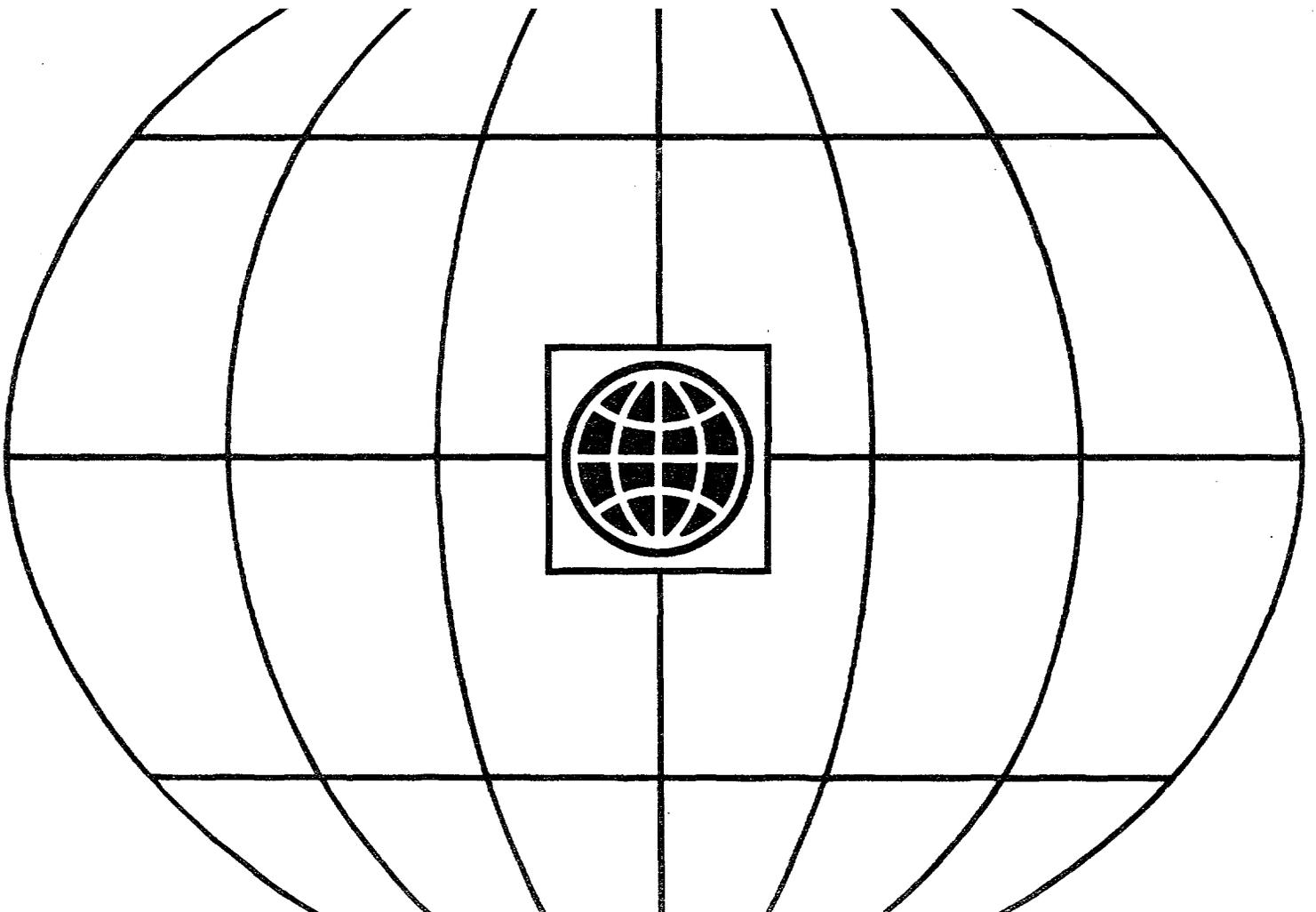


Kenya

The Role of Women in Economic Development

077-01
~~Archives~~
HE 1001

0035



RECENT WORLD BANK DISCUSSION PAPERS

- No. 1. Public Enterprises in Sub-Saharan Africa. John R. Nellis
- No. 2. Raising School Quality in Developing Countries: What Investments Boost Learning? Bruce Fuller
- No. 3. A System for Evaluating the Performance of Government-Invested Enterprises in the Republic of Korea. Young C. Park
- No. 4. Country Commitment to Development Projects. Richard Heaver and Arturo Israel
- No. 5. Public Expenditure in Latin America: Effects on Poverty. Guy P. Pfeffermann
- No. 6. Community Participation in Development Projects: The World Bank Experience. Samuel Paul
- No. 7. International Financial Flows to Brazil since the Late 1960s: An Analysis of Debt Expansion and Payments Problems. Paulo Nogueira Batista, Jr.
- No. 8. Macroeconomic Policies, Debt Accumulation, and Adjustment in Brazil, 1965-84. Celso L. Martone
- No. 9. The Safe Motherhood Initiative: Proposals for Action. Barbara Herz and Anthony R. Measham
[Also available in French (9F) and Spanish (9S)]
- No. 10. Improving Urban Employment and Labor Productivity. Friedrich Kahnert
- No. 11. Divestiture in Developing Countries. Elliot Berg and Mary M. Shirley
- No. 12. Economic Growth and the Returns to Investment. Dennis Anderson
- No. 13. Institutional Development and Technical Assistance in Macroeconomic Policy Formulation: A Case Study of Togo. Sven B. Kjellstrom and Ayite-Fily d'Almeida
- No. 14. Managing Economic Policy Change: Institutional Dimensions. Geoffrey Lamb
- No. 15. Dairy Development and Milk Cooperatives: The Effects of a Dairy Project in India. George Mergos and Roger Slade
- No. 16. Macroeconomic Policies and Adjustment in Yugoslavia: Some Counterfactual Simulations. Fahrettin Yagci and Steven Kamin
- No. 17. Private Enterprise in Africa: Creating a Better Environment. Keith Marsden and Therese Belot
- No. 18. Rural Water Supply and Sanitation: Time for a Change. Anthony A. Churchill, with the assistance of David de Ferranti, Robert Roche, Carolyn Tager, Alan A. Walters, and Anthony Yazer
- No. 19. The Public Revenue and Economic Policy in African Countries: An Overview of Issues and Policy Options. Dennis Anderson
- No. 22. Demographic Trends in China from 1950 to 1982. Kenneth Hill
- No. 23. Food Import Dependence in Somalia: Magnitude, Causes, and Policy Options. Y. Hossein Farzin
- No. 24. The Relationship of External Debt and Growth: Sudan's Experience, 1975-1984. Y. Hossein Farzin
- No. 25. The Poor and the Poorest: Some Interim Findings. Michael Lipton
- No. 26. Road Transport Taxation in Developing Countries: The Design of User Charges and Taxes for Tunisia. David Newbery, Gordon Hughes, William D.O. Paterson, and Esra Bennathan
- No. 27. Trade and Industrial Policies in the Developing Countries of East Asia. Amarendra Bhattacharya and Johannes F. Linn
- No. 28. Agricultural Trade Protectionism in Japan: A Survey. Delbert A. Fitchett
- No. 29. Multisector Framework for Analysis of Stabilization and Structural Adjustment Policies: The Case of Morocco. Abel M. Mateus and others
- No. 30. Improving the Quality of Textbooks in China. Barbara W. Searle and Michael Mertaugh with Anthony Read and Philip Cohen

(Continued on the inside back cover.)

A WORLD BANK COUNTRY STUDY

Kenya

The Role of Women in Economic Development

The World Bank
Washington, D.C., U.S.A.

Copyright © 1989
The World Bank
1818 H Street, N.W.
Washington, D.C. 20433, U.S.A.

All rights reserved
Manufactured in the United States of America
First printing May 1989

World Bank Country Studies are reports originally prepared for internal use as part of the continuing analysis by the Bank of the economic and related conditions of its developing member countries and of its dialogues with the governments. Some of the reports are published informally with the least possible delay for the use of governments and the academic, business and financial, and development communities. Thus, the typescript has not been prepared in accordance with the procedures appropriate to formal printed texts, and the World Bank accepts no responsibility for errors.

Any maps that accompany the text have been prepared solely for the convenience of readers. The designations and presentation of material in them do not imply the expression of any opinion whatsoever on the part of the World Bank, its affiliates, or its Board or member countries concerning the legal status of any country, territory, city, or area or of the authorities thereof or concerning the delimitation of its boundaries or its national affiliation.

The material in this publication is copyrighted. Requests for permission to reproduce portions of it should be sent to Director, Publications Department at the address shown in the copyright notice above. The World Bank encourages dissemination of its work and will normally give permission promptly and, when the reproduction is for noncommercial purposes, without asking a fee. Permission to photocopy portions for classroom use is not required, though notification of such use having been made will be appreciated.

The complete backlist of publications from the World Bank is shown in the annual *Index of Publications*, which contains an alphabetical title list and indexes of subjects, authors, and countries and regions; it is of value principally to libraries and institutional purchasers. The latest edition is available free of charge from the Publications Sales Unit, Department F, The World Bank, 1818 H Street, N.W., Washington, D.C. 20433, U.S.A., or from Publications, The World Bank, 66 avenue d'Iéna, 75116 Paris, France.

Library of Congress Cataloging-in-Publication Data

Kenya : the role of women in economic development.
p. cm. -- (A World Bank country study)

Bibliography: p.

ISBN 0-8213-1226-X

1. Women in development--Kenya. I. International Bank for
Reconstruction and Development. II. Series.

HQ1240.5.K4K47 1989

305.42'096762--dc20

89-33462
CIP

ACKNOWLEDGMENTS

This is the World Bank's first country study focusing on women in development. The Government of Kenya welcomed, supported, and assisted the effort over the past two years, and many people in Kenya gave generously of their ideas and time.

The study was prepared by the Women in Development Division of PPR in close cooperation with the Eastern Africa Department (AF2). Barbara Herz, Chief, PHRWD, directed preparation in collaboration with James Adams, Director, and Michael Mills, Deputy Director of the Regional Office in Nairobi. Several consultants contributed. Constantina Safilios and Joseph Maitha provided essential material to Chapter I on Women in Agriculture. Maureen Lewis co-authored Chapter II on Women's Education, Jennifer Mukolwe co-authored Chapter III on Women's Health, and Carolyn McCommon co-authored Chapter IV on Women and Water. Marcia Schafgans gave able research assistance. Fakhruddin Ahmed, Fermin Fautsch, and Zelig Matmor of the Nairobi Office, and K.Y. Amoako, Ian Bannon, Swadesh Bose, Ann Duncan, David Grey, David Hatendi, Robert Hindle, V. Jagdish and Katrine Saito in Washington gave advice and suggestions. Ann O. Hamilton, Director, PHR, and Callisto Madavo, Director, AF2, provided guidance and encouragement.

TABLE OF CONTENTS

	<u>Page No.</u>
OVERVIEW	xi
Chapter I. RAISING WOMEN'S AGRICULTURAL PRODUCTIVITY	1
Women and Kenya's Agriculture	1
Smallholders at the Center of Agriculture	2
Population Pressure on Smallholdings	2
A Strategy for Smallholder Agriculture	4
Women's Growing Responsibility for Farming	6
Productivity, Poverty and Gender	10
Equipping Women Farmers to Respond	14
Agricultural Extension	15
Provision of Inputs	23
Agricultural Credit	23
Further Systems Research Needs	28
Conclusion	29
Chapter II. EDUCATION OF WOMEN	30
Introduction	30
The Educational System	33
Levels of Schooling	33
Academic Curriculum	33
Primary School Enrollment	33
Secondary School Enrollment	37
Tertiary Education	47
Expanding the Reach and Improving the Quality of Education	49
Measuring Education Quality	49
Financing Expansion in Education	51
Community and Parental Willingness to Pay	52
Benefits of Female Education	53
Conclusions	57

Chapter III. WOMEN'S HEALTH	60
Introduction	60
Better Health and Longer Life	60
The Demand for Children	60
High Fertility and Population Growth Rates	62
Government Policy	63
Women as Wives and Mothers	63
Age of Marriage and Marital Status	63
Polygamy and Fertility	65
Childbearing Patterns	65
Family Planning Practice	68
Maternal Mortality and Morbidity	68
Adolescent Childbearing	71
Safe Motherhood	73
Kenya's Maternal and Child Health and Family Planning Services	75
Non-Government Organizations (NGOs).....	78
The Family Planning Association of Kenya	79
Christian Health Association of Kenya	80
Kanu/Maendeleo ya Wanawake Organization (KANO/MYWO)	80
Issues and Recommendations	83
Program Design and Implementation	83
Rationale for Family Planning	83
Increasing Attention to Maternal Health	83
Community-Based Programs	84
Program Management	85
Research and Evaluation of Programs	85
Incorporating Health and Family Planning in other Sectors	85
Mobilization of Women	85
Chapter IV. WOMEN AND RURAL HOUSEHOLD WATER SUPPLIES	87
Introduction	87
Rural Women's Responsibility for Household Water	88

Potential Benefits of Improved Rural Water Supplies	89
Health Benefits	89
Social and Economic Effects of Time Saved	90
The Evolution of Rural Water Supply Programs	91
The Kwale Project	93
Issues and Recommendations	96
Conclusions	97
BIBLIOGRAPHY	99
STATISTICAL ANNEX	117

TABLES

STATISTICAL ANNEX ON AGRICULTURE

1	Percent Disbribution of Women 15-49 by Selected Characteristics.	118
2	Percent Disbribution of Population over 15 Years of Age by Sex and Activity, by Frequency of Activity and Province	119
3	Percentage Distribution of Population over 15 Years of Age Engaged in Production of Crops for Market by Frequency of Activity and Sex, by Activity and Province	120
4	Percent Distribution of the Division of Labor on Maize, Cash Crops, Livestock and Household Crops, by Type of Household Head.	121
5*	Type of Extension Recommendation Adopted by Women Farmers by Women's Extension Status in Muranga	122
6	Fertilizer Use by Women Farmers on their Plots by Extension Status and by Type of Crop in Muranga	122
7	Women's Agricultural Income by Women's Expenditure for Agricultural Inputs in Muranga	123
8	Women Farmer's Sources of Supply of Agricultural Inputs in Muranga	123
9A	Size of Land Cultivated by Women Farmers' Extension, Status in Meru	124
9B	Size of Land Cultivated by Women Farmers' Extension, Status in Muranga	125
10A	Agricultural Decision-Making for Wife's Plot by Husband's Presence or Absence from Home in Meru	126
10B	Agricultural Decision-Making for Wife's Plot by Husband's Presence or Absence from Home in Muranga	127
11A	Agricultural Decision-Making for Family Plot by Husband's Presence or Absence from Home in Meru	128
11B	Agricultural Decision-Making for Family Plot by Husband's Presence or Absence from Home in Muranga	129
12*	Type of Extension Recommendation Adopted by Women Farmers by Women Extension Status in Meru.....	130

13	Fertilizer Use by Women Farmers on their Plots by Women's Extension Status and by Type of Crop in Meru	130
14	Women's Agricultural Income by Women's Expenditure for Agricultural Inputs in Meru	131
15	Women Farmer's Sources of Supply of Agricultural Inputs in Meru*	131
16	Number of Smallholdings, Number of T.A.'s and J.T.A.'s and Ratio of Extension Staff to Farm Holdings in Three Divisions of Muranga	132
17	Number of Farm Holdings, Number of T.A.'s and J.T.A.'s and Ratio of Extension Staff to Farm Holdings by Division and Location in Meru	133

STATISTICAL ANNEX ON EDUCATION

1	Population Data Age 6-13 (extrapolated from ages 6-12 & 6-14) ..	134
2a	Enrollment in Primary School by Standard and by Province, 1986 .	135
2b	Proportion of Girls in Primary School by Standard and by Province, 1986	135
2c	Primary school Promotion Repetition and Dropout Rates by Standard for 1980	136
3a	Secondary School Enrollment by Form and by Province (1986).....	137
3b	Secondary Schools Enrollment by Gender	138
3c	Percentage of Incoming Form 1 Students Who are Retained by Form, School Type and Sex, 1973-79	139
3d	Enrollment in Secondary Schools by Form & Sex, 1981-87	140
4a	Student Enrollment in Primary Teachers Training Colleges	141
4b	Student Enrollment in Secondary Teachers Training Colleges.....	142
5a	Enrollment in Polytechnics	143
5b	Percent of Females Enrolled in Polytechnics	143
6a	Per cent Distribution of Women 15-49 by Level of Education and Age for Nairobi Province, 1984	144
6b	Per cent Distribution of Women 15-49 by Level of Education and Age for Coast Province, 1984	144
6c	Per cent Distribution of Women 15-49 by Level of Education and Age for Eastern Province, 1984	144
6d	Per cent Distribution of Women 15-49 by Level of Education and Age for Rift Valley Province, 1984	145
6e	Per cent Distribution of Women 15-49 by Level of Education and Age for Western Province, 1984	145
6f	Per cent Distribution of Women 15-49 by Level of Education and Age for Central Province, 1984	146
6g	Per cent Distribution of Women 15-49 by Level of Education and Age for Nyanza Province, 1984	146

STATISTICAL ANNEX ON WOMEN'S REPRODUCTIVE HEALTH

1	Per cent Distribution of Women 15-49 by Marital Status, Place of Residence and Province, 1984	147
2	Per cent of Currently Married Women in a Polygamous Union by Age, Education Level, Ethnic Group and Place of Residence, 1984	148
3	Mean Number of Children Desired by Currently Married Fecund Women 15-49 by Selected Background Characteristics, 1984	149
4	Per cent Approving of Family Planning among Ever-Married Non-Users of Family Planning Who Know At Least One Family Planning Method, by Selected Background Characteristics, 1984	150
5	Per cent of Every-Married Women 15-49 Knowing At Least One Family Planning Method by Selected Background Characteristics and Place of Residence, 1984	151
6	Per cent of Currently Married Fecund Women Who Don't Want More Children by Number of Living Children	152
7	Per cent of Women 15-49 Who are Currently Using any Family Planning Method by Selected Characteristics for Nairobi, Coast, Eastern, Central, Rift Valley, Nyanza and Western Provinces, 1984	153
8	Age of Female VSC Acceptors by Number of Living Children by Age of Contraceptive Acceptor, Nyeri Clinic of FPAK	160
9a	Distribution of Clients Who Used and Who Did Not Use Family Planning Methods Prior to VSC at FPAK Nyeri Clinic (1982-1986)	161
9b	Family Planning Methods Used by Clients Prior to VSC at FPAK Nyeri Clinic (1982-1986)	161
10	Place of Residence of VSC Clients at FPAK Nyeri Clinic (1982-1986)	162
11	Distribution of VSC Cases Done at FPAK Nyeri Clinic by Marital Status (1982-1986)	162
ANNEX A		163
Official Government Machinery to Address Women: The Women's Bureau		
ANNEX B		169
Safe Motherhood Model		

WOMEN AND KENYA'S ECONOMIC PROSPECTS

Overview

1. Since Independence in 1963, Kenya has been working to make women active partners in the development of its economy. It has integrated women into the development process by careful design of mainstream programs, rather than by instituting separate programs for women, thus benefitting women along with the entire population. Its efforts to assist women constitute an integral aspect of the overall policy framework. Its experience shows that integration of women in development is a cost-effective way to pursue economic progress for the whole population; to increase agricultural output; to encourage better use of land, forest, and water; to improve family health and education; and to slow population growth. The theme of this report is that this experience provides an example for other countries and a rationale for continued pursuit of this course by the pioneering Government of Kenya.
2. Kenya's achievements have significance beyond its boundaries. Throughout the world, women's contribution to economic progress is increasingly acknowledged. Yet in many societies, both developed and developing, women's productivity remains constrained. Their quality of life -- as measured by such indicators as income or educational attainment -- remains relatively low. Their control over their own lives remains relatively limited. Women suffer the usual problems of poverty, but they are often specially disadvantaged by tradition, sometimes codified into law or policy, which limits their capacity to earn income, their access to information and productive resources, and their control over time and resources. Traditional constraints tend primarily to limit the supply of information and resources or, more broadly, of "opportunities" for women. But they also limit, directly or more subtly, women's own demand for such opportunities. Weaknesses of demand and supply combine to produce a vicious circle, with a resulting loss of productivity. Traditional constraints also skew the distribution of the benefits of economic growth (such as family income or social services) away from women. Despite women's gains in the past two decades in education and health throughout the world, women still generally lag behind men in educational attainment, earning capacity, and other respects even when national policies encourage equality of opportunity. Kenya's approaches to women in development seem particularly effective not only in improving equity but also in increasing the economic productivity of women.
3. This report concerns women in Kenya generally, but it focusses especially on rural women in four sectors: agriculture, education, health, and water. It assesses women's contributions, analyzes promising approaches, and suggests ways to extend Kenyan efforts to include women in development. In so doing, it is meant to contribute to the international analytic base for policy and program planning and to provide food for thought on practical approaches.
4. The Government of Kenya has demonstrated its recognition of the importance of women to development in many ways: (1) it has established economic policies, development programs, and a legal framework to strengthen incentives and productive capacity for women; (2) it hosted the 1985 United

Nations Conference which closed the U.N. Decade for Women, and the 1987 International Safe Motherhood Conference, which launched an initiative to improve maternal health; and (3) it has emphasized investments in human capital and provision of information and resources that equip women as well as men to improve productivity. Kenya's experience is particularly instructive in agricultural extension, primary education, and basic health care including family planning. Programs in rural water supply, forestry, and, on a smaller scale, credit are also providing useful lessons. Kenya's longstanding "harambee" or self-help tradition and its local women's groups, some federated nationally, are important. Of course, in Kenya -- as in every nation -- the development process is shaped by the realities of financial and natural resources, administrative capacity, and tradition. The current international and domestic economic environment, in conjunction with still rapid population growth, will form the backdrop for future steps.

The Kenyan Woman

5. In the aggregate, about half of Kenya's 20.2 million population is female, about 60 percent below age 20. Girls are slightly less than half of the childhood age groups, but women tend to outnumber men slightly in the older age groups. With improved health care and broader development, women now live on average 56 years, up from 46 in 1965.¹ Most marry before age 20 (but later than they did twenty years ago) and remain married. About 25 percent are co-wives, with lower proportions among younger and more educated women. Childbearing begins early (at an average age of 18 in rural areas, 19 in urban areas). Women have on average 8 children and want large families. But attitudes are beginning to change, and 17 percent of couples of childbearing age now practice contraception, compared to 7 percent in 1977.

6. With Kenya's massive investment in education, Kenyan women have made great gains in literacy in the past two decades. Today, more than 60 percent of women living outside Nairobi are literate. More than 80 percent of men are literate, but the male-female disparity almost disappears among the young.

7. About 9 out of 10 women (and 8 out of 10 men) live in rural areas. Ecology and culture vary widely, but many women live on small upland farms. (The minority who live as semi-nomads in dry pastoral areas will not be dealt with specifically in this paper.) Only about 12 percent of women live in towns or cities. One-third of urban women, compared to three-fourths of urban men, are "economically active". Half of these women and four-fifths of these men are in the formal wage sector, 27 percent of the women are in farming (even in urban areas), and the rest are in informal urban enterprises and services. Women constitute about one-fifth of the formal employed labor force. The majority are agricultural workers, while most women with "modern" jobs are teachers and secretaries.

1/ Life expectancy for men increased from 43 to 52; the disparity between men and women occurs in most countries and reflects a "natural advantage" that women appear to have. In higher income countries, the disparity widens.

The Situation of Rural Women

8. A rural woman in Kenya is likely to be a young farmer. She is likely to be literate, the wife of a man who is often absent, and mother of several young children. Compared to her grandmother, this young woman probably has a substantially higher standard of living and more independence. And she lives in a dramatically different social and political environment.

9. While cultures vary widely, the grandmother probably lived in a traditional society where she had limited latitude in the basic choices of her life. She may have had little voice in the selection of her own husband or the timing of her marriage. She probably lived subordinate to men, although she may have had considerable influence and respect, especially as she aged. She labored long and hard, and she was expected to defer to and care for her husband without complaint.

10. Today's young woman continues to bear some of the responsibilities her grandmother had, but she is better equipped to handle them. She spends 12-14 hours a day working at home or in the fields. Like her grandmother, she is largely responsible for growing, storing, and preparing the family's food, and she also probably helps grow and market cash crops (food and others). She is, as her grandmother was, responsible for finding the family's fuelwood and water and for most household chores. And in Kenya as elsewhere, it is primarily women who care for young children and see to their health and learning.

11. Progress has not come without costs. The traditional system that limited the grandmother's choices also gave her some expectation of security within a kinship network. Few women in those days were abandoned. Whatever resources existed were shared under rules that everyone understood. Of course, the system was fragile: epidemics and famine did occur, and far more women died in pregnancy or saw their children die. With the social changes accompanying economic transformation, political evolution, and the spread of education in the past three decades, the traditional system has weakened. Yet the spirit of solidarity survives in the group self-help efforts that emerged in the struggle for Independence and thrive today. Women, through local groups, are at the heart of many of these efforts.

12. In the last several decades, Kenya's family structure has shifted considerably. Men traditionally headed Kenyan families, and when they died, their widows often remarried within the network of kin. Today rural families are increasingly likely to be headed de facto by women, apparently as more men work away from home. Nationally, roughly two-fifths of families are, for practical purposes, headed by women, and many others rely on women much of the time. Earlier data on female heads of household are not entirely compatible but suggest one-fourth to one-third a decade ago. The root cause of this shift is economic: as pressure on the land increases and urban job opportunities expand, husbands leave to find work in distant cities, towns, or large farms. The husbands are more mobile and better educated than their wives, who stay behind with the children to run the farm and preserve family ties to the land. Most men return periodically, but others drift away for good. Female-headed households are typically poorer. There are relatively fewer female-headed households in urban areas; but poor urban families in Kenya, as elsewhere, are more likely to be headed by women.

Improving Women's Productivity in Agriculture

13. The central challenge to sustaining growth in Kenya today is to equip its farmers, both men and women, for higher productivity. Agriculture is the core of Kenya's economy, smallholdings are the core of Kenya's agriculture, and women are the core of the smallholders. To provide for a population now growing at 3.8 percent annually according to official data, Kenyan agriculture must grow by 5 percent annually until the year 2000. Agriculture accounts for one-third of GDP and provides raw materials for the resource-based industrial sector and about 70 percent of export earnings (excluding refined petroleum). Smallholders produce three-fourths of Kenya's agricultural output, including almost all the food consumed at home and much or most of the major cash crops (led by coffee and tea). With growing male migration to urban areas, Kenya's agriculture is increasingly in women's hands. Women provide three-fourths of the labor used on smallholdings; 95 percent of the women smallholders work on their own farms. It is primarily women who provide Kenya's food, and much of its coffee, tea, pyrethrum, and other cash crops.

14. Women actually manage at least two-fifths of Kenyan smallholdings and exercise substantial influence over the rest. While women traditionally grew food crops, men tended cattle, helped break the land, and, when cash crops such as coffee and tea were introduced, men generally took charge of them. As male migration increased, that division of labor has changed. Now women are increasingly in charge of cash crops as well as food crops -- deciding how much to grow, how to grow it, and how much to market. Moreover, maize and other foods have become cash crops, as substantial quantities are marketed.

15. Research is limited, but some suggests that women's average agricultural productivity may be 85 percent of men's. Yet in comparisons of women and men farmers in Western Kenya with similar access to education, land, and agricultural services and inputs, women farm slightly more efficiently than men. Kenyan policies (for example in pricing, research, and agricultural extension) provide a framework through which women and men farmers are meant to gain access to information and inputs. The difficulty is that, for historical and practical reasons, women still remain at a disadvantage in getting the information and resources that they require to work more productively or to improve family welfare. In Kenya as in other countries, while women have access to informal credit, the formal credit market is as a practical matter still relatively segmented. Land title is generally required as collateral for formal credit, and land is usually registered in men's names. In Kenya as in many countries, the issue of land tenure is a very sensitive one and is evolving gradually with the changing of values brought about by education and social development. At present, the vast majority of women who lack land title are left (as a practical matter) ineligible for formal credit. Moreover, husbands are reluctant to borrow for their wives (or for their wives' crops). Nor does information flow as readily to women. Young mothers cannot easily get free to attend training sessions. On the farm, women's time for agriculture is constrained by their traditional responsibilities for household chores, water, fuelwood, and childcare. With fewer women than men educated, women can less easily acquire information on modern farming or handle the procedures involved in obtaining credit.

16. Kenya's emerging experience suggests that some of these barriers can be substantially overcome at modest cost, with policies providing sufficient economic incentive and with imaginative programs. Thus far, Kenya's effort to improve opportunities for women has focused on improving women's human capital -- through education, health care, and agricultural extension. The evidence in Kenya, and internationally, suggests that such investments have a relatively strong impact on economic performance, family health, and population growth. They also directly benefit women. While families can reallocate resources to compensate for other transfers in favor of particular members, education cannot be taken away. (Skills may be eroded through lack of use, but they remain associated with the individual.) Kenya has also begun to improve access for women to productive resources, water, fuelwood, and credit.

Issues in Agriculture

17. Extension. Kenya is instituting a national agricultural extension system which aims to reach women as well as men farmers. In areas where extension reaches farmers regularly, yields have reportedly risen 20-40 percent (with wide variation). While the effort is still quite recent, a Government study reports that about half of Kenya's extension agents regularly see a majority of women farmers. Kenya's experience demonstrates that male extension agents often prefer to work with women on grounds that women actually do the farming, make many day-to-day decisions, and willingly adopt advice. Having female agents helps, but male agents can usually work with women farmers if care is taken to respect cultural traditions. Some male agents do, however, require encouragement to work with women if they are more accustomed to working with men farmers.

18. Kenya's experience also demonstrates that groups of 15-20 women will meet regularly with extension agents, while such large groups of men have proved more reluctant to do so. The reasons are probably related to the longstanding tradition of group effort among women. The groups include women of varying backgrounds and economic positions and are considered willing adoptors of extension advice. By working more with women's groups, the reach of extension could probably be doubled and the costs actually reduced through savings in agents' travel and increased time on task. The Government has therefore directed the extension staff to work more with women's groups.

19. Women also request more advice on fruits, vegetables, drought crops, animal husbandry, and other things of particular interest to them. The extension system, including its associated research, is being adjusted to give more attention to these subjects and, more generally, to facilitate work with women, particularly in groups. To complement such adjustment, further steps are underway to provide agricultural inputs in convenient quantities and in more locations. This should enable women farmers to respond more effectively to the incentives of the market as well as to the needs of the family. The result should be improvements in the quantity and quality of agricultural output -- and greater economic efficiency and food security.

20. Credit for women farmers and entrepreneurs. While women have access to some informal credit, the flow of formal credit to women is evidently minimal, primarily because women lack title to the land or other assets

required for collateral. But women's demand for credit for productive purposes is strong, judging from the higher interest rates they pay in the informal credit market and from their own statements. International evidence suggests that women -- even poor women -- can be good credit risks. Collateral requirements that effectively rule out many potentially productive borrowers ought to be reconsidered on grounds of economic efficiency. The Government believes that expansion of credit for women's groups is also worth exploring. A few small scale programs are underway in Kenya to provide credit with less reliance on land as collateral and more on peer pressure and ability to pay, but it is too early to judge their impact or cost. An in-depth study of women's credit needs and additional experiments could usefully be undertaken, so that promising approaches can be identified, refined, and replicated.

21. Land Tenure. In many traditional societies, women had widely recognized usufructory rights to the land that they were expected to farm. With the advent of modern adjudication, land title generally goes to men as "head of the family", and, as a practical matter, women may be left with a weaker claim to the land they farm. This may reduce women's economic security and may increase their dependence on husbands and children. It also inhibits women's access to credit and to cooperative organizations and may thereby diminish agricultural productivity. Bearing in mind the sensitivity of land tenure, some adjustments in land tenure, perhaps including more joint tenure, more recognition of usufruct, or other measures to strengthen the legal standing of women, could usefully be explored.

22. Rural Water. Better access to water can save women several hours daily to devote to agriculture, family, or other pursuits. Nine out of ten rural women (or their children) fetch their water from traditional natural sources several times daily. Many of these sources are unreliable during dry seasons or polluted. Programs to establish rural water systems have generally relied on relatively centralized and highly engineered approaches which often proved costly and disappointing. The Government of Kenya has therefore decided to give communities, and particularly women, more voice in the design and management of some water projects. Since women have the responsibility for finding water, they have the incentive to keep water systems working. Several outstanding Kenyan projects, notably including those of the Ministry of Water Development in conjunction with a local NGO, KWAHO, operate along these lines and can serve as models as rural water supply programs expand. Community participation will also build community willingness to share in the costs of providing reliable water supplies.

