The term “institutionalisation” is often used to refer to the process and outcome of the regularisation, maintenance and diffusion of social rules, norms and meaning (Scott, 1995:78). However, in the regulative and normative perception of institutions, the process of institutionalisation is inherently the design, control or enforcement of rules or norms such as laws, prices or techniques. In contrast, cognitive theorists see the enforcement of social rules, norms and meanings as a process of embedding or internalising rules, procedures or norms to make a meaning for them at the level of both the individual as well as the organisation. This process of institutionalisation is not externally driven, but can be externally influenced (Powell and DiMaggio, 1991; Tolbert and Zucker, 1996).

It is also useful to recall that institutionalisation, in the wider sense of the term, has a less positive interpretation when it refers to the physical or psychological incarceration of individuals within the physical or abstract confines of institutions. There it implies the

enforcement of social controls that make it increasingly difficult, if not impossible, for an individual to leave or exist outside the institution (Foucault, 1979; Dreyfus and Rabinow, 1983). While acknowledging this area of literature on institutionalisation, it is the interplay between social actors and structures which is of greater relevance to an investigation of project implementation and an analysis of the institutionalisation of agroforestry at the local level.

2.3.1 Structure and Agency

The academic discourse on individuals as actors, or human agency, and social structures is too extensive to review in its entirety within the limited scope of this study.^{ix} Derek Layder's (1994) presentation of the state-of-the-art issues in social theory provides a useful review of the relevant discourse. Of specific relevance to this study is the recognition that the relation of human agency to structure is only one of three key dualisms in social theory (Layder, 1994:2). The other dualisms include a macro/micro debate on the origins and purpose of social change, and an age-old dilemma concerning the relative significance of the individual to the social group. Layder encourages social theorists to be mindful of these layers of dualisms in social theory; however, he, too, is absorbed by the intellectual impact of the dualism between human agency and structure in society which is highlighted by Anthony Giddens's (1984) "theory of structuration."

For Giddens, all social behaviour can be explained by the interaction, across time and space, of social actors who express their agency against social structures. In this context, "structure" has no physical connotation, but represents the meaning (or memory

of the meaning) of “rules and resources” in society and the essential human action capable of reproducing them. This human action, or agency, is an intentional expression of human capability to produce and reproduce an effect. In this way, agency implies power, and no one is powerless. As Layder (1994:137) comments,

[everyone] ... always has some resources at their disposal with which they can attempt to alter the balance of the power relationship. Babies can cry to attract the attention of their parents, prisoners can engage in “dirty protests” or hunger strikes to put pressure on the authorities. This does not ensure that the power relation will be equalised or even turned around, but it does mean that people are never completely helpless when subject to the power and control of others.

Unlike Foucault (1979), whose view of human behaviour amidst authoritarian institutions is far less optimistic, Giddens (1984) proposes that the “duality of structure” allows agency and structure to exist not as two opposing phenomena, but one phenomenon with a dual nature in which structure is as intrinsic to agency as agency is to structure. According to Giddens (1984:181), “structural constraints do not operate independently of the motives and reasons that agents have for what they do.” For Layder (1994:132), this means that social agency and structure are two sides of the same coin. Structures are not external to the person, but “internal” to human activity; therefore, outside the activity they simply do not exist. In Giddens’s paradigm, institutions, as social structures, do not exist independently of the reasons, motivations and reflexive behaviour of human beings as social agents (Layder, 1994:140).

While Layder (1994) finds Giddens’s work more useful than Foucault’s because of its positive perspective and avoidance of the dichotomy of agent and structure, he sees a

weakness in Giddens's bias towards agency and the subsequent rejection of social structures as "objective realities". Layder makes a strong argument that while structures are affected by the meanings that social actors give to them, they can exist autonomously as part of a social system. Thus, the durability of social structures over time and space cannot be explained by agency alone (Layder, 1981).

Agents are not, therefore, entirely free to make choices that do not have considerations or consequences attached to them. As Fierlbeck (1997:42) argues,

Rather than existing as self-contained agents wafting through a universe of endless choices, we are situated creatures who are continually and insidiously affected by the more fundamental emotional and psychological ties which we require in order to perceive choices in the first place.

While recognising the limits to agency, the concept is useful for an analysis of participation in development policy and projects. It encourages implementation analysts to come to terms with the concept of human agency as the ways in which people can be caught up in – or actively resist being dominated by – forces, including project structures, over which they may have little or no control (Arnfred and Bentzon, 1990). The agency/structure dualism has been addressed in studies related to agroforestry and rural development. Blaikie and Brookfield (1987) and Long and Long (1992) propose that farmers' acts of agency prove that individuals and groups have an innate capability to effect change in their environments. This could mean, of course, resistance to activities from which they do not benefit (Bebbington, 1994). Farmers' acts of agency have been shown to involve, for instance, speaking against and opting out of project activities (Uphoff, 1992b). This means that farmers are not passive within the structures of

development policies or projects, but have some recourse to “exit” and “voice” options (Hirschman, 1970; Paul, 1994).

2.4 Feminist Perspectives on Development and Environment

There is no place in the world where rural society is homogeneous (Kloppenburger, 1991).

What is referred to here as “the local level” is highly heterogeneous, with diverse individuals and organisations whose needs, interests and activities vary widely and reflect both past and prevailing cultural and historical conditions. Among feminist scholars, there is a common concern that power relations in society are structured so asymmetrically that women and men rarely receive equal and/or equitable treatment and representation (Nicholson, 1986). Other research has shown that due to the ever-changing roles and relations which women and men experience in their lifetime, it is difficult to generalise about gender relations.^x The analysis of gender relations focuses on the diversity of gender roles and relations in society to account for disparities that exist between men and women, and among women themselves (Connell, 1987; Young, 1988). It is through this capacity to address both unity and differences among women that the concept of gender gains its analytical strength.

The analysis of gender relations in development and environment developed rapidly from the late 1960s as the “invisible” role of women in the development processes was illuminated (Boserup, 1970). Substantial research has been generated on topics relevant to agroforestry, including the vital role played by women in food production, post-harvest storage and agricultural markets. Of relevance to this study is the literature addressing

gender issues in sub-Saharan small-scale farming, particularly in western Kenya. Although this body of literature is relevant to the study, it is extensive. Therefore, we shall specifically refer to key pieces of the literature over the course of this study and summarise this work and its relevance in Annex 2.

2.4.1 Gender Analysis and Development Policies and Projects

Over the course of more than 30 years, debates concerning women, development and the environment have been launched from various feminist perspectives (including, in addition to those already quoted, Jaggar, 1983; Stamp, 1989; Ng, 1991; Moser, 1993; Merchant, 1989).^{xi} By the 1980s, two major approaches for assisting women in developing countries had emerged in the policy and planning literature, and they have influenced development policy and agroforestry projects. The first of these approaches is the framework known as “WID” or women in development (Overholt *et al.*, 1985).^{xii} WID promoted the seemingly innocuous logic that helping women helps children, and therefore the family, to prosper. Rooted in ethnocentric, Victorian ideals of the family, as well as the notion that a woman’s life is primarily defined in relation to childbirth and caretaking activities which are complemented by the “benevolent leadership” of her husband, WID addresses the basic or practical needs of women and their families but poses little threat to more strategic needs and interests of women in society (Molyneux, 1985; Young, 1993).^{xiii} For example, in Kenya the vast majority of registered farms are recorded as being owned by the male “head of household” (Mbeo and Ooko Ombaka, 1989). As Wanjala (1990) explains, land legislation in Kenya is a historical outgrowth of

colonial statutory law. This ethnocentric bias falsely assumes that women farmers can gain access to land through their husbands, fathers or sons (Khasiani, 1991). In reality, women such as widows, abandoned wives and daughters can be extremely land insecure and therefore at risk of losing their livelihood, food and shelter. However, WID assumes that women separate their practical (or basic) needs from their long-term, political (or strategic) needs (Hambly, 1992:145-7). The tendency in WID to separate the practical from the strategic dimensions of women's lives has been seen to have particularly negative consequences for their access to natural resources (Kettel, 1991; Agarwal, 1992; Heyzer, 1992). As the example of women and land tenure in Kenya suggests, WID policies and projects can do little to address violations of women's natural resource rights.

A second major approach in development policy and planning to advance the status of women is a framework known as Gender and Development (GAD). GAD differs from WID in that it seeks to address both practical and strategic gender needs and interests, including issues such as women's lack of legal and political representation and greater social and economic value for women's labour and knowledge. In its specific use of the term "gender" and not "women", GAD policy addresses itself to the compromise, complementarity and conflict intrinsic to socially constructed relations between men and women (Young, 1988; Miller and Razavi, 1998). The motivation underlying GAD is that if gender relations are socially constructed attitudes and behaviour, they can, and do, change (Plewes and Stewart, 1991:126). Such change occurs through the empowerment of women and the liberation of men from roles and relations that they may no longer desire

(Whitehead, 1985). The goal of empowerment is what distinguishes the GAD agenda from the WID one (Moser, 1993). Yet, as Rathgeber (1990) suggests, the empowerment goal has made the translation of GAD theory controversial and difficult because the deep-rooted power relations within development institutions are unlikely to be changed as rapidly as feminists may wish.

In this respect, recent work on “getting institutions right for women” has brought GAD analysis and organisational studies together (see Goetz, 1997, a collection of papers which appeared in an earlier form in *IDS Bulletin*, Vol. 26, No. 3, 1995 and Levy, 1998). Goetz (1997:16-23) proposes a framework for a “gendered archaeology of organisations” that emphasises eight elements for analysing gendered organisations.^{xiv} Levy (1998) similarly presents the notion of a “web of institutions” consisting of thirteen factors that intersect gender with sites of power within institutions and their organisational landscape. Such feminist critique of organisations and institutions is based on evaluating social transactions within organisational environments. The case studies presented by Goetz (1997) cover a wide variety of organisational contexts, from NGOs to national parliaments to international agencies such as the United Nations Food and Agriculture Organization (FAO), and from organisations working in agriculture to women’s credit programmes. Not surprisingly, each context is found to be different, and therefore it is argued that a general list of prescriptions for policies or projects to address “women’s interests” will not sufficiently change the gender biases of institutions. In her final analysis, Goetz (1997:28) argues that change continues to occur through political struggle by male and female

feminists within as well as outside all types of organisations to transform the institutions of local and global societies.

From this discussion of feminist perspectives on development and environment policy, it can be seen that gender-related research and development work continues to evolve by confronting some major obstacles. The author believes that gender analysis is complicated by three challenges: 1) the resistance to change in development structures, 2) the ability of development structures to absorb and de-politicise alternative approaches and the pressure for change, and 3) increasing “gender fatigue” amidst a rising sensitivity to gender issues.

First, it is apparent that over the past decade development structures have proved themselves to be *resistant to change* when it comes to addressing gender inequities in institutions.^{xv} As Halvorsen (1991) and Stamp (1993) suggest, a collaborative patriarchal hegemony, located within both the State and civil society, reproduces an ideology that serves the purposes of that hegemony and not the obligation to empower women.^{xvi} As a case study by Agarwal (1995) on property ownership in India illustrates, State legislation and national development policies reinforce the lack of change within political and economic institutions, and in turn serve as a systematic check against improvements in gender equity at the local level. Levy (1998) suggests that resistance to change is inherent in the power structures of development activity. The argument is implicitly that “the way institutions are changed and adapted reflect the ways they resist change and channel adaptation” (Genschel, 1997:42).

A second reason why GAD has found it difficult to reach its goal of empowerment is that both the terms “gender” and “empowerment” have been absorbed into development texts and plans without the transformation envisioned by its proponents. In this respect, development is like a powerful discourse generated and organised by an enterprise of approaches, policies, institutions and projects. As an “industry”, development has the capacity to generate new images of itself and acquire new meanings (Shiva, 1989; Sachs, 1992; Ross, 1998). Indeed, this is an integral part of the persistence of development discourse.

The third dilemma for GAD proponents is that “gender fatigue” as well as sensitivity to gender issues currently confront gender-related work in an unprecedented way. The enthusiasm behind the GAD debates of the 1980s has given way to a significant degree of fatigue among individuals and organisations that previously championed women-related issues in research and development (Hirschmann, 1991; Miller and Razavi, 1998). Feminist perspectives on environment and development may provide an ontological shock to policymakers and planners, but the “mix-and-stir” methods of integrating or mainstreaming women or gender issues into development policy and programmes risk a return to invisibility for the role of women in development and environmental activities (Kabutha and Hambly, 1995; Harding, 1996).^{xvii} There appear to be serious difficulties in maintaining the momentum needed to sustain GAD policy and ensuring that it is effectively translated in the implementation of development projects, suggests Goetz (1997). If gender fatigue does not reduce the space created for gender

issues on the global development agenda, then the threat of “foreign feminists trying to change local cultures” may do so, suggests Kapadia (1994). Mohanty (1991:57) argues that WID and GAD are irrelevant as long as “Third World women” are situated as implicit victims of development whose needs and priorities are already pre-determined. Mbilinyi (1984) has also commented that the false image of a powerless, acquiescent African woman has been important to the growth of political self-interest among male chiefs, local power structures, development organisations and scientists. These arguments are justified, but so, too, is Kapadia’s (1994:368) response that if gender and development studies is to be an area “where angels fear to tread” simply because a charge of paternalism (and worse) can be levelled against the analyst, then feminists are possibly being drawn not into a better debate that will improve their work, but towards the purpose and devices of an anti-gender hegemony that they first sought to change.

Ultimately, in the connection between project implementation and gender analysis, there are three dilemmas that require greater attention: 1) development structures that are resistant to change, 2) the ability of development to absorb pressures to change that would drastically alter power relations, and 3) increasing gender fatigue accompanied by rising sensitivity to gender issues. A gender-conscious approach to analysing implementation would anticipate social asymmetry and respond to women, in relation to each other and to men, as social agents.

2.5 Conceptual Schema for Agroforestry Project Implementation Analysis

The foregoing sections explored some of the thinking underlying policy and project implementation studies, and the gaps in their application to agroforestry in sub-Saharan Africa. In this context, project implementation and institutionalisation can be seen as processes of change influenced by forces emerging from the expression of human agency and gender relations among project participants. Figure 2.3 illustrates this conceptual approach to the interrelated processes of project implementation and institutionalisation at the local level.

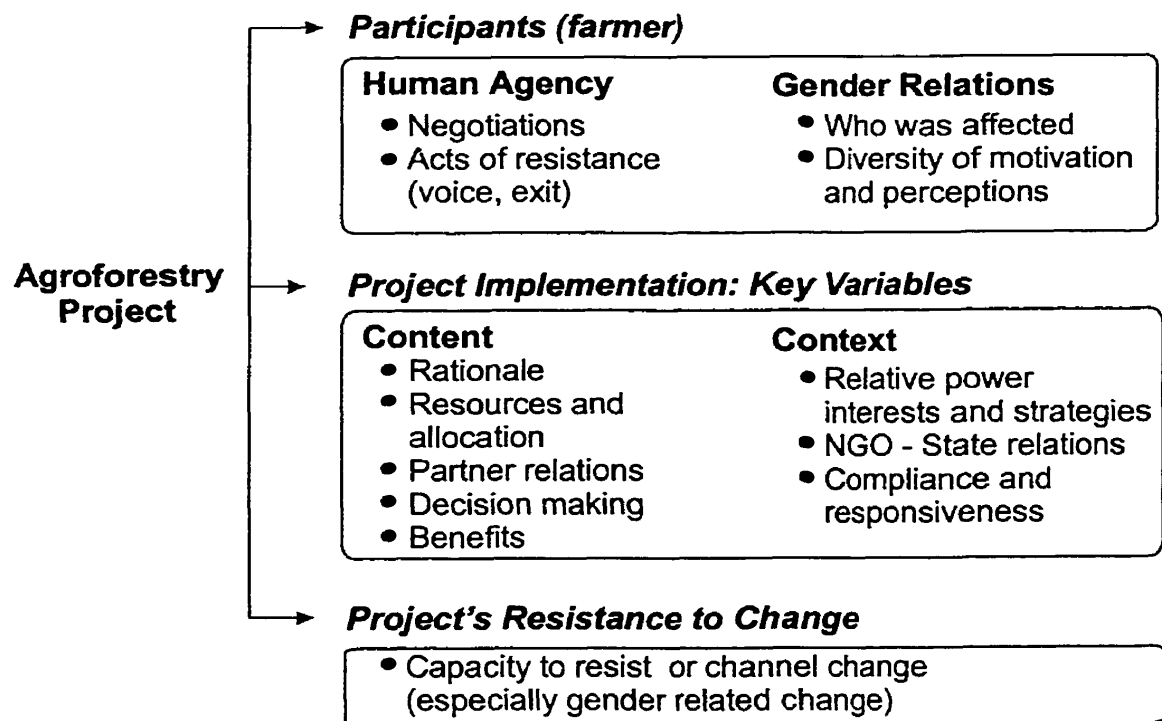


Figure 2.3. Conceptual Schema for Agroforestry Project Implementation

In this schema, implementation analysis encompasses both project content and context, following Grindle (1980) and, to a lesser extent, Najam (1995). It also implicitly seeks not to separate the substance (new and improved agroforestry technologies for small-scale farmers) from the process (delivery of the project). This study explores and explains why things happened, or did not happen, within an agroforestry project. It recognises the diversity of the motivations and perceptions of individuals (and organisations) participating in the project and asks who was affected. Two guiding concepts, human agency and gender relations, are emphasised. Agency and gender, as socially-constructed power relations, exert pressures for change over the course of project implementation.

The agency/structure dualism described by Giddens (1984) and Layder (1994) applies to all individuals and organisations, and not just to farmers. However, attention is paid to farmers as social agents involved in a variety of agroforestry-related activities who are capable of acting with, or against, the project (Blaikie and Brookfield, 1987; Long and Long, 1992). The extensive research into the role of women in agricultural production south of the Sahara, and in agroforestry in particular, supports a focus on female farmers (see Annex 2). In this sense, male and female farmers, but especially rural women, are situated not as passive participants in the project, but as active implementers of the project. While male and female farmers may share some similarities in how they participate in or benefit from the agroforestry project, the concept of gender relations suggests that the diversity of farmers, and women themselves, should be taken into account. The study is

diversity of farmers, and women themselves, should be taken into account. The study is further informed by research in the context of Kenya and sub-Saharan Africa that demonstrates how women exert their agency by optimising their individual and group resources, speaking out, opting out or using other options at their disposal to resist or bring about desired change (Stamp, 1993).^{xviii}

Simultaneously, farmers' actions, including acts that are influenced by gender relations in the project, may encounter counter-resistance to change within the structure of the project or its participating organisations. The social structure represented by the project should perceive and react to such resistance. The forms which counter-resistance may take in an agroforestry project were not entirely clear before this study was undertaken. Finally, this theoretical approach encourages a broader view of institutions in agroforestry research, and specifically attention to the cognitive context. Using this vantage point does not diminish the body of knowledge on regulative and normative institutions in agroforestry, but rather seeks to expand the interpretation of institutions and to challenge the way in which research and development work currently seeks to institutionalise agroforestry at the local level.

2.6 Summary

This chapter has elaborated three areas of literature relevant to an investigation into the implementation and institutionalisation of agroforestry: policy and project implementation, some social theorising on organisations and institutions which draws on the concepts of human agency and structure; and contributions from feminist perspectives

on environment and development issues which emphasise the relevance of gender relations in agroforestry activities in sub-Saharan Africa.

The literature review suggests that analyses of implementation and institutionalisation have apparent weaknesses, particularly when they are contextualised within the subject of agroforestry. A wider view of institutions in agroforestry is called for and implementation studies require attention to gender relations. Thus, connections between these three fields of study were identified to provide a stronger analytical approach, and the chapter concluded by illustrating and discussing this approach. This conceptual framework is applied to the case study of the CARE Agroforestry Extension Programme in western Kenya. Following a description of the geographic area in which the study was conducted and the research methodology, and subsequently the discussion of research results, we shall return to this conceptual approach and schema to reflect upon its usefulness for the study of agroforestry project implementation and institutionalisation.

Notes

ⁱ The term “generations of implementation studies” is borrowed from Adil Najam (1995).

ⁱⁱ One of the flaws of implementation analysis is its focus largely on policy and projects from the viewpoint of American and European authors. More scholars from, or working on, issues relevant to Latin America, Africa and Asia are broadening and challenging this field of study (see, for example, Morah, 1990; Najam, 1995).

ⁱⁱⁱ Labelled the “classical school of management”, it developed mainly in the early twentieth century and was led by Henri Fayol. Institutions and organisations were key to Max Weber’s characterisation of the “ideal” bureaucracy (Weber, 1978), and to what Berle and Means (1932) proposed as the “managerial revolution”, where the manager (distinguished from the “owner”) was seen as implicitly operating from broad social values and professional training. The assumed objectivity and rationality of managerial

behaviour has been a subject of considerable debate among organisational theorists (Scott, 1979).

^{iv} General systems theory began to be applied to social science fields such as environmental and organisational studies in the early 1960s. Systems thinking emphasised a holistic view of the complex interrelationships that crossed natural and social worlds as well as the internal and external boundaries around organisations (Meyer and Scott, 1992). Emery and Trist (1965:21-32) describe turbulence within the organisation as rapid, inconsistent and complex commotion which makes it seem as if the organisational ground is moving, along with the actors inside the organisation. Systems theory and concepts such as turbulence debunked ideas that social, economic, political or natural environments had clear-cut, linear or causal relationships (see for example, Senge, 1993).

^v The Overseas Development Institute reports that approximately 15% of all aid to developing countries (\$6 billion) passes through NGOs (ODI, 1996). In the literature, NGOs are cast as both more ethical and more opportunistic (Wellard and Copestake, 1993; Chambers, 1995; Ndegwa, 1996; Attack, 1999). Further differentiation between these categories of organisations would be judicious, keeping in mind for instance that some farmers' groups are also groups of commodity producers while others are "self-help" groups of the resource-poor. Similarly, NGOs should be differentiated by the extent to which they are internationally supported or transnational in nature, and the extent to which they are connected to other social organisations such as churches or national movements (Farrington *et al.*, 1993; Wellard and Copestake, 1993).

^{vi} The monitoring and evaluation of development activities currently faces several difficulties associated with the assessment of interdisciplinary programmes and their impact in complex environments. Recent efforts by donors and multilateral institutions to develop improved evaluation units, methodologies and more frequent assessment procedures may be one reason for the recognition of the importance of implementation studies.

^{vii} As Scott (1995) suggests not all institutions involve organisations, but all organisations do implicate institutions.

^{viii} Furthermore, as an Akamba researcher in social forestry once remarked to the author, the local "norms and values" of *fanya juu* "were beaten into us" by the chiefs and their lackeys during and after the colonial administration.

^{ix} The actor/structure literature has its roots in more ancient philosophies, as well as Marxian political philosophy. While not professing to understand all of the intricate details of Anthony Giddens's "theory of structuration", the author prefers to use it as a starting point. Giddens's duality of structure has found its way into several fields of

study, including rural development and agriculture (Kloppenburger, 1991; Long and Long, 1992)

^x As the work of Sacks (1979), Amadiume (1987) and Owen (1996) has aptly shown, women themselves vary as sisters, wives, mothers, daughters or widows.

^{xi} There have been five approaches to feminist analysis in development. In general, these “official” frameworks have moved along ideological lines, including liberal, Marxist, socialist and cultural or radical feminism. A tentative group of contesting feminist viewpoints may be evident and imperfectly referred to here as “postmodern”, but it is clear that they vary widely and that their identity is based on resisting classification. Such “contesting” feminist perspectives may, the author believes, represent less of a distinct inquiry than permutations of the “official” feminisms.

^{xii} It was the United States Agency for International Development (USAID) which in 1973 first coined and used the acronym WID for women in development. WID became associated with the thematic framework subsequently adopted by most major donor agencies (Plewes and Stuart, 1991). It was common in the 1980s to distinguish between two “schools of thought”: the Harvard model and GAD, the Sussex model. Both models use the term “gender”. However, WID is more concerned with gender roles (e.g. women’s productive labour) while GAD focuses on gender relations (e.g. the power relations underlying productive and reproductive labour). Over time, and the mixture of terminology, the two models appear to be less distinct than they did ten years ago (Miller and Razavi, 1998).

^{xiii} The counter-argument from liberal feminists is that liberalism has not always been skewed towards the welfare perspectives evident in twentieth-century development policy. Tong (1989) distinguishes between the classical, libertarian rights of an individual or minority group in liberal feminism of the nineteenth century, and the welfare-oriented pursuit of materialism that Western liberal feminism has endorsed in the later part of the twentieth century. Recognising the hazards of comparing issues that affect women across different historical periods, Tong (1989) maintains that the original civil rights perspective of liberal feminism was relatively more progressive than its late twentieth-century framework which has tended to reduce the emphasis on civil rights and replace it with a more passive focus on women’s welfare and material well-being. Mary Wollstonecraft’s *Vindication of the Rights of Women*, written in the 1800s, is considered to be a significant first foundation for women’s equal rights (although this early equal rights perspective did not necessarily extend to the rights of all people regardless of race and class). It is also argued that the civil rights or “equity argument” of liberal feminism was reflected in policy prescriptions at the beginning of the United Nations International Women’s Decade (1975-85), and later in the 1985 Nairobi “Forward-Looking Strategies”, but this “equity argument” has been downplayed in recent policy discussions (Moser, 1993).

^{xiv} These eight elements include: 1) organisational and institutional history, 2) the gender cognitive context, 3) gender organisational culture, 4) gendered participants, 5) gendered space and time, 6) the sexuality of organisations, 7) gender authority structures, and 8) gendered incentive and accountability structures.

^{xv} This phrase has been used by Dr. Carlos Valverde a former director of a national agricultural research institute and colleague at the International Service for National Agricultural Research. Within the framework of strategic planning as a tool for management of change, Valverde argues that efforts to change an organisation are met with resistance that is primarily reproduced through vision and leadership of the organisation and entrenched roles and relations among its staff. This is, indeed, true in development organisations where leadership, vision, roles and relations rarely change when WID and GAD projects are adopted (see also Moser, 1993). The literature on resistance to change has come to management studies from psychology, and specifically from “personal construct” theory. However, most of this literature regards individuals (or clients) as being “resistant to change”. Here, the phrase is used to refer to the structured or systematic resistance to change in development projects.

^{xvi} The term “patriarchal hegemony” has been used to refer to social relations and structures dominated by, and created in the interest of, elite males (Agarwal, 1995). In this sense, patriarchy is not the opposite of “matriarchy”.

^{xvii} The term “mainstreaming” refers to the integration of gender into development policy and planning. Some examples of mainstreaming suggest that this approach has a tendency to make women invisible again in organisational structures (United Nations, 1995; Miller and Razavi, 1998).

^{xviii} Other examples of women’s agency are found in van Allen’s (1976) study of women’s riots and resistance among the Ibo of Nigeria, and Haugeraud’s (1995) work on collective voice in local meetings and ceremonies to seek negotiating power. Resistance to development interventions can be exhibited by people’s use of both voice and exit options, but in feminist research, people’s resistance is only one element of agency which alone may not necessarily hold the vision or objectives required for political transformation of gender relations (Apter and Garnsey, 1994). Leonard (1977) has also discussed notions of resistance in the behaviour surrounding rural extension in Kenya. His early work uses organisational theory, but it is characteristic of literature that neglects gender relations in rural extension. Tendler (1997) suggests that there are “silent users and resisters” in rural extension programmes in Brazil. Jackson (1997) provides good examples of silent and loud resistance, including women agitating against men’s alcohol abuse and women hiding their earnings from their husbands in group-held bank accounts. In Chapter 8 of this study, more examples of such actions are discussed and referred to as “escape routes”.

3. METHODOLOGY

3.1 Introduction

The goal of this study is to examine the processes of project implementation and institutionalisation of agroforestry at the local level. The conceptual framework of this study, as explained in the previous chapter, takes farmers – both female and male – at the individual, household level, and also as members of women’s self-help groups, as central to the analysis of what happens during the implementation of an agroforestry development project and the process of institutionalising agroforestry at the local level. However, the attention to farmers does not preclude examination of the role of other institutional actors in the implementation of an agroforestry project (for example, the State, government bureaucrats, researchers and extension workers). Data was collected from multiple sources, including farmers in Siaya District who did not participate in the AEP. The stakeholders in the AEP who provided data included project staff, government agencies and non-governmental organisations. This chapter illuminates the research methods employed in the study. It explains the relevance of qualitative research and qualitative data analysis to the study. The use of NUD*IST (Non-numerical Data Indexing, Searching and Theorizing), a relatively new computer software for qualitative data analysis, is described in more detail in the last section of the chapter.

Some key characteristics of the area where the study was conducted are highlighted before the research methods are presented. The information about Siaya District provides

relevant background to the identification and selection of farmers and women's groups interviewed in this study.

3.2 Characteristics of the Study Area

Siaya District lies across the Equator, north of Lake Victoria, which is known locally as Nyanza ("the lake"). The district headquarters is the town of Siaya, which is located almost halfway between the Kenyan capital Nairobi, and Kampala in Uganda. Siaya District is divided into administrative zones referred to as divisions, and within divisions are locations (counties) and sub-locations (villages). At the end of the last decade there were five divisions in Siaya District, but in 1991 each of those five divisions was split into two. Figure 3.1 illustrates the ten divisions and their boundaries in Siaya District.

The agro-ecological variation within the district accounts for the diversity among its ten divisions. The four agro-ecological zones (or ecozones) which characterise the district are illustrated in Figure 3.2. These ecozones are defined by the amount and distribution of annual precipitation and soil fertility. Altitude and wind direction are the most important determinants of rainfall variability in Siaya. In the north-eastern highlands, average annual precipitation can exceed 2000 mm. In contrast, the semi-arid lowlands along and inland from the shores of Lake Victoria may receive 800 mm of rainfall per year.

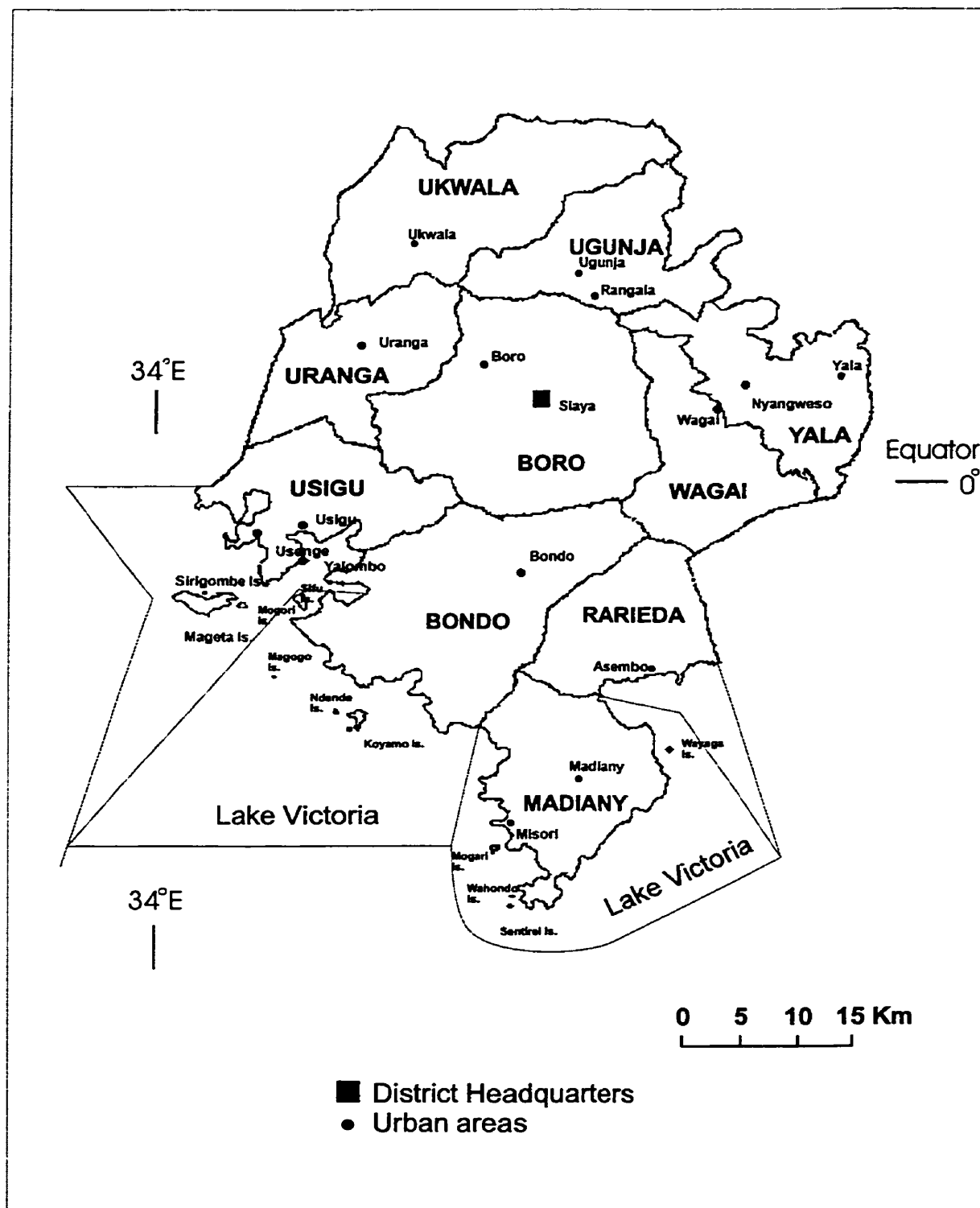
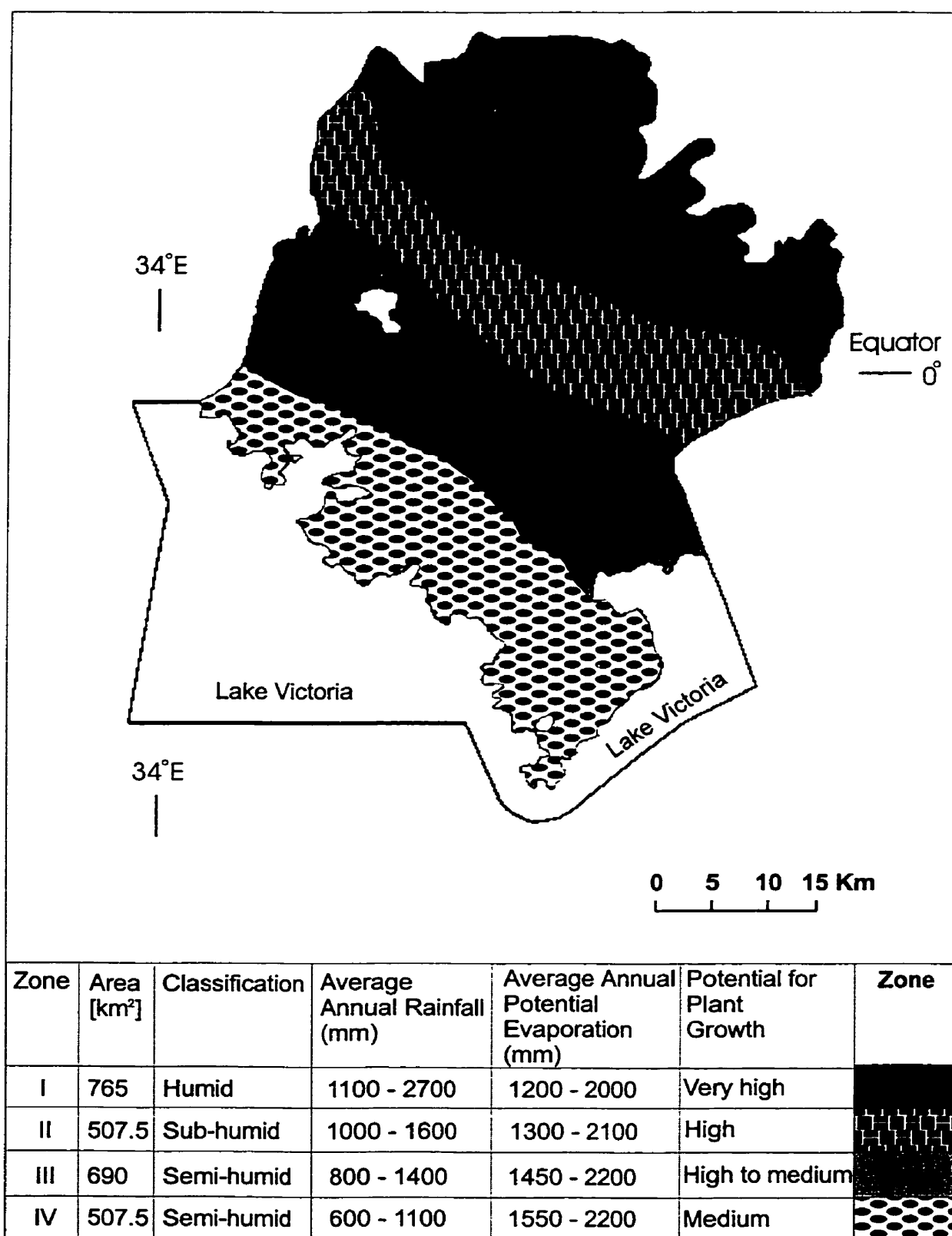


Figure 3.1. Map of Siaya District - Divisional Boundaries



Map 3.2. Map of Siaya with Ecozones

Siaya has a population of approximately 800,000 people (UNEP, 1992), of whom the vast majority (96.9%) are Luo. The Luo people and their history are described in more detail in Chapter 4. In 1993, more than 80 per cent of the district's population, or approximately 90,000 households, lived in small rural villages (see Table 3.1).

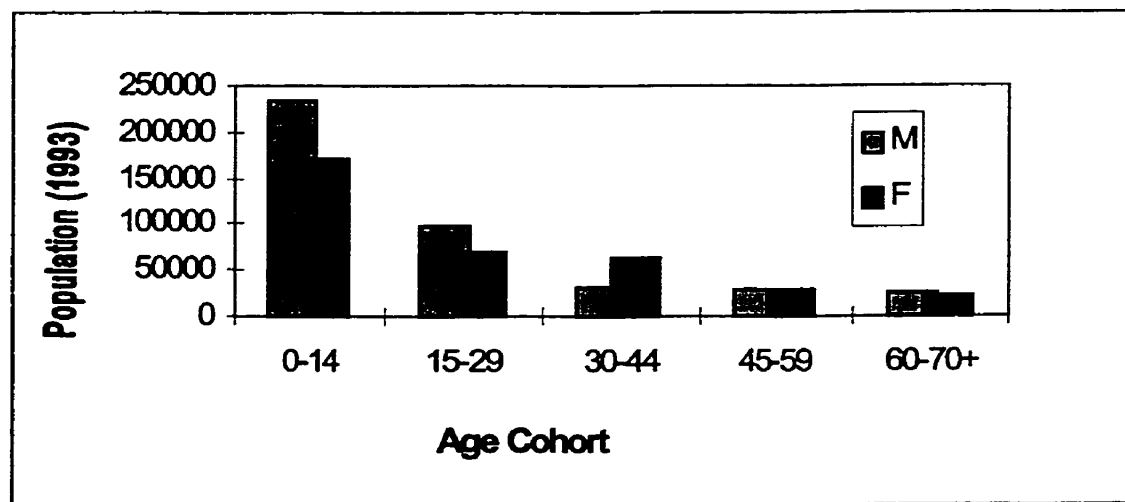
Table 3.1 Population, Growth Rate, Density and Number of Households by Division (1969-93)

Division	Area		% of Total District Population		Density (persons/km ²)		No. of Households
	km ²	%	1969	1993	1969	1993	1993
Bondo	387	15.4	9.3	10.5	93	205	7,304
Boro	421	16.7	16.9	18.3	154	315	15,640
Rarieda	176	7.0	8.6	8.0	186	328	6,286
Uranga	192	7.6	7.1	5.8	141	219	5,070
Yala	210	8.3	12.3	11.7	224	405	12,398
Wagai	197	7.8	7.8	7.7	152	269	8,389
Ukwala	323	12.8	15.1	14.2	179	346	14,533
Ugunja	203	8.1	11.0	10.3	207	370	10,888
Usigu	187	7.4	3.9	5.4	80	208	3,448
Madiany	222	8.8	8.1	7.8	139	255	5,746
Siaya District	2518	100.0	100.0	100.0	152	288	89,702

Source: Republic of Kenya, 1994a:10.

In defining a rural household in Siaya, three factors must be taken into consideration. Firstly, the size of the land-holdings varies widely across the district, from 93 households per square kilometre in Ukwala to 39 households per square kilometre in Bondo. In the highland areas, farmers may cultivate less than one hectare (Ayiecho, 1991; David and Swinkels, 1994). A second factor to be considered is that the rural households are generally extended family units, with one or more generations of the family living within or adjacent to one compound (*dala*) (Cohen and Odhiambo, 1989). The origins of

Luo settlement and land-use patterns are described in more detail in Chapter 4. Related to the tendency for generations of one family to live together or near one another is the possibility that a household may have more than one adult woman (wives, grandmothers, daughters-in-law) due to roughly more than half of all marriages being polygamous (Ayiecho, 1991; Suda, 1991). Finally, the interpretation of a household must take into consideration that approximately 45% of working-age males in Siaya are not residents of the district (Cohen and Odhiambo, 1989:4). This is a historical phenomenon which is discussed in more detail in the next chapter. One consequence of these demographic circumstances is that the majority of the working-age population in Siaya are women, as Figure 3.3 illustrates. Officially, 55% of Siaya District's resident population is reported to be female, although the actual percentage is suspected to be much higher (Ayiecho, 1991).



Source: Republic of Kenya, 1994a:10-13.

Figure 3.3 Age/Sex Projections for Siaya District

The *Siaya District Development Plan (1992-96)* reports that agriculture is the main livelihood of 72% of Siaya's rural population, who cultivate just over a third of the area of the district (37%) (Republic of Kenya, 1994a). Half of the total land area is grass or fallow. Bush and forested hilltops cover approximately 9%, and 4% is wetland although one-third of the total area of Siaya District is covered by swamps, lakes and rivers.ⁱ Approximately 15% of the rural population earn their income through fishing and a further 8% through other means.

Siaya District is considered to be among the poorest districts in Kenya. The *District Development Plan (1994-96)* estimates the per capita income of small-scale farmers in the district at only 1,346 K/sh per year, less than CAD\$35. The UNICEF Regional Office estimates the poverty line in Kenya at about 8,000 K/sh (CAD\$200) per capita per annum; at least half of Siaya's population falls below this mark. Such figures are unreliable measures of the standard of living in Siaya as they do not convey inter-household variations at the local level, or the generation, access and control of income within the household (Beneria and Roldan, 1987; Buvinic, 1990).

Health and nutrition indicators need to be taken into consideration to determine the socio-economic standing of Siaya District. For instance, two major diseases, malaria and Acquired Immuno-Deficiency Syndrome (AIDS), have serious negative impacts on the rural population in Siaya (Republic of Kenya, 1994a).ⁱⁱ The infant mortality rate, which has fallen from 211 deaths per thousand in 1989 to 130 per 1000 in 1992, is still high above the national average of 74 deaths per thousand (Republic of Kenya, 1994a and

1994b). As Figure 3.1 shows, only 42% of the 0-14 age cohort are female. While data is not sex-disaggregated at the district level, it has been suggested that girls may be more adversely affected than boys by chronic and absolute malnutrition (UNICEF, 1994). The district has historically had below-average rates of child development (i.e. stunting) for children under the age of 12 (Hafkin and Bay, 1976; Republic of Kenya, 1994b).ⁱⁱⁱ

However, child development in Siaya is more probably being affected by limited access to and availability of medical, water and sanitation services (UNICEF, 1994). The situation in Siaya is unlike that in other areas of Kenya, where stunting may be due to protein deficiencies and high rates of malnutrition caused by competition between industrial crops and food crops (Kennedy and Cogill, 1988). Siaya does not experience that problem because few industrial crops dominate its landscape. Instead, the best “cash crops” in Siaya are more commonly food crops (Hambly, 1992; Omamo, 1998).

Conventional “cash crops” such as sugarcane, cotton and robusta coffee are grown in Siaya. In the north of the district, coffee, tea and French beans intended for export are grown on a small scale. Sugarcane farming has declined due to the closure of the Yala Sugar Factory, although some farmers in Ugunja Division produce for the Mumias Sugar Company in Kakamega District (Republic of Kenya, 1994a:49-50). Cotton is grown in the southern part of the district, but there is only one semi-operational cotton ginnery in Rarieda Division. Fifty per cent of farmers in Bondo, Rarieda and Madiany produced cotton in the late 1980s; however, the collapse of marketing structures has made many farmers unwilling to continue planting cotton (personal communication, District

Agricultural Officer, 1995). The major agricultural crops in the district are maize, sorghum, cassava, beans, finger millet and sweet potatoes. In 1984, 52% (32,670 ha) of the total area cultivated was allocated to these crops; by 1987 this figure was 75% (47,529 ha) (Republic of Kenya, 1994a:41). In 1992, maize or maize and beans intercropped represented 40% (37,920 ha) of the land under cultivation in Siaya District.

There are substantial numbers of livestock in Siaya. Of approximately 300,000 head of cattle, less than one per cent are for dairy production. Most of the cattle are a local breed (Zebu) and they are what one farmer referred to as “school fees on four hooves”. Sheep are also kept as a form of savings.^{iv} Local poultry and goats are more often raised for sale or household consumption. In 1995, livestock markets were observed to be affected by frequent closures due to animal and human disease (i.e. cholera and typhoid). Further constraints on agriculture in Siaya are related to the lack of decentralised farm credit programmes and poor infrastructure (IFAD, 1990).

Perhaps the greatest constraint on agriculture in Siaya is water. Nearly two-thirds of the district experiences soil moisture deficits (Republic of Kenya, 1994a). Despite large inland sources of water, irrigation infrastructure in most of the district is limited and previously initiated irrigation schemes have largely collapsed. In recent years, development efforts have focused on drilling of community-operated boreholes to tap groundwater resources (Lake Basin Development Authority, 1993). Surface water is often unsuitable for human or animal consumption due to water-borne disease contaminants (e.g. typhus) exacerbated by water run-off due to soil erosion and deforestation (Jaetzold

and Schmidt, 1983; Gatahi and Okoth, 1990). Of particular concern to district planners is the fact that certain activities such as reduced fallow seasons, charcoal production and grazing of sheep and goats might cause even further land degradation in Siaya (KREMU, 1986; Republic of Kenya, 1994a).^v The loss of woody vegetation is both a sign and a symptom of the link between environmental deterioration and the pressures of rural poverty in Siaya District (Okeyo, 1983; Belgian Survival Fund, 1984; KREMU, 1986; FGCSF, 1995). It is within this context that the CARE Agroforestry Extension Project was initiated in Siaya District in 1983. The project was designed to promote tree planting and agroforestry to address the needs of resource-poor, small-scale farmers for woodfuel as well as improved agricultural production through soil and water conservation (Vonk, 1983).

3.3 Case Study and Qualitative Research

This case study is based mainly on qualitative research and fieldwork which has employed methods associated with ethnographic and participatory research. Case studies are the most common type of qualitative research in the analysis of implementation and institutional issues. According to Rist (1994), the study of policy or project implementation is best addressed through qualitative research.

The focus is on the day-to-day realities of bringing a new program or policy into existence. This “ground-level” view of implementation is best done through qualitative research. The study of the rollout of an implementation effort is an area where qualitative work is at a clear advantage over other data collection strategies... Policies and conditions change – both before and after a policy response is decided upon. Thus the challenge for

qualitative researchers is to continue to track the condition, even as the implementation effort swings into action (Rist, 1994:550)

The field of qualitative research actually encompasses a diverse family of methodologies and methods which vary across disciplines (see, for example, Denzin and Lincoln, 1994). Hammersley (1992) suggests that case studies and ethnography are the two most widely used qualitative research traditions. If there is a common denominator in qualitative research, it is probably its association with the interpretative “school” of social science (Silverman, 1993:28). Interpretative research emphasises social construction and meanings, in contrast – but not necessarily in opposition – to quantitative hypothesis-testing which has its roots in the “positivist school” of social science. Quantitative research tests a single or small number of pre-formulated hypotheses or deductions, and it is

... aimed at how many and what kinds of people in the general or parent population have a particular characteristic which has been found to exist in the sample population. The aim is to infer a characteristic or relationship between variables to a parent population. With qualitative research it is the concepts and categories, not their incidence and frequency that are said to matter. (Brannen, 1992:5)

There are numerous debates in the field of qualitative research and only some key issues can be highlighted here. An important one is the extent to which researchers start by designating concepts early in the research process. Silverman (1993:28) makes a convincing argument that since substantial knowledge already exists on virtually every topic in social science, it is virtually impossible to begin new research without implicit or explicit concepts. Such “guiding concepts” focus the study and organise the data by

categorising these and emergent concepts, therefore making it possible to generalise results to other conditions. Yet, an apparent difficulty in qualitative research is the depth of information needed to adequately test and re-test concepts in the process of interpreting data. Typically, qualitative research, particularly a single case study, increases the strength of its analysis by investigating multiple sources of information (a process referred to as triangulation). Qualitative researchers such as Brannen (1992:12) use multiple research methods, multiple investigators, multiple data sets and multiple theories. Researchers such as Silverman (1993) have offered suggestions on the relative importance of various data sources and the sequencing of multiple sources of data.

Another important issue in qualitative research is that of objectivity in the research process. As Hammersley (1992) observes, this should not imply that a distinction between qualitative and quantitative approaches is based on one being more objective than the other, because it is only in rare instances that quantitative approaches do not involve subjective interpretation.^{vi} In most ethnographic and participatory research, the subjectivity or personal involvement of the researcher is widely acknowledged. Ethnographic research is characterised by interactive fieldwork that relies on a variety of methods including participant observation, journals, audio, photographic and other recording methods (Agar, 1980). As Atkinson (1992:37) suggests, “good ethnography” requires researchers to enter into their fieldwork recognising that their “personal style” influences the collection of data and experiences in “the field.” However, “bad ethnography” also exists. For instance, Robertson and Berger (1986:1-2) refer to the

salient example of anthropologist Evans-Pritchard's Victorian-age research in East Africa, and the consequences of his interpretations of African women. For many feminist researchers, there are serious limits to the ethnographic and participatory approach (Maguire, 1987; Guijt and Shah, 1998). One of these limits is the extent to which researchers can actually spend time with research participants, "know" their language and culture, and understand and facilitate their actions (Agar, 1980). Inadequate time spent in the field with male and female participants, the failure to adjust research methods to take gender differences into account, and not following up on commitments made in participatory research can, and does, render gender issues invisible (see, for example, case studies in Guijt and Shah, 1998; Oakley, 1981). Punch (1994:505) points out, decisions taken during the research process are inherently political and ethical, and this is particularly true of research that involves fieldwork situations and "action-oriented research". Research with a view to subsequent action and power-sharing must be based on solidarity between the researcher and the research "subjects" (i.e., on asking, "Would I want someone to ask me that or do that to me?") and privileges the "voice" of female respondents (Harding, 1986; Kelly-Gadol, 1987).

Finally, a key issue is the validity and reliability of qualitative research, particularly when it fails to sufficiently account for the analytical steps taken between generating data, interpreting them and testing theory (Miles and Huberman, 1984). Silverman (1993:167) offers three suggestions for validating qualitative research results: 1) methods of generalising to a larger population, 2) methods of testing hypotheses (during data

analysis), and 3) the use of simple counting procedures. All these suggestions have been adopted in this study. However, there is a further problem which Silverman (1993) does not deal with: the issue of the quantity of data within qualitative research. As Epstein (1988:5) observes, while qualitative data is often rich with narratives, opinions, respondent knowledge and perceptions, the depth of information is great and the analysis generated may be difficult to reproduce; and that makes qualitative research appear unreliable. An important aspect of qualitative research is the use of multiple data sets, and the inclusion of different sources of data. Therefore, reducing the quantity of information would not improve its quality, argues Brannen (1992:11-2). However, improving the tools that are used to work with large amounts of highly variable data is one alternative (Bryman and Burgess, 1994; Huberman and Miles, 1994). Consequently, the development of new qualitative research software programmes to handle qualitative data analysis has increased rapidly in the 1990s.

This study uses NUD*IST (Non-numerical Data Indexing, Searching and Theorizing), a relatively new computer software programme for qualitative data analysis. Developed by Latrobe University, Australia, it was first distributed in the early 1990s and is now exclusively available through Sage Publications.^{vii} NUD*IST is one of three main types of qualitative analysis software programmes available to researchers. One type only retrieves discrete pieces of text, locating specific words and sections of documents (e.g. Text Base Alpha). Another type labels segments of text (i.e. coding) to improve retrieval of data along pre-set or variable conceptual patterns (e.g. Ethnograph). The third type of

programme is designed to label and retrieve text data (e.g. HyperResearch). Of this third type, NUD*IST includes several relational databases which allow the project to be given more complex codes which can be rapidly searched for and cross-referenced in such a way that theoretical relationships can be visually constructed in tree diagrams (Richards and Richards, 1994a).

NUD*IST is believed to improve the reliability of its results without compromising the interplay between the data and process of theorising (Tesch, 1990). It does this by helping the researcher with three key tasks in qualitative data analysis: 1) organising and managing multiple data records; 2) keeping track of coding and easy labelling of data that can be saved, changed, and indexed; and 3) retrieving data rapidly to test assumptions, compare sections of data and identify and record recurrent finds or deviant cases (see also Tesch, 1990; Richards and Richards, 1995). Before explaining how NUD*IST was used to organise and retrieve data we first turn our attention to the specific qualitative research methods used in this study.

3.4 Research Methods

The conceptual framework and research goal involved working with three major groups of respondents: farmers; women's groups; and officials, AEP staff and other key informants. Furthermore, to improve the validity of the results, this study involved farmers who were participants in the AEP as well as some who had never been involved in a CARE project or in any other agroforestry-related project. This approach was used for two reasons. Firstly, as explained in more detail in Chapters 4, agroforestry had existed prior to the

AEP as an historical outgrowth of traditional and colonial land use practices in Siaya District. The AEP introduced “new and improved” types of agroforestry to farmers, and the inclusion of non-AEP farmers helps to illuminate a “baseline” (ex-ante group) for comparison of the project’s influence on farmers’ adoption and perceptions of agroforestry as well as possible differentiation between traditional and introduced agroforestry activities.

Secondly, an investigation of a group of farmers who were not participating in the AEP created an opportunity to examine situations in which farmers not directly involved in agroforestry extension could be influenced by the actions of their neighbours (in this case, AEP farmers). Chambers *et al.* (1989) have suggested that farmers innovate, at least in part, as a result of what they observe or experience at the local level. This is plausible, but there are social, economic and political obstacles that restrict information movement to and between farmers. This is exactly the experience of the National Extension Programme of Kenya (the “Training and Visit” system), explain Ruttan (1984:41-2) and Venkatesan (1997:50-2). Therefore, it was not assumed in this study that agricultural information moves freely, and that farmers who were not otherwise involved in a project such as the AEP would be inclined towards adoption of the new agroforestry technologies.

The plan was to gather four types of data from interaction with AEP and non-AEP farmers, and women’s groups in Siaya:

1. Socio-economic data about the farmers and their households (or alternatively, the women's group), including information about the type of agroforestry practised by them.
2. The opinions of farmers' and women's groups on agroforestry, and specifically their motivations for and constraints while being involved in the agroforestry project.
3. Decisions or actions taken by farmers and women's groups that are related to their motivations for and constraints hindering their practice of agroforestry.
4. Explanations of their actions. These data were collected through in-depth discussions with farmers and interviews with women's groups.

Most of the data was qualitative, but some socio-economic data about farmers, households and women's groups was quantitative. After preliminary analysis of the data, feedback was provided to the farmers and women's groups. All results of the study presented during feedback and reported in this dissertation do not use the true names of farmers or women's groups. All names have been changed in order to ensure confidentiality of the responses.

The research methods used to explore institutional stakeholders and their roles and relations in the AEP were chosen after formal interviews and informal discussions with relevant officials. Following data collection, a feedback workshop was also held with farmers and women's groups towards the end of the fieldwork (Hambly, 1995).

Fieldwork was organised in three phases in this study:

Phase 1: Data Collection

- Analysis of over 300 published and unpublished documents, including approximately 80 hours of archival research in the Kenya National Archives^{viii}
- A total of 96 farmer interviews: 54 farmers who had been once (or were still) assisted by CARE and 42 farmers who had never been part of the CARE AEP (see Annex 3).
- Eight structured official interviews and review of organisations' documents such as strategic plans and policy statements. Numerous other discussions (approximately 17) with other NGO and government projects in Siaya and in western Kenya were conducted.
- Four environmental histories of tree use, farming and gender relations in Siaya.
- A total of 11 in-depth interviews with women's groups (see Annex 4).
- A total of 18 discussions with women's groups and former group leaders.
- A total of 12 informal local market surveys.

Phase 2: Preliminary Data Analysis and Feedback.

Phase 3: Final Data Analysis.

Before providing more detail on the research methods, the research team and the strategy used to select the farmers and women's groups are described.

3.4.1 Research Team and Role of Research Assistants

The inclusion of a team of research assistants enabled the study to be based on fieldwork of adequate scope and scale. Six research assistants (three females and three males) were employed in the study. One had been previously involved in the 1991 fieldwork and her role in the project was primarily that of translation and data entry. The other five field assistants were secondary school graduates and residents of the district; each was responsible for interviews with farmers in two divisions.^{ix} One of the research assistants also served as the overall supervisor of the field team.^x

A good research team dynamic was considered important and was achieved in two ways. First, an orientation meeting was held before starting the fieldwork.^{xi} This helped the research assistants and author to become familiar with each other and the content and the objectives of the study. The exercise demonstrated that even research assistants who come from the local area do not necessarily communicate well with farmers and respect their knowledge and contributions. Also, some individuals have an aptitude for fieldwork while others do not, particularly for defusing potential problems associated with sensitive discussions around farmers' livelihoods and gender relations. Through techniques such as role-play and debriefing exercises, the research team addressed potential and actual problems occurring in the course of collecting data and discussed possible solutions as a group.

The team dynamic was also strengthened through three-day meetings held every three or so weeks during the course of the fieldwork. These enabled the group to agree on

conventions for conducting interviews, translation and transcription of field notes as well as plan for upcoming activities. The meetings also generated discussion and ideas which were later examined against the interviews and other information.

3.4.2 Selection of Farmers and Women's Groups

To assess the outcomes of the project for farmers assisted by the AEP, the team returned to the households interviewed in 1991 (Hambly, 1992): 55 AEP farmers (38 comprising the core project, 17 of “special interest” – see below) and 33 women's groups. In practical terms, this was possible in 1995 because five months were available for fieldwork and the relatively large research team was familiar with the local area.