Improving Women's Education

23. Kenya has made enormous strides in education, particularly at the primary level since Independence. Except in some remote regions, Kenya's schools generally reach all income groups and both sexes. The Government has given high priority to education and now allocates over one-third of its recurrent budget to education. It has also shifted toward coeducational schools and encouraged parents to educate daughters as well as sons. Parents now contribute heavily: parental demand for education is high and about the same for daughters as for sons at the primary level. Official data suggest

that virtually all Kenyan children of primary school age are enrolled (compared to about half for all of Africa). These data include some children who are repeating and some who stay in school past the normal ages, but probably 5 out of 6 children of school age are actually enrolled.

24. At Independence, far fewer women than men had any education. In Kenya as in other countries, as incomes rise, the disparity between girls' and boys' educational attainment has decreased. The Government's promotion of education for girls as well as boys and the expansion in the number of schools have helped. Progress at the primary level is impressive. Yet in Kenya, as in much of the world, girls tend to drop out of school sooner. About one-third of the girls, compared to two-fifths of the boys, complete primary school. Just under half of those boys and girls go on to secondary school. About 9 percent of girls and 12 percent of boys finish.

25. Girls and boys generally go to primary school together, but some still go to separate secondary schools. At the secondary level, girls are disadvantaged because more are obliged to go to schools which receive less Government support and which charge higher fees. Despite faster expansion recently in girls' places at the supported secondary schools, there are still fewer places for girls (relative to the number of qualified girls) in these schools. Girls' academic performance has been generally weaker than boys' but in 1986 and 1987 girls outperformed boys in their secondary-level examinations. Girls' performance has sometimes been stronger in girls' schools than in coeducational schools. In fact, 6 of the 10 outstanding secondary schools (as judged by examination performance of their students) in the mid-1980's were girls schools. While Government policy is to provide science facilities equally in boys' and girls' schools maintained by Government, many girls attend non-Government schools. Some schools are not well equipped for science. This in turn impedes girls' attendance at universities. Women's employment options and earning prospects are thus diminished.

26. If girls can be educated better, their chances of earning higher incomes from agriculture or modern sector jobs will improve. They will not only be better qualified but also better equipped to overcome traditional or practical obstacles and break into the labor force in a wider variety of fields. In agriculture, some evidence suggests that primary education for women farmers has more impact on productivity than education for men farmers. Agricultural extension can help compensate for lack of education but may work more effectively if farmers already have basic education.

27. Worldwide, the evidence confirms that increased education and income earning opportunities for women are associated with improvements in child health and reductions in family size. In Kenya, the evidence on child health (though rather old) is startling: among uneducated women aged 35-39 in 1969, about 25 percent of children had died, compared to 2 percent for mothers with at least primary education. Educated women below age 35 also tend to prefer smaller families. Today, nationwide, women with at least five years of education have had, on average, fewer than 3 births, while women with no education have had 4-6. Younger women tend to be more educated; their ultimate childbearing remains to be seen. Yet younger educated women are having fewer children than younger uneducated women. This suggests that total fertility rates and average family size will decline significantly as education and health and family planning services spread.

Issues in Education

28. Access for Women. The principal issue in female education is to retain more girls in school at the later primary and secondary stages. The Government believes that intensification of "family education" programs at the primary and secondary level may help persuade parents further as to the value of educating girls. The Government is currently working to improve and equip secondary schools so that the quality of education will further motivate parents and girls themselves to continue schooling. It is making specific efforts to improve science education for girls as well as boys and to change attitudes that may especially discourage girls on science. But its capacity to do so is linked to a broader financial squeeze on education. A sector-wide appraisal of the possibilities for improved efficiency and cost recovery at every level of education is needed. The Government cannot entirely finance the expansion and improvement in education needed to reach the growing population of school children: at present population growth rates, the population doubles in less than twenty years. Given that over one-third of the Government's recurrent budget already goes to education, careful consideration of existing expenditure patterns and of alternative financing (including cost recovery) will be a practical necessity. The Government aims to ensure that its expenditures on education effectively complement the contributions communities can make. University education is basically free. But the private returns to university education are generally quite high. Many university students come from families with above-average incomes. If Kenya were to charge at the university level for students able to pay something, savings would be generated which could then be invested wherever the likely payoff seems highest. It may be worth permitting universities to retain some of these savings as an incentive. Another use for such savings could be improvements at the secondary level. This could ease the disparity between boys and girls, since girls are now so much more dependent on community and parental willingness to educate them. It is particularly important to improve teacher training in girls' schools, to upgrade basic equipment and supplies, and to improve science education available to girls, as this will strengthen their capability in agriculture and health care, open up broader employment opportunities, and respond to girls' and parents' demand for more science-based education.

29. Participation by Women at the Tertiary Level. Given the expansion in university capacity, it may also be possible to improve the participation of women students. Preparation of a strategy to accomplish this would be a sensible step. Much could be achieved through low-cost measures, such as encouragement from leaders or from women role models, to help more girls and women enter broader lines of vocational and advanced training, particularly in scientific fields. A woman director of university training for dentistry shows what is possible: in that field, in sharp contrast to most other scientific fields, women represent more than half the students.

30. Adolescent Pregnancy. One of the significant causes of high drop-out rates among girls in later primary and secondary school today is pregnancy. In Kenya today, about one percent of girls drop out of school every year during later primary and secondary school, so that one girl in every ten who reach later primary school may eventually be affected. In Kenya as in countries throughout the world, adolescent childbearing is a sensitive issue.

At present, childbearing among girls of secondary-school age in Kenya is not uncommon. The relatively few girls who achieve several years of education are thus faced with a conflict between their own expectations of a better life through further education and the example of many peers already starting families. They are often not permitted to remain in school if they become pregnant. It may be worth considering more measures to enable these young mothers to continue their education, so as to improve the longer run productivity, capacity for self-reliance, and welfare of mother and child. As more girls complete primary and attend secondary school, this should also strengthen the next generation's commitment to education and their interest in smaller families. Kenya has just begun "family life education" programs in schools, which should also be helpful.

Improving Women's Health

31. The Risks to Women. With development progress -- higher incomes, improved nutrition, expanded education -- and heavy investment in primary health care in the last 18 years, women's life expectancy has increased to over 56 years. Of course, women still face the usual health concerns remaining in Kenya (including diarrheal and respiratory infections, malaria, and other parasitic and infectious diseases as well as some nutritional stress). They also face special concerns in reproductive health. This report focuses on women's reproductive health as broader health issues are dealt with elsewhere. Maternal mortality accounts for about 40 percent of deaths among women aged 15-35, at the height of their family responsibility. Worldwide experience suggests that for every mother who dies, 1-2 young children also die. Maternal morbidity, sexually transmitted diseases, and other reproductive health issues also cause concern.

32. Maternal mortality is linked to high fertility. Very young mothers and women with several previous births are at especially high risk: the timing and frequency of pregnancy both matter. If Kenyan women had no more than four children, about half of the maternal deaths would be averted. Maternal mortality usually arises from infection, hemorrhage, toxemia, and obstructed labor, as well as from the complications of primitive abortion. It can be substantially prevented at low marginal cost, through better prenatal care, more effective help with childbirth, and better family planning. Without such health care, the risk of death or disability can be considerable even for women of appropriate age and parity.

33. Safe Motherhood. The Government is addressing maternal mortality, family planning and other reproductive health issues as part of its broader and impressive efforts to improve health. Primary health care has expanded dramatically in the past decade but is not yet fully available everywhere. The Government is encouraging communities, and particularly women, to play a greater role in maintaining their own health and in delivering front line health care. The Government PHC system works with non-government organizations and local groups in this effort. The community-based family planning and health programs of Kenya's national women's organization, KANU/Maendeleo ya Wanawake, and of the Kenya Family Planning Association, in conjunction with Government PHC, show that much can be achieved by local women in the delivery of basic health and family planning education and services. Other non-government organizations and church-affiliated efforts are similar.

These programs have modest costs and often achieve twice the national levels of family planning practice, while encouraging more efficient use of the PHC system. Innovations to train and equip midwives and traditional birth attendants are being expanded by Government and by some non-government organizations. New measures to strengthen the capacity of hospitals, clinics and local health centers to provide a wider range of family planning services, to deal with the emergency complications of pregnancy and childbirth (notably hemorrhage and obstructed labor), and to treat humanely the victims of septic abortion could be instituted and expanded. Efforts to improve blood supplies in the Government's PHC system and to provide health education will help control the spread of sexually transmitted disease. Finally, measures to increase men's understanding of family health and family planning will make it that much easier for women to improve their own and their family's health.

Strengthening Women's Organizations

34. Through an extensive network of women's groups reflecting an age-old tradition among women, women in all walks of life can more easily voice their ideas and contribute. The Government is working to strengthen these local groups. In 1976 Kenya had some 4,300 women's groups registered with Government and eligible for assistance; now it has over 16,200 spread throughout the country, many affiliated with KANU/Maendeleo ya Wanawake. These groups involve women with different incomes, education, and background in efforts to increase incomes, promote saving, and improve family health and welfare. Kenya's experience shows that women's groups can channel Government or other services effectively in such fields as agriculture, rural water, health and family planning. Women's groups can also provide feedback from users to program managers and planners. The common thread of experience from several fields suggests ways to expand cooperation with women's groups. It is not always easy to work with far-flung and disparate local groups. But efforts are underway to strengthen the groups, which entail modest cost and which could be expanded. These include measures to improve management and logistical capacity and to federate local groups into larger entities more easily dealt with by Government or large non-government organizations.

35. Experience in several sectors has shown the importance of giving women at the community level more voice in the design and operation of programs meant to benefit them. Despite considerable discussion of the merits of this approach, it is still infrequently done in practice. Women in Kenya, as elsewhere, are asking today for greater responsibility in programs that can improve their situations. Kenya's experience with women-managed programs to improve community health, water supplies, and other aspects of daily life suggests that it would make sense to design more programs with, not for, the women meant to benefit.

Government Machinery for Addressing Women's Issues

36. In 1976, the Government of Kenya created the Women's Bureau as a division within the Ministry of Culture and Social Services, to "uplift the status of women and to increase their involvement in the national development process". The Women's Bureau is empowered to:

- (a) formulate broad policies that affect women's programs;
- (b) coordinate women's activities performed by other Government ministries and voluntary organizations;
- (c) collect and analyze data and information on women and monitor and evaluate women's projects; and
- (d) plan some women's projects.

37. The Bureau is composed of eleven structural units spanning a wide variety of activities, but it has very limited resources and is meant to rely on line ministries to carry out basic service programs. The Bureau is presently seeking to form an interministerial committee with representatives from each ministry to provide coordination and exchange of ideas. At the local level, the Women's Bureau provides assistance for a number of specific projects. The Bureau is focusing its resources more sharply on developing innovative approaches that the line ministries can expand and on channeling the views of local women to Nairobi to increase their influence. This seems a natural comparative advantage for the Bureau, as the line ministries lack overall focus on women but are the appropriate entities for delivering Government services to all Kenyans.

38. The Ministry of Planning and National Development provides overall guidance and direction for Kenya's women in development efforts, and KANU/Maendeleo ya Wanawake and other women's groups provide the capacity to work with women in communities throughout Kenya.

Costs and Benefits of Improved Opportunities for Women

39. This paper has focused on direct provision to women of education and health care and other measures to help improve agricultural productivity, open more lines of work, and promote the wellbeing of women and families. It has explored innovations with potential for expansion and replication. This analysis should be refined and extended to other sectors.

40. The actual costs of Kenya's effort to improve women's opportunities ought to be estimated more precisely, as indeed should the costs of most development programs. Analysis will be needed sector by sector, disaggregated by gender. As noted in several instances, however, the additional cost of involving women will plainly be quite modest and essential to achieve the relevant development objectives on schedule.

41. The role of community involvement in enhancing cost-effectiveness ought to be explored particularly. Evidence from Kenya and elsewhere suggests that community-based efforts involving women who deliver health and family planning services can dramatically improve family planning practice and family health at a limited cost and encourage more efficient use of clinics and hospitals. Experience with women's groups in agricultural extension is also promising. More limited evidence from Kenya and elsewhere suggests that women's involvement as managers at the community level may be key to rural water supply systems that require basic technologies and local upkeep.

Implications for the Bank

42. The measures that Kenya has taken to improve women's opportunities have promoted more efficient use of national resources and improved equity and deserve consideration for expansion and replication. Many UN organizations, bilateral donors, and international non-government organizations support Kenya's development efforts that address women's potential and needs. These notably include UNDP, WHO, UNICEF, UNFPA, the USA, the United Kingdom, the Nordic countries, and Canada, as well as the World Bank. But many others are involved. Within this context, the Bank has tried to determine its own comparative advantage.

43. As to the Bank's capacity to assist Kenya's efforts to improve women's opportunities, priority should go to: (a) intensification of the promising agricultural extension program (and related research) particularly to encourage more involvement with women's groups and greater attention to crops and livestock of interest to women; (b) improvement of secondary education for girls especially in science; (c) expansion of "safe motherhood" programs including maternal health and broader family planning efforts; (d) exploration of innovative options in credit; (e) expansion of rural water supplies through community-based approaches; and (f) analysis of the potential for increased employment outside agriculture and linkages to education and training. Since Kenya's experience in several fields is promising and since, world-wide, little rigorous analysis exists on "what works" in women in development, the Bank could make an important contribution by supporting analysis to show the costs and benefits of Kenya's efforts for women in development.

Chapter I. RAISING WOMEN'S AGRICULTURAL PRODUCTIVITY

WOMEN AND KENYA'S AGRICULTURE

1. Kenya's development depends considerably on the productivity of women farmers. Agriculture is the core of Kenya's economy, smallholdings are the core of Kenya's agriculture, and women are the core of the smallholders. Approximately 85 percent of Kenya's people live in rural areas; agriculture contributes one-third of GDP and employs about 70 percent of the labor force. The agricultural sector produces almost all the country's food raw materials for the predominantly resource-based industrial sector, and about 70 percent of export earnings (excluding refined petroleum). Smallholder agriculture accounts for about three-fourths of total production, including most major cash crops as well as food marketed or consumed at home. At least two-fifths of Kenya's smallholdings are managed by women, and women generally manage food production and participate in non-food cash crops.

2. Kenya's Fifth Development Plan (1984-1988) and Sessional Paper No. 1 of 1986 (Economic Management for Renewed Growth) stress agricultural growth as the key to national economic development. Agriculture must grow at 5.0 percent annually until the year 2000 to meet targets for per capita incomes, employment, food security, and exports. In the decade after Independence, Kenya achieved 4.7 percent annual agricultural growth which fueled strong economic growth (GNP at 6.6 percent). Disruptions in the world economy from the oil crisis and falling commodity prices, East Africa's drought in 1979-80, and difficulty in maintaining policy discipline impeded agricultural growth in the late 1970's. Improvements in policy, in international markets, and in the weather led to agricultural growth at 4.8 percent in 1981-83 and, except for the 1984 drought, solid performance thereafter. Kenya has achieved this record by instituting a framework of economic and agricultural policies and institutional measures to provide incentives and equip farmers -- men or women -- to respond. Kenya's achievements in bringing agricultural extension to women farmers are outstanding and progress has also been made in providing inputs in appropriate quantities and in designing agricultural research to benefit all farmers. Yet, women's productivity remains constrained in several ways. Women still have more limited access than men to information, credit, and complementary resources. Women also still have less education. And women have heavier responsibilities for child care and household work and for collecting fuelwood and water which require several hours daily and so limit their time for agriculture. Kenya's experience to date offers the seeds for further progress. Basically, the Government has chosen to try to integrate women into mainstream programs, through careful design to take account of women's special needs, rather than instituting separate "women only" programs. This approach appears to be paying off, though of course the pace and extent of change vary within the country and resource availability lies inevitably constrain what is possible. The basic wisdom of the approach can best be seen by assessing women's role in Kenyan agriculture.

Smallholders at the Center of Agriculture

3. Kenya's agriculture has been dualistic. Before Independence, relatively few large farms and ranches produced the bulk of marketed production. Smallholdings provided subsistence for the majority of Kenyans and some marketed production. Since Independence, smallholder agriculture has gained ground. At present 1.7 million smallholdings spreading over some 60 percent of farmed land account for three-fourths of agricultural production and 85 percent of total agricultural employment. (The data suggest that smallholdings generally achieve higher yields per acre than large farms, which cover about 25 percent of farmed land. Ranches cover 15 percent.) Smallholders provide food for home consumption and 45 percent of marketed maize, 60 percent of coffee, 50 percent of tea, 45 percent of sugarcane, 50 percent of milk, and almost all marketed rice, pulses, cotton, and pyrethrum. Most smallholders market at least 30 percent of their production. Only one in five markets less than 10 percent.

4. Women provide about three-fourths of the labor on smallholdings. 96 percent of rural women work on the family farm, compared to 80 percent of men (GOK, Economic Survey, 1981). About two-fifths of Kenya's smallholdings are managed by women, and women have substantial influence over the rest. It is primarily women who produce Kenya's food and much of the country's cash crops.

5. Smallholdings average 2.3 hectares (5.7 acres), with 83 percent below 2.0 and 47 percent below 1.0 hectare (2.47 acres). Most smallholdings lie in Kenya's high-potential areas -- cool and fertile uplands with rainfall of 35 inches or more annually. These areas are densely populated. But only about 17 percent of Kenya's land has high potential. Another 9 percent of the land, with lower altitudes and less rainfall (25-35 inches annually), has moderate potential. There population density is much lower. The vast low-potential lands are semi-arid, unsuited to cultivation, and traditionally the domain of nomadic peoples. These lands support cattle and much of Kenya's wildlife. A typical small farm has a planting of maize and small plots for beans, other vegetables, and fruits. Cooler, higher farms often have potatoes and coffee, tea, or pyrethrum. Drier and lower holdings have millet and sorghum. Many farms provide grazing for dairy cattle and smaller animals.

Population Pressure on Smallholdings

6. Kenya's small farms typically support families of 7-8 children. Kenya's population is growing according to Government data at 3.8 percent annually, a rate that would double the population in nineteen years. Population pressure has worked to fragment farms and impel men to seek off-farm employment, leaving women and children behind to farm and maintain family ties to the land. In 1964, there were two acres of high potential land per person, but by the year 2000, there will be less than half an acre. In 1989 the supply will fall to less than one acre in more than half of Kenya's districts (with about two-thirds of the population excluding Nairobi) (see Table 1). Uneconomic fragmentation of the land -- and of farm activities within such small holdings -- is a considerable worry. Farmers with little land are often risk averse and reluctant to diversify out of food crops, and farmers who diversify on small holdings may end up with a mosaic of inefficient plots. The Government believes it requires 2.5-3.5 acres of high potential land to provide subsistence for a family using traditional farming

methods (Senga, 1981). Farms of 7 to 10 acres could more efficiently diversify. Population pressure has also stimulated an expansion of cultivation into marginal land and forests. More people (mostly women) are having difficulty finding fuelwood. In 5-10 years most of the forested land now providing charcoal for fuel will be farmed.

7. Traditional ties to family lands remain strong. Most families live in regions where their extended families or clans traditionally lived. Still, in the past 20 years, diminishing returns to agricultural labor and the hope of economic opportunity have inspired substantial migration. Between 1969 and 1979 Kenya's urban population doubled, so that 15 percent of Kenyans lived in

Table 1: Estimated Availability of Good Agricultural Land Per Person, Per District, 1969, 1979 and 1989 (Hectares of High-Potential Land Equivalents)*

District	Population (1000)			Hectares ('000)	Hectares per person		
	1969	1979	1989		1969	1979	1989
Narok	125	213	345	915	7.32	4.30	2.66
Lamu	22	42	75	74	3.36	1.76	0.98
Tana River	51	92	157	119	2.33	1.29	0.76
Samburu	70	77	84	156	2.23	2.03	1.85
Laikipia	66	134	253	138	2.09	1.03	0.55
Uasin Gishu	191	304	460	327	1.71	1.08	0.71
Trans-Nzoia	124	260	507	208	1.68	0.80	0.41
Nyandarua	177	233	371	265	1.50	1.14	0.14
West Pokot	82	158	286	107	1.30	0.68	0.37
Baringo	162	203	249	190	1.17	0.94	0.78
Nandi	209	293	396	234	1.12	0.80	0.59
Nakuru	291	522	882	301	1.03	0.58	0.34
Kitui	343	464	611	305	0.89	0.66	0.50
South Nyanza	663	818	986	567	0.86	0.70	0.58
Busia	200	300	431	163	0.82	0.54	0.38
Kericho	479	635	821	380	0.79	0.60	0.46
Kwale	206	287	384	163	0.79	0.57	0.42
Bungoma	345	503	710	253	0.73	0.50	0.36
Elgeyo Marakwet	159	149	141	105	0.66	0.70	0.74
Embu	179	262	370	103	0.58	0.39	0.28
Kisumu & Siaya	784	957	1,144	438	0.56	0.46	0.38
Kilifi	308	428	573	162	0.53	0.38	0.28
Murang'a	445	647	905	217	0.49	0.34	0.26
Kirinyaga	217	295	388	100	0.46	0.34	0.26
Taita	111	148	191	50	0.45	0.34	0.26
Meru	597	833	1,164	263	0.44	0.32	0.23
Nyeri	361	487	641	160	0.44	0.33	0.25
Kakamega	783	1,033	1,324	325	0.42	0.31	0.25
Machakos	707	1,019	1,413	284	0.40	0.28	0.20
Kiamgu	476	686	951	170	0.36	0.25	0.18
Kisii	675	870	1,096	220	0.33	0.25	0.20

* Estimates of high-potential land equivalent as calculated for 1969 in Table 1, ILO Mission Report, assumed constant to 1969. Estimates of District Populations in 1989 calculated on assumptions that district growth rates 1969-79 are maintained to 1989.

urban areas (compared to 5 percent in 1948). The typical migrant is a man who leaves his family behind but returns to visit every several weeks or months. More men than women migrate because men tend to be better educated, and cultural expectations give men better odds in the formal job market. Moreover, farming at home is often considered "women's work" (Kabira and Njau, 1985). Women with 6-8 young children are not highly mobile and rely for help on networks of family and women friends. It is thus simpler for the women and children to stay on the land.

8. Research is scarce, but one study in 1974 found that 90 percent of men working in Nairobi sent one-fifth of their earnings back to their families (Johnson and Whitlaw, 1974). More broadly, urban remittances may constitute about 10 percent of smallholders' total family income (GOK, Integrated Rural Surveys, 1974-79). About 30 percent of smallholders' family income derives from the non-farm work of smallholders, mostly male, living on their land. Some 60 percent of smallholder family income comes from the farm, produced largely by women (GOK, Social Perspectives cited in UNICEF Situation Report, I). The off-farm income finances farm investment (as well as consumption, school fees, and so on) which enables those on the land to improve technology, buy inputs, and get credit, thus directly affecting agricultural productivity (Collier and Lal, 1980; Safilios, 1986; and Moock, 1973).

9. Kenya's population growth and hence migration pressure may taper off with improvements in education and economic opportunity (especially for women) and the spread of health and family planning services (see Chapter II and III). But with half the population now less than 15 years old, population growth will persist at rapid rates into the next century while average family size falls. The challenge will be not just to maintain, but to improve, the productivity of smallholdings.

A Strategy for Smallholder Agriculture

10. Kenya's considerable accomplishments in agriculture offer hope. In the 1960s and 1970s, Kenya carried out extensive land reform and agricultural modernization programs. These established coffee, tea, pyrethrum, and dairying as well as maize and other foodcrops on small farms and helped to demonstrate internationally the efficiency of smallholders' agriculture. Agricultural incomes rose as land under these crops increased and as yields improved. Kenya's experience proves that smallholdings can achieve higher yields per acre than large farms when labor is relatively plentiful, when land and climate suit profitable labor-intensive crops such as coffee and maize, when information and resources are provided to smallholders, and when families are given secure title so that they have incentive to invest in their farms. A study of smallholders in the 1960s shows they achieved about twice the yields in coffee that large farmers had and at least matched large farms in maize, pyrethrum, and dairying (Herz, 1974). The reforms shifted production patterns enough to increase farm employment and substantially forestall diminishing returns to labor for perhaps two decades. (Smallholders used several times as much labor per acre as large farms. Higher yields made their system more profitable) (Ibid).

11. As gains from these reforms leveled off, a second generation of difficulties in agricultural policy emerged. Regulated prices on major agricultural products (excluding coffee and tea) at first provided considerable incentive, but later these prices were not raised in step with input prices. Maize prices were kept below world market levels. Parastatals organized to market particular goods (including coffee, tea, dairy products, and, to some extent, maize) sometimes operated inefficiently. Expansion of land under cash crops slowed as most available land was used. Smallholders had difficulty getting information, inputs, and credit. Droughts in the 1970s exacerbated the situation. Now smallholder yields often fall short of large-farm yields and still shorter of yields at research stations. Still, as Table 2 shows, the potential is there for increased yields of maize, coffee, tea, dairy cattle, and other things on smallholdings.

Table 2: Actual and Potential Agricultural Yields
(Tons per hectare)

<u>Crop</u>	<u>Average</u>	<u>Smallholder</u>	<u>Large Farm</u>	<u>Research</u>
Maize	1.86	0.5-5.0	2.3-5.4	Up to 8
Coffee	0.86	0.54	1.37	Up to 2.5
Tea	1.34	0.93	2.39	n/a

Source: GOK, Sessional Paper No. 1, 1986

12. Women's or men's agricultural productivity depends in the first instance on the policy framework in smallholder agriculture. Kenya's Sessional Paper No. 1 emphasizes improving productivity for all smallholders through a policy framework with three key aspects: (1) intensification of production for maize and other key food crops (particularly through greater use of new varieties of seed, fertilizer, and pesticides); (2) increased research on agricultural technology; and (3) limited expansion and intensification of production of high-value cash crops (coffee, tea, fruits and vegetables, and dairy products). This will require:

- o Pricing and other policies to give producers (male or female) stronger incentives. (Prices are still controlled on maize, wheat, milk, sugarcane, and cotton, but not coffee or tea; prices have been raised for some products, such as maize, but not for others of interest to women.)
- o More efficient use of land and other natural resources (particularly forests and water);
- o Expanded services to improve farmers' supply response and complement land and labor -- particularly extension, provision of inputs, credit, and research;

- o Streamlined operation of parastatals involved in agricultural production and marketing (for example, coffee, maize, and milk), reduction of their monopoly position, and increased competition;
- o Increased investment resources and better coordination of development assistance.

For the first three, attention to women farmers will be crucial.

Women's Growing Responsibility for Farming

13. While Kenyan women now produce and market a variety of foods and cash crops, women were traditionally responsible only for food crops and small animals. Men usually tended the larger animals, did the heavy work of clearing and planting, helped with harvesting, and protected the family. Women also gathered firewood, fetched household water, prepared food, and cared for the family.

14. The division of agricultural labor by gender was reflected in customary land tenure, which provided women some economic security. Under most customary land tenure systems in high potential areas, land was ultimately controlled by the tribe. The tenure systems were complex and varied. Much grazing land was held communally (and often rotated with cropland to preserve fertility). Cropland was usually owned in a more immediate way by men and parcelled out into plots farmed mostly by their wives. Sons usually inherited the land, but women had widely respected rights of usufruct. With increasing population pressure, exacerbated by colonial settlement on some of the high potential land, traditional systems gave way: fallow periods were cut and plots were fragmented. Land reform consolidated holdings and permitted more efficient farming (Herz, 1974). But under modern land registration, title almost always goes to men -- who continue to allocate plots informally to wives or daughters-in-law. Women are permitted by law to own land, but few do (widows tend to own more). Studies in such diverse areas as Nyanza and Muranga show no more than 4-5 percent of women owning land (Pala, 1975, and Safilios, 1986). Since formal title gives legal standing, many women are left with less hold on the land than traditional usufructory rights provided (Osman, 1986, and Kabira and Njau, 1985). With population growth, cultural pressures increase on fathers to provide at least minimal land for their sons. Landlessness and weaker legal claims to land are of growing concern to women.

15. With the advent of widespread smallholder cash cropping in the 1960s, the division of labor on farms changed. Men took charge of "family plots" or "husbands' plots" for cash crops such as coffee and tea, while women retained "wives' plots" for food crops and seldom earned much income. With more recent male migration, the division of labor has evolved further. While they maintained their traditional responsibilities for fuelwood, water, and household work, women work now in a wider range of crops and livestock activities (see Table 3). In fact, Table 3 shows that a higher proportion of women than men are engaged now in most phases of agriculture including cash cropping. In areas where cash cropping is concentrated, women tend to be more involved than men. With coffee in Central and Eastern Provinces, a higher proportion of women in virtually every phase; the same is true for tea and pyrethrum in Central and Nyanza provinces. (See Statistical Annex on Agriculture) (GOK, Integrated Rural Surveys, 1976-1979).

16. Time-use studies are rare, but available evidence suggests that women spend 13-14 hours a day working, about one-third carrying out food preparation and childcare tasks and the remainder in gathering household water and fuelwood, hygiene, farming, and other tasks (UNICEF Situation Report, III). Most women spend at least three hours daily fetching water even when water sources are relatively close, with a sharp decline in "productivity" measured by amount of the water fetched as distance and travel time increase (see Chapter IV). Men farmers reportedly work shorter hours because they do not have such time-consuming childcare and household responsibilities (Safilios, 1986).

Table 3: Division of Labor by Gender among Smallholders
(Percent of those above 15 years of age
who work regularly on task)

	<u>Males</u>				<u>Females</u>			
	<u>Plant</u>	<u>Weed</u>	<u>Harvest</u>	<u>Market</u>	<u>Plant</u>	<u>Weed</u>	<u>Harvest</u>	<u>Market</u>
<u>CROP</u>								
Maize	54	55	54	24	87	87	89	52
Potatoes	8	8	8	4	13	13	14	7
Coffee	13	12	11	10	13	16	16	13
Tea	5	5	5	4	5	6	6	6
Pyrethrum	5	5	5	4	7	7	6	5
Cotton	6	6	6	5	8	8	8	5
<u>LIVESTOCK</u>								
	Work regularly				Work regularly			
Poultry care			3				9	
Stall feed livestock			8				12	
Graze cattle			25				24	
Milk Cattle			12				37	
Graze sheep, goats			21				27	
Carrying water			5				89	
Carrying wood			5				89	
Preparing food			5				90	
Cleaning house			5				90	
Caring for children			1				63	
Buying food			23				71	

Source: GOK, Integrated Rural Surveys 1976-79 Basic Report
cited in UNICEF, Situation Analysis Vol. III

Table 4: Women's Weekly Time Allocation for Five Productive Activities

Activity	High Potential Areas		Low Potential Areas	
	% of Women	Hrs/wk	% of Women	Hrs/wk
Collecting Firewood	90	5.25	81	6
Farming (crops)	90	12.25	62	13.5
Tending animals	66	19.5	53	12
Milking	35	5.75	50	8
Marketing	44	6	53	10.75

Source: Krystall and Gomme, 1979

17. Most women farmers are -- to varying degrees -- decision-makers. Evidence suggests that women substantially control their own plots and, in addition, influence "husbands' plots". Women have traditionally made decisions on technical efficiency -- how to use given supplies of resources with available technologies to maximize the output of a particular crop (Moock, 1973). Until the 1970s, the "heads" of farms -- generally men -- made decisions on allocative efficiency -- how to maximize total profit or family income (including subsistence) by selecting the proper combination of agricultural activities and by adjusting supplies of available resources. Men usually decided how much land to devote to which crops, how much to market, and whether to hire labor or purchase improved seeds (Ibid). Today more women are making these allocative decisions. A study for the Bank in Muranga and Meru (by consultant Constantina Safilios) reports that about 3 out of 4 women farmers in Muranga and Meru usually make most decisions on "wives' plots" even when the husband is near, but are less likely to decide about purchasing tools or seeking credit (see Tables 5a and 5b). On the husband's plot, women tend to have less decision-making authority, but still substantial influence. Interestingly, in Muranga, women apparently have less influence over husbands' plots when husbands are away. But these absent husbands concentrate on coffee production, while the nearby husbands concentrate more on food crops which women traditionally control. In Meru, women have, as expected, more influence when husbands are absent (Safilios, 1986).

Table 5a: Women's Decision-Making Authority in Muranga
(Percentage of Wives Who Report that They Usually Decide)

	Wife's Plot		Husband's Plot	
	Husband Near	Husband Away	Husband Near	Husband Away
What to grow	74	91	37	19
Use of fertilizer	68	97	23	23
Better Seeds	71	97	37	33
How much to sell	79	97	54	30
Seeking loan	54	70	-	-
Buying agr. tools	32	66	32	66

Source: Calculated from Safilios, 1986

Table 5b: Women's Decision-Making Authority in Meru
(Percentage of Wives Who Report that
They Usually Decide)

	<u>Wife's Plot</u>		<u>Husband's Plot</u>	
	Husband	Husband	Husband	Husband
	Near	Away	Near	Away
What to grow	87	91	-	-
Use of fertilizer	84	91	2	-
Better Seeds	87	91	-	25
How much to sell	85	91	11	40
Seeking loan	70	68	-	-
Buying agr. tools	20	32	20	32

Source: Calculated from Safilios, 1986

18. Moreover, many families have little land beyond what is allocated to wives' plots. 36 percent of farms in Muranga had only a wife's plot; 44 percent had husbands' and wives' plots, but on two-thirds of those farms, the wives' plots constituted over half the family's land. In Meru, 14 percent of the farms had only wives' plots. In another one-fourth of the farms, wives' plots constituted one-half or more of the family's land (Safilios, 1986). In general, the smaller the family's total supply of land, the higher is the percentage of land in the wives' plots.

19. Today, many women are entirely on their own. In traditional societies, custom usually often ensured that few women were on their own. Widows were expected to remarry within clans. Such traditions provided considerable security but gave women limited choice and little recourse if a husband was harsh (Kabira and Njau, 1985). With the disruptions of colonial settlement and more recent pressures encouraging migration, the situation has changed. Women today are obliged to be more independent. In some ways they are far better equipped to be -- through more education and a stronger legal position (excepting land tenure). But some are in precarious economic positions, which has troublesome implications also for the children who depend on them.

20. Definitions of "female heads of household" vary. Divorced or widowed women are often clearly heads of household. The disagreement centers on women whose husbands are often away and who thus have substantial but not total responsibility for the household. In Central, Eastern, and Western Provinces, in the Kenya Government's Contraceptive Prevalence Survey of 1984, fewer than half of the women aged 15-49 report that they are married and with husbands present (see Table 6) (KCPS, 1984). Some absent husbands retain strong family ties, so that their wives do not always "head". As another complication, some young women who are not married still live with parents. But some women delay marriage and yet establish households. As a practical matter, probably two-fifths of rural Kenyan households are headed by women. Even allowing for definitional differences, relatively more households are headed by women than thirty years ago. Kenya's rural families and Kenya's agriculture are increasingly in women's hands.

Table 6: Percentage of Households Headed by Women by Province

	Coast	Eastern	Central	Rift	Nyanza	Western	National
1976-9	12.2	22.9	31.1	21.1	32.6	32.8	27.3
1979	23	37	36	29	36	36	33
1984a	44.4	51.3	58.4	43.1	43.8	54.8	n.a.
1984b	29.0	35.7	33.5	25.0	34.2	36.4	n.a.

a = never married + married in past + married, husband away

b = married, husband away + married in past

Sources: GOK, The Integrated Rural Surveys, 1976-79;
1979 Census; KCPS, 1984 (which excluded North East Province)

21. While their definitions of "women household heads" vary, community studies from around Kenya confirm the point: 47 percent of smallholdings in Mwala location of Machakos were managed by women (Rukandema et alia, 1981); 45 percent of smallholdings in Kawelu sub-location and 41 percent in Kibiuni sub-location of Eastern Province managed by women (Rukandema et alia, 1983); and in Shitoli sub-location of Kakamega, 55 percent were in the hands of women. (Rukandema, 1980; see also Safilios, 1986).

Productivity, Poverty, and Gender

22. Total agricultural productivity depends, of course, on land, labor, and capital. Kenya's policy framework is certainly designed to increase the productivity of all farmers, male or female. But for practical and cultural reasons, women typically have more difficulty than. The land shortage affects women especially, and women now have more tenuous hold on the land, which may affect their willingness to invest. Women's labor requirements for non-shiftable activities like childcare, household work, and fetching of water and fuel leave their time for farming constrained. And women who are often ill or who bear eight or nine children have other demands on their physical energy. Moreover, historically, women have had less access than men to information and productive resources to complement their labor. The Government is taking steps to increase women's education and health care and to open up access to complementary resources and information that will equip women directly to improve productivity.

23. Research is scarce, but one study suggests that women's productivity is roughly 15 percent lower than men's (Smock, 1981). Another suggests a difference of only 4 percent (Mooock, 1973). Moreover, some women have relatively smallholdings. As little land and low productivity translate into lower income, women are disproportionately represented among the poor. Some 70 percent of Kenya's poor are smallholders, and most adult poor are women. (UNICEF Situation Report, Vol. III) Poverty of men or women is associated with little land, little non-farm income, little education, less access to information and resources, and larger numbers of children. Poor smallholders have more people to feed and depend more on farm income but are less well equipped to farm. Women who head smallholder households are especially vulnerable.

24. In the first instance, households with just one income tend to be poorer (see Table 7). Thus married women who head households report only about two-thirds the income that married men who head households report (these women report substantially less cash or in-kind income). Married women who head households have fewer earners in the household than married men (whose wives are present). But married women with husbands absent have the highest incomes of any female household heads, largely because of husbands' remittances.

Table 7: Rural Household Income by Gender of Head
(Kshs per month) (1981/1982)

Male:	Average	Single	Married	Widowed	Separated /Divorced
Adults in HH	2.82	1.74	2.94	1.69	1.29
Earners	1.44	1.54	2.54	1.43	1.19
Total Income	927	528	970	527	418
a. Cash	490	337	511	249	221
(Farm)	92	34	98	44	17
(Non-Farm)	81	20	87	8	58
(Employee)	216	263	220	122	91
(Other)	102	20	107	105	55
b. Kind	436	192	459	249	197
(Farm)	349	162	367	205	161
(Non-Farm)	84	28	89	44	32
(Other)	3	2	3	0	4
Female	Average	Single	Married*	Widowed	Separated /Divorced
Adults in HH	1.97	1.54	1.91	2.13	1.71
Earners	1.64	1.26	1.56	1.81	1.51
Total Income	600	564	663	528	502
a. Cash	297	372	335	233	310
(Farm)	44	50	43	46	25
(Non-Farm)	35	18	37	35	36
(Employee)	85	223	93	47	180
(Other)	133	81	162	105	79
b. Kind	304	191	329	296	191
(Farm)	257	162	279	250	158
(Non-Farm)	45	28	48	45	32
(Other)	2	1	2	1	1

Source: GOK, 1981/82 data

* Husband absent.

25. More solid research in Kenya or elsewhere on the causes of poverty is needed. Yet unusually extensive Government data from 1979 shed some light on the issue. These data confirm that women who head smallholder households depend more on farming but are less well equipped to farm because they have less land and less education (see Table 8). According to these data, 29 percent of unmarried women who head households had no off-farm income,

compared to 22 percent of married women and 19 percent of married men who head households. Over 60 percent of women household heads have less than one hectare of land, compared to 45 percent of men household heads. Female heads of household are also less involved with cash crops and with cattle, which tend to fetch relatively high prices. Married women who head households tend to be younger, while unmarried women who head households tend to be older widows (about two-thirds are past 50 years of age). Few older women have any education, while 40 percent of married women who head households and 45 percent of married men who head households have some education (GOK, Integrated Rural Survey, 1979, analysed by Barnes and Warner, 1982).

26. Solid research showing the relative impact of different factors affecting agricultural yields is rare in any country, because of the statistical difficulty of isolating the impact of individual factors. But one study of maize yields on smallholdings in Kenya by Peter Moock is noteworthy. In the Vihiga Division of Western Kenya, his careful multivariate analysis of a household survey showed that proper planting patterns, use of improved seeds and fertilizer, avoiding erosion, and good weather helped raise yields per acre -- as did having a female farm manager. Table 9 summarizes the findings of this study, showing the number of bags of maize attributable to each factor listed: thus, the use of hybrid maize seeds contributed 1.4 bags (Moock, 1973). The same study also looked at the impact of having a woman farm manager. It found that women smallholders with the same access to inputs and education as men actually achieved maize yields per acre that were about 1.5 bags or 7 percent higher. Women were thus capable of efficient farming. Their stronger performance may reflect their lack of other employment options -- or a tendency for more able men to find jobs off the farm.

27. Further analysis (separate regressions for men and women) suggested that agricultural extension services had more impact for men: in those days, extension agents seldom reached farmers, and the extension system was in any case weak. This further analysis also suggested that credit helped increase yields by encouraging greater use of inputs -- but credit usually went to better off farmers who could perhaps have financed the inputs some other way. Finally, the study suggested that 1-3 years of education had greater impact on agricultural productivity for women than for men farmers. The explanation may be that almost all women are farmers while the more able men may be more likely to find off-farm employment. Men as well as women farmers achieved higher yields when they had 4 or more years of education. The few women farmers with more than 3 years of schooling tended to be more involved with extension, and that same tendency was only slightly weaker for men with more than 3 years of schooling. On balance, education alone had a substantial impact on productivity (Ibid).

Table 8: Household/Smallholding Characteristics by Sex and Marital Status of Head

Age of Head	HOUSEHOLD HEAD		
	Married Male	Married Female	Unmarried Female
Under 30 years	13%	34%	3%
30-39 years	21	30	10
40-49 years	26	20	24
50-59 years	18	9	25
60 years and over	22	7	38
Education of Head			
None	55	60	90
Standards 1-4	18	17	8
Standards 5-8	23	19	2
Farms 1-2	2	3	0
Farms 3+	2	1	0
Size of Holding			
> 1 Ha.	45	61	64
1.0-1.9 Ha.	20	20	15
2.0-2.9 Ha.	11	7	7
3.0-3.9 Ha.	5	2	3
4.0-4.9 Ha.	3	1	3
5.0 Ha. and over	9	4	4
Not reported	7	5	4
Monthly Off-Farm Income			
None	19	22	29
< Shs. 300/-	55	56	64
Shs. 300-699/-	20	16	5
Shs. 700/- and over	6	6	2
Production of Cash Crops to Household Growing			
Coffee	21	15	13
Tea	9	7	4
Pyrethrum	8	9	6
Cotton	10	6	9
Ownership of Unimproved Cattle in Household Owning			
1-3 unimproved cattle	17	19	16
4-8 unimproved cattle	14	9	12
9-13 unimproved cattle	6	8	4
14+ unimproved cattle	6	3	2
Ownership of Improved Cattle in Household Owning			
1-3 improved cattle	12	7	8
4-8 improved cattle	7	4	4
9-13 improved cattle	3	1	1
14+ improved cattle	4	1	3
Expenditure on Wage Labour			
None	86	78	89
Shs. 1-249/-	9	16	7
Shs. 250-650/-+	5	6	4
Expenditures on Fertilizer			
None	77	79	81
Shs. 1-249/-	16	16	15
Shs. 250-299/-	3	3	2
Shs. 300-400/+	4	2	2
Expenditures on Dips and Veterinary Services			
None	74	82	79
Shs. 1-59/-	15	12	13
Shs. 60-119/-	4	4	2
Shs. 120/-+	1	1	6

Source: Barnes and Warner 1982

Table 9: Influences on Maize Yields per Acre

(Dependent variable is maize yield in bags per acre.)
 (The sample mean is 17.6 bags per acre: 17.1 for women, 17.8 for men.)

Factor	Contribution*
Constant	0.540
Interplanted maize/beans	1.708++
Hybrid maize seeds	1.437+
Maize plant population	1.085+++
Insecticide	0.928
Rate of Phosphate	0.031+
Rate of Nitrogen	0.081+++
Fallow/fertlz last season	2.181+++
Labor hours per acre	0.0017++
Hail damage	-0.961++
Misc. damage (erosion)	-1.961+++
Schooling (per year)	1.244++
Extension index	0.0027
Loan	0.537
Migration/age	0.864
Female Manager	1.508++
R2	0.642
F	16.279+++

*Note: The equation was a linear form assuming constant marginal product.
 (+, ++, and +++ indicate significance levels of .10, .05, and .01 respectively)

Source: Mook, P., 1973

EQUIPPING WOMEN FARMERS TO RESPOND

28. Productive capacity for men or women in agriculture can be increased through: investments to build human capital, particularly education and health, and investments to equip farmers more directly, such as agricultural extension, credit, provision of higher yielding varieties of seeds or other inputs, related research, and so on. The Kenya Government has made impressive progress on all of these fronts, though credit remains a difficult issue. Opinions differ on the relative contribution of these various measures today for men or women farmers, and solid research to elucidate the question is scarce in Kenya and elsewhere. It is difficult to disentangle the separate effects of this complex of measures: this suggests that a "package" of policies, information, credit, and inputs -- and female education -- is needed. But more research to determine the best package for farmers of either gender is needed. This chapter will identify particularly promising ways to increase women farmer's productivity.

Agricultural Extension

29. The leading source of organized advice on agriculture for both men and women farmers in Kenya is the national extension system operated by the Ministry of Agriculture in conjunction with related agricultural research programs. Kenya's modern extension system has evolved since pre-Independence. The present system was initiated in 1983. Before then, the extension system worked by design mostly with men farmers. (A separate home economics branch served rural women, advising them on domestic hygiene, household resource management, and cottage industries, as well as some farming.) The impact of this early system proved less than expected. After a pilot undertaken in Nandi and Kericho Districts in 1982-83, the Government decided to establish a stronger national service of extension based on the "Training and Visit" system. In Kenya's case, "T and V" was designed and has been implemented with the deliberate intention of reaching women as well as men farmers.

30. Under "T and V", extension agents regularly visit selected "contact farmers" on their own land. They provide technical "messages" which the contact farmers can put into practice. They provide only the messages -- no physical inputs or credit, no advice on other matters -- to avoid overloading the system. (The farmers get credit and inputs from various sources, such as cooperatives and commercial outlets.) T and V aims to select about one-tenth of farmers to be contact farmers. The selection is made either by extension agents or by local communities or leaders. Contact farmers are expected to adopt extension messages and persuade others to adopt them also. Several "follower farmers" are supposed to join the visits, so that the message spreads to the community.

31. The messages are linked to the farming cycle and initially emphasize measures that require limited cash outlay, such as spacing and pruning. They eventually include the use of fertilizer, crop spraying, and other purchased inputs. The agents are backed by "subject matter specialists" and ultimately by extension management and research. The agents provide two-way communication: they channel research results, appropriately adapted, to local farmers and get feedback from farmers on their needs and on the utility of existing messages. The agents pass this on through the extension service to agricultural researchers, who then improve the messages.

32. The T and V system is established to some degree in Kenya's 30 High Potential Districts. Some 3,500 frontline extension agents cover 1.7 million farm families, or an average of one to every 500 families. The groups of 500 are subdivided into 8 smaller groups of 50-100, and from those 5-10 contact farmers are selected. The agents are to visit each contact farmer every two weeks. Every eight agents are supervised by a technical officer, and technical officers are supervised by divisional extension officers who report to the District Agricultural Officer. Each district has several "subject matter specialists" in extension, home economics, rural youth, crops, coffee, horticulture, plant protection, land development, and program coordination. Most agents and backup officers are men. The home economics district officers (women) now supervise local home economics agents (also women) who now provide the same agricultural extension as other agents but who in addition provide special support to women's groups.

33. Kenya's extension system has become one of the world's better examples of programs to reach women (as well as men) farmers. Before T and V, extension seldom reached women: in Kakamega, for instance, half of the farms managed by women had not been visited by 1975 as compared to about one-fourth of those managed jointly by men and women (Staudt, 1985). Since T and V, considerable progress has occurred. Although little information on women's access to extension exists for most countries, this subject was assessed in a study by the Ministry of Agriculture and Livestock Development (The Performance of the National Extension Programme, MOALD, 1986, cited in Safilios, 1986). It found that increasing numbers of women serve officially as contact farmers, but many more serve as de facto contact farmers because their husbands do not farm full time. Nationwide, about half of the extension agents see women contact farmers or wives of male contact farmers in most of their regular visits. This is particularly true of Central, Eastern, and Rift Valley Provinces (see Table 10). While extension does not yet reach all women farmers, substantial progress has been made.

Table 10: Proportion of Extension Agents Working with Women Farmers

<u>Province</u>	<u>At Least 50 Percent of Visits</u>	<u>At Least 70 Percent of Visits</u>
Central	59	47
Eastern	62	53
Rift Valley	63	51

Source: Safilios, 1986, calculated from GOK (MOALD) data.

34. Despite the de facto situation, the number of official contact farmers who are women is smaller. About half of the extension agents report that fewer than one-fifth of their official contact farmers are women, 15 percent of agents report that from one-fifth to two-fifths are women, and 22 percent of agents report that more than two-fifths of their official contact farmers are women (Ibid).

35. The Safilios study cited earlier also assessed the impact of extension on women farmers in two districts of smallholdings with mixed crops, Muranga and Meru (Safilios, 1986). In each it interviewed about one hundred women farmers (a purposively selected sample of some contact farmers, some follower farmers, and some who were neither) in three areas: one where extension was generally proceeding well, one where it had encountered difficulty, and one where it was going moderately well. It also interviewed 46 extension agents in the two districts. It is one of the first such studies to be performed in any country, and it is just a beginning. It should be supplemented with more extensive research, based on a larger sample permitting comparative studies of both men and women with different levels of income, education, access to inputs, and landholdings. But the emerging findings from the study suggest certain design characteristics of Kenya's extension system that affect its capacity to reach women. These are summarized below.

36. First, male extension agents can certainly work effectively with women contact farmers either one-to-one or in groups. Official contact farmers are sometimes selected by agents themselves and sometimes by local leaders. Women are more likely to be selected if criteria for selection emphasize farming ability and if the agents make the selection. Findings differed in three areas of Muranga. In Makuyu, where the selection criteria include active involvement in farming and availability for meeting agents, more than half the contact farmers are women. In two other areas of Muranga, where land ownership is still a selection criterion, about two-fifths of the agents select women as one-fourth to one-half of contact farmers. The two female agents have two-thirds and ninety percent women contact farmers. In Meru, where chiefs more often select contact farmers in local meetings, fewer individual women are contact farmers. But more women's groups in Meru serve as collective "contact farmers": about half the extension agents, male and female, work with such groups. Moreover, extension agents work primarily with women on a de facto basis. In Muranga, three-fourths of extension agents report seeing regularly no more than one-third of the men selected as contact farmers. In Meru two-thirds of extension agents report seeing regularly no more than one-third of the men selected as contact farmers. Thus, for both areas, some three-fifths of agents report that three-fourths of the farmers they see on a regular basis are women contact farmers or wives of contact farmers, and another one-fourth of agents see women farmers at least half the time (Safilios, 1986).

37. Older male agents generally prove more reluctant to work with women farmers: in Meru, 60 percent of the male agents over 40 years old have no women contact farmers and work with no women's groups. By contrast, younger agents (whether men or women) often prefer working with women farmers. In Meru, about two-thirds of agents prefer working with women because they consider them more likely to adopt their advice and because women actually do most of the farming. Half of these agents work with at least 2-3 women's groups (Ibid). In Muranga, in one area the agents usually select women contact farmers; in the other two areas, about half prefer working with women on grounds of their greater interest in extension advice, but the other half prefer working with men on grounds that they can better afford to put the advice into practice (Ibid). On the whole, this evidence suggests that low-cost efforts to legitimize and encourage selection of competent women as contact farmers would make sense. The Government is moving in these directions. The marginal cost of such efforts can be kept minimal. Possible ways include setting targets for numbers of women contact farmers; emphasizing the need to reach women farmers in training programs for extension agents; encouraging chiefs, ministers or political leaders to speak out in favor of women contact farmers at local gatherings; and supportive publicity in the media. It would also help to base the selection of contact farmers strictly on farming capacity and to remove requirements like land ownership.

38. Second, women (and men) contact farmers tend to be slightly older and better off than ordinary farmers (Safilios, 1986). Perhaps women innovative enough to be contact farmers are also innovative in other fields: Contact farmers are likelier to practice contraception than follower farmers (see Table 11). (The sharp differences in contact and follower farmers are interesting because their average ages are so similar.) Contact farmers tend to have more land than follower farmers, but both have more than other farmers (see Table 12). 35 percent of the contact farmers, but more than half the other farmers had less than 1 acre (see Table 13). Contact, follower, and

other women farmers all usually decide about farming on women's plots, and all three groups have moderate influence over husbands' plots. Contact farmers earn higher incomes from farming than follower farmers, who earn more than other farmers (see Table 13). More than two-fifths of the contact farmers but only 16 percent of the follower farmers and 4 percent of the other farmers earn more than Kshs 10,000 annually. This difference is sharper than the difference in land holdings, which suggests extension may have played a role in raising income. As agents are generally judged by how well their advice is adopted, they may seek contact farmers who have more land and more resources with which to implement their advice. They may shy away from farmers who are poor and so less likely to buy new seeds, fertilizer, and other inputs. Since women tend to be poorer, this may discourage some agents from selecting women as contact farmers (as some of the agents in Muranga reported) (Safilios, 1986). However, the spending patterns of male and female heads of rural households, at least in the 1970's, were not dramatically different; expenditures are generally low and inadequate (see Table 8). To improve the reach of extension among poorer farmers, it may be worth insisting that agents select more contact farmers from among the poor, particularly women, and assess their particular needs.

39. Third, extension agents often prefer to work with women's groups as a "composite" contact farmer. Among some cultures, notably in Muslim areas, it is easier for male extension agents to visit groups of women than individual women. In all areas, the groups offer economies of scale. Agents can spend far more time teaching and less in traveling from farm to farm, and transport costs are reduced. Innovation diffusion theory suggests that groups may learn more efficiently than individuals not just because of scale economies, but also because "group spirit" provides reinforcement and encouragement. Organized groups of 15-20 women willingly meet regularly on one farm with an extension agent, while such large groups of men farmers are apparently less willing. (Exactly why this is so is unclear, but it probably relates to the age-old tradition of group self-help efforts among women.) Evidence from Meru and Muranga suggests that in more than half the women's groups, at least three-fourths of the members attend sessions with the agents regularly. Thus agents typically reach 15-20 women farmers at once. In about half the cases, extension agents follow up group meetings with visits to the individual women's farms, and they report these women tend to be better adoptors of extension messages than individual contact farmers (Safilios, 1986). Other evidence from Baringo, Taita Taveta, and Busia confirms that women's groups are highly effective in channeling information whether for rainfed agriculture, irrigated areas, or drier areas (Muzaale and Leonard, 1985). Moreover, available evidence suggests that women's groups include women with varying levels of land, education and assets: poor women participate extensively and women heads of households tend to participate relatively heavily, though the very poorest may have difficulty keeping up in times of famine (Muzaale and Leonard, 1985 and Mukolwe, personal communication). Efforts to hold some group meetings on the farms of poorer women could help to reach the poor.

Table 11: Family Characteristics of Women Farmers
in Muranga by Extension Status
(Means)

	Age	Percent Married	No. of Children	Percent Practicing Family Planning
CF	42	83	6.6	43
FF	42	88	5.4	29
OF	36	89	5.1	63

Note: CF=contact farmer, FF=follower farmer, OF=other farmer
Source: Calculated from Safilios, 1986

Table 12: Farming Decisions of Women Farmers
in Muranga by Extension Status
(Means of index for "usually decides": husband=1, wife=5)

	Wife's Plot					Family Plot				
	Size (Acres)	Crop	Frt	Seed	Loan	Size (Acres)	Crop	Frt	Seed	Loan
CF	1.6	4.2	4.2	4.2	3.3	1.0	2.3	2.2	2.7	1.4
FF	1.3	4.5	4.5	4.5	4.2	0.9	2.1	1.7	2.3	1.1
OF	1.0	5.0	4.9	5.0	4.3	0.6	3.3	2.3	3.3	1.3

Frt = Uses Fertilizer
Source: Calculated from Safilios, 1986

Table 13: Income and Landholdings of Women Farmers
in Muranga by Extension Status

	Landholding (Acre)				Agricultural Income (KSHS)			Average Agr. Income (KSHS)
	<1	1.5-2	2.5-5	0	<2700	2700-10000	>10000	
CF	35%	39%	26%	22%	9%	26%	43%	10134
FF	40%	42%	19%	33%	26%	26%	16%	4534
OF	54%	36%	11%	18%	32%	46%	4%	4066

Source: Calculated from Safilios, 1986

40. A major effort to use more women's groups as contact farmers could enable the extension service to meet, as a conservative estimate, twice as many farmers, probably at a lower total cost. T and V is designed to enable an extension agent to talk with several farmers simultaneously and to limit the time spent traveling among farms. Even so, extension agents often spend half of their "farm time" traveling among farms. Many cannot manage to keep a biweekly schedule for visiting each contact farmer. Moreover, one difficulty in Kenya as elsewhere has been that each contact farmer has, in practice, few "follower farmers" who work with and learn from him or her. In Meru and Muranga, contact farmers officially had 5-8 official follower farmers, mostly women. But in practice, each had only one or two (Safilios, 1986). People may feel like "second class citizens" as "followers", or follower farmers may be poorer or have trouble traveling, and so on. Thus agents reported that they could reach only 8 to 13 percent of the local farmers as contact farmers or follower farmers (including some women's groups). By working with women's groups, extension agents could increase their time on task and reduce their travel time. Group cohesion could help overcome the typical follower farmer difficulties. Since groups tend to be relatively good adopters, the payoff should be substantial. The Government is therefore making considerable effort to encourage the extension service to work more with women farmers.

41. In Kenya, women have traditionally banded together in small self-help groups, often to generate savings or earn income or improve family welfare. Many such groups earn and save for joint projects, like a well or cistern, and for individual needs such as marriages or improved roofing or new seeds. Organizations notably including Maendeleo ya Wanawake have national networks reaching down to the local level and including some of the poorest women, in regions near Nairobi and in the remoter parts of Kenya as well. The Ministry of Culture and Social Services has registered over 16,000 women's groups, and the registration makes them eligible for Government assistance. It is important to use groups of women with access to land.

42. The marginal cost of working more with women's groups should on balance be minimal. It would require somewhat longer sessions and more afternoon meetings but would save transport time and money. It might require training agents for group communication and greater use of "subject matter specialists" to speak on particular topics. And women's groups, like other local organizations, often need and seek help to manage their resources and carry out their programs. Providing such help would raise the cost of involving women's groups in extension work. But the extension work need not wait for that -- many groups are ready to serve as contact farmers, and with additional farming income, can strengthen themselves. On balance, because transport savings could be substantial, working with women's groups could reduce total costs of extension. The impact could be substantial. While some women's groups have difficulty with "group income generation projects" such as crafts, groups can work effectively to channel information on farming (and, as discussed in later chapters, to deliver health care and manage rural water supplies). The "group income generation projects" have often encountered problems because they compete with women's already heavy responsibilities including farming. Agricultural extension is more likely to raise incomes because it helps women do better at what they do already.

43. Fourth, the technical packages should be extended to cover crops or livestock of particular interest to women. So far the packages have focused on the main food crops (maize, beans, and potatoes) and non-food cash crops, notably coffee and tea. Women also ask for more attention to fruits (including citrus) and vegetables for both home consumption and sale and, in dryland areas, to drought crops such as millet and sorghum. More attention could go to women's requests, as one aspect of the principle that extension has greater impact when it meets the expressed needs of farmers. Some of this is occurring, but it is worth considering how to accelerate it. The direct costs and the opportunity cost of improving and expanding the technical packages ought to be examined carefully. At issue are the financial requirements; the capacity to carry out the needed agricultural research; and the likely additional administrative requirements for the extension service. The potential problem of "overloading" the extension system with too many subjects must be faced. But at least in densely populated areas (where most Kenyan smallholders live), it should be possible to make greater use of subject matter specialists in field-based extension, for example in drought crops or in grade dairy cattle, particularly in conjunction with women's groups.

44. Fifth, women contact farmers do adopt messages. Extension agents interviewed for the Muranga and Meru study suggest that women do adopt extension advice (Safilios, 1986). But the opinions of the agents need to be taken with some caution. They may have been eager to please, for example, or they may not have known precisely what individual farmers were doing, "adoption" may have been less than perfect, and the agents may have overgeneralized (Ibid). With these caveats in mind, the agents reported that the key recommendations for coffee are adopted by the majority of contact farmers in Muranga and Meru. Messages regarding pruning are reportedly adopted by three-fourths or more of contact farmers and messages regarding fertilizer application and spraying with pesticides by at least 60 percent of the contact farmers. Two-thirds of the extension staff in Muranga and 40 percent in Meru report that at least two-thirds of the contact farmers adopt the spacing recommendations for maize, mainly for intercropping maize and beans. However, half of the extension staff in Meru report that women have difficulty because of time constraints, so that one-fourth or fewer of the women adopt these recommendations. On potatoes (the income from which women control), two-thirds of extension staff report adoption of key messages, and almost all contact farmers adopt advice on vegetables (which women grow almost exclusively) (Ibid).

45. Interviews with the women themselves also suggest that they generally adopt messages. In Meru, practically all women contact farmers (92 percent) and follower farmers (95 percent) report having adopted usually more than one extension recommendation (Ibid). The Government emphasizes that such a high proportion of reported adoptors needs to be treated with some skepticism as farmers may have been "anxious to please" surveyors. The Government has requested that these results be confirmed in studies now underway. The most widely adopted recommendations are for spacing of maize and beans (see Table 14). (The table considers the number of people who reported receiving the recommendation and, of those, the percentage who said they adopted. Not all women reported receiving recommendations, and it may be that some had forgotten.) There is some tendency for contact farmers to adopt more recommendations. Constraints on adoption, according to the women surveyed, are principally their lack of credit and income to buy inputs and their lack of land.

Table 14: Adoption of Selected Extension Messages as Reported by Women Farmers
(Percent Adopting, by Women's Extension Status)

<u>Recommendation</u>	<u>Meru</u>		<u>Muranga</u>	
	Contact	Follower	Contact	Follower
Spacing maize	78	80	94	82
Spacing beans	88	83	93	71
Spacing potatoes	89	90	50	64
Fertilize maize	50	50	81	59
Fertilize beans	40	25	82	59
Spraying coffee	89	83	70	71
Pruning coffee	67	-	89	86
Planting maize & beans separately	14	11	75	33

Source: Safilios, 1986 (note caveat in paragraph 45.)

46. Information on the ceteris paribus impact of agricultural extension on yields for farmers of either gender is scarce indeed. In the Meru and Muranga study, about one-fourth of followers and about one-tenth of contact farmers believe that recommendations on spacing of maize increased production. Several farmers report that production increased from 7-8 bags before T and V to 15-18 bags per acre later. These data are, of course, highly subjective and open to doubt as discussed above. The impact of extension needs to be studied carefully, through larger sample surveys of men and women farmers with varying levels of education, land holdings, and so on and with explicit attention to the direct and indirect costs of adopting the messages.

47. In a country with Kenya's substantial education levels, consideration should be given to augmenting the regular extension service with radio programs that could reinforce the work of extension agents and reach areas where the agents visit infrequently. Short but frequent radio programs could be particularly helpful to women with young children who have difficulty leaving the household. Where people do not usually have radios, providing a few within a village could be a cost-effective supplemental measure.

48. As a priority, research should be expanded on a number of questions concerning extension such as: what subjects men and women farmers most want advice on; how adoption differs among women and men of various levels of education and assets, who adopts what messages, how women compare to men in different socioeconomic groups, what measures most encourage adoption and continued use, and what results (in terms of yields and income) occur (holding constant for other influences), with explicit attention to the direct and indirect costs of adopting the messages. Such research would provide much needed management information: the impact on all farmers would be clarified. Limited but sample surveys could provide useful information in a few months and at modest cost.

Provision of Inputs

49. Indications are that Kenyan farmers could substantially increase their yields through greater use of improved seeds, fertilizer, and other inputs. As Table 8 suggests, levels of expenditure remain very low.

50. The channels for distribution of inputs, the location and regularity of supply, the quantities available for purchase and the information provided at the point of distribution or on the package can all affect the use of inputs. Access to inputs is generally being made easier in Kenya. Following earlier reports that inputs were too often provided in large quantities that smallholders find inconvenient, Kenya has begun distributing 10 kilo bags of fertilizer, and pesticides are more often provided in convenient quantities. Agricultural inputs are provided through a variety of channels such as commercial stores and shops, the Kenya Grain Growers' Cooperative Union (KGGCU), marketing organizations (for example, the Kenya Tea Development Authority), and various other organizations. Seeds and fertilizer can be bought at local shops. The study of Muranga and Meru cited earlier suggested that for most women farmers, these shops are the most important source of supply for inputs (Safilios, 1986). Measures could be considered to provide such shops with more regular information on farming practices, a step that has proved helpful in other countries.

Agricultural Credit

51. Women do generally have access to informal credit but typically in small amounts. Difficulty in obtaining credit from the formal sector may inhibit the use of inputs and so constrain productivity particularly for women farmers -- they may know the benefits of modern seeds and fertilizer, but be unable to get started using them. In the Meru and Muranga study, over half the women report that "lack of cash" kept them from using more fertilizer, seeds, and other inputs. While some women in urban and rural areas manage to borrow from formal credit sources, very few women smallholders have access to formal credit from Kenya's main credit institutions (Maitha, 1986). The question is why -- and what can or ought to be done about it. The Kenya Government has recommended an in depth study of credit to find the best ways to assist women farmers and believes (on the basis of promising evidence from several countries) that it may be possible to consider credit groups of women who have difficulty gaining access as individuals to the formal credit market.

52. It is difficult to document the small amount of formal credit going to women in Kenya. For institutions lending in rural areas, it is estimated that rural women borrowers represent no more than 10 percent of all loanees (see Table 15). Many of these women are not borrowing for farm production (KWFT, 1985). Kenya has no laws specifically prohibiting women from borrowing from credit facilities offered by public or private institutions (KWFT, 1985). But the main credit institutions nonetheless seldom lend to women.