By 1988/89, the AEP had worked with 3,000 farmers who were part of 280 women's groups in Siaya and South Nyanza Districts (Buck, 1990; Scherr, 1995). However, data for Siaya District were difficult to obtain separately because the project lacked reliable baseline data on farmers and women's groups involved in the project since 1983.^{xii} In 1988, a pilot study of agroforestry adoption among AEP farmers in Siaya and South Nyanza Districts produced a list of farmers active in the project (Scherr *et al.*, 1990). This baseline data was used for a major adoption study in the AEP, the Agroforestry Impact Survey, as it was also known. This study was jointly published by a socio-economist from ICRAF and the AEP project manager (Scherr and Alitsi, 1990).^{xiii} In Siaya District this survey involved 234 farmers (farm households) from 48 women's groups.^{xiv} The report by Scherr *et al.* (1990) presents the basic approach used to establish

the list of AEP farmers who could be considered “active agroforesters”. The report explains that,

Farmers were listed in the sample frame only if they had taken at least 50 trees from the nursery – still a small number, but enough to differentiate those who were interested in agroforestry land use, from those who just wanted a few trees... Because farmers operating with CARE for less than a year had not yet established a pattern of tree management, they were not included in the sample. (Scherr *et al.*, 1990:156)

In 1991, the author interviewed approximately 15% of the same farmers and households interviewed by Scherr and Alitsi (1990). The list of farmers was already stratified by ecozones (high, medium and low potential) and five administrative divisions.^{xv} In 1991, the team selected eight AEP farmers per division at random, of whom two were unable to participate due to poor health (leaving a total of 38 farmers).^{xvi} Completed copies of the 1988/89 surveys (raw data) for 32 of these 38 farmers were provided by the ICRAF/CARE team. Also, a second group of “special interest AEP farms” that had not been involved in the CARE/ICRAF impact survey were identified. These 17 farmers were selected with the help of CARE extension workers from the mid-potential ecozones of Boro and Ukwala/Ugunja Divisions. The farmers were categorised according to key social factors that the team wanted to investigate in more detail, including households in which the contact farmers were older than 60 years of age, polygamous households and newly established households. Their agroforestry activities were examined in relation to key issues in the author’s 1991/92 study on gender relations, labour and access to land.^{xvii} Thus, a total of 55 AEP farmers were interviewed in 1991, as summarised in Table 3.2.

Table 3.2 Distribution of Interviews by Division

Division	No. of farmers				
	1988/89	1991		1995	
	Adoption survey AEP farmers	“Core” AEP farmers	“Special interest” AEP farmers	AEP farmers	Non-AEP farmers
Boro/ Uranga	38	8	15	23	2
Bondo/ Usigu	55	6	--	5	10
Rarieda/ Madiany	41	9	--	10	10
Ukwala/ Ugunja	49	7	2	9	10
Yala/ Wagai	51	8	--	7	10
Siaya District	234	38	17	54	42

Sources: Scherr and Alitsi (1990), Hambly (1992) and survey data 1995.

All households interviewed in 1991 were re-approached for interviews in 1995.

After the initial selection of farmers, the total of 55 households was reduced to 54 because a farmer from Bondo abstained from the interview.^{xviii} In addition, one household in Rarieda Division interviewed in 1991 had been “split” into two distinct compounds and fields as a result of property inheritance. Finally, a farmer in Yala Division dropped out of the study when she moved away to become a maid in Nairobi.

The second group of farmers interviewed in this study, the non-AEP farmers, comprised 50 farm households (approximately five per division, or ten based on 1991 divisional boundaries). The households were selected on the basis of the following criteria;

1. The farmers should not have had prior involvement in any CARE-Siaya or agroforestry development project.

2. The farmers should be located at least one kilometre away from an AEP farmer.

As census information does not exist for every farm in the district, this second group was identified by walking at least one kilometre westwards from the base reference point (the AEP farmer's household) without passing a limit of two kilometres or crossing a significant agro-ecological boundary. Farm households falling within this area were eligible for interview, as long as they had no prior experience with CARE or an agroforestry development project.

The only modification in this strategy to select non-AEP farmers was due to the influence of water and sanitation development projects sponsored by CARE in the area surrounding the town of Siaya. This prevented the identification of households in Boro Division and some parts of Uranga Division, which had never had any contact with the NGO. The result was that the total number of non-CARE-assisted farmers in the control group was reduced from 50 to 42 households.

In 1995, the farmers interviewed for this study came from 33 of the 48 women's groups involved in the CARE/ICRAF adoption survey (Scherr and Alitsi, 1990). During fieldwork in 1995, it was discovered that two-thirds (22) of these women's groups had collapsed (see Chapter 7). Of the 33 original groups, the team was able to interview 11 in depth and to conduct 18 informal discussions with key members or leaders of the ones that had collapsed. In the case of 4 groups there were no members willing or available to be interviewed. Table 3.3 breaks down the number of women's groups represented in the 1991 and 1995 studies by division.

Table 3.3. CARE-assisted Women's Groups Involved in Studies of the AEP in 1989

Division	No. of AEP Women's Groups Studied		
	1989*	1991	1995
Boro/Uranga	7	7	7
Rarieda/ Madiany	10	7	7
Bondo/ Usigu	13	6	6
Ukwala/ Ugunja	9	7	7
Yala/ Wagai	9	6	6
Total	48	33	33

Note: * Study by Scherr and Alitsi (1990)

Sources: Scherr and Alitsi (1990), Hambly (1992) and survey data 1995.

3.4.3 Phase 1: Data Collection

This first phase of research involved the following four activities: 1) archival research and analysis of secondary literature, 2) farmer interviews; 3) women's group interviews, 4) official interviews; and 5) other sources of information.

Archival research and analysis of secondary literature

Literature relevant to the research topic was reviewed in Canada and Kenya. The ICRAF and KEFRI libraries provided many references related to previous agroforestry trials in Siaya and to the CARE project. The libraries of York University, UNEP and IDRC provided many references related to tropical forestry, agriculture and gender, environment and development. The University of Nairobi library and Institute of Development Studies provided valuable historical and contemporary reports related to poverty and environmental issues in Siaya District. Reports produced during the colonial and post-

independence era, mainly by the Ministry of Agriculture, Department of Forests and Ministry of Health, were reviewed at the National Archives of Kenya. Sixty documents related to the CARE AEP were analysed, approximately half of which were published by CARE-Siaya, CARE-Kenya, ICRAF, KEFRI, CARE-Canada and CIDA; the other half included media articles, graduate theses and case studies.

Farmer interviews

Between March and May 1995, 96 in-depth interviews (54 with AEP farmers and 42 with non-AEP farmers) were conducted. Typically, the interviews and discussions with farmers lasted a minimum of two hours and all were held on-farm. Except in a few situations where the farmer wanted to be interviewed immediately, the first contact with farmers was only to introduce the purpose of the study, or in the words of one research assistant, “[to explain] that I was a learner and not a provider”, and to make an appointment for an interview at the farmer’s convenience. During the interview itself, farmers were asked open-ended “core” questions (see Annex 3).^{xix} All discussions were conducted in the local language, *Dholuo*.^{xx} If more than one farmer attended the interview or replied to questions, the recorded answers indicated each speaker’s relationship to the contact farmer. However, in some households some members of the household were restricted by those in positions of greater authority from actively participating in interviews.^{xxi}

As mentioned above, different types of data were expected from the open-ended questions. These included baseline data about the household; farm activities, including agroforestry; labour and gender-based responsibilities related to agroforestry; farmers’

attitudes to land and labour problems; and personal and collective priorities and goals for development, including women's group activity. Following advice from Silverman (1993), checks for consistency and validity of data were built into the research questionnaire.^{xxii} The first type of check was to ask the same question in different ways to ensure accuracy of interpretation. An example of one such in-built check in the open-ended questionnaire is:

Part I: Question 12 “How many full-time residents are there?”

Part II: Question 5a) “On the farm you are visiting, who lives here all the time?”

The need for reformulating and checking the answers to these particular questions, for instance, was based on a tendency among farmers to avoid questions about their resident children, or perhaps about the residency of a husband. A second type of consistency check (for AEP farmers only) was cross-checking with data from 1991, and, where possible, information from 1989.^{xxiii} The third check was through the inclusion of a simple sketch map of the compound and fields at the start of the interview. This technique involves research assistants drawing a map of the arrangement of houses, location of trees and crops, and other information about the household and inviting farmers' inputs and corrections to this diagram. This information could be checked against other data because, according to traditional settlement patterns in Siaya, the number and arrangement of houses in a homestead indicate the number of sons in the family and related information such as the whereabouts of the sons, their wives and children.^{xxiv} As the research team members toured the farm and drew the sketch, they were also able to improve their

understanding of the farm, establish a rapport with the contact farmer and pose questions to other members of the household, including other wives, daughters-in-law or children. At the same time, the method contributed information to develop some sense of the socio-economic status of the household with the aid of “proxy indicators” such as type of house, source of water, number of livestock, etc. (Rugh, 1986).

Interviews with women’s groups

Women’s groups were interviewed with a structured set of questions (see Annex 4). One-third (11) of the 33 groups interviewed in 1991 were available for in depth interviews involving the majority of group members in 1995. Information about 18 of these women’s groups was collected from some members (usually past executive members). The entire membership of the group could not be assembled because of group collapse (see Chapter 7). In the remaining cases of 4 of the 33 women’s groups there was no reliable information or no group member willing to discuss the group.

The questions posed to groups were developed based on suggestions by Schneider (1988) who offers guidelines on examining the evolution and performance (through self-assessment) of farmers’ organisations. Women’s groups were asked about their group’s history and their vision and objectives for their organisation. Interviews focused on the progress and problems experienced as a group, but during the course of the interview individual experiences were also noted.

Official interviews

In addition, interviews were conducted with local government officials responsible for district planning, agriculture, social services, forestry and environmental programmes in Siaya District. Interviews with AEP staff in Siaya, Kisumu and Nairobi were also conducted. Other key informants at the district level included representatives of two local NGOs operating in Siaya District. Annex 5 provides a list of these interviewees. Some discussions were held informally, and others were formal interviews in which questions were specially designed and presented to the respondent in advance of the interview.^{xxv} In 1991, 12 extension workers in the CARE AEP were interviewed; only two of these extension workers still worked in Siaya during the main phase of fieldwork in 1995. High turnover of project staff and the staff's unwillingness to be interviewed individually resulted in only three AEP staff interviews in 1995. Formal interviews were conducted with two senior AEP managers in each of the CARE-Kenya offices in Kisumu and Nairobi. Informal discussions and field visits to other agroforestry projects in western Kenya were conducted in collaboration with KEFRI scientists and ICRAF researchers based in western Kenya and Nairobi.

Other sources of information

Three other sources of data were used mostly for contextual and historical information. Current and seasonal prices of food crops, tree products, fertiliser, hybrid seed and labour were obtained from local markets (see Annex 6). This information helped to contextualise discussions with farmers about the benefit of agroforestry products for sale in the local

market, women's income generation activities in trading food crops and firewood, and generally the seasonal nature of prices and availability of farm inputs in Siaya.

Supplementary data were also obtained from oral histories provided by four individuals knowledgeable about trees, farming and local culture who were referred to the team by other farmers. They were: two elderly women farmers, one of whom was an herbalist; another herbalist who has a flourishing practice in Boro Division; and a former chief (*mlango*) during the colonial administration, also from Boro Division. Although structured questions are recommended for oral histories (Agar, 1980), the team only anticipated asking baseline questions and allowing others to arise during the interviews.

3.4.4 Phase 2: Preliminary Results and Feedback

After completion of all farmer interviews, the research team convened for one week to begin preparing a synthesis of initial research results. This exercise involved the author's preparation in advance of a synthesis of the baseline data and general findings from the interview transcripts related to agroforestry activities across the district. The research assistants also provided a report on agroforestry activities among AEP farmers and non-AEP farmers and women's groups interviewed in their divisions. This material formed the basis of the feedback that was given to each farmer and group. These results were also used in an one-day seminar held in Siaya with local officials, NGO representatives and AEP staff (see Hambly, 1995).

This same technique had been used in 1991, when it was found that although feedback to participants in the research process was time consuming, it was important

from an ethical standpoint because farmers involved in the AEP had rarely received the results of earlier surveys. Feedback is also of practical importance because it helps with the checking of information and refining of ideas. Specifically, it gives research participants the opportunity to refute the initial analysis and its generalisations, and claim (or disclaim) any recommendations that are proposed.

3.4.5 Phase 3: Final Data Analysis

Data analysis was an important aspect of the research methodology. During the design of the research project, a relatively new computer software programme known as NUD*IST seemed to be well-suited to interdisciplinary research and its multiple sources of data. The programme has received strong recommendations from qualitative researchers such as Tesch (1990), Huberman and Miles (1994) and Bryman and Burgess (1994). Let us now briefly look at how NUD*IST was used in this study, including the tasks performed to analyse the data and the process followed in data interpretation. The chapter will end with a brief explanation of how the NUD*IST data is compiled and presented in each of the subsequent chapters.

The purpose of data analysis was to accomplish four main tasks:

1. To organise the baseline data and responses to the questions posed to farmers in the in-depth interviews (n=96).
2. To “flesh out” the guiding concepts of implementation and institutionalisation processes, human agency and gender relations by exploring them across the different data sources.

3. To identify and test emerging concepts from the data analysis.
4. To generalise the findings and compare them with other sources of information (e.g. secondary literature).

NUD*IST is a tool that helps with the organisation and exploration of data. The way NUD*IST organises data is visually represented by a hierarchical, but flexible, tree diagram. There is a tree diagram for each NUD*IST research project (a project in NUD*IST is an individual database of information). There were three projects in this study: the main project – in-depth farmer interviews and group interviews; a second one containing official interviews and other relevant data from fieldwork; and a project to analyse secondary literature and AEP documents. The tree diagram is a hierarchy of category, sub-category, sub-sub-category, and so on. Each category is called a “node” and, as in a family tree, each node may (or may not) have parents, siblings, children, grandchildren, etc. Nodes store useful information about a particular “variable” or “concept” in the research project. Each node has its own “address” in the NUD*IST index system. Once created, a node can be deleted or collapsed into another node, which leads to the tree diagram developing as the research project progresses.

The data were explored with NUD*IST in two ways: by searching the text (text files stored in the project database) and by coding the text. Coding in NUD*IST can be done in three ways: 1) by coding passages of text directly on-screen; 2) by transferring codes from an annotated hard copy onto passages of text that are introduced into the project; or 3) by searching the data, identifying relevant text and storing it at a relevant node. This last form

of coding can be done manually (by following drop-down menus on the NUD*IST toolbar) or by writing command files to automate repetitive coding (e.g. search for “age of farmer” and save to node “age of farmer”). In this study, the author used all these types of coding and created an extensive list of codes (an index system).

In qualitative data analysis searches are generated by posing hypotheses and testing them against the data. Data in NUD*IST can be sought out as individual bits, strings or patterns of words, numbers or most other characters. Searches can be performed using Boolean symbols to include or exclude information (e.g. “men/or/women” and “alley-cropping/not/Boro Division”). The finds from the searches can then be discarded, coded or sorted further. They can also be located with or without their “header” (a label of the document from which the passage of text was found). The find can also be spread to include more text (or context for the particular find). In this respect, the researcher can make several “cuts” of the data and widen or focus the lens as needed. The results of searches can be saved for further questioning – what the designers of NUD*IST refer to as “system closure” (Richards and Richards, 1994b). As the researcher moves on to examine new hypotheses, the results of searching, sorting and writing memos about earlier concepts can be called back again, searched afresh, and new concepts or hypotheses proposed. This is essentially the way in which the process of interpreting the data in NUD*IST takes place. It is something like the “cut-and-paste” and cross-referencing of data against other sources of information, as explained by Agar (1980). Yet this process is faster and

possibly more reliable in terms of handling a large quantity of documents and keeping track of the process of data interpretation.

The study team started by following advice in the NUD*IST user's handbook and "practising" on a few documents. However, some of the marks used as codes in the word-processed interview transcripts (e.g. exclamation marks, quotations, capital letters) prevented introduction of the documents into the NUD*IST database or restricted searches of the text.^{xxvi} This mistake cost valuable time as all 96 farmer interviews as well as 30 or so other field documents had to be "cleaned" of these marks and re-introduced into the NUD*IST project. Once the team got over this hurdle, the next tasks were as follows:

1. Relevant baseline information was coded and later transferred into an EXCEL spreadsheet for tabulation (unlike the most recent version of the programme, NUD*IST 3.1 data cannot be easily exported to SPSS or EXCEL).
2. The "family tree" of the main project was first based on farmer and group demographics (Division, Group Name, Farmer ID, etc.), and then organised conceptually; the two other projects (other interviews and field data, and secondary literature) were organised thematically, and then conceptually.
3. The projects were developed conceptually (at first) by searching and coding data, using the central research questions (does the implementation of agroforestry institutionalise it at the local level, and why) and the "guiding concepts" (gender relations and human agency) elaborated in the research design and theoretical framework.

4. As new ideas or hypotheses emerged in the data, they were stored and eventually retrieved while testing other hypotheses about the implementation of the AEP, agroforestry among non-AEP farmers, and other issues dealt with in the study.
5. When interesting results arose in one project (e.g. farmer interviews), they were cross-referenced with the other projects (e.g. secondary literature or other interviews).

Determining when to stop searching and coding of the data in each NUD*IST project, and cross-referencing it within the same project and between projects is difficult. Even during the writing of the findings, some of the data continued to be re-categorised through re-running of tests and collapsing of the analytical tree branches. Richards and Richards (1994a) suggest that the NUD*IST project is a living research project which can be returned to in light of new information. Nevertheless, most of the data analysis was stopped once the author had achieved the key tasks set up at the start of the study: 1) to establish baseline data, 2) to explore and interpret the different data sources in relation to the central research questions and guiding concepts, 3) to identify and test concepts that emerged in the analysis, and 4) to generalise the findings to other cases and sources of information.

The final step of working with NUD*IST involved presentation of the data analysis results. While Silverman (1993:162) and Yin (1984) discuss counting and tabulating qualitative data, there continues to be a gap in the literature on qualitative data analysis using NUD*IST where presentation of results is concerned. Unfortunately, while the

NUD*IST tree diagram is useful during data analysis for visually representing the index system (the codes and reports they contain), even these cannot be printed into a word-processing file in version 3.1 of NUD*IST. The best option to present some research results are conventional data tables that summarise the relevant “finds” in the NUD*IST project and support key arguments in the discussion of the dissertation. For these tables references indicate the relevant nodes of the project tree where the data are stored in the NUD*IST project. A summary of the project tree is also illustrated in Annex 7.

3.5 Summary

This chapter has described the research methods used in the study. It has also introduced the geographic area of the study, Siaya District. This preliminary background has identified some issues which will arise in subsequent chapters, including the composition of a rural household in Siaya District, the significant role of women in agriculture, and some of the contemporary rural development issues within the district.

This chapter has suggested that the processes of project implementation and institutionalisation of agroforestry at the local level are suited to qualitative research and the case study method. The approach used in this study has paid specific attention to qualitative data analysis. The use of NUD*IST, a computer software programme for qualitative data analysis, has been described. Chapters 4 to 8 will present and discuss the findings of the data analysis. The introductory section of each chapter will identify the sources of the data presented. In Chapter 4, we shall turn specifically to the subject of the historical context of agroforestry in Siaya as well as the emergence of national policies and

programmes that have influenced the contemporary practice and promotion of agroforestry at the local level.

Notes

- ⁱ The total area of Siaya District is just over 3,500 km², of which approximately 1,000 km² are three freshwater lakes (Sare, Kanyaboli and Nyanza) and two major rivers (Nzoia and Yala). A further 17,000 hectares are covered by Yala Swamp, the largest inland marsh in Kenya.
- ⁱⁱ Malaria accounts for 50% of the cases of illness leading to death reported by health centres. A separate chapter on HIV/AIDS has been included in the *District Development Plan (1992-96)*. However, the accuracy of data on AIDS in Siaya is considered to be low. Nyanza Province has the second-highest rate of HIV/AIDS infection in Kenya. An estimated 1 in 18 persons are infected with the virus in the country, with the highest rate being in the Coast Province.
- ⁱⁱⁱ Stunting is the term given to below-average measurements of height for age, weight for height and weight for age. It is an indicator of household poverty.
- ^{iv} There were 217,425 sheep in Siaya in 1995 (Republic of Kenya, 1994a). An accurate figure for the total number of goats is not available.
- ^v A recent study by UNEP and the Government of Kenya suggests that the vegetation loss due to deforestation and the reduction of other soil cover account for less land degradation than overgrazing and arable agriculture (Republic of Kenya *et al.*, 1997).
- ^{vi} Hammersley (1992) also argues that a qualitative/quantitative divide does not exist because qualitative analysis often adopts procedures found in quantitative research. These include the stratification of data to focus on certain social groups or situations and summaries of data using simple statistics, charts and tables.
- ^{vii} This study used version 3.1 of NUD*IST. However, it is now available in a new version (4.0) which interfaces with SPSS (Statistical Package for the Social Sciences) and with Decision Explorer to create tree diagrams that are more easily manipulated and printed.
- ^{viii} This number does not reflect the number of documents and other materials read or referred to in the course of the research, but, instead, the number of references from which notes were taken and entered as “documents” in the NUD*IST project.
- ^{ix} This was a modification of the 1991 research methodology in which the research assistants had worked at the district headquarters, Siaya. The decentralisation proved to

be an improved strategy for multiple visits to farmers, with the role of the liaison being critical to the rapport and interchange within the team.

^x This individual had been employed as a senior extension worker in the CARE AEP from 1984 to 1992 and had participated to a significant extent in the 1989 CARE/ICRAF Impact Survey.

^{xi} The author's PhD supervisor also attended the first part of this orientation exercise.

^{xii} In 1994 there were approximately 90,000 households in Siaya District (Republic of Kenya, 1994a).

^{xiii} This study was the basis of a number of further publications by Dr. Scherr, who left ICRAF in the late 1980s and joined its sister agency, the International Food Policy Research Institute (IFPRI) in Washington D.C.

^{xiv} A further 102 farmers in South Nyanza were involved in the study by Scherr and Alitsi (1990).

^{xv} There were ten administrative divisions in 1995 as each of the five existing in 1991 had been split into two.

^{xvi} In 1991, the farmers were selected by pointing at random to a name on the relevant list. Selections were made without replacement. The total number of farmers interviewed are similar to the sample sizes recommended for in depth interviews as suggested by Lofland (1971), Agar (1980), Miles and Huberman (1984), Maguire (1987) and Kirkby and McKenna (1989) .

^{xvii} These particular households were expected to experience greater benefit from or constraints while practising agroforestry. For instance, one hypothesis examined was that elderly or monogamous households might experience labour or land shortages differently than younger or polygamous households. These were farms located in medium-potential areas so as to reduce the influence of agro-ecological or climatic factors. These farms were not selected in consultation with CARE extension workers and none had been involved in the 1989 CARE/ICRAF study.

^{xviii} The farmer complained that she was tired of visitors from the CARE project. However, she later contacted the team and asked to be interviewed. The fieldwork had been completed by then, so the team visited her instead and discussed the general feedback from the study with her.

^{xix} The core questions in this study were a combination of directed and non-directed questions addressed to both male and female farmers participating in the discussions. The value of including non-directed questions is that, unlike in the traditional interview method, questions which are not "targeted" at a specific individual can be answered by more than one person. As the literature on focus groups indicates, an important dynamic

occurs between the person who hears the question and the one who shares (or allows someone else to share) in answering it. That information can be captured in the text of the responses to the questions, or later in the observation notes of the research assistants. Addition of further information, open disagreement with the speaker's viewpoints, personification in examples, and attempting to influence the course of discussion can be especially useful for observing gender dynamics in the interviews (Oakley, 1981; Kelly-Gadol, 1987).

^{xx} As in 1991, the author attended some but not all of these household-level interviews due to the possible implications conveyed by her presence as an outsider. However, her attendance sometimes had a positive impact as some farmers found the presence of an outsider an opportunity to explain in detail their concerns regarding agroforestry and the project. In other situations, this presence created difficulties related to the farmers' perceptions of the extent to which the project could respond to their requests for services or group requirements for remobilisation.

^{xxi} As the 1991 study found, younger women are providers of key labour in the agroforestry system, but they are viewed by the older family members and their husbands as "newcomers" who do not yet understand the family's situation (Hambly, 1992). Any opportunity to have input from the "marginalised" members of households came during tours of the farm, or repeated visits.

^{xxii} Pre-testing the questionnaire also reinforced to the research team that these checks are important for certain questions where farmers may be reluctant to answer.

^{xxiii} In order to avoid influencing the 1995 results, the 1991 farmers' responses to these questions were not shared with the research assistants in 1995 until after all the interviews had been completed. It was one of the major tasks in the study to later reflect on the 1991 responses in light of the 1995 findings. This comparison of data was carried out first through discussions in Siaya and then more thoroughly by the author when the interviews were analysed with NUD*IST.

^{xxiv} This can also help to determine how frequently non-residents visit their rural homes by assessing the state of the houses, the keeping of homegardens, etc.

^{xxv} In two cases, officials asked to be interviewed outside their offices, one at a local restaurant and the second at the site of a field trial. Experience with formal interviews in 1991 suggested that the use of structured questions in formal interviews yielded information which was only partially capable of explaining multiple organisational linkages and negotiations. Much of the information for the analysis came from organisational literature, attendance at meetings, interviews and informal discussions with relevant staff.

^{xxvi} All interviews and field notes were first entered in MS Word for Windows 3.1, and not as text files. If they had originally been entered as text files, the symbols would not

have been accepted and the problem would not have arisen. Unfortunately, this advice does not appear in the NUD*IST (version 3.1) handbook.

4. AGROFORESTRY IN WESTERN KENYA: HISTORICAL AND CONTEMPORARY CONTEXT

4.1 Introduction

This chapter provides an account of how historical events in western Kenya have influenced contemporary environmental issues in Siaya. We shall explore some of the major ways in which traditional settlement patterns and land use among the Luo people there, as well as interventions by the British colonial administration, shaped farmers' agroforestry practices. These historical insights are useful because they provide a wide temporal and spatial context for agroforestry in Siaya. They are also relevant to a discussion of the form and extent to which agroforestry was institutionalised in Siaya before the early 1980s.

The discussion in this chapter derives mainly from the analysis of secondary data on Luo historiography, records from Kenya's National Archives, oral histories and interviews with key respondents, the District Lands Officer and government forestry officers based in Siaya.

4.2 The Luo People (*Piny Luo*)

Almost 97% of the population of Siaya are Luo, a culturally and linguistically distinct "Western Nilotic" ethnic group originating in the region near the Upper Nile Valley in present-day southern Sudan (Ocholla Ayayo, 1976).ⁱ Luo migrations through present-day Uganda towards Lake Victoria or Nyanza (*Nam Lolwe* in *Dholuo*) and into Tanzania took

place between 1400 and 1700 A.D. It is believed that the original migrations of the Luo were the result of competition from neighbouring tribes for scarce grazing land (Ogot, 1967; Ochieng, 1974). Despite the value of fishing among the Luo and their self-identification as *jonam* or “people of the lakes and rivers”, cattle have historically been the main unit of prestige, investment and exchange among them (Ocholla Ayayo, 1976:35). However, competition for pasture was brought about by other disruptions that contributed to social upheaval in Sudan and Uganda, not the least of which were war, famine and slave raiding, as pointed out by Amin (1972).

The first Luo clans arrived in Siaya at about the end of the fifteenth century. Under their clan leader, Jok, they secured their first settlements in Siaya by fighting the Bantu-speaking people (mainly the Abasamia and the Abunyala, sub-tribes of the Abaluhya). Over several decades, the Luo established themselves inland from the shores of Nyanza, at Got Ramogi and Ligala in present-day Samia (Ogot, 1967; Ochieng, 1974). Up to the mid-1700s, Luo clans continued to immigrate from Uganda to Nyanza. Their expansion north towards the borders of present-day Kakamega and Vihiga districts, and east and south towards Kisumu and South Nyanza and the lake region of Tanzania, did not end until 1900 (Kokwaro and Johns, 1998).

Descriptions of the environment of Siaya in the pre-colonial era can be seen from two main perspectives, both of which offer insights into life in the district at that time. For Cohen and Odhiambo (1989), what defined the Luo environment and social identity was not natural resource-based activities, including pastoralism; but, rather, the ancestral

settlement pattern known as *gunda bur*, which is a fortified community of agnatic and non-agnatic kin.ⁱⁱ The authors suggest that the meaning of Luo society (*Piny Luo*) is an outgrowth of the past communal fortified settlements merged with a dispersed but connected network of homesteads. Although distinct, these scattered settlements remain strongly linked by social relations of both kinship and friendship.ⁱⁱⁱ Whereas Cohen and Odhiambo do not examine the socio-economic implications of these pre-colonial networks of kin and friendship in depth, the theme is developed in other analyses, including that of Shipton (1985), which suggest that the harshness of Nyanza's environment required Luo social networks to serve as a mechanism for "wealth-sharing". However, the strength of Cohen and Odhiambo's work is that it captures the concept of a *household* in Siaya as a collection of individuals where economic and political networks spread beyond the borders of a district and encompass family and friends who live and work outside the *dala* (the compound or the visual boundaries of the farm household).

Another view has constructed the pre-colonial environment of Siaya as a landscape defined by other socio-economic relations, including marriage and trade between the Luo and the neighbouring Abaluyha people. These relations introduced the Luo to new agricultural techniques such as biannual cultivation and diversified crop production. Bookman (1973) has argued that Luo women, including Abaluyha wives, played an important role in land use in pre-colonial Siaya.^{iv} This socio-economic perspective possibly explains how the balance between cattle, fish and crops was influenced by exogenous knowledge prior to the reduction of cattle herds in the late 1800s due to

disease. The role of women in exchanging knowledge about agriculture and their direct involvement in the movement and exchange of germplasm were evident during the fieldwork for this study. Two co-wives from Boro Division, Mama Akinyi (aged 74) and Jerusha Otieno (approximately 78 years old), described how in the late 1930s, when they were young co-wives, they travelled nearly 100 miles on foot to visit relatives in South Nyanza. During those visits, the women gave their extended families food and seed from their fields in Siaya in an exchange of gifts. In addition to being an exchange of germplasm, which has potential benefit for breeding improved crops and safeguarding biodiversity of crops, this sharing of resources was critical during times of famine, as Ocholla Ayayo relates:

During famine, the Luo women travel many miles to their distant relatives who may or may not have been hit by famine in order to get some food crops. This system is what they call *kisuma* (Ocholla Ayayo, 1976:100).

Through customs such as *kisuma* and marriage, new knowledge and practices began to influence the Luo household; and women, as wives, farmers and traders, can be seen to have been agents of a historical transfer of resources that were to change the Luo economy and environment (Hay, 1976; Okeyo, 1983).

4.3 Traditional Agroforestry Among the Luo

There is no detailed historical record of the social, political and ecological aspects of farm forestry or agroforestry in Siaya. According to Ogot (1967), Ochieng (1974) and Ocholla Ayayo (1976), pasture and water for cattle were the priorities of the migrating Luo, and

only agriculture, as the domestication of food plants or crops, was practised to a lesser extent.^y However, ethnobotanists Kokwaro and Johns state that

The Luo have a deeply rooted culture and rich knowledge of plant and animal uses. This is one of the leading African tribes with an excellent knowledge of ethnosystematics (the traditional system of naming and classifying plants and animals). Their knowledge of herbal remedies is superb, probably because as they travelled diverse ecological habitats from Sudan through Uganda into Kenya and Tanzania, they learned the hard way how to keep themselves healthy before the advent of modern medicine. In Kenya they have learned to co-exist with the neighbouring communities like the Luhya and the Kuria and occasionally share plant or animals names with them. They also share many plant and animals names with their Ugandan cousins (Kokwaro and Johns, 1998:ii).

Therefore, it is possible that trees (and other herbaceous woody plants) were important to the Luo, who managed species that they perceived to be important or valuable. Trees were not only necessary as firewood for cooking and preserving food (e.g. smoking fish or meat), but also, as recorded in Kokwaro and Johns (1998) and related to the study team by local farmers and herbalists, they provided an important source of dry-season fodder and veterinary and human medicine. Annex 8 summarises one such interview with a traditional medical practitioner, *Daktari* (Doctor) Onege of Boro Division. In addition, discussions with farmers in 1995 revealed that for them trees have both a functional dimension as well as a symbolic value. Trees are important in Siaya because they demarcate the *dala* (compound). As the late Luo leader, Oginga Odinga, once wrote:

In among the thick hillside vegetation of the Sakwa area lie fields of maize and millet, and clusters of homesteads of thatched huts. Our village, like all Luo villages, was neatly fenced by euphorbia trees or “Ojuok” as we call them (Odinga, 1967:6).

In this sense, euphorbia or *ojuok* (also referred to as *bondo*) is an “umbilical cord” connecting members of the same *dala*. It is near this “living fence” that the placenta of a baby born in the home is traditionally buried. In this respect, trees are linked symbolically to the *dala* or rural “households” in Siaya.

There is yet another way in which trees may be historical markers on the rural landscape. The team members were told the following story by a 70-year-old farmer, who had heard it from her late husband, about how the *bao* (*Eucalyptus* spp.) was introduced to her village:

About 100 years ago, Okoth (an important Luo clan leader in the nineteenth century) first planted the *bao* that grows near my farm. The seedlings came from Uganda where Okoth had travelled on a peace mission to the *Kabaka* (Baganda king). Okoth was so impressed by the unfamiliar trees towering over the royal palace that he asked the *Kabaka* if he could take some seedlings back to his home. In exchange, Okoth gave the *Kabaka* one cow for each seedling. The *Kabaka*’s eucalypts, probably 12 or so trees, some as high as 40 metres, still stand near the main road where Okoth planted them.^{vi}

As this story demonstrates, for some farmers in Siaya, trees, including “exotics” such as *Eucalyptus*, are more than simply a natural resource or source of wood. Their stories are also sometimes different from the types of narratives provided by forestry researchers and officials. For instance, Tenge (1994:7) reports that in the early part of the century eucalypts were planted to provide fuelwood for railway trains and to drain swamps around Nairobi. Scherr (1995:789) narrates that *Eucalyptus* spp. and *Cassia siamea* were introduced into Siaya for commercial timber in the 1930s.^{vii}

For the purposes of this study, trees in the pre-colonial era are most relevant in relation to traditional agricultural activities among the Luo. Two examples of pre-colonial agroforestry can be identified from the literature and oral histories analysed in this study. One is the spatial rotation of crops and trees, and especially the use of bush fallow, and the second is the intercropping (randomly) of crops and trees.

The rotation of crops and trees, with the land lying fallow between rotations, is probably the oldest form of agroforestry in Siaya. The Luo were initially described by missionaries as “shifting cultivators” (Ogot, 1967; Bookman, 1973). Shifting cultivation, as described by those early missionaries, generally involved the movement of farmers from one area to another as the land declined in productivity after continuous cultivation – usually after a few years. The fields were then left to the slow and regenerative effect of grass and bush regrowth.^{viii} However, some researchers do not accept this description of the Luo; instead, they believe that what the missionaries observed in Siaya was the migration of the Luo and shifting settlement, not agriculture (Odinga, 1967; Cohen and Odhiambo, 1989). Although this latter proposition is probable, oral histories collected during this study suggest that at least since the early part of this century, farmers in Boro Division have also rotated their fields and pasture according to seasonal requirements. Farmers explained that fields could be left fallow for more than one crop season in a number of ways, including: 1) scattering the seed of fast-growing bushes after the harvest, 2) restricting livestock from entering the fields, and 3) preventing the cutting of trees or shrubs in the fallow fields for woodfuel or fodder. Such an example of “improved” bush

fallow was found on the land of a Bondo Division farmer who managed his fields by directly seeding woody perennials after the crops had been harvested. Most of the species used by the farmers increase soil nutrients through their capacity to fix nitrogen.^{ix} Nonetheless, bush fallow as a traditional agroforestry technique is rare in contemporary Siaya. In part, this is because increasing population pressure and commercialisation of land in most parts of the district have led to a more general decline in land available for protected fallow periods. Even in less densely populated areas, fallow land is used for grazing or for harvesting woodfuel. Also, farmers may prefer to lease their unused land, or possibly lend it to relatives, as described in more detail in Chapter 6.

The second form of agroforestry traditionally practised by the Luo is the intercropping of food crops and trees. In Siaya, certain species of naturally propagated trees are left in farmers' fields where annual food crops (maize, sorghum, beans) or a perennial (cassava) are grown. Some indigenous tree species, especially *siala* (*Markhamia lutea*), are commonly maintained in the fields and farmers cultivate around them (van Schaik, 1986). In 1995, *siala* trees were identified in 50% of the fields cultivated by farmers involved in the CARE Agroforestry Extension Project and 55% of the fields managed by non-AEP farmers interviewed in this study. These figures were only slightly lower than in the study on *Markhamia lutea* by van Schaik (1986). Farmers explained that *siala* trees are left to grow in the fields because they do not adversely affect crops. The trees prevent surface run-off that leads to soil erosion and provide shade for crops, and in pasture shade for grazing animals. The trees are often scarred as a result of branches

having been lopped off or pollarding (cutting the trees and leaving them to regrow from their trunks). Farmers also value the *siala* wood for carpentry. The study team observed that in Boro Division, although not elsewhere in Siaya, *siala* is protected by taboos against its removal from the fields as it is associated with the ghosts and graves of ancestors.

On the basis of these examples provided by herbalists and farmers, as well as the accumulated historiographies of the Luo people, the author contends that “agroforestry” existed in pre-colonial Siaya. Both women and men were actively involved in pre-colonial farming. Moreover, women played an important role as wives, traders and farmers in the way that agriculture evolved in Siaya.

4.4 Colonial Influence on Agroforestry in Siaya

In 1882, the directors of the British Royal Geographical Society, having determined the source of the Nile, decided to find the most direct route to Lake Victoria from the western side of the Rift Valley. This was also essential for the British plan to build a railway across East Africa to facilitate military movement into Uganda to control the headwaters of the Nile (Sorrenson, 1967).^x The Society appointed Joseph Thompson to head an expedition across the territory of the much-feared Masai (or more correctly, the Nandi) (Miller, 1971). In 1884, Thompson became the first European to reach Nyanza’s eastern shores, not far from present-day Kisumu. Beyond Thompson’s descriptions of the densely forested landscape of Kavirondo (as Nyanza was then known), there is little to redeem his grievous descriptions of the Luo and their way of life.^{xi} In 1899, parties of the Imperial British East Africa Company (IBEAC) carried out their own type of expedition, killing

over 100 Luo men and thousands of animals, records Hay (1976:89). The European presence in Siaya, however, was limited to a handful of missionaries until after the IBEAC pulled out in 1901 and the British East African Protectorate was established.

In the early 1900s, Siaya held no more interest for the British than as a “classic example of a labour reserve”, according to Cohen and Odhiambo (1989:4). This situation was different from that in other parts of Kenya, such as Central Province and parts of the Rift Valley, where the British interest lay mainly in controlling arable land and natural resources.^{xii} In Siaya, then part of the territory referred to as Kavirondo, one of the few natural resources exploited by the East African Protectorate was the gold deposits in the south-east of the current district (Hay, 1976). To control their principal interest, the supply of (mainly male) labour, the British enforced boundaries between the various clans in Nyanza as a precursor to taxation.^{xiii} Enforcement of the Hut Tax Regulations (1900) compelled the Luo to sell their labour, or alternatively cattle, which are their traditional source of savings. The Masters and Servants Ordinance (1910) also opened the door for labour agents, in collaboration with headmen appointed by the colonial authorities, to actively recruit men in Siaya.^{xiv} Increasing controls over movement within the region and the designation of boundaries around the ethnic groups in western Kenya ignored the traditional social relations and land-use patterns among the Luo, argue Cohen and Odhiambo (1989). By 1920, when the Protectorate was formally declared Kenya Colony, the Siaya landscape was well on its way to being re-interpreted as a “Native reserve” to support the expansion of the white-settler export economy.

Development (*dongruok* or “progress”) was found not in Siaya, but elsewhere, in Nairobi or Mombasa, imply the texts of Whisson (1964) and Odinga (1967). The balance between pastoralism and agriculture in Siaya shifted as livestock numbers dropped further due to the restriction of movement, drought and disease. Both Bookman (1973) and Hay (1976) argue that this shift led to Luo men spending less time herding animals and more time on other activities, including agriculture. Hay (1976) made an important contribution to the study of women farmers in Siaya as she showed that men were involved in agriculture, although this varied between households. Men were also engaged in specific and seasonal tasks, including clearing fields and breaking ground, but women did the majority of planting, weeding, harvesting, processing, storing and trading of crops. As men were recruited away from Siaya, the full burden of agriculture fell on women.

While this change in the sexual division of labour and the out-migration of working-age men increased women’s responsibilities in the colonial period, it did not follow that the key role of women in agriculture was recognised in national policy and programmes. Instead, Staudt (1975, 1991), Okeyo (1980) and Hay (1982) suggest the opposite, that women’s role in agriculture in western Kenya was undermined by colonial policy on agricultural development, specifically in the area of rural extension and land tenure. Perhaps among the most important of legislative actions in the colonial period was land consolidation and registration. This process began soon after 1954 when the Swynnerton Plan was translated into laws which required that land, traditionally considered a collective resource among most Africans, be registered in the name of one person, invariably the

male “head” of household (Mbeo and Ooko Ombaka, 1989). Hay (1982:117) contends that in Siaya, through the trade in agricultural surplus, which increased in the colonial period, Luo women had until then maintained some independence from the control of their husbands and lineage elders. Traditionally, Luo women could return to their birth home with their grievances and regain access to land. However, statutory laws introduced in the colonial period led to the transfer of land to husbands. The concept of land as male property was supported by Luo men, and elders in particular, who sought to re-establish control over women, argue both Okeyo (1980) and Hay (1982). For the same reason, both authors are equally critical of the interpretation of “customary land laws” which were institutionalised by the colonial government in village-level elders’ councils. Hay (1976) refers to customary law in Siaya District as a mix of “tradition and wishful thinking”, which as Stamp (1990) has also observed, continued to infiltrate public discourse on women and property rights in Kenya.

Land laws established during the colonial period became the basis on which many other policies related to natural resource access were later instituted in Kenya (Okoth Ogendo, 1991). For this reason, it is not surprising that the legacy of colonialism reinforced the alienation of Luo women from *both* land and trees. As Fortmann (1985) has pointed out, the overlap between land and tree tenure makes them inseparable institutions in many parts of sub-Saharan Africa. That is the case in Siaya.^{xv} However, some specific policies formulated during the colonial period in Kenya also have a direct impact on the local people’s use of trees on-farm, and in the wider environment. Although Kenya did not

formally establish a national forestry policy until 1957, the country did have various auxiliary forestry policies.^{xvi} The Forest Department of the colonial administration was created in 1902 and colonial tree-planting and forestry programmes were initiated in Siaya from the early 1920s. According to national agriculture- and health-related archives, it is possible to delineate two types of tree-related programmes in Siaya (then part of the region known as Kavirondo): one concerning trees for family welfare and hygiene, and the second designating trees for environmental conservation programmes.

The first type of programme involved tree planting mainly around missions and their schools as “demonstrations” to local inhabitants. Kavirondo had suffered from famine several times in the early part of the century, and improved nutrition played a major part in the missionary drive (Whisson, 1964). Local missions proposed a nutrition programme that involved planting fruit trees and a hygiene initiative that essentially called for African women to stock firewood to boil washing and drinking water.^{xvii} Just prior to the Prince of Wales’s visit to Kisumu in 1928, the Provincial Office initiated another example of agricultural demonstration programmes known as “communal *shambas*”. The production of white maize for famine relief and improved nutrition fitted in well with the colonial administration’s interest in promoting white maize for export. Finally, one other major demonstration-type programme initiated in Kavirondo in 1934 involved the distribution of free tree seeds to farmers, with chiefs’ camps being used as the main distribution points and missions as demonstration sites. The objective of the programme was to get farmers to plant fruit trees to improve the nutrition of children and produce fruit for export. The

programme was a failure, according to colonial reports.^{xviii} In addition to the inappropriateness of the main species (citrus and pears) for most areas of Kavirondo, the seeds were treated with arsenic and numerous cases of poisoning were reported to the chiefs, who then called for the programme to be discontinued.

In such tree-planting programmes, as in agricultural development schemes within the reserve areas, local officials and missionaries played an important role in enforcing land-use policies (Troup, 1922; Odinga, 1967). As in Central and Eastern Kenya, farmers were not only encouraged, but required, by the colonial administration to plant trees for windbreaks and soil conservation (Castro, 1991; Rocheleau *et al.*, 1997). Discussions with a former chief of the colonial administration suggest that the efforts to promote tree planting had limited success in Siaya. The former chief spoke critically of farmers' unwillingness to plant trees and restrict over-grazing by their animals. Another farmer, who had worked for over 30 years as a village-level forestry officer, also remarked that the reforestation programme and those started in the late 1950s to gazette or establish state control over forested hilltops in Siaya would not have been successful without the direct involvement of government officials and strict enforcement by local forestry officials. Nevertheless, hilltop afforestation programmes were an example of the direct continuum of tree-planting activities from the late colonial period into the post-independence era. They have also been strongly criticised recently because they have typically involved strict anti-public-access policies, the planting of non-indigenous species including cypress and eucalypts and the illegal division or seizure of land (Oduol, 1986; MENR, 1992).^{xix}

4.5 Agroforestry-related Policy Initiatives in Kenya, 1963-95

The enforcement of forestry activities at the local level, initiated under the colonial regime and continued after Kenya's independence on 12 December 1963, left farmers wary of both chiefs and forestry department employees. Farmers did not perceive government extension workers as promoters of the use of trees, but rather as representatives of the government-appointed chiefs, acting as "tree policemen", protecting trees and enforcing conservation (van Schaik, 1986; KIFCON, 1994). In 1970, the Chiefs Authority Act (revised again in 1988) gave chiefs, within the limits of their jurisdiction, the power to enforce various environmental conservation provisions, which included control of the use of tree resources on both public and private land (MENR, 1994:236).^{xx} Thus, the power of the State over farm forestry did not diminish after independence and continues to the present day.

Let us now turn to three relevant policy issues that emerged after independence, which strongly influence the contemporary institutional context of agroforestry in Kenya. These include:

- 1) Expansion of an often poorly co-ordinated structure of government farm forestry and agroforestry research and extension policies and programmes.
- 2) Decentralisation of rural development planning under the District Focus Strategy of 1983.
- 3) The growth of environmental NGOs in Kenya.

4.5.1 Expansion of National Policy and Programmes

The National Forestry Policy of Kenya, written in 1957, was revised with few modifications in 1968.^{xxi} As the Kenya Forestry Master Plan (1994) reports,

The (1968) policy concentrated on catchment protection and timber production, with strong government control. Despite the increase in population over the past 25 years, most of the forests are still in existence, which is a major achievement in itself, and their role in catchment protection is still largely being fulfilled. However, there have been partial failures in implementing the 1968 policy in respect of the closed forests, which have resulted in losses due to excisions and over-exploitation (MENR, 1994:72).

Early in the post-independence period, it was argued that forestry-related extension should be institutionalised in Kenya (MENR, 1992). One underlying argument was that soil and water conservation measures were needed on land that had been owned by white settlers during the colonial period and which was being sub-divided and brought into more intense cultivation. Another reason for attention to farm forestry was Kenya's growing population (from about seven million people in 1962 to 11 million in 1969) and an expected increase in demand for woodfuel.^{xxii} These issues spurred the development of the Rural Afforestation Extension Service (RAES) within the Forest Department in 1971. The RAES was given a national mandate to ensure that each division in every district had at least one tree nursery which could introduce new species to farmers, produce seedlings for local sale and reinforce the importance of tree planting to farmers. Over a 12-year period, extension officers were posted to every rural district in Kenya (39 at that time). By 1989, there were more forestry extension workers than foresters at the divisional level, mainly due to an influx of donor funding and training programmes (MENR, 1992).^{xxiii}

However, Wamagunda (1989) suggests that the RAES was consistently unable to reach its original target for seedling production at the district level and its objective of assisting rural farmers in tree planting. Government tree nurseries concentrated production on one or two species, and in Siaya District those were mainly cypress and eucalypts which were more suited to forest plantations than to farmers' fields. The creation of the RAES (renamed in 1989/90 as the Forestry Extension Services Division or FESD), and subsequent policy statements such as the 1986 Sessional Paper 1 on Economic Management for Renewed Growth, directed considerable attention to the fact that small farms in Kenya are essential to the overall picture of economic development and forestry in the country. Indeed, the total volume of wood in the form of trees planted by farmers across Kenya has equalled that in the closed-canopy indigenous forest and government forest plantations combined. This means that about 40% of the woody biomass in Kenya is "on-farm" (the balance is on "other public areas"), and the on-farm figure is reported to be slowly increasing at an annual rate of 0.5 cubic metres per hectare (MENR, 1994:127).

One of the most important uses of on-farm "woody biomass" in Kenya is as woodfuel, a term that encompasses both firewood and charcoal. Approximately 73% of the energy consumed annually in Kenya is from wood, mainly firewood in the rural areas and charcoal in many urban areas (Republic of Kenya *et al.*, 1997:82). In 1980, the President of Kenya announced the creation of a Ministry of Energy which, in part, was to undertake a national survey of energy needs with an emphasis on the renewable energy sector.^{xxiv} The Kenya Woodfuel Project, a joint undertaking between the Ministry and the

Swedish Academy of Sciences' Beijer Institute, published a woodfuel survey report in 1982 (Beijer Institute, 1982). The Beijer Institute Report, as it was known, was instrumental in bringing the image of an impending "global woodfuel crisis" into the context of Kenya (FAO, 1978; Eckholm, 1979). Concern was raised in the Report that western Kenya in particular was experiencing the start of a woodfuel crisis due to increasing population and further depletion of wood stocks. "Extreme shortfalls" were predicted before the end of the twentieth century unless immediate action was taken in the form of woodfuel conservation and on-farm tree-planting activities (O'Keefe *et al.*, 1984; Hosier, 1987; Bradley, 1991). The Beijer Institute Report signified what Copestake (1993) has referred to as "an unprecedented expansion in formal agroforestry research and development activities in which both government and non-governmental organisations took a role".

By the end of the 1980s, the Ministry of Environmental and Natural Resources' Forest Department was only one of several government bodies with a mandate related to agroforestry in Kenya. This build-up of institutional activity in farm forestry is summarised in Table 4.1. What appeared to emerge in Kenya in the 1980s was an extensive policy structure for agroforestry and farm forestry whose implementation was highly uncoordinated. It was observed that,

By 1985 there were 13 major national organisations and 63 others active in agroforestry/social forestry and general tree planting activities in Kenya ... but despite the proliferation of organisations and activities in agroforestry, it is generally felt that these efforts are still insufficient and suffer from a lack of institutionalisation. There is also an inherent danger of duplication of efforts and even misdirection (Getahun, 1990:184).

Table 4.1 Mandate of Government of Kenya Agencies and Programmes in Farm Forestry or Agroforestry Research and Extension

Government Agency/Programme	Year	Institutional Jurisdiction	Relevant Mandate, Programmes and Key Donors	Problems/ Key Issue(s)
Forest Department, Rural Afforestation Extension Service (RAES); renamed as Forestry Extension Services Division (FESD)	1971	Ministry of Environment and Natural Resources	<p>National policy on environmental management and protection, including forests.</p> <p>Involved in key farm forestry programmes, including:</p> <ul style="list-style-type: none"> • Kenya Indigenous Forestry Conservation programme (KIFCON) funded by British Fund for International Development. • Indigenous Conservation and Management Project (COMIFOR) funded by European Union. • Kenya Forestry Master Plan (1993/94) Project funded by FINNIDA (Finland). 	Executing agency only; no defined legal powers.
Kenya Agricultural Research Institute (KARI)*	1980	Ministry of Research, Technical Training and Technology	<p>Responsible for research on soil and water conservation in Kenya and agroforestry-related interventions for livestock management.</p> <ul style="list-style-type: none"> • Various donors. 	KARI involvement in agroforestry limited; KEFRI takes lead role.

Table 4.1 (continued)

Government Agency/Programme	Year	Institutional Jurisdiction	Relevant Mandate, Programmes and Key Donors	Problems/ Key Issue(s)
Kenya Renewable Energy Development Project (KREDP)	1981	Ministry of Energy	<p>National policy on woodfuel; trees for energy.</p> <ul style="list-style-type: none"> Establishment of KREDP/ MoA extension worker training centres across Kenya, largely funded by USAID; CIDA (Canada) funding to Ministry for renewable energy technical and policy assistance. 	Duplication of Forest Department extension worker training (MENR, 1994).
National Extension Programme (NEP)	1981	Ministry of Agriculture	<p>Responsibility for national extension services.</p> <ul style="list-style-type: none"> FAO support to revision of NEP, using farming systems approach. 	Over-extended extension services; transition in extension methodology requires staff re-training.
Permanent Presidential Commission for Soil Conservation and Afforestation (PPSCA)	1983 /84	President of Kenya	<p>Co-ordinate all national efforts for soil/water conservation and afforestation programmes.</p> <ul style="list-style-type: none"> Presidential Tree Fund for Youth Wingers of Kenya African National Union (KANU) to plant trees. 	Political power; mainly campaigns to increase public awareness.

Table 4.1 (continued)

Government Agency/Programme	Year	Institutional Jurisdiction	Relevant Mandate, Programmes and Key Donors	Problems/ Key Issue(s)
National Soil and Water Conservation Programme (NSWCP)	1983	Ministry of Agriculture	Mandate for managing and enforcing soil conservation laws; agroforestry unit established in 1983 for livestock management. • NSCWP funded mainly by SIDA (Sweden).	The programme is considered successful due to heavy emphasis on training extension workers and reinforcing importance of agroforestry for soil conservation.
National Water Catchment Programme	1984	Ministry of Land Reclamation, Regional and Water Development	Responsible for monitoring human activities in forested water catchment areas especially related to soil conservation, siltation and flooding. • Kenya Water Master Plan, funded by Japanese International Co-operation Agency (1995).	Relevant to Siaya District as part of Kenya's largest drainage basin, the Lake Victoria Basin; Water Master Plan and Forestry Master Plan have been harmonised to some extent.
National Environment Secretariat	1985	Ministry of Environment and Natural Resources	Co-ordinates national environmental management and conservation. • Design of the National Environment Action Plan, funded by World Bank, other donor involvement (1992/93).	Lack of legislative power; delay in finalising and implementing the NEAP.

Table 4.1 (continued)

Government Agency/Programme	Year	Institutional Jurisdiction	Relevant Mandate, Programmes and Key Donors	Problems/ Key Issue(s)
Kenya Forestry Research Institute (KEFRI)*	1986	Ministry of Research, Technical Training and Technology	<p>Responsible for research on agroforestry and forestry in Kenya.</p> <ul style="list-style-type: none"> • Agroforestry and social forestry research programmes (largest donor is the Japanese International Co-operation Agency); some CIDA (Canada) funding. • National Steering Committee on Agroforestry. 	In 1987, the National Council for Science and Technology established the National Steering Committee for Agroforestry, led by KEFRI.
Agroforestry Unit for Livestock	1988	Ministry of Livestock and Rangeland Development	Responsibility for agroforestry for livestock development and range conservation.	Programmes for livestock overlap with MoA programmes; the programme has been weak, except for the production and distribution of tree seedlings for zero-grazing cattle in some areas (Getahun, 1990).

Note: * Formerly forestry and agriculture research were part of the East African Agriculture and Forestry Research Organisation (EAAFRO), instituted by the East African Community which broke up in 1976. Forestry research was then taken over by KARI until KEFRI's creation.

Sources: Getahun (1990); MENR(1992, 1994); official interviews.

However, behind the lack of co-ordination were two important realities in the agroforestry policy environment in Kenya during the 1980s. The first was that some parts of the institutional structure were powerless, while others, due to the Minister's influence and donor attention, received disproportionate financial and political support.

Such power imbalances among national organisations led to some parts of the government wielding too much influence (e.g. PPSCA and the Ministry of Energy) and others insufficient legal power (e.g. NES) (MENR, 1994:248; KIFCON, 1994).

The second factor underlying the lack of co-ordination was that many of these initiatives were formulated with limited, if any, inputs from the targeted individuals, including extension workers and farmers (MENR, 1992:109). Co-ordination was supposed to occur at the field level, but up to the mid-1980s most government agricultural and forestry activities in Kenya were still highly centralised in Nairobi.

4.5.2 Relevant Policies and Programmes at the District Level

National policies are supervised and implemented by two interrelated government structures in Kenya. One is the local government, and the second is the District Development Committee as an element of the District Focus for Rural Development. Kenya's system of local government is the responsibility of the Ministry for Local Government and Physical Planning, formed by an Act of Parliament to "provide for the establishment of authorities for local government, to define their functions and to provide for matters connected therewith and incidental thereto".^{xxv} These matters include, for

instance, the appointment of chiefs and sub-chiefs at the lowest level of administration, the sub-location. These local authorities are, however, partners in local development activities.

The co-ordination of government and NGO farm forestry and agroforestry policies in Kenya is expected to be realised at the level of the District Development Committee (DDC). As discussed above, during the colonial period (specifically, in 1924) Local Native Councils were appointed mainly as a means of enforcing colonial policy. The European population of Kenya had a separate system of local government. In 1950, the first African District Councils were set up and included elected leaders; however, they were later suspended during the struggle for independence. At independence, the ADCs were merged with the local government structures of the European areas to form county councils. In 1977, the Local Government Regulations were passed, and preparations for a new national development strategy were underway. By 1983, Kenya had adopted the District Focus Strategy which strengthened the DDCs and gave them the mandate to act as the main agencies of decentralised development in Kenya. The Chair of the DDC is the official head of the district, the District Commissioner. The District Executive Committee (DEC) is the executive arm of the DDC. Whereas the DDC meets four times a year, the DEC meets ten times annually (Republic of Kenya, 1994a).

The DEC has four major functions: to make operational decisions within the directives of the DDC; to co-ordinate, implement and monitor development activities in the district; to prepare the district development plans and annual annexes; and finally, to prepare briefing notes for the DDC on all proposals and reports from the Central Government, NGOs and the private sector. (Republic of Kenya, 1994a:31-2).