Table 15: Percentage of Rural Borrowers Who Are Women

<u>Number of Organizations</u>	<u>Percentage of Rural Women among Borrowers</u>
20	nil
7	less than 10
6	10
5	above 10
5	no record
43	Total

Source: Credit Position of Women in Kenya, Kenya Women's Finance Trust, Nairobi, 1985

53. The Agricultural Finance Corporation of Kenya (AFC), funded by the Government, is Kenya's major source of seasonal agricultural credit and of term lending for investment. AFC has about 100,000 outstanding loans to perhaps 50,000 borrowers; some 20,000 are farmers (compared to 1.7 million farm households). Almost all of AFC's agricultural borrowers are large and medium scale landowners. Hardly any are women. AFC requires that short-term loans be given to smallholders who own land -- which disqualifies the vast majority of women.

54. The Cooperative Bank of Kenya (CBK) provides credit to members of cooperative societies to finance farming (the traditional activity) and consumer durables (KWFT, 1985, and Maitha, 1986). Cooperatives are widely considered the most promising channel for reaching smallholders, but many have had serious operational difficulties. Of the 2,549 cooperatives registered in 1982, only 28 were registered as women's cooperatives. The Cooperative Credit Production Scheme (CCPS) requires that participants have title to their land, and CCPS focuses on coffee, which remains relatively controlled by men (Gicheru, 1983, cited in Safilios, 1986).

55. Specialized crop programs also provide credit, such as those run by the National Irrigation Board for rice and cotton or the Kenya Tea Development Authority. The specialized crop programs may provide technical advice and inputs along with credit, while AFC and commercial banks only provide credit. Commercial banks, input suppliers, and crop development institutions provide little to smallholders and less to those who are women. But the leading commercial bank, Kenya Commercial Bank, offers some potential for reaching smallholders.

56. Informal credit -- that provided by friends, relatives, merchants, and money lenders -- is more likely available to women. Kinship and friendship credit is often used to meet consumption needs, payment of school fees, and special requirements such as marriages and funerals as well as production needs (KWFT, 1985). An investigation of market women in Kenya found that about 60 percent of agricultural produce traders got start-up capital from relatives -- and that the availability of such credit was to a great extent what made it possible for traders to get started (Okeyo, 1979, cited in Lycette, 1984). Merchant credit is used to finance purchases of basic commodities like sugar, salt, and fuel oil, and so has less potential for financing production. Money lenders exist but are less important in Kenya, and their interest rates are reportedly about double the rates of the

organized credit market (Maitha, 1986). The advantages of informal credit are the lack of collateral requirements, the ease of the transaction, and, from the borrower's perspective, the relatively low or zero interest. But informal credit also has disadvantages which militate against economic efficiency: it is limited to the borrower's circle of family and acquaintances, it is constrained by the lender's own limited financial capacity, it tends to be available only for a narrow range of purposes, and it may not be available to support production (Lycette, 1984, KWFT, 1986 and Maitha, 1986).

57. The Broad Credit Sector Issues. Available evidence suggests three levels of issues in formal sector credit:

- o agriculture as a whole receives inadequate credit;
- o smallholders in particular receive inadequate credit;
- o women smallholders receive hardly any credit.

58. At each level, there are constraints and possible approaches on both the demand and supply side. On the demand side, loans to finance agricultural production may appear relatively unattractive because profitability seems lower and risks higher than in other areas, although the facts may prove otherwise for smallholders, and especially for those who are women. The basic policy and institutional measures to expand agricultural production, particularly on smallholdings, and recommendations such as those offered here to assist women smallholders are the main means of addressing the profitability and risk aspects of the credit issue.

59. On the supply side, the credit market has been constrained in several ways, but is now in better condition. Interest rate policy has been adjusted so that real rates of interest are relatively high and provide a substantial incentive to save. Banks are at present quite liquid. But Government deficit financing has in the past reduced the pool of credit effectively available to the private sector. Substantial arrearages on existing loans and high operating costs have further reduced this pool. The substantial costs of expanding branch networks into rural areas have helped to keep credit institutions largely urbanized. The typical requirement of land title for collateral has restricted the market further, particularly for women. The practical requirements of loan application and account management, particularly for women who still lag in education, have hampered credit for smallholders. The net result is that effective eligibility for smallholder credit is restricted, and the transaction costs are high (for borrower or for lender or for both in some shared fashion). The limited supply of available agricultural credit is rationed and typically goes to established large-scale borrowers who have considerable standing in the community (even though their repayment performance may be below standard). The credit market thus functions inefficiently. The result is that smallholders in general lack the credit they need, which results in lower production yields, the inability of farmer to plant full acreage available, and diversion of funds. For example, the New Seasonal Credit Scheme of the Agricultural Finance Corporation has financed less than one-tenth of the acreage planted to maize and has a lending limit which covers only about half the variable costs of production.

60. Women's access to credit is particularly limited. One study in Kakamega is instructive. In the mid-1970s, farmers could obtain credit through agricultural extension services. Since 40 percent of the farms were

managed or headed by women, it was reasonable to suppose that women would have access to extension and credit. In fact 49 percent of the woman-managed farms were never visited by extension agents, compared to 28 percent of the farms managed by both husband and wife. Ninety-nine percent of the women who managed farms knew nothing of the credit program, and only one woman (in 84) had ever actually received a loan. By contrast, 14 percent of the jointly managed (husband and wife) farms knew about credit programs (Staudt, 1976).

61. Some women have husbands who provide some credit indirectly. For example, under the CCPS, over 60 percent of the savings accounts were joint for husbands and wives even though husbands were the official participant, suggesting that some husbands recognized their wives' needs (Gicheru, 1983 cited in Safilios, 1986). But some husbands are unwilling to borrow, or they will borrow only for "their" crops. A study of women's access to institutional credit in Kakamega found that male farmers were willing to allow wives to seek credit if neither land nor family property were pledged as security. That effectively eliminated formal credit for women. Moreover, women would not seek credit without their husband's permission (Chavangi, 1983, SIDA, 1984 and Safilios, 1986). Beyond this, many women do not have husbands at home. And some institutions are plainly reluctant to lend to women, because women do not "usually" get loans in their own names (Maitha, 1986).

62. Particular attention should go to women's lack of legally-owned assets, especially land, to pledge as collateral. Secure title to land has long been considered an important incentive to investment, but the Government's accelerated adjudication and registration of land among smallholders is eroding women's traditional usufruct rights and giving title to men. The implications of these land tenure policies for women, families, and agricultural efficiency need to be reexamined. Going back to the traditional systems is obviously not a reasonable option. But incorporating some historical concepts of land use might lead to more flexible and useful principles of land tenure. For example, joint title between husbands and wives or more individual title for women or legally recognized use rights might expand women's access to credit and thus promote agricultural efficiency.

63. Other formal credit barriers. Formal credit has additional associated requirements that impede access for women as a practical matter, though not by design. These include application, accounting, and reporting procedures, areas and hours of operation, and capacity for technical backup. Of course men borrowers may also be deterred by these requirements, but women's disadvantage in education results in difficulties in dealing with formal financial institutions. Also most formal credit sources lack effective rural networks -- a further disadvantage for Kenya's women farmers (KWFT, 1985 and Maitha, 1986).

64. A number of remedies could be adopted to give women greater access to formal credit for agricultural development.

- o Improvements in the policy framework and institutional management of the credit sector as a whole, including further movement toward flexible market interest rates, consolidation of portfolios, streamlined operating procedures, and more effective collection arrangements,

- o Deliberate efforts to encourage branching out into rural areas (for example, through tax advantages to credit institutions and through efforts to assist farmers with loan procedures),
- o Pilot efforts to shift from typical land-title collateral toward innovative approaches based on credit for groups, peer pressure, innovative linkages between credit and savings, and ability to earn income. (These efforts do not guarantee success, as AFC's experience has demonstrated, but they offer promise under carefully designed institutional arrangements.)

65. By adjusting the circumstances enough so that loans to smallholders can be, and can be demonstrated to be, profitable and practical, more credit could be made available to agriculture, to smallholders, and to women. The risk, of course, would be the introduction of what are in effect subsidies for smallholders, a further complication in an already inefficient credit market. Properly handled, however, the effect should be to free up the credit market and improve the efficiency of its operation by reducing barriers to access and by bringing to light new opportunities for productive investment.

66. A possible innovation. Sources of informal credit for women (some at much higher interest rates) do exist, and the formal credit institutions are not always attractive. But as an economic matter it makes sense to open access to all kinds of credit, whatever the imperfections, to all farmers on the basis of who can make most effective use of the credit, whether men or women. One way to do this may be to recognize that land title is not, as a practical matter, always very good collateral, since lenders may be reluctant to try to enforce forfeiture of land among borrowers who fail to repay. (Some poor farmers have certainly forfeited land, but not on a scale commensurate with the level of arrearages in some credit programs.) In any case, in Kenya as elsewhere, land tenure is a sensitive issue, evolving with changing values accompanying education and social development. It might make sense to try, on a pilot basis, "groups" approaches that do not require land title as collateral but instead emphasize ability to pay and group support, perhaps through cooperatives, banks, or other kinds of organizations. The Government of Kenya has expressed interest in such "group" approaches. The Grameen Bank in Bangladesh is the outstanding example of such an approach, which operates effectively in an environment with far more constraints on women than in Kenya. It lends small amounts at substantial interest rates to small groups of assetless men and women (now about 80 percent are women, mostly very poor and virtually or actually landless) and has a repayment rate of over 95 percent. It works with groups of five to ten people who discuss each others' plans and borrow in turn, so that the first must begin to repay before the others can borrow. This approach can be adapted to urban as well as rural areas. Other measures worth trying include management and technical support for borrowers. The Kenya Women's Finance Trust has begun opening access to credit particularly in urban areas, particularly by guaranteeing loans to women through other banks. Another pilot program is experimenting with the use of savings as collateral for larger loans. A variety of approaches ought to be tested and carefully assessed in the rural areas.

Further Systems Research Needs

67. While measures discussed in this paper for extension and credit are clear in their potential impact on women, additional research could help to identify other possibilities in programs and broader economic policies. Farming systems research can elucidate more precisely the role of women of different cultural backgrounds in agriculture and their incentives and constraints. It would be helpful if such research considered the following questions as they affect women farmers: (1) How do incentives affect women farmers in different cultural groups (their choice of what to grow, how to grow it and how much to market) given that women tend to control the income from some crops more than others? (2) How does improved access to extension, inputs, and/or credit affect agricultural productivity among different cultural groups (men or women) with different levels of education and land holdings? (3) How can women's labor constraints (fetching fuelwood and water, household work) be eased and what might be the linkages with agricultural labor? (4) How do women in different cultural groups operate in factor markets (labor, capital, and land) and how does that affect productive efficiency? (5) How do women and men in different cultural groups control and spend income and what does that imply for family welfare, the environment, and population growth?

68. Women traditionally tend to control the income from some food crops and kinds of livestock, while men tend to control others. Reportedly, women have refused to work on or have shortchanged crops that men control, in order to devote more time to "women's crops", even when those were less profitable (Eide, 1977 cited in UNICEF Situation Report, III). If institutional changes give men more control over a particular crop, women may shift away from it (Apthorpe, 1970 cited in UNICEF Situation Report, III). On the other hand, compared to men, women reportedly tend to spend more of whatever income they have for the family (Muzaale and Leonard, 1982 and UNICEF Situation Report, III). The policy implications of this situation need to be examined more thoroughly. As patterns of profitability change, will women shift their time? Will they do so by choice or under duress? What affects differences in control of income between men and women? What impact will changes in income, in combination with changes in control and in spending patterns for both spouses, have upon families? What does that suggest in turn for Kenya's agricultural policies?

69. Beyond their agricultural work, women farmers (whether or not husbands are present) typically spend several hours a day finding fuelwood and water, preparing meals, and caring for the household. Seasonal labor constraints are a serious problem. Thus women's capacity to undertake additional labor-intensive tasks is limited, even though Kenya's overall factor proportions suggest that comparative advantage generally lies in labor intensive fields. Better understanding of how women optimize the use of their time, land, and other inputs -- and what would happen if the constraints change -- would promote agricultural efficiency.

70. Does women's lack of credit impede hiring additional labor to overcome seasonal peaks when their husbands are away? How does it affect input use? How does male land ownership affect land use, and application of labor and capital? How does access to their husbands' income affect women's farming? Some research on such issues has been done, but with relatively

little attention to women's aspects. Practical research might suggest some shift in priorities for the focus of extension work (for example, on improved tools for time-consuming weeding). It might also highlight the need for improved household water, stoves, and wood supplies, by demonstrating not only how much more efficiently natural resources could be used but also how more time could be released for agriculture and other productive activities. It would also have implications for the land tenure issue and for policies affecting factor markets. The kinds of recommendations proposed earlier would, of course, promote more efficient operation of factor markets and would help raise women's productivity, but additional research could provide useful guidance for further measures.

71. The issue of land tenure deserves to be reconsidered and thoroughly explored. What are the implications for agricultural productivity, family welfare, and women themselves of the current situation where women do much or most of the farming but hardly ever have legal title to the land? What can, or ought to be done differently? Would more joint tenure or individual tenure for women or more recognition of usufructory rights be practical or desirable? These questions will be difficult to sort out, and solutions may be politically and socially controversial. But it may be costlier to ignore the issue.

CONCLUSION

72. Kenya's agriculture depends substantially on women smallholders. Kenya's agricultural policies are designed to increase the productivity of all farmers. But the productivity of women smallholders is constrained by the particularly strong barriers that they face as compared to men -- particularly barriers to information and complementary resources. This inhibits their capacity to respond to policy incentives and so hampers the achievement of Kenya's objectives in agriculture. Several low cost and practical measures could further open access to information and inputs for women farmers, and so increase the efficiency of agricultural production generally. The Government is moving to accomplish this. Agricultural extension has made substantial progress, but more attention should be directed to women's needs (particular crops and types of livestock). Access to credit also needs to be expanded, through carefully phased-experimental approaches emphasizing farming capacity rather than land ownership. Women's groups can play an important role in two ways: services can be delivered simultaneously to a dozen or more women, and "group spirit" can provide reinforcement and encouragement. Working with more women's groups could probably double the reach of Kenya's extension service and lower the cost, to judge from promising experience thus far.

73. On the broader policy front, it would make sense to examine incentives and constraints for women farmers (pricing, land tenure, patterns of differential income control between men and women on different crops, and family needs as perceived by women and men) together with women farmers' productive response capacity when agricultural policies are being designed. It appears that women are disproportionately responsible for family welfare, so that policies and programs to improve family living standards must not look simply at "the family" as a unit but at who does what.

Chapter II. EDUCATION OF WOMEN

INTRODUCTION

1. Since Independence in 1963, Kenyan women have made rapid strides in education. Among women aged 40 or more, fewer than one in three ever went to school. But over 60 percent of women below age 25 have had at least 5 years (see Table 1a). The variation among Provinces is considerable, however, with over three-fourths in Nairobi and two-thirds in Central Province having at least 5 years, compared to about one-third in Coast and fewer in North Eastern Provinces (see Table 1b).

Table 1a: Women's Education by Age Group (1984)
(Percent)

Age	Total	Years of Schooling				Not Stated
		None	1 - 4	5 - 8	9+	
15-19	100.0	8.3	10.9	53.0	27.5	0.3
20-24	100.0	23.1	14.9	37.2	24.5	0.3
25-29	100.0	37.7	16.4	27.9	17.9	0.1
30-34	100.0	45.6	20.4	24.4	9.4	0.2
35-39	100.0	54.1	21.3	18.4	5.9	0.2
40-44	100.0	69.2	19.0	9.6	2.1	0.1
45-49	100.0	69.2	18.3	11.5	1.0	0.0

Source: GOK, KCPS, 1984

Table 1b: Women's Education by Province (1984)
(Women Aged 15-49) (Percent)

Province	Years of Schooling			
	None	1 - 4	5 - 8	9+
Nairobi	14.3	9.4	33.8	42.5
Coast	55.7	9.9	22.0	12.2
Eastern	32.2	17.1	32.8	17.6
Central	20.6	14.4	42.5	22.3
Rift Valley	43.1	16.7	29.1	10.8
Nyanza	34.6	21.6	30.8	12.6
Western	34.2	14.8	31.9	19.0
<u>All Kenya</u>	<u>34.8</u>	<u>16.1</u>	<u>32.1</u>	<u>16.8</u>

Source: GOK, KCPS, 1984

2. School enrollment at all levels has been rising, reflecting the rising proportion of children attending school and population growth. Today at least five of every six children of primary school age are enrolled: 48 percent of primary students are girls. About one-third of the girls, compared to two-fifths of the boys, finish primary school. 45 percent of those girls and 48 percent of those boys go on to secondary schools (see Table 2). Relatively fewer girls finish secondary school, and few women attend university or advanced training institutes. The main question today on female education is how to maintain momentum in later primary and secondary school. The Government of Kenya is addressing the dropout issue in several ways, by working to build and reinforce parental demand for education and by improving the supply of schooling. The first requirement is, of course, to have school and teacher available. Kenya's achievements in supplying schools and teachers are impressive.

Table 2: Comparative Enrollments by Stage of Schooling (1986)
('000)

	Female	Male	Total	F/M
Primary, Standard 1	439	473	912	.93
Primary, Standard 8	150	195	345	.77
Secondary, Form I	68	94	162	.72
Secondary, Form VI	6	11	17	.55

3. Demand for education -- for girls or boys -- is now generally strong. Since Independence, the Government has encouraged parents to educate their children and has given budgetary priority to education. Working through the Ministry of Education, it now allocates 38 percent of the recurrent budget to education, roughly twice the pre-Independence level, and 3 percent of the capital budget. Despite these heavy expenditures, the Government cannot afford enough schools to meet all students' needs, particularly with population growth. It provides most primary schools, but parents still help to build many schools. At the secondary level, the Government "maintains" some schools: it generally provides the physical plant and teachers and about Kshs 20/pupil/year for books (compared to a cost per book of about Kshs 45). It "assists" other schools with less support, typically including teachers. Parents also contribute heavily to children's schooling, not only by helping build schools, but also by paying for some school fees, books, and supplies. (Women provide over 60 percent of that labor and often cover schooling costs especially in rural areas.) Kenya also has some relatively costly private schools. As a whole, then, secondary schools fall into two categories:

- o "Aided schools" which include maintained, assisted, and assisted harambee; and
- o "Unaided schools" which include unaided harambee, private and missionary schools.

4. Schools maintained by the Government are generally of the highest quality and charge lower (if any) tuition fees; aided and unaided schools are less well equipped and, lacking Government support, generally charge higher fees. However, the extent of the Government's contribution varies by type of school and district. The Government generally charges no fees for primary

schools. The maintained secondary boarding schools charge tuition and boarding fees. Annual fees are about Kshs 6,000 for high cost boarding schools and Kshs 4,000 for low cost ones. Maintained secondary day schools charge about Kshs 1,700-3,000. For assisted and unaided schools, fees range between Kshs 1,500 and Kshs 10,000.

5. The Government emphasizes coeducation and encourages parents to educate daughters as well as sons. Primary schools are coeducational. At Independence, the few existing secondary schools were single-sex, most for boys. Now, of the 2,393 secondary schools, 1,534 are coeducational, 455 are for boys, and 404 are for girls. But the girls' schools are still generally less well equipped.

6. Boys generally have an advantage in attending maintained secondary schools. Parents are more likely to give their sons an extra year of primary school to prepare for the secondary school entrance examinations, which suggests some parental favoritism toward boys. There are still also more "boys' places" in maintained secondary schools. But so many girls go to unaided secondary schools that parents actually spend more on their daughters' secondary education. This demonstrates that parents do want to educate girls, even if only at the unaided schools.

7. Because the secondary preparation of girls is weaker, their attendance at the university and technical level is low, especially in scientific fields. Technical schools have only recently admitted women, most for home economics.

8. The principal issues in female education today are in later primary and secondary education: in face of financial constraints, how can more students, regardless of gender, gain access to secondary schools; how can girls be kept in school, and how can the quality of education be improved and made more relevant to potential employment? The stronger the demand for female education, the easier it will be to retain girls in school and to persuade parents and communities to share the costs of providing and improving schools. Demand for education is generally high, particularly in areas with faster economic progress and more cash-cropping, but some preference persists for educating boys (Eshiwani, 1985). This may reflect traditional limitations on women's roles, customary patrilineal inheritance systems, and perceptions that boys will have greater prospects for modern sector employment (Ibid). Moreover, in rural areas, the opportunity cost to parents of educating girls seems higher. Custom demands that girls help find wood and water, do household chores, and care for younger children, but custom demands less of boys. As parents earn higher incomes, and gain education, their aspirations for their children rise. Internationally, the evidence suggests that as incomes rise, the gap between girls' and boys' educational attainment tends to close (Schultz, 1988). The government also believes more intensive efforts to educate families on the value of education for girls will help to increase girls' enrollment further. Improving the quality of girls' schooling will help ensure that education seems worth the effort to girls and their parents. However, with unemployment rising among secondary and university graduates, it may be difficult to maintain demand for female education. Until 1987 there was an implicit Government guarantee of employment for university graduates. This year, university graduates may face prolonged periods of unemployment and may be forced to turn to the informal sector when employment prospects weaken. Women are generally at a disadvantage at getting whatever jobs or training are available.

THE EDUCATIONAL SYSTEM

Levels of Schooling

9. At Independence, Kenya's educational system was based on the British model of 16 years divided into 7-4-2-3: 7 years (called "standards") of primary, 4 then 2 years (called "forms") of secondary school, and 3 years of university. At each break students took national qualifying examinations that determined whether they may continue and what schools they could attend. The "primary school leaving examination" gave entrance to secondary school. The first part of secondary school (Forms I-IV) ended with "Ordinary" or "O"-level exams, and those who perform best were offered places in upper secondary school (Forms V and VI). After that, "Advanced" or "A"-level examinations determined admittance to university.

10. This structure was recently replaced by an 8-4-4 system which resembles the USA model. One year was added to primary school; secondary school is now four years; and university training has increased to four years. Entrance examinations continue: the Kenya Certificate of Primary Examination (KCPE) for entrance to secondary school and one examination at the end of secondary school for admittance to university.

Academic Curriculum

11. In response to criticism that the academic curriculum focused too heavily on the minority of students who complete the full course of education, practical subjects have been added in primary and secondary schools. Thirteen "core academic" courses are required, including English, mathematics, biological science, geography, physical sciences, history and government, religious education, and Kiswahili. Agriculture and social education and ethics (and physical education) have been added. Schools also select one course from each of the following lists:

- music, art and design, foreign language, and business education;
- building construction, metal, woodwork, drawing and design, home science, electricity, and power mechanics.

The Government has also just begun a pilot course in family life education.

12. Thus far, the 8-4-4 system and associated curriculum changes have not been easy to implement. More subjects must be covered, and qualified teachers are still lacking, especially for the more practical and technical courses. The 8-4-4 system also places an incremental burden on capital facilities and equipment, particularly at the primary and tertiary levels which are increased by one year.

Primary School Enrollment

13. At Independence in 1963, fewer than 900,000 Kenyan children attended primary school, 34 percent of whom were girls (Eshiwani, 1985). By 1973, after a major effort to build and equip schools and train teachers, total enrollment had doubled and the proportion of girls had increased to 45 percent (Ibid). In 1986 some 4.8 million Kenyan children were enrolled in primary school, 48 percent of whom were girls (see Table 3). In the five most populous Provinces (Central, Eastern, Nyanza, Rift Valley, and Western) with

over 90 percent of the students enrolled, the proportion of girls averages about 49 percent. In general, enrollment percentages have reached higher levels in areas of greater agricultural progress, especially in cash cropping (Eshiwani, 1985). But the relative gains for girls have actually been greater in more disadvantaged areas (Ibid). It is only in sparsely populated North Eastern Province that the proportion of girls remaining markedly lower. The population of North Eastern Province is largely nomadic and has lower than average incomes. This suggests a coincidence of low population density, relatively lower self-help capacity, and possibly weakness in demand that may be difficult and costly to address.

Table 3: Primary School Enrollment (1986)

	Male	Female	Total	Female/Total
Central	414,801	407,909	822,710	49.6%
Coast	181,338	140,246	321,584	43.6%
Eastern	455,659	445,839	901,498	49.5%
North Eastern	17,119	6,341	23,460	27.0%
Nyanza	477,179	434,626	911,805	47.7%
Rift Valley	559,741	501,980	1,061,721	47.3%
Western	341,233	331,914	673,147	49.3%
Nairobi	65,417	62,090	127,507	48.7%
	2,512,487	2,330,945	4,843,432	48.1%

Source: GOK, CBS

14. Gross Enrollment Ratios and Repetition. The Gross Enrollment Ratio is defined conventionally as the number of children enrolled expressed as a percent of the number of children of primary school age (6 to 13). Ratios for 1986 average 95: 97 for boys and 93 for girls (see Table 4). Gross Enrollment Ratios reflect a tendency for some children (particularly boys) to remain in school past the normal age. In 1986 it reportedly took from 8 to 8-1/2 years on average for a child to complete the 7 years of primary school. 12 to 15 percent or more of students may be repeating, so that 1 in 6 children of primary school age may actually not be enrolled. Enrollment Ratios are high for girls and boys in all Provinces except North Eastern. Less repetition may explain the lower Gross Enrollment Ratios in Nairobi.

Table 4: Primary School Gross Enrollment Ratios, 1985-1986
(Age 6-13)
(Percent)

	1985			1986		
	M	F	Total	M	F	Total
Central	100.4	104.0	102.2	97.7	99.9	97.8
Coast	85.0	71.9	77.1	90.6	93.4	82.2
Eastern	95.0	94.7	94.9	97.2	99.1	97.2
North Eastern	22.0	9.8	16.3	20.1	18.6	18.4
Nyanza	108.3	97.8	103.2	104.3	96.1	100.2
Rift Valley	101.0	93.8	97.4	100.8	98.2	97.8
Western	111.3	108.2	109.8	110.0	108.1	109.6
Nairobi	74.9	64.1	69.2	73.5	62.9	67.9
Total	97.9	93.3	96.7	97.0	92.9	95.0

Source: GOK

15. Dropout rates are high (see Table 5). Outside Nairobi, only in Central Province do as many as half of those students who begin primary school actually complete it, and the national average is substantially lower for girls (34 percent) than for boys (41 percent). The ratio for both, but particularly girls, is markedly lower in North East Province and below the mean for girls in Coast, Nyanza, and Rift Valley Provinces. Girls account for almost half the student body until Standard 8 (see Chart 1). This suggests that most girls are not much disadvantaged until the later years of primary education despite considerable cultural and economic variation. But in North Eastern Province, enrollment numbers and the percentage of girls both decline rapidly. In the country as a whole, in Standards 6-8, a Government study suggests that some 0.8 percent of students (over 5000) dropped out for pregnancy in 1987. Most were aged 14-17 years (Ministry of Health, 1987).

16. School Performance. The most frequent litmus test for education quality is examination performance. In 1984 and 1985 on examinations at the end of primary school, boys outperformed girls by 2.3 to 11.4 percentage points (Savage, 1984 and Eshiwani, 1985). Boys outperformed girls in every field on the examinations. But the Government reports that in 1986 and 1987 girls' performance improved markedly.

Chart 1

Proportion of Girls in Primary School Student Body (1986)

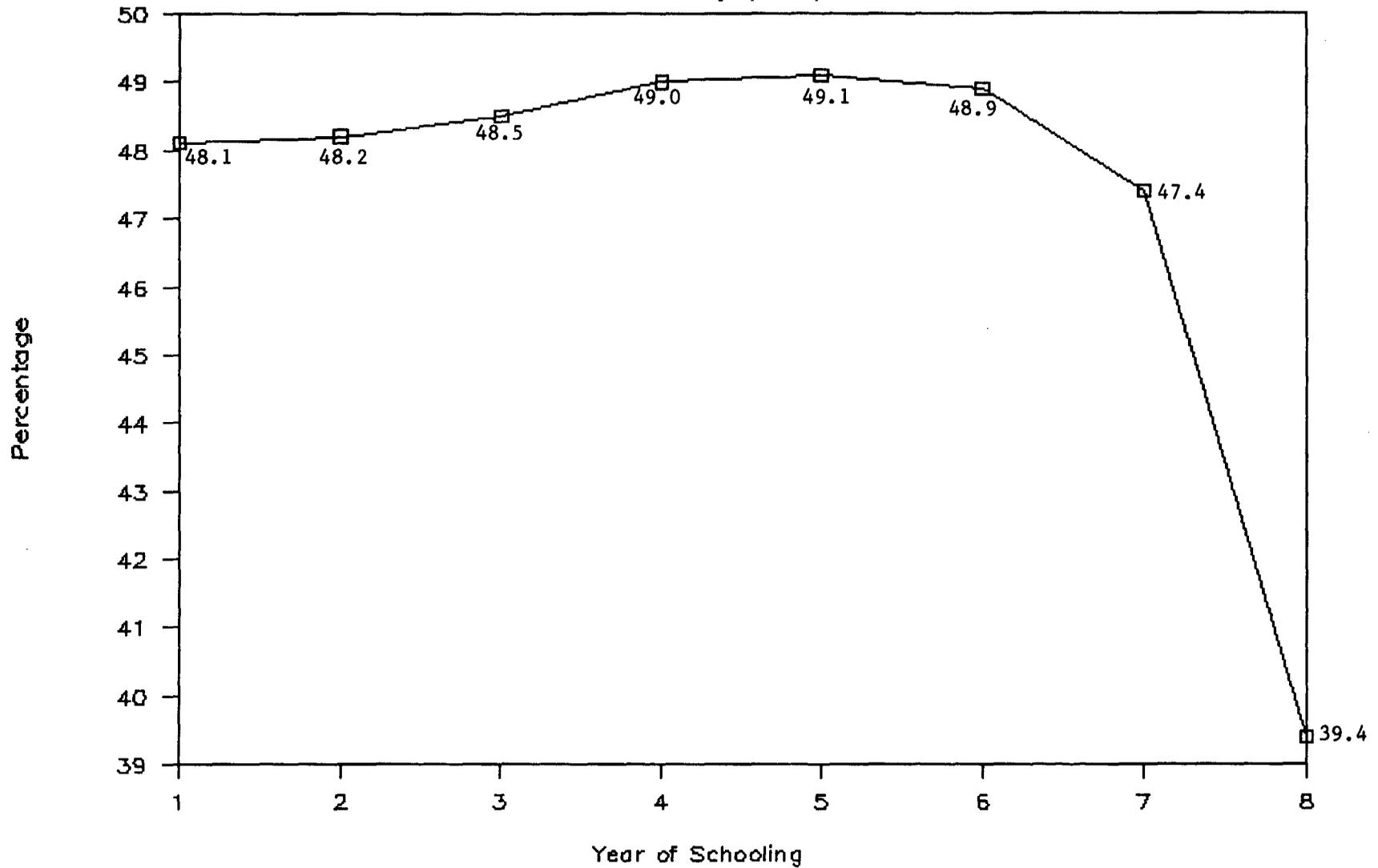


Table 5: Proportion of Enrolled Children Who Finish Primary School
(Standard 8/Standard 1 as Percent)
(1986)

	Male	Female	Proportion of Females in Std. 8
Central	51.4	50.2	47.8
Coast	44.1	31.6	36.9
Eastern	40.7	35.7	45.8
North East	23.5	12.0	18.9
Nyanza	37.7	26.3	39.5
Rift Valley	37.6	29.2	41.3
Western	39.9	33.0	45.0
Nairobi	60.6	61.1	49.4
TOTAL	41.3	34.1	43.4

Source: GOK

Secondary School Enrollment

17. About half of Kenya's boys and girls who finish primary school go on to secondary school. Almost half gain entrance to the Government-maintained schools, while the remaining students must go to the generally weaker assisted or unaided schools. Enrollment in the first year of secondary school in 1986 was 162,000 students (41 percent female). Total secondary enrollment in 1986 exceeded 450,000. Central Province (with over 100,000) and Rift Valley (with about 90,000) led the Provinces in number enrolled.

18. At the secondary level, girls have been at a disadvantage. The proportion of girls declined from 32 percent in 1963 to 25 percent in 1967 and recovered to 31 percent in 1970 (Eshiwani, 1985). Secondary schools were generally not coeducational, and few girls' schools existed. By 1975 there were 235 maintained secondary schools for boys, 82 for girls, and 47 coeducational (Ibid). Since 1975, Kenya has built 2000 more secondary schools, generally coeducational. The proportion of girls has climbed and remained quite steady at about two-fifths.

19. A serious difficulty remains. A smaller proportion of girls gain entrance to maintained secondary schools. Relatively more girls are thus obliged to attend the assisted or unaided secondary schools. In 1985, some 48 percent of secondary school students attended maintained schools, 21 percent attended assisted schools, and 31 percent attended unaided schools. But only 35 percent of students at maintained schools were girls, while 44 percent of students at assisted schools and 39 percent at unaided schools were girls (see Table 6. Between 1980 and 1985, enrollment for boys grew at 4.0 percent and for girls at 4.8 percent, so the proportion of girls attending maintained schools increased slightly. The proportion of girls at unaided and assisted schools actually dropped, and girls' overall share remained about 40 percent (see Chart 2).

Table 6: Girls' Secondary Enrollment
('000)

	Maintained			Assisted			Unaided			TOTAL		
	M	F	%F	M	F	%F	M	F	%F	M	F	%F
1980	129	61	(32.1)	48	48	(50.0)	72	59	(45.0)	249	168	(40.3)
1985	135	74	(35.4)	50	40	(44.4)	84	52	(39.2)	259	176	(40.4)

Source: GOK

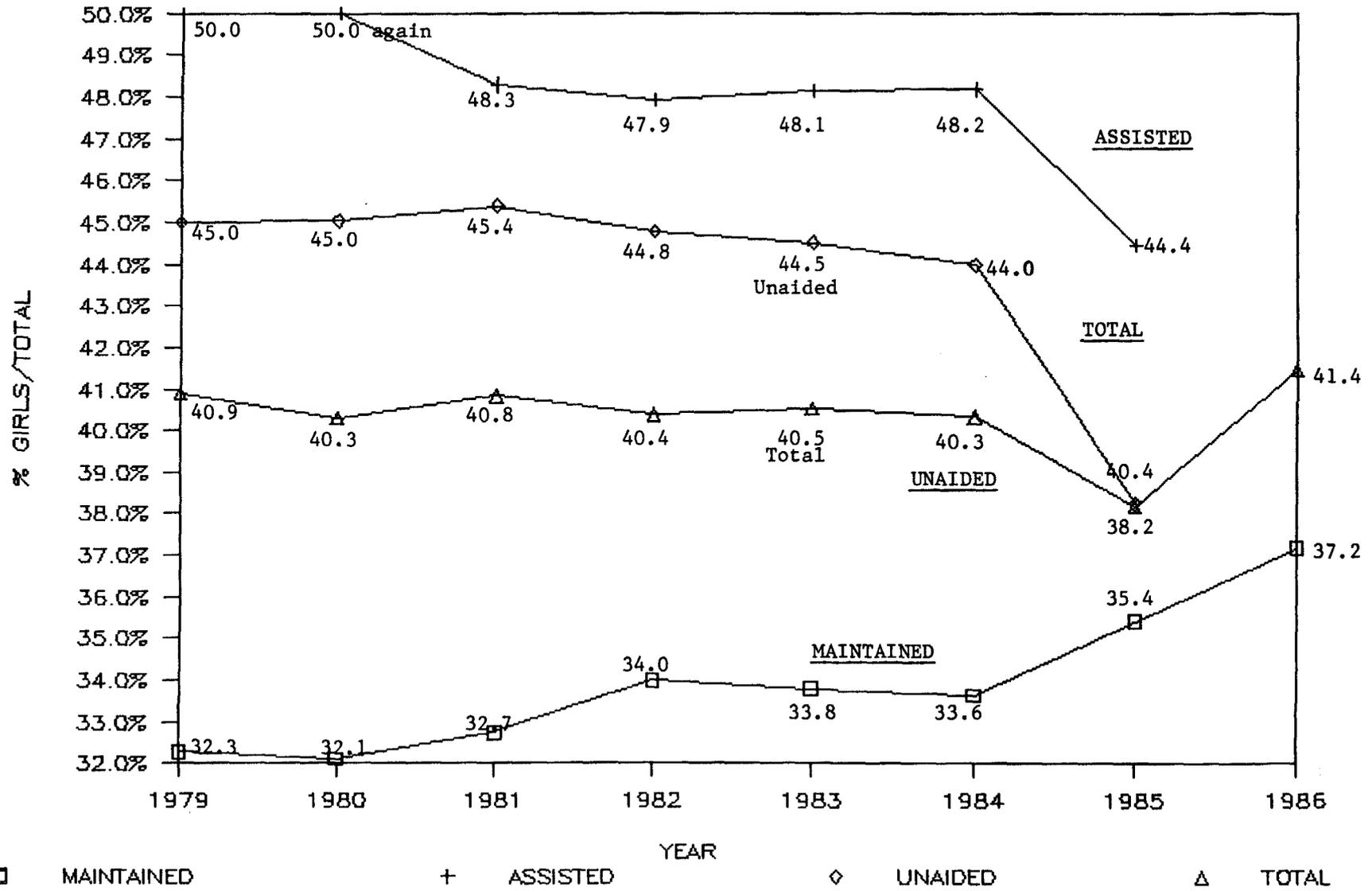
20. Data disaggregated by gender, Province, and form are not available for recent years, but data for the 1970's confirm the general picture (see Statistical Annex on Education). Girls were underrepresented, and their attendance declined further during later secondary school. In maintained and other aided schools in all Provinces, less than 40 percent of the secondary student population were girls. In almost every Province (except North Eastern) girls were more heavily represented in the unaided schools than in the aided schools.

21. As Table 7 for lower secondary schooling shows, from 1970 to 1981 girls' enrollment in Standard 7 rose faster (174 percent) than boys' (90 percent). By 1981 some 194,000 boys and 133,000 girls were enrolled. In lower secondary schools maintained by the Government, the "index of opportunity" (the proportion of qualified students who are enrolled) for boys exceeded that for girls. Unaided schools were expanded to help serve girls. Thus the index of opportunity at unaided schools was consistently higher for girls than boys. Considering all secondary schools, there were fewer places for girls, but the index of opportunity tended to be higher for girls than boys because of the number of non-gender-specific places that girls occupy in the unaided schools. Enrollment in later secondary school, Forms V and VI, shows faster growth in the number of boys and girls qualified to go on than in the number of places available, so that the index of opportunity for both boys and girls actually declined despite faster school construction (see Table 8). The number of places for girls increased about 600 percent, versus less than 400 percent for boys. But the population of qualified girls grew still faster, so that the index of opportunity for boys exceeded that for girls.

22. Dropouts. During the course of secondary schooling, dropouts are extremely heavy. In 1986 only about 17,000 students -- about 10 percent of the class three years behind -- graduated (see Table 2 and Statistical Annex on Education). Data for 1986 by form and gender suggest that girls are more likely to drop out than boys. Between Forms IV and V, when the 0-level examinations occur, the vast majority of boys as well as girls leave, but the loss of girls is greater. Dropouts are particularly heavy in the unaided schools, where proportionately more girls attend (see Chart 3 and Statistical Annex on Education). One Government study estimates that 0.9 percent (about 1500 cases) of female students drop out of secondary school every year for pregnancy, foreclosing the gains to them, their families, and society of a complete secondary education or more advanced training (Ministry of Health,

Chart 2

Percent of Girls in Secondary School Enrollment



Source: GOK

Table 7: Enrollments and Index of Opportunity for Lower Secondary Schooling by Sex and Year, 1970-81

Year of Entry	Enrollment in Standard 7	Index of Opportunity for All Lower Secondary Schools		Index of Opportunity for Government Maintained Lower Secondary Schools		Index of Opportunity for Unaided Lower Secondary Schools	
		Number of Student Places and Form I	Percent of Primary School Graduates in Secondary	Number of Student Places and Form I	Percent of Primary School Graduates in Secondary	Number of Student Places and Form I	Percent of Primary School Graduates in Secondary
1970 Boys	102,085	27,566	27.0%	11,761	11.5%	15,805	15.5
Girls	48,562	13,477	27.8%	4,408	9.1%	9,069	18.7
1971 Boys	109,764	29,568	26.9%	13,281	12.1%	16,287	14.8
Girls	54,087	14,304	26.4%	5,013	9.3%	9,291	17.1
1972 Boys	113,865	35,454	31.1%	14,734	14.2%	20,720	16.9
Girls	59,285	18,026	30.4%	6,033	10.2%	11,993	20.2
1973 Boys	116,226	37,214	32.0%	15,471	13.3%	21,743	18.7
Girls	67,107	21,479	32.0%	6,320	9.4%	15,159	22.6
1974 Boys	122,707	38,933	31.7%	16,824	13.7%	22,109	18.0
Girls	72,168	23,652	32.8%	7,299	10.1%	16,353	19.1
1975 Boys	133,550	44,806	33.5%	19,320	14.5%	25,486	19.0
Girls	88,722	28,884	35.6%	8,885	11.0%	19,999	24.6
1976 Boys	137,994	56,444	48.9%	19,609	14.2%	36,835	21.5
Girls	89,445	38,398	42.9%	9,064	10.1%	29,334	32.8
1977 Boys	144,678	61,943	42.8%	18,992	13.1%	42,951	29.7
Girls	98,536	44,553	45.2%	8,723	8.9%	35,830	36.3
1978 Boys	138,494	59,160	42.7%	20,661	14.9%	38,499	27.8
Girls	98,640	45,533	46.2%	10,009	10.1%	35,524	36.1
1979 Boys	145,980	60,618	41.5%	22,097	15.1%	38,521	26.4
Girls	186,240	46,709	44.8%	11,253	10.6%	35,524	34.2
1980 Boys	159,494	65,600	41.1%	22,386	14.0%	43,214	27.1
Girls	116,125	47,200	48.6%	12,555	10.8%	34,645	37.8
1981 Boys	193,765	69,300	35.8%	24,092	12.9%	45,208	22.9
Girls	133,235	52,700	39.8%	14,095	10.6%	38,605	29.1

Table 8

Enrollments and Index of Opportunity for Upper Secondary Schooling
by Sex and Year, 1970-81

Year of Entry to Form V	Sex	Enrollment in Form IV in Previous Year	Number of Places and Enrollment in Form V.	Index of Opportunity
1970	Boys	13,082	2,028	16.0%
	Girls	4,197	578	14.0
1971	Boys	14,475	2,308	16.0
	Girls	4,842	706	13.0
1972	Boys	17,183	2,772	16.1
	Girls	5,920	916	15.4
1973	Boys	19,504	2,704	14.0
	Girls	7,365	947	13.0
1974	Boys	20,061	2,732	14.0
	Girls	8,034	864	10.8
1975	Boys	22,544	3,046	13.5
	Girls	9,197	1,089	11.8
1976	Boys	24,982	3,534	14.1
	Girls	10,980	1,258	11.4
1977	Boys	30,899	3,689	11.9
	Girls	14,718	1,519	10.3
1978	Boys	34,927	3,803	10.8
	Girls	17,722	1,437	8.1
1979	Boys	39,870	5,535	13.8
	Girls	20,872	2,000	9.5
1980	Boys	45,199	4,335	9.9
	Girls	25,754	2,800	10.8
1981	Boys	54,039	7,500	13.8
	Girls	32,789	3,000	9.1

Source: Noage (1981)

1987). The percentage tends to be about twice as high in harambee as in Government schools and at least twice as high among non-boarding students. Most of the girls are aged 17-19, and just over half of the fathers are school-mates or boys of similar age. Moreover, illegally-induced abortion (with high associated mortality) is not rare among secondary school girls. This may reflect a policy of not permitting girls who are pregnant to remain in school -- and, of course, it reflects peer pressure arising from the frequency of pregnancy among married teenagers.

23. School Performance. At the secondary levels, the disparity in performance between girls and boys was generally wider until 1986-1987, when the Government reports that girls outperformed boys on "O" and "A" level examinations. Kenya's "O-level" examinations after Form IV determine who can go on to Form V. According to the data available (from 1984-85), fewer girls did well in O-level examinations, particularly in scientific subjects (see Table 9a). Almost half of those who failed were girls -- and girls constituted less than 38 percent of those who even tried the examinations (Eshiwani, 1985). Girls' performance tended to be stronger at girls' schools than in coeducational schools (see Table 9b). In fact, 6 of the 10 leading secondary schools (as judged by examination performance) were girls' schools, showing that girls can excel when given an opportunity (Ibid). By contrast, on A-level examinations, girls' performance improved -- perhaps because of self-selection for ability among the few girls who reach A-levels. Data for the mid-1980s suggest that about one-fourth of A-level candidates are girls. They received a disproportionate share of higher grades (3 and over), and the percentage of boys who fail is about double the percentage of girls who fail (see Table 10) (Ibid). The Government reports that girls now outperform boys on O-level as well as A-level examinations are encouraging.

24. The disadvantage in science. Since few girls study science in early secondary school (Forms I-IV), the vast majority are excluded from further scientific education at the A-level or beyond (see Table 11) (Ibid). The Government policies provide for science education to boys or girls, but fewer girls choose to pursue science at early ages, so most are precluded later from continuing. There are therefore fewer A-level streams in science for girls than for boys (see Table 12). This forecloses employment opportunities for girls in several growing fields and deprives them of information useful in agriculture and family care. In 1983 there were 34 science streams for girls. With 35 students in each stream, only 1,190 girls participated. Still, this represents improvement. In 1977 there were only 5 science streams for girls at the A level and 113 for boys, while there were 61 arts streams for girls compared to 70 for boys (Kagia, 1985). Yet girls are interested in science and seek it in unaided schools when they cannot gain entrance in maintained schools. Data are scarce, but in 1977 the percentage of girls among science students was far higher in unaided than in aided schools: in Form VI over three times the percentage of girls selected science in unaided schools than could be accommodated in the aided schools (see Statistical Annex on Education). This happened even though few really strong science programs existed in unaided girls' schools. Of course science facilities are provided equally in all government maintained schools in principle. The popularity of science among girls in unaided schools suggests that either parents are reluctant to finance arts-based education in the unaided schools or there is strong demand for science-based education or both.

Chart 3

1986 SECONDARY ENROLLMENT BY GENDER

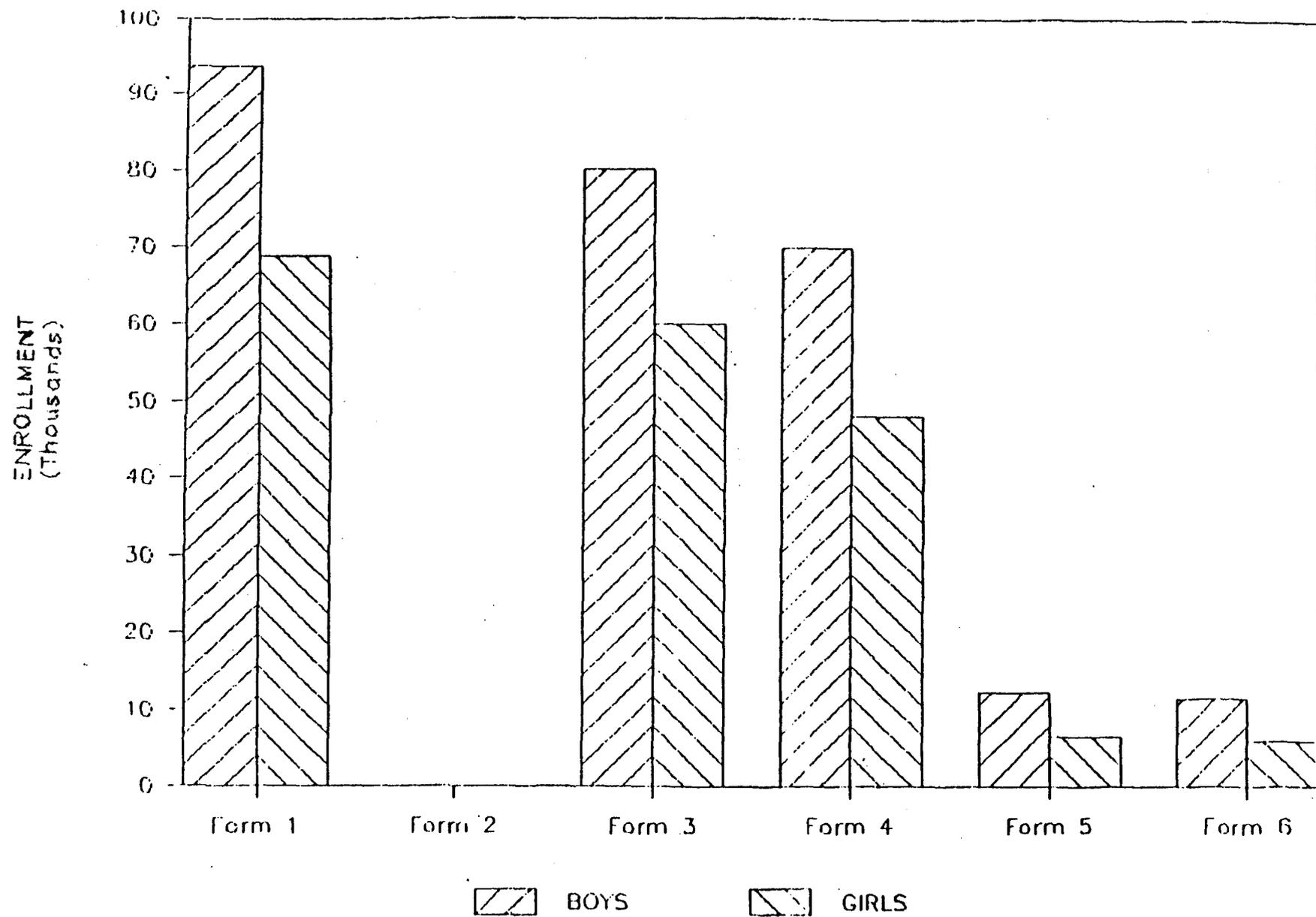


Table 9a: "O-Level" Candidates Obtaining Grades 1-6 by Gender
(1982)

Selected Subjects	Number		Percent with Grade 1-6	
	Girls	Boys	Girls	Boys
English Lang.	35,135	55,936	15	15
English Lit.	22,024	23,663	26	21
CRE*	30,439	31,146	41	39
Geography	31,712	53,425	18	31
Kiswahili	28,112	45,920	24	30
Math	35,111	55,893	7	16
Gen. Science	14,139	19,418	4	13
Phy. Science	5,991	15,731	23	31
Physics	687	2,938	22	28
Chemistry	1,140	1,697	40	47
Biology	17,900	7,155	17	24
Agriculture	574	5,560	17	38
Cloth. & Text.	1,099	-	23	-
Food & Nutrition	556	-	54	-
Home Mgt.	943	-	35	-

* Christian Religious Education

Source: Eshiwani (1985) from Kenya Examinations Council.

Table 9b

"O level" Performance by Gender

Percentage Passes For Boys And Girls By Intake And Examination Grade

The Kenya Certificate Of Education 1981

Subject	Grade	Girls in Girls Schools	Boys in Boys' Schools	Girls in Mixed Schools	Boys in Mixed Schools
English	A	3.2	1.6	0.7	0.8
	B	35.2	30.0	19.3	16.8
	C	38.1	37.9	30.2	29.2
	D	23.5	30.5	49.8	52.2
Mathematics	A	1.6	4.2	0.5	2.4
	B	5.9	30.7	8.7	16.6
	C	20.7	23.0	12.1	17.3
	D	61.8	42.1	78.7	63.7
"New" Physics	A	0.2	4.1	0	0
	B	32.4	39.5	9.0	26.1
	C	35.4	32.2	42.4	39.5
	D	31.8	24.0	48.4	34.2
"New" Chemistry	A	1.4	7.0	0	1.4
	B	38.8	39.7	13.7	34.7
	C	32.7	25.3	20.6	35.4
	D	27.1	27.8	65.5	28.3
"New" Biology	A	1.1	2.7	0.3	2.5
	B	20.6	35.9	11.6	35.5
	C	29.4	31.9	38.8	37.2
	D	48.6	29.3	49.1	24.5
Biology	A	1.2	1.6	0.2	0.5
	B	27.2	41.5	15.5	27.0
	C	35.0	33.0	12.5	35.6
	D	36.4	23.8	71.6	36.6
History	A	1.9	1.5	0.5	0.6
	B	27.8	27.6	13.9	14.6
	C	43.7	28.9	27.52	34.7
	D	26.5	41.7	58.0	49.9

Table 10: Girls" Performance on A-Level Examinations

	1981	1984	1987
Percentage of girls among A-Level candidates	24	27	28
Percentage of girls among candidates with high grades (3-6)	41	34	33
Percentage of girls who fail	4	5	4
Percentage of boys who fail	10	10	8

Source: GOK

Table 11: Girls Prepared to Study A-Level Science (1983)

"A-Level" Subject	Percent of Girls Barred by "O-Level" Subjects	Percent of Girls with Grade 1-6 on "O-Level"
Math (compulsory)	0	6.5
Physics	80	4.8
Chemistry	78	5.7
Biology	57	10.1

Source: Eshiwani (1985) from Kenya Examinations Council.

Table 12: "A-Level" Streams Available for Boys and Girls (1983)

	Science	Arts	Total
Girls	34	61	95
Boys	113	70	183
Mixed	35	22	57

Source: Eshiwani (1985) from Kenya Examinations Council.

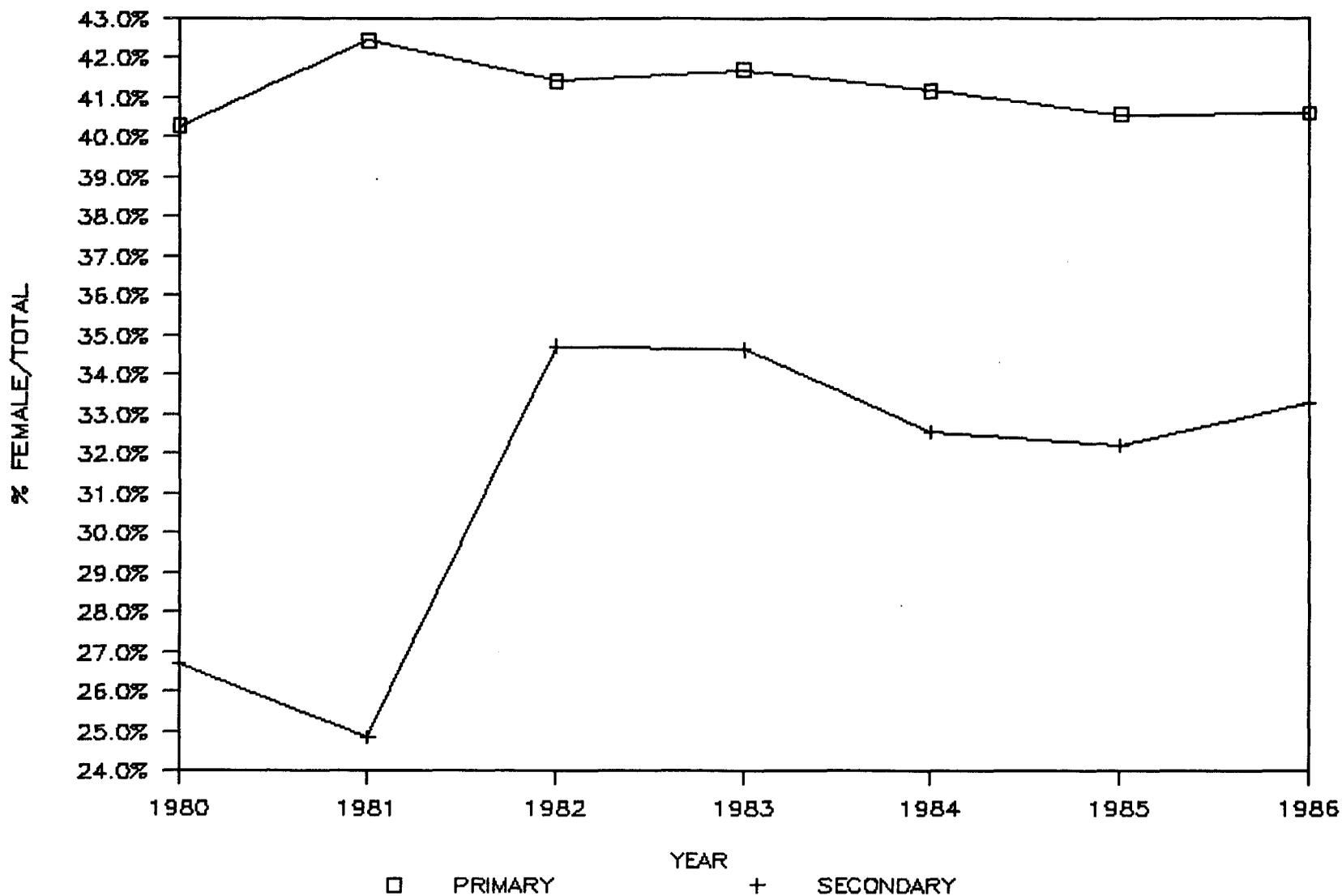
Tertiary Education

25. In 1986, some 7,000 students attended the University of Nairobi and another 2,800 attended Kenyatta University and 240 Moi University. Some 10,000 other students studied abroad. Little is known of their gender, choice of subjects, or willingness to stay in Kenya if more facilities were available. Women constitute about one-fifth of the student population at the University of Nairobi and two-fifths at Kenyatta University. Except for dental surgery, teaching, and fine arts, women are in a minority in every faculty. With so few women taking A-level science, women are severely underrepresented in science, engineering, and architecture. Women represent about two-fifths of those enrolled in teachers' colleges for the Primary Level and one-third for the Secondary Level (see Chart 4).

26. In Kenya's education system, technical or vocational schools have less status than academic schools, but a number of technical training institutes provide more practical education of varying quality. The three national polytechnics at Nairobi, Eldoret and Mombasa, and the Kenya Technical Teachers' College are the leading technical schools. (The Jomo Kenyatta College of Agriculture and Technology has become a constituent college of Kenyatta University, and is not just a technical school.) Female enrollment stands at about one-fifth at the national polytechnics, but girls' enrollment in the more scientific fields remains minimal. Fifteen Harambee Institutes of Technology also exist and are heavily supported by donors. At these, female enrollment is about one-fourth. A number of secondary level technical schools, are being converted into technical training institutions. About 500 "village polytechnics" with an enrollment of 15,000 offer skills training in rural areas, to fit local needs. The Government assists only 320, which are operated out of the Ministry of Social Services and Culture. They now tend to attract primary school leavers.

Chart 4

FEMALE ENROLLMENT IN TEACHER COLLEGES



EXPANDING THE REACH AND IMPROVING THE QUALITY OF EDUCATION

27. Kenya's educational achievements in the face of rapid population growth are impressive. Not surprisingly, the rapid expansion of the school system has been accompanied by some decline in quality, reflecting declines in per capita resources, deterioration in facilities, and difficulty in managing an expanding system. The quality of schools varies even among the maintained schools of Nairobi (Kinyanjui, 1981).

Measuring Education Quality

28. The quality of schooling can be judged by assessing the morale and knowledge of its teachers and the adequacy of basic supplies, such as books and blackboards, and by analyzing examination results (Court and Kinyanjui, 1985). By these criteria, there is room for some concern. As the number of teachers has increased rapidly, qualifications may have weakened. Moreover, teacher morale is reportedly declining as their real incomes deteriorate (Ibid). To pay the salaries of additional teachers, expenditures on essential inputs such as books have been put off. The addition to the academic curriculum of technical or vocational courses has compelled further dilution of resources. Fewer hours are being devoted to English, mathematics, physical science and biology to make room for the new technical courses (Makau, 1985b). (This last point deserves consideration, since some evidence suggests that technical training is more effectively accomplished separately from secondary academic schooling.) While maintained schools are chronically short of supplies and funds for upkeep, unaided schools are generally in far worse condition. Libraries, laboratories, and kitchens need attention as a priority. Most telling, fewer than half the students of either sex succeed in obtaining passing grades (1 to 6) in almost any subject on the O level examinations (Eshiwani, 1985).

29. A number of explanations can be offered for this high failure rate. "Supply side" factors -- quality of instruction and adequacy of the physical plans -- are partly responsible. "Demand side" factors, such as competing demands on children's time, also contribute. While it is possible that test standards are unrealistically high, it is much more likely that students are just not learning enough of what is being offered. Considering Kenya's massive investment in education and the potential benefits, more research on why children are performing poorly and how they might perform better should be undertaken as a matter of national priority.

30. The question remains as to how to improve girls' performance in secondary schools, particularly in science. It is, of course, encouraging to note recent Government reports that girls in 1986 and 1987 reversed the longstanding trend and outperformed boys. Previous policies to strengthen secondary schools may well be paying off, but substantial difficulties remain. On the supply side, the Government is moving to strengthen science education for girls as well as boys (improving teacher training, books, equipment, and so on). Efforts are planned for some 600 schools: about 300 coeducational, 200 for girls, and 100 for boys. But the performance of girls at secondary and tertiary levels reflects more than school quality. Competing demands on girls' time at home are still stronger: girls are often expected to do more of chores at home than boys (see Chapter IV on Women and Rural Household Water Supplies). Moreover, there is still a widespread perception that sciences are unfeminine; girls have few role models to look to (Kagia, 1985). In the one scientific field at the university where women constitute more than half the

students, dentistry, the director is a woman (see Table 13). Some evidence suggests that in textbooks, women are typically portrayed as meek helpmates who cook and care for the family and fetch water, while boys are portrayed as interested, involved, and adventurous (Obdura, 1985). Other evidence points to subtle social pressures encouraging girls to be passive and people-oriented rather than idea-oriented. Girls' own attitudes are influenced by those pressures (Eshiwani, 1985). So do teachers, many of whom feel that girls cannot effectively learn science (Ibid). It is interesting that girls have been able to learn science as effectively as boys in experiments with "programmed instruction" which minimizes the role of the human teacher (Ibid). On the other hand, the daughters of teachers and technical officers are more likely to pursue science than the daughters of parents in more traditional occupations (Ibid). These observations provide some indication of underlying explanations. But more extensive research ought to be done, to ensure that students of either gender make the most of the educational opportunities available to them.

Table 13: Student Enrollment by Faculty 1983-84
University of Nairobi

Faculty/Degree	Men	Women	Total	% of Women
B.Ed. Arts	514	702	1,216	57.7
B.A.	760	416	1,176	35.3
B.Ed. Science	664	321	985	32.5
B.Sc.	708	118	826	14.2
Medicine	429	117	546	21.4
Law	188	138	326	42.3
Vet. Medicine	263	3	294	11.7
B.Sc. Agriculture	205	66	217	24.3
Civil Engineering	200	6	206	2.9
B. Architecture	175	8	183	4.3
Mechanical Engineering	131	0	131	0
Electrical Engineering	128	2	130	1.5
Pharmacy	77	28	105	26.6
Land Economics	53	27	80	33.7
Building Economics	58	11	69	15.9
Dental Surgery	31	36	67	53.7
Forestry	49	8	57	14.0
Food Science Technology	38	15	53	28.3
B.A. Design	31	20	51	30.7
Agriculture Engineering	50	0	50	0
Range Management	38	5	43	11.0
Fine Art	11	17	23	52.1
TOTALS	4,855	2,088	6,943	30.0

Source: Kagia (1985) from MEST data.

Financing Expansion in Education

31. The quality and reach of education can be improved only if resources in education are used more efficiently and if costs are distributed more broadly. With the abolition of school fees for standards 1-4 in 1974 and for standards 5-7 over 1978-80 and continuing population growth, financial pressures have increased sharply. In 1986 the Government spent a total of Kshs 4.5 billion (representing 38 percent of the recurrent budget) on education. The Government cannot do the job alone.

32. Primary schools account for 60 percent of Government expenditures on education. The Government pays teachers and allocates small amounts to schools for equipment. It is supposed to supply some text books and basic teaching materials, as well as 1/5 litre of milk twice a week. In fact, the Government supplies only a small amount for textbooks (Kshs 20/pupil/yr.). The school milk program costs about Kshs 120/pupil/yr and is distributed to all the primary school population regardless of the child's economic/social status. In Africa as a whole, however, the social rates of return on primary education are generally high, and higher than for other levels of schooling.

33. In maintained secondary schools, the Government covers salaries for teachers' and non-teaching staff and provides minimal allocations for upkeep and improvement of physical facilities. In 1986, about 80 percent of recurrent expenditures on education went to teacher salaries. Most of the rest went to subsidized student boarding (Kinyua and Olang', 1985). Other education costs are passed on to parents and the community. The non-maintained schools carry higher fees. There are 18 national boarding schools distributed over 7 districts. These schools are built with Government funds and generally charge high boarding fees (Kshs 6000/yr); lower cost boarding schools charge Kshs 2000-3000. Day maintained and assisted school fees range from Kshs 1700 to Kshs 4000. These high costs mean that qualified but poor students, both female and male, may not have access to quality secondary education. There are only about 200 scholarships from Jomo Kenyatta Foundation and the Government bursary scheme represents only 5 percent of total school fees.

34. Government allocations to universities account for about one-sixth of the Government's recurrent and development budget. University training at the University of Nairobi, Kenyatta University College, and the newly opened Moi University is virtually free for all students. Before 1973-74, the university covered tuition, board, food, books, stationery, and students' personal expenses. That year the Government launched a student loan program to help cover non-tuition costs. By 1983/84, the loan program amounted to about 5 million Kenyan pounds, or 2.5 percent of the education budget. Loan repayment includes a grace period after graduation and 2 percent annual interest thereafter. Despite these relatively easy terms, loan repayment has been poor, and Government collection efforts have been limited (Bertrand and Griffen, 1984). The Government also covers all capital development costs and provides the university with an annual capitation to cover staffing, staff development, postgraduate education, research, books, equipment, staff housing, transportation, and health services. Some evidence suggests suboptimal use of these resources. Shifting subsidies away from food and boarding might help increase the provision of teaching equipment and books in secondary schools and more generally improve education quality (Kinyua and Olang', 1985). The need to share costs at the university level has been noted by numerous individuals (Kinyua and Olang', 1985; Bertrand and Griffen, 1984; Hughs and Wahome, 1985; Court and Kinyanjui, 1985).