In Siaya nine sub-committees of the DDC characterise the District Focus strategy. Two of them have direct responsibility for planning, implementing and monitoring farm forestry or agroforestry at the sub-district level: the District Agricultural Committee (DAC) and the District Environment Committee. Two other committees which are implicated in the extension activities of farm forestry and agroforestry are the District Community Development Committee and the District NGO Forum. At least in theory, these sub-committees and the DEC formulate and implement the District Development Plan. Every four-year district plan is based on the needs identified by sub-location development committees that are chaired by a government-appointed chief and meet approximately each fortnight. In Siaya District these village meetings, or *baraza*, are the official forums for interaction between the government and local people. Haugerud (1995:3) sees these meetings as “... revealing because [they are] the principal meeting ground between ordinary citizens on the one hand, and state officials and bureaucrats on the other.” In Siaya, the meetings observed by the team tended to be dominated by male village elders and senior civil servants, and especially the government-appointed chief. Moreover, in discussions with women’s groups, the group leaders reported that they attended the *baraza* infrequently unless specifically requested to do so. In view of the DDC’s still sizeable bureaucracy and the difficulties of the *baraza* as decision-making forums, the extent to which the DDC in Siaya District can be said to reflect community opinion is questionable.^{xxvi}

The difficulties of making the various parts of the District Focus Strategy work may be apparent; however, that does not diminish the responsibility of the DDC to oversee national policy implementation at the local level. Siaya District is exceptional in terms of its implementation of district-level activities. In 1984, the International Fund for Agricultural Development (IFAD) selected Siaya and Kwale/Kilifi as the two districts where it would support rural extension and district-level integration of agricultural development activities (Belgian Survival Fund, 1984; IFAD, 1990). Siaya was selected because it was a “traditionally food-deficit area of the country” which experienced chronic problems in the four sectors that the project aimed to strengthen: credit, health, water and farmers’ group organisation. The resulting programme, known as the Farmers’ Group Community Support Programme (FGCSP), reached the middle of its second phase in 1995. The evaluation of the first phase of the programme stated that “after initial problems associated with District Focus for Rural Development (DFRD), the project has succeeded in establishing the financial and administrative routines of district-based development” (IFAD, 1990:10). Among the “lessons learned” by the middle of the programme’s second phase were the following:

- The District Focus Strategy provided a framework for development administration, but in practice the management structure of the District Planning Unit had no clear responsibilities to designate officials for specific action. This was further aggravated by a lack of involvement on the part of ministry headquarters staff in project planning and supervision (IFAD, 1990; Republic of

Kenya, 1994a).

- The IFAD-supported farmer credit programme was a failure, with a 90% default on loans provided to farmers and women's groups (FGCSP, 1995).
- The National Extension Programme was judged unsuccessful in Siaya District. It had done slightly better in higher-potential areas, "where commercial input supply and marketing services were found to be more adequate and proven production technology was available ... the Training and Visit (T&V) approach failed to increase the rate at which poor farmers took up new techniques and the use of contact farmers was often alien to social custom" (IFAD, 1990:27).
- Women were viewed by the evaluators of the first phase of the IFAD project as more progressive in accepting practices that increased production. The evaluators criticised the exclusion of home economics from the extension services. It was also noted that there was "clear evidence that any older male extension staff are unwilling to provide extension advice to women ... even when trained, male staff are reluctant to offer home economic extension services" (IFAD, 1990: 33).

The IFAD-supported Farmers' Group Community Support Programme is important in the light of efforts in Siaya District to improve co-ordination at the district level. Government bureaucracy and ministerial territoriality are two factors contributing to the

problems in the planning and delivery of farm forestry and agroforestry policies at the district level. However, since the 1980s a second group of institutional players, non-governmental organisations, have been involved in environment and rural development policy in Kenya.

4.5.3 Non-Governmental Organisations (NGOs)

In the early 1980s, there was little mention of NGOs in the development of Kenya's District Focus strategy. However, NGOs have existed in Kenya since the early part of the century, particularly Church-based organisations and predominantly European charities such as the Red Cross. In 1994, 75 NGOs in Kenya were involved in farm forestry and environmental conservation activities (MENR, 1992). These organisations were classified under six categories by the Ministry of Environment and Natural Resources (1991):

1. International donor NGOs: Official aid agencies that disburse and monitor assistance to other government programmes and other NGOs (e.g. CIDA, FINNIDA, USAID, SIDA, IDRC and Ford Foundation).
2. Intermediate NGOs: These may provide an intermediate role between bilateral or multilateral donors and the Kenyan government or the local level. They include organisations such as CARE International in Kenya, Aga Khan Foundation, World Vision, etc.

3. Networking NGOs: These act as thematic “umbrella groups” for national and international NGOs (e.g. KENGO, National Christian Council of Kenya, Environment Liaison Centre International).
4. National NGOs: These implement national programmes, or activities in more than one part of the country (e.g. Kenya Institute of Organic Farming, Greenbelt Movement and Mazingira Institute).
5. Local NGOs: These engage in specific activities in a province or district; they are generally small (e.g. the Saradidi Health Project and the Community Initiative Support Service in Siaya District).
6. Grassroots NGOs: These include “women’s groups” based at the village level. In Siaya District there are 2,000 registered voluntary groups, 50% of which are involved in agriculture- and environment-related activities (Republic of Kenya, 1994a:118).

The rapid growth of NGOs in Kenya during the 1980s was partly the result of an influx of financial and technical support from larger charities and donor agencies in the North. The growing sophistication of international, intermediate and national NGOs led many donors to position NGOs as the “other public sector” in East Africa, argues Fowler (1991; 1993). However, the relations between the elite decision-making authorities of the Government of Kenya and NGOs representing members of civil society are not easily generalised. Hulme and Edwards (1997) have argued that the NGO-State relations may be

“too close for comfort”, which they imply may be due to behaviour that is complementary to the point of competition, or viewed as confrontational to both the vested interests of the State and perceptions of social justice among NGOs as vanguards of civil society (Korten, 1990; Ndegwa, 1996; Potter, 1996; Atack, 1999).

This study is interested in NGOs that have contributed to the expansion, implementation, and possibly harmonisation, of national farm forestry or agroforestry policies at the local level. It is important to point out, for instance, that calls for improved co-ordination between NGOs to articulate their plans and impact on the environment have also been made by NGOs themselves (Kiriro and Juma, 1991). Yet, in Kenya co-ordination of NGOs in the environmental sector is typically viewed as an issue of State intervention in their affairs (Ndegwa, 1996). In the area of farm forestry, the rationale for State collaboration with NGOs is addressed in a statement by the Ministry of Environment and Natural Resources (1994):

Collaboration between government departments and NGOs, as well as among NGOs, is high on the agenda of development assistance. NGOs are seen as a cost-effective way to reach rural communities, free from the heavy infrastructure of government departments. However, it is better to see government services and NGOs as complementary (MENR, 1994:288).

Again, the State sees benefits for public service delivery in collaboration with NGOs, but the final sentence of the statement is characteristic of the government perception of and policy towards NGOs in the farm forestry sector: NGOs may have greater organisational flexibility, but they should complement, not supplant, government services. Indeed, in 1991 the Parliament passed an Act to register and co-ordinate all

NGOs in Kenya, which facilitates government monitoring of international, intermediate, networking and national NGOs. Under this legislation, grassroots NGOs may be registered at the district in which they have been formed and will operate (MCSS, 1991). In political terms, however, such efforts by the Government to co-ordinate NGOs have tended to be viewed as a means of controlling them, their activities and their financial resources. In response, many NGOs in Kenya have joined the NGO Council, which has acted as a forum for debate, a clearing-house for information and a counselling service for NGOs in their relations with the Government (Fowler, 1993; personal communication, Office of the President, 1995).

At the district level, the District Development Committee is the government body responsible for co-ordinating NGO activities. In the case of Siaya District, this is done through the NGO Forum, a sub-committee of the DDC whose monthly meetings are attended by representatives of NGOs operating in the district.

4.5.4 Organisational Linkages in Agroforestry

The course of agroforestry research and extension policy in Kenya has changed in recent years due to key moves to rationalise and harmonise relevant government and non-government initiatives. One collection of recommendations is embodied in the recent Kenya Forestry Master Plan (KFMP), dated 1994 but not released until the following year. Three key recommendations and some of the studies leading up to the KFMP proposed important policy solutions relevant to farm forestry and agroforestry in Siaya District.

Firstly, it was argued that farmers would be best served by merging the Forest Department's extension programme with the existing National Extension Programme of the Ministry of Agriculture, and the Plan reports that such a Memorandum of Understanding was in preparation (MENR, 1992; MENR, 1994:287).^{xxvii} However, as Venkatesan (1997) has discovered, structural adjustment and demands for a new farming systems approach to replace the Training and Visit system has over-extended the NEP in Kenya. A second recommendation was acceptance of the policies proposed by the National Steering Committee on Agroforestry, a network started in 1992 by MoA, MENR, and KEFRI. The goal of this group was to establish and link institutions involved in agroforestry (and farm forestry) research, extension and training in Kenya. The Committee's meetings have resulted to date in the preparation of a set of policy recommendations to improve agroforestry research and the co-ordination of extension (see Annex 9). Thirdly, both the KFMP and the Steering Committee on Agroforestry supported the conclusion that linkages with NGOs, and in particular grassroots organisations such as women's groups, were essential to the design and delivery of farm forestry and agroforestry policies and programmes. We shall return to discuss these organisational realtions and the Agroforestry Extension Project's responsiveness and compliance to these policy and macro-structures in Chapter 8.

4.6 Summary

This chapter has suggested that agroforestry in Siaya should be viewed in both its past and present contexts. Agricultural and forestry activities have been practised among the Luo people since they first arrived in Siaya five centuries ago. They have made extensive use of trees for traditional medicines and bestow symbolic importance on trees planted around their homesteads in a way that is similar to the agroforestry technique of live fences. In Siaya, trees are traditionally rotated with crops or pasture through the use of bush fallow. Farmers have also traditionally intercropped or simultaneously managed crops and tree species such as *Markhamia lutea*.

Land use in Siaya, then Kavirondo, from the 1930s onwards, included various interventions by the colonial administration and missions to promote maize-based agriculture and tree planting, mainly within social welfare and environmental conservation programmes. Land legislation allowed the colonial State to control areas such as hilltop forests.

After independence, some colonial policies were revised, but not totally set aside. New policies were also created, in part due to global concerns over a potential woodfuel crisis and an influx of donor support to environment and development projects. The growth that occurred in both government and non-government sectors has provided Kenya with an expansive institutional structure which faces difficulties due to the spontaneous origins of policy and programmes, lack of legal power in key parts of the policy structure, policy gaps at the sub-district level, and deterrents to State-NGO relations. This policy

issue is of importance to this study and can be summarised under two headings: 1) inter-ministerial policies and programmes for agroforestry and farm forestry which still require rationalisation, and 2) implications of (diverse) NGOs and their relations with government partners, particularly at the district level. These will arise again in Chapter 8 as we discuss policy compliance and State-NGO relations in the context of the CARE Agroforestry Extension Project. The next chapter will examine the AEP and its evolution.

Notes

ⁱ Ocholla Ayayo points out that the Luo are not “Nilotes”, the term used by other anthropologists such as Evans-Pritchard (1940, 1950) to describe the common traditional kinship of the Luo. The Luo are Jii-speaking people who share their origins with the Nuer, Dinka, Atwot, Anyuak, Alur, Joka-Cholo, Lango’o, Pari and other groups originating in southern Sudan (Kokwaro and Johns, 1998).

ⁱⁱ In the functioning of the *gunda bur*, alliances built on friendship (*osepe*) could overrule patrilineality (offspring of the same male ancestor) and segmentation (a line of land being concurrent with a line of related members of a family). For example, *jodak*, migrants typically from other ethnic groups or clans, were allowed temporary land-use rights in return for contributions towards communal labour (*saga*) and defence (see Ocholla Ayayo, 1976). *Jodak* became very significant in the Siaya landscape because many of them became permanent residents. During the post-colonial period, they thus gained ownership rights to land under colonial statutory law, which they would not otherwise have been granted under customary law (Hambly, 1992).

ⁱⁱⁱ This change in settlement patterns took place over a span of perhaps one or two centuries. The progressive shifting of the three components of the Luo mixed economy – pastoralism, agriculture and fishing – led to an increase in cultivation as a result of a progressive reduction in cattle herds and the northward expansion of settlement away from the more densely populated perimeter of Lake Victoria.

^{iv} A good description of marriage among the Luo is provided by Ocholla Ayayo (1976:134-53). Especially in the past, and frequently in the present, marriage between members of related clans is not permitted. Marriages may be arranged, although more proactive *meko* or “forced escort” of women from distant villages was possible in the

past. Marriages among the Luo are sealed through the traditional exchange of cattle (as dowry or bride price).

^v “Agriculture” is used in this study as a general term to refer to livestock management and cultivation of annual crops. However, here the author is differentiating between the Luo practice of agriculture and the traditional “hunting and gathering” of food crops. For a more detailed description of the agricultural revolution in Africa, see Freund (1984). Simons and Kindt (1996) have conceptualised agroforestry as the domestication of trees.

^{vi} The farmer was referring to the *bao* tree (the general term in Dholuo for *Eucalyptus* spp.), but the author believes that Okoth’s trees are *Eucalyptus camuldensis*, which originated in Australia.

^{vii} Researchers and development workers have in recent years encouraged farmers to cease planting eucalypts because of the negative impact on ground-water levels and crops of their water-hungry roots and acidic leaf litter. Control of the tree by male farmers is also considered to decrease the appeal of eucalypts. *Eucalyptus* spp. may also be unpopular as it has an association with timber and construction materials, which, unlike other tree species in western Kenya, automatically makes the tree male property (Chavangi, *et al.*, 1985; Hambly, 1992).

^{viii} For a definition of shifting cultivation (also known as swidden agriculture or slash-and-burn cultivation) and a discussion of its advantages/disadvantages, see the collection of papers in Gholz (1987).

^{ix} Many leguminous trees and a few non-leguminous species have the capacity to fix atmospheric nitrogen in symbiosis with bacteria (or fungi) in their root nodules. The fine roots on which the nodules are located rapidly die, decay and release the nitrogen, more fine roots grow, fix more nitrogen, and so on. In addition, research has shown that one pre-condition for N-fixation is a minimum level of soil phosphorus. In heavily degraded soils, the phosphorus required for N-fixation is often insufficient (Tengas, 1994:64).

^x European imperial powers “carved up” Africa in 1885 under the Act of Berlin. The Imperial British East Africa Company was granted a Royal Charter to develop trade inland to Lake Victoria. In 1890, the Brussels Treaty on the suppression of the slave trade was one argument put forward for the construction of the railway. Britain had abolished slavery in 1772, but the trade still continued to some extent into the late 1800s. The IBEAC refused to finance the building of the railway and the British Government stepped in to construct “the lunatic express” (Miller, 1971).

^{xi} The name “Kavirondo” was coined by Arab slave traders. It was used to describe the people and the area of western Kenya regardless of major ethnic differentiation, contends Ogot (1963). Thompson’s (1885) journal *Through Masai Land*, and

specifically his writings about Kavirondo, reflect many of the Victorian-age attitudes towards African women.

^{xii} In the “White Highlands” of Kenya, the African inhabitants of arable areas were essentially evicted and forced to work as labourers or tenants on what became large, commercial, settler-owned farms (Kitching, 1980; Bates, 1989).

^{xiii} Labour from Siaya was eventually destined for mines in the southern part of the district, and European plantations and construction activities located in other parts of the colony. The British also conscripted tens of thousands of men from Siaya to serve as porters and soldiers in the First and Second World Wars (Ogot, 1963). Interviews with farmers throughout the district confirmed that many of those conscripts remained in the civil service until their retirement and eventually returned to their rural homes in Siaya. When voluntary labour failed, contracts for compulsory labour were ordered and the *mlango* (state-appointed chiefs and assistant chiefs) became labour recruiters (Bookman, 1973; Ochieng, 1974). Some women and children were also recruited as plantation labourers and servants for European households; however, the vast majority of women remained on the farm to shoulder most of the burden of supporting their remaining families and the new burden of taxation (Odinga, 1967).

^{xiv} The National Archives record that in 1925, the Provincial Commissioner alleged that “the free flow of Native labour from Nyanza Province was being interfered with” and recommended that weekly schedules for forwarding labour be established (Archives: 4/3 Labour PC/NZA 3/20).

^{xv} However, it should also be noted that the dependence of tree tenure on land tenure is not necessarily a global phenomenon, as the work in Latin America by Current *et al.* (1993) has suggested.

^{xvi} Kenya’s National Forestry Policy (1957) was drafted as a consequence of the Sixth Commonwealth Forestry Conference in Ottawa in 1952, at which it was recommended that each country should formulate and implement a forestry policy (MENR, 1994:210).

^{xvii} ‘On the Problem of Human Feeding’, by Dr. Orr, Nyanza Hospital (Archives: PC/NZA Hospital & Disease/ piece 15).

^{xviii} This example is also from the National Archives (Archives: PC/NZA Hospital & Disease/ pieces 18-24).

^{xix} Programmes for hilltop reforestation are still government policy in Siaya and South Nyanza, and many of the programmes have linked up with NGOs to involve local people in the projects (see also Diamond, 1992). However, these programmes should not be confused with a form of agroforestry introduced by the colonial administration in other parts of Kenya (mainly in the Rift Valley and Central Provinces), known as *taungya* or the *shamba* system, which gave farmers leasehold rights to cultivate

agricultural crops within newly established state-owned forest plantations. This practice was common to industrial forest plantations in Kenya's highlands, but not in Siaya. In turn, the *shamba* system should not be confused with indigenous agroforestry. As Castro (1991) has observed, the Kikuyu of central Kenya were engaged in black wattle (*Acacia mearnsii*) production for tannin (tannic acid) as an indigenous, commercially based agroforestry prior to its appropriation by the colonial regime.

^{xx} Specifically, these important provisions of the Chiefs Authority Act (cap. 128) are: 1) to prohibit the destruction of vegetation, 2) to regulate the cutting of timber and wasteful destruction of trees, 3) to control grass fires, 4) to prohibit or restrict grazing, 5) to order the execution of work or services for the conservation of natural resources, and 6) to empower the Minister to "remove member(s) of a tribe or community who have land reserved for them, if they unlawfully occupy or cultivate any land other than the reserved land".

^{xxi} Archive copy of Sessional Paper 1/68 of the Government of Kenya (1968) Forestry Policy for Kenya. Government Printer, Nairobi.

^{xxii} MENR Forest Department, 1970-71, Annual Report. Government Printer, Nairobi.

^{xxiii} By 1990, the Forest Department had changed the name of RAES to the Forest Extension Services Division (FESD). In 1992, FESD headquarters in Nairobi had five branches: 1) nurseries and seed, 2) training and education, 3) media and communication, 4) woodfuel development, and 5) extension monitoring and evaluation.

^{xxiv} In 1983, the Ministry was merged with the Ministry of Regional Development to become the Ministry of Energy and Regional Development. The President subsequently appointed his protégé, Nicholas Biwott, as the Minister. New funding and rapid development of the Ministry, with technical assistance from the Canadian government and Ontario Hydro, played a major role in the creation of rural energy policies and programmes in Kenya.

^{xxv} Local Government Act, cap 2645, 1986, as discussed in MENR (1992:29). As mentioned earlier, the Chiefs Authority Act chapter 128 spells out the chief's powers at the local level, particularly as they relate to environmental conservation.

^{xxvi} In 1984, in advance of the District Focus Strategy, a study by a team supported by Belgian development assistance argued that Siaya District's DDC was not interacting on any substantial basis with divisions and generally disregarding locations and sub-locations (Belgian Survival Fund, 1984).

^{xxvii} In 1981 the World Bank introduced the Training and Visit system of extension in sub-Saharan Africa, starting with Kenya. Kenya's National Extension Programme (NEP) has been discussed widely in the review of the T&V system and its current

modifications using farming systems approaches (Benor *et al.*, 1984; Howell, 1988; Venkatsan, 1997; FAO, 1997).

5. EVOLUTION OF THE CARE AEP (1983-95)

5.1 Introduction

CARE International is an intermediate non-governmental organisation with its Kenyan and East African regional headquarters in Nairobi. CARE signed its first registration and operating agreement with the Government of Kenya in 1968. One of its largest projects in the country has been the Agroforestry Extension Project (AEP). The AEP is also one of sub-Saharan Africa's oldest agroforestry applied research and development projects. It is still operating in 1998/99, though under a revised rural extension approach.

This chapter concentrates on the project's first 12 years of activity, which were characterised by complex organisational linkages. The analysis traces the evolution of the AEP, its activities and its relations with the Government of Kenya and non-governmental organisations. It illuminates the multiple stakeholders in the project and their impact on efforts to strengthen local institutional processes to support agroforestry in Siaya. It draws on various sources of information, including project documentation and interviews.

5.2 Data Sources and Organisational Analysis of the AEP

The analysis of project documentation, including donor evaluation reports, case studies, secondary literature and interviews with AEP staff, local officials, farmers involved in the AEP and women's groups, provides a basis for this chapter. The NUD*IST project which contains this material was coded by phase of project operation and by partner (organisation) so that data concerning different organisations across various time periods

could be cross-referenced. Figure 5.1 illustrates the analytical matrix for the organisation and analysis of the data.

Organisation	AEP - Project Phase			
	Pre-Project*	Early 1983-86	Mid- 1986-91	Late 1991-95
AEP farmers	1	1, 2, 3	1, 2, 3	1, 2
AEP women's groups	1	1, 2, 3	1, 2, 3	1, 2, 3
CARE	1	1, 2, 3	1, 2, 3	1, 2, 3
Donors (CIDA, CARE-Canada)	2	2	2	1, 2
ICRAF	2, 3	1, 2, 3	1, 2, 3	1, 2, 3
KEFRI	2, 3	1, 2, 3	1, 2, 3	1, 2, 3
Forest Department (MENR)	2, 3	2, 3	2, 3	1, 2, 3
Other GoK	2, 3	2, 3	2, 3	1, 2, 3
Other NGOs in Siaya	1, 3	3	3	1, 3

Notes:

1 = interviews or discussions in 1991 or 1995.

2 = AEP project documents (including evaluations)

3 = case studies

* Results also discussed in Chapter 4

Figure 5.1 Matrix for Data Analysis – AEP Project Phases and organisational Relations

The organisation of data in this matrix made it was possible to construct a view of the AEP over time. Such a perspective is essential in a case study approach to implementation analysis. This is what Rist (1994:550) refers to as a study of the “rollout of an implementation effort”. Following organisation of the data, the team identified three important questions: 1) What organisations were involved in the rollout of AEP activity and how did their involvement change over time? 2) What landmarks can be identified

along the course of project implementation? 3) What claims did the AEP and its partners make about the outcomes or impact of the project?

5.3 Origins of the AEP

Macro-level support for agroforestry in Kenya was strengthened by the creation of the International Centre (née Council) for Research on Agroforestry (ICRAF), which established its global headquarters in Nairobi in 1978. ICRAF is a member of the international system of agricultural research, the Consultative Group for International Agricultural Research (CGIAR).ⁱ In co-operation with the Government of Kenya (GoK), ICRAF initiated two key research programmes in the country during the early 1980s, both in Machakos District, Eastern Province. ICRAF encouraged increasing attention to agroforestry research and extension activities by the non-governmental sector. The first development project set up to concentrate specifically on the transfer of agroforestry technology and agroforestry extension in Kenya was implemented by a national NGO, Mazingira Institute. It was financed at its start in 1980 by the Ford Foundation, and later by the Dutch government. Known as the Agroforestry Plots Project, the initiative involved six agroforestry demonstration sites in Central and Eastern Kenya. Contact with farmers was originally expected to be facilitated by the Wildlife Clubs of Kenya (WCK), an NGO which conducted environmental education activities in several communities and schools across the country. When Mazingira realised the range of various community groups already interested or involved in tree-planting at the local level, it decided to “circumstantially eliminate” WCK as a partner from the project (Buck, 1993:121).

Mazingira Institute's project staff initiated a model of working with farmers through community groups. Farmers were invited to the demonstration sites to learn about new and improved agroforestry tree species, and the importance of planting trees, conserving soil and obtaining woodfuel from on-farm sources (Buck and Alitsi, 1984). ICRAF provided some technical assistance to the Mazingira Agroforestry Plots Project and transferred its experience in various agroforestry technologies from its field trials at two sites (Kathama and Kakuyuni) in Machakos District. At those two stations, ICRAF had concentrated on developing prototype agroforestry technologies such as alley-cropping. In Kakuyuni, the focus of the research trials was on identifying agroforestry tree species suitable for semi-arid environments and introducing new tree species to small-scale farmers (Vonk, 1983; Hoekstra, 1984).

The lessons of this first agroforestry development project in Kenya were threefold. Firstly, according to project staff Buck and Alitsi (1984:118), Mazingira encountered difficulties in making the transition from demonstrating agroforestry to establishing that farmers had adopted "new or improved" agroforestry. Secondly, agroforestry, Mazingira Institute staff argued, was inchoate and needed specialised technical support for its direct extension to farmers or community groups at the local level. Thirdly, the Mazingira project found that its six demonstration sites required vast administrative effort and expense to maintain, detracting the NGO from the community-level activities on which it expected to concentrate. According to Buck (1993), after three years of operation the Agroforestry Plots Project found that its greatest impact was increased awareness building

about agroforestry in Kenya. The project could not, however, prove that it had a significant impact at the local level. Therefore, Mazingira recommended that national and international organisations in Kenya address two issues for further work related to agroforestry: 1) specialised research on appropriate and locally-adapted agroforestry technologies, and 2) improved collaboration among partner organisations (including community groups) in order to institutionalise agroforestry at the farm and community levels (Buck, 1990).

5.3.1 National and International Linkages

Linkages between ICRAF and NGOs such as Mazingira Institute in the early 1980s were in part motivated by a mutual need for the exchange of knowledge. NGOs were useful to ICRAF for access to information about farmers' needs in agroforestry and indigenous knowledge about trees and tree management. On their part, NGOs sought technical support from the research institute, including selection and treatment of tree seed. Unlike most agricultural seeds, tree seed is difficult to germinate and requires extra care in terms of selection, storage and adaptation to the demands of the local environment (Teel, 1990). In response to these interests and issues among the stakeholders, the Kenya Tree Seed Project was initiated in 1982. Financial support for the project was provided by one of ICRAF's major donors, the Canadian International Development Agency (CIDA) which has had a long-standing interest in social forestry, the creation of ICRAF and the promotion of tropical forestry (Bene *et al.*, 1979). The Kenya Tree Seed Project also involved Mazingira Institute and other NGOs, including the Mennonite Central

Committee, the Kenyan Energy NGO (KENGO) and CARE International in Kenya.ⁱⁱ

During the first two years of operation, however, the project was not as successful as ICRAF and the participating NGOs had anticipated. It encountered difficulties because farmers became dependent on tree seed handouts, and once project activities slowed down farmers returned to their use of cuttings and wildlings for tree planting. Only to a small extent did farmer training lead to the continuation of group or on-farm tree nurseries. ICRAF withdrew from the project, stating that technical input for the project would be best managed by national partners such as NGOs and the government sector (Buck, 1993). ICRAF had what Getahun (1990:184) refers to as “direct and indirect positive impacts on agroforestry developments in Kenya”. However, the demands of government and NGO programmes related to farm forestry and agroforestry in Kenya placed ICRAF in the difficult position of trying to establish itself at a global level in agroforestry research, while, at the same time, providing technical support for agroforestry extension in its host country. As discussed in the previous chapter, by 1982 many organisations, including government ministries, donors, research institutes and NGOs, had engaged in agroforestry policy development and programmes in Kenya. The Kenya Forestry Research Institute (KEFRI) was not created until 1985, and a co-ordinated national research and extension strategy for agroforestry was not to be achieved until 1992.ⁱⁱⁱ

Nevertheless, it was through this interaction between international scientists and national development workers that ICRAF began to develop a methodology that would bring farmers together with scientists to plan appropriate agroforestry technologies. This

method is known as Diagnosis and Design (ICRAF, 1983a, 1983b).^{iv} In its early years, the Diagnosis and Design (D&D) approach was based on multi-disciplinary research using rapid appraisal methods to conduct field research in consultation with farmers. The methodology was influenced by efforts in the CGIAR system to create a systems perspective on research (e.g. Hildebrand, 1979; Byerlee and Collinson, 1980; and Rhoades and Booth, 1982) and also by wider developments in rapid rural appraisal (RRA) methods, widely publicised by Chambers (1991). The first step of D&D involved “pre-diagnosis” using secondary data and key informants from local government offices and NGOs to classify the land use system(s) in order to develop a land use profile (Vonk, 1983). At ICRAF’s field stations in Machakos, this process involved training local senior extension workers in research skills, who then assisted the national and international scientists with the farmer and group interviews. Subsequently, there were two stages in the interaction between multi-disciplinary scientists and farmers, states Rocheleau (1986). The first stage involved an introductory interview with individual heads of farm households as farm managers. This “rapid appraisal” of problems was followed by the design of “best bet” solutions in agroforestry technology by the multidisciplinary team of scientists. The second phase involved validating the agroforestry design with farmers and evaluating the technologies in terms of their biophysical and socio-economic performance.

Over the past 15 years or so, the D&D method has changed and periodically fallen out of favour at ICRAF (Rocheleau, 1986; Raintree, 1987; Franzel, 1996).^v In retrospect, D&D suffered similar problems to those associated with multi-disciplinary farming

systems research and rapid rural appraisal techniques. For instance, systems research based on multi-disciplinary teams is now recognised to be holistic but not necessarily integrative (Norman, 1992). Rapid rural appraisal was found to be too rapid and reductionist in its approach. Important differences among farmers were concealed, and therefore the method did not necessarily equate to participation in the development of technology for the rural poor, argue Chambers *et al.* (1989). For this reason, after 1985 the D&D method underwent various modifications to identify agroforestry users, including differentiating between male and female farmers' use and knowledge of trees (Rocheleau, 1986).

5.3.2. Design of the AEP

Following its experience in the Kenya Tree Seed Project, CARE Kenya set out to initiate a long-term project to promote agroforestry at the local level, develop new research and extension techniques, and link relevant partners in this process including farmers, government (GoK) and ICRAF. The proposed Agroforestry Extension Project (AEP) would, as one of its designers wrote some years later,

... achieve a higher order extension activity in which uniquely trained field staff would participate with self-motivated farmers to improve agroforestry technologies using a prototype testing approach. Through a system of ongoing, internal monitoring and evaluation among farmers and AEP's dual-level field staff, a set of agroforestry technology recommendations would develop which were understood and promoted by a district-wide formal and informal agroforestry extension network. Joint training and planning among organisations involved in technical assistance to rural communities would provide the basis for this agroforestry institutionalisation process (Buck, 1990:126).

Interested in having the initial work of ICRAF and its partners developed further; CIDA was receptive to an approach by CARE-Canada and CARE Kenya for funding the

AEP. Reportedly, CIDA was so keen that it approved support for the project prior to the completion of the project design (Buck, 1993). In the AEP, CIDA apparently found two opportunities: 1) to respond to rising global pressure to support development projects that would address concerns about deforestation in sub-Saharan Africa, and 2) to develop projects that were relevant to issues affecting women in developing countries (CIDA, 1995). These two issues were central to a new agenda for Canadian development assistance in the 1980s and they underpinned CIDA's continuing support to the AEP for over 16 years (CIDA, 1986).

In 1982-83 CARE started in earnest to design the AEP by selecting a site for an integrated agroforestry research and development project that would build on the experience and technologies tested by ICRAF's research programmes, and by Mazingira Institute and other NGOs in Kenya (Buck, 1990). This transfer of experience was facilitated by an American volunteer with the Mazingira project who joined CARE as a consultant (regional technical advisor), and a Dutch graduate student working with the Machakos station, who joined the AEP as its first project manager.^{vi}

To initiate the design of the AEP, its planners modified ICRAF's D&D methodology to fit CARE's interest in agroforestry within a community development approach that would strengthen the agroforestry capacity of local institutions (Buck, 1990). The NGO's philosophy was to "not treat the community as a patchwork of individual farmers", but to view farmers as part of a wider community which includes farmers' groups and relationships with government services (Challinor and Frondorf,

1991:3). Also, as a methodology designed for research, not extension, D&D was viewed by CARE as over-emphasising problems, not solutions or the immediate development needs of farmers. The translation of a research methodology into an extension process by CARE led to the reduction of the formality and length of ICRAF's household problems identification survey. The NGO also adapted D&D to fit the skill levels of CARE extension workers in training, who in effect became the "researchers" (Buck, 1990:116). The overall model on which the AEP was designed involved five phases of activity, initially envisioned as a ten-year project (see Table 5.2). The first three phases represented a "pilot phase" for the project (1983-85), and the next two phases were referred to as the project's "demonstration phases" (1985-93) (Vonk, 1986:21; Buck, 1990:108).

For selection of a project site, CARE decided to focus on a district in Kenya where no other major agroforestry activity had yet been undertaken, but was needed. CARE Kenya also required a geographic setting in which there was some potential for inter-institutional collaboration and co-ordination. As the first AEP manager reported, Siaya District was the first to be selected for implementation of the project for three key reasons: 1) the severity of the fuelwood crisis in western Kenya (as identified in the 1982 Beijer Institute report), 2) Siaya's inclusion among ten new "focus" districts for CARE's national programme in community development, and 3) a high level of collaboration and commitment demonstrated by the District Forest Officer in Siaya (Vonk, 1986:4).^{vii}

Table 5.2. Agroforestry Extension Project Cycle

⇒ Phase I: Project Conception
Identify rationale
Assess historical, institutional experience
Assess institutional potential
Prepare concept paper
⇒ Phase II: Project Design
Assess agroforestry needs at national/regional levels
Assess agroforestry potential at national/regional levels
Identify collaborators and initial project area
Establish approach
Develop hierarchy of objectives
Identify activity types to meet objectives
Develop staffing structure and management strategy
Design preliminary monitoring and evaluation plan
⇒ Phase III: Negotiation and Commitment
Select and train staff
Identify/ select local sites and participants
Assess local agroforestry needs and potential
Design area-specific interventions (men's and women's)
Develop extension activity schedule
⇒ Phase IV: Establishment
Site and develop nurseries
Design/ select site/ farm-specific interventions
Raise and plant trees
Monitor configurations and species planted
⇒ Phase V: Ongoing Management
Manage and use trees and other agroforestry system components
Monitor tree management objectives and techniques
Assess participant satisfaction/ adoption
Assess technology performance
Assess organisational capacity to manage activities
Assess potential for expansion; repeat Phases III-IV at new sites and adjust management practices accordingly
Assess potential for sustainability (and further evolution) of respective activities and intended outcomes

Source: Buck (1990)

The following sections of this chapter delineate how the AEP was put into operation in Siaya District, which organisations were involved in its activities and how they influenced project implementation and outcomes.

5.4 CARE AEP, 1983-86: The start-up years

The activities of the AEP started in July 1983 under the management of an expatriate project leader and four field officers. One of the first tasks of the initial phase (1983-85) was to develop local institutional support for the project in Siaya, and specifically among farmers, local authorities and the District Development Committee. This negotiation was accomplished through a close alliance between CARE Kenya and the District Forest Officer (DFO).

The DFO was sympathetic to the strategy, having long ago realised the limited suitability of the Forest Department's "big three" plantation species (cypress, pine and eucalyptus) for farm forestry in Siaya. He also appreciated the knowledge-intensive nature of the strategy, and became intimately involved in teaching project staff about local trees and shrubs, and how to learn more from farmers (Buck, 1993:128).

Indeed, the early support given by the DFO and other district authorities during the start-up phase of the project is noteworthy. The DFO in Siaya District assisted CARE to negotiate with district authorities for the allocation of a headquarters building that belonged to the Forest Department. He also facilitated the collection of baseline data by enlisting assistance from location-level Forest Department technicians and arranging official introductions to local chiefs who helped to identify and communicate with women's groups.^{viii} As a result, the AEP managed to accomplish some key tasks in a

fairly short period of time (July 1983-February 1984): 1) setting up an AEP field office and personnel in Siaya District, 2) gaining support from local authorities, and 3) selecting farmers and groups.

Drawing on the experience of earlier agroforestry projects and the advice of the DDC, it was agreed that the AEP would work with groups of farmers commonly referred to in Siaya District as “women’s groups”. In Siaya District, women’s groups include men, who constitute up to 20% of their membership according to regulations set out by the District Office of the Ministry of Culture and Social Services (MCSS, 1991). At the start of the AEP, there were an estimated 1000 women’s groups in Siaya District (Belgian Survival Fund, 1984; Republic of Kenya, 1994a). Conscious of the major role played by women in agriculture-related activities in Siaya, the AEP sought to establish tree nurseries and deliver agroforestry extension services to farmers through the women’s groups. The identification of groups to participate in the project involved issuing an invitation to interested groups through the Location Development Committees (LDCs). In the initial selection of women’s groups, CARE staff consulted with local authorities and attended *baraza* to meet the group leaders and members (Vonk, 1983). As Rocheleau (1986) points out in her case study of the AEP, the double criteria for selection of the groups were:

... 1) the group was established and already working (not necessarily on trees); and 2) that group objectives for nursery work place priority on plant production for members’ farms, over cash income from sale of seedlings ... Special attention was paid to the character of the groups relative to the larger community (e.g. wealth, influence, educational level, language, special skills, and access to land). The selected women’s groups were required to already be organised and functioning but they did not

necessarily have to be working on forestry or environmental activities (Rocheleau, 1986:19).

Initially, the AEP was structured in such a way that from these groups a “local nursery management committee”, including members of local government such as chiefs, would be established. However, this approach was abandoned when more community groups than CARE had anticipated came forward to join the project. As a result, the AEP dropped the local committee approach to agroforestry and “left the organisation of the groups to the groups themselves” (Vonk, 1986:12). In retrospect, this was perhaps the first of several important decisions taken in the management of the AEP that were to influence the course of its implementation.

5.4.1 AEP Diagnosis and Design of Prototype Agroforestry Technologies

The initial diagnostic stage of the AEP started with the collection of baseline data to satisfy two requirements: 1) the design of agroforestry technologies appropriate for Siaya District, and 2) a reference point for continual monitoring and evaluation of project activities, including their contribution to knowledge development in agroforestry. It was this latter purpose which would integrate the research and development activities in the AEP and operationalise what its planners saw as “a higher-order extension activity” (Buck, 1990:126). Following Buck (1990), the diagnosis followed in the CARE AEP included the following steps:

1. Pre-diagnosis: a two-month review of existing data sources and classification of land use and types of farming systems in the district to create a project area profile and provide initial training to field staff.
2. Two sets of farmer interviews: first through community-level assessment of trees, land use problems, production constraints and gender roles, and then a group interview “to stimulate farmer awareness of the existence and potential for agroforestry in local farming systems” (Buck,1990:117).
3. Problem identification survey: on-farm observation of farmer practices and problems to assess at the household level the issues discussed in group interviews.
4. Agroforestry tree inventory: assessment of local trees and indigenous uses.
5. Causal analysis: a diagramming of constraints and opportunities facing farmers who practise agroforestry, as set out in the ICRAF D&D methods.

The analysis of these results provided the AEP with baseline data for the identification of potential agroforestry prototype (or “best bet”) technologies for Siaya District (see Table 5.3).

Table 5.3 Prototype or New and Improved Agroforestry Technologies Promoted by the AEP

Prototype	Description
1. Tree nursery establishment	<ul style="list-style-type: none"> - Establishment of decentralised, group-managed tree nurseries as the basis from which agroforestry could be promoted and sustained in Siaya (Vonk, 1986). - AEP staff assisted women's groups to organise and manage their own tree nurseries. - Basic requirements to be provided by the women's group were: a site (usually a fifth of an acre in size), water availability and a schedule of labour or group meetings for members to take turns working in the tree nursery. - Rules for running the group nursery and managing the equipment provided by CARE were set out. - Initially the AEP provided farmers with all necessary equipment for the nurseries, including polythene bags (polybags), wheelbarrows, watering-cans and donkey carts to transport water in drier areas of the district; salaries of watchmen and labourers in the tree nurseries were provided during the first five years or so of the project. - Tree nurseries became the site for group meetings between the farmers and extension workers; groups received technical support on virtually all aspects of tree propagation, including seed selection and harvest, treatment of seedlings, root pruning and techniques for planting out seedlings.
2. Alley-cropping	<ul style="list-style-type: none"> - Planting of staple food crops (maize and beans, sorghum, cassava, etc.) in four lines between "alleys" or hedgerows of nitrogen-fixing tree species. - Alleys of trees were planted along the contours of the field. - Advice to farmers included the use of tree foliage for use as animal fodder or as mulch when it is either laid on top of the soil or dug into the soil; trees re-grow from their stumps and the process is repeated. - Demonstrations included showing farmers how to cut the roots of mature trees in order to prevent them from spreading too far or interfering with crop growth.

Table 5.3 (continued)

Prototype	Description
3. Live fences, border or boundary planting	<ul style="list-style-type: none"> - As discussed in Chapter 4, live fences are common throughout Siaya District as a traditional form of agroforestry. - The configuration could be improved, the AEP planners believed, by incorporating species of exotic and indigenous trees into the traditional border of sisal or euphorbia. - Use of "MPTs" (multi-purpose trees) that are typically exotics characterised as useful for several purposes including timber, apiculture, windbreaks, fruit, etc., were promoted. - AEP encouraged planting of trees along borders or boundaries to reinforce farmers' land ownership rights and provide households with an on-farm source of woodfuel or construction materials.
4. Fruit and shade-tree planting	<ul style="list-style-type: none"> - Farmers were introduced to new or uncommon species of shade and ornamental trees. - Planting of improved citrus varieties, although the AEP found it difficult to satisfy requests from farmers for expensive chemicals to protect citrus fruits from pests and disease. - Fruits such as mango, papaya, avocado, guava and banana were already widespread in the district. - Fruit-tree seedlings were popular species for local sale.
5. Woodlots and woodfuel species	<ul style="list-style-type: none"> - Fast-growing tree species for timber, building poles and woodfuel were widely promoted by the AEP. - Farmers were encouraged to grow woodlots composed of a mix of tree species; eucalypts were downplayed and indigenous species such as <i>Markhamia lutea</i>, <i>Acacia</i> spp. and the quick-growing woody bush <i>Sesbania sesban</i> were promoted. - <i>Sesbania</i> and similar species are easily harvested by women because they are considered to be shrubs and not trees – traditionally, only men would harvest an entire tree.

Table 5.3 (continued)

Prototype	Description
6. Improved random mix or intercropping	<ul style="list-style-type: none">- Nitrogen-fixing tree species such as <i>Leucaena</i>, <i>Sesbania sesban</i>, and <i>Markhamia lutea</i> are mixed randomly or more systematically in fields of maize, sorghum, beans, cassava and sweet potatoes.- The main difference between this prototype technology and traditional intercropping in Siaya was a more systematically designed density of nitrogen-fixing trees in the fields.- Intercropping was also promoted as a source of dry-season fodder, apiculture or light shade for coffee, maize or fish ponds.

These prototype designs were adapted to each ecozone and tested on nine sites in Siaya (Buck, 1990:120). At each of the sites, agroforestry technologies were adapted to local conditions by identifying appropriate tree species and agroforestry management procedures. These adaptations were reviewed with farmers in the participating women's groups. Once the particular agroforestry intervention had been planted, the nine sites were used for further demonstration to groups and training of AEP extension workers. Project extension workers also directly advised farmers on tree/crop and, to a lesser extent, livestock management within the context of agroforestry. This direct extension service involved "hands-on" work activities at the women's group tree nursery or specific activities on group members' farms.

In her case studies of the AEP, Buck (1990, 1993) argued that there was no systematic process of project planning (successive diagnosis and design), monitoring and evaluation of these demonstration sites and of extension workers' visits to farmers. There

were two reasons for this. Firstly, *all* of the data generated in the pre-diagnosis, diagnosis and design stages were lost. The reason offered to researchers such as Davis-Case (1988), and also recorded during the fieldwork for this study in 1991, was that the boxes of files had been accidentally destroyed during the move to the new AEP offices. Generally over the course of project implementation, the AEP never achieved a reliable system for maintaining project records and compiling data.

The second reason for the project's neglect of its original planning approach was that its extension activities became more participatory. According to Buck (1990:120), farmers were encouraged to "design" and adapt agroforestry interventions by their own methods rather than following the "prototype technologies" initially tested and promoted by the AEP. This change in extension approach led to extension staff having to balance the prototype design of agroforestry technologies in which they had been trained against the tree species preferred by farmers or the resources available to the women's group.

Regarding this alteration of the AEP design, Buck lamented:

This non-prescriptive approach undoubtedly resulted in more variable configurations and practices, probably too variable to be efficiently managed for learning approaches (Buck, 1990:120).

As far as the original project planners were concerned, the AEP was abandoned as an integrated research and development project during the first phase of its implementation (Buck, 1993). However, as explained in the following section, the real reason for its change of extension approach was that monitoring and evaluation began to be guided mostly by interest in expanding the project and publicising its outputs.

5.4.2 Expansion of the AEP

Between 1984 and 1987, the AEP experienced a tenfold increase in its activities. The rapid expansion of the project was made possible by two external circumstances, according to Buck (1993). Firstly, CARE doubled its purchasing power in 1985 when the Kenyan shilling was devalued by 50%. Secondly, the accelerated growth was endorsed by the new management of CARE International in Kenya, which was primarily concerned with expanding its resources and programmes. Given these conditions, project outputs grew significantly in the first few years of implementation, as illustrated in Table 5.4.^{ix}

Yet, it is also evident that CARE-Kenya's management of the project was directly affected by growing attention to the AEP by external organisations, specifically donors and international organisations (Rocheleau, 1986; Fowler *et al.*, 1986; CIDA, 1986; Magee, 1987; Spurgeon, 1988; McGuire and de Treville, 1988). External pressure from the international and national levels therefore propelled the expansion and diversification of AEP activities at the local level.

Part of this expansion of activities involved collaboration with the newly instituted Kenya Forestry Research Institute (KEFRI). CARE signed a memorandum of understanding with KEFRI in 1985, soon after the creation of the national research institute. In Siaya, research trials were set up on six sites spread across the various ecozones (one site was later closed). The trials involved alley-cropping, improved woodlots and border planting of exotic and indigenous tree species. ICRAF provided technical support to its new national partner at these sites. CARE-Kenya provided funds

for the management of the trials, including funds for hiring personnel. One of these research trials is described in Annex 10.

Table 5.4 Scope and Outputs of the AEP (1983-87)

Output	Year			
	1983/84	1985	1986	1987
Scope of activity	Siaya District	Siaya District	Siaya and South Nyanza Districts	Siaya and South Nyanza
Trained field staff	6 FOs	6 FOs 15 EWs	7 FOs 48 EWs	11 Fos 50 Ews
Farmers*	520 (est.)	2250 (est.)	3000	3000
Women's groups	52 (est.)	225	311 (est.)	600 (est.)
Nurseries established**	71	300	300	300
Tree seedlings produced***	500,000	5,000-10,000 annually	5,000-10,000 annually	5,000-10,000 annually
Reported survival rate of trees	75%	75%	50-75%	approx. 50%
Source(s)	<i>Vonk (1986:4-5) Rocheleau (1986:19)</i>	<i>Vonk (1986:15) Rocheleau (1986)</i>	<i>Vonk (1986:15) Fowler et al (1986)</i>	<i>Magee (1987:11) Buck (1990:101)</i>

Notes: FOs = Field Officers Who Have Supervisory Responsibilities; EWs = Extension Workers; Est.= Estimated

* These estimates are based on 10 members per women's group. The actual figure may be higher.

** These figures include school tree nurseries (generally one-third of tree nurseries in the AEP).

*** An average of 5,000 to 10,000 tree seedlings are produced in each nursery.

Some important landmarks in project implementation are evident during the 1985/86 period. Firstly, internal pressure within CARE's management structure

encouraged the AEP to move into South Nyanza District. The consequence of this decision was the hiring and training of more field officers and extension workers, and new lines of authority and communication within the project (Vonk, 1986). The most important of these changes was probably the creation of the position of assistant project manager and the hiring of the District Forest Officer as an AEP staff member (Buck, 1990).^x This decision was perhaps taken in the interest of the NGO rather than to strengthen district government activities in agroforestry. Comments from one of the DFO's successors confirmed the impression at the District Office that the NGO had placed its own targets for the project ahead of efforts to strengthen the District Office programmes.

A second and related landmark in the AEP's implementation was increased administrative activities and the subsequent decision to centralise the administrative functions of the AEP at new offices in Kisumu, some 80 kilometres from Siaya (Fowler *et al.*, 1986). The field office was retained in Siaya District, but it was decided not to replace the Dutch project manager. Consequently, the AEP operated through the assistant project manager and field staff under the remote supervision of administrators, not technical advisors. The project developed a more bureaucratic approach to its implementation. As the former planner and technical advisor contended,

Management (of the AEP) ... was vested in generalists, backed up by additional layers of administrative support and bureaucracy. Specialised technical support functions were eliminated. Implications for AEP were obvious to members of the agroforestry community who maintained a spotlight on the project. ICRAF associates expressed dismay that CARE, in the name of participation, appeared to be advancing its overall programming performance at AEP's expense. CARE, on the other hand, appeared confident that the agroforestry component of the new integrated

project was strong enough to remain effective despite the withdrawal of senior technical support (Buck, 1993:130).^{xi}

Despite these project implementation issues in the mid-1980s, CARE-Kenya and its donors emphasised that the AEP was successful because it had achieved and surpassed its development targets (CIDA, 1986). The project's capacity to produce one-third of the ten million trees which the Forest Department estimated were required for reforestation in Siaya District persuaded observers to consider it as a model for agroforestry development projects in sub-Saharan Africa (Magee, 1987:11; Challinor and Frondorf, 1991). The numerous requests to the AEP for assistance were further proof of local support for it, argued the outgoing project manager (Vonk, 1986:4). However, the factor determining the project's future was funding, and specifically the opinion of CIDA and CARE-Canada. As contributor of 70% of CARE-Kenya's total national programme budget, CIDA had substantial influence over the AEP.^{xii} In 1986, CIDA and CARE-Canada urged the project to identify how much more extension input was required by farmers to make them self-sufficient in tree planting and agroforestry. CARE negotiated with its donors that

... the frequency of the visits will be scaled down as the groups become more self-sufficient in knowledge. This would also allow an increase in the number of groups assisted per extension worker and at the same time it will allow the project to saturate all the groups that requested for assistance (Vonk, 1986:16).

In practical terms, this meant that the AEP would continue to offer to farmers technical assistance through women's groups. Women's groups involved in the first phase of the project would continue to receive support, but the package of AEP assistance to the groups that had already received equipment would be reduced (CIDA, 1986). All groups would,

however, continue to receive extension advice, seed and polybags for seedling production. Consequently, CIDA agreed to continue its support to the AEP. According to Smillie (1990), this represented an estimated CAD\$10.8 million (with 10% of the budget allocated to CARE-Canada for its support costs) for approximately a five-year period from 1987 to 1992.

5.5 CARE AEP: The adoption years, 1988-92

The AEP's reputation for successful agroforestry development was strengthened considerably by its favourable ranking in a study of six major agroforestry projects in sub-Saharan Africa that was commissioned by the World Bank (McGuire and de Treville, 1988; Cook and Grut, 1989).^{xiii} The World Bank concurred with the observation that the AEP "is thought by many to be one of the more successful attempts at disseminating technologies in Kenya" (McGuire and de Treville, 1988:3; Cook and Grut, 1989:22). CIDA and CARE International quoted this statement (Scott and Masai, 1989; Vonk and Safman, 1990). In the final version of the World Bank report, however, it was more cautiously stated that,

During the first phase of the project, many of the initial targets were exceeded, including the numbers of farmers assisted, the number of seedlings raised in the nurseries and planted out, and the number of extension staff trained and employed. However the project has focused on providing seedlings to farmers. On-farm research receives little, if any attention. The project provides few insights into the farming system and the actual and potential role of agroforestry on the farms. Furthermore, the focus on input delivery makes it difficult to evaluate the socio-economic impact of the project (Cook and Grut, 1989:23-4).

Managers of the AEP as well as the project donors were encouraged to rejuvenate the project's monitoring and evaluation activities by both the recognition and the critique in the World Bank report. This interest was reinforced by two other developments. One was an initiative by a senior socio-economist at ICRAF who saw the context of the AEP as suitable for the development of a methodology for assessing farmer adoption of agroforestry (Scherr and Oduol, 1989). The other development was another re-organisation of CARE's programmes in 1989, which led to the re-establishment of the position of resident project manager in Siaya District. The individual recruited for this position was the former co-ordinator of the Mazingira Agroforestry Plots Project, who was also a former staff member of the non-governmental organisation KENGO, which had been involved in the Kenya Tree Seed Project. This meant that the project manager was not a newcomer to the AEP, but a former colleague of its original project designers. In combination, these developments led the AEP into a new phase of activity which encompassed several studies involving various stakeholders in the project, including ICRAF, KEFRI, technical advisors formerly involved with the AEP and CARE-Kenya staff based in Nairobi. The outcomes of these studies provided a basis on which the partners involved in the AEP could claim that the project had strengthened agroforestry among small-scale farmers in Siaya District. The various studies are identified in Table 5.5.

Table 5.5 Research Initiatives in the AEP 1987-91

Authors/ Year	Type of Study	Leading to other reports	Partner
Buck, 1988	Monitoring and evaluation methodology development and assessment	Davis-Case, 1988	CARE/ FAO/Ford Foundation
Nyamai, 1988	Agroforestry research activities		KEFRI
Oduol, 1988	Assessment of alley-cropping	Scherr and Oduol, 1989	CARE/ ICRAF KEFRI
Scherr and Oduol, 1989	Pilot study of agroforestry adoption by farmers	Scherr <i>et al.</i> , 1990	CARE/ ICRAF
Alitsi and Oteku, 1990	Tree seedling survival counts		CARE
Scherr and Alitsi, 1990	Agroforestry adoption and project impact survey	Scherr, 1992b; Bonnard and Scherr, 1994; Scherr, 1995	ICRAF/ CARE
Martin, 1990	Women and development study; sex-disaggregated data collection		CARE

Source: 1995 review of project literature (NUD*IST, node "CARE/studies").

Scherr and Alitsi (1990) published the most widely referenced study of AEP farmers' adoption of agroforestry. The results of this ICRAF/CARE survey justified supporting the continuation of the project into the 1990s, as indicated in the AEP evaluation report by Smillie (1990) and discussions with project staff in 1991. In part, this research was encouraged by a previous finding by Scherr and Oduol (1989) that 50-60% of a group of 126 active farmers in the AEP practised alley-cropping and border planting of trees. These preliminary results motivated ICRAF and CARE to engage in a full-scale impact study involving 335 farmers, or 14% of the farmers involved in the AEP in Siaya

and South Nyanza Districts. Table 5.6 summarises the results of Scherr and Alitsi's (1990) ex-ante and ex-post evaluation of agroforestry adoption among AEP farmers.

Table 5.6 Ex-ante and Ex-post Adoption Results of the Agroforestry Impact Survey (1990)

Agro-forestry activity	Average no. of trees established		% farmers using seedlings for agroforestry		% farmers protecting existing trees		% farmers establishing trees with wildlings	
	Pre-AEP	Oct. 1989	Pre-AEP	Oct. 1989	Pre-AEP	Oct. 1989	Pre-AEP	Oct. 1989
Free-standing trees	237	539	29	81	41	6	9	2
Hedges	291m	386m	12	38	30	10	12	4

Note: m= metres

Source: Scherr and Alitsi (1990); the results are also discussed in Scherr (1992a, 1995)

Essentially, the ICRAF/CARE study identified and quantified four major findings relating to agroforestry adoption in the AEP:

- 1) Over an average of three years' participation in the AEP, farmers planted more than twice the average number of free-standing trees previously planted or grown on their farms; including trees within hedgerows, this came to an average of 782 trees per farm.
- 2) The configuration in which these trees were planted was diversified, including an alley-cropping adoption rate of 50%.
- 3) Exotic tree species were available, including *Leucaena leucocephala*, *Melia azadirach* (a valuable timber species), *Thevetia peruviana* (popular for live fencing), *Terminalia*

mentalis (for poles and timber), citrus, papaya and jacaranda. Some tree species were reduced in proportion to the extent to which they had been planted in the past (e.g. eucalypts and cypress), but the traditional preference for *Markhamia* in farmers' fields did not decline.

- 4) These results were made possible through farmers' increased access to tree seedlings because of an estimated annual production of 670,000 tree seedlings by 300 women's groups (Scherr and Alitsi, 1990).

The fourth finding meant that farmers had reduced their reliance on the traditional use of cuttings (or suckers), transplanted wildlings or direct seeding, particularly for the planting of free-standing trees. Tree seedlings would have also contributed towards the increased number of trees on farms in Siaya because seedlings generally have a higher rate of survival (Scott and Masai, 1989).^{xiv}

Scherr and Alitsi (1990) also note that the configuration in which free-standing trees were planted on the farms of AEP participants had changed. This change was considered an indicator of how farmers had adopted new and improved forms of agroforestry. Scherr and Alitsi (1990) found that 37% of the trees planted out were in linear patterns (border or boundary planting), 21% in small blocks (woodlots), 9% in linear intercropping (alley-cropping), and 6% in systematic mixed intercropping (improved random mix). Fields, not compounds, were the dominant site for planting of trees due to three factors: 1) increased farmer awareness of the benefits of agroforestry (crop/tree interactions), 2) declining farm

size, which reduced the total area of non-cropped land, and 3) increased availability of tree species suitable for intercropping, such as *Leucaena* and *Sesbania* (Scherr, 1995:148).

On the basis of these various findings, it was argued that the AEP had been responsible for a major increase in tree planting and agroforestry among the farmers participating in the project. In further elaboration of these data, Scherr (1992a, 1993, 1995) presents the AEP as a successful case of agroforestry adoption. Yet the data collected during the 1988/89 fieldwork reflect the AEP at one point in time, and determine adoption (and impact) according to one quantitative survey methodology. It is useful, therefore, to consider the results of other studies within the AEP, particularly those findings relevant to gender relations and processes concerning institutions at the local level.

5.5.1 Agroforestry Adoption, Gender Relations and Local Institutions

Studies of agroforestry adoption and the impact of the AEP could potentially respond to three issues related to gender: 1) The benefits of agroforestry for women farmers, 2) the project's contribution to strengthening women's groups and women's collective interests in agroforestry, and 3) action taken within the project, and its structure, to support awareness and attention to gender issues in delivery of the AEP. The author explored the extent to which these three aspects of gender relations had been recognised in the various studies of agroforestry adoption in the AEP.

Most of these studies have assumed that the project benefited women farmers for two reasons: one, the project's extension approach was based on assistance to women's groups; and two, tree-planting benefits women in terms of addressing their needs and

responsibilities related to woodfuel collection and food crop production (Rocheleau, 1986; Cook and Grut, 1989; Vonk and Safman, 1991). According to the former project manager,

A major impact of the AEP was in redefining the role of women, who traditionally had no tenure or ownership rights. CARE's decision to put women in charge of seedling production more broadly empowered women. Though men retain de jure control of the trees, women now enjoy more rights to seedlings, tree planting and tree products as a result of the AEP (Vonk and Safman, 1991:5).

In 1994, data sets on agroforestry adoption from the ICRAF/CARE impact study (Scherr and Alitsi, 1990) were examined by Bonnard and Scherr (1994), who sought to determine the extent to which gender was a relevant variable in explaining agroforestry adoption. They found that within the context of the AEP, “species choice, tree product marketing and use, and the employment of soil conservation and fertility management practices are not clearly differentiated by gender, but rather, more variable across the marital status of women” (Bonnard and Scherr, 1994:71). It was specifically determined that,

Men had 50% more trees on their farms and almost 30% higher tree density ... Men's farms also had higher numbers and density of trees in cropland. Women's farms had significantly more trees used primarily for fuelwood, which may partially reflect women's greater emphasis on use for fuel (Scherr, 1995:798).

Yet, these results missed two important elements. First, what the authors referred to as “men's farms” and “women's farms” were designations based on the sex of the AEP contact farmers interviewed during the 1988/89 fieldwork. For methodological reasons, the ICRAF/CARE study and the subsequent analysis provided by Bonnard and Scherr (1994) could not address the likelihood that the actual farm manager, not the owner, was a

woman and not a man. In 1990, a study of men's and women's separate and joint responsibilities in agroforestry in Siaya found that two-thirds of the tasks in agroforestry were performed by female farmers, whereas men were involved in less than 10% of on-farm agroforestry labour (Martin, 1990). The method used in Bonnard and Scherr (1994) did not come to terms with the fact that day-to-day agroforestry activities lie in the domain of women's knowledge and responsibilities, and not men's, regardless of whether or not the husband is resident (Martin, 1990; Diamond, 1992; Hambly, 1992). Secondly, by disaggregating data based on sex, Bonnard and Scherr (1994) employed the term "gender" as biological sex, and not as a relational concept of the power-based relations in which men and women are engaged (Moser, 1993). Researchers making a gender relations analysis would, for instance, avoid disaggregating data by "men's farms" and "women's farms" and recognise that in Siaya District land is almost never owned by women, even in joint title with men (Suda, 1991). On male-owned farms women also play key resource management roles in agriculture as well as farm forestry (Hambly, 1992). Gender relations analysis would also illuminate the important variations among women, including, for instance, agricultural activities within monogamous and polygamous households – again whether or not a husband is resident (Ayiecho, 1991; Hambly, 1992).

A second and relevant area of study on gender relations in the AEP would relate to the project's capacity to strengthen women's groups as local institutions involved in agroforestry. Evaluations commissioned by the project's donors referred to women's groups as "the key to the success of the AEP" (Fowler *et al.*, 1986; Scott and Masai,

1989). However, no studies were conducted on the nature or status of women's groups in the AEP. Adoption studies that disaggregated data by the sex of the AEP farmer (i.e. Scherr and Alitsi, 1990; Bonnard and Scherr, 1994) did not identify the influence of collective activity among male and female farmers on the uptake of agroforestry activities promoted by the project. The actions of individual farmers were viewed, therefore, in isolation from wider social relations that transpired within the women's groups.

Finally, the third way in which gender relations would feature in the AEP relates to gender issues in the organisational structure of CARE-Kenya and the AEP delivery. The project was designed to include both male and female extension workers, according to Vonk (1986). While evaluations of the AEP congratulated the project on its near-equal ratio of female to male extension workers (Scott and Masai, 1989; Smillie, 1990), women were scarce in project management positions. In 1991, only one in five middle-level supervisors were female, and there were no females in the top management of the project until 1994 (Hambly, 1992). This situation changed little after the establishment of a Women in Development (WID) Unit in CARE-Kenya in late 1988. In 1989, with funding from the Swedish International Development Agency, a national Gender Co-ordinator was given the responsibility for ensuring that

... gender issues in development are emphasised, supported and implemented; the aim being an attempt to foster and influence social change, which is central to community development. Within these broad parameters, the co-ordinator should also ensure that CARE's projects have a direct impact on women in terms of ameliorating conditions in which they work and live and ensure that CARE has an enforceable policy with respect to women in development in respect to project selection, implementation and evaluation and an affirmative female hiring policy (CARE, 1991:3).

In the same year, the Gender Co-ordinator cited “passive resistance to advice or instruction” among CARE-Kenya’s managers and then later resigned (CARE, 1991a). During discussions with the author in 1991, extension workers were complimentary about gender awareness workshops held by the Gender Co-ordinator. The Gender Co-ordinator’s responsibility to review project designs, implementation methodologies and evaluation results of the AEP was never fulfilled. In 1991, project managers reported that this was due to her lack of technical knowledge of agroforestry and conflicts between the head office of CARE-Kenya and the field office in Siaya. On closer inspection of the Co-ordinator’s terms of reference, it is apparent that her ranking at the same level as a project manager without similar authority over the allocation of resources within individual projects was an important limitation to the WID unit’s influence.

Overall, the analysis of gender relations and institutions within the context of the AEP has not been as strong as one might expect it to be. This is particularly true of the many studies of the project as well as the wider literature relevant to women and agriculture in sub-Saharan Africa, and particularly studies on gender and agroforestry in Kenya (Rocheleau, 1991).

5.6 CARE AEP: 1992-present

In the course of project implementation in the early 1990s, the AEP shifted again as it began to experience the results of reducing equipment and supplies to women’s groups. In the interest of encouraging farmers to become self-reliant, the AEP extension workers were informed by project management to continue their agroforestry extension, but to

provide the women's groups with only technical advice and limited quantities of polybags (personal communication, AEP extension workers, 1991). Extension workers reported that this led to a slowing down in nursery activities and seedling production. Smillie (1990) did not see this shift in emphasis as entirely negative.

More important however, has been a change in emphasis from numbers (numbers of seedlings, numbers of groups, etc.) to a focus on the longer-term adoption by individual farmers of the new technology and good agroforestry management. In recognition of the fact that longer-term impact involves more than production and distribution this emphasis on extension will continue through Phase III (Smillie, 1990).

Consequently, the AEP switched its extension approach from women's groups to individual farmers. According to a 1995 project evaluation, however, the catalysis for this turning point was the advice of the CARE Regional Technical Advisor to the AEP (CIDA, 1995). The AEP concentrated its extension advice and training activities on 1,258 self-directed, individual "farm families" in Siaya District. In continuing its assistance to the AEP, CIDA agreed to the individual approach to extension on the basis that it would probably be more effective for achieving increased farmer income from agroforestry (CIDA, 1995). Farmers were to receive specialised attention to assist them in marketing agroforestry products such as tree seedlings, timber, poles and fruit.

This revised extension approach was short-lived as it was stopped after less than a year of implementation (April 1992 to March 1993). In 1993, the AEP was reorganised for the third time in ten years. The "individual farm family" extension approach was abandoned. The reorganisation of the AEP led to the departure of the Project Manager, re-posting of the Siaya-based Assistant Project Manager to South Nyanza and retrenchment

of field staff. Some extension workers were transferred to the AEP in South Nyanza or other CARE projects in Kenya. The changes in staffing and extension approach suggest that the decision to shift the AEP focus away from farmers' groups to individual farmers was a miscalculation by project managers. CIDA (1995) stated that the project had stagnated and it was unsure of what else it could offer farmers in Siaya District. The District Forest Officer also commented that in the early 1990s "CARE was too busy studying agroforestry than doing it" and that the AEP could not sustain its earlier results once material assistance to women's groups was reduced.

In effect, 1993 marked the end of the AEP as the vast majority of the 300 women's groups ceased to receive assistance. In managerial terms, the AEP was transformed into a new project under the name of "Agroforestry Element" (AE). The project was re-organised with its administrative and top manager in Kisumu, and a more junior Assistant Project Manager in Siaya. The methodology of the project was known as TRACE (Training Resource Persons in Agroforestry for Community Extension) and this extension approach involved broadening the agricultural or food crops component of the agroforestry element. In the early stages of implementing the TRACE methodology, extension workers trained farmers, who then served as resource people for the women's groups (now referred to as farmers' groups).^{xv} This training covered a wider range of agricultural practices than previously promoted by the AEP, including, for instance, the performance of local maize varieties versus hybrid maize, or alternative tilling practices for cassava production. Support for tree nurseries and seedling production was curtailed,

although a limited number of polybags and tree seeds continued to be provided. As CIDA (1995:v) reported, the project was designed to emphasise technical advice and promote self-reliance. The TRACE approach

... aims at creating an environment where extension staff merely play a catalytic role in enabling the groups and schools to carefully analyse and modify their agroforestry practices. The ultimate aim is to increase incomes and improve productivity ... to institutionalise agroforestry within the community, thus stimulating the sharing of agroforestry technologies by community members themselves. It is envisaged that agroforestry activities shall continue to be developed and refined by the community-based resource persons on the phasing out of the project (CARE, 1995:iii-iv).

During the fieldwork in 1995, the author observed that after approximately one year of implementing the new Agroforestry Element, CARE-Kenya was working with less than half the number of groups involved in the project in 1985 (see Table 5.7). Many of the participating farmers in the new AE project (most of whom are female) were not necessarily involved in tree-based farming activities, particularly in some areas of the district. In Boro and Uranga Divisions farmers were active in conventional agroforestry activities, including woodlots, some alley-cropping and fruit production (banana, citrus and other species), but in general the AE data suggest that most of the farmers assisted by the project were engaged in small-scale agricultural activities which have only a minor, or even non-existent agroforestry component.

Table 5.7 CARE AE (Phase III) Activities in Siaya District (May 1995)*

Division	No. of groups	No. of farmers		Tree-based activities (No. of groups)**
		m	f	
Bondo/Usigu	13	11	41	bananas (3)
Boro/Uranga	26	46	54	alley-cropping/ woodlots (34) bananas (24) zero-grazing (23) other fruits (16) coffee (6) tree nursery (4) citrus (4)
Ukwala/Ugunja	50	90	100	bananas (19) tree nursery (2)
Yala/Wagai	50	50	170	zero-grazing (2) other fruits (1) alley-cropping/ woodlots (1)
Total	139	197	365	alley-cropping/ woodlots (35) zero-grazing (25) other fruits and citrus (21) banana (21) tree nursery (6) coffee (6)

Source: CARE AE data.

Notes: * No project activities were recorded for Rarieda and Madiany Divisions

** Groups may practice alley-cropping and/or plant woodlots

Group organisation and internal relations have received no greater attention in the most recent design of the Agroforestry Element project. In late 1991 there were approximately 30 extension workers in Siaya District, each responsible for extension support to an average of seven to eight women's groups. In 1995 there were 15 extension workers each working with an average of 13 farmers' groups (Hambly, 1992; CIDA, 1995).^{xvi} Furthermore, by cross-checking the names and locations of the women's groups

involved in the ICRAF/CARE studies of the late 1980s with 1995 AE project records, the author found that only five women's groups had been "readmitted" to the new project. Therefore, the farmers' groups involved in the TRACE method are nearly all new, and older groups are no longer participants in the project. CIDA evaluators confirmed this finding in their 1995 report, but did not make much of it.

A very small number of the Farm Families are still active in the Element. Some are members of participating groups. Others are used as resource persons for training by the Community Extension Workers (CEWs) in the area. A few of the very keen farmers are still visited on an informal (and currently undocumented) basis by the local CEW (CIDA, 1995:78).

Closer investigation into the background of these groups suggests that three of the women's groups which were also part of CARE's Farm Families approach were additionally recipients of a loan under the CARE Women's Income Generation project. This, and discussions with current field staff in the project, suggest that the project now seeks only groups that are capable of delivering results.^{xvii} Part of CARE's new attitude towards farmers and groups is also evident in a new component of the TRACE method, which is the involvement of 64 "progressive farmers" in adaptive, on-farm research experiments. These farmers implement "on-farm research trials, based upon needs identified by the groups themselves during participatory needs assessments which are facilitated by CARE extension staff" (CIDA, 1995:78). In this adaptive research component, CARE has maintained some relationship with KEFRI in order to facilitate the provision of technical advice to farmers and assist in the design of on-farm trials.^{xviii} However, in a 1991 interview, the DFO said the Agroforestry Element project had

significantly downplayed agroforestry and tree planting, making the NGO's work less relevant to his district programmes. At the same time, the District Agriculture Officer complimented the project on its wider interpretation of agroforestry, but felt that its narrow focus on staple cereal and root crops (mainly maize, sorghum and cassava) ignored the potential of cash crops such as cotton and sunflower.

5.7 Summary

This chapter has presented the evolution of the CARE Agroforestry Extension Project and identified major landmarks in its implementation. These key aspects included the abandonment of certain elements of the project design, rapid expansion on a scale and of a scope unforeseen in the design stages of the AEP, frequent organisational restructuring and alteration of the approach to farmer extension. These turning points in the project reflect both reactions by the project in light of changing external context, as well as management decisions which affected the content of the project. This discussion of project context and content will be developed further in Chapter 8.

This chapter has also illustrated that the overlap of research and development activities in the AEP were more intermittent than integrated. The focus of studies conducted within the project was largely on tree survival rates and agroforestry adoption. In part, this was due to the interventions and interests of international organisations such as CIDA and ICRAF. Relations among the various organisations involved in the project were complex. Project managers carried with them their own vested interests and perspectives on how the project should operate. Finally, relations between the NGO and

district government started off well, but later declined. A similar pattern of relations occurred between the project and its participants. One of the most local of institutions in Siaya District, women's groups, was not well understood by the AEP. They were under-researched, but also involved and later dropped from the project without recognition of how that could affect the individual farmers' perspective of the project or farmers' practice of agroforestry. The following two chapters will now examine agroforestry practices among AEP farmers after the project ceased to support their activities, both individually and collectively as women's groups.

NOTES

ⁱ Since 1971, the CGIAR is co-sponsored by the World Bank, FAO, UNDP and UNEP and aims to strengthen agricultural research for sustainable food security and poverty alleviation in developing countries. In recent years most of the CGIAR centres receive less than 15% of their funding from the World Bank, with the majority of core and project support being provided by bilateral donors.

ⁱⁱ KENGO (now known as the Kenyan Environmental NGO) co-published a national tree seed directory (Teel, 1990) and eight extension publications through the Agroforestry Training Series (Mbonye and Kiambi, n.d.). Research into seed procurement, selection and distribution was conducted in the Kenya Seed Project at the six field sites of the Mazingira Agroforestry Plots Project.

ⁱⁱⁱ Parts of KEFRI's research programme were carried out within the Kenya Agricultural Research Institute, which was started in 1980. This national research institute was established after the break-up of the East African Community and a merger with the research wing of the Ministry of Agriculture.

^{iv} The author acknowledges contributions from Steve Franzel, ICRAF socio-economist, on the D&D method and proposals for its improvement (Franzel, 1996).

^v For instance, Rocheleau (1986) and others later argued that the D&D method required greater attention to the diverse needs and interests of agroforestry "users" within the household. The 1987 ICRAF annual report states that a D&D database that allows for the "implementation of a geographic storage and retrieval system for D&D case study results...(included) a total of 58 recorded D&D analyses of land-use systems, 40 (of

which) have been entered into the database” (ICRAF, 1987:9). According to the report, the database was used in the late 1980s for ICRAF publications and further research on priority setting and planning. Franzel (1996) states that the technique stagnated in the late 1980s for three reasons: 1) D&D was not modified to take new methodological developments in participatory research and priority setting into consideration, 2) there was reduced emphasis on diagnostic studies within ICRAF, and 3) under-staffing in ICRAF. D&D has recently been reconstructed to respond to these needs in the late 1990s, according to Franzel (1996), and to be more “quantitative” in its approach, states Raintree (1986).

^{vi} These individuals were Louise Buck and Remko Vonk, whose reports and publications are cited in this chapter.

^{vii} It is also likely that Siaya District was an obvious choice because in 1983 the Beijer Institute was initiating its own agroforestry project, the Kenya Woodfuel Development Project (KWDP) in neighbouring Kakamega District. The KWDP also operated in Kisii District, which borders South Nyanza District. The Kenya Woodfuel Development Project, like the CARE AEP, is well known in the community forestry literature. It was later named the Kenya Woodfuel and Agroforestry Project (KWAP) after the Beijer Institute withdrew from the project as a result of conflict with local authorities. Its government partner, the Ministry of Energy, together with the ETC Foundation, a Dutch NGO/consultancy, has implemented KWAP since 1989. The KWDP and CARE AEP did not co-operate very often, preferring to maintain their own organisational distance and differences.

^{viii} Personal communication, District Forest Officer (1991).

^{ix} Unfortunately, a complete record of the achievements of the project is not available. The information in Table 5.3 has, however, been cross-checked with project documents and case studies.

^x Also, three former Forest Department technicians at the location level were also identified in this study as involved in the set up of AEP women’s groups. In two cases, the Forest Department employees (one later retired) served as women’s group co-ordinators.

^{xi} Buck (1993:129-30) also observed that this decision was backed by the country director based in Nairobi, and that the 1986 evaluation team supported the shift towards the generalist approach (see also Fowler *et al.*, 1986; Vonk, 1986).

^{xii} Smillie (1990) reports that under the Rural Integrated Development project (1983-92) CIDA provided CAD\$14.4 million to four CARE-Kenya projects: agroforestry extension (the AEP), women’s income generation and employment, primary education and polytechnics. The second phase of the AEP, which ended in 1992, cost CAD\$9.88 million.

^{xiii} Although the study was conducted by a team of consultants, the report was sub-titled, Agroforestry “a farmer’s perspective” (Cook and Grut, 1989).

^{xiv} Scott and Masai (1989) reviewed seedling survival rates. They indicated the following variations in the rates: CARE, 1985: 79%; CDP Consultants, 1985: 69%; CARE, 1986: 67%; and KEFRI, 1988: 53%.

^{xv} These groups are registered by the Ministry of Culture and Social Services under the general heading of women’s/self-help groups. The AE also operates in parts of Migori and Homa Bay Districts. (The latter was formerly South Nyanza District).

^{xvi} Field Officers (there were five in Siaya in 1991) now have been replaced with one Senior Technical Supervisor (STS) who is responsible for the adaptive research work and two Senior Extension Supervisors (SES), one responsible for extension work in the higher-potential zones, the other for extension in the lower-potential zones. The STS supervises in his/her respective district, four adaptive research workers who work directly with eight farmers involved in the adaptive research component of the project. Each SES supervises ten extension workers, who are now referred to as CEWs (Community Extension Workers).

^{xvii} Little evidence was provided of the work of the AE project in the drier, more distant agro-ecological parts of the district, specifically Rarieda and Madiany Divisions, where the tree nurseries and field operations have always been less successful due to climatic and logistical problems.

^{xviii} CARE is still involved with the five of the original six agroforestry research plots established by KEFRI/ICRAF/CARE across Siaya District (one plot has been discontinued). At these sites, the management of alley-cropping and species selection for woodlots and boundary planting are still the lead responsibility of KEFRI. Research findings are generally not very encouraging, as problems with *psyllid* infestation emerged in 1993/94 and the productivity of *Leucaena* has been negatively affected.

6. ADOPTION AND ABANDONMENT OF AGROFORESTRY IN SIAYA (1991-95)

6.1 Introduction

This chapter explores the extent to which agroforestry can be said to be institutionalised or embedded at the household level in Siaya District in terms of its sustained practice and the import of its meaning to farmers. It first identifies and discusses some of the key socio-economic characteristics of farmers and their households (*dala*), including comparisons between AEP farmers and non-AEP farmers. The chapter examines if, and how, farmers once involved in the AEP have sustained their practice of agroforestry and then broadly compares these findings to agroforestry activities among non-AEP farmers. Subsequently, the extent to which AEP farmers have abandoned agroforestry is presented and discussed.

In the second section of this chapter, attention is specifically directed to the gender relations implicit in efforts at the intra-household level to sustain agroforestry. It is argued that the adoption and abandonment of agroforestry does not occur in isolation from farmers' motivations and constraints, and that farmers themselves are a highly diverse group. As the theoretical approach to this study has acknowledged, gender is only one aspect of the economic, political, ecological and social dimensions of rural environments. However, the hypothesis put forward is that the creation of meaning for agroforestry by individual farmers is influenced by socially constructed gender relations.

6.2 Socio-economic Characteristics of AEP Farmers and Non-AEP Farmers

This section presents the analysis of baseline information about farmers and their households that was collected through in-depth interviews. A description of the socio-economic characteristics of the farmers follows, and they are compared with other socio-economic analyses of agroforestry in Siaya District.

The conceptual framework of this study proposes that farmers are best characterised as a highly diverse group of individuals, and that male and female farmers in the same household may have varying responsibilities and interests in agroforestry. Differences within and between households and among farmers are expected to influence the ways in which individual farmers perceive and practise agroforestry. This section addresses this proposition in light of the fieldwork and data analysis. It examines the characteristics of farmers and households that were involved in the AEP as well as those that were not.

6.2.1 Household Composition, Age and Sex Structure

As mentioned in the previous chapters, a typical rural household in Siaya is an extended family unit with porous social and economic boundaries (Cohen and Odhiambo, 1989). This makes the “household” a difficult unit of analysis. The focus in this study is not on the household unit *per se*, but on a project. However, following Giddens (1984) and Layder (1994), individual project participants should not be seen in isolation from the realities of the social groups to which they belong, including their “households”. Hence, attention to an individual farmer must take into consideration his/her social relations. In

this study, we concentrate on two social units with which the individual farmer is associated: his/her household and women's group.

It is, however, "households" which typically form the basic unit of analysis for most socio-economic agroforestry research in Kenya. For instance, in their studies of Central Province (Murang'a District) and western Kenya, respectively, Dewees (1993) and David and Swinkels (1994) have identified four key characteristics of household composition: 1) sex of adult residents (and specifically the head of household and/or farm manager), 2) age of adult residents, 3) marital status, and 4) number of full-time residents (adults and children). In this case study, similar information about the composition of rural household in Siaya was noted among AEP and non-AEP farmers. This baseline data was used to code specific farmer interviews and is referred to throughout the discussion of farmers' adoption and abandonment of agroforestry in Siaya. At this juncture, it is useful to review the general composition of AEP farmers' households (Group A) and households of farmers who were not involved in the project (Group B).

All contact farmers involved in this study can be considered as either heads of household and/or managers of the farm. In agroforestry research, a "head of household" is typically defined as the individual who has primary decision-making authority over the land on which agroforestry is practised (David and Swinkels, 1994). This concept has been considered useful because female farmers who are the sole adult residents on a farm may practise agroforestry but not necessarily have the authority to make decisions that implicate land and tree tenure (Feldstein *et al.*, 1989). Therefore, the female farmer may be

a *de facto* farm manager but may not be the “head of household” as Rocheleau (1986) has suggested. In the context of Siaya, the “authority of this position is important in relation to the extent to which some women, such as widows, are not only farm managers but also heads of the household (Hay, 1976; Okeyo, 1980). As Ayiecho (1991) and Suda (1991) have suggested, in a polygamous home in Siaya, the head wife may assume the leadership role in the household, in the absence or death of her husband. Even when wives are “inherited” by brothers or other male relatives of the deceased husband, as is customary among the Luo, the new husband does not live in the household of the deceased, and therefore often assumes a somewhat modified role of “head of household”. Figure 6.1 illustrates the variation between male/female-headed households.ⁱ The matrices show the percentage of AEP and non-AEP households that were headed and/or managed by male and/or female farmers.

Group A				Group B			
FM				FM			
		Male	Female			Male	Female
HOH	Male	27%	48%	HOH	Male	30%	47%
	Female	0	22%		Female	0	21%
n=52/54				n=41/42			

Source: Interview data; coding HOH (head of household) FM (female managed).

Notes: The difference in “n” is because two male contact farmers had no wives and one female farmer did not answer.

Figure 6.1 Sex of Head of Household and Farm Manager

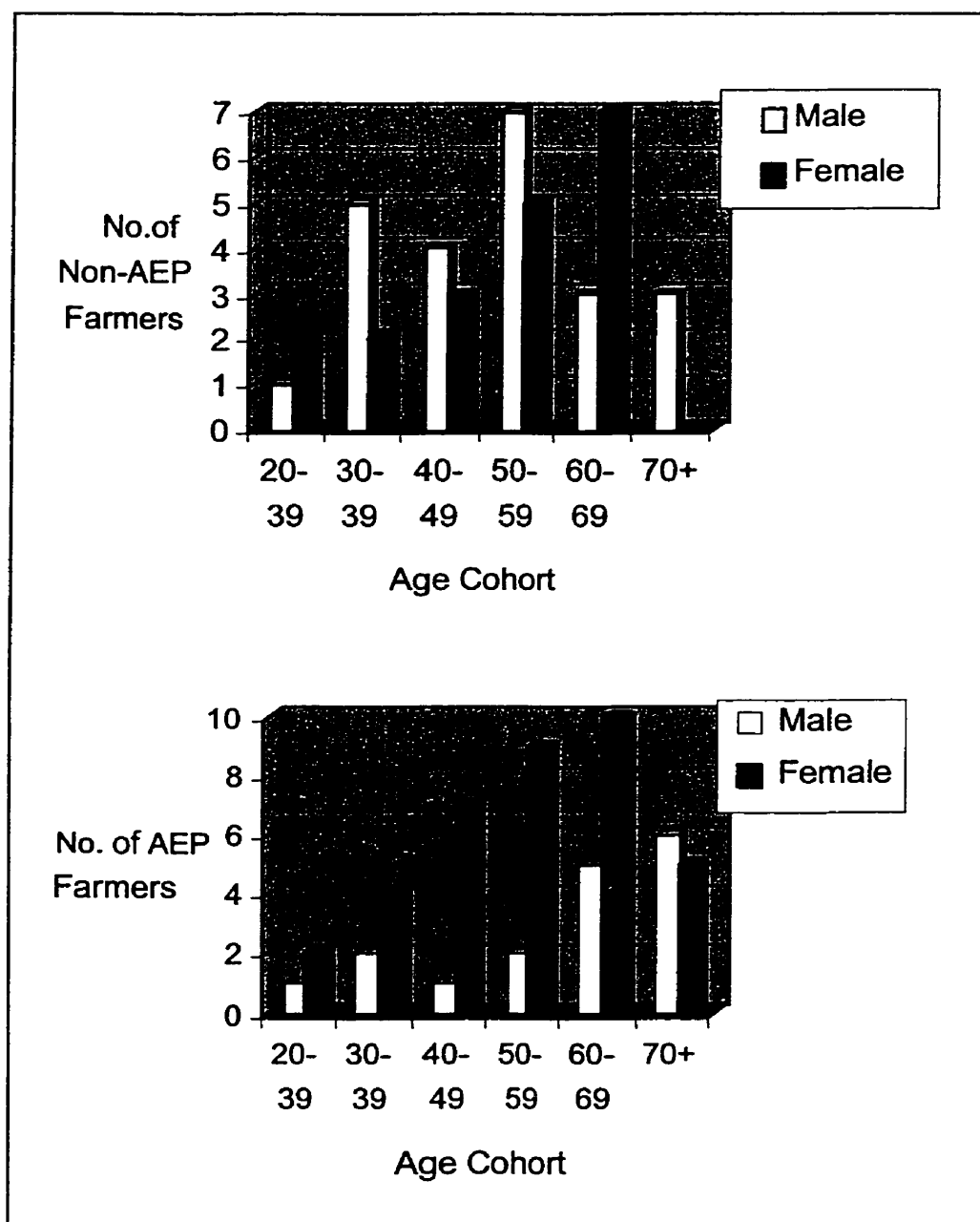
The most frequent household type among farmers involved in this study was male headed and female managed. However, male respondents in both groups tended to report their

household as being male headed and male managed even though in all but three of the households there were full-time resident wives.ⁱⁱ Two widowers in Group A had no wives.ⁱⁱⁱ Nevertheless, a large share of both Group A and Group B households were female headed and female managed. This situation is related to the relatively high number of women-only households in both groups of farmers interviewed. Households without husbands or adult males are referred to here as women-only households; the women are genuine widows or those whose husbands are away for extended periods, those referred to by Hay (1974) as “widows of migration”. In all, 45% of AEP farm households and 30% of non-AEP farm households do not have a full-time resident husband. These figures are comparable to the district average of 45% rural households in Siaya without a resident husband (Republic of Kenya, 1994a).^{iv}

Finally, it is acknowledged that the occurrence of women-only households does not mean that women may be inclined to report that their home is female headed or female managed. The author found, for instance, that in four AEP households women reported that although their husbands were not full-time residents, they were heads of the household as well as managers of the farm. In approximately 8% of the AEP households, non-resident husbands were actively participating in decision-making and management of the farm from a distance.

The age and sex composition of contact farmers involved in this study are presented in Figure 6.2. Overall, 55% were female.^v Contact farmers who had once been involved in the AEP were 68% female and 31% male. A slightly higher number of women

farmers in Group A was to be expected given the predominance of women (of working age) in the district and the emphasis on women farmers and women's groups in the AEP.



Source: In-depth farmer interviews, 1995.

Figure 6.2 Age/Sex Structure of Farmers Involved in the Study

Of the non-AEP farmers, 54% were female and 45% male, which is almost identical to the Siaya district population sex ratio. It should be noted, however, that farmers in Group A were slightly older than those in Group B.^{vi}

The marital status of farmers is important in terms of the proportion of households that are monogamous (and therefore have typically only one wife potentially active in managing the farm) and those that are polygamous and have more than one wife involved in agricultural activities. Half of the AEP farm households involved in this study are polygamous, but the proportion is only one-third among non-AEP farm households. The relevance of marital status to farmers' agroforestry activities is discussed in more detail later in this chapter.

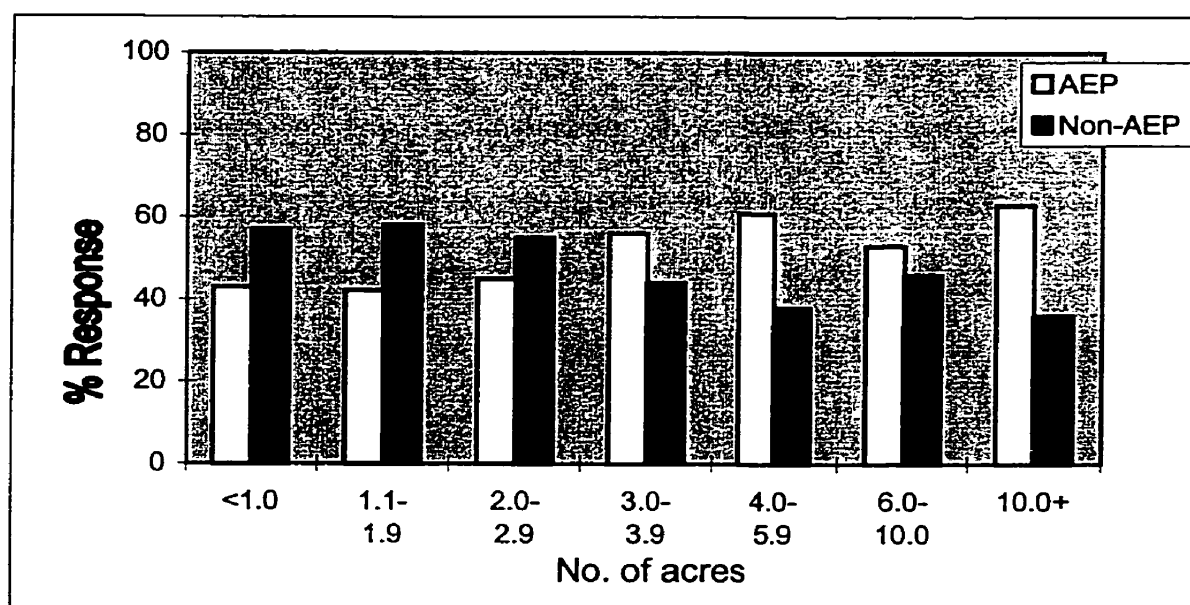
Finally, with regard to the total number of residents per household, including dependent children and resident adults, there was little variation between AEP and non-AEP households. However, families were larger in households in the drier ecozones, and specifically in Bondo, Rarieda, Madiany and Uranga Divisions. In both groups, polygamous households also had approximately one-third more full-time residents than monogamous ones did.

6.2.2 Farm Size and “Other Land” Accessed

In Siaya District, the way in which farmers practise agriculture and agroforestry is influenced by three types of land use: land within the compound, where homegardens, shade trees or live fences are often grown; parcels of land or fields in which crops and trees may be intercropped or borders of trees may be planted; what is referred to in Siaya

as “other land” – parcels of land that do not lie near the compound or its adjacent fields, but which farmers may access for agroforestry-related activities. This “other land” includes land that is owned, rented and/or borrowed by farmers (Hambly, 1992:113-7).^{vii}

In 1995, the author found that the main “farm” of AEP farmers, or rather the area of the compound and its adjacent fields, was somewhat larger than that cultivated by non-AEP farmers (see Figure 6.3).



Source: In-depth farmer interviews, 1995.

Figure 6.3 Area of Land Cultivated (Compound and Adjacent Fields)

In Bondo and Usigu Divisions the mean size of land holding among non-AEP farmers was less than three acres, but among AEP farmers it was 18 acres. The average for these two divisions was approximately seven acres (District Lands Office, 1991). Only in Yala and

Wagai Divisions was the average AEP farm smaller than the average non-AEP farm (two acres as compared with four acres).

The total area of land cultivated should take into consideration other-owned, borrowed or rented land that is not adjacent to the farmers' place of residence. Other-owned land should be at least half a kilometre away from the farm compound. Borrowed and rented parcels of land are often accessed on a seasonal, not permanent basis. In 1995, 45% of non-AEP farmers and 59% of AEP farmers accessed "other land." Table 6.1 illustrates the proportion of "other land" that is owned, borrowed and rented.

Table 6.1 "Other Land" Accessed by Farmers

Type of "other land"	AEP Farmers						Non-AEP Farmers		
	1991 n=38			1995 n=54			1995 n=42		
	No.	%	Mean size (acres)	No.	%	Mean size (acres)	No.	%	Mean size (acres)
Owned	10	26	2.1	16	29	1.97	13	30	3.2
Borrowed	13	34	1.15	9	16	2.04	3	7	1.25
Rented	11	28	1.5	17	31	1.96	4	9	1.66

Source: In-depth farmer interviews, 1995

Note: farmers may own, borrow and/or rent more than one piece of land.

One important aspect concerning "other land" and its relevance to farmers' livelihoods in Siaya District is that households without a full-time resident male make greater use of borrowed land. In both groups, households with a resident male are more likely to own and rent "other land." However, several female-headed and female-managed households also rent land. A second important feature of "other land" is the type of

farming activity on other-owned, borrowed or rented land. The farmers' interest in trees on these other land areas is mainly as a source of woodfuel and additional fodder, particularly during the dry season. Because the planting or harvesting of trees implies a tenurial right to the land, farm forestry was not found to be practised on rented or borrowed land. The author also found that landlords may restrict the planting of certain crops on rented or borrowed land. Specifically, this applied to cassava, which tends to be a gross feeder of soil nutrients and can be stored in the ground for up to two years, therefore preventing the leasing of land on a seasonal basis. Prices of rented land varied from 1,500 to 2,000 Kenyan shillings per acre in Yala and Wagai, to 200 to 300 Kenyan shillings per acre in Boro and Bondo Divisions. However, prices may fluctuate, depending on soil fertility and moisture. Landlords may also be willing to rent land to friends and family in exchange for their labour. This customary practice is referred to as *pur wabar*. There were only two cases, both of AEP farmers, in which farmers had sufficient land to lease to others. Both rented out land under the *pur wabar* system. Cassava is the main crop grown on other-owned land. Other rented and borrowed parcels of land were planted in 1995 with a combination of sorghum, maize, beans and/or cowpeas. Overall, sorghum was the most frequent choice for the 1995 long-rains season, a contrast with the author's findings in 1991 when maize was the most common crop grown.

Overall, farmers' use of "other land" in Siaya District suggests that they are active in the production of "security crops", which help them to cope with fuel or fodder shortages. Furthermore, the recognition of AEP and non-AEP farmers' access to other land suggests

that the “farm” observed by researchers or extension workers is often only part of a farmer’s overall area under cultivation for agricultural and farm forestry production. This is important when determining the extent of farmers’ access to food and tree products, especially off-farm woodfuel and additional fodder.

6.2.3 Occupation, Employment and Income

Among both groups of farmers, the primary occupation of male and female respondents is agriculture (90% and 88%, respectively). Thus, the number of farmers involved in this study who are employed off the farm is small. Within the farmers’ households, however, there can be a diverse number of secondary activities conducted by adults and children to generate income. Both male and female members of the household are engaged in income-generating activities (see Table 6.2).

Table 6.2 Income Generation Among AEP (Group A) and Non-AEP (Group B) Farmers

Income Generating Activity	Group A n=54		Group B n=42	
	No.	%	No.	%
Regular marketing of food and/or industrial crops	29	53	13	30
Regular remittances from spouse/children	24	44	19	45
Handicrafts	21	38	7	16
Work as hired labourers (farming and/or construction)	15	27	6	14
Sale/trading of livestock or animal products (non-dairy)	4	7	9	21
Fishing/sale of fish	8	14	1	2
Sale of woodfuel (charcoal and/or firewood)	2	3	3	7
Brewing of alcohol	3	5	1	2
Dairy (sale of milk and/or ghee)	2	3	2	4
Other (sale of sand, cooked foods, local transport)	1	1	3	7

Note: Respondents may have reported being engaged in more than one activity.

Source: In-depth farmer interviews, 1995.

These results suggest that farmers may have several ways of accessing or generating income. However, this does not apply to all the farmers. Five farmers (9%) in Group A and six (14%) in Group B reported that they had no source of income. When hard pressed for cash, they would sell cassava or seek assistance from relatives. In all these cases, the households were either widows or women whose husbands were non-resident.^{viii} All these households, except two, were considered to be resource poor and very resource poor, categories explained in more detail below.

Farmers were most likely to generate income by marketing food or industrial crops grown on their farms. “Regular” marketing was interpreted as taking produce to cooperatives and/or markets at least twice a month. Several farmers in both groups occasionally marketed crops when all other sources failed. Women were more likely to engage in small-scale marketing of food crops, poultry, fresh and dried fish and handicrafts, whereas men were involved in marketing furniture, livestock (local cattle, goats and sheep), fresh fish and animal products (hides). Both male and female farmers were involved in producing and selling ropes, baskets, mats, brooms and pottery. In both groups, polygamous households were more likely to engage in marketing activities. Non-AEP farmers were found, however, to participate less in marketing of crops and fish, and more in smaller-scale activities such as selling woodfuel (firewood and charcoal) and other activities such as selling sand, using bicycles to transport people or produce (*boda boda*) and selling cooked foods at the market. Farmers once involved in the AEP had a

greater reliance on agriculture-related activities, including hiring out themselves and their family members as farm labourers.

Although farmers may access and generate diverse income sources, they may do so for other purposes than generating wealth. Generally, farmers aim at subsistence: they attempt to be self-reliant in food production without selling crops. Some farmers seem to achieve self-sufficiency in food production and even generate a surplus of crops to market locally. However, others do not, and therefore must engage in additional activities to raise money. For a small number of women farmers, the main source of money is assistance from urban-dwelling members of the family. Therefore, it can be argued that farmers' occupations, employment and income generation opportunities were only some of the many criteria to consider in determining the economic status of households in Siaya District.

6.2.4 Other Measures of the Economic Status of Households

The economic status of rural households in western Kenya is not easily determined, as studies by socio-economists Were *et al.* (1991), Scherr *et al.* (1990:148) and David and Swinkels (1994:13) conclude. In 1994, in an effort to establish baseline socio-economic data for ICRAF's field station in Maseno, just east of Siaya District, David and Swinkels reviewed data from seven studies conducted in western Kenya.^{ix} They suggest that socio-economic status in Siaya is based on eight quantifiable factors: 1) labour availability, 2) type of household, 3) farm size, 4) land tenure, 5) wealth, 6) input use, 7) age of household head, and 8) involvement in labour markets. In 1995, the author considered that most, if

not all of these factors would be relevant to characterisation of the socio-economic status of farmers in Siaya District. However, it was not the intention of the current study to carry out a detailed statistical analysis of the economic status of farmers in Siaya. Also, in the selection of AEP and non-AEP farmers the author did not require a measure of socio-economic status to stratify the sample. Most importantly, the author found that roof types are an unreliable proxy indicator for wealth in Siaya District and that other indicators can be used for the purpose.

One of the main indicators of wealth endorsed by David and Swinkels (1994), and also by Scherr *et al.* (1990) in their assessment of farmers' wealth in Siaya District, was house and roof type (permanent or semi-permanent house with a thatched or corrugated iron roof).^x In 1995, the author found that this indicator was unreliable because severe shortages of the grass commonly used for thatching in Boro, Bondo, Yala and Rarieda divisions (*Loudetia kagerensis*) had made it unaffordable for roofing new houses as well as repairing existing ones.^{xi} Consequently, farmers were instead purchasing second-hand corrugated iron (*mbati*).

Proxy indicators of relative wealth or poverty were identified by the research team *after*, not before, data collection, and later confirmed during the return visits to farmers to provide them with preliminary results of the study (i.e. during farmer feedback). These proxy indicators were neither ranked nor weighted, only subjectively cross-referenced with other recorded information about the particular farmer and his/her household. The households were then allocated one of five codes: 1) very resource poor, 2) resource poor,

3) middle resource poor, 4) middle resource rich, and 5) resource rich; and stored in the relevant node in the NUD*IST project. The proxy indicators for relative wealth among the households involved in this study are summarised in Table 6.3.

Table 6.3 Other Proxy Indicators for Wealth/Poverty Among AEP (Group A) and Non-AEP (Group B) Farmers

Indicators		No. of Times Coded*	
		Group A n=54	Group B n=42
Wealth indicators			
	Regular marketing of crops (co-operatives or locally)	29	13
	Area of land cultivated including "other land" > 2 acres	41	31
	Permanent house and furnishings	21	14
	No. of grades completed at school >6	11	17
	Low share of cultivated land under cassava	7	3
	High share of cultivated land under non-food cash crops	2	6
	Regular production/purchasing/marketing of charcoal (not firewood)	4	2
	Ownership of more than one dairy cow	3	2
	Brewing of alcohol	3	1
Poverty indicators			
	More than five dependants < 18 years (including grandchildren)	9	17
	No off-farm employment/ pension/ remittances or other income	5	6
	Age of resident adult(s) > 65 years	8	3
	Marketing of cassava only	4	6
	Chronic health problems within the household (e.g. HIV-AIDS/ mental illness/ tuberculosis)	4	4
	Sale of collected wild products (e.g. firewood, mushrooms)	3	2
	Only source of income being farmer/children working as hired labourers	3	1
	Widows with no sons	1	2

Note: * Number of times coded refers to the number of "finds" for that particular item within the 96 interviews (AEP and Non-AEP farmers).

Source: In-depth farmer interviews.

This list includes indicators not taken into consideration in other analyses of socio-economic status in Siaya District by David and Swinkels (1994) or Ayiecho (1991). For instance, consideration of chronic health problems among family members is important to understanding farmers' need for cash income to pay for costly medications or the cost in terms of lost labour. For instance, farmers generate income from trading considered to be illegal by the State (e.g. brewing of alcohol, production of charcoal). Some farmers reported that they marketed crops, but closer inspection showed that ten percent marketed only cassava, which means that they were reluctant to sell other staple crops which sustained them during food shortages and shortfalls resulting from loss of income from other sources (e.g. remittances). The cassava indicator is important, but also weak in view of the above discussion where it was noted that farmers often plant cassava on "other land" as a buffer crop in case of drought or food shortages.

Using the indicators listed in Table 6.3, five codes were created to categorise farmers according to a five-point scale representing wealth or socio-economic status. Table 6.4 summarises the results.

Table 6.4 AEP and non-AEP Farmers Coded by Farmers by Proxy Indicators of Wealth

Farmers	% of Farmers Interviewed					Total
	Very Resource Poor	Resource Poor	Middle Resource Poor	Middle Resource Rich	Resource Rich	
Group A (n=54)	3.1	39.2	33.6	10.5	12.9	99.3
Group B (n=42)	4.7	45.2	21.4	19.0	9.5	99.8

Source: In-depth farmer interviews.

In a general sense, it can be said that non-AEP farmers are mostly categorised in the resource poor to middle poor categories and AEP farmers are relatively wealthier.

However, these findings are inconclusive, in part because the assessment was based on the author's perception of farmers' living standards at one particular point in time. Other factors could have contributed to AEP farmers' appearing slightly better-off, including the fact that farmers in Group A are slightly older and seem to have few dependants under 18 years of age. The relatively older number of farmers in Group A may also relate to remittances received from non-resident family members (i.e. sons and daughters).

6.2.5 Summary of Socio-Economic Characteristics

The review of socio-economic characteristics of farmer households in Siaya District suggests some similarities and differences between the two groups. The key similarities are the large number of widows and the prevalence of non-resident working-age men in both groups. This means that women are responsible for most agriculture-related activities. Differences between the two groups include the age structure, with AEP farmers being slightly older than non-AEP ones, and the profile based on wealth indicators identified in the study. The two groups do not vary in their access to "other land", although inter-household gender-related variation (i.e. resident husband/non-resident husband) does exist. A wider frame of reference for assessing socio-economic status is useful, particularly for appreciating the diversity of income sources and socio-economic status of farmers. Although statements are made here about the relative social and economic conditions of farmers interviewed in this study, it should be kept in mind that the

environment and conditions in which farmers live are highly dynamic and difficult to generalise. We shall now turn to a closer examination of agroforestry among AEP farmers and non-AEP farmers.

6.3 Agroforestry Adoption and Abandonment

This study is primarily concerned with what has happened to farmers' practice of agroforestry at least four years after they ceased to receive assistance from the CARE Agroforestry Extension Project.^{xii} In 1995, the author interviewed the same AEP farmers who had been part of the earlier study in 1991 (Hambly, 1992).^{xiii} In-depth interviews with farmers in Siaya who had not participated in the AEP were conducted in order to determine the extent to which they practised agroforestry in 1995. In this section of the chapter, we shall examine agroforestry in the widest possible sense – the intentional use and management of trees, in combination with crops and livestock, for economic production and environmental protection. We shall specifically examine farmers' continued or sustained practice of agroforestry – in the sense that farmers have actively sustained agroforestry by reproducing its tree or forestry component.

6.3.1 Agroforestry as Practised by AEP and Non-AEP Farmers

Two key questions frame the discussion of agroforestry among farmers who were once participants in the AEP. Firstly, did farmers continue to practise agroforestry once the AEP had ceased to offer them and women's groups technical assistance? Secondly, how do they compare with farmers who never had any contact with the project? These

questions were explored by examining the data obtained from in-depth interviews with farmers.

Initially, farmers in both groups were asked if they were practising agroforestry in 1995.^{xiv} The definition of “agroforestry” discussed with farmers at the outset of the interview was the planting and/or management of trees in combination with crops and livestock in fields or compounds. As Table 6.5 illustrates, 87% of farmers who received assistance from the AEP were practising some form of agroforestry. However, 67% of farmers in Group B reported that they, too, were practising agroforestry according to the definition employed.

Table 6.5 Agroforestry Among AEP-Assisted (Group A) and Non-AEP-Assisted (Group B) Farmers

No. of Farmers	Group A		Group B
	1991	1995	1995
<i>total n=</i>	38	54	42
Practising agroforestry	38	47	28
% of total	100%	87%	67%

Source: In-depth farmer interviews, 1995.

When these results were examined by division and ecozone, some variation was found between the Group A and Group B responses, as illustrated in Table 6.6.

Table 6.6 Agroforestry Among AEP-Assisted (Group A) and Non-AEP-Assisted (Group B) Farmers, by Ecozone.

Division and Agro-ecological Zone*	No. of Farmers			
	Group A	% Practice AF	Group B	% Practice AF
All Divisions	54	87%	42	67%
Zone I				
Yala	6	83	6	83
Ukwala	5	60	5	60
Zone II				
Wagai	1	0	4	50
Ugunja	4	75	5	40
Boro	17	88	2	100
Uranga	6	100	0	n.a.
Zone III				
Bondo	4	100	5	100
Madiany	4	100	4	50
Rarieda	4	100	4	75
Zone IV				
Rarieda	2	100	2	50
Usigu	1	100	5	80

Notes:

n.a. = not applicable.

* Zone I has two rainy seasons; Zone II has one good rainy season and a second unreliable rainy season; Zone III has one rainy season; Zone IV has one rainy season which may be unreliable.

Source: 1995 in-depth farmer interviews (NUD*IST, node “agroforestry/yes” and cross-checked with “farmer/division”).

All the AEP farmers in Bondo, Madiany, Rarieda and Usigu reported that they were practising agroforestry. The non-practice of agroforestry among farmers formerly involved in the AEP was highest in Wagai, Ukwala and Ugunja. Ukwala and Ugunja Divisions were also found to have the lowest rate of agroforestry among non-AEP farmers. However, non-AEP farmers from Rarieda and Madiany, unlike AEP farmers, reported low

involvement in agroforestry activities. This finding suggests that the AEP may have positively influenced farmers in the drier areas of Siaya District, specifically Rarieda and Madiany. However, the sample size is too small to make strong claims in this regard.

More importantly, this general picture of the farmers' practice of agroforestry must take into consideration two key points. The first is the type of agroforestry in which both groups of farmers are engaged. This requires identification in order to differentiate, insofar as possible, variations between "new and improved" agroforestry and practices carried over from pre-project (traditional and colonial era) agroforestry activities. The second point arising from the interpretation of the data is to consider how these results may be dependent on the definition of agroforestry used in the discussions.

6.3.2 Types of Agroforestry Practised

What type of agroforestry, in terms of its structure and function, is being sustained by farmers once assisted by the AEP, or those outside the project?^{xv} Table 6.7 summarises the major types of agroforestry among both groups of farmers.

The findings show that many farmers in Siaya who have not been part of the AEP plant and manage similar structural combinations and arrangements in agroforestry. There are, however, some distinct similarities and differences between the two groups of farmers in the type of agroforestry they practise. The contrasts concern: 1) alley-cropping, 2) live fences, 3) tree planting around fish ponds, 4) composting, and 5) species observed in farmers' fields.

Table 6.7 Types of Agroforestry Practised by AEP (Group A) and Non-AEP (Group B) Farmers

Type of Agroforestry Practised	No. of Farmers		
	Group A		Group B
	1991 n=38	1995 n=54	1995 n=42
Live fences/ border or boundary planting	35	29	27
Inter-cropping (random mix)*	25	30	24
Woodlots/ windbreaks	17	19	11
Alley cropping	16	2	0
Homegardens using trees (fruit/shade/mulch)	13	11	12
Trees planted in compounds	13	9	8
Improved pasture/ fodder banks	8	7	9
On-farm tree nursery	6	2	1
Trees on soil terraces	4	1	1
Trees around water points/ fish ponds	1	1	0
Trees for beekeeping	1	0	1
Compost piles using tree cuttings	0	0	2
Farmers not practising any agroforestry	0	7	14

Source: In-depth farmer interviews, 1995 (NUD*IST, node "agroforestry/types/...").

Note: * Main tree species cited among both groups were: *Markhamia lutea*, *Albizia coraria*, *Grevillea robusta* and *Melia azadirachta*.

1. Alley-cropping

In 1991, the author found 42% of AEP farmers practising alley-cropping. This figure was more or less in line with the finding that half the farms involved in the AEP in Siaya had established a small alley-cropping plot (Scherr and Alitsi, 1990:153; Scherr, 1995:800).^{xvi}

By 1995, this figure dropped to 5% as only two of the 38 farmers interviewed in 1991 were still practising alley-cropping. The experience of one of these two farms is striking because it had served as a demonstration site for the AEP and therefore had received

above-average technical and material inputs. After the project ceased its support to the AEP demonstration farmer, he no longer maintained his approximately one-acre field of hybrid maize and tree alleys (half of which was planted with *Leucaena leucocephala* and the other half with *Grevillea robusta*). In 1992, he began to modify his alley-cropping by altering the recommended spacing of trees within rows from 0.25 metres to up to two metres – a density far less than the recommended 2000 trees per hectare (Scherr *et al*, 1990:155).^{xvii} The farmer expressed regret during the interview that he had not maintained the alleys in the recommended pattern, expressing the belief that the trees had been competing too much with the line-planted maize. The farmer said that he had faced no other constraint in practising alley-cropping, including labour to prune the tree roots or cut back the trees for mulch. In the end, he could not justify retaining the tree alleys or his purchase of hybrid maize seed, given the low yields. In the 1995 planting season, he turned the field over to the second of his three wives to intercrop local maize, beans and sorghum.

2. Live fences, border and boundary planting

A second agroforestry intervention promoted by the AEP was the improvement of trees lines (i.e. hedges not part of an alley-cropping system) that are referred to as live fences, field borders or boundary planting (Scherr *et al.*, 1990:149). The author's results indicate that by 1995, AEP farmers had a wider variety of tree species in linear configurations, including an apparent preference for multi-purpose *Gliricidia sepium*, *Thevetia peruviana*, *Grevillea robusta* and *Cassia siamea*, planted as live fences or boundary markers.^{xviii} In

contrast, live fences among 75% of non-AEP-assisted households were limited to the traditional use of *Euphorbia tirucalii* (*ojuok*) and/or sisal (*konga*). Another 20% of the AEP farmers used *Thevetia peruviana* (*thebesia*) for live fence, border and boundary planting. On 10% of the non-AEP farms, *Cassia siamea* (*ndege*) was planted or retained in or near the boundaries of compounds, reportedly due to its use in the construction of traditional granaries and homes. One farmer remarked that her *ndege* trees would be used to construct a granary or kitchen because “the trees were already known to the termites” and therefore the wood was unlikely to be destroyed by them.^{xix}

3. Other types of agroforestry identified

In addition to alley-cropping, another type of “new and improved” agroforestry which only farmers once assisted by the AEP still practised in 1995 was the management of trees around fish ponds.^{xx} However, this comparison is weakened by the fact that no farmer in Group B had a fish pond on his/her farm. One type of agroforestry practised among farmers who were not involved in the AEP (Group B) is the use of tree foliage for composting household and animal waste. In one of the two cases where this practice was observed, the farmer used only banana leaves for her compost. Both farmers had produced compost as fertiliser for homegardens for many years. Among both AEP and non-AEP farmers, homegardens varied from relatively large (50 square metres), intensively cultivated, multi-level plots (or canopies) of vegetables, fruit (banana, papaya, avocado and mango) and nitrogen-fixing trees (usually *Grevillea robusta*), to small (four square metres) vegetable gardens over which trees offer light shade. One husband and wife team

in Rarieda Division cultivated trees in their homestead to support the vines of three different varieties of passion fruit (which were sold locally by the female farmer). They also grew *Mucuna pruriens*, an indigenous vine used like coffee and known locally as *amilo*, named after the popular commercial beverage “Milo”. The farmers were interested in the possibility of selling *amilo* in places such as Nairobi.

4. Tree Species

By definition, the specific structure and function of an agroforestry system are partly characterised by the species of trees used in agroforestry. The AEP mainly promoted the use of indigenous tree species and some exotic tree species that had been introduced to the district prior to the AEP. Therefore, it is difficult to assess the direct contribution of the project to increased tree species diversity in Siaya. Annex 11 presents a list of the species of trees observed in farmers’ fields and compounds. In general, the diversity of tree species in the fields and compounds of farmers was effectively the same for both groups.

6.3.3 Re-defining the Practice of Agroforestry

Having described the type of agroforestry practised by farmers, we can now address the agroforestry activities that were not sustained by farmers involved in the AEP. As Table 6.9 suggests, most types of agroforestry have declined among farmers once assisted by the AEP. However, alley-cropping was almost entirely abandoned between 1991 and 1995.

The author’s experience during the fieldwork was that it is not enough to ask farmers, “Do you practise agroforestry?” and proceed to count the number of trees on the

farm and analyse their location and configuration when the answer is in the affirmative. It is necessary to review the definition of agroforestry, and to grasp the farmers' individual perception of what agroforestry entails. The author came to this realisation by analysing the responses to the question about practising agroforestry and cross-referencing the results with other information from the in-depth interviews. In only one-third of the interviews, the responses provided by farmers coincided with subsequent descriptions of tasks, mainly related to tree-planting, that would encompass an *intentional* management of trees with a view to reproducing or replacing the tree component in the agroforestry system. To address the possible gap between what outsiders mean by agroforestry and what farmers perceive it to be, the author started by adjusting the questionnaire after pre-testing.^{xxi} Moreover, in subsequent discussions with farmers, the author was conscious of actions taken by farmers to sustain their agroforestry activities, as opposed to using and managing existing trees in a way that was not necessarily for the long term. The definition of "practising agroforestry" was therefore reconceptualised as farmers "sustaining or reproducing agroforestry" as a land-use practice (Hansen, 1996; Leakey, 1996).

From this slightly different departure point in the collection and analysis of data, the author identified two key results. One was that 12% of farmers had made conscious but futile efforts to sustain agroforestry since 1991. This was initially found among farmers who had once participated in the AEP and attempted to reproduce agroforestry, but due to reasons such as drought or termite infestation had lost their trees between 1991 and 1995, particularly in the drier areas of the district. It was found that after failing once, almost

10% of farmers formerly participating in the AEP had not tried to re-establish trees in their fields and compounds. Furthermore, only two households reported continuing to establish new trees in their fields and compounds for at least two more seasons.^{xxii}

The second finding that emerged from adjustment of the analysis was that 52% of AEP farmers had not sustained agroforestry. Six had successfully planted between 50 and 200 new trees since 1991 and a further 15 had grown 10 to 50 free-standing trees. In the remaining cases, only a few free-standing trees had been planted. This compared with five farmers outside the AEP growing between 50 and 200 free-standing trees and 12 planting 10 to 50. However, one farmer who had never been involved in the AEP had grown more than 370 trees, mainly as a woodlot. This exceptional case was partly motivated by his craft of furniture making, but he told the team that his “love for trees encouraged him ... (and) stimulated him to badger his neighbours to plant more trees”.^{xxiii} Among AEP farmers, only two had established new configurations of agroforestry since 1991. One in Ukwala had established a 12-metre long fodder bank of *Leucaena* for a new breed of sheep (shoats) which he was raising. In the other case, two widows in Boro had established a small woodlot of *Eucalyptus* with tree seedlings purchased from a local school. They planned to use the wood from the trees for production of charcoal for the local market. However, these findings suggested that farmers were not sustaining agroforestry in the long term. If the concept of farmers’ practice of agroforestry is based on their intentional reproduction of AEP activities the results are not encouraging. The findings are summarised in Table 6.8.

Table 6.8 Examples of AEP Farmers Sustaining Agroforestry Since 1991

Examples	No. of farmer responses*	
	Group A	Group B
Total no. of farmers sustaining agroforestry	26	18
Trees established in compound, fence or boundaries*	20	16
Trees established in fields*	9	13
Tree nursery established on-farm	2	3
Tree nursery established in women's group	1	0

Notes: * Using seedlings, wildlings, cuttings or direct seeding.

Farmers may have cited more than one example.