Community and Parental Willingness to Pay

35. Communities have generally been expected to build schools and teacher housing for teachers (hence the low proportion of the Government's capital budget going to education). But national boarding schools (secondary) and schools in the poorer arid areas (primary and secondary) are generally provided by the Government. Primary schools in new urban areas also tend to be provided by the Government. But the Government contributes only marginally towards the purchase of textbooks and other supplies at both primary and secondary levels. Parents cover substantial costs -- not just books, but uniforms, notebooks, medical care, and additional fees that the community may impose for particular reasons. Harambee schools cost significantly more as they are entirely supported by the community. Two separate studies estimate that parental contributions average Kshs 160-180 per student per year in rural areas (Olembo, 1980 and Nkinyangi, n.d.; average per capita income in Kenya is around Kshs 5,000 or \$310 per year).

36. Parents pay roughly 30-40 percent of the costs of secondary schooling, not counting school uniforms, examination fees or textbooks. Some evidence estimates that O-level textbooks cost Kshs 1,833 and textbooks for A-level science courses, Kshs 1,785, which represents three and four times respectively the Government's allocation per student for school equipment and stores.

37. One study of the urban labor force found that virtually all parents wanted more education for their sons and daughters (Sabot et alia, 1981). Workers indicated no substantial difference in their general or willingness to pay for private secondary education for boys or girls. (But for the first child who reaches age 15, parents spend about 30 percent more for education if it is a boy.) On the whole aspirations and investments for sons and daughters appear to be fairly similar in urban Kenya. Parents with higher incomes and education levels more often put their first child in private school. Some 63 percent of the lowest income earners but only 21 percent of the highest earners send their children to private secondary school, implying that Government subsidies are most often benefiting those best able to pay for education. In general, parents allocated 8-18 percent of their income on their children's education, but the lowest earners allocated 30 percent (Sabot, et alia, 1981). Demand for girls' schooling in rural areas also seems strong: as discussed earlier, expenditures on secondary education for girls frequently exceed expenditures for boys because girls are more likely to attend unaided schools. Thus, on average, parents actually spend more to educate their daughters than their sons. Given the high cost of secondary education, it appears that parental ability to pay more is limited -- particularly among the lower income groups.

38. How much more can and will Kenyan parents pay for their children's education? How much more can older students contribute? Demand for education in Kenya has not been examined systematically. But evidence from Egypt (Cochrane, et alia, 1985), Nepal (Jamison and Lockheed, 1985), and Malaysia (DeTray, 1984) and a review of girls' schooling worldwide provide some guidance on the major determinants of girls' education, though these studies produce conflicting results in part because of differences in data collection and analysis.

39. Parents naturally weigh the potential costs and benefits of children's education against other claims on available resources. The opportunity cost of educating children has proved difficult to determine. Parental aspirations for their children (reflecting their own education and background), demographic pressure (number of children in the household), school quality, location of school, and gender are the usual main influences on education for children. But how these influences operate in Kenya needs to be examined as a priority. While the demonstrated willingness to spend for education of sons or daughters is encouraging, it is also reported widely that parents may be more reluctant to educate girls. Greater parental willingness to give boys an additional year at the primary level to improve chances of gaining entrance to maintained secondary schools does suggest some remaining preference for educating sons in rural areas. On the other hand, it is not uncommon for parents to express the hope that their daughters, as well as their sons, will be better educated and equipped for life than they were.

40. Education is necessary, though certainly not sufficient, to gain entry to the formal sector where salaries are higher. As educational quality weakens, however, the level of education required to gain formal sector employment is steadily rising (Hughes and Wahome, 1985). And the effective demand for employment of educated people has not kept pace with the supply, leading to pressure for expanded public sector employment opportunities. But the hope that a child will beat the odds, earn a higher income, and in turn help the family lingers -- and fuels parental willingness to invest. On the other hand, rising unemployment for secondary and university graduates is a serious problem. Until last year the Government guaranteed employment to all university graduates. This year not all graduates will be absorbed by the formal economy and of those who are, some will be underemployed. Given the present growth rate in both secondary and tertiary education, the unemployment and underemployment situation will be exacerbated. This issue is of crucial importance for women because it means that they face a double hurdle in gaining employment in the formal sector: first, gaining access to adequate education, then translating their education into a formal sector job.

BENEFITS OF FEMALE EDUCATION

41. The benefits of female education have not been studied much in Kenya. However, several points can be made. First, as discussed in the agricultural chapter, education demonstrably improves their agricultural productivity. Women with three years' education outperformed men, but men or women with more education had higher productivity. Exactly how this happens is not clear, but education may expand women's access to information and also lead to improved opportunities for earning off the farm. Evidence of linkages between education and modern labor force participation in Kenya is sketchy but strong in other countries. The social and private returns to education in Kenya should be explored more carefully.

42. Second, the impact of maternal education on children's health in Kenya is dramatic (see Table 14). (The evidence is dated, but on an issue like this, it is likely to stay valid.) The 1969 census suggests that among uneducated women aged 35-39 years, 25 percent of their children had died while among those with at least a primary education (Form 5 and beyond), only 2 percent had died. When mothers are educated, almost all their children live. International evidence confirms this linkage (Schultz, 1988). The impact of maternal education is generally considerably stronger than that of paternal

education. Education's effect on children's health is probably mediated substantially by income, but there is an additional effect that relates to the ability to acquire and use information.

Table 14: Mean Number of Births and Child Mortality by Mother's Education

Maternal Age	<u>No Education</u>		<u>Standard 5-8</u>		<u>Form 5 and Over</u>	
	Birth	%CM	Birth	%CM	Birth	%CM
20-24	2.05	17	1.55	9	— .01	— 5
35-39	5.97	25	6.51	15	— 2.28	— 2
45-49	6.65	31	7.62	19	— 2.23	— 6

Birth = average number of live births; %CM = proportion of children who died. (GOK, 1969 Census, cited in Smock)

43. Finally, the Kenya Government's detailed contraceptive prevalence survey shows that education is associated with lower fertility (see Table 15). But it is primarily younger women who are more educated. They may yet have large families -- or they may remain content with fewer children. Previous analysis of linkages between education and fertility in Africa and elsewhere could rarely take account of age. Kenya's data begin to take account of age, by stratifying by age (and by Province). Education has a negative effect on fertility in most Provinces for women in three different age groups. It is, indeed, weakest among older women. Yet childbearing among younger, more educated women may reflect not only their individual education levels but also the higher levels now prevailing in the community, which may change social expectations to favor smaller families. More analysis is needed, but such an explanation is plausible.

44. The explanation for the strong association between increased education and decreased fertility appears to involve delayed marriage and increased practice of contraception (see Tables 16-18). These findings are typical of those in other countries as well. But the Kenyan data suggest a deeper explanation for the linkage between education and lower fertility.

Table 15: Mean Number of Children Ever Born by Mother's Age and Education

Province and Years of Education		Total	15-24	25-34	35-49
<u>Nairobi</u>	<u>Total</u>	<u>2.4</u>	<u>0.9</u>	<u>3.9</u>	<u>5.7</u>
	None	4.4	(1.4)	5.4	(7.7)
	1-4	3.0	(1.2)	(4.0)	(6.3)
	5-8	2.5	1.2	4.4	(4.6)
	9+	1.5	0.6	2.8	(4.8)
<u>Coast</u>	<u>Total</u>	<u>3.5</u>	<u>1.0</u>	<u>4.7</u>	<u>6.3</u>
	None	4.5	1.5	4.9	6.4
	1-4	3.6	1.2	(5.1)	(6.2)
	5-8	1.8	0.6	3.9	(5.7)
	9+	1.4	0.4	2.8	(3.6)
<u>Eastern</u>	<u>Total</u>	<u>3.9</u>	<u>1.0</u>	<u>4.8</u>	<u>7.5</u>
	None	6.1	2.3	5.1	7.9
	1-4	5.1	1.7	5.8	6.8
	5-8	2.6	0.9	4.5	7.0
	9+	1.2	0.5	2.8	(7.0)
<u>Central</u>	<u>Total</u>	<u>3.5</u>	<u>0.7</u>	<u>4.3</u>	<u>7.4</u>
	None	6.7	(1.4)	5.0	7.8
	1-4	5.4	1.5	4.3	7.5
	5-8	2.5	0.7	4.7	6.7
	9+	1.3	0.4	2.9	(4.7)
<u>Rift Valley</u>	<u>Total</u>	<u>4.1</u>	<u>1.2</u>	<u>5.1</u>	<u>7.5</u>
	None	5.7	2.3	5.4	7.5
	1-4	5.0	1.9	5.6	8.0
	5-8	2.3	0.9	4.8	7.3
	9+	1.3	0.4	2.9	(6.7)
<u>Nyanza</u>	<u>Total</u>	<u>4.0</u>	<u>1.5</u>	<u>4.9</u>	<u>8.2</u>
	None	6.1	2.7	5.3	8.4
	1-4	4.1	1.7	4.7	8.3
	5-8	2.7	1.3	5.1	7.4
	9+	1.3	0.7	3.1	(5.6)
<u>Western</u>	<u>Total</u>	<u>4.0</u>	<u>0.8</u>	<u>4.9</u>	<u>8.6</u>
	None	6.6	2.3	5.1	8.7
	1-4	4.9	1.2	5.5	8.9
	5-8	2.5	0.5	5.2	7.8
	9+	1.5	0.4	3.0	(8.7)

Source: GOK, KCPS, 1984

Table 16: Percent of Women Never Married

Woman's Age	Education Level			
	None	1 - 4 Yrs.	5 - 8 Yrs.	9+ Yrs.
15 - 19	30.3	44.4	77.0	92.7
20 - 24	5.7	9.8	21.2	52.1

Source: GOK, KCPS, 1984

Table 17: Family Planning Practice by Woman's Education
(Percent of Women 15-49, Currently Practicing Contraception)

Levels of Education	Nairobi	Coast	Eastern	Central	Rift Valley	Nyanza	Western
0	10.7	5.4	21.2	28.4	12.2	5.1	2.5
1 - 4	19.0	10.0	28.8	31.3	15.2	5.9	3.0
5 - 8	18.7	8.8	20.0	23.4	15.7	9.4	3.3
9+	30.5	24.1	18.3	29.3	19.8	16.9	8.4

Source: GOK, KCPS, 1984

Table 18: Family Planning Methods by Woman's Education

Education Level	TOTAL		Nairobi/Mombasa		Other Urban		Rural	
	Use Any Method	M/T	Use Any Method	M/T	Use Any Method	M/T	Use Any Method	M/T
None	11.7	0.90	10.5	2.89	13.0	0.89	11.7	0.79
1 - 4	17.0	0.97	12.5	1.52	13.5	2.83	17.3	0.89
5 - 8	19.1	1.70	18.2	7.95	16.5	2.33	19.4	1.53
9 +	36.4	2.89	52.7	5.89	33.2	5.60	31.2	1.61

Note: M = Modern method of family planning.
T = Traditional method of family planning.

Source: GOK, KCPS, 1984

Education particularly encourages the choice of modern rather than traditional contraception. (The differences are striking in urban areas but still substantial in rural areas.) Modern contraception -- primary pills, IUDs, injectables, and sterilization -- has far higher "in-use" success rates. It is thus less subject to human error or carelessness than traditional methods, notably abstinence and rhythm. Users choosing modern methods are more likely to succeed in their attempt to contracept. Kenya's data show that education and family planning programs can thus be mutually reinforcing. As more women are educated, interest in family planning grows and the impact of family planning service programs will increase. This is a clear example of the role of education in encouraging innovation and adaptation to changing circumstances.

CONCLUSIONS

45. Evidence from developed and developing countries suggests that education may well be the single most effective way to enhance women's economic productivity and promote family wellbeing. Kenya has made enormous progress in educating children of both sexes in the past two decades. As far as girls are concerned, the principal remaining difficulty is at the later primary and secondary level, where there are fewer places in the Government maintained schools. Science education is particularly weak, and attitudes especially discourage girls in scientific fields, which biases girls' future work choices and inhibits learning agricultural or family care skills. With relatively few girls completing secondary school, fewer girls go on to university.

46. Government cannot do the whole job of education either in delivery of services or in finance. Today, with fewer positions for girls in maintained secondary schools, girls are more dependent than boys are on their parents' ability to pay for their education. And girls are therefore more dependent on the living standards of their communities, since it is the community that establishes the unaided schools.

47. The solutions to these problems are embedded in the broader solutions that must be found if Kenya is to educate its young and growing population adequately. It is encouraging that parents are willing to invest in the education of their daughters as well as their sons. But parents already contribute heavily at the primary and secondary level, and their ability to pay more is limited. The solutions must lie primarily in improving the efficiency of available resources, in selective expansion as resources permit, and in selective cost recovery especially at the tertiary level.

48. To ease the budgetary pressure, it will be worth exploring ways to make secondary education more efficient, for instance by generally shifting away from boarding to day schools. It would also help to charge users at the basically free university. Most university students come from families with above-average income. Scholarships could be provided for students who need them most. The social costs of university education far exceed the private costs, while the private benefits are at least as great as the social benefits. User charges are, of course, not popular. People anywhere prefer

free or low-cost education as long as quality is adequate. Providing high quality and free public education is an attractive objective for many social and economic reasons. The difficulty is that with the Government already spending so heavily on education and the school age population growing so fast, it is hard to see how purely Government-financed education can be made a practical reality. (It is not likely that external sources will cover these costs, especially over the long term.) Then the choice will be -- as it is now -- Government-financed education for some (particularly boys, as things stand) and much lower quality, and more expensive, privately financed education for others. From society's point of view, that may not be the best way to allocate educational resources. It may be better to try to spread the burden so that all share it. Imposition of user fees would create savings that could be shared among the various levels of education depending on the relative productivity of investments in those levels. To provide an incentive to universities, some portion of the savings could be made available to them.

49. It would make sense to explore the potential for a low cost "leadership campaign" to encourage girls to stay in school and to improve their performance. The Government has recommended intensified "family education" programs at the primary and secondary level to reinforce the value of girls' as well as boys' education. To make this effective, it would be important to explore the reasons why relatively more girls fail at the entrance examinations for secondary school. The likeliest reason is that more boys repeat in the last years of primary school to prepare for these examinations. But the underlying explanations could be analyzed further. More restricted expectations for girls and more home chores could show up in more erratic attendance records for girls or girls may be given less time for study. A campaign could be mounted at little cost to encourage parents to improve girls' attendance and give girls as well as boys time for homework. At upper levels of education, the importance of public leadership and role models in encouraging female education could generally be emphasized. At very low cost, leaders can speak out more forcefully to strengthen girls' own motivation to enter and remain in secondary school, to delay marriage and motherhood, and to get scientific training that will improve their employment prospects and their capacity to maintain family welfare. Media efforts -- press, TV, radio -- support groups for young women students, informal apprenticeship programs, and the like can have substantial effect with little or no drain on Government budgets.

50. It would make sense to improve existing secondary schooling for both boys and girls, particularly in science, through practical and relatively low cost measures such as better books, better basic supplies and equipment, and some teacher refresher courses. These measures, combined with efforts to ease attitudes that especially discourage girls in science, could help bring girls' enrollment in scientific fields closer to parity with boys enrollment.

51. Inadequacies in basic supplies and maintenance are major problems which should be addressed at all levels of the school system. Unaided girls' schools are reportedly especially weak. Many primary schools suffer from a lack of basic teaching materials such as blackboards and textbooks, as well as such things as maps, flash cards, or simple scientific equipment. In

secondary schools, textbooks are in short supply. Science laboratories are of uneven quality, in boys', girls', and coeducational schools, and libraries need to be improved. Maintenance of dormitories and school buildings (including kitchens) is much needed but extremely difficult given the constraints on Government and parent's already severe financial burden.

52. It would also seem sensible to strengthen family planning information and services and school "family life" counseling to discourage teenage pregnancy so that girls who do reach later primary or who start secondary school can continue (see Chapter III). Some measures should be considered to enable girls who do get pregnant to continue their schooling to gain the increases in economic productivity and other attitudinal changes that education would provide. The high dropout rate for pregnancy is a real social loss.

53. With the rapid expansion of the school system, it is not surprising that difficulties have emerged in training sufficient numbers of teachers and in maintaining their skills. Approaches such as more group training sessions for teachers, lectures on new curriculum, and so on could help. Costs could be kept modest, and communities could help defray the costs by in-kind contributions (for example, letting a teacher stay with a family during a few days' refresher course). Management training could also be strengthened.

54. As to curriculum, several possibilities arise:

a) Curriculum (and the books used) could be assessed for general relevance and effectiveness. Books that have very strong gender biases that would discourage girls could be replaced. For example, it might make sense to introduce more focus on agricultural science, on family health, and on family budgeting.

b) Experiments could be conducted with alternative combinations of courses and teaching approaches to determine how best to teach students of different background and gender.

c) The impact on student performance of the new curriculum changes could be evaluated and adjustments could be made at an early stage.

55. Steps along the lines suggested here should enable women in Kenya to accelerate progress in education and so build on the considerable achievements of the past twenty years.

Chapter III. WOMEN'S HEALTH

INTRODUCTION

1. Health is universally recognized as a basic goal of national development, and the policies of the Government of Kenya regarding women's health have been stated in various policy documents including Sessional Paper No. 10 of 1965 on "African Socialism and Its Implications to Planning in Kenya," and in the five national development plans since Independence in 1963. The Government of Kenya hosted the International Safe Motherhood Conference in February, 1987, which was cosponsored by WHO, UNFPA, UNDP, and the World Bank, and it cosponsored the Safe Motherhood Initiative resolution adopted by the World Health Assembly in May, 1987.

Better Health and Longer Life

2. In 1965, men could expect to live about 43 years and women 46. By 1984, life expectancy had increased to 52 years for men and 56 years for women. Crude death rates fell from 21 per thousand population in 1965 to 17 in 1969 and to 13 by 1984. These gains came largely from a reduction in infant mortality: in 1948 the infant mortality rate was an estimated 184 deaths per thousand births; in 1979 it was about 119; and today it is about 76.

3. Though significant progress has been made in reducing mortality and morbidity, serious health problems remain. These include malaria, respiratory and diarrheal diseases, and other parasitic and infectious diseases. Occupational hazards and some working environments are a concern. Women in Kenya still generally face high rates of maternal mortality and morbidity, though considerably less than in neighboring countries. Fertility remains high, especially among those with lower socioeconomic status. These health concerns in turn reflect shortages of know-how, productive resources, and equipment; still limited education and training; very limited environmental control and sanitation; and shortages of health and family planning services. Improvements in these areas will generate further improvements in women's health. But Kenya's experience thus far in the health sector -- with both Government and NGO programs involving women at the community level -- should already interest others working to improve women's health.

4. This paper focuses on women's reproductive health, for two reasons. First, reproductive health is an important concern to women. About 40 percent of the deaths of women aged 15 to 35 years in Kenya stem from pregnancy and childbirth. Second, other analyses of health in Kenya cover problems such as infectious diseases and malaria which affect the broader population.

The Demand for Children

5. A woman's capacity to bear and rear many children has long been the core of her identity in Kenya, the principal source of esteem for her within her family and community:

The ideal fertility was firmly impressed into the traditional image of the 'proper man' and 'proper woman.' Barrenness, sterility, or limited fertility were socially considered humiliating conditions and misfortunes. Children constituted the most important visible sign of success and achievement. Off-spring were essential to ensure a man's social position and confer prestige and influence within his lineage and the community.... Likewise for a woman, the regular birth of children was indispensable to ensure her status; indeed, children were the justification of her very existence. All women wished to avoid the pitiable condition of being a childless or a subfertile wife (Molnos).

6. Most women have about 7 children. Parents everywhere find satisfaction and joy in their children. But the traditional desire for so many children also reflected social expectations, which in turn arose from practical requirements. Children provided reliable help around the farm and household, protected the family or clan, and ensured support for aging parents. In a developing economy, before the widespread establishment of modern political and economic means to assure protection and security, large families may help ensure the economic position of the parents -- even though, to their country as a whole, rapid population growth may constitute a threat. Since child health is precarious in some places (and parents may be slow to conclude that child health is improving even when it is), many parents seek additional births to insure against children's death. Of course, unintended pregnancies occur. And when affordable, effective, and culturally acceptable family planning services are not readily available, parents may feel they have no real option except large families. If breastfeeding and cultural patterns such as polygamy decline, then family size may also increase. More recently in Kenya, the number of children desired by families has begun to decline -- reflecting growing awareness of the population issue and its economic implications, better child health, and improved family planning services.

7. Traditional societies usually observed customs that kept fertility below the biological maximum. These included breastfeeding, often combined with postpartum abstinence, and sometimes polygamy. The practical effect was to help space births sufficiently to allow mother and child a healthy start before the next pregnancy occurred. Since childbearing began early, resulting families were large enough to meet social and economic needs. Population growth then was slow and helped to stimulate economic growth. In recent decades, economic growth has led to better health and faster population growth. The challenge today is to find a new equilibrium, to bring birth rates into balance with the new death rates. Such a demographic transition is often the natural outcome of development, if development proceeds rapidly and broadly enough. But it may be difficult for a country to make the required investment in development efforts if intervening population growth is too fast. Investment in opportunities for women can particularly help to hasten the transition.

8. Family planning services can eliminate unwanted pregnancies, improve maternal and child health, and gradually help change social expectations on

family size. Efforts to improve child health can encourage parents to prefer smaller families. And socioeconomic development -- particularly better education and economic opportunities for women -- can shift parental preferences toward smaller families. As women become less dependent on children for help and support, as they gain other sources of satisfaction that compete with childbearing, and as safe and effective means to plan pregnancy become more readily available, family size tends to fall. While men's attitudes matter, changes in women's circumstances are still apparently the main influence on family size.

High Fertility and Population Growth Rates

9. Families of 7 to 8 children, most now surviving, translate into unprecedented rates of population growth and child dependency. This, combined with Kenya's limited natural resources, constitutes one of the country's most pressing problems. The 1979 census revealed that Kenya had a total population of 15,327,061: 50.4 percent females and 49.6 percent males. This represented a rise of 29.3 percent from the previous census in 1969 -- much more than expected. By mid-1987, the population was estimated to be 22.1 million. (According to projections made by Kenya's Central Bureau of Statistics the female population in Kenya rose 44 percent over 1979-87.) Kenya's population growth rate increased from about 3.0 percent annually in 1961 to about 4.0 percent today. At this rate, the population will double in just 17 years.

10. Fertility trends in Kenya can be traced from the 1962, 1969, and 1979 censuses, the 1977 National Demographic Survey, the 1977/78 Kenya Fertility Survey (KFS), and the 1984 Kenya Contraceptive Prevalence Survey (KCPS) (see Table 1).

Table 1: Total Fertility Rates by Various Years

	1962	1969	1977	1977/78	1979*	1984
TFR	5.3	6.6	8.0	7.9	7.9	7.7

* Estimated.

Source: GOK, KCPS, 1984.

11. Recent data suggest that fertility may be starting to fall, especially in Central Province and some parts of Eastern Province. The Kenya CPS revealed a total fertility rate of about 7.7 births per woman in Kenya, which represents a slight decline from the level of 7.9 estimated indirectly from the 1979 census and reported in the 1977/78 KFS. A health survey in Chogoria, a rural area with outstanding health and family planning services, indicated a total fertility rate of 4.79. There are other signs of change as

well. Use of contraception has risen sharply. Use of condoms has increased dramatically in urban areas. Surgical contraception is rapidly becoming a major method of choice in much of Kenya. Use of injectables has also increased substantially. A further survey planned for 1988 will clarify the trends.

Government Policy

12. The Kenya woman's reproductive health is addressed as part of a broader effort to improve health. The Government considers the following to be high priority concerns in this effort: maternal and child health problems; communicable diseases; diseases and conditions caused or provoked by inadequate environmental sanitation; and health problems related to malnutrition and undernutrition.

13. The Government has initiated comprehensive efforts to put basic health care within reasonable reach of the people. These efforts include maternal and child health care and family planning. Several family planning methods are offered, including traditional methods (abstinence and breastfeeding) and modern methods (pills, condoms, IUDs, and sterilization). The Government is also addressing the population problem through programs in several sectors -- including female education and measures to improve women's income -- that will build interest in smaller families. Political, cultural, and economic forces favoring large families are beginning to shift, and a consensus is emerging on the need to slow population growth.

WOMEN AS WIVES AND MOTHERS

Age of Marriage and Marital Status

14. Most Kenyan women marry. Among women aged 15 to 49, some two-thirds of the population are married, one-fourth have yet to marry, and 8 percent were married in the past. The proportion of women never married falls sharply as women age: about three-fourths of women aged 15 to 19 have not married, while only 6 percent among women aged 25 to 29 have yet to marry (KCPS, 1985). Since 1962, teenage marriage has decreased substantially (see Table 2).

Table 2: Percentage of Women Who have Never Married

<u>Age</u>	<u>1962 Census</u>	<u>1969 Census</u>	<u>1977 NDS</u>	<u>1977-78 KFS</u>	<u>1979 Census</u>	<u>1984 KFS</u>
15-19	55	64	71	72	71	74
20-24	13	18	22	21	25	24
25-29	5	6	6	4	9	6
30-34	3	4	3	1	5	4

Source: GOK, KCPS, 1984

15. Education delays marriage. Over half of the women aged 20 to 24 with 9 years or more of education are still unmarried, while only about 10 percent of those with 1 to 4 years of education remain unmarried (see Table 3) (KCPS, 1984). Culture also influences the age of marriage. Urban women are more likely to delay marriage than rural women, perhaps because of higher education levels among other influences (see Table 3).

Table 3: Percent of Women Aged 15-24 Who Have Not Yet Married by Selected Background Characteristics, 1984

Background Characteristics	Age	
	15-19	20-24
Total	73.8	23.5
<u>Education Level</u>		
None	30.3	5.7
1-4 years	44.4	9.8
5-8 years	77.0	21.2
9+ years	92.7	52.1
<u>Place of Residence</u>		
Nairobi/Mombasa	76.1	29.0
Other Urban	72.7	34.6
Rural	73.7	21.6
<u>Ethnic Group</u>		
Kikuyu	91.9	36.7
Luo	41.9	14.4
Luhya	78.6	25.5
Kamba	77.2	17.7
Kisii	76.1	31.4
Meru-Embu	87.1	37.7
Mijikenda	58.3	11.3
Kalenjin	57.9	15.5
Taita-Taveta	85.2	47.6
Others	56.7	9.9

Source: GOK, KCPS, 1984

16. Eighty-four percent of women remain married to their first husbands. Once a woman is married, she is likely to spend only 5 percent of the rest of her life widowed, divorced, or officially separated -- though many women's husbands are absent. Less well educated women are more likely to experience

dissolution of their first marriage and also are more likely to remarry. Rural-urban differences in marital dissolution and remarriage are not significant.

Polygamy and Fertility

17. The practice of polygamy in Kenya has been declining in recent years. The 1984 KCPS reveals that about 25 percent of currently married women aged 15 to 49 are in polygamous unions, compared to the 1979 KFS estimate of 30 percent. Polygamous unions are on the wane among the young. The KCPS indicates that the proportions of women in polygamous unions range from 17 percent at age 20 to 24 to 34 percent at age 45 to 49. Polygamy is slightly more common in rural than in urban areas. About 17 percent of married women living in Nairobi/Mombasa are in polygamous unions compared to about 25 percent in rural areas. Polygamy also varies considerably by ethnic group but is negatively related to the educational attainment of the wife in both urban and rural areas. While about one-third of the currently married women with no education report that they are in polygamous unions, only about one-tenth of women with secondary education are.

18. Some evidence suggests that the decline in polygamy can be associated with a rise in marital fertility unless compensated for by contraceptive practice. If that is true, it may be necessary to intensify family planning efforts for Kenya to reduce its population growth faster. Current socioeconomic developments will accelerate the rate at which polygamy declines. It is possible, however, that polygamy can assume other forms, especially in the urban areas. The impact of polygamy on women's health, decision-making, and socioeconomic status is widely reported to be serious and needs to be researched.

Childbearing Patterns

19. Childbearing is primarily within but not confined to marriage. Among later marrying women, childbearing tends to begin before marriage. KFS data suggest that at least one-fifth of Kenyan women have children before marriage. Perhaps 20 percent of all births in Kenya occur among women under 20 years old. If pregnancies terminating in abortion are included, then one-third of all pregnancies can be attributed to teenagers (Mati). The tendency toward later marriage seems likely to increase the number of children who are born to unmarried teenage girls and young women.

20. Data on children ever born indicate high fertility (see Table 4). Average fertility shows some variation among provinces, being lower for Central, Coast, and Nairobi when standardized for age (See Table 5). Total fertility rates give a more accurate picture of current childbearing patterns. Total fertility rates appear to be declining a little in comparisons of the 1977 KFS and 1984 KCPS (see Table 6). In both studies, women in urban areas had substantially lower total fertility rates. Both reported high and quite similar total fertility rates for almost all ethnic groups and religions. The influence of education appears to be modest in the KFS and more important in the KCPS, but most significant at the secondary level.

Table 4: Mean Number of Children Ever Born by Maternal Age, 1962-1984

Age	1962 Census	1969 Census	1977 NDS	1977-78 KFS	1979 Census	1984 KCPS
15-19	0.36	0.35	0.33	0.35	0.32	0.35
20-24	1.65	1.88	1.83	1.84	1.85	1.96
25-29	3.01	3.65	3.72	3.76	3.65	3.96
30-34	4.20	5.11	5.55	5.55	5.38	5.70
35-39	5.07	6.00	6.67	6.82	6.47	7.04
40-44	5.61	6.44	7.25	7.59	7.02	7.84
45-49	5.90	6.69	7.46	7.88	7.17	8.15

Source: GOK, Central Bureau of Statistics

Table 5: Mean Number of Children Ever Born by Province (1984)
(Standardized by Maternal Age)

Nairobi	Coast	Eastern	Central	Rift Valley	Nyanza	Western
3.0	3.4	3.7	3.4	4.0	4.0	4.1

Source: GOK, KCPS, 1984

Table 6: Total Fertility Rates from the 1977-78 KFS and 1984 KCPS

Characteristics	1977-78 KFS	1984 KCPS
Total	8.2*	7.7
<u>Education Level</u>		
None	8.8	8.5
1-4 years	9.0	9.0
5-8 years	8.1	7.9
9+ years	7.3	5.4
<u>Place of Residence</u>		
Nairobi/Mombasa	5.7	4.7
Other Urban	6.8	5.3
Rural	8.4	8.1
<u>Province</u>		
Nairobi	6.1	5.6
Coast	7.2	6.7
Eastern	8.2	8.0
Central	8.6	7.8
Rift Valley	8.8	8.6
Nyanza	8.0	8.2
Western	8.2	6.3
<u>Ethnic Group</u>		
Kikuyu	8.4	7.8
Luo	7.6	8.3
Luhya	8.3	6.8
Kamba	8.0	7.8
Kisii	8.7	7.6
Meru-Embu	8.2	8.0
Mijikenda	7.4	7.6
Kalenjin	8.9	8.6
Taita-Taveta	7.8**	8.1
Others		6.5
<u>Region</u>		
Catholic	8.1	7.7
Protestant	8.3	7.8
Moslem	7.1	6.0
None	7.9	7.4

* Based on births in the five years before the survey.

** In the KFS (1977-78) Taita-Taveta was included in the other category.

Source: GOK, Central Bureau of Statistics, 1980.

21. The influence of education on fertility deserves to be highlighted. More educated women tend to have smaller families, as noted in Chapter II. This trend is apparent in every Province (except perhaps North-Eastern, which lacked data). Looking separately at women in young, middle, and older ages, education and family size are inversely related within each of the three age groups in almost every Province. The trend is stronger among younger women. This is partly because young women have not yet had time to bear so many children. But it may also reflect the general increase in community levels of education and accompanying changes in social expectations. Population growth may start to subside soon as young women, most with at least five years of education, move through their childbearing years, and as progress on secondary education for girls continues.

22. The strong association between increased education and decreased fertility can apparently be explained by delayed marriage and the increased practice of contraception. Education also encourages the choice of modern, rather than traditional contraceptives with far higher "in-use" success rates, as discussed in Chapter II.

Family Planning Practice

23. In 1984, the KCPS found some 17 percent of currently married women practicing family planning, compared to only 7 percent in 1977 according to the KFS. This is an increase of 2-1/2 times in about 7 years. About 10 percent are using modern methods (mainly pills, IUDs, injectables, and female sterilization) and 7 percent traditional methods (mainly rhythm, abstinence, and condoms). Kenya's KCPS provides unusually comprehensive data on the characteristics of family planning acceptors, which has implications for family planning program. Urban, literate, and more educated women are more likely to choose modern methods, as are women with more children (see Table 7) (KCPS, 1985). There are about 100,000 new acceptors each year, and roughly three times that number practicing family planning at a given moment.