Source: 1995 in-depth farmer interviews (NUD*IST, node “agroforestry/repro”).

These results are based on planting and management of trees (either in existing or new agroforestry arrangements) through the purchase, growing or receipt of tree seedlings, cuttings, wildlings and/or seed. The term “established” refers to successfully planted out trees that have survived at least two seasons (one year). These trees require active interventions by farmers, including selection of good-quality cuttings, wildlings or seed (for direct seeding or seedling production), water (or planting in a moist, well-drained area), possibly the application of manure, and protection from grazing animals or termites. The findings indicate that agroforestry can be reproduced or sustained by farmers through the establishment of an on-farm seedbed or tree nursery (size not defined) to produce tree seedlings for agroforestry activities.

In approximately two-thirds of the interviews with farmers who had once been involved in the AEP, the team identified complaints that farmers were unable to continue agroforestry activities and plant trees because they lacked polybags (plastic tubes for growing seedlings). In contrast, non-AEP farmers made no comment about polybags. In

five cases, farmers in both groups used different kinds of seedling containers, from tin cans to banana leaves. A female farmer and her husband in Group A created their own “portable tree nurseries” by using the bottoms of oil drums. After the collapse of their group tree nursery, these two farmers became self-sufficient in seedlings for repairing gaps in the live fence around their compound and replanting their woodlot. The container of tree seedlings could be rolled out of the range of grazing animals or to areas where water was stored.

Our results found that farmers previously involved in the AEP may be practising agroforestry in terms of using and managing existing trees on their farms, but they do not necessarily reproduce their agroforestry systems. In comparison, farmers who have not been involved in the project are equally active, and possibly more involved in sustaining certain agroforestry practices, many of which are traditional (or pre-project) activities. Farmers not involved in the AEP do practise and sustain agroforestry, although their experience varies somewhat according to agro-ecological conditions and in terms of the use of propagative material used in planting trees. Given these results, it is proposed that a more realistic picture of farmers’ adoption and sustained agroforestry activities can be summarised as in Table 6.9.

How can this variation in farmers’ practice and sustaining of agroforestry be understood in greater depth? To address this question, we need to examine the farmers’ motivations and constraints, especially how gender relations might shape farmers’ motivations and constraints in agroforestry.

Table 6.9 Sustained Agroforestry Among AEP-Assisted (Group A) and Non-AEP-Assisted Farmers (Group B), 1995

Description of Adoption	Number of Farmers			
	Group A		Group B	
	No.	%	No.	%
Practising agroforestry*	47	87	28	67
Sustaining agroforestry since 1991	26	48	18	43
Total	54	100	42	100

Note: * No. of farmers practising agroforestry as indicated in table 6.1.

Source: 1995 in-depth farmer interviews (NUD*IST, node "agroforestry/repro/yes").

6.4 Farmers' Motivations for Practising Agroforestry

In this study, the extent to which farmers create their own meaning for agroforestry beyond the AEP itself, is considered to influence the extent to which they continue to practice agroforestry, which is now seen in the wider sense of managing and sustaining trees. Keeping in mind the distinction made above and summarised in Table 6.9, the author examined farmers' perceptions of the importance of agroforestry. These perceptions are relevant to environmental research because they underscore farmers' pursuit of certain land-use action, argue Blaikie and Brookfield (1987). However, as Long and Long (1992) have shown, farmers' perceptions do not exist in isolation of various constraints on their actions. Furthermore, as Rocheleau (1991) and Diamond (1992) have both pointed out, male and female farmers, even within the same household, may not share similar motivations for and constraints to practising agroforestry. Therefore, gender relations shape farmers' perceptions of agroforestry and must be taken into account. In this

section of the chapter, we shall examine farmers' motivations for agroforestry, and in section 6.5 we shall address the constraints that farmers experience in acting on these motivations.

The exploration of farmers' perceptions of agroforestry involved asking them if and why they considered agroforestry to be important. In the discussions, the team sought to understand what motivated farmers to initiate and stay involved in agroforestry activities. The results of the "finds" (coding in the NUD*IST project) and cross-referenced with the sex of the respondents are summarised in Table 6.10.

A positive response as to the importance of agroforestry and trees on-farm was received from 92% of all AEP farmers and 89% of non-AEP farmers. The farmers who answered negatively reported that agroforestry and tree planting were not important to them because of advanced age or ill-health; non-farm activities which kept them too busy; or lack of knowledge about trees. (The last reply was given by only one respondent, a non-AEP farmer.)^{xxiv}

The findings suggest three levels of difference among farmers in terms of their motivations for on-farm tree planting and agroforestry. Firstly, farmers from Group A could list many reasons for trees being important to them as individuals and as a household. However, these AEP farmers tended to perceive the importance of agroforestry in terms of tangible "products"; in other words, as woodfuel, timber, poles or fodder.

Table 6.10 Importance of Agroforestry to AEP-Assisted (Group A) and Non-AEP-Assisted (Group B) Farmers

Importance of Agroforestry	Number of farmer responses					
	Group A			Group B		
	Males n=19	Females n=35	Total n=54	Males n=20	Females n=22	Total n=42
Woodfuel	10	27	37	13	22	35
Establish fences/ boundaries	15	9	24	15	5	20
Sale of timber/ poles for construction, furniture, boats, etc.	17	6	23	11	7	18
Poles/wood for house or granary construction, etc.	12	10	22	9	8	17
Soil fertility or conservation	7	9	16	7	13	20
Alternative sources of fodder	9	2	11	7	1	8
Fruit and food	1	4	5	2	6	8
Medicines	0	4	4	1	5	6
Wood for household utensils, farm implements, own furniture, etc.	2	1	3	2	2	4
Aesthetics/ shade	1	1	2	4	3	7
Trees "bring rain"	0	1	1	1	4	5
Traditional practice since "time immemorial"; "God's will"	0	1	1	2	3	5
Charcoal for own use or sale	1	0	1	4	0	4
Beekeeping	1	0	1	0	0	0
Marking graves	0	0	0	0	1	1
Learned the importance at school	0	0	0	1	0	1
Total no. of responses	76	75	151	79	82	159

Note: Farmers may have provided more than one answer.

Source: In-depth farmer interviews, 1995 (NUD*IST, node "agroforestry/importance").

This suggests that, to a certain extent, both male and female farmers who had once been involved in the AEP expressed their motivations for agroforestry on the basis of what they had experienced in the past as members of the project. In contrast, farmers in Group B valued many of the same tree products but also listed a wider range of motivations for tree planting.

Secondly, some responses by female farmers were quite different from those by male farmers, in both groups. The answers by women that trees are important because they conserve soil and “could bring rain” are relevant examples. In one elaboration of her answer, a farmer related her belief that trees could be sacred and that within a grove of trees (*embho*) rain was created through a link with God and ancestors (see also, Hambly, 1992:108).^{xxv} Male farmers were less likely to elaborate on metaphysical meanings for trees. The difference between male and female attitudes was also evident in their attention to certain tree products or agroforestry activities. This finding matches that in other studies which have pointed to the “gendered” nature of farmers’ perspectives on agroforestry (Rocheleau, 1990). This proposition implies that due to socially constructed roles and gender relations, male and female farmers may have greater control or strategic interest over a certain tree product. In the case of the data presented in Table 6.12, this is evident in men’s emphasis on boundaries around fields or the compound, poles and timber for sale and wood for house construction, and women’s emphasis on woodfuel, fruit and food, soil fertility and medicine.

Thirdly and finally, it was found that female farmers' motivations for involvement in agroforestry could vary because of the influence of other social relations defining the relevance attributed by various rural women to a certain tree product. The diversity of interests among women requires more than disaggregation of data based on sex of the respondent (male or female). However, it was not realistic to examine in depth every example of the "importance of agroforestry" and cross-reference it with the multiple socio-economic characteristics of the farmer and her household. For the purpose of illustrating farmers' diversity of interest in agroforestry, even among women farmers, the author chose the most frequent "gendered" motivation identified for agroforestry (i.e. woodfuel) and analysed it in depth to explore how different types of AEP and non-AEP female farmers perceived its importance. The selection of this example also seemed relevant because the AEP was designed to partly address the "woodfuel crisis" in western Kenya, and woodfuel was considered by the project planners to be an issue of relevance to women farmers (Vonk, 1983; Thrupp, 1984).

6.4.1 "Gendered" Motivations: The Example of Woodfuel

Motivations for tree planting and agroforestry should vary among women if the analysis of gender relations is based on the premise that women cannot be viewed as a homogeneous social group. Do important differences exist between female farmers, and even women in the same household, concerning farmers' motivations for agroforestry? To address this question, the author identified how female farmers involved in this study perceived the issue of woodfuel. This example is relevant because the collection of firewood and its use

is often stated as a primary role and responsibility of women (Chavangi *et al.*, 1985; Bradley, 1991).

Woodfuel refers to wood when it is used for charcoal production and as firewood. We have seen from the data presented above that woodfuel featured prominently in AEP and non-AEP farmers' perceptions of the importance of trees and agroforestry. Charcoal production was also identified as a motivation for agroforestry by male farmers, and an activity reportedly performed mainly by men. This situation partly arises because men have the right to harvest large, mature trees and therefore control the income generated from the sale of larger quantities of charcoal. Generally, women in both groups did not consider charcoal production to be one of their motivating factors for practising agroforestry. It was noted, however, that non-AEP male farmers expressed considerably more interest in charcoal than AEP farmers did. In one case, a non-AEP farmer had generated over 6,000 K/sh (approximately CAD\$160) in 1994/95 from charcoal produced from trees (eucalypts) planted ten years earlier. He also remarked that he knew that the government opposed the production of charcoal, but said that he was only going to use it for on-farm purposes and would replace the trees that he harvested. The chief had warned him already that he should not burn indigenous species of trees. Nevertheless, in the discussion with this farmer and his two wives, it was noted that his first wife also purchased fish, fried it and re-sold it locally. She reported using only on-farm sources of charcoal and firewood for both domestic purposes and her small enterprise. This was a case of how farmers can evade interference from the State and its officials while still

obtaining benefits from “illegal” activities. In addition, farmers also trade in charcoal by purchasing a 20 kg sack of it, dividing the contents into small portions and reselling the charcoal for a small profit (see Annex 6 for price information). For example, one female farmer who sells charcoal in Boro town reported that the “illegal” marketing of charcoal had led to locally produced charcoal being passed off as imported. A similar report was given by a female AEP farmer who did not produce charcoal on her farm, but whose co-wife traded in larger quantities of charcoal at Usenge on the shores of Lake Victoria. Women farmers can therefore negotiate an opportunity for themselves within a gender division of labour in which men take charge of charcoal production and women then sell the charcoal and circumvent State policy against its production and sale from local sources.^{xxvi}

Firewood is also a gender issue in Siaya District. Not only do men rarely admit to collecting firewood, women overwhelmingly reply that they are responsible for firewood collection. The main source of firewood accessed by farmers comes from on-farm sources, as shown in Table 6.11.

Table 6.11 Main Source of Firewood Accessed by AEP (Group A) and Non-AEP (Group B) Farmers

No. of Farmers	Group A n=54	Group B n=42
On-Farm	43	30
Off Farm	8	9
Buy/exchange	2	3
No answer	1	0

Source: in-depth farmer interviews, 1995 (NUD*IST, node “source of firewood”).

The main difference between the two groups of farmers involved in this study is that non-AEP ones make greater use of off-farm woodfuel than the farmers previously involved in the AEP. This was to be expected, given the likelihood that trees planted during the 1980s were mature by the mid-1990s and farmers were deriving benefits such as woodfuel from those trees. In the interviews, 87% of AEP farmers responded that agroforestry had increased the amount of woodfuel available to them. Only 4% of AEP farmers felt that the woodfuel situation had not changed since they had started practising agroforestry.

Yet, in analysing the discussions with AEP and non-AEP farmers on the importance of trees and agroforestry, the author found two interesting differences in the qualitative data about farmers' opinions on agroforestry and woodfuel. Firstly, there were more complaints about the availability of off-farm woodfuel from women who did not have resident children old enough to assist in the collection of firewood about. The women respondents (with and without a resident husband) remarked that since children had been sent to school, they were no longer able to assist in the time-consuming task of collecting or cutting firewood. Secondly, gender issues surfaced with regard to firewood collection and woodfuel availability among women of the same household that were related to the age and status of the wife in the household. This included wives within a polygamous household and mothers/daughters-in-law within the same monogamous or polygamous household. While there is insufficient data to explore the latter relationship in depth, the study did identify the importance of intra-household relations concerning woodfuel within polygamous households.

In polygamous households, each wife is responsible for securing the livelihood of her own house, but co-wives may reciprocate and share other tasks such as the collection of firewood and water. For the short periods of time in which the team interacted with co-wives of the same household, few cases were found of co-wives not co-operating with each other in most agriculture-related activities. However, this does not mean that co-wives have the same authority or responsibilities. For instance, in five interviews with AEP and non-AEP farmers it was noted that younger wives and daughters-in-law were given primary responsibility for collecting firewood. Another example of gender relations between women concerning woodfuel was reported as follows:

Margaret abandoned alley-cropping because her sister-in-law returned to the husband's paternal household in 1993 after the death of her husband. Her sister-in-law needed the land for cultivation and Margaret could not convince her of the benefit of the alleys, so they were removed. Margaret complained that there is a deficit of on-farm woodfuel and she must now collect firewood from off-farm.

In David and Swinkels (1994:8) the relevance of relations between women of the same household is neglected. Although polygamy among rural households in central Kenya is less common, Dewees (1993) does not identify the significance of polygamy when he positively correlates farms with woodlots having 17% more residents than households without a woodlot. The advantage of a gender relations perspective can therefore be seen in exposing the myth that all women are equally concerned about firewood. The results of the current study suggest instead that some motivations for agroforestry, such as production of firewood, are gendered issues influenced by the power relations between women as well as non-reciprocal gender roles of women and men. If

such a perspective is taken, women are not situated as passive victims of the “woodfuel crisis” but rather become active negotiators of gender roles and relations. Farmers, both male and female, may also evade certain policies of the State that interfere in their interests to produce, market and use charcoal. Re-evaluation of the “woodfuel crisis” in Siaya District by investigating such gender relations in greater depth would be a relevant area for further research.

6.5 Farmers’ Constraints to Practising Agroforestry

Agroforestry research in western Kenya by Chavangi, *et al.* (1985), Rocheleau (1989), David and Swinkels (1994) and Scherr (1995) has shown that farmers’ motivations for tree-based activities may be constrained by a number of different factors which implicate gender relations at the inter- and intra-household levels. Such constraints have been found to include availability of and access to resources (land, labour, capital and time) as well as disincentives to tree planting such as controls on cutting of trees, decision-making rights in the household and the use of the on-farm or off-farm trees. In the conceptual framework of this study, it was recognised that a distinction between gender needs or constraints that are *strategic* (long-term, politically rooted) and *practical* (immediate or basic) is recommended in gender analysis (Young, 1988; Moser, 1993). This identification of the two levels of constraints or needs by women and men highlights both divergent and complementary goals of men and women in a particular society or within the context of a particular land use system such as agroforestry (Feldstein *et al.*, 1989). However, some field-level application of the concept of strategic and practical gender needs has found that

farmers may not necessarily differentiate between practical and strategic needs or interests because their perception may be that neither can be separated from the other (Hambly, 1992:145-7).^{xxvii} In this study, therefore, the author was conscious of the difference in and complementary nature of farmers' needs or constraints in the practice of agroforestry, while keeping in mind the results of earlier research suggesting that farmers' perceptions and actions may simultaneously address both levels of needs or constraints. Tables 6.12 and Table 6.13 list the constraints reported by farmers in their practice of tree planting and agroforestry.

It was found that all farmers who had once been involved in the AEP could specify what they needed, but often their statement of needs related directly to what they expected development organisations to provide to them. This included the inputs that the farmers had once received from the AEP as individuals (e.g. seedlings) or as members of a women's group (e.g. a wheelbarrow). As one female farmer bluntly stated, "We need polybags and water to grow the seedlings, why can't AEP help us?" The research assistant who conducted this interview later wrote in her notes, "... the farmers are testing you, they have heard something and want to know if it is true, they are all wondering why the project stopped, and were other farmers left out too?"^{xxviii} Such statements are responses that relate to a practical need in agroforestry such as polybags or tree seedlings, but they are also a statement of a strategic gender need – access to resources provided by a development project.

Table 6.12 Constraints for Agroforestry Among AEP Farmers (Group A)

Constraints	No. of finds* n=54
Tree seedlings – access and availability of low-cost tree seedlings <ul style="list-style-type: none"> • Emphasis on availability, by men (5) • Emphasis on low cost, by women (5) and men (4) 	18
Labour/ time <ul style="list-style-type: none"> • Emphasised by women (13) • Emphasised by men (3) 	16
Active women's group (women only) <ul style="list-style-type: none"> • Emphasis on accountability/ trust (3) • Emphasis on laziness of members (2) 	10
Technical assistance <ul style="list-style-type: none"> • Emphasis on continued extension support from AEP, by men (4), and by women(3) • Emphasis on serious extension workers, by a woman (1) 	5
Pesticides to control termites <ul style="list-style-type: none"> • Emphasis on cost, by men (3) • Emphasis on knowledge of pesticides, by a woman (1) and by a man (1) 	5
Lack of polybags, tools or other implements (as provided earlier by the project) <ul style="list-style-type: none"> • Emphasis on lack of donkey cart, by a man (1) or wheelbarrow, by a man (1) and a woman (1) • Emphasis on lack of polybags, by women (3) 	5
Lack of land/ land converted to other purposes (crops only; house construction), by women (4)	4
Other reasons (illness & death/relocation of farmer), by women (3)	3
Lack of market for selling agroforestry products, by women (3)	3
Lack of water/ adequate rain, by a man (1) and a woman (1)	3
Nothing is needed; can go ahead on own, by a man (1)	1

Note: * 100% response rate; some interviewees provide more than one response.

Source: In-depth AEP farmer interviews, 1995 (NUD*IST, node “needs”).

AEP farmers were found to be particularly outspoken about their agroforestry needs. This situation was apparent when the author compared responses from farmers in Group A with those from farmers in Group B (Table 6.13).

Table 6.13 Constraints for Agroforestry Among Non-AEP-Assisted Farmers (Group B)

Constraints	No. farmers* n=42
Lack of labour/ time, by men (5), women (2) • Emphasis on loss of child labour, by women (2) • Emphasis on lack of cash for hired labour, by women (2)	11
Lack of land, by men (3), women (3) • Emphasis on land disputes, by a woman (1)	7
Lack of market for selling agroforestry products, by men (3) • Emphasis on market for fruit, by women (2) • Emphasis on market for timber, by men (2)	7
Lack of water/ adequate rain, by a man (1) and by women (5)	6
Lack of manure for soil fertility, by a man (1)	1
No needs indicated, by men (2) and by women (6)	8

Notes: * 93% response rate; some interviews provide more than one response.

Source: 1995 in-depth non-AEP-assisted farmer interviews (NUD*IST, node "needs").

It was found that, in general, farmers who had not been involved in the AEP (Group B) were less inclined to link material support with their agroforestry needs and constraints. Also, in contrast with AEP farmers, farmers in Group B reported substantially fewer needs for tree planting and agroforestry. Non-AEP farmers did identify needs that AEP farmers did not report, such as the need for animal manure to improve soil fertility, but they were also more likely to report they had "no needs" for tree planting and agroforestry. This difference between the answers received from Groups A and B may be explained in two possible ways. Firstly, it could reflect the perception of non-AEP farmers that tree planting

and agroforestry do not require special inputs as compared with other on-farm activities.

In other words, non-AEP farmers believe that a development project is not required to help them plant trees or integrate trees into their cropping and livestock practices.

Secondly, this finding could also reflect the unfamiliarity of non-AEP farmers with “new and improved” agroforestry (e.g. alley-cropping, mulching with tree foliage, etc.) because, according to AEP farmers, the technologies do require at least some additional planning and resources (i.e. labour).

The investigation into the constraints to agroforestry among the two groups of farmers also provided an answer to the question of whether or not there were substantial gender differences between farmers, for instance between different types of women, or between women within the same household. Simple disaggregation of responses received from male and female respondents indicated that some issues were of greater concern to women than to men in both Group A and Group B. For instance, women farmers were more aware and vocal of the constraints associated with their practice of agroforestry. Also, whereas male farmers could cite one primary constraint, female respondents were less likely to give only one answer. In general, female respondents did not find it difficult to articulate their needs. Indeed, AEP women farmers expressed strong concerns regarding the constraints imposed by the collapse of women’s groups, the need for “serious extension workers” and the lack of access to land and markets for agroforestry products. Nonetheless, for the purposes of this analysis, the lists of “needs” are limited because they do not identify the differences between women concerning a particular constraint to

agroforestry. Therefore, in the same way that woodfuel was examined earlier as a “gendered” motivation for agroforestry, the primary agroforestry need or constraint identified in the data analysis – labour – was explored as an example of how women farmers may differ in their agroforestry needs.

6.5.1 “Gendered” Constraints: The Example of Labour

Although not all farmers perceived agroforestry as increasing the demand for labour, among those farmers who did, most were women. Unlike male farmers, women farmers in both groups were generally inclined to view agroforestry as increasing their labour requirements (Table 6.14). One farmer said that her farm required the labour of at least three people in the peak seasons of cultivation, planting and weeding to maintain two acres of alley-cropping with maize and beans.

Table 6.14 Labour Requirements for Tree Planting and Agroforestry

Labour	Number of farmer responses					
	Group A			Group B		
	Males n=19	Females n=35	Total n=54	Males n=20	Females n=22	Total n=42
Increased	7	12	19	4	10	14
Decreased	8	7	15	1	0	1
Remained the same	3	16	19	11	9	20
Don’t know/ no answer	1	0	1	4	3	7

Source: Farmer in-depth interviews (NUD*IST node “needs/labour”).

In Siaya, gender relations structure agricultural labour in at least two ways. Firstly, there is a division of roles between men and women, and secondly, women perform more agriculture related tasks and spend far greater amounts of time on these tasks than men do (Martin, 1990; Ayiecho, 1991). Women are largely responsible for over 80% of on-farm

labour in Siaya District, and certain tasks such as planting, weeding and collecting woodfuel or water are almost entirely their responsibility (Republic of Kenya, 1994a). In 1994, the Rural Employment Survey conducted in Siaya by the Central Bureau of Statistics identified the gender roles associated with many off-farm agriculture-related tasks, including marketing of food crops, fruit and woodfuel, and hiring out of the farmers' labour to neighbouring farmers (see Figure 6.4). Men were found to spend more time on non-farm activities, including social activities and local off-farm employment.

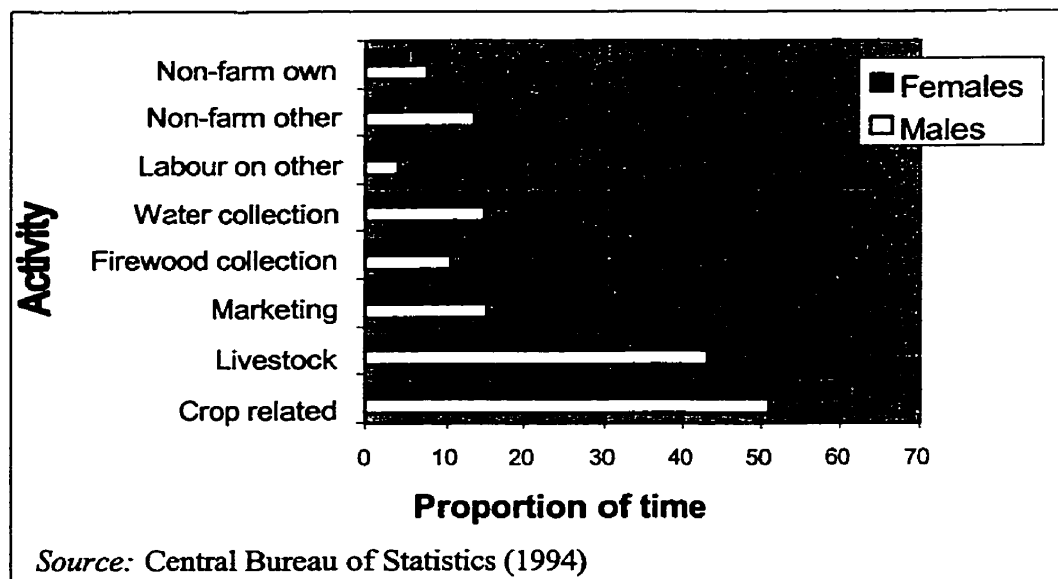
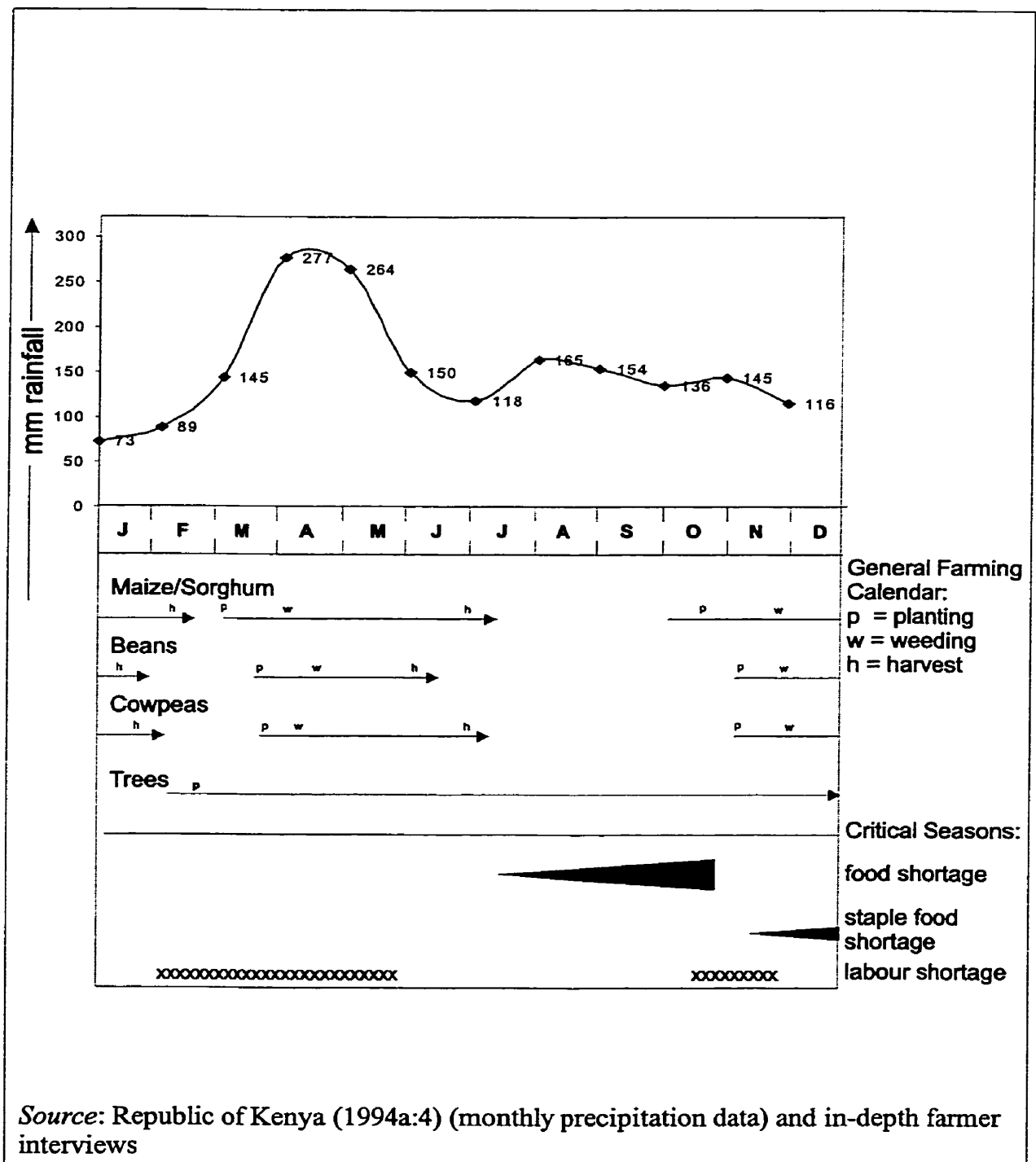


Figure 6.4 Proportion of Time Spent on Farm-Related Activities

Demands for both men's and women's on-farm labour in Siaya vary according to ecozones. Figures 6.5 and 6.6 provide a general illustration of the peak periods of labour shortage for areas of Siaya with the highest rainfall (e.g. Yala Division), and areas of the district with the lowest rainfall (Usigu Division). By examining cropping patterns in these two relatively extreme agro-ecological conditions, it was found that labour demands per acre can be expected to vary according to availability of rainfall and crop type. However, as previously discussed, farmers in higher-potential areas generally cultivate smaller plots of land than farmers in drier areas of Siaya. Also, while labour demands are high in both divisions, the patterns illustrated in Figure 6.5 and 6.6 reflect considerable seasonal variation.

Certainly, the gender roles in agriculture prescribed for male and female farmers in Siaya District reflect further variation at the level of the individual household and farmer. Over two-thirds of the farm households involved in this study rely mainly on labour from within the household itself, including tasks performed by men, women and/or children. Yet, even among female-only households, where a husband is non-resident, some households are more disadvantaged than others in terms of access to labour. Table 6.15 summarises the extent to which women-only households have made use of different sources of labour.



**Figure 6.5 Seasonal Calendar: High Potential Ecozone
(St. Mary's School, Yala Division)**

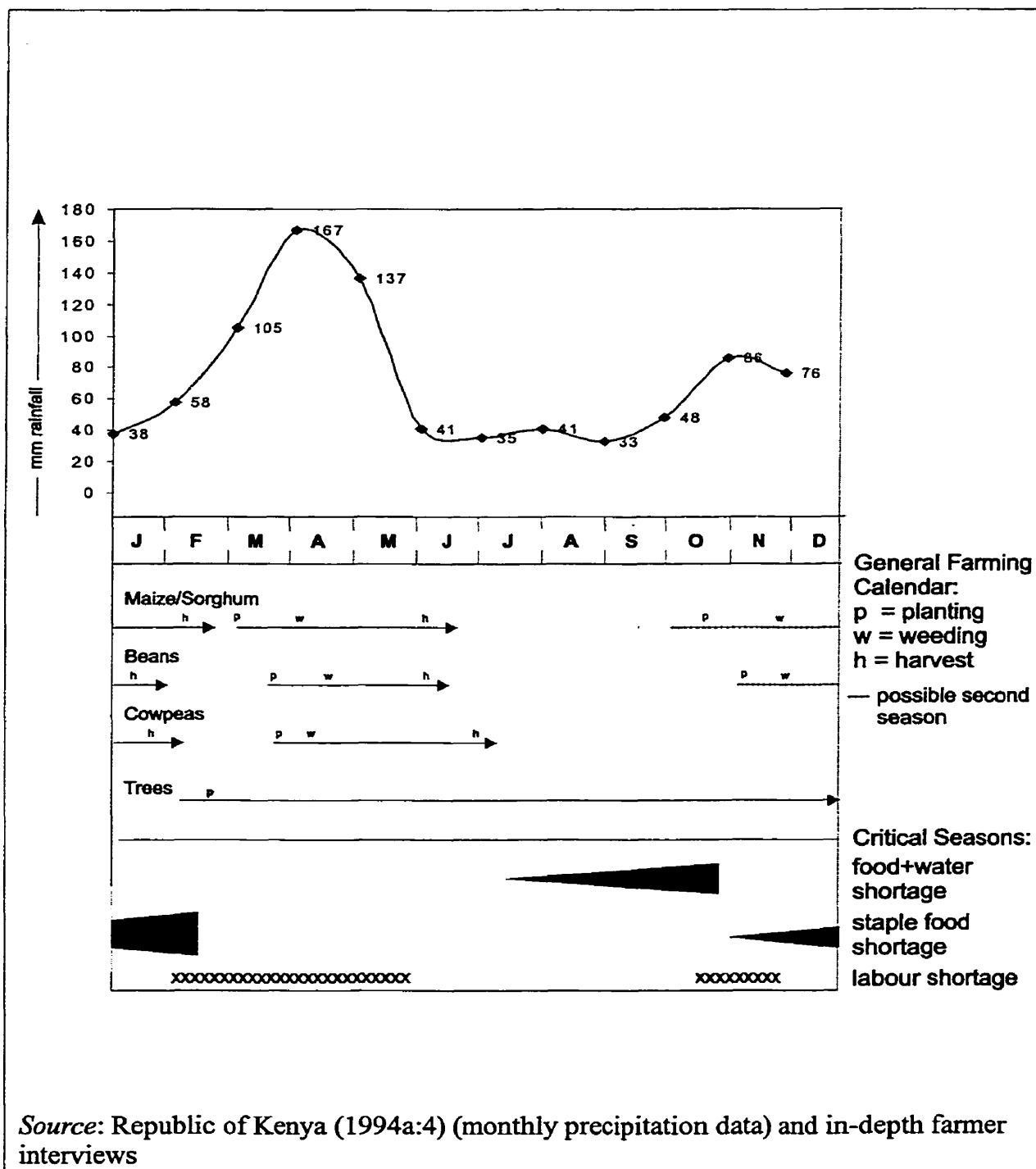


Figure 6.6 Seasonal Calendar: Low Potential Ecozone (Maseno Dispensary, Usigu Division)

Table 6.15 Source of Labour Accessed by Women Farmers

Primary Source of Labour	Female-Only Households (%)			
	Group A (n=30)		Group B (n=17)	
	Widows	Women without resident husbands	Widows	Women without resident husbands
Female only (one adult female)	23	13	47	23
Family*	26	20	11	17
Hired labour	6	10	0	0

Note: * Defined as more than one adult and children working together in the same fields.

Source: Farmer in-depth interviews (NUD*IST, node “needs/labour”).

These data suggest that farmers’ identification of labour as a primary need for agroforestry varied further when the needs of different types of women farmers were examined. Women farmers in Group A were found to be relatively more advantaged in terms of access to labour than those in Group B. Women farmers in Group A who hired labour were both monogamous and polygamous households; however, in Group B, even polygamous wives said that they worked alone, without assistance from other family members. The households with the highest labour deficits were observed to be those where the widow was monogamous and could not afford to hire labour. This finding reinforced the argument that some of the most resource-poor women farmers in Siaya District are widows without resident adult children (especially daughters-in-law).

These data cannot explain why co-wives or mothers and daughters in female-only households interviewed in Group A work together and share farming tasks. They are

discussions of gender relations where numerical values provide limited insight into the relations between women of the same household. Possibly, the female farmers in Group A worked more co-operatively partly as a result of their greater involvement in women's groups activities. On one hand, membership in women's groups that were part of the AEP may have led to female farmers' working together on several on-farm tasks. On the other hand, a predisposition to work together could have encouraged the women to join the AEP women's groups in the first place (as discussed further in the next chapter).

Of all the households involved in this study, approximately 37% of farmers in Group A and 19% in Group B reported hiring additional farm labour.^{xxix} Among non-AEP farmers, there were no female-only households that depended primarily on hired labour (see Table 6.15). It was also found that the situation of hired labour in Siaya reinforces a gender division. Female farm workers are hired for tasks involving hoe cultivation whereas cultivation by oxen-plough or tractor involves the hiring of male labourers, usually two or three men. Yet the author found that three-quarters of all women farmers who hired labour did not hire men, but other women labourers who were co-members of their women's group. This practice is referred to as *saga*, or collective labour. Male farmers sometimes preferred to hire women labourers for tasks such as hoe cultivation and almost entirely for weeding. However, over half of the male farmers in both groups reported hiring men and oxen-ploughs for cultivation when funds were available.

6.5.2 Response of Women Farmers to Labour Constraints

In this study, we recognised that women farmers are not willing victims of what Tinker (1991) has termed “the other energy crisis” that forces women into work from which they cannot escape. Farmers, especially women farmers, respond to demands on their labour, and therefore act in response to practical and strategic constraints they experience. When asked about their labour constraints in agroforestry and agriculture-related activities, most women farmers remarked that they would reduce labour costs as much as possible (by using less labour) rather than use scarce cash income earmarked for other needs such as payment of school fees. It was also found that the ways in which women save on labour are highly varied and are adopted in response to certain constraints experienced at the household level. For example, interplanting of food crops (also referred to as intercropping) is perhaps the most common way in which women farmers save on labour as they are overwhelmingly responsible for three interrelated tasks: seed production (including selection and storage), planting and weeding. Intercropping of at least two crops at the same time (most commonly beans and maize) was practised by all farmers involved in this study. Intercropping is preferred by farmers because it reduces the time and energy spent on planting and weeding and produces a diversity of crops for household consumption and, possibly, local sale. Intercropping is the most obvious example of labour-saving agricultural activities in Siaya District and it is acknowledged in the literature on small-scale agriculture in Siaya (Republic of Kenya, 1994a; Ayiecho, 1991).

However, in this study it was possible to identify several other planting techniques employed to save on the use of scarce resources such as labour (Table 6.16).

Unlike intercropping, which was found to be recommended for crops such as maize and sorghum and beans or cowpeas by district agricultural extension workers and the AEP, some of these other planting techniques are not considered to be compatible with agricultural and agroforestry extension advice (personal communication, District Agricultural Officer, 1995). Farmers, on the other hand, may have a different perspective:

In 1986, the Ministry of Agriculture forced us to plant in lines. That year there was a total crop failure. The community perceived this as due to planting in lines. Other farmers say that although they can slowly adopt the ruler and string (line-planting method), they still want to broadcast the seeds, especially for small-seed crops.

Jerusha Anyango, Boro Division (age 58)

Not only do farmers sometimes resist certain agricultural advice or try to get around it by slowly changing their planting practices, they may also reject the advice because they perceive it to be incompatible with their planting material. Comments from farmers who practise broadcast seeding indicated that this form of planting is exclusively used for local seed. In other words, the author found that no farmer who practised broadcast seeding planted hybrid maize seed. Indeed, 80% of AEP farmers and 85% of non-AEP farmers used local maize seed produced, sorted and stored from the earlier harvest.

Table 6.16 Labour-Saving Options Used by Women Farmers in Siaya District

Name of technique	Number of Finds AEP (n=54) and non-AEP (n=42)	Description	Agroecological zone	Comments
Broadcast seeding (koro, literally "throwing")	41	Seed is cast by hand then covered with feet or hoe	Common throughout Siaya District	Preferred for millet and sorghum; sesame; maize and beans
"No tillage" (baba ongogo)	15	Soil is not broken or ploughed, but rather loosened by hoe, the seed is planted and the untilled soil cover replaced	Most common in the medium- and low-potential agro-ecological zones	Sorghum, maize, cowpeas
Drilling (komo gi dhiang)	16	Seed is planted as digging or ploughing takes place	Common throughout Siaya District	Most crops
Dibbling (komo panga)	29	Using a stick (for small seeds) or panga (machete, for larger seeds) to plant; this technique is often used after the maize seed has germinated to intercrop beans or cowpeas	Common throughout Siaya District	Groundnuts, sesame
Ratooning (orowe or nyarera)	5	At harvest time, the head of sorghum is cut but the plant is not uprooted, so the plant regrows a second head of sorghum or ratoon	More common in Ugenya and Ukwala; short rains only	Sorghum; may be used for seed production and as a buffer crop to prevent famine
Continuous cropping (oduoko literally "returning")	12	Uprooting the plant and immediate replanting; some farmers plant the cutting on a slant	Ugenya; Yala; Wagai; but for cassava in all parts of Siaya	Cassava, sweet potatoes, arrowroot

Admittedly, as 43% of all farm households involved in this study practise broadcast seeding, it is an important but somewhat less likely form of planting the major cereal and legume crops. The relevant finding was that among 47 female-only households examined in this study, 87% stated that they used broadcast seeding. These farmers were asked why they preferred broadcast seeding and how the technique had been influenced by advice they had been given about alley-cropping using the “ruler and string” line formation. Five cases were identified of former AEP women farmers disagreeing with the AEP’s advice to row-plant maize and bean crops within the tree alleys.^{xxx} In all five cases the farmers had abandoned alley-cropping, at least partly because they preferred broadcast seeding to save valuable time during the long, and especially the short rains.

This is not to say, however, that only women farmers are convinced that broadcast seeding is a relevant and important traditional technique upon which they depend. Perhaps one of the most interesting interviews involved a farmer reporting an experiment he had conducted with his wives to determine whether or not line-planting maize and beans led to greater yields than broadcast seeding. The farmer conducted the experiment during the 1992 long rains season to check whether his wives’ desire to use broadcast seeding was justified. This unusually resource-rich and gregarious farmer

... compared planting in line and broadcasting on an experimental basis, applying the same treatment on the fields. In the long rains, in 1992, the farmer applied seven lorry-loads (i.e. seven tons) of manure on the one-acre field. Manure was broadcasted and then ploughed into both plots. He divided the one-acre field into two equal parts, one planted maize in line and the other broadcasted. In the line-planted portion of the field, the distance between the rows was 0.75 metre and maize plants were 30 cm apart in the lines. Beans were planted 15 cm apart in the row within the lines of maize.

In the other half-acre of the field, maize and beans were broadcasted by the second of the farmer's three wives. Later in the season, the two plots were weeded at the same time using hired labour. They were weeded a second time, again using hired labour. The maize/beans planted in line were not thinned or gapped. In the broadcasted portion of the field, the weak plants were thinned according to the traditional practice of broadcasting to allow better spacing and growth, and therefore, strong plants. The farmer remarked that this is important when using local maize and bean seed because stronger plants tend to produce better seed. At the end of the season, the farmer found that the yields from the broadcasted fields were seven bags of maize and two bags of beans and the line planted yields were 5.5 bags of maize and 1.75 bags of beans. The farmer and his wives were convinced that they should continue to broadcast-plant their fields.^{xxi}

The team's experience in examining farmers' planting techniques in greater depth and understanding their link to seed type and production and other tasks such as weeding, suggested that relatively little is known about the incompatibility of alternative planting techniques with agricultural and agroforestry extension advice. This contradiction has led to farmers' abandoning certain practices such as alley-cropping and sustaining agroforestry practices such as random planting of trees in fields, in which case the broadcast seeding of crops would be compatible. Further research in this area of alternative planting techniques would also be useful to understanding how women's interest in saving labour and their knowledge of broadcast seeding have reinforced certain agricultural practices such as the use of local seed and thus the preservation of genetic resources. In this example, it is also seen that women farmers address both their short-term practical needs for food, shelter and income, as well as their strategic, long-term needs as active agents of agriculture and not passive victims of resource constraints.

6.6 Summary

In this chapter, the presentation and discussion of results from fieldwork conducted in Siaya District involving AEP and non-AEP farmers supports the premise that gender relations in agroforestry would be poorly understood if they were simply reduced to relations between men and women. The author's findings suggest that differences such as marital status, non-residency of a husband, polygamy and other characteristics of farm households in Siaya are vital to understanding how and why agroforestry is implemented at the household level. However, it has also been recognised that the relations among men and women, as well as between female farmers, are structured in terms of power whereby certain social identities, including age, marital status and relative access to resources such as land and labour, can dominate relations among farmers.

In this chapter, we have investigated how the implementation of the AEP affected individual farmers and their households. Through examination of farmers' motivations and constraints, we have explored how the project's emphasis on agroforestry as a set of economically and environmentally sustainable land use technologies was reinforced or divorced from farmers' own internalised meaning for agroforestry. This is a cognitive process which underlies the significance of certain rules and roles in agroforestry to individual farmers. This level of institutionalisation holds important lessons for how scientists and development planners perceive agroforestry adoption and its sustainability as a land use system. We shall return to some of these issues in Chapter 8.

However, it is first critical to understand that the implementation of the AEP and its contribution to institutionalising agroforestry at the local level is only in part related to gender relations and farmers' actions at the intra-household level. Equally important is the experience of farmers within the women's groups that were part of the Agroforestry Extension Project in Siaya District. This is the focus of the following chapter.

NOTES

ⁱ In pre-testing the questionnaire the author found that it was necessary to ask three questions because of the various translations in *Dholuo* for "head of household". The questions included: *ngano ma chiwo chik e dala* (who is in charge of the home), *ngano ma ngado rieko e tije mag dala* (who makes decisions in the home), and *ngano ma ngado rieko kuom tije mapile* (who makes decisions about daily work).

ⁱⁱ In two cases, female respondents gave the same reply and both were monogamous wives of less than 35 years of age.

ⁱⁱⁱ In one case, the husband was separated from his wife, and in the other case the wife had died.

^{iv} Dewees (1993:12) also found that 30% of households (n=80) he surveyed in Central Kenya were headed by women. David and Swinkels (1994:8) also identified women-headed households as composing 30% of their sample (n=30).

^v However, Ayiecho (1991) believes that the population of women in Siaya District is probably more than 60%.

^{vi} The age range in Group A was 28-75 and in Group B 20-77.

^{vii} According to Sara Scherr, the identification of farmers' use of "other land" and the author's critique that this had been missing from earlier assessments of agroforestry adoption, was one of the most important findings of the author's Masters research.

^{viii} Eight of the 11 respondents from both groups were widows. Six of these widows were in monogamous households, two were in polygamous ones (two wives in each). Three women had husbands who were non-resident, one of whom was working and who did not send remittances to his wife.

^{ix} The non-ICRAF studies were Ayiecho (1991), Suda (1991) and Scherr and Alitsi (1990).

^x In the design of the research method for assessing agroforestry adoption in the AEP, Scherr *et al.* (1990) report that this indicator was combined with the enumerator's (AEP extension worker's) subjective assessment of the wealth of the particular household. While this is a rapid technique for assessing wealth, it is not altogether reliable because, in the author's experience, CARE has consistently stated that it works with the "poorest of poor" farmers, although this has been questioned by other agroforestry researchers including David and Swinkels (1994). Extension workers may feel they must support their employer's statement and under-estimate the wealth of participating farmers.

^{xi} This grass, known locally as *buoywe*, is the most commonly used, especially for thatching houses. However, some farmers, particularly those near wetlands and the lake shore, also use other types of grass.

^{xii} This view is influenced by discussions on the concept of sustainability in agriculture as "an ability to continue" (Hansen, 1996:128), the discussion of the historical background to adoption-diffusion research by Ruttan (1996) and the definition of adoption offered by Alston *et al.* (1995). The agroforestry adoption studies of the AEP have been mainly based on farmers who were still participants in the project (Alitsi and Oteku, 1989; Scherr *et al.*, 1990; Scherr and Alitsi, 1990; Scherr, 1995).

^{xiii} As described in Chapter 3, the 1991 interviewees were a sample of 38 AEP farmers selected from among the 234 AEP farmers in Siaya interviewed in the CARE/ICRAF adoption survey (the CARE AEP Impact Survey published by Scherr and Alitsi, 1990, and later discussed in various publications by Scherr). The 1991 sample also included a further 17 "special interest" AEP farmers who represented different types of households; they answered the same questionnaire, but with specific attention to gender relations and the position of women. They included households differentiated by marital status (widows, and homes with resident and non-resident male, monogamous and polygamous) and age of the farmers (above 65 years of age and below 30 years of age). The intention was to re-interview all 56 households in 1995; however, two households no longer able to participate, and therefore the number of AEP farmers interviewed in 1995 was 54.

^{xiv} This question is 6a) on the questionnaire.

^{xv} See Annex 1 for an explanation of the structure of agroforestry as the nature of its components and its arrangement, and the function of agroforestry (its productive and protective uses).

^{xvi} One of the most common alley-cropping species, *Leucaena* has been struck by *psyllid*, a predatory insect whose infestation reduces leaf litter and results in poor growth of the trees. Four farmers reported that this infestation had led to their removing the alleys, but most farmers had removed the alleys because of the labour-intensive

requirement of pruning foliage and roots, and more so, competition between the tree alleys and crops.

^{xvii} This study used the conversion figure of 2.5 acres per hectare. Farmers do not speak of hectares but acres, and therefore this unit of land measurement was also used. It was verified by research assistants by using the common extension worker measure of one acre equal to pacing 70 x 70 yards.

^{xviii} All of these species have been introduced to Siaya District. *Gliricidia sepium* comes originally from Central America and is preferred for live fences because it spreads quickly, fixes nitrogen and its leaves can be used as fodder. It is a good windbreak and firebreak and can often be seen planted around compounds. *Grevillea robusta* is an exotic from Australia and was originally introduced as a shade tree for coffee. Farmers like it for the shade it provides to compounds and cattle sheds. *Cassia siamea* is preferred because it grows well on poor soils and is generally avoided by grazing animals; hence its usefulness along borders or fences. This species comes from southeast Asia.

^{xix} The author could not locate any secondary literature to support the farmer's belief that termites do not infest wood that comes from on-farm trees.

^{xx} Fish ponds benefit from trees in several ways, including shade, reduction of soil erosion around the ponds and attraction of insects and birds (insects and bird droppings are eaten by the fish).

^{xxi} Two new questions were added: 1c) Have any trees been planted in the compound since 1991? and 6d) Are you practising any new types of agroforestry?

^{xxii} Depending on agro-ecological zone, it can be roughly estimated that farmers would have had a minimum of four rainy seasons in which to establish trees (and a maximum of eight) between 1991 and 1995.

^{xxiii} Source: Interview transcript, 1995.

^{xxiv} The remaining 2% and 4% of AEP and non-AEP farmers, respectively, did not reply to the question.

^{xxv} In modern hydrology, the function of trees as "moisture pumps" is established, but the link between trees and climate change is not. Farmers, however, believe that trees "bring rain" and that the absence of trees "chases the rains away".

^{xxvi} Actually few farmers involved in this study were found to be engaged in business related to charcoal and firewood. The incentive for business related to charcoal and firewood seems low although prices for woodfuel did fluctuate across the district (see Annex 6). It was observed that farmers had not become involved in the marketing of charcoal for smoking fish in southern Siaya. In some beaches along the Lake, charcoal is

apparently being brought in along with fish from Uganda, and this source of fuel dominates the local market. Due to the cost implications associated with charcoal, most farmers opt to use firewood and not charcoal.

^{xxvii} Question 14 included two parts. The first question asked farmers to list their “primary needs” and the second part asked them to identify their secondary needs in agroforestry.

^{xxviii} Source: Interview transcript, 1995.

^{xxix} Only two farmers hired labourers for the entire season; otherwise, farmers mainly hired labourers for a particular task or in peak periods of the year.

^{xxx} These farmers included three from Boro Division, one from Rarieda Division and one from Ugunja Division.

^{xxxi} This experiment was organised and implemented by Dalmas Otieno of Boro Division. Otieno is a former civil servant with the Forest Department. He is not a typical farmer by any stretch of the imagination. His land is used at the Nyasanga research plot of the AEP project. He has considerable resources available to him and has made substantial effort to attract development projects to his area. He has also participated in at least three research studies in the district, including research by Cohen and Odhiambo (1989).

7. THE COLLAPSE OF WOMEN'S GROUPS

7.1 Introduction

The previous chapter examined the adoption and sustained practice of agroforestry among AEP farmers who had once been participants in the project. This chapter focuses on women's groups that were an "entry point" for the implementation of the Agroforestry Extension Project. It explores the nature of these women's groups, including their membership, leadership and activities. Specific attention is paid to the extent to which farmers continued to participate in the women's groups.

The data analysed and discussed in this chapter include information about 33 women's groups in Siaya District that were part of the CARE AEP in the late 1980s. These groups constituted 69% of the ones involved in the 1989 CARE/ICRAF Agroforestry Impact Survey (Scherr and Alitsi, 1990).ⁱ In-depth interviews with 11 groups and key informants are also analysed. Secondary data was obtained from the register of women's groups at the Siaya District Office and from reports by the Department of Social Services (DSS) in the Ministry of Culture and Social Services (MCSS), which is the government department responsible for policy and affairs related to rural women's groups.

The chapter begins with a discussion of the emergence of women's groups in Siaya and State policy that regulates women's groups through district-level registration and monitoring activities. As noted in Chapter 4, women's groups in Siaya are sometimes referred to as "community groups" or "farmers' groups". In 1988 the AEP replaced the

term “women’s groups” with “farmers’ groups”. As explained in Chapter 5, by 1992, when the project proceeded to reformulate its activities and extension approach, most of these women’s groups were no longer involved in the AEP. The term “women’s groups” is deliberately used in this study for two reasons: 1) the majority of members of rural self-help groups in Siaya are women; 2) the AEP was initiated specifically with the intention of supporting “women’s groups”, although it adopted the terminology “farmers’ groups” as the project evolved. The re-naming of women’s groups by the AEP was based on the argument that men, not only women, were members of the groups. The implications of male (minority) membership in women’s groups, as regulated by the State and acknowledged by the AEP, is a key issue in this chapter and will be discussed later in more detail. Another major issue addressed in this chapter is whether or not women’s groups survived after the AEP ceased all material and technical inputs into their agroforestry activities. The process of group collapse and its implications for project outcomes and the complexity of gender relations in women’s groups in Siaya District are discussed in the final section of the chapter.

7.2 Background to Women’s Groups in Siaya

Collective organisation by women is a long-standing practice in Luo society. Cohen and Odhiambo (1989) suggest that informal social groups have always existed among the Luo and are typically organised on the basis of kinship (the clan or sub-clan) and *osepe* (friendship/neighbours). Women of a *gunda bur*, or communal settlement, engaged in collective agricultural activities (*saga*) well before the advent of the twentieth century.

Age and kinship-based groups involving women were active in traditional social and economic activities, including dancing, brewing of local beer and trading, reports Ocholla Ayayo (1976). Similarly, interviews with elderly female farmers for this study revealed that women married into the same sub-clan traditionally organised “women’s meetings” during family funerals. These meetings involved collection and loans of small amounts of money to one another, and sharing of information about the farming and trading activities practised by the women.

However, such examples of “traditional” collective activity among Luo women should not be assumed to be the origin of all types of collective activity in Siaya in the late twentieth century. For instance, some Luo kinship groups have expanded beyond the borders of Siaya or developed links to a more elite membership. Such groups were the topic of study by Whisson (1964), who identified such Nairobi associations as groups with an identity of “home, away from (rural) home”. Also, some Luo kinship groups may have entirely different interests. Some may engage, for example, in public political and legal battles such as the famous Wambui Otieno case examined by Stamp (1990), or they may operate business networks *cum* soccer clubs as described by Cohen and Odhiambo (1989). These examples suggest that various types of groups or associations exist in contemporary Luo society. The groups we are concerned with in this study are women’s groups that are involved in rural development projects. However, as explained later in this chapter, it is not assumed that overlap is impossible between such “grassroots” women’s groups and other “association”-type groups.

A further difference between past and present women's groups in Siaya is that the current groups were formed and operate within a markedly different context. Women's groups, although organised at the local level, operate in an institutional environment where they have relations with other organisations such as NGOs or the State. At the local level in western Kenya, these relations with the State are mediated by the District Office (Staudt, 1991). Of particular interest to this study is the fact that rural women's groups are viewed by NGOs and the State as a key to the process of institutionalising agroforestry and agricultural development at the local level. The sustainability of women's groups involved in project implementation is argued in this study to be critical to what could be considered the institutionalisation of agroforestry.

7.2.1 Government Policy and Women's Groups in Siaya

Women's groups activities are viewed by the Government of Kenya as the most significant indicators to gauge the involvement of women in national and local socio-economic development (Republic of Kenya, 1994b:256). As vehicles for self-help and income-generation, women's groups are "one of the most significant efforts by rural women to take their affairs in their own hands" (*Ibid*:38). By the mid-1990s, there were an estimated 23,614 women's groups in Kenya, both registered and unregistered, with a membership of 968,941. Men comprise 11% of the membership (MCSS, 1991). Government and non-governmental organisations consider women's groups in Kenya as organisational structures or channels through which development assistance is transferred to the local level.

The first official registration of women's self-help groups in Siaya began in 1964, although legislation to organise women's groups dates back to the early 1930s (Hay, 1976; Strobel, 1976; Wipper, 1984). However, women's social welfare and home economic groups were less active in Kavirondo during the colonial period than in central Kenya (Monsted, 1978; Wipper, 1984; Thomas, 1985).ⁱⁱ It was not until the 1980s that the District Office reinvigorated the registration process for women's groups in Siaya under the District Focus for Rural Development approach.ⁱⁱⁱ As elaborated in the 1991 national policy statement on Community Group Promotion Development,

Group promotion and development is central to the policy which government, through the District Focus for Rural Development Strategy (DFRD), has established to ensure self-reliance and the mobilisation of community efforts to meet collective needs such as education, health care, water supplies, rural access roads and other socio-economic programmes. The principal responsibility for implementation of this policy lies with field staff of the Department of Social Services (DSS) of this Ministry and the success of its efforts is reflected in many thousands of active groups which this Department has promoted and continues to assist (MCSS, 1991:1).

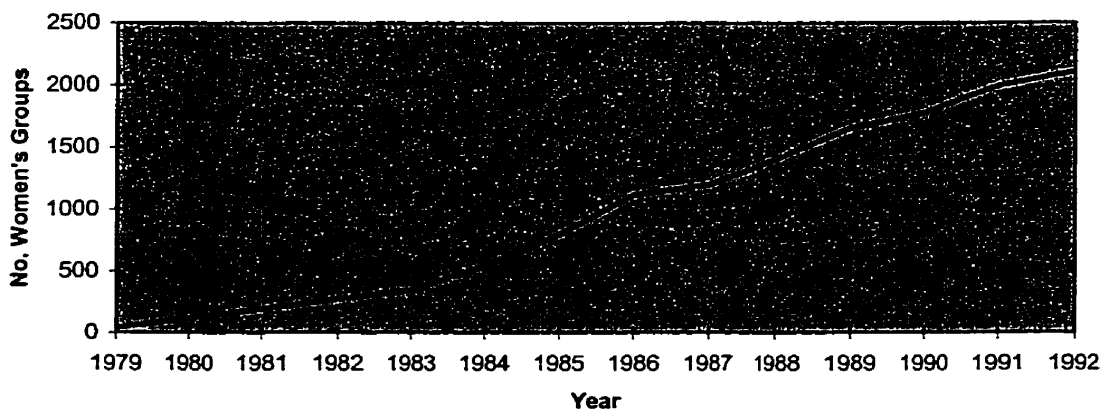
Registration of women's groups in Kenya involves recognition of the group and its members by the location-level authorities (i.e. the chief and the location MCSS development worker). It requires the completion of forms which record the names of the group executive and the proposed objectives and activities of the group. After submitting the forms and paying a one-time registration fee, the group is approved and registered with the District Office. Through this process, the State ensures that every group has an entirely female executive committee made up of the Chair (often referred to as the Chairlady), Treasurer and Secretary. The District Office requires this information to monitor the

women's groups (DSS, 1995). Such monitoring is conducted in collaboration with chiefs and assistant chiefs who are called upon to provide updates on the women's groups in their location. This registration process also ensures a minority male membership in women's groups: government regulations allow 20% of the members to be men (MCSS, 1991). The actual situation and implications of mixed membership in the women's groups involved in this study are discussed in subsection 7.4.1.

An analysis of the DSS guidelines for group registration and discussions with local officials suggest that official government policy is less concerned with membership of women's groups than with their activities.^{iv} For instance, groups involved in economic activities as well as savings and loans programmes are designated for "general control and oversight" by DSS in accordance with the 1991 policy guidelines. In contrast, groups involved in welfare activities such as adult education, health care and tree planting are expected to be supervised by the sponsoring government or non-governmental organisation responsible for that particular programme or activity (MCSS, 1991). According to MCSS, this division of responsibility is needed to avoid the inadequate registration and supervision of groups that arise when they are formed without the involvement of the Department of Social Services. However, one possible implication of this policy guideline is that registered women's groups involved in economic activity are potentially subject to greater supervision by the District Office and local authorities.

Information at the Siaya district office of the Department of Social Services suggests that over the past three decades the number of registered women's groups has

grown steadily. As illustrated in Figure 7.1, only 42 groups were registered in 1979, whereas in 1992 there were at least 2105 groups (Republic of Kenya, 1994b).



Source: Republic of Kenya, 1994a, p.34

Figure 7.1 Growth in Women's Groups Registered in Siaya District 1979-92

In the context of this study, the growth in the number of registered women's groups in Siaya raised two important considerations. Firstly, a significant variation within Siaya was noted when the data were disaggregated by location. The number of registered women's groups in Boro, Uranga and Ugunja Divisions is twice that in any of the other seven divisions. The distribution of registered women's groups by division does not correspond to the distribution of the district's population (see Chapter 3, Table 3.1). However, it may reflect the relative proximity of these groups to the district headquarters, the town of Siaya. Women's groups may be more readily engaged in NGO and government activities, and hence registered and monitored by the DSS, if they are located closer to the District Office. This possibility has not been investigated in other studies of

women's groups in Siaya District. It was relevant to this study, however, to consider this possible relationship as the author investigated the survival and collapse of AEP women's group.

The author also examined whether or not the growth trend of the women's groups corresponded to the rapid expansion of the AEP between 1984 and 1986 which was discussed in Chapter 5. The data from the District Office women's groups' register suggest that this connection is possible, but only insofar as the AEP is just one organisation of many development agencies working with women's groups in Siaya.^v Implementation of the AEP stimulated the formation and registration of women's groups, but so, too, has the implementation of government activities within the District Focus for Rural Development approach (i.e. the Farmers' Group Community Support Programme in Siaya supported by IFAD). This raises doubt that the AEP was based on "pre-existing women's groups" as stated by project planners and observers (Vonk, 1983:12; Rocheleau, 1986:19). Indeed, the author found that of the 11 women's groups studied in depth, only two had existed prior to 1963 (when Kenya became independent), and nine had been formed between 1983 and 1987. Therefore, it can be argued that some women's groups involved in the AEP were formed and officially registered in response to an increase in public services (that is, they were supply-driven) and were not simply the result of demand-driven, "traditional" initiatives of rural women.

7.2.2 General Findings About Women's Groups and Their Activities

It is useful at this point to highlight some general findings concerning the involvement of AEP farmers in women's groups and their major activities. As explained below in section 7.3, only one-third of the women's groups supported by the AEP were active, or partially active, in 1995. Of the 54 AEP farmers interviewed in 1995, 20% were no longer members of any women's group. However, 76% of farmers once involved in the AEP belonged to one or more women's groups in 1995 (a total of 69 different groups). Although data was only available for 39 of these "other groups", the author found that 59% of the groups had been formed before 1991 and 17% before 1963.

In contrast, only 50% of non-AEP farmers (n=42) were members of one or more women's groups. This figure is possibly lower due to the higher proportion of male respondents in the sample of non-AEP farmers interviewed (see Chapter 3). A similarity between both AEP and non-AEP farmers was that widows and women without full-time resident husbands were generally much more active in women's groups. Despite the high number of widows represented in this study (particularly among AEP farmers), they represent the majority (85%) of the farmers belonging to multiple (two or more) women's groups. However, no farmer belonged to more than four different women's groups.

What type of activities motivated farmers, especially female ones, to join women's groups? To answer this question, the author examined data collected in 1991 concerning the major activities of the women's groups of which AEP farmers were members (Hambly, 1992). This information was compared with the results of data collected in 1995

from the same 33 women's groups. It was thus possible to identify changes in the type of group activities between 1991 and 1995. The activities of women's groups that had once been associated with the AEP could also be compared with the activities of other groups to which AEP farmers belonged. The results of this investigation are summarised in Table 7.1.

As Table 7.1 shows, the major activities of the 11 women's groups once assisted by the AEP and still active or partially active in 1995 had to do with agriculture and/or agroforestry. The agricultural activities included purchase and resale of grains and legumes (maize, sorghum, beans and groundnuts), and to a lesser extent crop production on farmland cultivated by the group. Only a fraction of women's groups remained active in tree-nursery and tree-planting activities, although four active AEP groups were selling agroforestry products (polewood, timber and fruits) from trees planted during the 1980s. The crops produced or money earned were directly divided among group members, or the money earned from the sale of group produce was reinvested in the group's savings and loans activities. The majority of "other groups" to which AEP farmers belonged in 1995 were mainly involved in savings and loans activities. Only 17% of those savings and loans groups (n=6/35) were associated with other organisations at the local level, such as IFAD and churches.

**Table 7.1 Major Activities of AEP Women's Groups
(as a percentage of groups engaging in each activity)**

Major Activity	1991 AEP Farmers (n=38)		1995 AEP Farmers Interviewed (n=41/54)*			
	AEP groups		Active or partially active AEP groups		Other groups	
	No.	%	No.	%	No.	%
Agricultural and tree crops production and/or marketing	22	66.6	5	45.5	15	21.7
Tree nurseries and tree planting only (no marketing)	9	27.2	3	27.2	2	2.9
All types of savings and loans	--	--	2	18.1	35	50.7
Group/ wage agricultural labour	2	6	1	9.1	6	8.7
Political and religious campaigns	--	--	--	--	4	5.8
Singing/praying/cooking at funerals	--	--	--	--	4	5.8
Fishing/ smoking & selling fish	--	--	--	--	2	2.9
Handicrafts (weaving/ pottery)	--	--	--	--	1	1.4
Total	33	99.8	11	99.9	69	99.9

Notes: * In 1995, 11 AEP farmers were not involved in any group and two did not reply. Farmers may be members of up to four other groups in addition to the AEP group (if it still existed in 1995).

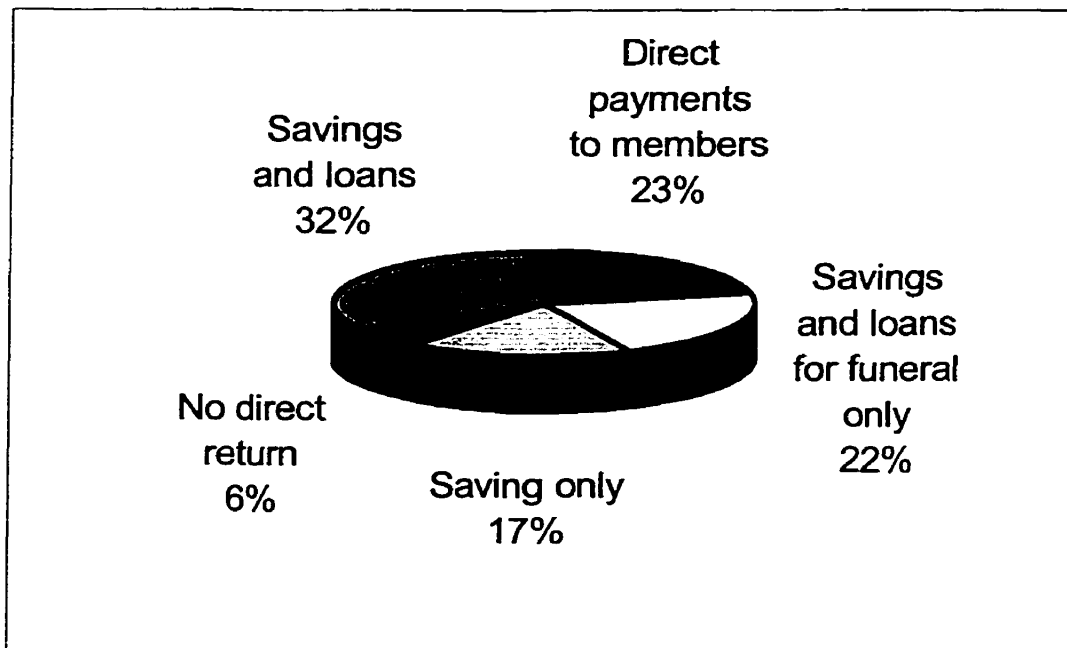
Source: Author's in-depth group interviews and farmer surveys, 1991 and 1995.

AEP farmers in Siaya District have joined women's groups in order to gain access to certain opportunities and resources. Observation of group activities suggests that many of these economic activities also offer intangible benefits to farmers, including opportunities to socialise with neighbours, friends and family. Therefore, it would be

unwise to imply that the social function of women's groups can or should be separated from their economic function. Nevertheless, farmers' responses when asked why they join women's groups reflect their motivation to gain access to three key resources: capital, labour and arable land, in that order.

Chapter 6 addressed the issue of labour constraints experienced by AEP and non-AEP farmers. Labour and land will be examined later in the light of findings discussed in subsection 7.4.1 on the roles of men in AEP women's groups. With respect to access to capital, however, some initial explanation is required because many women's groups involved in agroforestry have simultaneously saved and invested their returns in savings and loans activity. In this study, the term "capital" refers to the investment or savings generated or contributed by members of the women's groups, from which members can obtain loans. These arrangements are "informal sector banks" for rural women in Siaya District.

It was noted in the analysis of relevant literature about women's groups in Siaya that women's savings and loan activities are often broadly known as "merry-go-round" (Belgian Survival Fund, 1984; Were *et al.*, 1991; Republic of Kenya, 1994a). March and Taqqu (1986:60-65) generally refer to these groups as "rotating" credit (or labour) associations. However, the author's findings identify certain women's group activities as generating capital (through either cash contributions or income) which is handled by the groups in different ways. Figure 7.2 illustrates the breakdown, by percentage, of the different ways in which groups hold or disburse their capital.



Source: AEP farmer interviews, 1995

Figure 7.2 How women's groups hold or distribute capital

Returns from agricultural and agroforestry activities are saved mainly in the group account. This may be a bank account or, for smaller amounts of money, funds held by the treasurer of the group. Income could be earned by the women's group and later invested in other activities or distributed among members at the end of the calendar year. These funds could be divided equally in proportion to the work accomplished by members, and paid directly to the group members. As shown in Figure 7.2, some of the activities earn no direct economic returns; these are contributions made to religious projects or political campaigns and could include donations for building a church or certain church facilities, or sometimes contributions to the campaign of a local politician. These "investments" accounted for the smallest percentage of women's groups' use of capital in 1995.

Most importantly, the findings concerning women's groups' "informal banks" indicated that savings could be the source of investments and possible loans for individual group members. This was a major motivation for group involvement reported by AEP and non-AEP farmers, especially women farmers. The savings and loans activities could take two distinct forms. One was cash held in the group account, from which loans could be made to group members at 20% per annum interest. Non-group members can also "apply" for loans, but at a higher interest rate (typically 30-50% per annum). The second form of activity was loans made specifically for funerals.

Some savings and loans activities of women's groups are also investments that provide farmers with insurance against future emergencies. In Siaya, farmers refer to groups that engage in this activity as *m'asira*, or "funeral groups", because they loan money out of their savings for the benefit of bereaved group members. Some of these groups engage in income-generating activities at funerals, including singing, cooking and hauling fuel and water. Funeral groups have interesting features that are useful to consider in light of the focus of this study on institutions at the local level. For instance, farmers reported that these groups rarely collapse due to misuse of funds. In three interviews it emerged that the reason for this is the strong sanction within the groups and Luo society against stealing money associated with death and bereavement. Yet, the meaning of these women's groups to farmers must also be reinforced by the necessity of these activities for dealing with an emergency. It was also noted that funeral groups have the most specific objectives and the least formal characteristics. They meet only when there is a death in a

member's family. Over half these groups have no name other than "funeral group" and often no permanent executive committee except for a secretary/treasurer who records the contributions and holds or distributes funds among the members. It was also noted that few of these groups were registered with the DSS; therefore, many such groups were outside the purview of the District Office.

Finally, with regard to the general findings about women's groups in Siaya and their activities, both AEP and non-AEP farmers were very much aware of the procedures or rules of their group and its activities. The team's discussions with farmers indicated their awareness of how the group operated, or was supposed to operate, particularly where capital or other collective resources were concerned. It is difficult to convey this highly descriptive and case-specific information without referring directly to examples from the interview transcripts. Therefore, Table 7.2 presents some of the types of "rules" developed by women's groups. In all cases, the groups reported that the group itself without external regulation from a NGO or government organisation determined the rules.

Table 7.2 Savings and Loans Activities among AEP Farmers

Type of Group (name given by the group)	Rules for the Savings and Loan Activity
Gift or "sweeties" group	Members contribute 200 K/sh each month. The total amount (2,400 K/sh) is available to one group member on a revolving basis to buy "a gift" selected by the member. "Gifts" have included items such as fertiliser, a wheelbarrow, a bicycle and schoolbooks. No cash is ever given to the group member; the member proposes the "gift" and the treasurer and secretary arrange to purchase it.
<i>Dongruok</i> (development) group	Each member contributes 250 K/sh per month: 200 K/sh is a development contribution, 20 K/sh for emergencies and problems, 30 K/sh for tea. The development contribution (<i>dongruok</i>) is a loan available to members at an interest rate of 20% per annum. At the end of the year all the borrowed money is returned to the depositors, together with their share of the interest earned.
<i>Dongruok</i> (development) group	Each member contributes 5 K/sh per week (i.e. 260 K/sh per year) as a compulsory fee. From the 260 K/sh, 65 K/sh is subtracted for funeral expenses. The remaining 195 K/sh plus any other amount made available by the member is deposited into the group account. Every month members pay 10 K/sh each for <i>onja</i> , a fee given to the owner of the house where the monthly meeting is held, to pay for tea and porridge consumed during the meeting. Each member must pay another 10K/sh for <i>buk</i> (from the English word "book", referring to the group account book). Finally, another 5 K/sh <i>m'asira</i> is collected every month and kept aside in the account for funeral expenses. Members can borrow money from the group account at 10% per month interest. This is deducted from the loan (e.g. for a loan of 100 K/sh, 10% is deducted immediately as interest for that month so that the borrower receives 90 K/sh but has to repay 100 K/sh plus interest beyond the first month).
Family <i>m'asira</i> (funeral) group	This group is only for family members and helps to pay funeral expenses. Women must buy the burial shroud and men must buy the coffin. The registration fee is 10K/sh per person and the monthly contribution is 10K/sh. This is held in the group treasury. Money can also be used to buy utensils and other necessary things during the funeral. When a member of the group dies, women contribute 10 K/sh and men contribute a further 20K/sh. This is a compulsory contribution for every adult member of the family.

In general, this information about women's groups and their activities in Siaya District suggests greater diversity and complexity than previously acknowledged in the AEP literature. For instance, most AEP farmers have been involved in more than one women's group in order to meet the different needs that they experience both as individuals (e.g. as widows) or as a group (e.g. as a family). Sometimes agroforestry has been combined with other activities such as savings and loans. These findings also suggest that it is unlikely that farmers in Siaya do not have an opportunity to form or join women's groups. We need to look for other reasons to explain why 20% of AEP farmers were no longer involved in women's groups and 50% of non-AEP farmers were not members of women's groups in 1995. Finally, these results reinforce the importance of women's groups in enabling some farmers to gain access to resources from which they might otherwise not benefit.

7.3 Women's Groups and the AEP

Women's groups in Siaya District that participated in the AEP from as early as 1984, have experienced a fairly dramatic rate of collapse. Unfortunately, no official "survival rate" for women's groups in Siaya is available for comparison. MCSS (1991:5) has, however, recognised an "unacceptably high rate of failure" among groups. Given that 67% of the women's groups interviewed in 1991/92 had collapsed by 1995, the rate can be considered to be quite high.

The AEP was aware for some years that women's groups risked collapse. For instance, Scherr and Oduol (1989) and Scherr and Alitsi (1990) modified their sampling of

farmers from AEP-assisted women's groups to replace members of groups that had collapsed by 1988. However, in their assessment of the AEP's impact, Scherr and Alitsi (1990) only acknowledged the occasionally weak state of some women's groups. The issue of group collapse was given scant attention in their report and was also not adequately reflected in other analyses which aimed to address "gender issues" in AEP farmers' adoption of agroforestry (Bonnard and Scherr, 1994; Scherr, 1995).

From the beginning of this study, the issue of group collapse in the AEP was seen as relevant to the implementation of the project and the institutionalisation of agroforestry at the local level. The author did not, however, know why and to what extent women's groups participating in the AEP had collapsed. To investigate these questions, the author analysed the transcripts of interviews with individual farmers who were members of AEP-assisted women's groups. The farmers had given their opinions on the reasons for the continuing survival or collapse of their groups. The transcripts of 11 in-depth group interviews were also analysed and interviews with some members or past leaders of 18 AEP women's groups provided additional, but less comprehensive, data. Subsequently, the women's groups were classified into one of three categories: active, inactive and partially active. Groups were considered to be inactive if they no longer met as a group or conducted collective activity. Partially active groups met less than once every six months. Their agroforestry activities were weak or nearly non-existent, but the group still met. In contrast, active groups met at least once every three months (typically, once a month) and maintained, as a group, activities related to agroforestry that had been initiated while they

were participating in the AEP. Table 7.3 provides a summary of this classification of women's groups, sorted by division.

Table 7.3 AEP Women's Groups Involved in the Study, by Division (1991-95)

Division	No. of Women's Groups			
	Interviewed in 1991	Groups Active in 1995	Groups Inactive in 1995	Groups Partially Active in 1995
Boro/Uranga	7	0	5	2
Rarieda/ Madiany	7	1	6	0
Bondo/Usigu	6	4	2	0
Ukwala/Ugunja	7	0	6	1
Yala/Wagai	6	2	3	1
Total	33 (100%)	7 (21%)	22 (67%)	4 (12%)

Source: In-depth group interviews and farmer surveys, 1995.

More than two-thirds of the women's groups interviewed in 1991 and active in the AEP since 1988/89 had collapsed by 1995. The findings also suggested some variation across the ten divisions in Siaya District. Bondo had the highest proportion of women's groups still active in 1995, three years after the AEP had ceased its extension and technical inputs into women's groups. Unlike the positive influence of location on the registration of women's groups (brought out in subsection 7.2.1), location has no effects on women's groups in Boro Division, which, although closest to the town of Siaya, were not necessarily less likely to collapse.

Group collapse is the term used in this study to reflect a situation in which groups once had a defined structure, process and activity and then ceased to exist as an organisation. Collapsed groups do not meet on a regular basis or carry out any type of

group activity, agroforestry-related or otherwise. The leaders of the group no longer have authority because there is no group or group activity to lead. It was noted, however, that this does not necessarily mean that the group has dissolved a group bank account, or resolved possible disputes over collectively held funds and resources. Typically, past leaders of collapsed women's groups may hold or use group assets or equipment (e.g. trees, donkey carts, wheelbarrows, polybags, watering cans) as individual property. Finally, group collapse does not mean that the group is de-registered with the District Office. The author found that 41% of women's groups that had collapsed since 1991/92 still appeared (under a partial or full name) in the DSS register in 1995. Staff of the Department of Social Services remarked that due to inadequate support to monitor women's groups, district records were not sufficiently up to date in 1995. The register also did not have the names of 15% of the women's groups that had once been involved in the AEP and whose members were interviewed in 1995. Registration was a requirement of the AEP and the District Office and it is not certain why those women's groups were not listed.

7.3.1 Surviving Women's Groups

Not all women's groups involved in the AEP collapsed. Seven were still active in 1995 and in interviews with them the team sought to understand why women's groups survive, and to what extent the groups had continued their involvement in agroforestry-related activities after the AEP ceased its assistance to them. All the groups still operated tree nurseries of varying size. They also reported that their members had benefited from access

to tree seedlings, on-farm tree planting and the sale of tree seedlings (four cases only).

Beyond this point there is difficulty in generalising why the seven cases represented active and surviving women's groups. There were only two other similarities between the cases: the role and style of group leadership, and the extent to which the groups achieved and continued to achieve benefits from their collective activity. These benefits could be in the form of products such as crops or cash distributed to individual members, access to group labour, transport or natural resources such as arable land. As mentioned earlier, small-scale revolving savings and loans activities were practised by all surviving AEP groups, but this form of activity was more typical of groups categorised as "partially active", rather than active and surviving women's groups. The intangible benefits enjoyed by surviving women's groups (for instance, trust or loyalty among group members, protection from external interference, and social – including religious – interaction with friends or family) were observed to be the basis for tangible benefits.

These two factors – group leadership and benefits – also seemed to work together to support the self-image and purpose of the women's groups. To explain this point further, it is useful to describe two of the women's groups. These descriptions come from interviews with individual farmers in the group, the group itself and researchers' field notes following the interviews or during feedback to the farmers.^{vi}

Case 1: Okiero Women's Group

The Okiero Women's Group was set up to respond to the CARE AEP's call for women's groups to join the project in 1984. The group is located only seven kilometres from the AEP headquarters. The 17 group members include five men. Selina Achieng, the oldest member of the group, is 71 years old. She and her son Christopher Otek, who is 39 years old, have always been "executive" members of the group. Otek is the co-ordinator, but officially his wife, Margaret, is the chairlady and Selina is the group treasurer. In the past 11 years, the group has cultivated and sold vegetables and cereals and used the surplus food for catering at funerals. They report that they can make more money processing and selling the surplus as food at funerals than through any other type of marketing activity.

In 1991, interviews with Okiero Women's Group showed it to be one of the most successful women's groups involved in agroforestry in the district. In 1990, the group produced 4000 seedlings of several tree species during the long rains season. The group still operates a tree nursery, but produces only 700 seedlings per year. The 12 farmers participating in the main interview reported that they had planted out more than 1000 trees since 1991. Having all the seedlings they currently need, the farmers are eager to find new ways of selling the seedlings they produce in their tree nursery.

On land still registered in the name of the dead husband of Selina Achieng, the group has planted several fairly well-maintained alleys of maize, *leucaena* and *glyrricidia*. The

group also has two zero-grazed cows that provide milk for sale. The group obtained the cows from a church project in 1993. In addition to their involvement in the AEP, Okiero Women's Group also received and repaid a loan from another CARE activity in Siaya, the Women's Income Generating (WIG) project. The group used this money to buy and sell maize and sorghum. This was a successful enterprise, although the group did not reveal the level of profits realised. The group has a savings and loan arrangement for its members. Each member donates 10k/sh every fortnight towards the group account.

When the group meets, each person pays 10K/sh to the member who hosts the meeting to cover the cost of tea and porridge served to the group members. If a member misses the group meeting or any type of group work, he or she is charged 10K/sh which is given to the organiser of the meeting.

During all the three visits to the Okiero Women's Group, Christopher Otek dominated the discussion. He said that "some years ago the group was feeling so nice, but recently it has become discouraged." He stated that the group "is well known for its skill in nursery work and that it is even known to the Government". Several visitors have been brought to the tree nursery because the group devised its own way of growing tree seedlings using banana leaves for pots. Even researchers from KEFRI came to take cuttings from the trees. Another member of the group, a 55-year-old man, interjected a comment that members of the group were growing bitter. "We know the gifts for what they are," he said. This

comment was a reference to a promise from KEFRI that the farmers would be paid for the tree cuttings taken to Nairobi. Another group member added that a church project has reminded them that money given to the group to purchase a dairy cow was only a loan which has to be repaid with a female calf or in cash. The cow often requires veterinary medicine that the group cannot afford and the members are not in agreement that it is paying for itself.

Three-quarters of the members of the Okiero Women's Group belong to other women's groups. "The more groups you are in, the more you gain," says Otek. One NGO is going to plant sunflowers and "will give me a machine to process the oil". The money comes from Britain, he has heard. Alcoholics Anonymous has also started a *posho* (flour) mill project nearby, and Margaret, the group chairlady who is his wife, is the cashier at the mill. Otek is pleased about this because the business is running well.

The research assistants found it difficult to interrupt Otek and direct questions to other members of the group, including Selina Achieng, the team's contact AEP farmer. At the end of one visit, Otek said in English, "Come to me if you have more questions, I know, the others don't know." A research assistant felt challenged by another remark from Otek, that "CARE people are not serious; they do not listen to people's problems." He gave the research assistant a list of items he wanted delivered to the CARE headquarters in Siaya.

The items ranged from a biogas unit to pesticides. Otek estimated the total cost of this list came to 125,000 K/sh or US\$4,200.

Case 2: Uhuru Women's Group

Walter Otieno was born in 1927 and has lived all his life in the village of his birth. Otieno has been a member of the Uhuru Women's Group since it was set up in 1969. It was less active in the 1970s than in the 1980s. It joined the AEP in 1984 after learning from the chief that a new project to support farmers was being started. At the beginning of the 1980s, Uhuru Women's Group had 26 members, 20 of whom were women. In 1995, it had only 12 members, seven of whom were women. The others had gradually dropped out of the group as they realised that the tree nursery activities were small-scale and that, as one group member commented, there would be no cash handouts.

Otieno is the co-ordinator of Uhuru Women's Group. His wife is the chairlady of the group. Otieno is a prosperous farmer who owns 20 head of cattle, three of which are zero-grazed cows. He hires three full-time labourers to help him on his farm; they are also members of the women's group. Nearly two acres of his farm are planted with trees, plus a one-acre woodlot. He continues to replace the trees he harvests with indigenous species of trees as well as eucalyptus and cypress for timber production. Otieno owns the land on which the Uhuru Women's Group has its tree nursery. The nursery is large in comparison with most women's group tree nurseries observed in Siaya District. It is approximately a quarter of an acre in size and is on well-drained soil less than 500 metres from a stream. A

pile of manure stands nearby to use in the seedbed. In the late 1980s, the group used to produce several thousand tree seedlings and thousands of vegetable seedlings per season. Production is now less than 300 tree seedlings and 500 vegetable seedlings per season. The reason for this reduced activity, according to Mama Salome, one of Otieno's three wives and who was inherited from his brother, is that some group members are lazy. They only planted a few trees on their farms and never became leaders in agroforestry like Otieno and his family. Mama Salome is 53 years old and has always been the chairlady of the group. Two young men and a woman (all under 30 years of age) asked the research team for information about small-scale commercial enterprises such as oilseed production and processing. Otieno responded to the young farmers' comments that group members do not see trees as a means for earning cash income.

Uhuru Women's Group started as a family group. In 1995, one-third of the members belong to Otieno's extended family, others are neighbours and friends. Relations within Uhuru Women's Group "have gone up and down", relates Mama Salome. In 1995, they are better than in the past, remarked the group treasurer, an elderly woman who is Otieno's neighbour. They were quite bad in 1992 when, during local elections, Otieno's brother, who was then co-ordinator of the Uhuru Women's Group, was beaten and some months later died. The tree nursery was vandalised and many seedlings were destroyed or stolen, animals were killed and the group was afraid to come together to work anymore. Otieno

commented that his brother had been labelled the “opposition’s prefect” and said that if local politics had not interfered with the group, everything would have worked out well.

Mama Salome remarked that “our group is well known in the area and until 1992 we felt safe”. The group had a good reputation with the AEP and understood that the project had withdrawn from most groups in the area. However, the group still had various items of equipment from the AEP (stored at Otieno’s house) and in 1994 Otieno had obtained a few hundred polybags for tree seedlings from CARE and the Forest Department.

When asked about their future plans, Uhuru Women’s Group members presented several ideas, the most popular of which seemed to be the purchase of a tractor and wagon and an oxen-plough. Otieno has two oxen that he is willing to contribute to a proposed group oxen-plough activity. The tractor, group members felt, could also be a good business, especially for hauling water, sand and other construction materials. One of the older women said men were dominating the group with their “tractor ideas”.^{vii} She said the women in the group preferred to buy and sell maize, sorghum and millet. Nonetheless, Otieno said, the group would not rush into new activities until the members were certain that there would be no political interference.

These two groups illustrate the influence of leaders and tangible benefits in the survival of women’s groups once assisted by the AEP. Both are involved in diverse

activities that generate benefits for the group. Agroforestry and tree planting are only one area of activity and seem to be adapted to fit other group needs (zero-grazing, income generation, etc.). Not all activities, including agroforestry, were necessarily successful, but in both groups members argued that the group was achieving more for its members than they would as individuals on their own.

These examples also illustrate how there may be more than one leader or sets of leaders in women's groups in Siaya. There is an "official" executive (always women) and what is referred to as a "shadow executive" (usually a man). Of equal importance is the male membership of women's groups. In these examples, both Otek and Otieno are not "officials" of the group, but they are leaders. The "official" women leaders recognise the role of these men in the groups. However, the style of leadership in the two groups is different. Whereas Otek's domination of group discussion often did not allow other members to comment on the leadership of the group, the members of the group led by Otieno were more free to participate in discussions and debate over group activities. This may also have been due to the fact that Otieno had become the "group co-ordinator" by "inheriting" the group (and not only Mama Salome the group chairlady) after the death of his brother.

Of the seven former AEP women's groups still active in 1995, only one did not have a man playing a "shadow executive" role. That group had only six members and a chairlady who was exceptionally tenacious in encouraging the group to continue its market gardening activities and avoid collapse. Again, it was characteristic of all surviving groups

that their members benefited collectively and individually from the activities. Active AEP women's groups were very much aware of the extent of their achievement in avoiding collapse. This recognition seemed to encourage the groups to sustain themselves as organisations and continue or expand their activities.

7.3.2 Collapsed Women's Groups

What were the main factors responsible for the collapse of two-thirds of the AEP women's groups studied by the author? How did the AEP influence group collapse? These two questions were investigated by examining data from the interviews with AEP women's groups and farmers.^{viii} As described in section 7.3, the analysis identified the women's groups that were active (had sustained or increased activity) or relatively inactive (were partially active or had collapsed). The groups did not collapse simultaneously; rather, their activities declined between 1989 and 1994/95. The experience of each group is unique because some were also contracting more rapidly than others. Figure 7.3 represents and explains this situation by portraying the hypothetical pattern of a group's collapse. This schema was useful for generalising about the experience of women's groups and formulating further questions about the implications of group collapse.

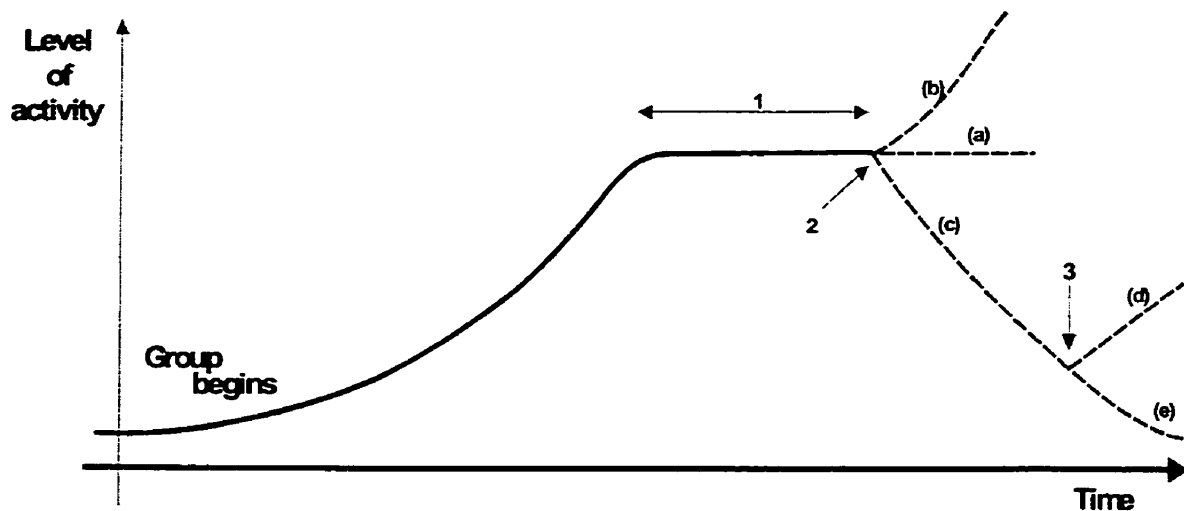


Figure 7.3 Pattern of AEP Women's Group Collapse

Key:

1. The period over which a group remains active. In this study, the time period would be 1983-95. The process of group collapse appears to have occurred between 1989 and 1995.
2. By 1995, women's groups either (a) remained active or sustained themselves after inputs from the AEP had completely stopped in 1992 (n=8), or (b) apparently increased their activities (n=3). Other groups (c) collapsed altogether (n=22).
3. Although groups collapsed, further studies might investigate whether the members of women's groups recreated themselves as new groups (d), or not (e).

This schema raised two key points. First, there was a small difference between the women's groups defined as active (21%) or partially active (12%), and those that had actually increased (11%) rather than simply sustaining or continuing (24%) their activities once the AEP ceased to assist them. Secondly, the finality of the collapse of women's

groups was questioned. However, none of the interviews with farmers or groups suggested that collapsed groups could or would re-establish themselves with the same leadership, membership or activities. As mentioned earlier, 20% of AEP farmers wanted no part of any women's group after the collapse of the AEP group. The reasons for this were negative group experience (40%), age or poor health of the farmer (20%) or lack of time (10%). The restoration of collapsed women's groups could be an area for further research.

There was never only one reason for a group's collapse; all the 22 AEP women's groups that had collapsed cited at least two major problems. These responses were compared with those from non-AEP farmers (n=42). The various reasons listed by AEP farmers and groups were then clustered. They are listed in Table 7.4.

Table 7.4 Actual and Perceived Reasons for Group Collapse

Reason	No. of Reasons Identified		
	Actual	Perceived	
	AEP Groups (n=11)	Other AEP Farmers (n=29/54)	Non-AEP Farmers (n=37/42)
Greed, misused or stolen resources	8	9	10
Infrequent meetings; low turnout	8	3	0
Poor relationship with the AEP	7	4	n/a
Death/absence of group co-ordinator	6	4	0
Interference by officials/politicians	4	3	0
Imbalances in group work	3	4	1
Lazy members	3	3	0
Time-consuming activities	1	1	5
Lack of money and inputs	0	2	1
Weak/uneducated leaders	0	1	0
No answer/ don't know	0	11	4

Notes: Some groups/farmers provided more than one answer; n/a = not applicable.

Source: In-depth group interviews and farmer surveys, 1995, NUD*IST note "collapse/reasons"

The various reasons provided by farmers and groups to explain group collapse (actual for AEP farmers and perceived for non-AEP farmers) raised some important considerations. For instance, non-AEP farmers were apparently less experienced with women's groups than AEP farmers – possibly because half of non-AEP farmers did not report being members of any organised women's group. Yet, the perception of non-AEP farmers' that women's groups collapse because of greed and misused resources mirrors the actual experience of AEP farmers and women's groups. One point of contrast between the two groups was that non-AEP farmers considered the time-consuming nature of group meetings and activities a major factor in group collapse, something underreported by AEP farmers and women's groups.^{ix}

A further difference was that AEP farmers provided a wider range of opinions and actual reasons as to why women's groups collapse. For instance, in discussions concerning relations within the women's group as a reason for group collapse, AEP farmers said problems arose because internal differences were exacerbated by other, externally related problems. For instance, misuse of group-held resources was often found to relate to poor communication with the AEP or interference by "outsiders" (chiefs, local politicians, etc.).

Finally, these results point to a perception among farmers and groups that the implementation of the AEP, and decisions taken by CARE-Kenya played a role in the collapse of women's groups. More than half the responses blaming the AEP identified the relationship between the groups and AEP extension workers as one of the problem areas. Examples of this included extension workers favouring some group members (especially

men and educated women farmers) over others. In group interviews farmers reported that material or technical inputs were sometimes provided only to some farmers instead of the entire group. This situation was linked sometimes to farmers' comments that some past leaders had been too greedy and had misused group resources. In 16% of the interviews, farmers indicated that the AEP had not communicated well with the women's groups over its restructuring and reallocation of project staff. They remarked that they had "felt cheated" when a particularly good extension worker had been transferred to another Division or an especially irresponsible extension worker had not been reprimanded.^x However, the picture was not entirely bleak; group members also made positive comments about extension workers. The positive attributes that were missed by women's groups after the end of the AEP included the extension workers' friendliness, reliability, regular visits and organised approach to reporting back on issues of concern raised by the group. It should be noted that, since extension workers mediate interactions between women's groups and the AEP, when relations between them and the farmers are good it generally follows that the women's groups feel less discouraged when the project ceased to support them.

In the light of these various findings, the cause of group collapse proves to be a process of decline based on a combination of complex partner relations and overlapping reasons for group weakening. It is also apparent that, given the nature of the group membership and leadership, group activities and external group/project interactions were influenced by gender relations within the women's groups.

7.4 Gender Relations in Women's Groups

As Harrison (1997) has acknowledged, the role of men in women's self-help groups is a relatively recent area of gender and development research. Based on the review of literature for this study, it would be possible to state that previous research on women's groups in Siaya has tended to underestimate the character and influence of the male minority membership. For instance, Achola (1991) recognises that men are members of women's groups, but reports that they are only "recruited" for skills such as bookkeeping or leadership experience or to carry out certain tasks "traditionally done by men". Furthermore, despite more than a decade of activity in Siaya District, the Farmers' Group Community Support Programme (FGCSP), supported by IFAD and implemented by the GoK in Siaya, has a similarly narrow viewpoint:

Men rarely hold office however, although they may act as the spokesman for the group in its dealings with its official clan. Many of the men are husbands of the women members. They may provide land to the group or assist in some of the heavier production-related tasks (FGCSP, 1995:7).

Such statements indicate a need for researchers and development policy makers and planners to be made aware that gender relations in women's groups in Siaya implicate not only women, but also men.

7.4.1 Role of Men in Women's Groups

During fieldwork in 1991, the author found an average 25% male membership in 33 AEP-assisted women's groups in Siaya District (Hambly, 1992). In 1995, the average membership of men in both surviving and collapsed groups was only slightly lower, approximately 21% of the total membership.^{xi} Only one group reported having never had

men as group members. Some groups had a male membership of up to 42% (the median was 27%). These figures were higher than the government's 20% limit on male membership of women's groups (MCSS, 1991; Republic of Kenya, 1994a). In comparison, the analysis of data from the revised AEP (the Agroforestry Element) indicates that in 1995 CARE's agroforestry programme in Siaya worked with farmers' groups having a 35% male membership.^{xii}

If the mixed membership of women's groups is viewed from a perspective informed by gender relations, the number of men is only one of the concerns within the overall analysis. Other social relations, including age, marital status and socio-economic standing of the men in women's groups, are also relevant considerations (Young, 1993). Are the men in women's groups more influential because they are older, relatively wealthier than the women group members, or married to women group members? The author found that although the age of the 50 men who were members of the 11 groups interviewed in depth ranged from 30 to 75 years, more than half the men were 60 years old and above.^{xiii} This result should, however, be seen in the context that men of working age (20-56) are often non-resident in the district.

Regarding the socio-economic status of the men, it was difficult to apply the measure used to determine the socio-economic status of AEP and non-AEP farmers (in Chapter 6) because not all the members of the 11 women's groups were interviewed and their farms visited. However, on the basis of group visits and observations of AEP-assisted farmers, the author believes that the economic status of most male farmers in women's

groups was not substantially different from that of the AEP households visited. What seemed to make a difference was the marital status or family relations of men in women's groups. It was found that 84% of the men in the 11 women's groups were married to, or relations (mainly sons/nephews) of women in these groups.^{xiv}

Analysis of gender relations within organisations informs us that the number of men in women's groups may be less influential than the role of specific men (Goetz, 1995; Macalpine, 1995). We can now add that in the case of rural self-help organisations, men's age and relation to individual women in the group is a relevant consideration. In the analysis of surviving or collapsed women's groups once assisted by the AEP, it was found that men are most influential when they are "shadow executives". Men call themselves "chairman", or more frequently "co-ordinator", occasionally "patron" and even "organising secretary". Typically, such leaders are often married to or sons of past or current "official" executive members of the group, all of whom must be women according to government regulations. Discussions with local-level government officials confirmed that chiefs or assistant-chiefs, as well as DSS staff knew that men assume "shadow" roles in women's groups. However, they said that in many cases other group members (both men and women) "wanted it this way".^{xv} While this was the opinion of mostly male district officials, some comments from female farmers (individually and as groups) confirmed that men are recognised by women to behave or belong differently within the group. The reflections of a research assistant after interviewing seven groups are illuminating:

... one of these groups had a major argument when some members were accused of “eating” what CARE and other NGOs like IFAD brought to the group. It was said that men in the group helped the women members talk to CARE ... women said they would miss these outside links if men were not in the group. “Men will always be going out and around and getting ideas,” said one woman farmer. Another remarked, “The only way for the group to do better is by having these ideas.” In another group where 2,000 K/sh were “eaten” and the group quit their tree nursery, the chairlady said, “Men in the groups are good if their interests are for the group and not for themselves.”

In other interviews, the opinion was expressed that women’s groups “appear more serious” to local authorities and to husbands when they have men as members. In one such case, the group co-ordinator of a surviving women’s group, a male teacher, explained that both women and men work harder and more “professionally” [*his words*] when there is a male co-ordinator. He then went on to remark that “when CARE dropped other groups, we received a loan”, which he believed was the reason for the AEP’s willingness to accept and recognise his leadership role in the group.^{xvi}

Examination of the role of men in women’s groups in Siaya District suggests that men have a different presence from that of women. Their influence is partly as leaders, but also as non-executive members. Four specific roles were identified.

1. Men as government/NGO “go-betweens”: It was stated in six group interviews that men often acted as liaisons to the AEP and other external organisations. A man was useful, one group chairlady explained, because “he can go around and find the ones who can assist us.” Typically, men may manage relations with the local chief and assistant chiefs. They may speak on the group’s behalf at location-level meetings and, according to several respondents, take the lead in registering the group with the District Office or

opening the group's bank account. This role carries considerable power and does not seem to be simply an administrative task.

2. Men as co-workers: Men were reported to be valuable members of women's groups because they might have access to resources valued highly by resource-poor women. One example is the role of men as operators of oxen-ploughs. In four cases, (two AEP groups and two non-AEP groups), the oxen-plough earned considerable revenue for the group. All the members could also benefit from access to the oxen-plough, and the money earned from it contributed to the groups' savings and loans activity. It was also noted that oxen-ploughs provided an opportunity for female farmers in the group to sell their labour, cultivating by hoe the furrows dug by the plough. The payment for this work would go directly to the member instead of into the group savings. Typically, this work was combined with simultaneous planting (by line or broadcast seeding).

A second way in which male group members made important contributions to the group was by providing land (especially land with access to water) for cultivation. The group would grow trees and crops for sale and pay "rent" to the farmer owning the land. Similar arrangements could be used to access transport, including fishing boats and donkey carts. Only in a few cases was land provided free of charge to the women's group. In one case, the elderly farmer contributing the land had been designated the group "patron". In another, the farmer had no particularly influential role.

Finally, it was noted that in some cases women's groups invited younger men to join in some activities (sometimes these men were referred to as sons, although they could be

distant relatives). These men often had designated roles in the group activities. For instance, they might help with certain tasks such as fishing, producing charcoal or transporting produce to markets.

3. Men as opportunists: Labour is a major need of all farmers, male and female, in Siaya District. Women's groups provide a relatively inexpensive source of labour. The labour of women, in combination with oxen-ploughs or not, is sometimes preferred because their physical strength is combined with knowledge and skills to perform certain tasks such as planting and weeding. Some widowers or monogamous husbands said during the group interviews that they had joined women's groups to gain access to the labour and knowledge of the group. Men may behave opportunistically when they benefit more from the group labour than they contribute.

Members of several groups blamed men's interference in the generation and allocation of income received from group activities for the collapse of groups. In one particularly extreme case, the male co-ordinator of a group had pressured members to contribute their savings to a female politician whose campaign promises included obtaining "matching grant" support for women's groups in the division. The candidate was defeated in the elections, the funds invested by the group disappeared and the group eventually collapsed.

4. Men as agitators: One of the women's groups examined in depth had been quite active in the AEP between 1983 and 1991. However, in 1992 the husband of the group chairlady retired from his job in Nairobi and became a full-time resident on their

farm. The group members described him as a tremendous “pest” who constantly demanded that the group reorganise itself and its activities (mainly tree planting and buying and selling sugarcane and maize). The man went so far as to complain to the chief that members of the group were cheating on their contributions to the group savings and loan activity. After some time, the members gave in and made the man the “organising secretary”. The group collapsed in 1994 after the man’s wife, the chairlady, died. When this former group leader was interviewed with other former members present, he was adamant that the group could be reactivated, with new members if necessary. The man’s role was more destructive than constructive because of his interference, mishandling of group funds and consequent abandonment of the group by other members.

Given this range of men’s roles in AEP women’s groups, it can be seen that the roles may be *political and/or practical* in nature. The political role of men in women’s groups is most obvious when they act as liaisons to external organisations, local officials or political campaigns of politicians. These are power-based roles often involving control over resources such as capital, labour or land for the benefit of a single man (and not necessarily a man and a wife, or a son and his mother). On the other hand, the practical roles of men in women’s groups are exhibited when men act as co-workers or facilitators of access to resources such as arable land and information. The problem for women’s groups in Siaya District is how to maximise the practical role of men in groups while minimising their political role. Some farmers argued during the interviews that the activities of women’s groups could not expand without men’s interference and assistance,.

For this reason, they said, “women-only” groups were not necessarily more desirable, and that they were unrealistic. These findings further reinforce the view that rural women’s groups can hardly be considered homogenous in their interests or their membership, and that their activities in Siaya cannot be seen as uninfluenced by gender relations.

In conclusion, in many respects, the analysis of AEP women’s groups in Siaya evokes a point made some years ago by March and Taqqu (1986),

Informal associations simultaneously promote women’s political influence and economic contributions on the one hand and their subordination, victimisation or exclusion on the other. The internal dynamics of women’s informal associations explain neither the origins of nor the variations in women’s position; these can be better accounted for in light of the linkages between formal and informal spheres. But an appreciation of informal organisational patterns makes women visible and marks their influence in a way that theories focusing narrowly on formal organisations cannot. (March and Taqqu, 1986:121)

It is certain however that women’s groups involved in the AEP blend the informal and formal dimensions of traditional and contemporary organisation. A gender perspective in implementation studies opens up organisations and institutional processes to understand gender relations in the project delivery, as well as the sustainability of agroforestry. This includes the role and relations of women, but also of men in women’s groups.

7.5 Summary

This chapter has examined the nature and status of women’s groups that were strongly involved in the implementation of the Agroforestry Extension Project in Siaya District. These women’s groups were active in the project in 1988/89, but by 1995 two-thirds of them had collapsed. This high rate of attrition was explored by examining the groups’

activities and membership and the overlapping reasons for their collapse. The survival and collapse of women's groups was found to be a result of complex experiences, often reflecting the internal situation, including multiple activities and mixed membership, as well as relations with the project and other organisations in Siaya.

The male minority membership in women's groups in Siaya District was found to be contributing to this complexity. While State regulations about women being the official leaders of women's groups are observed, there are male "shadow executives" in the groups who are the unofficial leaders. The political and/or practical roles of men in women's groups were examined and found to account for the behaviour of male leaders and members in women's groups.

The inescapable gender relations of women's groups were discussed. The complexities of these stem from the fact that both the government and non-governmental organisations have targeted women's groups as major points of entry for project implementation. AEP project planners were criticised not only for romanticising women's groups in Siaya District as continuations of pre-colonial social organisation, but also for later neglecting the project's own role in the collapse of women's groups and gender relations within the groups. The AEP's failure to address and take into consideration its influence on group activities and power relations within the groups can be seen as having worked against the long-term sustainability of both women's groups and agroforestry. This point and the idea that the implementation of the AEP did not simply involve the

involve the institutionalisation of agroforestry in Siaya District, but also to some extent its de-institutionalisation, are pursued in the next chapter.

NOTES

ⁱ As discussed in Chapter 3, 11 in-depth interviews were conducted with women's group members and a further 18 interviews were conducted with only one or two of the original executive members of the group. In four cases, the team was unable to interview past members of the women's groups due to the reluctance of former group members, or the death or advanced age of the executive members.

ⁱⁱ National figures from government sources such as the Maendeleo ya Wanawake Organisation and the Women's Bureau of the Ministry of Culture and Social Services (MCSS) indicate that only 1% of women's groups registered in Kenya in 1995 existed prior to 1950. Over 80% were formed between 1970 and 1994 (MCSS, 1991). It is important to clarify that women's group development at district level is embedded in a context of national politics, including a formal integration of the national women's group (Maendeleo ya Wanawake) by the ruling political party KANU in 1986. As well, the 1985 international women's conference in Nairobi contributed to the expansion in the number of women groups across Kenya, NGO activity involving women's groups as well as direct political intervention in these organisations.

ⁱⁱⁱ The relevant document is "Paths to Rapid Development: Policy Guidelines for the Department of Social Services", published in 1983.

^{iv} Specifically, these key informants were the co-ordinator of the integrated district development project FCGSP, a District Officer, a local chief and the head of the Farmers Training Centre in Siaya.

^v Charles and Wellard (1993) estimate that there were 26 development organisations operating in Siaya District at the start of the 1990s. The IFAD project was only agricultural project larger than the AEP in terms of the number of farmers it assisted and infrastructure (e.g. staffing support, material inputs) it created.

^{vi} The names of the groups and the group members have been changed.

^{vii} In the compilation of the transcripts from interviews with this group it was interesting for the author to note the link between this discussion about tractors (*tinga* in Kiswahili) and the commentary on the election campaign of FORD-Kenya. The political identity of Raila Odinga was expressed through a slogan and symbol on the voting ballot of "*Tinga Tinga*".

^{viii} Farmers' answers to questions from 12 to 15 yielded substantial information about their experience in women's groups. These responses were supplemented with baseline

information about the group collected during the initial appointment with farmers. Also, further elaboration about group activities was obtained during feedback to the farmers.

^{ix} The higher proportion of male respondents among the non-AEP farmers may have been responsible for this variation in responses. However, this would assume that male farmers are biased against women's groups and consider them to be "time consuming". There was no evidence to support this assumption.

^x Extension staff were the farmers' key contact with the AEP. Therefore, it was likely that relations between the group and these individuals made a strong impression on the women's groups. Farmers would remark, "Jane the extension worker didn't come anymore," or "Osogo the extension worker used to say we were the best group in the division and now he has forgotten us."

^{xi} Complete data was available for 29 of the 33 groups.

^{xii} In total, the AE (the revised AEP using the TRACE method) involved 562 participating farmers in Siaya District in 1995. The raw data provided by AE managers, which is referred to here, is gratefully acknowledged.

^{xiii} In 14% of these cases, data was not available on the male farmer's age (or the information was unreliable).

^{xiv} Data was unavailable for 18% of the male farmers listed as members of women's groups.

^{xv} The local officials who reported this comment and similar statements included the District Social Services Officer (in 1995), three Location Community Development Assistants (LCDA) who are location-level staff of DSS (in 1991 and 1995) and the head of the FGCSP at the District Office. All these respondents, except one LCDA, were male. Only the head of the Farmers Training Centre in Siaya reported that male membership in women's groups generally had a negative effect on group structure, process and activities.

^{xvi} In this particular case, CARE continued to support the women's group until 1993, and the group was still partially active in 1995. However, its agroforestry activities were vastly reduced, from 9,200 seedlings produced in 1988 to a few hundred seedlings in 1995. Its membership also fell from 17 members in 1988 to ten in 1995.

8. TOWARDS AN IMPROVED APPROACH TO IMPLEMENTATION ANALYSIS: INSIGHTS FROM THE AEP

8.1 Introduction

This chapter brings together the results presented in previous chapters, highlighting the major issues in the implementation of the AEP and conclusions regarding the extent to which 13 years of the AEP have institutionalised agroforestry in Siaya District. The conceptual framework proposed in Chapter 2 for the analysis of AEP implementation is re-examined in the light of the research results. This chapter provides insights for strengthening implementation analysis and informing policy and project efforts that aim to promote agroforestry in sub-Saharan Africa.

8.2. Conceptualising the Implementation of the AEP

In Chapter 2 it was proposed that three relatively recent challenges confront project implementation analysts. The first is the application of implementation analysis to environmental policy and programmes, which typically involves broader frames of time and space than used in earlier generations of implementation analysis. The emergence of the “third sector” of non-governmental organisations also introduces new relationships into the study of implementation, where most analysis has concentrated until recently on the conventional public sector of government policy and programmes. Thirdly, implementation studies require consideration of the “blurred line” between project implementers and project beneficiaries. The distinction between those who are expected to

implement and those who are expected to benefit is open to critique on the basis of the contemporary emphasis on popular participation in policy formulation and on local ownership of development projects. This study also contends that it may be difficult to identify the interests of the various project stakeholders who are not the target group or intended project beneficiaries.

In addition to these three challenges, the conceptual approach of this study suggested that the past three generations of implementation studies had certain “blind spots”. One area of neglect relates to the targeting of “clients” or “beneficiaries” by projects, therefore situating them as objects of implementation. Participants are thus not seen as agents of social, political, economic or environmental change. Informed by the concept of human agency, this study has recognised that individuals and groups of individuals participating in a project can, and do, resist aspects of project delivery. Attention is focused on how farmers attempted to escape or negotiate the elements of the AEP and its process that they opposed.

A second and related weakness of implementation studies is that with very few exceptions, implementation analysis has generally been unresponsive to gender issues.ⁱ Gender relations are especially relevant because they underlie “who gets what” from development policy and project implementation. Through the lens of gender analysis it can be seen that development policy and project structures do not intrinsically promote fair and inclusive gender relations (Moser, 1993; Jackson, 1997; Goetz, 1997).

Organisations that lead projects intended to benefit resource-poor rural women are social structures that can be “resistant to change”. A central argument in the analytical approach of this study is that if implementation analysis is to be relevant to emerging global development and environmental issues, the concepts of human agency and gender relations must be taken into account to transform the way that implementation is conceptualised and practised. To this end, a conceptual model was proposed to analyse the process of implementation, and to examine why implementation studies inform research on the institutionalisation of agroforestry at the local level (see Figure 8.1).

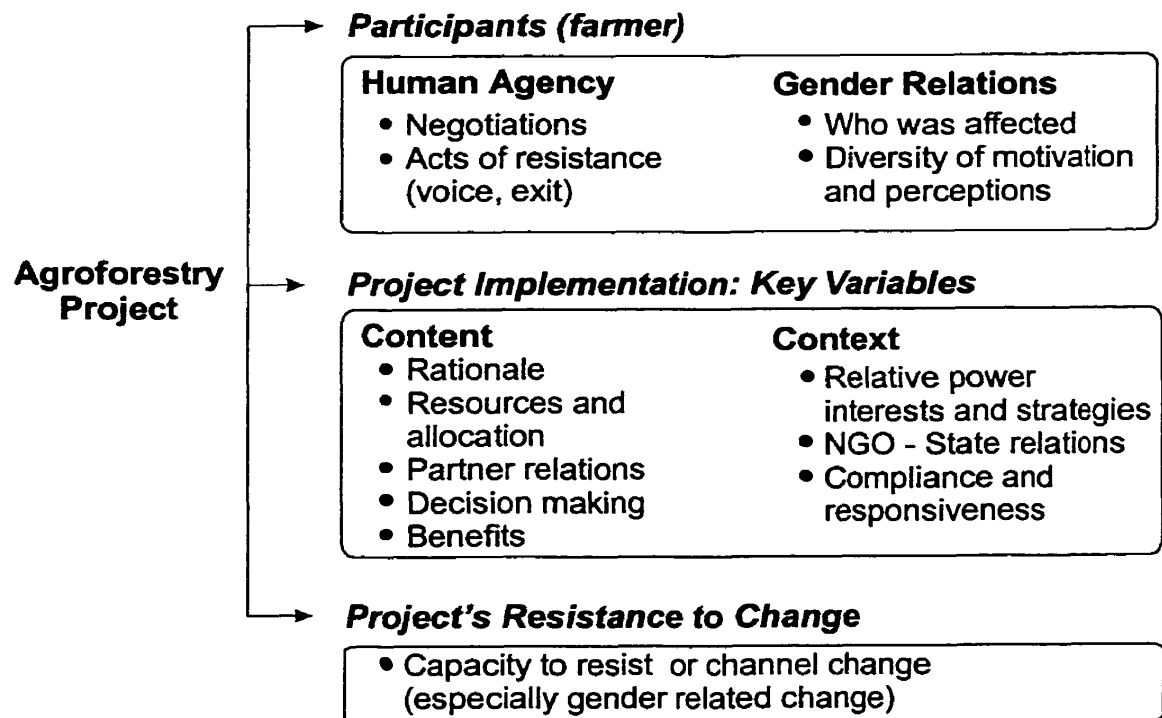


Figure 8.1 Analytical Approach to Agroforestry Project Implementation and Institutionalisation

Following Grindle (1980) and Najam (1995), implementation analysis was seen as encompassing both project content and project context. In this respect, the content of the AEP (new and improved agroforestry technologies for small-scale farmers) was argued to be inseparable from its process (project management and outreach to farmers). This framework recognised the challenges explained above and proposed work towards a “fourth generation” of implementation analysis. It also specifically addressed the two blind spots of gender relations and human agency. Accordingly, the framework was applied to the analysis of one of sub-Saharan Africa’s oldest and largest agroforestry development projects, the Agroforestry Extension Project in Siaya District, western Kenya. This case study was relevant because the goal of the AEP was the institutionalisation of agroforestry at the local level. The project was expected to lead to direct benefits for resource-poor farmers in Siaya, many of whom are women. To what extent the implementation of the AEP institutionalised agroforestry in Siaya, and why, were the key research questions explored in this study.

We shall now focus on each of the components of the analytical approach in light of the results of the case study, to draw together the key conclusions, identify the key elements of this framework, and propose any necessary adjustments.

8.3 Content of the Project

The analysis of the content of a particular policy or project draws attention to its underlying logic. In earlier generations of implementation thinking, Pressman and Wildavsky (1973: xv) described implementation content as “the links in the causal chain

so as to obtain the desired results”. Although the direct, causal relationships between project content and impact have since been dismissed by some analysts, the relevance of the goal, theory and methods of a project to its outcomes remains a critical dimension for explaining the implementation process (Grindle, 1980; Najam, 1995).