24. While couples in Kenya are turning to more modern methods, they are turning away from some of the oldest forms of family planning. Thus, on balance, fertility has not yet been much affected. Two mechanisms, polygamy and breastfeeding combined with post-partum abstinence, traditionally served to limit fertility. Polygamy has been discussed. Mosley et alia note that some 97 percent of women in Kenya breastfeed their children, and this is associated with about 11 months on average of lactational amenorrhea. Currently, the average duration of post-partum abstinence is only about three months, so that abstinence no longer affects birth-spacing. But if breastfeeding declined to levels common in Western Europe or America, the duration of post-partum amenorrhea could fall to about two months. This could cause a rise in fertility of about one-fourth, unless compensated by an increase in contraception (Mosley, Werner, and Becker, 1982).

Maternal Mortality and Morbidity

25. Kenya has achieved impressive declines in overall and maternal mortality since Independence. While maternal mortality in Kenya compares favorably with that in neighboring countries, it is still high. The Government is intensifying its effort to address maternal mortality within the framework of more generally improving health.

Table 7: Percent of Currently Married Women 15-49 Using a Family Planning Method by Selected Background Characteristics and by Place of Residence, 1984

Characteristics	<u>Total</u>		<u>Nairobi/Mombasa</u>		<u>Other Urban</u>		<u>Rural</u>	
	Use	M/T	Use	M/T	Use	M/T	Use	M/T
<u>No. of Living Children (including current pregnancy)</u>								
0-2	10.7	0.83	24.2	3.22	17.1	2.41	8.3	0.44
3-5	17.4	1.36	27.1	9.81	26.3	4.37	15.9	1.00
6-8	21.8	1.78	30.4	3.96	27.3	1.85	21.1	1.70
9+	26.2	1.45	*	*	*	*	26.3	1.39
<u>Education Level</u>								
None	11.7	0.90	10.5	2.89	13.0	0.89	11.7	0.79
1-4 years	17.0	0.97	12.5	1.52	13.5	2.83	17.3	0.89
5-8 years	19.1	1.70	18.2	7.95	16.5	2.33	19.4	1.53
9+ years	36.4	2.89	52.7	5.89	33.2	5.60	31.2	1.61
<u>Work Status</u>								
Currently working	25.8	1.98	44.8	3.71	36.0	2.93	22.1	1.57
Worked in past	18.6	0.91	31.1	2.08	17.8	2.05	17.8	0.68
Never worked	14.4	1.20	17.3	5.80	13.7	3.48	14.2	1.07
<u>Literacy Status</u>								
Illiterate	11.0	0.96	8.7	2.11	10.4	9.23	11.0	0.88
Literate	22.0	1.53	31.3	5.52	24.4	2.64	20.6	1.22
<u>Reproductive Intentions</u>								
Last preg. unwanted	29.5	1.62	34.6	3.11	44.6	2.32	28.9	1.53
Want no more	21.6	3.00	41.0	13.54	36.2	7.05	18.8	2.24
Want after 2 yrs.	14.3	0.72	24.6	5.54	16.8	2.27	13.2	0.49
Want within 1 yr.	6.7	0.57	14.0	1.28	12.5	1.43	4.9	0.37

* Too few cases for a meaningful percentage comparison.

Source: GOK, KCPS, 1984

26. Maternal mortality arises primarily from hemorrhage, infection, obstructed labor, toxemia, and septic induced abortion. Estimates vary, and research is limited indeed. On the whole, it appears that about two-fifths of all deaths of women aged 15 to 35 are maternal deaths. Maternal mortality reflects the risks in pregnancy and the number of times a woman is exposed to those risks. It appears that about 200 women die for every 100,000 live births. The leading cause of hospital admissions (1979 data) was pregnancy (34 percent compared to 22 percent for infectious diseases). One-sixth of the deliveries were complicated (Were, 1985). Available information indicates that in 1977, over 500 maternal deaths per 100,000 live births occurred at Kenyatta National Hospital, excluding abortions. Of course, hospitals tend to have disproportionate numbers of complicated labors. Hospitals also have many maternal deaths from primitive abortion (Koblinsky, 1987). On the other hand, a study in Machakos (in the town and surrounding rural area) found a maternal mortality rate of only 80 per 100,000 live births in 1975-79. (Perhaps the low rate can be attributed to an on-going community-based health program.) (Ibid). Some 29 Catholic hospitals around the country report an average maternal mortality rate of about 148 in 1985. About one-fifth of births were considered complicated, involving obstructed labor, caesarean section, or hemorrhage. Their hospitals do not usually attract septic abortion cases (Ibid). Abortion is causing growing concern in Kenya today. Were estimates that roughly 5 percent of all pregnancies are complicated by abortion and sepsis (Were, 1985). With a total fertility rate of over 7, the probability that a woman will suffer a septic abortion is considerable. Taken together, these studies suggest that women in Kenya may face 100 times the risk of death in pregnancy as women in many developed countries.

27. Women at highest risk are adolescent mothers, mothers with large numbers of children born close together; and older mothers. Even women of appropriate age and parity can be at a substantial risk as most births are not attended by trained midwives or physicians.

28. Maternal morbidity is also apparently considerable, although research on it is even more limited. Although women tend to outlive men, many health professionals believe that the disease pattern in the country suggests that women have a higher incidence of morbidity, especially from difficulties related to childbearing. Data from the Machakos health program cited earlier suggest some nutritional stress among pregnant women. The women continued to eat similar food and in similar quantity during pregnancy (except during the last trimester, when they ate less). But their weight gain averaged only about 11 percent, compared to 15 to 25 percent among European and American women (Were, 1985). On the other hand, low birth weight is associated with poor maternal nutrition, and Kenya does not report an abnormally high proportion of low birth weight babies. Anemia is generally not uncommon among women in Africa, and reportedly about 10 percent of Kenya's hospital maternity cases in 1981 presented with anemia (Koblinsky, 1985). Malaria, prevalent in parts of Kenya, can cause or exacerbate anemia and bring about a number of other health conditions damaging to mother and child.

29. Maternal nutrition substantially influences breastfeeding capacity. Western women who breastfeed produce about 850 mls. of milk daily. In Machakos, Kenyan women produced 710 mls. during harvest time and 540 mls.

during the lean season (Were, 1985). Better nourished women also produced higher quality milk with 10 grams of protein and 64.8 kilo-calories per day, while malnourished women produced 6.6 grams of protein and 47.5 kilo-calories (Ibid).

30. Pre-eclamptic toxemia is also a considerable problem: in 1980 about 39 percent of maternal admissions in about 1,500 institutions in Kenya were for pre-eclamptic toxemia, and toxemia accounted for about 1 percent of all deaths (Were, 1985).

31. Sexually transmitted diseases in Africa are widespread and often result in infertility and pregnancy wastage. The infertility often stems from pelvic inflammatory disease developed as a result of chlamydia or gonorrhoea. Some 6 percent of maternity cases in Nairobi hospitals reportedly present with gonorrhoea, and chlamydia rates are higher. Syphilis was also reported in about 3 percent of maternity cases at Kenyatta National Hospital in 1981 (Koblinsky, 1987). AIDS is, of course, increasingly worrying people in Kenya as elsewhere, and about half of the children born to mothers with AIDS will reportedly have the virus.

Adolescent Childbearing

32. The Kenya Fertility Survey of 1977 reported that of the women aged 15 to 19 years, 28 percent were currently married and 7.6 percent were currently pregnant. About one-fifth of births occur to women less than 20 years old. Adolescent fertility is a problem common to both developing and developed countries. In the USA, for example, in 1963, 14.5 percent of all births were to teenagers, increasing to 19.3 percent in 1972 and declining to 12.6 percent in 1986 (Shanghvi, 1981, and Kinney, 1988). Adolescents in Kenya are becoming an increasingly important segment of the sexually active population. Although Kenya has had an official family planning program since 1967, and a strategy for reducing the number of high risk pregnancies among adolescents under 18 years of age since 1972, Government and private clinics have not been able to design culturally appropriate programs for youth. Yet the consensus is that early pregnancy has long-term health, social, and psychological effects on the adolescent.

33. Fertility rates among Kenya's teenagers are apparently increasing. In 1960, the fertility rate was 141 per 1,000 women aged 15 to 19, whereas by 1979 it had increased to 168. Girls are now reaching sexual maturity at a younger age (on average about 13 years), and by 20 years of age the majority of Kenyan women have had at least one child. A seven-week study of the obstetric outcome of teenage pregnancy in the City of Nairobi showed that 18.6 percent of the 5,293 single deliveries were aged 19 years or below (Shanghvi, 1984).

34. The incidence of teenage pregnancies in Nairobi is 18.6 percent as compared to 11.6 percent in rural Kenya. Forty percent of the pregnancies of 225 teenagers ended in abortions, giving an early pregnancy wastage rate of 12.7 percent. The same Nairobi Birth Survey revealed a significant perinatal mortality rate of 142 per 1,000 live births, indicating the high risk nature of teenage pregnancy (Mukolwe, 1987).

35. Maternal mortality rates and low birth weights (below 2,500 grams) are significantly higher among adolescent mothers as compared to other mothers. Adolescents account for 38 percent of all cases of eclampsia in Kenya (Wanjohi, 1984), 36 percent of all cases of intra-uterine growth retardation (Mukasa, 1983), and 45 percent of all cases of vasico-vaginal fistula (Orwenyo, 1984). Because of their ignorance or immaturity, most of the young adolescents (particularly the unmarried) delay or forego antenatal care and suffer more complications such as anemia, malnutrition and pre-eclampsia. Among adolescents there is a higher incidence of prolonged labor and fetal distress during labor (Shanghvi, 1984). Anemia occurred in 17.6 percent of pregnant teenagers compared to 10.5 percent in all mothers surveyed; 13.7 percent of pregnant teenagers had hypertensive disease compared to 10.3 percent in all mothers. The rate for prolonged and obstructed labor was also significantly higher (10.3 percent). Preterm delivery occurred in 23 percent of teenage mothers compared to 16.8 percent when all ages are combined (Mukolwe, 1987).

36. Studies have also shown that increased sexuality is associated with increased incidence of sexually transmitted diseases. For example, of all cases of syphilis in pregnancy at Kenyatta National Hospital, 32 percent occurred among teenagers (Nana, 1982). The incidence of syphilis in teenage pregnancy cases in Nairobi was found to be 4.2 percent, which is twice as high as that found among other older mothers (Shanghvi, 1984). Adolescents suffering from a sexually transmitted disease often do not recognize its symptoms. Embarrassed to go to the hospital to seek help, they often seek treatment from unqualified persons. The result is that most adolescents do not get adequate and timely treatment and suffer chronic ill-health, including sub- or permanent infertility.

37. Abortion has been found to be a major contributor to the emergency gynecology workload in all hospitals in Kenya. Of all the deaths associated with abortion, 24 percent are among teenage mothers (Murugu, 1984). At Kenyatta National Hospital, 28 percent of all abortion cases occur among women less than 19 years of age, and of these 56 percent are procured illegally (Aggrawal, 1982). Elsewhere in Kenya, the proportion of women admitted with abortion complications who are less than 19 years of age ranges from 18 to 68 percent (Mukolwe, 1987).

38. Pregnant adolescents in Kenya, like those in most developing countries, undergo enormous social, economic and psychological trauma. The pregnant adolescent who is at school stands the risk of being expelled, thus terminating her formal education and any prospects of competing for a skilled salaried job. If she is lucky, she may deliver the baby and then apply and be readmitted into another school, where her history is not known, to continue with her education. In such a case, the young baby is left with the grandparents who may not be able to bring him/her up in a satisfactory manner.

39. The pregnant adolescent who fails to get readmitted to a school after delivery may be forced into an early and, sometimes, unstable marriage and continue with more pregnancies which, unfortunately, may be too close. Some pregnant adolescents may decide to seek an abortion, thus facing all the risks that have already been discussed. In some cultures in Kenya and elsewhere, a pregnant unmarried adolescent is looked down upon by the clan. (In contrast,

in a few other cultures an unmarried pregnant adolescent is seen as a blessing, in that the pregnancy is viewed as a sign of health, wealth and therefore a guarantee of marriage.) Many children of unmarried adolescents have no legal rights to inheritance except from their adolescent mothers; some are reared under extreme conditions of poverty.

40. The recently concluded Annual Kenya Medical Scientific Conference in Nairobi on Adolescent Fertility and Schoolgirl Pregnancy observed that:

- Kenya's teenagers become sexually active at a much younger age than in the past.
- Teenagers are very ignorant of the consequences of sexual intercourse.
- About 78 percent of urban girls in Nairobi and Mombasa aged 14 to 17 years are sexually active; a large number of these have more than one partner.
- Youth are ignorant of the use of contraceptives (only 5.5 percent of sexually active girls were using contraceptives).
- Two-thirds of the boys and 40 percent of the girls in the study believe a woman gets pregnant during her menstrual periods.

41. In view of these findings, providing "family life education" and contraceptives to sexually active adolescents who want to control their fertility may offer a better choice than unwanted pregnancies or illegal and often dangerous abortions. It may also be important to provide "family life education" in schools, which Kenya has begun, and to allow teenage mothers to continue their education.

SAFE MOTHERHOOD

42. A woman's health and nutritional status substantially affect her capacity to withstand difficulties during pregnancy, childbirth, and the post-partum period as well as her capacity to produce a strong and healthy baby and to nurse and care for it. Many women could help themselves if they had basic information about childbearing, family planning, and nutrition; but they lack the information and the resources to use it. Improving the incomes, education, health, and nutritional status of women can thus help reduce maternal mortality and morbidity.

43. Family planning information and services can substantially improve maternal health by enabling women to time and space their pregnancies. Specific efforts to address maternal mortality and morbidity could have a substantial effect as well. A recent World Bank study emphasizes that the three essential elements are prevention of complications; routine care; and backup for high risk and emergency cases (Herz and Measham, 1987). Much maternal mortality and morbidity could be prevented by pregnancy risk screening and referral for high-risk women. Adequate care for women with supposedly routine pregnancies is equally essential. About four-fifths of the births in rural Kenya are assisted by traditional birth attendants, not all of whom are thoroughly trained. Traditional birth attendants and other health

workers can be taught improved techniques so that they can manage routine deliveries more effectively. But they also need an emergency backup system -- first-level referral facilities and transport capacity.

44. To provide the necessary preventive, routine, and backup (first-level referral) care, the World Bank has recommended a three-pronged approach:

- Stronger community-based health care (relying on non-physician health workers, often drawn from the communities they serve) to screen pregnant women, identify those at high risk, and refer them for help; to provide prenatal care and safe delivery for women at less risk; to provide family life education and family planning services; and generally to promote better family health and encourage people to seek the health care they need,
- Stronger referral facilities -- hospitals and health centers with beds -- to act as a backup network, to take care of complicated deliveries and obstetrical emergencies, and to provide clinical and surgical methods of family planning,
- An "alarm and transport system" to transfer women with high risk pregnancies and emergencies from the community to the referral facilities in time.

45. Such maternal health and family planning services would normally be built into Government or NGO primary health care programs. Their cost to Government depends on what services are made available and how thinly those services are spread. Management and logistics and the ability of clients as communities to pay for services (through cash or in-kind contributions) will also affect the Government's costs. The principal costs are likely to be in the referral system. Community-based services and alarm and transport can vary considerably, but some measures can be financed substantially by communities as they become aware of the benefits (Ibid).

46. To see what such an effort might cost and accomplish in countries similar to Kenya, the World Bank study provided a rough model, based on information from Kenya among other countries, of a basic primary health care system with increased attention to maternal health and family planning. Because maternal health and family planning aspects are integrated into the broader system through multi-purpose health workers and facilities, the model does not split out the marginal costs of "adding" maternal health or family planning components. But some notion of marginal costs can be obtained by comparing what is required to what is presently available in a given place. Of course, this model does not suit Kenya (or any specific area) in every respect, but it may be of interest in broad outline. It is given as Annex B.

47. The implied annual operating costs for this model are \$1.25 per capita population (roughly half in salaries). The capital costs annualized over a ten-year period come to \$.25, so that the total cost is \$1.50 per capita population. But this is for a PHC system able to meet the basic health

needs of the population including an outreach system to offer improved maternal and child health and family planning services (Ibid). Kenya thus already provides much of what is required.

Kenya's Maternal and Child Health and Family Planning Services

48. Kenya has already made considerable progress in establishing such a primary health care system. But as in almost any country, health and family planning services are not equally strong or readily available everywhere. Innovative approaches being taken by Government (including encouragement for NGOs) will help pave the way for expanded efforts to improve maternal health and extend family planning.

49. Until 1970, county councils and missions or other private facilities were responsible for basic health care, and levels of service were generally very weak (Were, 1985). During the last 17 years, the Government of Kenya has stressed the need to establish primary health care, particularly maternal and child health and family planning services, to reach the rural and urban populations. The Ministry of Health manages the Government's primary health care system. Substantial progress has been achieved, and about 70 percent of the people who now use these services are women and children. Family planning services were introduced as far back as 1955 by the Family Planning Associations of Nairobi and Mombasa, which later became the Family Planning Association of Kenya (FPAK) (now an affiliate of the International Planned Parenthood Federation). FPAK helped build public understanding of family planning and introduced modern contraceptives. In 1962, the Government introduced family planning as part of the maternal and child health services of the Ministry of Health, while FPAK (then with 40 clinics) continued to work at the community level.

50. While Government is the major source of health care in Kenya, non-government facilities still reportedly provide some 30 percent of health care. The Government has made a series of efforts to establish basic services and provide referral care within a system managed by the Ministry of Health. Kenya now has roughly one doctor for every 10,000 people, compared to one for about 17,000 in low income countries, excluding China and India, and there are about 11 nurses for every doctor. Regional distribution of health care providers varies.

51. In 1972 the Government began the Rural Health Development Program to establish primary health care. Under the 1974-78 Development Plan, primary health care was designed around a Rural Health Unit that would serve 50,000 to 70,000 people. Within each unit, a district hospital or health center would operate, with several satellite sub-health centers, dispensaries, and mobile units reaching into the community. Under the 1979-83 Plan, the concept evolved into a Health Care Network including district and sub-district hospitals with more emphasis on front-line care at the community level (Were, 1985 and Koblinsky, 1987). By 1983 some 1,300 Government rural health facilities existed (up from 550 in 1970) (see Table 8). These employed some 31,000 health workers. By 1982, some 77 percent of the population were within 8 kilometer of a health facility and 42 percent were within 4 kilometers. But only 30 percent were within easy walking distance, 2 kilometers. Coverage varied considerably by province, with more accessibility in densely populated Central, Nyanza, and Western provinces (Koblinsky, 1987 and Were, 1985).

Table 8: Health Care Facilities by Provider, 1983/84

	Number	Hospitals		Urban Health Center/Clinics	Rural Health Centers	Rural Dispensaries Clinics
		Number	Beds % Total			
<u>Government</u>						
MCH	80	16,776	65	31	245	1,032
Defense Dept.	2	108	<1	43		
Prisons Dept.	9	356	1	28		
Municipalities	1	350	1	107		
Missions	42	5,480	21	11	72	165
Private Companies	4	257	1			59
Private "Market"	44	2,355	9	22		17
TOTAL	182	25,682	100	242	317	1,273

Source: MOH, Expenditure and Financing of the Health Sector in Kenya, 1986.

52. Over 1974-78, the Government introduced a Maternal and Child Health and Family Planning Program within the broader context of primary health care. By 1978, Kenya had 600 clinics providing maternal/child health and family planning services (about twice the 1972 level). By 1979-80 some two-thirds of women lived within a moderate distance of such services (Were, 1985). But family planning services were weak, and pronatalist cultural pressures persisted in a society where a woman could find herself a co-wife if she opted for family planning (Ibid). Around this time non-governmental organizations intensified their efforts to change community attitudes, to create a more supportive climate in which women could opt for family planning (Ibid).

53. FPAK expanded its locally based activities, and Kenya's national women's organization, Maendeleo ya Wanawake, began a community-based effort to increase understanding of family planning. Eventually Maendeleo also began providing community-based services. Several Church-run health programs also introduced family planning. These early programs encountered some cultural sensitivity and operational difficulties, but they developed acceptable and practical approaches that paved the way for expansion. In 1982 the Government began an Integrated Rural Health and Family Planning Program which increased the emphasis on community health and family planning services. By 1986, community health projects were underway in 14 districts, focusing on maternal and child health and family planning (Were, 1985, and Koblinsky, 1987). FPAK, Maendeleo, and the church programs also sharply expanded (see below).

54. While the Government has clearly demonstrated its commitment to reach the under-served population, especially rural women and children, efficient health services are not available everywhere, and several broad issues have emerged:

- About half of the households are located beyond 4 kilometers from health care (70 percent are more than 2 kilometers away);
- Most people do not know how to make the most effective use of either preventive or curative services even when available;
- Most health workers are not using the most effective methods of preventing illness or providing health care or family planning;
- Family planning remains sensitive and sometimes poorly understood at the local level (Were, 1985).

55. Of those seeking health services the majority are women and children. To serve them better more effective rural primary health services must be designed and alternative approaches to increase coverage should be explored. The Government has identified specific issues to be addressed:

- Inadequate and uneven coverage of the population due to insufficient health service delivery points, made worse by population growth and under-utilization of some existing facilities;
- Inadequate levels of service because of shortages of staff with adequate medical skills and ability to communicate (not least on family planning);
- Excessive deployment of health manpower in urban relative to rural areas;
- Unsatisfactory utilization of equipment and transport and shortages of drugs, contraceptives, and other essential supplies reflecting financial constraints and managerial difficulties;
- Inadequate flow and utilization of information, which impede planning and evaluation.

56. The Government has determined that rural health care should continue to be the focus of the primary health care system and has identified several steps to strengthen this system:

- Increase the emphasis on maternal and child health and family planning services in order to reduce morbidity, mortality, and fertility;
- Increase coverage of health services in rural areas;
- Consolidate urban and rural curative and preventive/promotive services;

- Strengthen the Ministry of Health's management capabilities, particularly at the district level;
- Increase inter-ministerial coordination;
- Increase alternative funding mechanisms and encourage non-governmental organizations to provide health and family planning services.

57. To establish health services throughout the country, the Government has carried out several innovative efforts, including static and mobile health units in the remote areas of the country. It is also increasing its longstanding training efforts to provide a broader array of health workers, particularly those who can serve at the local level.

58. A much stronger consensus in favor of family planning has emerged among Kenyan leadership in recent years, and the Government has taken several steps to build interest in family planning and improve services (by expanding the variety of family planning methods available, by strengthening Government service delivery, and by facilitating the work of non-governmental organization in this field). A National Council for Population and Development works in cooperation with the Ministry of Health and other ministries as well as private organizations.

59. As to maternal health, the Government is expanding a locally based nutrition program to prevent malnutrition among children under 5 and pregnant and lactating women. It is also training traditional birth attendants as part of a broader effort to integrate traditional and modern medicine. It is also increasing the number of trained Government midwives.

60. To expand basic health care including maternal/child health and family planning, the Government has determined that the approach of community-based health care (CBHC) should be strengthened and expanded. All communities are to be encouraged and guided in taking more responsibility for their own health (GOK, Development Plan, 1984-88). Front-line services will be expanded through efforts that communities themselves help to sustain. In this case, the sustainers in the community and the front-line service providers (nurses and midwives) are mainly women. The effort has its roots in "harambee" and in several efforts by non-governmental organizations building on the tradition of women's group self-help efforts.

Non-Government Organizations (NGOs)

61. The Government of Kenya officially encourages NGOs to participate in the overall Kenyan program of maternal and child health and family planning, and works with them to identify their comparative advantages.

62. NGOs have played an unusually strong role in Kenya in developing community-based health and family planning services. These are built on the principle of outreach: people drawn from the community they serve bring information and some services to neighbors and friends. They help their clients decide if they need more extensive services and encourage them to seek such services at nearby clinics, health centers or hospitals. The community-

based services complement Government primary health care by building interest in family health and family planning and by enabling communities to help with the actual provision of front-line care. This appears to increase impact substantially (particularly in family planning practice) with only a modest increase in program cost.

63. Actual cost data covering both program and community contributions are scarce and ought to be developed. But the marginal cost for community-based outreach is certainly modest compared to the costs of establishing the primary health care system, and outreach can promote more efficient use of primary health care facilities. Studies of impact thus far focus on family planning. The increase in demand for family planning is so large (FPAK and MYWO both report a trebling) that the investment in community-based services is almost certainly highly cost-effective. Outreach has been used less for broader health services. But some efforts to address maternal health through prenatal screening and care are underway, using traditional birth attendants as well as other community workers, and more ought to be considered.

64. The work of three NGOs deserves highlighting: the Family Planning Association of Kenya, the Christian Health Association of Kenya (CHAK), and Maendeleo ya Wanawake Organization (MYWO).

The Family Planning Association of Kenya

65. FPAK's role in national maternal/child health and family planning is to disseminate information on population, family planning, and family life education and to promote contraceptive practice. It is expanding its effort to provide quality family planning services using innovative approaches for specific target groups. It promotes community-based family planning and has pioneered in integrating family planning with other development activities in collaboration with the Government of Kenya and other agencies. The KCPS revealed that FPAK contributes about 27 percent of the family planning services in Kenya. Three FPAK projects are particularly interesting: Planned Parenthood and Women's Development (PPWD), the Community-Based Distribution Program (CBD), and the Voluntary Surgical Contraception Project (VSC).

66. The PPWD program, started in 1979, aims to train and work with women's groups to improve their socio-economic status and to inform other young women and girls about family planning, child care, nutrition, family life, breastfeeding, and small-scale industries and trade. The activities of the groups elevate women's status at home and in the community, changing the outlook of many in the community, not least the men, toward the women. When this happens, family planning tends to become more accepted.

67. The CBD program was initiated in 1982 to deliver contraceptives in villages using trained lay educators from the communities -- 98 percent of the lay educators are women and they work primarily with women's groups. The lay educators motivated so many family planning clients that the workload at the static clinics trebled. The program is being considerably expanded.

68. FPAK's effort to introduce voluntary surgical contraception (VSC) (both tubal ligation and vasectomy) has demonstrated that when quality services are made available, the demand for these services sharply increases.

This will be of interest not only in Kenya but in other countries where surgical contraceptive is not yet available. Previously unpublished data from FPAK's Nyeri Clinic actually show steadily increasing demand, and some 5,000 women have now had tubal ligations (TL) (see Table 9). Initially, these data show, most people seeking VSC were 30 to 40 years and had more than five children. By 1986, some 19 percent of VSC acceptors were aged 25 to 29 compared to 9 percent in 1982. However, over 1982-86, women aged 25 to 34 constituted about half the acceptors (see Table 10). Voluntary surgical contraception apparently met a need that temporary methods could not fill. Among this clinic's 2,916 acceptors, 57 percent had six or more children. Almost one-third of these VSC acceptors had never used any family planning method before. Of those who had, most had used contraceptive pills or IUDs (see Table 11). About 82 percent of these VSC acceptors were married. Some two-thirds came from outside the Nyeri district, showing that women will travel long distances provided they are sure of getting quality services scheduled on the same day so that they can return home and carry on with their work as soon as possible. These data help considerably to establish the acceptability of surgical contraception in Kenya.

Christian Health Association of Kenya

69. The Christian Health Association of Kenya coordinates Protestant Churches and societies which provide extensive health care in Kenya. CHAK members maintain 15 hospitals, 4 cottage hospitals, 10 health centers, and 15 dispensaries throughout the country. CHAK provides both preventive and curative services and offers maternal and child health and family planning services through hospitals, static and mobile clinics, and community-based health care (which includes distribution of some contraceptives). At the request of the Government, CHAK is working to strengthen health services at five hospitals in various provinces and increasing its attention to family planning. It is now providing help with delivery, ante-natal and post-natal care, and family planning.

Kanu/Maendeleo ya Wanawake Organization (KANU/MYWO)

70. KANU/Maendeleo ya Wanawake Organization is the oldest and largest voluntary women's organization in Kenya.

71. After Independence, Maendeleo focused on efforts to improve social conditions, when leaders called for "harambee" for national development. Today the goal of the organization is to promote socioeconomic development and leadership capacity for women throughout Kenya.

72. MYWO now operates programs in five main areas: leadership development, maternal child health and family planning, nutrition, the environment, and income generation. While all affect women's health indirectly, the maternal and child health and family planning program is most relevant.

Table 9: Family Planning Association of Kenya
FP Acceptors by Method and Year

YEAR	PILLS	INJECTION	IUD	DIAPHRAGM	CONDOMS	FOAM TABLETS	JELLIES	TUBAL LIGATION	VASECHOMY	OTHERS	TOTAL
1975	4086	13829	1061	49	808	348	80	-	-	308	20569
1976	4822	17184	1583	43	238	251	44	-	-	1078	25243
1977	4522	21837	2238	55	303	351	47	-	-	1571	30924
1978	5325	25763	3264	28	506	1006	231	-	-	1738	37861
1979	6823	27823	4030	28	565	1064	145	-	-	1771	42249
1980	7630	23522	5700	85	883	1193	133	50	14	4451	43597
1981	7512	22340	8400	41	1212	1274	146	30	7	1700	42625
1982	8591	22925	11004	106	1548	1440	186	70	10	350	46150
1983	12349	31743	15007	66	2031	2002	317	335	13	562	64077
1984	22807	48721	18176	96	3479	3822	608	688	14	591	98300
1985	41736	64808	28506	147	5819	6562	106	1440	13	5004	152688
1986	52448	93905	21241	155	13009	7601	471	1570	18	2498	191328
1987	24685	54502	8414	13	3482	5812	1200	2868	17	2713	100821

Source: FPAK monthly annual reports (previously unpublished)

Table 10: VSC Acceptors by Age in FPAK Clinic in Nyeri
(Percent)

	1982	1983	1984	1985	1986	82-86
24 years or less	0	1	2	1	0	1
25-29	9	17	14	14	19	15
30-34	41	54	46	36	32	38
35-39	31	27	37	32	30	30
40-44	4	0	1	13	15	9
45-49	14	0	0	4	3	3
<u>Over 50</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>3</u>
100%	99	99	100	100	99	99
Total Number	109	168	403	666	607	1953

Source: FPAK reports (previously unpublished)

Table 11: Previous Family Planning Practice of VSC Acceptors
Nyeri Clinic (1982-86)
(Percent)

Pills	IUD	Condoms	Tablets	Injection	None	Not Stated
23.7	15.7	3.6	5.2	11.9	32.0	7.9

Source: FPAK reports (previously unpublished)

73. In 1979 MYWO decided to begin a program to inform and educate its members to utilize the health and family planning services offered by the Ministry of Health and other agencies. This project has now been extended to cover 14 districts throughout Kenya. An evaluation several years ago found that about one-third of the MYWO members surveyed were practicing family planning. After group members found it difficult to obtain adequate family planning services regularly at whatever health facilities existed, MYWO began a Community Based Distribution of Contraceptives (CBD) Program. Currently, there are over 500 trained group leaders involved in the CBD Program. They in turn select distributors from among their own group members to promote family planning and maternal health, distribute contraceptives, refer clients to health services when appropriate and keep client records. In some places the CBD distributors also help identify high-risk pregnancies and encourage pregnant women to seek prenatal care and assistance with childbirth. The CBD program has proved so successful that the Government has asked it to expand

its operations. Program achievements include training about 500 women to provide education on family planning, sanitation, and maternal and child health and nutrition; identifying and serving over 200,000 clients in maternal and child health and over 80,000 new clients for family planning; and encouraging communities to form viable women's groups which initiate and implement various income generating projects.

ISSUES AND RECOMMENDATIONS

Program Design and Implementation

74. It has been observed that health programs meant to improve women's health -- like other programs meant to benefit women -- tend to achieve more when they involve women heavily in design and implementation. Yet in practice women are often not much involved. There has been a tendency for programs to be developed more for, than by women. Kenya's experience, particularly with community-based programs, shows the potential for more extensive involvement of women in health and family planning.

Rationale for Family Planning

75. Experience has shown that many family planning programs are designed with too much emphasis on the macroeconomic benefits of slower population growth and too little on the benefits for maternal and child health. From the point of view of the client, usually a rural woman, family health is a major worry. Better family health ought to be more emphasized as a rationale for programs affecting it, including family planning as well as maternal health care, breastfeeding, child health care (immunization, nutritional surveillance, and so on). Safe motherhood is a natural concept to most women, as is child survival. Women also see safe and effective family planning as an important way to facilitate their broader efforts to improve family wellbeing, as the capacity to time pregnancy can make it easier to seek training, join self-help programs, or otherwise improve productivity. Of course, in family planning as in all health programs, it is important for women to understand the medical risks and benefits so that they can seek help for any difficulties. It is also important for women to understand relative risks -- family planning is generally far safer than childbearing "too early, too late, too often, or too close". Kenya's experience demonstrates that programs adopting a "client's perspective" can effectively inform women about family planning and other health care options so that they can make their own informed choices.