The approach used in this study emphasises five components of project content: rationale, resources and their allocation, relations with partners, decision making and benefits. The following sections summarise each of these components on the basis of the research findings.

8.3.1 Rationale

The Agroforestry Extension Programme significantly altered its rationale (or purpose), approach and organisational structure over the course of its implementation. On the other hand, the goal of the AEP did not change. This goal was described as “... the institutionalisation within the socio-political fabric of the identified target areas, of locally self-sustaining agroforestry development strategies” (Vonk, 1986:9). The analysis of AEP work plans and evaluations showed that the project rationale was repeatedly reconstructed. The AEP’s specific objectives and extension approach to farmers also changed accordingly. The re-writing of the project’s logical framework, described in Chapter 5, is one indicator of these shifts (see Annex 12). In this regard, it is argued that there were three critical shifts in the AEP over the course of the project’s implementation in Siaya:

1. The focus of the AEP on tree planting and agroforestry for woodfuel production (roughly between 1982 and 1987) was de-emphasised and agroforestry benefits for household food production and environmental

rehabilitation were highlighted (1987-90). Extension activities focused on “women’s groups”; later, with reference to a “gender perspective”, these same groups were renamed “farmers’ groups”.

2. The group extension approach was dropped in favour of an individual-farmer approach, but that was used for only 12 months (1991-92). The AEP then reversed its approach and focused again on groups. The new groups were “community-selected” farmers’ groups and youth groups.
3. Nursery seedling production for on-farm tree planting was de-emphasised in favour of multipurpose agroforestry interventions. The AEP was reformulated as the AE (Agroforestry Element) and focused on “adaptive research” that involved testing various local and hybrid crop varieties, income-generating agriculture-based activities and, to a much reduced extent, tree planting and farm forestry practices.

The changes in the AEP’s rationale and approach were induced by external shifts in thinking and policy about agroforestry. In essence, the AEP emerged in the early 1980s from a paradigm alarmed by the prospect of a global energy crisis, deforestation and woodfuel deficits among the rural poor. Rural women walking long distances to collect woodfuel dominated the imagery of the “woodfuel crisis”. In sub-Saharan Africa, organisations like CARE International embarked on projects to respond to this scenario. Once the belief in an impending “woodfuel crisis” had been shaken, so, too, was the rationale of the AEP in Siaya District. The rationale was reconstructed to fit with the emergent paradigm that emphasised agroforestry production and its potential for income generation among small-scale farmers. It was not only woodfuel that took a back seat to other production issues in agroforestry, but also the AEP’s women’s group approach. Indeed, the AEP replaced the term “women’s groups” with “farmers’ groups”. Eventually, the project abandoned its focus on these groups in favour of individual farmers that were

considered by the project to be progressive or pro-agroforestry. However, within a short time, the AEP judged its approach to be a mistake and returned again to groups. These were, however, almost entirely new groups of farmers and were referred to as “community groups”.

The results of these modifications are central to understanding the implementation process of the AEP. Analysis of the changing rationale of the project unveils the fundamental changes and choices that occurred within the AEP and helps to explain why some farmers and women’s groups in Siaya that were once involved in the AEP perceived the project to be unreliable. Most importantly, the shifts in rationale and approach occurred without a change in the overall project goal. Thus, the apparent contradiction between the project’s overall goal and its changes in rationale proves a useful analytical element with which to understand project implementation.

8.3.2 Resources and Their Allocation

A second element of the content of project implementation relates to the adequacy and allocation of financial resources in the AEP. Najam (1994:48) states that this is the most frequently referred to variable in the analytic literature. Morah (1990) argues that there is a universally recognised basic resource requirement for project implementation. However, the minimal financial, human and physical resources necessary are impossible to generalise across different projects. This study of the AEP suggests that the project had substantial implementation capacity in terms of funding between 1982 and 1995. Its

resource problems lay not in obtaining, or even maintaining, the basic requirement, but rather in the way the funds were allocated.

Chapter 5 explains the start-up of the AEP and its early financial support from American and Canadian sources. As one of the largest and oldest agroforestry development projects in sub-Saharan Africa, the AEP had considerable human, physical and financial resources at its disposal (Cook and Grut, 1989). It is estimated that over 70% of the funding came from Canada through a multi-part assistance package including programmes in agroforestry extension (the AEP), women's income generation and employment (WIG/WED) and primary education and polytechnics (CIDA, 1991; 1995). Phase I of this programme was known as Rural Integrated Development (RID), and Phases II and III were labelled Skills and Resources for Community Productivity (SRCP). By any standards, the four components of the RID and SRCP constituted a major commitment by a bilateral donor to an NGO. Under the RID (1983-92), CIDA support for these four components totalled \$14.4 million Canadian dollars. From 1992 to 1995, the Canadian contribution to the SRCP totalled a further CAD\$12.4 million.

As the largest of the four components, the AEP apparently received the greatest proportion of CIDA support. In 1991 the AEP was valued at about CAD\$10,877,743, with 10% of the budget allocated to CARE-Canada for its support costs (Smillie, 1990). Phase II of the AEP, which ended in 1992, cost approximately CAD\$9.88 million dollars. Phase III of the project, over 1992-97, cost a further CAD\$4,382,001 (personal communication, CARE-Canada Programme Manager, 1997). The integrated approach to funding adopted

by CIDA and CARE makes it difficult to be precise about the portion of funds allocated to the AEP, and specifically to Siaya District. However, during the 12 years examined in this study, the project had no less than CAD\$10 million and possibly as much as CAD\$14 million available to it.ⁱⁱ

The allocation of resources within the AEP fluctuated over the project's lifetime. As described in Chapter 5 (section 5.4.2), in the mid-1980s the devaluation of the Kenyan shilling resulted in additional, unplanned income to the project that contributed to the ten-fold expansion of activities between 1983 and 1987. Likewise, subsequent decline in development assistance from CIDA to CARE-Kenya in the early 1990s seems to have contributed to reduced activities (CARE, 1991).

The financial resources available to a project are relevant to the analysis of implementation because they implicate other project management decisions, including the expansion (and later contraction) of physical and human resources.ⁱⁱⁱ During its most active period in the late 1980s, the project had an extremely favourable extension worker-to-farmer ratio (1:65).^{iv} A new, well-equipped headquarters building was also built in the town of Siaya, reinforcing the significance of CARE-Kenya activities in Siaya District and eclipsing the approximately 26 other NGO programmes operating in the district (Charles and Wellard, 1993). As explained in Chapter 5, the infrastructure of the AEP had a significant spread from Nairobi to Kisumu to Siaya (and South Nyanza). When the project grew, so, too, did the amount of time and energy that went into communicating and problem solving across three levels of project management. Resource availability and

allocation underpinned the growth of the bureaucratic structure of the AEP (Buck, 1993). This undermines the belief that NGOs are less bureaucratic in project implementation than other public services (Heginbotham, 1975; Ripley, 1986). However, the bureaucratic behaviour of NGOs may be less important than the implications of resource expansion and contraction on a project's relationships (e.g. on the relation between the NGO and farmers' groups). In the light of the wider (structural) adjustment in public services, this consideration is particularly important for agricultural and rural development throughout Kenya (Bigsten, and Ndung'u, 1992; Byerlee and Eicher, 1997). It is not clear how the combined contraction of government and non-governmental services is affecting resource-poor farmers in Siaya. Further research on this "double blow" is called for.

Towards the advancement of the analytical approach used in this study, it is possible to confirm that resource availability was important in explaining shifts in the implementation of the AEP. Again, it was not the basic financial resources that were necessarily the main issue, but rather the allocation of resources in the process of implementation.

8.3.3 Relations between Partners

In the conceptual framework, it was envisioned that relations between partners or individuals and organisations referred to by Bardach (1977) as implementation "players" infuse the content and the context of a project. The context of the AEP is addressed in section 8.4. With regard to content, there were two sets of critical relations between

partners in the project: at the tree-nursery or field level and in the domain of project management.

At the farm level, an important relationship existed between AEP field staff, women's groups and individual farmers. Extension workers were bridges between the AEP and its participants (farmers). However, women's groups were the "entry point" for this contact. It has been recognised in other research, for instance, that the attitudes of foresters towards farmers and the inter-personal communication style of agricultural extension workers in Kenya are relevant to farmers' willingness and decisions concerning agricultural and agroforestry technologies (Dove, 1992; Mung'ala, 1996; Mwangi, 1998). In the case of the AEP, farmers' descriptions of their groups suggested that extension workers trained and employed by CARE played a key role in the technical, material and moral support provided to women's groups. In this respect, the role of the CARE extension worker in AEP implementation epitomised the influence of the civil servants that Lipsky (1980) has called "street-level bureaucrats". According to Lipsky, these typically junior civil servants are *de facto* policy makers and policy breakers because they are closest to the client and have the capacity to modify policies or activities in accordance with their own preferences. The decisions and actions of street-level bureaucrats could effectively become the public policies they carry out, argued Lipsky (1980:25). For this reason, he believed, implementation revolves around the actions of key individuals such as extension workers, and controls are required in the project to ensure that field staff comply

with project processes and the instructions of those in authority (Lipsky, 1980; Najam, 1995).

CARE extension workers (nearly half of whom were female in 1991) behaved as “field-level bureaucrats” who developed important relations with women’s groups and farmers. Chapter 7 explained how the personal and professional behaviour of extension staff affected the trust between the project, women’s groups and farmers. Farmers conveyed regret over the break-up of these relations, but in some cases identified them as contributing to the collapse of women’s groups. Such a partnership at the field level made farmers, women’s groups and extension workers interdependent. When the AEP’s rationale and resources changed, relations between extension workers, women’s groups and farmers inevitably followed suit. The substantial restructuring of the project, including the transfer of extension workers and the decision of the AEP management not to address issues of women’s group membership and leadership, weakened relations between farmers, groups and project staff. The influence of extension workers as “field-level bureaucrats” was apparent in this case study. However, influence over project outcomes was exercised more through the control of AEP managers than the actions of extension workers.

A second area of influential “partner relations” was not concurrent “partnership” *per se*, but a relationship between agroforestry projects and consecutive project managers, or advisors from different levels of CARE, or other organisations, over time. It was noted in section 5.3 that AEP managers tended to emerge from other agroforestry research and

development projects in Kenya. Subsequently, they moved from the AEP to other NGOs or higher positions within CARE International. What happened in other organisations in other parts of Kenya thus affected the content of the AEP in Siaya District, and from Siaya the AEP's influence may have spread to other organisations.^v In this "web of organisational relations" there is an apparent movement of knowledge, personal alliances and perspectives, along with the relocation of project managers (Levy, 1998). A good example of this involves the former Mazingira Institute Agroforestry Plots Project manager, who joined the AEP as a planner and later became a technical advisor to the regional programme of CARE. This advisor later argued that the systematic project planning, monitoring and evaluation process originally designed for the AEP had been abandoned as a result of turnover in project management during its implementation (Buck, 1993). The project was reported to have moved from the initial prototype agroforestry technologies it promoted towards farmers' design and adaptation of agroforestry interventions by their own methods. One of the consequences of this change was the dropping from the AEP of elements such as systematic monitoring and evaluation. A succession of project managers shaped the actual content of the AEP, paying greater attention to delivery of some parts of the plan than others. In this way, project managers and advisors took an active role in blocking or facilitating change in the AEP and in moving knowledge and influence from project to project.

Based on the discussion of relations between extension workers, groups and farmers, as well as between consecutive AEP managers or advisors, the element of

“partner relations” is confirmed to be a relevant focus for the analysis of project content and implementation. As Grindle (1980) has argued, these relations are implicitly political because they implicate power differentials among partners. For this reason, the term relationships is preferable to partnerships. The notion of partners in the project hides the fact that a middle actor (e.g. an extension worker or an influential male group leader in women’s groups) may mediate relationships. Furthermore, relationships with a significant influence over the content of the project did not occur concurrently, but rather involved personal alliances, positioning and knowledge transfer among the succession of project managers who would not normally be considered “partners” in the project.

8.3.4 Decision Making

The “roll out of implementation effort”, states Rist (1994), involves a complex of various decisions made within the project by different actors over time. Grindle (1980:5-6) is even more definite about the relevance of decision making to implementation:

Implementation is an ongoing process of decision-making by a variety of actors, the ultimate outcome of which is determined by the content of the program being pursued and by the interaction of the decision-makers within a given politico-administrative context.

However, the “messiness” of implementation makes weighing of all project decisions (or sets of decisions) against one another a less-than-satisfactory method of exploring implementation. Not only would such an analysis be extraordinarily difficult within a case study of the AEP that spans 12-13 years, but it would also sever the content of what is being decided from other decisions within the context of implementation. As explained in

Chapter 2, this was exactly one of the weaknesses of earlier generations of implementation analysis.

Nevertheless, decision making is fundamental to explaining the process of implementing a particular policy or project (Heginbotham, 1975; Ripley, 1986). Grindle (1980) argues that the site of decision making as well as the type of transactions and negotiations conducted are relevant to policy implementation. At the project level, it is the nature of decision making and the extent to which project beneficiaries have input into decisions that are thought to be the most relevant factors (Honadle and Van Sant, 1985; Finsterbush and Van Wicklin, 1987). On this point, most debates concentrate on the relevance of “top-down vs. bottom-up” methods of decision making (Sabatier, 1986). New models of implementation and participation have suggested that the strengths of both “top-down” and “bottom-up” perspectives need to be combined (Najam, 1995; Barrow and Murphee, 1998).

In the case of the AEP, the implementation process was both “top down” and “bottom up”, although the balance seems to have fallen routinely in favour of non-consultative procedures when major decisions concerning project implementation were being made. Examples of such major decisions were given in earlier chapters. They include the AEP’s early choice to “leave women’s group formation to the groups themselves”, the project’s failure to retain and manage information about its activities and outcomes, and the eventual end of material and technical inputs to the women’s groups without their full involvement in the decision. In retrospect, such decisions ran contrary to

the participatory image of the project generated by its significant reputation in the literature on agroforestry at the start of this decade (Magee, 1987; Spurgeon, 1988; Cook and Grut, 1989; Vonk and Safman, 1991; Charles and Wellard, 1993:100). This current analysis of the AEP suggests that whereas farmers participated in the project processes, they were generally not incorporated into decision-making processes. At the same time, it is not realistic to expect farmer participation in the AEP alone to have been sufficient to have led to “bottom-up” decision making at all levels of the project, in all activities or across all periods of time.

Decision making is not sufficiently focused to be as useful an analytical component in the implementation model as originally expected by the author. Possibly, the extent of client participation and the analysis of top-down or bottom-up processes would be more useful. However, that element is difficult to work with in view of the complex relationships in implementation, which involve multiple stakeholders over a long period of time. It is advisable, therefore, not to single out decision making as a specific element of project content, but rather to ensure that it is built into the analysis of relationships in the implementation process.

8.3.5 Benefits

In Grindle’s (1980) model of implementation analysis, benefits are referred to as achievements or success gained as a direct result of the policy or project. These benefits are recognised, publicised and valued among partners involved in the process. Typically, implementation analysis has tended to focus on tangible benefits, in part because the

quantitative, or more precisely monetary, value of the policy benefits are used to justify the policy or project initiative. Increasingly, however, the intangible benefits of environment and development policy and project implementation must also be taken into consideration, given the importance of the non-commercial costs and benefits of development activity across and within different cultures and societies (Dia, 1996; Kabeer, 1997)

The achievement of both tangible and intangible benefits was an important motivation for individual farmers and women's groups involved in the AEP. Chapter 7, explained that the achievement of benefits by farmers, as a group and as individuals, was apparently one of the reasons why groups survived. These benefits were mainly related to increased access to capital, labour and arable land. However, it would be more appropriate to envisage project benefits as "open ended" rather than fixed. This point is emphasised because certain benefits of the AEP could exist at one point in time, but not necessarily at another. Groups that had once been strengthened by the AEP could later collapse. Given the results of this case study, statements such as the following are indicative of the difficulties of evaluating project benefits and impact:

The impact of the various agroforestry programmes in (Siaya) is visible in the increased awareness of environmental issues and management in the district and the adoption of sound land use strategies based on agroforestry. The project has also strengthened groups and thereby increased people's participation in development at a very practical level. In the long run, CARE hopes to make the project self-sustaining and is therefore promoting the independence of its beneficiaries, mainly through groups (Charles and Wellard, 1993:108).

Despite this statement, the results of this study suggest that most AEP women's groups encountered many problems, with at least two-thirds of the groups involved in this study, that were once active in the AEP, having collapsed by 1995.

Furthermore, this current analysis of the AEP suggests that statements of project benefits and impact cannot be used without careful consideration of the methods and relation of the evaluator to the project's implementation. For example, it was claimed by a former AEP advisor that the AEP was responsible for the adoption of 23 combinations or types of agroforestry and the planting of 36 different species of trees by some 100,000 farming households in Siaya District (Buck, 1990:127). As explained in Chapter 4, agroforestry interventions are rarely "new" to farmers in Siaya. Many types of agroforestry were being practised long before the AEP was implemented, and the influences on them included colonial and post-colonial policies and programmes leading up to the emergence of NGO projects. Unfortunately, the AEP never reassembled the information that it lost concerning farmers' pre-project agroforestry-related activities, although the baseline data would have provided evidence to use in the evaluation of the AEP.

A second example of such claims comes from the CARE/ICRAF impact study that sought to attribute agroforestry adoption in Siaya to the AEP's efforts. The study stated that an average of 243 trees per farm (including live fences) had been planted by AEP farmers (see Chapter 5). However, the reliability of such figures is limited, in part because of the methodology used to assess farmers' adoption of agroforestry. For instance, the study discounted the extent to which agroforestry is practised among non-AEP farmers in

Siaya District. Also, the assessment by CARE/ICRAF paid scant attention to factors such as “other land” owned, rented or borrowed by AEP farmers, gender relations at the household level and the influence of the women’s groups. Consideration of these factors would require modifications to the impact survey methodology or measurement of the area of farms in Siaya. It would also need highlighting of the key differences between and among different farmers and women’s groups.

Inevitably, the adoption of agroforestry can be seen as an ephemeral claim. Alston *et al.* (1995) admits that there is no definitive point at which to assess adoption of agricultural technology because of the time lag between when a technology is developed, disseminated and put into practice. They suggest that adoption occurs when “improvement in technology yields a stream of future benefits that continues until after the knowledge or new technology becomes obsolete” (Alston, *et al.*, 1995: 29-30). However, the “sustainability” of agroforestry should be assessed as a “system’s ability to continue through time”, according to Hansen (1996:128). The findings of the current study suggest that the time lag between the adoption and abandonment of certain types of agroforestry may be relatively short (less than a few years), particularly if the support system around the technology begins to erode. Clearly, the concept of sustainability in agroforestry requires longer time periods than most claims of adoption could appreciate.

As short-lived statements made characteristically by individuals or organisations with a stake in a project’s outcomes, implementation analysts should debate further the notions of project benefits and impact. This discussion could be widened to address the

role of influential partners, competing interests and perspectives in a project. This would mean, for instance, asking “who benefits and why” from an agroforestry project. The claims of agroforestry adoption and impact are especially limited when they do not address the historical and environmental context of the project. In the implementation framework, the element of “benefits” should be rewritten as “who benefits” in order to inform the analysis and rethink notions of benefit, adoption and impact in policy or project delivery.

8.4 Context of Project Implementation

The context of project implementation is connected to and surrounds the content of the project. Project context is considered critical to implementation analysis because it involves inter- and intra-organisational relationships that generate convergent and divergent interests in a project (Grindle, 1980:14). Therefore, context is the larger social, cultural, political and legal structure around a particular policy or project. Such factors account for variation in project implementation experiences in cases where the identical project content is introduced into different temporal or spatial environments.

To understand the context of the AEP, it is useful to consider relations both in and beyond the local level where most project activities normally occur. In the analytical approach of this study, the context of implementation was defined in three ways: the relative power of collaborating organisations, relations between the NGO (CARE-Kenya) and the Kenyan State, and finally, the AEP’s compliance with and responsiveness to wider environmental and development policies.

8.4.1 Relative Power, Interests and Strategies

As Chapter 5 brought out, all the “right” organisational linkages existed in the Agroforestry Extension Programme in Siaya District (Cernea *et al.*, 1985; Raintree and Hoskins, 1989; Kaimowitz, 1990). The NGO designed and implemented the AEP, to some degree in collaboration with an international research centre (ICRAF), a national research institute (KEFRI) and the Forest Department at national and district levels. The AEP, therefore, involved the type of local, national and international collaboration (or linkages) often called for by international environment and development policy makers and leaders of research and development institutions.^{vi}

As one might expect, certain links were stronger than others during the implementation of the AEP. For CARE-Kenya, these external relations were necessary if the AEP was to move towards its goal of institutionalising agroforestry at the local level. This meant, for instance, that relations with the District Office and the Forest Department could not be replaced even when the project shifted its rationale and approach. As elaborated in the next section, CARE-Kenya sought collaboration, not confrontation, with the District Office.

The discussion of the major landmarks in the evolution of the AEP (in Chapter 5) identified how relations among the various organisational partners emerged and fluctuated. The interaction between ICRAF and CARE, for example, fluctuated over the course of project implementation. In the design stages, co-operation was instigated by project planners as well as the transfer of knowledge between the earliest NGO

agroforestry research and development projects in Kenya. The use of the Diagnosis and Design (D&D) farming systems research method developed by ICRAF connected the organisations, although there were apparent differences of opinion over CARE's adaptation of the ICRAF method and the "extension readiness" of agroforestry prototype technologies at ICRAF.

To some degree, ICRAF's key strategy in relation to the AEP was to replace its own role with the involvement of the newly formed Kenya Forestry Research Institute (KEFRI). While this partnership was nearly a decade old by 1995, project evaluators criticised the actual conduct of the national research institute's collaboration with the AEP and characterised the research-extension link as weak (CARE, 1995). One of the five AEP research sites described in Annex 10 describes some of the apparent difficulties in the "partnership" between CARE, KEFRI and ICRAF. Developing a link relevant to the needs of farmers proved particularly difficult, given the different strategies or objectives that each organisation had for collaborating in the AEP. Najam (1995) argues that such variation among partners is based on the relative power within the coalition. Certainly, as international organisations, ICRAF and CARE had greater resources at their disposal than other organisations such as the Forest Department and KEFRI have at the local level. The relations between CARE and KEFRI in the AEP were dependent on the exchange of resources (e.g. transport for KEFRI and technical assistance from the national forestry research institute for CARE). Power differentials within the coalition, structured by resources and their control, shaped the research-extension-farmer linkages.

It is also useful to draw upon Najam's (1995) concept of commitment to the implementation process to understand the fluctuating relationships between the NGO and international and national research institutes. Commitment permeates the coalition to ensure that partnerships generate on-going support for project implementation. To some extent in the AEP, each organisation needed to have some gain from the coalition. The findings of this study suggest that not only do individual managers or researchers need to be committed and identify gains to their collaboration, but so, too, do their senior managers in the organisation. If commitment breaks down at the national level, it is unlikely that the linkage will work at the local level. Likewise, if the local relationships are faulty, then the broader links are weakened. Undoubtedly, in the case of the AEP the difficulty lay not in creating the linkages, but in maintaining them. It is useful, therefore, to view the NGO as being in a situation where it had to maintain benefits not only for farmers, but also for itself as an organisation (i.e. its reputation), and, inevitably, benefits for the coalition behind the project.

This study reinforces the importance of the relative power, interests and strategies as an element of the context of project implementation. Implementation is not a linear progression of activity, but a complicated process whereby competing interests, repeated negotiations among organisational partners, and efforts to rebuild commitment and provide benefits to a wide range of stakeholders (not just project participants) are undertaken. Organisational partnerships or linkages within the AEP also played a key role in connecting policy at the international and national levels to what was happening at the

local level. Not surprisingly, the author's analysis suggests that whereas linkages between agricultural and forestry research and extension are often advocated, in practice these connections can be intermittent, dysfunctional and political in nature.

8.4.2 NGO-State Relations

Development processes in Kenya have a history of substantial NGO involvement. In general terms, NGOs are part of Kenyan civil society but vary widely due to the reasons implied in the definition below:

... civil society is, together with state and market, one of the three 'spheres' that interface in the making of democratic societies. Civil society is the sphere in which social movements become organised. The organisations of civil society, which represent many diverse and sometimes contradictory social interests, are shaped to fit their social base, constituency, thematic orientations (e.g. environment, gender, human rights) and types of activity. They include church-related groups, trade unions, co-operatives, service organisations, community groups and youth organisations, as well as academic institutions and others (UNDP, 1993:1).

Analysis of the power relationship between the State and NGOs indicates that there are limitations to the State's capacity to pervade and control civil society. Power relations arise because members of a society may separate themselves from, and exert influence upon, the State (Halvorsen, 1991; White, 1994; Bebbington and Riddell, 1995; Grindle, 1996).^{vii}

In Kenya, some non-governmental organisations collaborate with State agencies and attempt to influence the policy and practice of the public sector (see Chapter 4, section 4.5.3). Other (or possibly the same) NGOs may assume an advocacy or confrontational role. As Ndegwa (1996) has argued, some Kenyan NGOs have swung from confrontational to collaborative relations (and back again). Because civil society can

oppose the State, but also accommodate it, the potential two-sided (collaborative/confrontational) identity of NGOs is particularly relevant in the context of implementing NGO projects. Moreover, such considerations are critical, given calls for the increased involvement of NGOs in sustainable agriculture and related development policy and projects (Korten, 1990; Farrington *et al.*, 1993).

The Kenyan State has sought to co-ordinate NGOs, nationally through the Office of the President and locally through the District Offices.^{viii} Such interest within the State is based on two key realities. One is that some NGOs have led efforts for political change in Kenya. Secondly, the total amount spent annually by NGOs in Kenya has been estimated at US\$350 million (Fowler, 1993).^{ix} Consequently, State co-ordination at the national level has attempted to fix political and administrative controls over financial transfers between donor agencies and civil society organisations and to regulate activities in various areas of the country (personal communication, Office of the President, 1995; Riddell, 1997; Attack, 1999).

At the district level, development project planning and implementation brings NGOs into close proximity with State structures and control mechanisms. As described in Chapter 5, the District Office in Siaya has interacted with the AEP largely through the District Development Committee (DDC) and a sub-DDC committee on agroforestry.^x It has also been pointed out that introducing the project to local government was one of the first tasks to which the AEP attended in 1982/83. This study has identified CARE's collaboration with the State in terms of screening of women's groups through government

officials and local *baraza* (location-level meetings at the chief's camp), and acquiescence in the enforcement of State policies that influence farmers' practice of agroforestry or access to tree products. These include policies related to the harvest of indigenous species of trees, charcoal production, and male membership in women's groups. For instance, the NGO did not protest against the enforcement of the forestry policies by local chiefs whom some farmers labelled "tree policemen" (see Chapter 4, section 4.5.1). In this respect, policy issues on which the NGO was silent were indicators of its relation to the State. A good example of this point is that despite the AEP's goal of institutionalising agroforestry in Siaya, during the 13 years examined in this study the project completely avoided tackling key institutional issues related to women's groups, gender relations and land tenure.^{xi}

Therefore, CARE-Kenya's implementation of the AEP generally reflects an accommodation with the Kenyan State at the national and local levels rather than advocacy for substantial social and political change. Indeed, literature on the AEP describes State partnerships as a desirable part of the AEP's plan to "institutionalise" agroforestry in Siaya (Buck, 1993; CIDA, 1995). Yet, the AEP should have foreseen that certain of its decisions would not so much reform institutional relations as conform to existing power structures and the influence of State officials at the local level. One example of this described in Chapter 5 was the hiring of the District Forest Officer as a project manager in the mid-1980s. At least three former Forest Department employees were also accepted as "shadow leaders" of AEP women's groups. In the short term, the

AEP may have gained valuable knowledge and political support by inviting civil servants into the AEP structure, but in the longer term the decision engaged governmental/non-governmental entities in a way that undermines the distinction between State and civil society.

In many respects, the element of NGO-State relations in the analytical approach fits in well with the case study of the AEP. It provided a strong basis for identifying how national-level State mechanisms operate at the local level, and how local-level relations between NGOs and the State are relevant to agroforestry projects.

8.4.3 Compliance and Responsiveness

Compliance with, and responsiveness to legal and regulatory “national machineries” are a fundamental aspect of implementing international conventions that concern policies of direct relevance to women, environment and development issues (Found, 1991; Brinkerhoff, 1996a; del Rosario, 1997; Victor *et. al.*, 1999).^{xii} Macro-structures such as the 1992 United Nations Conference on Environment and Development (the “Earth Summit”) are part of the wider context in which projects in developing countries, such as the AEP, should be analysed. To some degree, such conventions structure international and national policy formulation, financing, planning, monitoring and reporting on activities in a particular sector or theme.

In Kenya, international Conventions have led to the development of a number of “strategic action plans”, which are known by their respective acronyms. In the area of agroforestry research and development work in Kenya, the major national policy and

programmes to emerge are the NFMP (National Forestry Master Plan, including the National Agroforestry Plan), the NWMP (National Water Master Plan) and the NEAP (National Environmental Action Plan). Intersecting this array of policies are other Conventions from sectors such as social development (and the advancement of women), population and health. In Chapter 4 it was indicated that past and present national programmes relevant to farm forestry and agroforestry in Kenya have involved complex inter-ministerial, inter-organisational relationships in their implementation. A similar situation arises in the case of the strategic action plans. Not surprisingly, the weak co-ordination and/or financing of these diverse national apparatus are still key issues related to institutions in agroforestry.

In Kenya, the NEAP, NFMP, etc., are part of the institutional context and structure in which agroforestry projects currently operate. Many of these macro- structures postdate the AEP and the period of project implementation investigated by the author. However, there are two relevant exceptions. One is the response of the AEP to the National Agroforestry Strategy (see Annex 9). The development of this mechanism was led by KEFRI. While CARE-Kenya representatives attended the policy workshops, the AEP had no direct response in terms of its implementation. Quite the opposite: when the AEP became the AE (Agroforestry Element) in 1993, CARE was already beginning to play down agroforestry in Siaya in favour of other adaptive research and extension activities.

A second example was the response to the Earth Summit's Agenda 21, the keystone global policy statement on environment and development released in June 1992.

This reaction was demonstrated mainly by a special meeting and a publication entitled “CARE for the Earth” (Hanington, 1992). There were few other indications that the Convention had reached and penetrated existing implementation efforts at the local level. Unlike other NGO projects, the AEP has not engaged in activities to mobilise local people around the issues raised by the Earth Summit (United Nations, 1992).

The AEP’s compliance with and responsiveness to international and national machineries and legislation was not at all clear. As possible frames of the context of a project, compliance and responsiveness are important analytical elements conveying the scope and scale of the complexity of implementation. Given the array of numerous and overlapping national mechanisms relevant to agroforestry in Kenya, questions about the effectiveness of these multiple structures and their articulation at the local level need to be given greater attention.

8.5 Gender Relations and Farmers’ Agency

The relevance of content and context in project implementation were discussed in the previous sections. Implementation analysts often argue that the relations of individuals and organisations involved in the implementation process inextricably connect project content and context (Grindle, 1980; Warwick, 1982; Najam, 1995). In this section we shall emphasise the point that the concepts of gender relations and human agency are not fully integrated into the analysis of implementation content and context. These relations are critical to the implementation process because they underpin “who gets what” from the policy or project. For instance, we have seen that the intention of the AEP was to benefit

resource-poor women farmers in Siaya. Outwardly the project recognised the significant role of women in agricultural production and it worked with “women’s groups”, but the AEP did not respond to gender issues in any major way during the implementation process.

The concept of gender in this study was defined as the socially constructed relations among men and women at the level of the household, organisation and wider society. In the case of the implementation of the AEP, the author’s analysis of gender relations exposed the ways in which discrimination against women is structured within the project as well as generally in Siaya. For instance, in its administrative procedures, organisational relations and technology delivery, the AEP repeatedly encountered problems related to gender issues. Yet, certain decisions taken within the AEP tended to avoid these issues, which included the mixed membership of women’s groups, group leadership, and some women’s lack of access to capital, labour and arable land. Moreover, the NGO did not engage in advocacy for fair and inclusive gender relations or seek to empower women who were adversely affected by restrictive policies related to agroforestry. From this perspective, the AEP can be seen as representing one way in which gender inequities were structured in Siaya.

Women are not necessarily passive in development structures and project implementation. It is useful to draw upon the ‘theory of structuration’ proposed by Giddens (1984), which identifies the interaction between structure and human agency as well as the potential for change in a particular society (Layder, 1994). This study has

proposed that the concept of human agency implies that individual actors such as farmers behave as agents in the implementation process and may act in conformity with or against the structure of the project.

The author's analysis of the implementation of the AEP showed that farmers did act in solidarity with the project according to their collective and individual needs or interests. However, several examples of farmers' agency that involved resisting or acting against the project were also distinguished. In both ways, farmers demonstrated their agency, both as individuals and as a group. Table 8.1 summarises some of the examples of farmers' agency, and specifically women's agency, evident in this case study.

The examples in Table 8.1, many of which were elaborated in earlier chapters, suggest that farmers' agency can be characterised as entrepreneurial (e.g. optimisation of their individual and group resources through savings and loans activities), opportunistic (e.g. access to labour by male and female farmers in monogamous households) and survivalist (e.g. "insurance" or emergency funds for funerals). Farmers' agency is not only economic, but also implicitly political. This study suggests that AEP farmers also exerted their agency by speaking out against developments in the course of the AEP's implementation. Farmers specifically complained that the AEP had broken trust by recalling extension workers and ceasing its material, technical and moral support.^{xiii}

Table 8.1 Examples of Farmers' Agency Identified in the Study

Focus Of Action	Farmers' Agency (group action)	Farmers' Agency (individual action)	(Specifically) Women's Agency
Women's Group	<ul style="list-style-type: none"> Engage in group savings and loans for emergency purposes 	<ul style="list-style-type: none"> Join women's groups 	<ul style="list-style-type: none"> Join more than 3 women's groups (widows)
	<ul style="list-style-type: none"> Delay or ignore group registration 	<ul style="list-style-type: none"> Access group labour 	<ul style="list-style-type: none"> Involve men as "go-betweens"
	<ul style="list-style-type: none"> Absorb outsiders who agitate the group 	<ul style="list-style-type: none"> Opt out of the group 	<ul style="list-style-type: none"> Withdraw from men in the group
	<ul style="list-style-type: none"> Speak out against group collapse 		
Agroforestry	<ul style="list-style-type: none"> Sustain group tree nursery 	<ul style="list-style-type: none"> Sustain traditional tree propagation techniques 	<ul style="list-style-type: none"> Sustain uncomplementary planting techniques
			<ul style="list-style-type: none"> Diversify crops and planting methods
Society	<ul style="list-style-type: none"> Invest and re-invest savings and loans 	<ul style="list-style-type: none"> Resist adverse policies related to agroforestry (e.g. harvest of indigenous trees) 	<ul style="list-style-type: none"> Access "other land" – especially borrowed land
			<ul style="list-style-type: none"> Brew illicit alcohol

Source: 1995 in-depth farmer and women's group interviews (NUD*IST, node "agency").

Women farmers are not passive or powerless social actors in Siaya. Compared to men, they do, however, face considerable difficulties in obtaining fair and inclusive social relations and political representation. As described in Chapter 7, women farmers may use their knowledge or take action against inequitable social structures. They can, for instance, involve men in women's groups to obtain access to information or resources that would

otherwise be difficult to obtain. Individually, women may exit group activities (as seen in the case of non-AEP farmers or some former AEP farmers) when systemic problems associated with male “shadow leaders” or misused group resources are no longer tolerable. Also, individually and as a social group, women in Siaya take action to protect themselves in situations over which they have little or no control. For instance, Chapter 6 identified various planting practices used by women to save labour and respond to adverse climatic conditions. Women farmers also take action to access “other land” (borrowed or rented land). Such actions are not often taken into account by agroforestry researchers involved in the AEP. These options can be seen as acts of women’s agency because some women consciously employ their own knowledge and resources to advance both their practical (basic) and strategic interests. Women farmers are thus circumventing restrictive aspects of a project and opposing dominant knowledge systems.

There is also a possibility that farmers may tolerate problems and not act against the structure that operates against their interests. Women farmers’ tolerance of what appear to be disempowering gender relations within the AEP women’s groups (i.e. the influence of male “shadow leaders”) represents a situation in which they are “silent users and resisters” in the project (Tendler, 1997). Fierlbeck (1997) similarly argues that women are not necessarily able to or going to use their agency. The discretionary and bounded powers of women farmers during the project implementation process raise important issues for implementation analysis because women farmers may actively seek “space” for themselves in development activities which otherwise do not seem to benefit them

(Jackson, 1997). Women farmers in the AEP were participating in the project, but controlling their participation.

Including the concepts of gender relations and human agency in the analytical approach enables researchers to view participants as no longer passive targets of a policy or project, but rather “agents of implementation” who influence what happens during the implementation process. In the case of the AEP, women farmers in Siaya were responsible for implementing the project, but at the same time they used the project to pursue their livelihoods beyond the bounds of the AEP and its effects (Mueller, 1987). Their actions continued despite, as well as because of, the existence and limitations of social, political and economic structures.

8.6 Resistance to Change

Layder (1994) argues that social structures resist change to the fundamental basis from which they operate. This reaction to human agency underlies what he calls “the duality of structure and agency” so that one cannot exist in isolation from the other. Indeed, it was anticipated in the analytical approach of this study that the fundamental structure of a project and its process of implementation would resist the pressures for change.

Resistance to change was evident in two major ways. Firstly, there was the direct refusal of the AEP to change its fundamental structure. Secondly, resistance to change was manifested through the channelling or adaptation of change. In some cases, both reactions occurred simultaneously. Two examples illuminate this resistance, especially with regard to gender-related change.

This study found that the phenomenon of women's group collapse was inadequately recognised by the AEP although the project and its donors were aware of widespread difficulties among the women's groups in Siaya. CIDA's 1995 evaluation of the AEP actually recommended that any "trap groups" that expected further "handouts" from the AEP should be replaced as soon as possible.

"Trap groups" are groups that expressed interest in joining the project because they expected handouts, and are not functioning well. AEP staff will meet with these groups and the LDC (Local Development Committee) that nominated the group. If the group's participation does not improve, the group will be dropped and replaced with another group nominated by the LDC (CIDA, 1995:88).

Groups of farmers, whether referred to by the AEP as women's groups or farmers' groups, were fundamental to the implementation of the project. However, the AEP would not accept that the "trap groups" were an outcome of the project itself. The project played a negative role in group formation and functions by failing to tackle the difficulties concerning women's groups and by not incorporating group collapse into its analyses of project results and impact. Whereas the AEP was overly concerned about the survival rate of tree seedlings, the survival rate of women's groups was not monitored or documented.

The second major example of the AEP's resistance to change relates to direct pressures to include a gender policy in CARE-Kenya and the AEP. As brought out in Chapter 5 (section 5.5.3), the integration of a gender and development (GAD) perspective in the AEP was resisted and rejected by the project. Increased calls for a "gender perspective", including interventions from the headquarters-based GAD co-ordinator and some senior CARE managers, were opposed in the Siaya project office. AEP managers

initially subverted these interventions during the implementation process. Field staff further argued that the AEP was innately responding to the woodfuel crisis in western Kenya, which was an issue of direct concern to women farmers. Finally, it was claimed that the AEP was based on the delivery of agroforestry technologies *via* women's groups, and, therefore, the project held an implicit benefit for women farmers (Vonk, 1983; Fowler *et al.*, 1986). However, when the AEP changed the project rationale and extension approach, managers also shifted their discussions of "women's groups" to "farmers' groups" on the basis that the AEP had assumed a "gender perspective" where the groups were concerned. Similarly, whereas the project employed the term "gender" in its research and documentation, the concept was employed selectively and only as a socio-economic variable synonymous with "women", not as a relational concept implying political and social activism.

If the AEP had retained its early emphasis on "women's groups" and addressed gender relations in those groups, it would probably have been a stronger example of a gender-responsive agroforestry research and development project. However, as described above, the AEP used "gender" to obscure certain shifts in extension approach and repress action that would expose gender conflict and perhaps the project's own role in creating or maintaining gender inequity in Siaya. Ultimately, analysis of the AEP's implementation demonstrates the capacity of development structures to channel or adapt change processes that would otherwise challenge the project structure. For this reason, the inclusion of

resistance to change within the analytical approach is necessary when exploring the influence of project implementation upon prevailing social relations.

8.7 Project Implementation and the Institutionalisation of Agroforestry

The conceptual foundation on which this study is based encourages a wider view of issues concerning institutional processes in agroforestry research, and specifically calls attention to the cognitive dimension of institutions (Scott, 1995). In this approach, agroforestry activities do not exist outside farmers' meanings for them. The other dimensions of regulative and normative institutions in agroforestry are not necessarily diminished, but rather challenged in terms of their relevance to people's meaning for them. Attention is also called to the relevance of institutions at the international and national levels, as well as at the local level where agroforestry is actually practised and sustained.

The central research questions of this study were: to what extent was agroforestry institutionalised in Siaya District through the implementation of the AEP, and why? The author's analysis leads to the conclusion that agroforestry was already institutionalised in Siaya, and that in efforts to strengthen local institutions the AEP also contributed to the de-institutionalisation of agroforestry. Each of these conclusions is now explained.

Donors, policy makers and planners behind the AEP persisted in their assumption that the institutionalisation of agroforestry at the local level would occur through partnerships between farmers, women's groups, CARE-Kenya, NGOs and government organisations such as the Forest Department or KEFRI. This proved to be a narrow view

of institutional development, one that did not sufficiently consider the complexity of the content and context of the AEP. In Siaya, farmers have knowledge and meaning for agroforestry that is distinct from the knowledge introduced by the project but which can overlap with it. AEP farmers accrued this knowledge before, during and after the project. To a considerable extent, knowledge and practice of certain types of agroforestry were evident among farmers in Siaya who had never been involved in the AEP. Thus, agroforestry was institutionalised in Siaya because farmers had created their own meaning and purpose for this land use practice. Agroforestry technologies that had no meaning among farmers, such as alley-cropping, were not sustained.

In several respects, a process of de-institutionalisation occurred in the AEP. This was partly due to the abandonment of agroforestry at the household level, but was also a result of the collapse of women's groups that were an "entry point" for the AEP and supported individual farmers in their practice of agroforestry, providing members with access to scarce resources. A group's collapse led to the closure of the group's tree nursery and ended farmer access to tree seedlings. Other tangible and intangible benefits such as labour, capital, arable land and moral support were also lost. The repercussions of group collapse on AEP farmers' individual practice of agroforestry were especially pronounced, with them no longer using tree seedlings to sustain their agroforestry activities. The polybag, once the most basic of tree-nursery supplies provided to women's groups, became a symbol to farmers of the activities the AEP women's group had once engaged

in, how the nursery had worked and the material, technical and moral support farmers had benefited from, individually as well as collectively.

Still, de-institutionalisation is not necessarily totally negative. In this case study, de-institutionalisation was seen to be also characterised by farmers' acts of agency. For instance, farmers abandoned certain types of agroforestry but maintained others which held meaning for them by using "traditional" methods of tree propagation. The biological or agronomic implications of this propagation material may be less encouraging, but the point made here is that farmers found ways of acting that circumvented the restrictions facing them, including the collapse of women's groups and changes in the project. Given the opportunity, farmers may come together with other farmers or organisations that share similar objectives. Farmers' agency, therefore, contributes to creating and re-creating a shared purpose and meaning for agroforestry activities. In this respect, the potential of new and improved agroforestry technologies will only be realised if institutional structures and processes at the local level are better understood. On this final point, it is useful to recall the hope and expectation of gender analysis – that socially constructed relations among farmers and within organisations at the local level can and do change.

8.8 Summary

Using the conceptual framework proposed in Chapter 2, this chapter focused on the content and context of the implementation of the AEP. It re-examined the analytical approach employed in the study and argued for the incorporation of the concepts of human agency and gender relations as well as resistance to change within project structures.

One conclusion was that the Agroforestry Extension Programme could not claim to have institutionalised agroforestry in Siaya District. Firstly, agroforestry and the institutional process that supported it had already existed before the AEP. It also existed outside the project, among non-AEP farmers. The other major conclusion was that the AEP's implementation led to the de-institutionalisation of agroforestry to some degree in Siaya. This process was primarily shaped by the abandonment of certain new or introduced agroforestry technologies, the erosion of meaning for agroforestry that was generated by the AEP, and the collapse of women's groups, which adversely affected access to farmers' individual and collective resources. Nonetheless, this analysis suggests that the effect of de-institutionalisation was not entirely negative. The existence and persistence of farmers' agency in Siaya retained past knowledge and meaning for agroforestry and further led farmers to take action beyond the bounds of the AEP to address their individual and collective needs.

NOTES

ⁱ As discussed in Chapter 2, the exceptions include Snyder *et al.* (1996) and van Nostrand (1993). Staudt (1991) and Moser (1993) have investigated the relevance of policy implementation and the implementation of gender-sensitive development planning, but without substantial challenge to conventional implementation literature as reviewed by Morah (1990) and Najam (1994).

ⁱⁱ Even programme officers responsible for the AEP at CARE-Canada were unable to provide a precise figure.

ⁱⁱⁱ Extension workers were equipped with bicycles and field officers with motorcycles. In addition, two four-wheel-drive vehicles were available for CARE project management in Siaya District and one for the KEFRI/CARE technical officer. By 1991, the AEP included a training officer, information officer, project secretary, driver, and other shared support staff. Communication and office facilities were good.

^{iv} Extension worker-farmer ratios are difficult to compare due to variations in the size and scope of rural extension. In Siaya the District Office estimated it to be 1:3500 in 1991 (personal communication, District Agricultural Officer, 1991).

^v Unfortunately, field-level evidence of these wider relations was outside the scope of this study. It appears that CARE International transferred some aspects of the AEP design and information from the project to other country contexts (Hanington, 1992).

^{vi} It is useful to refer to policy statements such as of the CGIAR Ministerial-Level Meeting held at Lucerne (Switzerland) on February 9-10, 1995. The *Lucerne Declaration and Action Program* of this meeting established an NGO and Private Sector Committee for the international research system and encouraged international researchers to develop a more open and participatory system that would interact with civil society organisations. Similar calls have been made in Chapter 27 of Agenda 21 and other declarations of the United Nations Conference on Environment and Development (1991).

^{vii} Civil society can represent the *structure* or organisations of social and political 'space', and relationships and the *process*, or the ways in which the elements of the structure come into being and interrelate. For further information and an extensive description and bibliography, see the North-South Institute (Ottawa, Canada), internet site <http://www.web.net/~nsi/civil/csdp01.htm>.

^{viii} In Kenya, NGO activity is co-ordinated in two ways. Firstly, there is a National Council of NGOs (created in 1995), which is an umbrella organisation of 350 Kenyan NGOs. It is a self-regulating body with no government representation, funded by membership fees, grants from larger NGOs, and some donor funding. There is also an NGO Board in Kenya, organised from the Office of the President. Half the members are government officials and the other half are elected members from the National Council of NGOs. It is the government arm responsible for registration, exemption, regulatory and policy matters. It is funded only by the Government of Kenya and deals with the NGOs via its Secretariat, the NGO Co-ordination Bureau in the Office of the President.

^{ix} These substantial funds were equivalent to \$10 per capita per year, or 2.7 per cent of per capita income in 1988 (Fowler, 1993). In the same year, NGO external funds transferred into the country were equivalent to half the foreign exchange brought in by tourism, a major foreign exchange earner. See the online report by Riddell (1997) at <http://www.valt.helsinki.fi/ids/appk12.htm>.

^x This does not take away from the fact that most major decisions that affect rural development and agroforestry continue to be centralised in the Department of Forest headquarters and government agencies in Nairobi (Copestake, 1993; Mung'ala, 1996).

^{xi} Issues concerning land tenure in Siaya District and their influence on tree tenure and agroforestry were one specific focus of the study conducted by the author in 1991

(Hambly, 1992). At that time, and in 1995, the managers of the AEP rejected project involvement in issues related to land insecurity in the district. Recommendations to set up paralegal advisory services for poor rural women were also neglected.

^{xii} The Conventions of specific interest are “Agenda 21” and other agreements signed at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in June 1992. Others include agreements at the Social Summit on Development in Copenhagen (spring 1995) and the Platform of Action tabled at the Fourth World Conference on Women in Beijing (September 1995).

^{xiii} Again, it is relevant that farmers’ demands for such services were symbolised by their association of the AEP with polybags.

9. RECOMMENDATIONS AND CONCLUSION

9.1 Introduction

This chapter summarises the findings of the study, discusses its strengths and limitations, and identifies major policy implications of the research. The first section reviews the main argument and discusses its strengths but also its limitations. A summary of the major findings of the study are presented in the second section. The final section highlights the main policy implications and presents some recommendations. Some ideas for dissemination of the results of this study and future research conclude the chapter.

9.2 Implementation and Institutionalisation of Agroforestry: Focus, Strengths and Limitations of the Study

9.2.1 Focus of the Research

Despite more than twenty-five years of research under the banner of agroforestry, there is still great uncertainty how agroforestry research and development come to fruition. It has been argued in this dissertation that the implementation of agroforestry policy and projects is an under-researched but fundamental area of investigation. Principally the elements of project implementation that have been identified here included, its content (rationale, resources and allocation, partner relations, decision making and benefits) and its context (relative power interests and strategies, NGO - State relations and compliance and responsiveness). These elements were also seen to affect the project's capacity to resist or channel change, and specifically transformation of the conditions and position of poor,

rural women. Incorporation of two concepts: gender relations and human agency in the analysis addressed “who” was engaged in and benefited from project implementation and emphasised the diversity of female and male farmers’ involvement in and perceptions of the project. It was also argued that farmers’ capacity to negotiate in and resist the project implementation process affected the extent to which agroforestry was “institutionalised” at the local level.

The main research question “does agroforestry project implementation institutionalise agroforestry at the local level” was examined in the case of the Agroforestry Extension Project in Siaya District. This question was explored by analysing the implementation of the AEP over twelve or so years to assess the extent to which it contributed to institutionalising agroforestry in Siaya. Up until now, the field of institutional analysis in agroforestry has been preoccupied with regulative and normative perspectives on institutions. While valuable literature has been generated, particularly on the link between land and tree tenure, the knowledge, meanings and practice of agroforestry which underlie farmers’ capacity to sustain or continue the use of new or improved agroforestry technologies were neglected. An additional challenge undertaken in this case study was to apply the concepts of gender relations and human agency to the analysis of the AEP’s implementation. Farmers, both male and female, individually and collectively, act as agents to engage with, or possibly disengage from, project activities that do not meet their needs. Such negotiation and opposition to project activities makes the project fail to generate and reproduce a meaning for new and improved forms of

agroforestry. Therefore, the argument — that beyond the project bounds farmers demonstrate their accrued knowledge of agroforestry, and take action to meet their individual and collective needs, emerged.

9.2.2 Strengths of the Research

This study represents one approach to the analysis of the implementation and institutionalisation of agroforestry at the local level. One distinctive feature of this study is that it devised a theoretical framework that connected implementation analysis with two guiding concepts – gender relations and human agency. Each of these concepts have to some extent been employed in agroforestry research, for example, by Rocheleau (1991) and Cashman (1992). However, these concepts have not been connected to the analysis of project implementation and efforts to “institutionalise” agroforestry at the local level. To bridge this gap, the theoretical framework brought together three distinct areas of social science: policy and project implementation analysis, institutional and organisational studies, and feminist perspectives on environment and development. The strength of this conceptual framework was seen in its application to the case study of the Agroforestry Extension Project in Siaya District which illuminated four key features of the process of institutionalising and de-institutionalising agroforestry at the local level: 1) the expansion and contraction of women’s groups that play a pivotal role in agricultural activities in Siaya and in the AEP; 2) the power relations within and between organisations in the AEP; 3) the inconclusive nature of agroforestry adoption and project impact at the

household level and 4) the consequences of farmers' agency in the process of implementing the AEP.

This study contributed towards the use of qualitative research methods, and in particular the use of NUD*IST, a computer program for qualitative data analysis in the study of agroforestry project implementation. The case study method is well used in implementation studies (Rist, 1994). Yet, one difficulty of the case study method is working with diverse data sets. Qualitative data analysis provided an opportunity to work with multiple sources of data to open up new factors and categories that illuminate process-based phenomena such as implementation and the important differences among farmers which further reflects a diversity of their knowledge, motivations, perceptions of environmental and development problems.

Admittedly, qualitative research depends upon good research methods in the field. The author feels that the systematic process of farmer interviews, group discussions and feedback to farmers is a definite strength of this study compared to some research projects undertaken in the AEP. Two distinctive research methods were also used in this study. Firstly, wealth and poverty indicators were critically assessed to understand the socio-economic status of households in Siaya. This method enabled the author to expose the inadequacy of some conventionally-used indicators such as roof type. Variables such as "marital status" were also focused more specifically on the diversity of marriages in Siaya considering for instance, the position of wives in monogamous or polygamous marriages, inherited wives and/or possibly, "widows of migration". Such indicators are fundamental

for understanding the differences among women farmers in relation to their agricultural and agroforestry activities.

A second innovation in the field research methods involved revisiting in 1995 the same sample of farmers (and women's groups) interviewed in 1991. This exploration of the adoption of agroforestry and its sustainability over time led to the relevance of how and why farmers abandon agroforestry. This method was also compatible with the efforts by the author to take into account the historical background of agroforestry among the Luo of western Kenya. Comparison of this sample to farmers outside the process (i.e. the non-AEP farmers) was also a valuable reference point for understanding the dynamic nature of implementation, institutionalisation and project outcomes.

9.2.3 Limitations of the Research

It was not possible for this study to fully explore all aspects of the complex processes of implementation and institutionalisation of agroforestry. One apparent limitation is the influence of economic factors in the theoretical framework and its application to the case study. For instance, the field of "new institutional economics" has increased significantly over the past three decades, but it was beyond the scope of this study to examine this area of analysis. It was not however the intention to conduct a detailed micro-economic analysis (backed up by multivariate statistical analysis) of household-level agroforestry production activities in Siaya. Macro-economic policies in Kenya, including structural adjustment were not elaborated in detail. However, it was suggested that the "double blow" of decreased government and NGO resources for agricultural and forestry

development projects in Kenya has implications for relatively poor rural areas such as Siaya. Yet, it was beyond the scope of the current research to pursue how macro-economic policies have affected farmers and women's groups in Siaya District.

Another aspect of the study that could have received greater elaboration is farmers' substantial agricultural and forestry-related knowledge. Data was collected on both male and female farmers' knowledge and use of mainly indigenous plant species. This included identification of "grassroots indicators" that male and female farmers employ in making farm management decisions, including actions against such things as the loss of biodiversity and impending drought or hunger (Hambly and Ongwen-Angura, 1996). This substantial material could not be elaborated in the dissertation. For this reason, the link between farmers' environmental knowledge and details about their adoption and abandonment of agroforestry technologies introduced by the AEP could have been strengthened. Field trials to analyse in greater depth farmers' overlap of indigenous and introduced agroforestry practices would also have been relevant.

Finally, there are some aspects of the research methodology employed in this dissertation which could benefit from further development. One is that comparative research involving application of the conceptual framework for implementation analysis to a second country or district within Kenya would strengthen hypothesis-testing by consideration of other socio-cultural, political, ecological and economic contexts. The experience of other NGOs may be a future point for comparative study in agroforestry project implementation.

On the question of the representativeness of the data, a larger sample of farmers would have been desirable, but it was not practical given the resource limitations involved in the in-depth interviews and repeat visits to farmers, including feedback to all farmers and women's groups participating in the study. The total of 96 contact farmers (54 AEP farmers and 42 non-AEP farmers) required considerable inputs in terms of field logistics, interview or feedback time, and data entry and analysis. There was even some difficulty in identifying non-AEP farmers in some locations of Siaya who had not been involved in CARE-Kenya programs. Therefore, it is unlikely that more than 100 farmer interviews could have been completed without sacrificing the in-depth and systematic approach to the field research.

Lastly, using the computer program NUD*IST (version 3.1) is considered to be a strength of this study. NUD*IST works in a timely manner with large amounts of text-based data that automates the "cut and paste" of sorting data to rapidly code the text and more easily search, categorise and cross-reference the data. Yet two apparent drawbacks of the software were the time required to correct mistakes in data entry and the difficulty to reach closure in searching, coding and cross-referencing of data. Also, future users of NUD*IST can be advised by the author of the need to keep a detailed work journal of the "tests" performed with the data. Such strategies are important because the emergence of concepts and categories are of fundamental importance to qualitative data analysis. In fact, some qualitative researchers believe that the sorting of data matters as much, if not more than their incidence and frequency of the "finds" (Brannen, 1992; Silverman, 1993).

Furthermore, qualitative data analysis tools are increasing more quickly than the discussion concerning the presentation of their results. The irony is that while the tools offer substantially greater familiarity with and exploration of the data it is difficult to capture and represent this detail. Data are summarised and generalised using fairly conventional and often quantitative means of presentation. Software such as NUD*IST can code the data according to speaker, location, and circumstances in which the responses were provided, but this detail of information is too great to be represented in summary tables and charts. The key texts on qualitative research methods have often missed this point.

9.3 Summary of the Findings

This section turns to the summary of the main findings of the research. It begins with a review of results related to agroforestry adoption and project impact and then addresses gender relations and human agency in agroforestry and lastly, the processes of institutionalisation and implementation.

9.3.1 Agroforestry Benefits, Adoption and Project Impact

Agroforestry systems are made up a combination of plant and animal species, constituting a rural life support system that has the potential to produce, protect and renew itself. The difference between natural forest ecosystems and agroforestry systems is the intentional mix of agriculture with trees. It is human need and interest that underlie the existence of agroforestry in environments such as Siaya District. By experimenting with various tree

species, selecting seed varieties, managing livestock, and alternating combinations of crops, farmers modify their environment, and therefore, determine the character of agroforestry in Siaya. Rarely is there only a single motivation for farmers' practice of agroforestry. For this reason one indicator (e.g. alternative on- or off-farm woodfuel sources) is an unreliable measure of farmers' diverse needs and interests in agroforestry. This study clearly demonstrated that single issues such as woodfuel are insufficient motivation for farmers to plant trees or participate in an agroforestry project.

Indeed, as this case study has shown, agroforestry has existed and evolved in Siaya over at least two centuries. The AEP and its efforts to institutionalize agroforestry at the local level were grafted onto the existing or "indigenous" forms of agroforestry which have commensurate knowledge, skills and beliefs. This study led to the conclusion that some local agroforestry practices were not well understood or were appropriated in the process of project implementation. Farmers may adopt new or improved agroforestry technologies and adapt them, although this is hardly a novel discovery. Yet, farmers may abandon new and improved agroforestry technologies more rapidly than most adoption analysts emphasise. This study concurs, for instance, with the findings of Whittome (1994) who identified non-adoption of alley cropping among small-scale farmers in West Africa. This study of Siaya District further emphasises that the abandonment of alley cropping (and also, group tree nurseries) occurs because the technologies do not fit with farmers' individual and collective needs and meaning for agroforestry. Indeed, the practice

of new and improved forms of agroforestry is closely dependent on support provided by the project (material and non-material inputs).

Furthermore, and finally, it is suggested that farmers' adaptation of a particular technology may be so substantial that new or improved agroforestry may more closely resemble indigenous practices than the technologies demonstrated or introduced by a project. It was argued that it would not be reasonable to equate the benefits of agroforestry as practised by farmers in Siaya who were formerly involved in the AEP as the impact of the project. Unfortunately, such appropriation of farmers' knowledge, skills and beliefs were evident in the claims concerning its outcomes and were further disseminated by an international system concerned with identifying "solutions" for environment and development problems in sub-Saharan Africa.

9.3.2 Gender Relations and Human Agency in Agroforestry

The implicit diversity of "farmers" and issues related to gender relations and farmers' agency are important new considerations for implementation analysis. Rural women are not victims of environment and development problems but agents who resist, deal with and navigate structures of political and socio-economic exclusion. For instance, farmers may use "escape routes" to avoid project activities that do not meet their needs. Some women take action by managing situations in which constraints on their labour or time are foremost in their farming decisions. For instance, in this case study it was identified that some women farmers maintain different forms of planting (e.g. broadcast seeding) despite strong advice or information to the contrary (i.e. to plant in lines). If agroforestry

technologies are designed on the assumption that women's labour is interchangeable, or that farmers use (or should use) only one method of planting, then the technologies are more likely to be abandoned by some women farmers.

Certainly, in the area of gender, environment and development studies there is a continuing concern with the creation of gender-responsive research and development organisations. Gender relations are part of the structure of an agroforestry project. This includes the project's partnerships and its program of work. Gender is more than simply a variable for data analysis and project reporting, although some researchers and managers in the AEP found it easier to treat gender as a socio-economic factor rather than to deal with it as a social relation that permeates the project's structure and management. This study identified that a major problem exists in interpretations of "gender" as sex-disaggregated data because it makes it possible for research and development projects to avoid the power relationships implicit in gender relations and to see the role of their organisation in perpetuating gender inequity.

Related to this finding is that for many years, it has been taken as an article of faith that rural women's groups are inherently beneficial for women, and led by women. In Siaya District, it was shown that the role of men has been of great importance to group formation, activities and outcomes. Yet, the AEP consistently avoided issues concerning women's group formation and management. The collapse of two-thirds of the women's groups assisted by the AEP (from 1989-1995) was neglected. It cannot be over-

emphasised that this issue is fundamental to the future of agroforestry research and extension activities in western Kenya.

For these above-mentioned reasons this dissertation questioned the role of projects such as the AEP in creating a “free space” for rural women to gain power from their individual and collective efforts. There is certainly a role for NGOs such as CARE-Kenya to provide and reform public sector services in rural environments such as Siaya District. However, the pressure within NGOs, as well as on NGOs, to conform to official development processes is also strong. Thus, as this case study demonstrated, it is possible for an NGO to reinforce prevailing social structures, and not change them. It is in the context of their relation to the State that NGOs further structure gender inequity at the local level. NGOs such as CARE-Kenya may integrate or mainstream “gender” in their programs, but at the same time, there is a resistance to change in NGOs that makes it difficult to mainstream or keep gender relations on the project agenda. The lack of action to engage in areas of gender inequity, including “shadow leadership” of men in women’s groups, reflects the biases and failures of both State and society.

9.3.3 Institutionalisation and Implementation

In sub-Saharan Africa, the cognitive or meaning-centred conceptualisation of institutions is fundamental to understanding the process of sustaining agroforestry at the local level to secure food, fuel and other benefits for the rural poor. Institutionalisation is a process of organising social transactions and providing order in a given environment and yet, the results of this study suggest that it is not necessarily a process that matures and improves

over time as Scott (1995:18-19) concurs. De-institutionalisation occurred and was manifested in various ways (Powell and DiMaggio, 1991). This included a lack of trust among and within organisations, erosion of shared meaning and purpose for agroforestry within women's groups and abandonment of agroforestry by farmers considered to be "adopters" of new and improved technologies.

Project implementation analysis illuminates the process of institutionalising agroforestry but its earlier theoretical generations have important blind spots. Specifically, it was argued that the concepts of gender relations and human agency need to inform implementation analysis to highlight not only "what happens" but also, "who gets what, and why" from an agroforestry project. These concepts illuminate the ways in which organisations and institutions change, but also resist change and channel adaptation. In the context of the AEP the resistance to change was seen in a variety of ways including: employing "gender" terminology but avoiding the integration of gender analysis or a gender specialist's input into the project, shifting the rationale of the project to avoid dealing with such realities as farmers' exit from the project and neglecting the role of the male minority in women's groups.

The two processes of implementation and institutionalisation in agroforestry are complex and deserve greater attention. For instance, this study revealed that partnerships or linkages among organisations are not always what they seem. The relations between CARE, its donors (CIDA and CARE-Canada), an international agricultural research centre (ICRAF), a national research institute (KEFRI), government offices (the State), and

women's groups, as well as individual farmers complicate the identification of the actual "clients" in the project. Balancing multiple organisational relationships and meeting the expectations of diverse clients, particularly over longer periods of time, proved unattainable.

9.4 Policy Implications and Recommendations

Some important policy implications can be gathered from the results of this study. The major policy issues are threefold. Firstly, policy makers, including donors, planners and evaluators are urged to rethink agroforestry adoption and project impact. Secondly, NGOs and government agencies are advised to address the situation of women's group formation, expansion and collapse. And thirdly, agroforestry research and development organisations are encouraged to identify their own role in creating and perpetuating gender inequity.

First, and foremost, a major policy implication raised by this study is to question the current emphasis on agroforestry project impact and adoption assessment. The implication of this study is that such emphasis among donors, international organisations and national policy makers risks appropriation of farmers' skills and knowledge. Such evaluations may separate a project from its historical context and construct claims that diminish the extent to which farmers' knowledge and activities actions lie beyond the bounds of an agroforestry development project. Because national and international policy makers typically interact in the design and delivery of research and development project, they can ensure that researchers and project managers move beyond extractive means of

assessing agroforestry adoption. Greater attention to aspects of project implementation such as women's group collapse or technology abandonment is also needed. Listening to farmer views on these issues is indispensable. Therefore, agroforestry research and development projects must be willing to learn from mistakes in their development activities, as well as to publicise their "success stories". By rethinking the motives behind agroforestry adoption and impact assessments new and more equitable methods of communicating with farmers may be created.

There is a second policy implication encased in the argument that policy makers and analysts have not effectively assessed the project implementation process, and its outcomes in agroforestry. In this case study, it was argued that women's groups play a pivotal and frontline role in agricultural and development activities in Siaya. Yet, after many years of involvement in agricultural and forestry development activities, the understanding of women's groups in an area such as Siaya District remains limited and poorly documented. National policy makers as well as the District Development Committee of Siaya are urged to examine the situation of group formation and collapse more closely. Proliferation of development projects, as well as calls for "linking up" with the local level influence women's groups, including their leadership and benefits for their members. Individual farmers can obtain benefits that they may otherwise miss when they are part of women's groups. However, they may also be negatively affected by problems in their groups. Policy makers in Kenya, as well as donor countries such as Canada, are urged to not neglect the interdependence of individual and group action at the local level.

Finally, researchers and development project managers are urged to be more self-critical in their implementation of agroforestry policy. Their actions influence what happens in a project, and to whom it happens. The content of what an agroforestry project delivers is however, only one dimension of its outcomes. Relations with other organisations, including the State, and compliance to the policy context, require greater accountability in the project. Responsiveness to farmers' diverse individual and group needs also remains an enduring challenge. Such relationships inevitably underlie the process and outcomes of the project implementation and the institutionalisation of agroforestry at the local level.

Annexes

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ANNEX 1

Definition and Description of Agroforestry in Sub-Saharan Africa

Agroforestry is a land use system that intentionally combines agricultural crops, trees and livestock on the same land management unit (ICRAF, 1989). Leakey (1996) revisited this conventional definition and suggested that agroforestry be defined as practices as phases in the development of a productive agroecosystem, with similar dynamics to a natural system. The definition states that agroforestry is a dynamic, ecologically based, natural resource management system that, through the integration of trees in farm- and range-land, diversifies and sustains smallholder production for increased social, economic and environmental benefits.

However, the definition of agroforestry also encompasses some farming activities that have been practiced in the tropics for centuries. This includes swidden (slash and burn) agriculture, random planting of trees in fields and homegardens (Ruthenberg, 1971; Altieri and Hecht, 1990). In this sense, agroforestry can be seen as emerging historically from two related discussions. The first is based on a reassessment that with low levels of population swidden agriculture or “slash and burn cultivation” could be considered to be sustainable (Rappaport, 1971). The second and more important impetus came about as a result of increasing concern for deforestation and environmental degradation in the 1970s and 1980s. Whereas the first emphasis on swidden agriculture or slash-and-burn agriculture has possibly been of greater relevance to the attention paid to agroforestry in

parts of Asia and Latin America, the second focus on agroforestry for rehabilitation of land degradation has been of significant importance to semi-arid regions of sub-Saharan Africa.

In the 1970s, great social and political concern rose over an impending “global energy crisis.” Rising costs of fuel in the North struck a sympathetic chord with laments of a “woodfuel crisis” in the South (Eckholm, 1976; 1979). As most rural and many urban people in sub-Saharan Africa depend on wood and charcoal as their major energy source, the need to plant more trees and conserve wood energy placed agroforestry and community forestry firmly on the international development agenda (Bradley, 1991). Agroforestry was presented as one of the most sustainable land use options for sub-Saharan Africa. In his book, The Greening of Africa (1987), Paul Harrison has written,

Agroforestry is not only the most promising approach to reafforestation and the supply of fuelwood, it is also in yield-boosting forms like windbreaks and alley cropping, the most hopeful avenue for intensifying African agriculture over the next five to ten years, increasing food production and reducing exposure to drought with few or no outside inputs. Agroforestry is arguably the single most important discipline for the future of sustainable development in Africa.

Agroforestry is considered to be sustainable because it seeks to maximise environmental protection while at the same time ensuring economic production (Arnold and Kanowski, 1993; Izac and Swift, 1994; Juo and Freed, 1995). In the early 1970s, the international development community argued that agricultural development did not necessarily occur at the expense of forests and resources for research and development on agroforestry expanded (Bene et. al., 1977; Oldeman, 1979). The leaders of the agroforestry movement

in the early 1970s came mainly from Australia, Canada (especially forest industrialist John G. Bene and the International Development Research Centre), the United Kingdom and other parts of Europe (especially from the Royal Tropical Institute in The Netherlands). By the time of the Eighth World Conference of Tropical Forestry in Jakarta, Indonesia, the theme “trees for people”, agroforestry as a social and ecological approach to forest management was part of the international development agenda (FAO, 1978).

Literature on agroforestry activities around the world also grew rapidly in the decades of 1970 to 1990. The body of literature on both modern and traditional agroforestry practices around the world is now substantial as texts by Altieri and Hecht (1990), Steppeler and Nair (1987), Nair (1993), Nair (1990) and Westoby (1989) indicate.

New or improved agroforestry is a phrase used in this study to refer to technologies that are developed or adapted by research through scientific on-station or on-farm trials. One of the major areas of scientific work in agroforestry is alley cropping, also known as hedgerow cropping, which is the alternate line planting of multipurpose trees that produce nitrogen-rich mulch with agricultural crops. In Kenya, alley-cropping typically, although not exclusively, intercropped nitrogen fixing tree species with improved hybrids of maize and sorghum which are suited to line planting. Several other temporal and spatial arrangements of crops and trees can characterise new or improved agroforestry technologies (see table A1.1). These technologies are typically classified according to their structure (nature or arrangement), function, agro-ecological or environmental adaptability and socio-economic and management level.

Table A1.1 Classification of Agroforestry Systems and Practices

CATEGORISATION OF SYSTEMS			GROUPING OF SYSTEMS	
Structure		Function (role and/or output of components, especially woody ones)	Agro-ecological/ Environmental Adaptability	Socio-economic and Management Level
Nature of components	Arrangement of components			
<i>Agrosilvicultural</i> Crops and trees including shrubs or trees	<i>In space (spatial)</i> Mixed dense (e.g. home gardens)	<i>Production Function</i> Food Fodder Fuelwood Other woods Other products	Lowland humid tropics	Based on level of technology input Low input (marginal)
<i>Silvopastoral</i> pasture/animals and trees	Mixed sparse (e.g. most systems of trees in pasture)		Highland humid tropics	Medium input
<i>Agrosilvopastoral</i> crops, pasture/animals and trees	Strip (width of strip to be more than one tree)		Lowland subhumid topics (e.g. savanna)	High input
<i>Others</i> multipurpose tree lots, apiculture with trees, aquaculture with trees, etc.	Boundary (trees on edges of plots/fields)		Highland subhumid tropics	

Table A1.1 (continued)

CATEGORISATION OF SYSTEMS			GROUPING OF SYSTEMS	
Structure		Function (role and/or output of components, especially woody ones)	Agro-ecological/ Environmental Adaptability	Socio-economic and Management Level
Nature of components	Arrangement of components			
	<i>In time (temporal)</i> Coincident Concomitant Overlapping Sequential (separate) Interpolated	<i>Protective Function</i> Windbreak Shelterbelt Soil conservation Moisture conservation Soil improvement Shade (for crops, animals and people)		<i>Based on cost/ benefit relations</i> Commercial Intermediate Subsistence

(source: Nair, 1985:11)

It has been warned that agroforestry is not a development panacea (Gholz, 1990; Lal, 1991 and ICRAF, 1997). Nonetheless, there is a tendency among international scientific research institutes and development organisations to persevere with the beliefs that “miracle” tree species and technologies for agroforestry do exist and can be developed. The “miracle” image of agroforestry is often tied to specific innovations. Currently, ICRAF is calling the “Mexican Sunflower” (*Thithonia*) the “Cinderella Tree.” This species is a woody, fast-growing bush which should be combined with rock phosphate to boost available soil phosphorus levels (Mango, 1999). Similarly, alley-cropping using the “miracle tree” *Leucaena leucocephala*, (prior to the serious problems of its infestation with the insect *Psyllid*), was considered to be one of the most sustainable of options for small scale producers in West Africa (Kang et.al., 1989; BOSTID, 1989).

Some miracles of agroforestry have over time, become mirages. Research, for example, by Whittome (1994) and Bayliss-Smith (1996) has cast serious doubts on the basis on which some forms of agroforestry can be considered “sustainable.” These geographers argue that the adoption and diffusion of alley-cropping in Nigeria, Benin and Costa Rica have been neither as spontaneous nor contagious as a number of international scientists have proposed (Kang et. al., 1984). In the context of an alley-cropping program led by the International Institute of Tropical Agriculture (IITA) and the International Livestock Centre for Africa (ILCA) from 1979-1993, Whittome (1994) found that on 385 farmers’ fields the abandonment of alleys was considerable. In the first three to nine months of having planted the trees, half of the farmers ceased to manage their alleys. Nine

years later, only 17% of the fields where farmers had planted alleys were still being used, and in many cases this work was only maintained with significant input from the international organisations. The tree species used in the alley-cropping system studied by Whittome (1994) were *Leucaena leucocephala*, *Gliricidium sepium* and *Cassia siamea*. The decision for farmers to adopt alley-cropping was not interpreted by the international organisations as being influenced by farmers' interest in research and extension that offered each farmer for half an alley field 100 kg.ha⁻¹ of improved maize seed and fertiliser every year.

Whittome's (1994) research makes room for healthy scepticism about the adoption of alley-cropping, and the claims made by international organisations to its sustainability. There are of course, other studies that call for a more realistic picture of the biophysical, economic and social constraints in agroforestry, although a review of this material is outside the scope of this thesis. A few of the most important studies undertaken in Africa include Kessler and Breman (1991) who argue that the potential of agroforestry is limited to regions with reliable rainfall and favourable soil types. Studies by Diamond (1991) and Minae and Swinkels (1992) have also pointed out that agroforestry activities designed to address the socio-economic needs of the "poorest of the poor" have generally missed reaching this group of farmers. As well, the work of Chavangi (1987), Rocheleau (1990) and Leach (1991) has demonstrated the difficulties imposed by gender inequalities in the distribution of labour and benefits in agroforestry. The argument that sustainable tropical forest use, including agroforestry needs more supportive or stronger institutions at the

local and national levels in order to achieve its productive and protective benefits is evident in Winterbottom (1990), Challinor and Frondorf (1991), Dewees (1993) and Fair, 1993.

Annex 2

Literature Reviewed on Women and Agriculture in sub-Saharan Africa

Theme	Argument and Relevant Literature
Importance of women	Women have been invisible in the evolution of agricultural production systems, and more specifically, rural production systems that involve a tree-based component (Boserup, 1970; Murphy and Murphy, 1974; Hoskins, 1979).
Household differentiation	Rural households are de facto female headed households that operate differently than de jure female headed households (Whitehead, 1985). In polygamous households, the so-called headship of households may be distinct from the headship of monogamous households (Diamond, 1992; Hambly, 1992). Household differentiation influences the direction and pattern of agroforestry technology adoption (Scherr, 1992b; Chavangi, Engelhard and Jones, 1985).

<p>Women's roles and responsibilities</p>	<p>Women undertake more and more of the tasks traditionally carried out by men but the reverse is not necessarily true. In parts of Africa, the contribution of women's labour to small-scale agriculture tends to exceed men's contribution, both in terms of seasonal and daily labour inputs (Saito, 1994). Women's labour is often treated as more flexible than men's. For instance, more child and female labour is used on male managed plots than male and child labour on female managed plots (Haddad et. al., 1995). Women's labour and responsibilities are not as easily substitutable or "switched around" as some agricultural planners may wish them to be (Tinker, 1991).</p>
<p>Availability and access to technology</p>	<p>New or improved technologies may not necessarily increase farm productivity if women are not on an equal footing with men in terms of access to farm inputs (Moock, 1976; Haddad et al, 1995) and they may actually worsen women's existing situation (Migot-Adholla and Pala Okeyo, 1984; Momsen, 1991; Kennedy, 1991). It has been found for instance, that fertilizer made available to households may be used exclusively on male- managed plots (Haddad et. al., 1995).</p>

Loss of natural resource rights	<p>Women may lose their traditional agricultural responsibilities to men when technological improvement have introduced new crops or production techniques (Williams, 1982). Improvement to crops or trees grown by men (or not previously grown by women) may potentially require more labour from women (Cecelski, 1987; Bradley, 1990). Women's increased workload due to the loss of male or shared labour reduces women access to capital or traditional (political) representation (Davison, 1988; Khasiani, 1991). Women's increased responsibility does not necessarily strengthen women's rights or access to resources (including land and trees) (Molnar, 1991; Bradley, 1990).</p>
Improving policy for research and extension	<p>In general, agricultural and forestry technology research and extension has not focused on the specific needs and interests of women farmers (Stuadt, 1975; Feldstein and Poats, 1989). Rural policies and extension projects with a gender neutral approach tend to favour males unless there is an explicit pro-woman process (Haddad et. al., 1995).</p>

<p>Importance of women's knowledge</p>	<p>Farmers use technology, but they also produce technology and experiment with it. Women's accrued environmental knowledge is marginalized in the conventional technology transfer policy and programs (Rocheleau, 1991; Leach, 1991; Okali and Cassidy, 1991). Involving women in technology development can improve, but also challenge normal or mainstream science and technology (Cashman, 1992; Carney and Watts, 1991). The exposure of economic assessment by an international institution which valued female labour below the standard of a "man day" in Nigeria was seen as controversial (Hahn, 1984). A more popular example is the case where the selection of bean seed by women farmers in Rwanda outperformed the breeders' selection (Sperling and Ntabomvura, 1994). Women's knowledge exchange prevents the loss of a crucial "science of survival" (Rocheleau, 1991; Leach and Mearns, 1996).</p>
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Annex 3

Core Farmer Questionnaire (English version)

PART I: Baseline Information

1. Division
- 2.a) Location
- b. Sub-location
- c) Village
- d) Clan
- 3.a) Name of Contact Farmer
- b) Sex
4. How many people are present in the interview? Who are they and what relation do they have to the respondent?
5. Age
6. Education (# of years in school)
7. Marital status
8. If married: monogamous; polygamous; widowed/widower
9. If polygamous or widowed: how many co-wives?
10. How many children/dependents over 18 years of age?
11. How many children/dependents under 18?
12. How many full-time residents are there?
13. Is the man/husband a full-time resident?
14. If not, where is he?
15. Is the home: female-headed; male-headed; female-managed; male-managed

PART II: Questions

1. *<Supplement this question with a sketch of the compound and the fields which you are currently visiting>*
 - a) Can you describe the compound and the houses and other buildings here?
 - b) How many trees are there in the compound? (Give an estimate)
 - c) Have any trees been planted in the compound since 1991?
 - d) Has a live fence or border been planted or improved since 1991?
 - e) What crops have been planted?
 - f) Who works in the fields? Do you hire labour?
 - g) Who decides how each field is cultivated?

- h) Who decides how the produce of each field is used or sold?
- i) How many acres is the compound? How many acres are under cultivation
- j) Why do you value land?
- k) Do you practise any innovations in farming or practise any forms of agriculture your neighbours may not practise?
- l) Is the land inherited or purchased?

2a) Are trees important here? Why or why not? Has this situation changed since 1991?

b) Does the home rely more on on-farm or off-farm woodfuel sources? Has this changed since 1991?

c) How many livestock do you have?

3. a) Do you own other fields or compounds?

b) Do you rent other fields or compounds?

c) Do you borrow other fields or compounds?

d) (For each of the above) If so, how many acres are they?

e) If so, how far away are they?

f) If so, does anyone reside there; who?

g) If so, what crops do you grow there?

h) If so, do you plant trees there?

i) If so, do you graze livestock there?

4a) Since 1991, has total land area under cultivation increased, decreased or stayed the same? Why?

b) Since 1991, have you introduced any new crops? Why or why not?

c) Since 1991, are you planting more of one crop than another? Why or why not?

d) Since 1991, has any land been changed from crop cover to tree cover?

e) Since 1991, has any land moved from tree cover to crop cover?

5a) Which is a more important problem for you: too little land or too much work? Why?

b) Is the amount of work in the fields increasing, decreasing or staying the same? Why?

c) Have any changes concerning the registration of your land been made since 1991?

- 6a) Do you practise agroforestry?
- b) If not, why?
- c) What type of agroforestry do you practise?
- d) Are you practising any new types of agroforestry?
- e) How does agroforestry affect: (increases; decreases; stays the same?)

- labour requirements
- crop productivity
- fuelwood supply
- area under cultivation

- 4a) Do you own other fields and compounds?
- b) Do you use someone's fields in exchange for money or crops?
- c) Do you borrow other fields for crops, grazing or collecting fuelwood?

<If so for any of the above ask the following>

- d) How large are the fields?
- e) Where are they?
- f) Do any of your family stay there?
- g) What crops do you grow there?
- h) Do you practice agroforestry there? What kind of agroforestry?

- 5a) On the farm you are visiting, who lives here all of the time?
- b) Who lives here some of the time?

- 6a) For your family which problem is greater- too much work or too little land, why?

- 7a) Is the amount of work on your fields and compound increasing, decreasing or staying the same? Why?

- b) Is the use of agroforestry increasing, decreasing or keeping the same, your:

- labour requirements (time)
- (crop) productivity
- fuelwood supply
- area of land under cultivation

- 8a) Do any of the members of your family living here have outside employment?

9a) Do you or your family members earn any cash income from such activities as:

- handicrafts;
- working as farm labourers;
- fishing;
- other means? <examples>

b) Who controls cash income in your family from such activities as:

- sale of cash crops;
- sale of tree products (poles, fruits, fuelwood) ;
- outside employment;
- petty trading;
- other means?

10a) In your family, who is involved in making decisions about the following topics?

- food crops to be planted;
- cash crops to be planted;
- the collection of fuelwood;
- the purchase of land;
- when to take a sick child to the dispensary;
- the allocation or giving of land to younger members of the family;
- the storage of seed;
- the species of the trees to be planted?

11a) Have there ever been disagreements among your family members about farm activities? <Explain>

b) How was the disagreement settled?

c) Has there been anytime when a decision could not be made due to the absence of a particular family member?

<This is a sensitive area of questioning; ask for examples only if it seems appropriate>

12a) Can you remember back to the first time when you decided to become involved in the CARE agroforestry project? How did you reach this decision?

b) Before you made a decision did you consult or discuss it with anyone? Who?

13a) Is there an equal distribution of decision-making and responsibilities in the family? Why or why not?

b) What are the woman or women's responsibilities in the family?

c) How have women's responsibilities changed over time? Can you give us some examples?

d) What are the man's or men's responsibilities in the family?

e) How have men's responsibilities changed over time? Can you give us some examples?

f) What are older children's responsibilities in the family?

<Asked with reference to both male and female children>

g) How have older children's responsibilities changed over time? Can you give us some examples?

14a) What are your primary needs for your participation in agroforestry? *<Asked to both male and female farmers>*

b) What are your secondary needs for your participation in agroforestry? *<Asked to both male and female farmers>*

<Was it difficult for either male or female farmers to identify their primary and/or secondary needs; if so ask why?>

15a) What would you like CARE to do to help you improve your farm activities?

b) Are there any comments, information or questions which you would like us to include in the interview or answer?

Annex 4

Women's Groups Questionnaire

1. Baseline information
 - a) Where is the group located? Division, Location, Sub-location, Village.
 - b) How many members are there?
 - c) Who are the office bearers?
 - d) When did the group start?
2. What are the group's objectives?
3. What have been the group's activities? How does it generate income?
4. What have been the group's achievements?
5. What has been the group's obstacles?
6. How has the group attempted to overcome its obstacles?
7. Does the group encourage male and female membership? Why or why not?
8. How many members of the group belong to other groups? Why?
9. Now that government and development agencies are giving less assistance to farmers, what can a group do to help itself? How can it continue its activities?
10. What are the future plans for your group?

Ask: are there other issues or questions does the group and its members would like to discuss?

Annex 5

List of Officials Interviewed

1. District Agricultural Officer, (J. Duma) interviewed May 2, 1995, Siaya, Kenya
2. District Lands Registrar (J. Adongo) interviewed March 25, 1995, Siaya, Kenya. (and also on July 5, 1991)
3. District Forestry Officer (D. M. Mbithi) interviewed April 21, 1995, Siaya, Kenya.
4. Deputy District Officer, Department of Culture and Social Services (Onyango) interviewed April 20, 1995, Siaya, Kenya.
5. Programme Manager, Farmers' Community Group Support Project (T. Odeny) interviewed March 25, 1995
6. Assistant Manager, Research Office and NGO Liaison, Office of the President (M. Wanasakami), interviewed February 2, 1995
7. Director, Kenya Forestry Research Institute (KEFRI) (J. Odera), interviewed January 26, 1995, Nairobi, Kenya
8. Programme Manager, Social Forestry Training Program, KEFRI (R. Mwendanda) interviewed May 4, 1995, Nairobi, Kenya

Various other non-official discussions were held with district, provincial and national level staff from CARE, the District Office, Ministry of Agriculture, Department of Forestry, Kenya Forestry Research Institute, and the district hospital.

Annex 6

Prices in Local Markets, Siaya District, February-May 1995

1. Price of Labour (for Cultivation and Weeding)

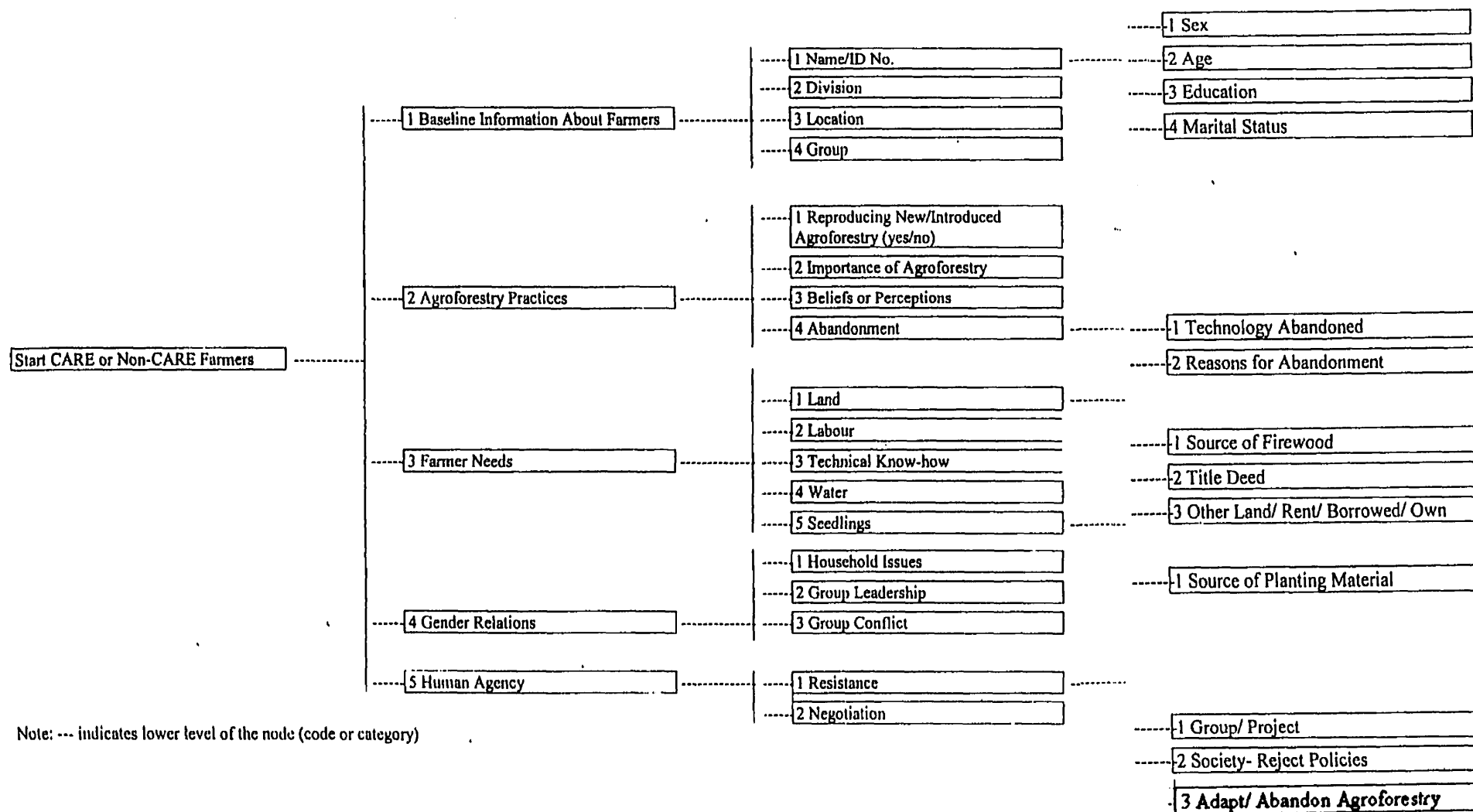
Division	Market	Date of survey	1 woman hoe/ acre	1 man hoe/acre	Group/ hoe/ acre	1 man/ tractor/ acre	2 men/ ox plough/ acre	1 man weeding .5 acre	1 woman weeding .5 acre
Boro	Siaya	8/3/95	45	55	100	540	500	35	35
Boro	Ngiya	7/3/95	35	45	100	n.a	450	30	30
Ugunja	Sigomre	2/3/95	25	25	130	n.a	300	15	15
Ugunja	Sigomre	20/4/95	300	300	150	700	350	20	20
Yala	Yala	7/3/95	500	500	175	500	1500	120	120
Wagai	Akala	4/3/95	20	50	n.a	500	800	120	120
Wagai	Wagai	20/4/95	80	120	200	n.a	250	35	35
Usigu	Usenge	3/7/95	100	100	900	650	800	100	100
Bondo	Bondo	3/3/95	100	100	950	550	700	140	140

2. Price of Fertilizer, Maize, Beans and Millet

Division	Market	Date of survey	Fertilizer NPK: 10k bag	Manure 1 wheel-barrow	Hybrid Maize 2kg	Local Maize 2kg	Beans 2 kg	Finger millet 2 kg
Boro	Siaya	8/3/95	240	15	97	22	85	25
Boro	Ngiya	7/3/95	240	10	n.a.	22	80	40
Ugunja	Sigomre	2/3/95	300	20	112	20	70	23
Yala	Yala	7/3/95	300	15	97	20	n.a.	
Wagai	Akala	4/3/95	300	10	97	17	n.a.	
Yala	Yala	18/4/95	300	10	100	22	80	20
Yala	Akala	8/4/95	300	10	0	18	n.a.	
Wagai	Wagai	20/4/95	300	10	0	18	60	18
Usigu	Usenge	3/7/95	485	20	0	20	70	40
Bondo	Bondo	3/3/95	450	20	0	17	70	
Bondo	Nyamonye	3/1/95	470	20	0	16	70	

3. Cost of Forest Products (Charcoal, Firewood, Polewood and Seedlings)

Division	Market	Date of survey	Char-coal 1 gunney bag	Char-coal 2 kg	Fire-wood 1 head-load	Pole-wood 1 pole	Eucalyp-tus Seed-lings each	Leu-caena Seed-lings each	Grev-illea Seed-lings each
Boro	Siaya	8/3/95	200	20	20	0	2.50	2.50	0
Boro	Ngiya	7/3/95	100	20	20	10	3	3	0
Ugunja	Sigomre	2/3/95	140	n.a	20	20	2.50	2.50	2.50
Ukwala	Sega	6/3/95	110	n.a	22.50	18	3	n.a	n.a
Ukwala	Ndhoya/ Nzoia	8/3/95	120	n.a	10	n.a	3	3	n.a
Ugunja	Sigomre	20/4/95	200	25	20	20	3.50	5.50	2
Yala	Yala	7/3/95	150	30	15	15	10	10	10
Wagai	Akala	4/3/95	140	30	20	15	8	7	5
Yala	Yala	18/4/95	180	30	25	20	10	10	10
Yala	Akala	8/4/95	150	30	15	15	15	15	15
Wagai	Wagai	20/4/95	130	18	10	15	5	5	5
Usigu	Usenge	3/7/95	250	40	20	38	10	6	8
Bondo	Bondo	3/3/95	150-180	25-30	20	42	10	7	9
Bondo	Nyamonye	3/1/95	120	24	10	35	8	4	10



Annex 8

Interview With *Daktari* Onege

Traditional Medical Practitioner and Herbalist, Siaya District,
March 22, 1995

Daktari (Doctor) Onege is one of the area's best known traditional medical practitioners although his full-time profession as an herbalist began after he completed twenty years in the civil service as a senior driver to various Provincial Commissioners. His family has been practising traditional medicine for more than one hundred years. He explained that his grandmother and grandfather were well-known traditional healers of the early 1920's and they were taught by their parents.

Daktari's grandfather knew the medicinal properties and use of 42 woody plants, no small repertoire for an herbalist. *Daktari* learned how to propagate medicinal plants, many of which are trees, as well as how to harvest and store the herbs while he was still a boy. On his grandfather's death, his grandmother who also came from a family that practised herbalism, took over the practice and expanded it from 42 to 82 species of useful plants. Her specialisation was in women's health and certain trees could only be used for her remedies for treating women. Similarly, there were certain trees that could only be used for men's ailments.

As a young man, *Daktari's* parents decided that their son must have formal employment. In the 1930s, he was taken to the local chief who sent him to the colonial home guards. *Daktari's* civil service career began but his real interest remained with

herbalism or *mitishamba* (translated from the Kiswahili this word literally means “field of trees or tree garden”). Eventually posted in his home district of Siaya, *Daktari* was able to practice herbalism with his grandmother, in addition to his other employment. On his early retirement from civil service in the 1960s, *Daktari* turned his attention to the practice full-time.

Daktari now maintains a stock of 120 medicinal plants most of which he grows in and around his home, and others which he harvests from small groves of trees around the area. Sometimes however, he travels as far as Bondo to locate tree seeds which he can propagate at his home. There is a small tree nursery just next to his home and there he and his nephew produce the seedlings they need. On the walls of his “office” hang various certificates and registration forms for his practice as well as the official business portrait of the President of Kenya. On the goat hide table is an assortment of devices that appear to be skulls and bodies of small birds, ancient shells, coins and porcupine quills. Next to this are many bottles of distilled elixirs and oils. One bottle has just been made for a teacher who has come from Siaya hospital diagnosed with typhoid, which is common in Siaya. *Daktari* feels very confident about his treatment made from the roots of a bush that we could not identify.

During our discussion, *Daktari* is called away when a mother arrives with a child with measles and he sells his customer a treatment made of the leaves of *Sesbania sesban*. He explains that his main clients are aged 30-45 but the number of children is always increasing. Women make up the majority of *Daktari*'s clientele but he regrets he

cannot assist them as well as his grandmother once did. Now that hospitals like the district hospital in Siaya have limited supplies of medicines, and the cost of most drugs far exceeds what most small-scale farmers could afford, he expects to be kept busy in his practice.

Annex 9

National Agroforestry Strategy

Republic of Kenya, MOA/MENR/KEFRI,
February 1992

Summary of Recommendations

The following recommendations were made during the proceedings of the National Agroforestry Strategy workshop (Green Hills Hotel, Nyeri, February 16-22, 1992).

Inter-institutional collaboration should be established. In this respect:

1. The Ministry of Agriculture should co-ordinate the development of agroforestry strategy.
2. The Ministry of Environment and Natural resources should collaborate with MoA in the development of agroforestry strategy
3. A Coordinating Unit for agroforestry research should be established. It was further recommended that KEFRI should take the lead in agroforestry research and KARI should collaborate.
4. Universities should develop the capacity in agroforestry education in collaboration with ICRAF to meet the current and future demands for agroforestry experts.
5. A radical overhaul of laws dealing with environment with particular reference to agroforestry should be carried out and where necessary repealed or amended or new ones created to take into account the present situation including the practical aspects of agroforestry.

6. Transfer of agroforestry functions in the Ministry of Energy to the Forest Department.
7. The role of extension should be separated from the role of land use laws enforcement.
8. The Ministry of Livestock should be amalgamated with the Ministry of Agriculture.
9. The activities of the National Council for Science and Technology should be publicised.
10. British American Tobacco (BAT) should be approached to finance agroforestry for small-scale tobacco farmers.
11. The Tea Industry should be encouraged to promote agroforestry with small-scale tea farmers.
12. Enhanced community participation should be encouraged with a deliberate effort to involve women more in agroforestry activities including planning.
13. A forum for research and extension experience exchange should be created at the national level (to be held annually) and agroforestry research revived at the provincial level (PAREAC) (to be held twice a year).
14. Regular household surveys should be carried out to determine household demand for wood and wood products once in five years.
15. Research on efficient utilisation of woodfuel resources should be strengthened.
16. Establish credit facilities and where possible grants for agroforestry development.

Annex 10

CARE/KEFRI/ICRAF Research Plot Number 1

Research Plot No. 1 is located in Boro Division. Its proximity to Siaya town makes it a popular destination for visitors to KEFRI and CARE projects in Siaya. The research plot is run jointly by CARE, KEFRI, and the ICRAF AFRENA program although the latter are rare visitors to the site in recent years. The 2 hectare plot is owned by James Otim, a prosperous farmer who worked with the Forest Department for many years. He was coordinator of the local women's group and three of his family members are employed as casual labourers on the research trial. KEFRI has also assumed the bulk of responsibility for the research plot as CARE is no longer covering salaries of the on-site KEFRI technician. CARE does however seem to provide "block funding" to KEFRI which includes research operations at the site and covers the salaries of the labourers.

The purpose of establishing the research plot in 1985 was to demonstrate the effectiveness of three main agroforestry interventions. First, the plot demonstrates the alley-cropping of maize with *Leucaena leucocephala* or alternatively, *Glyricidia*. Second,, part of the site has tested the growth and yields of maize and beans intercropped with the indigenous agroforestry species, *Markhamia lutea*. Third, and finally, on a corner of the research site, a demonstration of an on-farm woodlot has been set up. The overall objective of the demonstration plot like all CARE and KEFRI research stations (as well as the ultimate aim of the AFRENA program) is to present to

farmers a demonstration of agroforestry interventions which can be adopted by local farmers. The question raised here is has this goal been achieved?

With alley-cropping the benefits of the system have clearly fluctuated over time. In the early years of the establishments of the maize / *Leucaena* alleys there was a beneficial interaction between the crop and trees through the provision of nitrogen - rich green mulch manure. Since 1993, productivity of the alleys has declined due to the invasion of the tiny pest, *Psyllid* that prevents growth of the foliage. Farmers who were asked about the research site and the usefulness of its results are concerned about the toxicity of *Leucaena leucocephala* as a fodder for animals (not more than one-third of the animal's diet should consist of *Leucaena*). Furthermore, neighbouring farmers recognize that *Leucaena* alley-cropping at Research Plot No. 1 proved to be increasing in productivity over two seasons, but it had declined even prior to the *Psyllid* infestation. This observation was confirmed by the on-site technician who cannot explain the changes that resulted although he insists that *Psyllid* could have been affecting the growth of *Leucaena* much earlier than 1993.

In 1995, the technician was advised by his KEFRI superiors to apply a chemical application against the infestation. He admits this recommendation is beyond the possibility of farmer adoption and that most farmers around the area have removed their alleys and abandoned planting of *Leucaena* altogether. They are concerned that *Psyllid* might affect their other trees and crops although the technician could not confirm this apprehension. The technician prefers the results of *Glyriccidia* intercropping with

maize and believes it to be more successful in terms of ensuring the same or increasing levels of crop productivity. It has no apparent problems with pest infestation but the technicians own experiments to encourage animals to accept the foliage as fodder are unsuccessful as livestock will only eat *Glyriccidia* if nothing else is available.

Maize yields from the alley-cropping plots were believed to be lower in 1995 than the yields from the control plot of maize only. In both plots maize was also struck by stalk-borer disease. In the next season KEFRI will test if the chemical inputs can strengthen the resistance of maize to stalk-borer infestation. Based on our in-depth studies with farmers in the area, and discussions with extension staff, it seems unlikely that farmers could be able to afford the expensive chemicals now used on the demonstration site. Likewise, it is confusing to farmers that phosphate fertilizers are now being applied at the site when the original extension message from CARE called alley-cropping with *Glyriccidia* or *Leucaena* a source of “green manure” and “green fertilizer.”

One of the most interesting results of the research plot is observed on the plot where the objective was to intercrop *Markhamia lutea* with maize and beans. On the research plot, *Markhamia* was planted in lines, along the contour of the slope. Rows of maize were planted at the prescribed distance within the rows of trees. Planted in 1985 the trees have now reached a good height of 7 meters and diameter of 5 centimeters BH.¹ However, crop yields on this plot are even lower than in the control plots of

¹ BH is a common term in forestry measurement referring to “breast height” (height of the tree at a forester’s chest).

maize. Farmers who have visited the research trial have complained that the *Markhamia* have been planted in an incorrect configuration, hardly comparable to the traditional intercropping of *Markhamia*. On their own fields, *Markhamia* is allowed to grow naturally and when it is planted, it is grown not in lines but randomly through the field. Farmers are not surprised when they are told that the crop yields are low on this plot. The research project has decided to harvest and space the *Markhamia*, allowing the tree stumps to regenerate so that the trees can be managed more carefully and provide less competition to the crops.

Finally, the 100 x 100 meter woodlot of various indigenous and exotic trees established at the research site has matured. It has provided farmers nearby with a useful tree seed bank although during the visit the technician was eager to learn new ways in which tree seed could be collected and stored to distribute to farmers when they request the seed. According to farmers living nearby a woodlot is not an easily adopted technology when their land is often less than 2.5 hectares and their need for cash income from the sale of food crops must be met each year. Trees can only be sold after they have matured, at least several years after planting. Women farmers also pointed out that they could not plant such a number of trees without active involvement of their husbands, and their husbands would take charge of the woodlot.

Research Plot N. 1 is an interesting case of how agroforestry research trials is as much about relations between organizations and local farmers as it is about technology development. The concept of “on-farm” research trials as public demonstrations needs

some rethinking, particularly if the situation represents what a more prosperous male farmer can organize with paid labourers, than what an ordinary, resource poor farmer might accomplish. The results of this other joint CARE/KEFRI research plots suggest that the AEP had limited success in reaching its objective of demonstrating the effectiveness of agroforestry so that farmers can adopt the technologies. In contrast, farmers are quite clear in their understanding of what doesn't fit their own knowledge or requirements at the research site.

Annex 11

List of Tree Species Recorded in Study

Botanical Latin Name	Common Name in <i>Dholuo</i>	Common Names in English
<i>Acacia abyssinica</i>	--	
<i>Acacia brevispica</i>	Osiri	
<i>Acacia drepanolobium</i>	Dunga	Whistling thorn tree
<i>Acacia hockii</i>	Arume/ Oriang'	
<i>Acacia fistula</i>	Alii	
<i>Acacia senegal</i>	Otiep	Gum arabic
<i>Albizia coriara</i>	Ober	
<i>Albizia stipulata</i>	Ober	
<i>Annona sengalensis</i>	Obolo	Custard apple
<i>Azadirachta indica</i>	Aro'bani	Neem tree
<i>Balanites aegyptiaca</i>	Omulugu/ Otho	Desert date
<i>Cajanus cajan</i>	Mba	
<i>Calliandra calothyrsus</i>	Calliandra	
<i>Carica papaya</i>	Apoyo	Papaya/ pawpaw
<i>Cassia didymobotrya</i>	Owino	
<i>Cassia siamea</i>	Ndege/ Oyieko	
<i>Causarina equisetifolia</i>	--	
<i>Citrus aurantifolia</i>	Ndim	Bitter orange
<i>Citrus limon</i>	Maomao	Local lemon
<i>Citrus sinensis</i>	Machungu	Orange
<i>Cocos nucifer</i>	Nas	Coconut palm
<i>Combretum spp.</i>	Ohoro	
<i>Cordia abyssinica</i>	Oseno	
<i>Cordia ovalis</i>	Oseno	Sandpaper tree
<i>Croton dictygamus</i>	Rachar/ An'gwe	
<i>Croton macrostachys</i>	Ngong	
<i>Croton sylvaticus</i>	Odudho	
<i>Cymbopogon caseus</i>	Ang'we	
<i>Erythrina excelsa</i>	Yuma	
<i>Erythrina abyssinica</i>	Orembe	
<i>Eucalyptus spp.</i>	Bao	
<i>Euphorbia balsamifera</i>	Bondo	
<i>Euphorbia hierta</i>	Ojuok	
<i>Euphorbia tirucali</i>	Ojuok	Finger or rubber euphorbia

List of Tree Species Recorded in Study (continued)

Botanical Latin Name	Common Name in <i>Dholuo</i>	Common Names in English
<i>Ficus spp.</i>	Odok/ Bongu	
<i>Gliricidia (Glyrricidia) sepium</i>	Gliricidia	
<i>Jasminum dictotomum</i>	Oseke	Jasmine
<i>Kigelia africana</i>	Yago	Sausage tree
<i>Lantana camara</i>	Mwawagwa/ Onyalobiro	Tick berry
<i>Leucaena leucocephala</i>	Lucena	
<i>Maerva edulis</i>	Amoyo	
<i>Mangifera indica</i>	Membe	
<i>Markhamia lutea</i>	Siala/ Osiala	
<i>Melia azedarach</i>	Dwele	
<i>Mimosa scabrella</i>	Awour	
<i>Musa spp.</i>	Rabolo/ obolo	Banana
<i>Musa paradisiaca</i>	Rabondo	Plantain
<i>Perisa americana</i>	Avokado	Avocado
<i>Prosopis chilensis</i>	--	
<i>Prosopis cineraria</i>	--	
<i>Prosopis juliflora</i>	--	
<i>Salanum incanum</i>	Ochok	Sodom apple
<i>Sesbania bisponosa</i>	Osao-osao	
<i>Sesbania grandiflora</i>	--	
<i>Sesbania sesban</i>	Osao-osao	
<i>Tamarindus indica</i>	Chwaa	
<i>Tephrosia vogelii</i>	--	
<i>Terminalia brownii</i>	Opok	
<i>Terminalia molis</i>	Opok	
<i>Thevetia peruviana</i>	Tebesia	
<i>Thithonia diversifolia</i>	--	"Cinderella tree" Mexican sunflower
<i>Ziziphus spp.</i>	Lan'go	

Annex 12

Summary List of AEP Project Rationale, Objectives and Targets²

	Narrative Summary	Verifiable Indicators	Means Of Verification ³	Critical Assumptions
Goal	To increase sustainable economic security for project participants in the five target districts of Kenya. CARE will address issues that are basic to Kenya's long term problems: a growing population, increasing environmental problems,... the need for employment and retention of people in rural areas, as well as the need to enhance the role of women.			Political support to the project will continue.

² Source of these statements: CIDA, 1995 and the Project Approval Memorandum of August 1991. This covers the project between the period 1983/4-1992. Revised statements of project rationale, output and indicators from 1992 onwards are not included as these relate to the project's revision (from the AEP to the Agroforestry Element and TRACE methodology). All indicators for the project were revised and scaled down after the 1992.

³ No means of verification were examined by the CIDA (1995) evaluation team.

Summary List of AEP Project Rationale, Objectives and Targets (continued)

	Narrative Summary	Verifiable Indicators	Means Of Verification	Critical Assumptions
Purpose	The purpose is to increase productivity through access to resources, skills and knowledge. By the end of the project 60% of participants involved in the project extension are to have experienced real growth in per capita income and/or food production.			Existing macro-economic factors affecting project participants do not change adversely; population growth rates continue to decline; health status of population does not decline dramatically; there are no climatic disasters; existing primary education enrollment rates do not decline dramatically

Summary List of AEP Project Rationale, Objectives and Targets (continued)

	Narrative Summary	Verifiable Indicators	Means Of Verification	Critical Assumptions
Output	<p>increased/ improved farm productivity of project participants in the project's target areas</p> <p>to improve institutional capacity to manage agroforestry technologies</p>	<ul style="list-style-type: none"> 8,190 women's/farmers' group members and 57,600 school children trained in agroforestry systems and techniques which increase farm yields, vegetative cover, tree population and crop species diversification 500 community groups and schools are assisted by an agroforestry extension programme 30% increase in agricultural yields per year per hectare in school and group managed demonstration plots above control plots, and 300% increase in fodder and fuelwood⁴ 		<p>Women and youth continue to have time to implement agroforestry activities</p> <p>GOK and NGOs continue to support and participate in agroforestry programs</p> <p>Existing ratios of labour to land do not change dramatically</p>

⁴ The CIDA evaluator questioned the validity of this indicator and suggested that this would mean a 371% in yield after 5 years. It was suggested that the indicator be revised to reflect a 30% increase in yield/hectare.

Summary List of AEP Project Rationale, Objectives and Targets (continued)

	Narrative Summary	Verifiable Indicators	Means Of Verification	Critical Assumptions
		<ul style="list-style-type: none"> • 60% of women's/farmers' groups have successfully adopted and implemented agricultural and agroforestry techniques and are actively disseminating this information • 60% of primary schools involved in the project have successfully adopted and implemented improved agricultural and agroforestry techniques and are actively disseminating this information and building it into ongoing school curriculum • 625 community-managed tree nurseries and other resource-access mechanisms are established • regular collaboration and training are implemented with Government of Kenya and NGO research and extension programmes 		There are no climatic disasters

Annex 13: Photographs of the Project Site, Siaya District



Photo 1. Signpost of the CARE-Kenya Office in Siaya District, western Kenya (March, 1995)



Photo 2. Siaya District headquarters building of CARE-Kenya (March, 1995)



Photo 3. AEP extension workers participating in the feedback workshop (March, 1995)



Photo 4. Some material inputs (wheelbarrows) from the AEP that farmers retained (April, 1995)

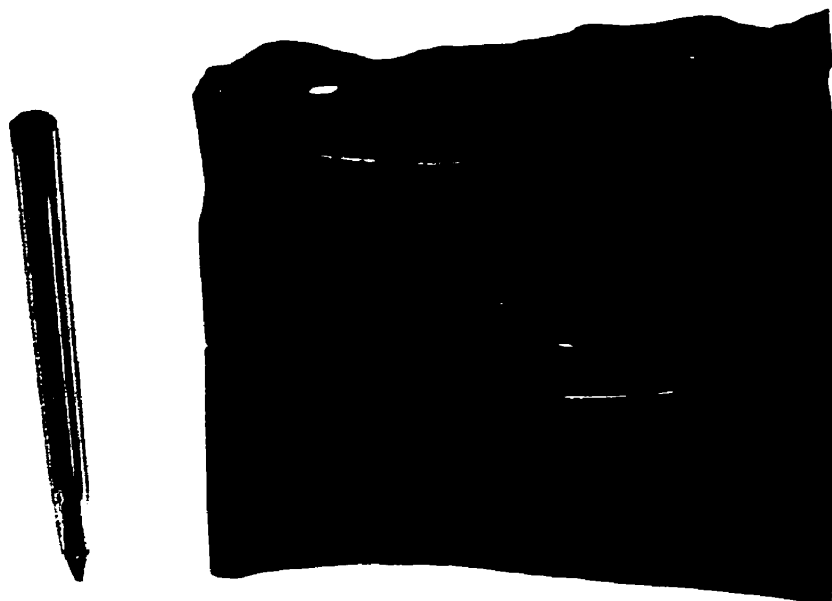


Photo 5. A tree seedling polybag (June, 1995)



Photo 6. Extension advice at an AEP women's group at their group tree nursery in Ukwala Division (October, 1991)



Photo 7. Members of an active AEP women's group at their group tree nursery in Ukwala Division (October, 1995)

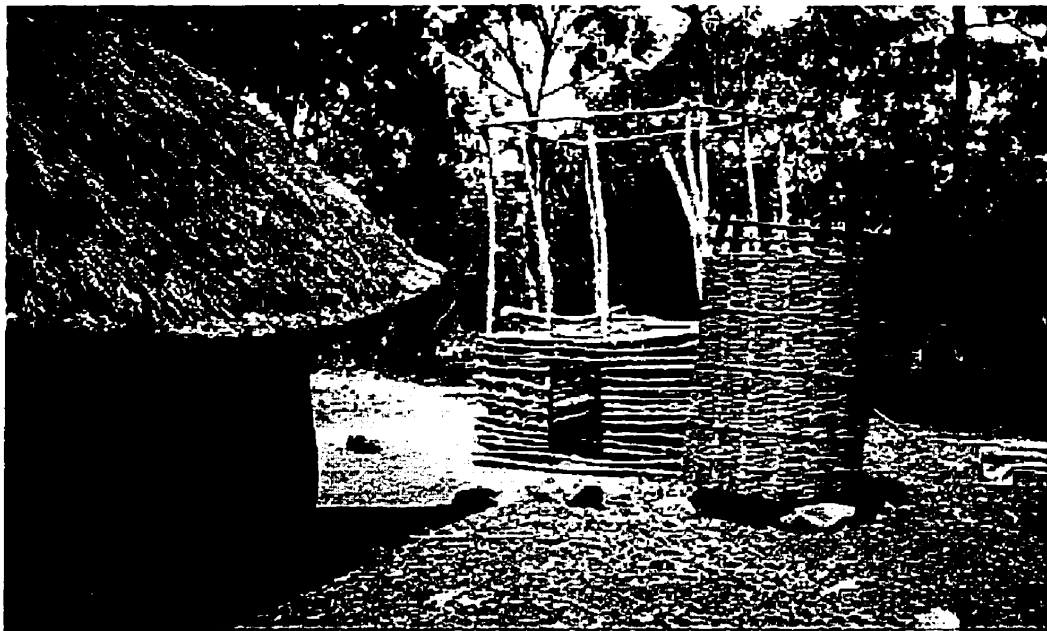


Photo 8. A typical house (left), poultry house (center) and granary (right) in Siaya (April, 1995)



Photo 9. Multi-canopy agroforestry including mix of *Leucaena leucocephala* (foreground), papaya and banana. Crops are grown under the light shade of the trees in Yala Division (Boro Division, 1991)



**Photo 10. Coppiced *glyrricidia* within a fallow field in Usonga Division
(May, 1995)**

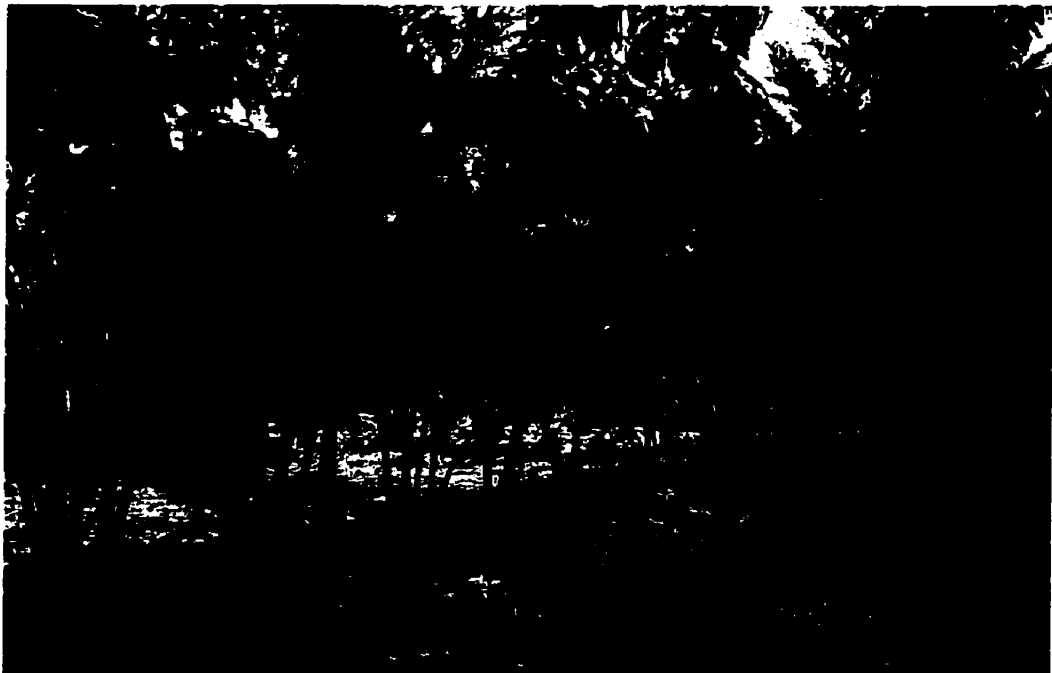


Photo 11. Green fence of *Leucaena leucocephala*, *glyrricidia* and cypress around a fallow field in Boro Division (May, 1995)



Photo 12. Eroded landscape in Boro Division (October, 1991)

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