Increasing Attention to Maternal Health

76. Particularly at the community level, it may be possible to increase prenatal screening to identify high-risk pregnancies; improve maternal education so that women can learn "danger signs" in pregnancy; extend the training of traditional birth attendants (and the provision of related supplies); and strengthen the "alarm and transport" concept. At the first level of referral facilities, it will be important to strengthen or establish the capacity to provide intravenous therapy and to perform cesarean sections. Throughout the system, more consideration should be given to regular provision of antibiotics, medications to prevent bleeding, and clean blood supplies.

Educating community members on AIDS and other sexually transmitted diseases and providing them with condoms can help prevent the spread of these diseases and so protect children as well as their parents. This is particularly important in communities where many men spend considerable time away from home. These diseases are a sensitive subject in any country, but it is of considerable importance to deal with them effectively.

Community-Based Programs

77. Over the past 5 years or so, there has been a deliberate effort by the Kenyan Government and other agencies to develop community-based health and family planning programs. Full Primary Health Care is costly to implement on a large scale. If such programs are to succeed, more cost-sharing and involvement of the people in health decisions that affect their own health are practical necessities. With a growing population, the Government cannot afford to provide for all the health needs of every individual in the country. The Government cannot hope to overcome limitations on health manpower and facilities overnight. Under the circumstances, it is only fair that communities be encouraged to develop innovative strategies and programs that are less costly to implement and to which the community members can contribute financially or through donated time or material resources. Community-based measures can also strengthen whatever other PHC is available by providing more direct feedback from clients and by educating people on their own health needs so that they can more effectively utilize available health care. The community-based approach is currently being tried in Kenya by the Government and by private organizations cooperating with the Government. The Integrated Rural Health and Family Planning Program of the Ministry of Health is supported to some extent by communities. The community-based health programs (including contraceptive distribution) of KANU/Maendeleo, AMREF, Chogoria Hospital, other church-affiliated hospitals, and FPAK are involving communities on a voluntary or partially paid basis. All of these have indicated that the community-based approach can be successful. However, they have not been evaluated sufficiently to pinpoint all the factors influencing their success.

78. While the community-based health and family planning programs described here are widely considered to be highly cost-effective, there is a real need to evaluate them using accepted scientific techniques. As part of this process, several questions should be addressed, including (a) what additional maternal health measures could be added at the community level, bearing in mind that many of the community-level workers are illiterate and the system can become overloaded; (b) how could linkages with PHC facilities and staff be improved; (c) what are the costs and benefits of alternative management approaches; and (d) what kinds of contributions could communities make to such programs?

79. Closer assessment of community-based programs might help to break down resistance to them among medical professionals who have not always trusted lay people in providing basic health or family planning services despite increasing evidence that community-based programs can be a highly effective component of a primary health care system.

Program Management

80. Program management in health as in other sectors has emerged as a significant problem, particularly as programs expand. Understaffing, inadequate training for staff, inappropriate assignment of trained staff, and inadequate support for field staff hamper some programs. Irregular supplies of key medicines, contraceptives, and other equipment are often cited as problems. Giving maternal health and family planning adequate priority and providing enough trained staff could increase the impact of these services. Improving inventory control and logistics through some relatively low-cost measures could help considerably, as could strengthening record-keeping and accounting. Also it may be advisable to check more regularly to ensure that maternal health and family planning services are being provided on a daily basis to avoid frustrating clients. About 2,000 service delivery points are reported to offer family planning services, but there is little information on actual performance. When services are provided, the quality of care should be assessed, as the attitudes of service providers may affect the willingness of women to seek health or family planning care.

Research and Evaluation of Programs

81. Research on some women's health issues is lacking, so that it is difficult to design and develop appropriate and viable programs. For instance, there is little scientific research on the problems older women are likely to encounter after decades of work as farmers, on changing patterns of morbidity as development proceeds, and on female circumcision and its health implications. Most programs lack effective appraisal mechanisms which would permit assessment of the performance of the workers themselves and the impact of their activities. There are not enough people trained in monitoring and evaluation techniques and transport capacity is low. Inadequate coordination of programs to address women's issues has also constrained program operation. More information should be gathered from existing programs and more action research is needed on topics that affect women's health, nutrition, and fertility. More women should be involved in this process -- including women from rural communities who can provide useful advice on what is needed and what approaches will be welcomed.

Incorporating Health and Family Planning in Other Sectors

82. Family health and family planning concerns can often be addressed through programs in other sectors. This may have the added benefit of improving men's understanding of these concerns. Formal and non-formal education, radio and public media, and agricultural services can all contribute. While not all areas are suited to food cultivation, agricultural and other development programs should be designed to better address the nutrition needs of families, especially women and children.

Mobilization of Women

83. In health as in other sectors, there is a need to build on the tradition of local women's groups in order to give women more voice at the district, provincial, and national level in policies and programs that affect

them. While women staff the local health centers as nurses and midwives and participate in women's groups, few women play a role in the management of health services. About three-fourths and four-fifths respectively of recent college graduates were women. But only about one-fourth of the clinical officers (in charge of health centers) recently graduating were women, and only between 10 to 20 percent of recent M.D. degrees have gone to women. Gradually more women are moving into positions of responsibility. But, particularly in a health system focusing so much on maternal and child health, it would make sense to give women more influence at senior levels. In this regards, the role of the Women's Bureau in policy formulation, documentation, and implementation ought to be strengthened.

Chapter IV. WOMEN AND RURAL HOUSEHOLD WATER SUPPLIES

INTRODUCTION

1. The scarcity of water for household or productive purposes is a significant problem in much of Kenya. The uneven distribution of rainfall and surface water resources has been a limiting factor in population distribution and in potential land use. The Government of Kenya has given considerable importance to the provision of water services in its development strategies. In urban areas, publicly financed water services reach about half the population. In rural areas, where over 80 percent of Kenya's people live, nine of ten people rely for household water on traditional natural sources of water -- streams, springs, and the like. A few have wells or other protected water supplies. Providing household water is generally the responsibility of women. They and their children, especially girls, collect the water, and govern its use in the household. While water needs vary among the different agricultural, pastoral, nomadic, and peri-urban communities, women in all districts are the principal users and managers of household water. As the shortage of rural water supplies especially affects women, they have the incentive to protect and maintain whatever water supplies are available.

2. In improving rural water supplies, the Kenyan Government -- like many others -- first looked to relatively centralized and highly engineered approaches. In practice, these have not always produced lasting effect. The initial difficulty was a design entailing high investment costs but promising -- sometimes wrongly as it turned out -- reliable water supplies once in place. Unforeseen practical difficulties in field operation and maintenance often led to substantial water losses which increased recurring costs. Systems often fell into disrepair and disuse. These approaches seldom involved target communities, much less women, and many of their operational deficiencies can be traced to this omission.

3. To improve the sustainability and affordability of water systems, the Government recently also initiated more cooperative approaches with the communities to be served, building on Kenya's tradition of decentralized management and local responsibility for water supply. Promising community-based approaches are emerging through joint efforts of the Government and Kenyan NGOs, with some external support. Thus far these tend to provide more reliable supplies of water through technically simpler means, with lower associated initial and recurring costs and a higher share of costs absorbed by the community. Fullfledged community participation in design and management -- including design and management responsibilities for women -- are an integral part of these approaches. Stronger community participation generates greater willingness for community contributions to financing rural water supplies, which will be important if such water supplies are to be instituted widely. If rural water supplies can be expanded through such efforts at an affordable cost, the time women now spend collecting water could be put to more productive use, and women would be saved from considerable physical stress and drudgery. Moreover, the community could benefit from the health impact of clean water.

RURAL WOMEN'S RESPONSIBILITY FOR HOUSEHOLD WATER

4. Rural Kenyan women are usually obliged to collect water several times a day, often over considerable distances, and to make difficult household decisions about the use of scarce supplies to meet the drinking, cooking, and washing needs of families with an average of eight children. About 90 percent of rural women obtain their water from unprotected sources such as springs, ponds, streams, and hand-dug wells -- many polluted and unsafe. A small minority has access to safe water supplies from point sources such as protected springs and handpumps, and still fewer are served by piped water supplies with communal standpipes (kiosks), yardtaps, or house connections. Water is usually carried by women on their heads, backs, or shoulders in clay pots, gourds, and large tins weighing four to forty-four pounds (White, 1972). In particularly dry periods, men may occasionally help, especially if they have ox carts, bicycles, or donkeys.

5. Water collection is thus an arduous job and can consume as much as 40 percent of a woman's day, when the time to get to and from the source and the queue time are calculated for all trips (see Table 1) (Whiting and Krystall, 1977).

Table 1: Finding Water: Time, Distance, and Amount Carried

<u>Distance from source</u>	<u>Average time per trip</u>	<u>Average time per day</u>	<u>Amount per hour spent finding</u>
Short	.75 hr	3.5 hrs	25 litres
Short-middle	1 hr	3 hrs	23 litres
Middle	1.25 hrs	4 hrs	19 litres
Middle-long	1.75 hrs	4.5 hrs	16 litres
Long	2.75 hrs	5.25 hrs	9.5 litres

Source: Krystall and Gomme, 1979

6. While women in all areas face broadly similar constraints in water collection, individual situations and options differ as much as the climate, terrain, and settlement patterns. One of the major distinguishing features follows the official classification of lands into high and low potential based on average rainfall (see Chapter I). High potential lands have traditionally been the target of more investment since the majority of people live there, and water is naturally more accessible because of the higher rainfall. But much of that land is hilly, and even short trips can be physically taxing. According to a recent survey by the Government, women in high potential areas now travel on average less than 1.5 kilometers to get water but must make two to three trips daily to collect enough for household use. At a walking speed of 4 km/hr this implies roughly 2 hours daily spent hauling water.

7. Women living in the more sparsely populated low potential areas face more difficulties in collecting sufficient water because few water sources in the vicinity exist. These lands are dry and serve primarily as rangeland or for wildlife. In the Kitui District of Eastern Province, for example, about 48 percent of the women travel at least 8 kilometers round trip to collect water, while 15 percent travel over 12 kilometers (Roark and Mbithi, 1985). The situation is most acute during the dry season, when the few available sources tend to dry up and women must travel still further.

POTENTIAL BENEFITS OF IMPROVED RURAL WATER SUPPLIES

8. Provision of safer and more convenient water supplies can provide multiple health, economic, and social benefits for women and more broadly for families. In areas with a market-oriented economy, it is reasonable to value time used to carry water at the current market wage rate for unskilled labor at about Kshs 4 per hour. Potential benefits in improved family welfare and increased "human capital" are quite plain as women apply time saved to other domestic or recreational activities, to education, and to child care. Improvements in health are usually less easily isolated as they are linked to other factors including employment or earning prospects, education, availability of health care, and environmental sanitation. Clean water may be important but not sufficient in itself to improve family health.

Health Benefits

9. Women suffer a variety of health problems arising from transporting heavy loads of water. Most immediately, these include physical injuries and accidents such as slipped disks, broken bones, and sprains as well as a high incidence of headaches, backaches, and osteoarthritis of the knee (Curtis, 1986). Carrying water can also threaten maternal and child health. During pregnancy and lactation, maternal nutrition is critical to both mother and child, and the mother's caloric needs rise considerably. During lactation, the mother's need for liquid -- and so her thirst -- also rise substantially. Anemia tends to be most severe during pregnancy and can be exacerbated by the requirements of heavy physical labor. Studies in Zaire and Gambia demonstrate the negative influence of excess walking on maternal nutritional status, on output of breastmilk, and on infant mortality (Elmendorf and Isely, 1982). Women whose nutritional status is sufficiently compromised may not bear healthy infants or recover their strength.

10. More generally, diseases associated with contaminated water constitute a serious health problem in Kenya as in many tropical areas. Water-borne diseases include diarrheal infections, skin and eye infections, malaria, schistosomiasis, and other parasitic infections. Transmission of water-related diseases can often be complex, with more than one route of transmission (polluted water sources, poor excreta disposal, food contaminated with excreta, poor drainage, poor personal hygiene, and unsanitary environmental conditions). In Kwale, for example, children were particularly likely to get schistosomiasis in households with smaller amounts of daily water consumption (5.0 to 9.9 liters per capita per day). Discussions with

their mothers revealed that the infected children tended to use the small amounts of available safe water for drinking and bathed relatively often in marsh water polluted by excreta (Stephenson, et al. 1986). Improving access to clean household water helped break this chain of disease transmission.

11. When men or children are sick, it is women who are expected to care for them -- even if the women themselves are sick or pregnant. The high incidence of water-related diseases thus carries a special cost to women in "nursing time."

12. Even where clean water supplies exist, ignorance and poor environmental sanitation can undo the benefits. Clean water can be easily contaminated through collection and storage in dirty containers. Women or children can inadvertently contaminate the water they collect by failing to wash their hands at appropriate times or by failing to cover the stored water. Poor environmental sanitation including failure to build or use latrines is a major concern in many areas. To ensure health benefits, improved water supplies ought to be combined with improved sanitation and health education.

Social and Economic Effects of Time Saved

13. One of the principal benefits to women of improved water supplies is the time saved from not having to haul water from distant sources. Such savings often represent a substantial reduction in the daily workload of a woman and can lead to improved productivity, better management of daily tasks, and more discretionary time for herself. In Nyabera, a village in Nyanza Province with moderate rainfall, women with access to improved water sources realized daily time savings of nearly 5 hours using household yard taps and 3.5 hours using communal waterpoints (CWPs). Data allow a direct comparison of time-savings among households using improved water supplies and those using traditional waterpoints (see Table 2).

Table 2: Impact of Improved Water Supplies in Nyabera Village on Time Use

	<u>Users</u>		<u>Non-users</u>
	<u>House Taps</u>	<u>CWPs</u>	<u>Traditional</u>
Av. trips per day	5.9	4.4	2.9
Av. time per trip	5 min.	27 min.	2 hours 7 min.
Total time per day	29 min.	1 hr. 48 min.	5 hours 24 min.

Source: Whiting and Krystall 1977

14. In many communities, drawing water is a household activity shared by family members. In the semi-arid region of Kitui, installation of standpipes saved individuals responsible for water collection 3.5 hours per week. With water collection shared by two to three household members, this implied a household time-savings of 10.5 hours -- the equivalent of one day's productive labor (Whiting and Krystall 1977).

15. Many women voluntarily use the extra time to make additional trips to collect water. While this often reduces the time saved, women value the additional water for improving hygiene, enhancing household cleanliness, and maintaining animals (Donaldson 1984). In Meru District, for example, women increased the number of trips per day from two to three or four, effectively raising the amount of water collected daily by about half (Krystall and Whiting 1977).

16. The allocation of time saved reflects a woman's set of preferences as to income, family welfare, and leisure and the importance she attaches to her children's welfare. Usually women apply some time savings to other household activities, in particular childcare and food preparation. Some women take advantage of adult education (KWAHO n.d.). Often the experience women gain through their involvement in water projects gives them confidence to identify other solutions to meet community priorities. In the Ngusuria Water Project in Kiboino, women initiated community projects including construction of a school, a clinic, a cattle dip, a goat project, and other productive activities (Donaldson 1984). Women also often take on some of the water chores or other tasks previously carried out by the children in the household (Whiting and Krystal 1977). Reducing the burden of water collection for children is especially significant because children are often kept from school to help with chores. Increased school participation and more time for homework are benefits often cited (Donaldson 1984; Krystall and Whiting 1977; KWAHO n.d.). These are particularly vital for the educational performance of girls, given their high drop-out rates at the end of primary school.

17. Easing the burden of water collection facilitates the development of income-generating projects. In some of these projects, women have established small irrigated plots near newly installed standpipes and cultivated cash crops or vegetables for home consumption and surplus sales (Gachukia 1979; Dworkin 1980). Experiences suggests, however, that it is important to identify income-generating activities that can be assumed without much additional labor or capital (Carruthers 1973; Whiting and Krystall 1977).

18. Many improved rural water supply projects rely on women to volunteer as maintenance and repair attendants. Over the long term, it will be difficult to sustain this donation of time without some compensation. Communities will have to identify and develop fund-raising activities to sustain the necessary operation and maintenance efforts.

THE EVOLUTION OF RURAL WATER SUPPLY PROGRAMS

19. The Government of Kenya considers the provision of water supplies important to rural and urban development. The issue has been how to get water to those who need better access. Since the late 1960s, major programs have

been carried out to improve and extend urban water supplies and to begin to provide protected water supplies in rural areas.

20. The Ministry of Water Development (MOWD) is the principal Government agency responsible for the provision of water supplies for human and animal use (explicitly excluding irrigation). Three programs managed by the MOWD are the Minor Urban Water Supply Program, the Rural Water Supply Program (under which rural projects are financed, constructed, operated, and maintained by the Ministry), and the Self-Help Program which sponsors projects that depend on cost sharing with communities. The MOWD programs operate within a broader network of Government agencies and NGOs, each with its own policies, requirements, and budgetary concerns. The Ministry of Local Government is responsible for administrative and technical coordination with local authorities in the larger rural towns. The Ministry of Culture and Social Affairs supports community development in rural areas, and the Ministry of Health has responsibility for rural sanitation, health education, and enforcement of water quality and sewage disposal regulations. At the District level, the District Development Committee coordinates proposals for water schemes in rural areas. Among the Kenyan NGOs are Kenya Water for Health Organization (KWAHO), Kenya Freedom from Hunger, and various dioceses.

21. Despite considerable effort, the intended impact on the rural population has been less than hoped. In 1983, the Government conducted a study of existing Government-sponsored water supplies which indicated rural population coverage of only about 3.5 to 9.2 percent, compared to about 50 percent in urban areas (MOWD, 1983). Rapid population growth exacerbates the difficulty of covering a high proportion of the population. But another difficulty has been the identification of workable and sustainable approaches. Early Government programs relied on large-scale and highly engineered systems using house connections and communal water points. The Government has identified several broad flaws in the design of these systems and practical constraints that impede the effective operation of rural water supply programs:

- o poor operational performance (including weak maintenance) leading to heavy losses of water;
- o unsustainably high initial and recurring costs; and
- o inequitable pricing and limited coverage of some social groups.

22. The relatively complex technology of centrally planned and managed rural schemes put a serious strain on the limited resources of the MOWD and militated against effective operation of water programs in the field. Water systems often broke down, and maintenance was haphazard and ineffective. In some areas, poorly operating water systems contributed to environmental problems and to the transmission of water-borne diseases. Communities, and particularly women, were given little voice in the design and operation of programs -- despite women's continuing responsibility for providing their families with water. Some communities grew disillusioned with water projects, even while women continued to demand relief from water fetching.

23. The Government therefore now places more emphasis on simpler technologies such as wells in a phased approach to improving water supplies. The eventual objective may be more highly engineered and extensive water sources, but the most effective next step is to emphasize decentralized, community-based approaches. These put more responsibility and control into local hands. They rely on locally sustainable technologies and have lower initial and recurring costs. Communities with more control have proved more willing to share the costs. Experience suggests so far that the most effective approaches are those that heavily involve women in the design, operation, and management of rural water supplies. Targeting women as the principal beneficiaries and the principal managers of rural water supplies capitalizes on women's incentive to make water programs work and promotes effective operation as well as cost-recovery. Such approaches place far less burden on the Government budget than the older, more centralized approaches.

24. The importance of targeting rural water supply activities towards women is reinforced by two facts: first, about two-fifths of rural households are headed by women, and, second, women's self-help groups are often the strongest local groups. These self-help groups, once registered with the Ministry of Culture and Social Services, are entitled to raise funds for local projects and eligible to receive Government assistance. Most of the early self-help water projects were initiated and sustained by women. Current initiatives to give more responsibility to communities and particularly to women often draw on these early projects. Today there are several examples of outstanding rural water supply project that give substantial control to women. One is the Kwale District Water Supply and Sanitation Project. The role assumed by women as local managers and active participants has been critical to the strength and financial viability of the project. "Well committees" on which women are the majority have been extremely effective in assuming responsibility for management, and local women have functioned effectively as pump-repair attendants -- despite a concern that, for cultural reasons, Muslim women could not take on such a responsibility.

THE KWALE PROJECT

25. Kwale District, in the Coast Province, has an estimated population of 380,000. The District is typical in having a primarily rural population largely employed in farming, livestock husbandry, and fishing. Less than 5 percent of the population is engaged in cash employment, most of it concentrated around the tourist hotels. In 1984 it was estimated that only 6 percent of the population had access to improved water supplies, assuming that all installed water systems were operating at full capacity. By 1986, the just completed South Coast Project (SCP) increased this coverage to a total of 15 percent through installation of 100 waterpoints (handpumps) providing extended coverage to an estimated 21,000 people. The remainder of the people in the district obtain their water from unprotected sources, most of which are polluted and periodically run dry. Information on the South Coast Project and the Kwale District Water Supply and Sanitation Project is drawn from the Draft Final Report, South Coast Project, and other project documents.

26. The SCP or "Kwale project," initiated in 1983 as a pilot project of the MOWD to improve water supplies in two locations in the Kwale District, was

expanded in 1985 to assist villagers throughout the district. It is managed and implemented by the MOWD with assistance from the Kenya Water for Health Organization (KWAHO) and in cooperation with the Ministry of Culture and Social Services and the Ministry of Health. KWAHO is a Kenyan NGO with programs in a number of provinces.

27. The KWALE project illustrates the Government's new approach in two ways: it emphasizes broad community involvement, including an explicit focus on women, and its design integrates technical and social aspects. In the design of technology, operation, maintenance, and training, women contribute heavily to the project's success -- a point with obvious implications for sustainability and replicability. The project is directed by a well-motivated, multidisciplinary team of national staff who advise rural communities in the construction of simple low-cost water supplies, mostly dug and drilled wells, equipped with handpumps. The MOWD pays for installation costs, and the community assumes responsibility for operation and maintenance of the systems. The key features of the KWALE project, described below, offer guidance for similar efforts.

28. Successful integration of sector ministries and an NGO at the district level under the leadership of the MOWD. The Kwale project is managed and implemented by the MOWD with assistance from the MOH, MOCSS, and KWAHO. It provides multisectoral teams of extension agents, mostly women, who advise communities in the construction of simple water supply systems. The communities themselves manage and finance the maintenance of these systems. The model fits the spirit of Kenya's district focus policy and demonstrates the potential gains in cost effectiveness when the public sector lends support to a local initiative rather than assuming the entire burden of providing the service. Close collaboration with other ministries involved in health education and community development facilitates coordination of the multi-sectoral teams of agents. The development of a common approach through KWAHO-sponsored training reinforces mutual impact and enhances the prospects for project survival in the face of budgetary cuts in any one sector.

29. Systematic, institutionalized community involvement in design, implementation, operations maintenance, and financing with a specific focus on women as managers. Despite some reservations, project leaders focused explicitly on involving women as managers of the water systems. Initial liaison with villages involved women in the planning phases, while later efforts shifted towards making local women responsible for operations and maintenance.

30. Women's responsibility for the management of newly installed systems takes two forms: majority representation on the well committees and selection as pump repair attendants. The well committees are the central community locus for the organization and management of water supplies. They handle local administration, financing of maintenance, revenue collection, handpump operation and maintenance, and bookkeeping. With assistance from KWAHO extension teams (also largely women), these committees initiate and maintain funds to cover operations and maintenance costs, and in some cases, to establish bank accounts. In the second capacity, only women have been trained in pump repair, installation, and preventive maintenance, and it is these

women who are participating, along with other village women, in the testing of the various handpumps proposed for Kenya. Their participation in the testing program ensures the selection of handpumps appropriate for local use and village-level maintenance.

31. Institution building and training. Systematic training and support activities to facilitate participation were provided for village Water Committees, and community pump repair attendants received technical and refresher training in pump maintenance and installation.

32. Parallel implementation of health education and sanitation programs. Health education and sanitation programs were undertaken as supportive activities to reinforce the benefits from improved water supplies and to prevent the contamination of water after it is collected. The principal focus has been on general health education messages such as personal hygiene, proper water storage, cleanliness of pump surroundings, etc. These activities are followed with family planning, nutrition, and maternal/child care education. Construction of demonstration latrines has been limited.

33. Community cost-sharing. The growing burdens of finance, administration, staff management, and transport makes shifting more operation and maintenance costs to beneficiary communities essential if the Government is to provide clean water to the entire population. In the Kwale project, communities have been required to collect funds for two purposes: to defray a portion of the initial construction costs and to meet recurrent operation and maintenance costs. Fee collection has been substantially more successful than in earlier schemes.

34. Success in collecting funds from the community and establishing community systems for operation and maintenance has long-range budgetary implications for the MOWD. Using data acquired through the Kwale project, these potential savings can be estimated. Preliminary estimates show a savings of Kshs 1,152 per handpump for central maintenance costs, a figure considered modest. Village level maintenance is calculated at Kshs 608/per handpump, which includes the shadow cost of labor that is currently volunteered. Assuming that the Kwale project has provided coverage for approximately 21,000 people through about 100 handpumps, community operation and execution of maintenance saves the Government Kshs 115,200 per year in central maintenance and management costs. Over 10 years, the life expectancy of properly maintained pumps, the potential savings to the Government budget could be Kshs 1,152,000 (SCP, Draft Final Report).

35. While this figure is only a projection based on limited experience, it suggests the level of savings that might be realized. Such savings could enable the Government to achieve broader coverage. Additional indirect economic savings would accrue from reductions in foreign exchange expenditures for vehicles and imported fuel to meet centrally managed maintenance needs.

36. Service coverage and usage. Before deciding on the system to be installed, communities had an opportunity to consider the financial consequences of various options and to debate the pros and cons of each. In this case, handpumps were not the favorite option, but women viewed them as a

necessary step until resources for preferred higher service levels might be obtained. Subsequently, success with their first community-managed water systems encouraged some villages to consider local financing of additional handpumps or upgrading service levels to piped systems. Women extend the impact of these newly installed waterpoints by ensuring that health benefits are realized at the household level through their own adoption of hygienic practices and by influencing behavioral changes within their households.

37. Operation and maintenance of community-based systems. In many of the successful rural water supply projects in Kenya, participation by the community, and in particular women, has been a key factor in sustaining the systems established. In Kitui District, the involvement of women as organizers, managers, and consumers was felt to be a major factor of success in those systems which were effectively managed (Roarke and Mbithi n.d.). In the Kwale Project, the well committee assumes a central role by establishing and enforcing a timely system of revenue collection as well as preventative maintenance and routine repairs. Further, under village maintenance, most handpumps are functioning with only brief periods of down time due to the quick response of the local repair attendants. This contrasts with Government schemes where handpumps do not function for lengthy periods due to logistical problems in providing maintenance.

38. Long-term impact. The Kwale Project is still too young to permit full identification of economic social, or health benefits. But the first apparent benefits are provision of water on a regular basis (the pumps have been working for two or more years in some areas) as well as visibly stronger organizational communities (especially women) which will be useful in tackling other development issues.

ISSUES AND RECOMMENDATIONS

39. Community-based management of water supplies and the MOWD. The promotion and development of community responsibility and the special focus on women's involvement in village-based water supplies is relatively new for the MOWD, which is essentially a technical agency. Relevant training in participatory techniques should be developed to help district and field staff to liaise more effectively with communities. This type of orientation will become increasingly more essential for field staff as they confront public frustrations over the Government's shift from its previous policy of "free water for all" to "water as a public commodity." It is also not clear what the long-term relationship of the MOWD will be with community owned and maintained systems. Perhaps another ministry will interface with the District Development Committees in sustaining the physical and social infrastructure. If the MOWD is to assume this role, it will have to put forth a special effort to develop the appropriate infrastructure for some central backup and planning capacity, system monitoring, and upgrading of service options as well as coordination with other agencies active in the sector.

40. Community involvement and collaboration with NGOs. The Kwale project demonstrates the importance of community participation and locally appropriate approaches. To extend such approaches, the Government may wish to augment its

own capacity through increased collaboration with local NGOs to provide liaison at the community level. Such an initiative, however, would require sufficient financing to provide the information and training necessary. Specific steps should also be taken to coordinate and integrate activities (including content as well as delivery) with the existing extension services of the Ministries Water Development, Health and Agriculture.

41. Development of multipurpose water sources. The provision of water can have a catalytic effect through time savings and introduction of new skills which give women the chance for more productive activities. These time savings could be channeled into activities which capitalize on the provision of water not only for household use but also for subsistence production, such as animal husbandry and small plot irrigation. It may be possible to develop multipurpose water sources to meet these overlapping needs, assuring sensible allocation of water among competing uses. Technical support from the Ministries of Health and Culture and Social Services should be integrated and coordinated to assist women in maximizing these opportunities.

42. Development of minor urban water and sanitation systems. While the focus of this chapter has been on the majority of women living in rural areas, women in peri-urban areas face similar problems in accessing safe water and sanitation services. Their neighborhood compounds or their communities often lie in areas where the responsibility for improved supplies is ill-defined, with maintenance and quality major concerns. For some women with limited incomes, water tariffs inhibit their use of even accessible sources and alternative water sources such as ponds or streams are often lacking. Women in these areas could be involved in health education campaigns and community groups which would identify the options for alternative low-cost water and sanitation systems appropriate to their needs (cf. Johnson and Newman 1986).

43. Opportunities for women in technical areas. Women's experience as local repair attendants in community managed systems might provide the basis for reaching into other fields, for learning other productive technical skills within the village and elsewhere. It could also encourage MOWD in its efforts to increase recruitment of women to attend its training school in Nairobi. Currently the proportion of women to men has been small partly because females graduating from high school lack the necessary background in science subjects.

CONCLUSIONS

44. The provision of improved water supplies may not only provide considerable health benefits but also can serve as an entry point and catalyst for broad-based economic and social development. To realize these benefits, water supply and sanitation projects must be prepared and implemented with the full involvement of the local community and with particular attention to the roles women assume in managing domestic water supply. The range of possibilities for community involvement can be identified only through locally appropriate designs that consider cultural, economic, and social perspectives.

45. The Kwale project provides one example of the importance of the role of women in meeting the Government of Kenya's objectives to extend improved water supplies in the rural areas. While caution should be exercised in

drawing conclusions at this early stage, the initial successes suggest that such projects should be extended and tested in other areas of the country. Investments in rural water supplies ought to include an explicit focus on promoting the role of women as both beneficiaries of supplies and potential managers of services. Experience in Kenya as well as elsewhere demonstrates that the involvement of women in rural water projects enhances the chances of success and that without women's involvement a project is severely weakened.

BIBLIOGRAPHY

- Arlosoff, S., D. Grey, et.al. Rural Water Supply Handpumps Project. UNDP Project Management Report #4, Washington, D.C.: The World Bank, 1984.
- Barnes, C. & Warner, L. "Kenyan Smallholdings and the Division of Labour", mimeo, 1982.
- Barnes, C. "Women in Kenya' Rural Economy", in: A. Pala, et al., eds. The Participation of Women in Kenya Society, Nairobi: Kenya Literature Bureau, 1983.
- Bertrand, Trent J. & Robert Griffin. "The Economics of Financing Education: A Case Study of Kenya." Mimeo (n.d.).
- Bifani, P. "How Kenyan Peasants, Pastoralists and Peri-Urban Women See Water Problems." Waterlines 4, 3 (1986), pp. 16-19.
- Bifani, P., Adagala, K. & Kariuki, P. "The Impact of Development on Women in Kenya: A Methodological Approach." Nairobi, University of Nairobi & Unicef, 1982.
- Birdsall, Nancy. "Child Schooling and the Measurement of Living Standards." Living Standards Measurement Study Working Paper No. 14. The World Bank, Washington, D.C., 1982.
- Blumberg, Rae L. "Income Under Female Vs. Male Control: Differential Spending Patterns and the Consequences When Women Lose Control of Returns to Labor", with the Assistance of Huma Ahmed Ghosh, University of California, San Diego, 1987.
- Boserup, E. Women's Role in Economic Development. New York, St. Martin's Press, 1970.
- Brokonsult AB/SIDA, Ministry of Water Development. "Operations and Maintenance Study. Recommendations", 1983.
- Bulatao, Rodolfo A. & Ronald D. Lee (eds.). Determinants of Fertility in Developing Countries. Vol. 1, New York: Academic Press, 1983.
- Butterfield, Cynthia. "Women and the Modern Wage Sector: A Study of Female Participation in Commerical Banks and Finance Companies in Nairobi." Discussion Paper No. 256. Institute for Development Studies, University of Nairobi, 1977.
- Carruthers, I.D. Impact and Economics of Community Water Supply. London, 1973.
- Chamie, Mary. "National, Institutional and Household Factors Affecting Young Girls' School Attendance in Developing Societies." ICRW Mimeo, 1983.

- Charnock, G. "Women take lead in Kwale Handpump Development." World Water (1985), pp. 42-43.
- Chavangi, N.A. "Women's Access to Institutional Credit and Savings Facilities in Vihiga/Hamisi Division of Kakamega District in Western Province of Kenya", in: Women's Programme in Agricultural Credit and Banking, Nairobi: African Regional Agricultural Credit Association (AFRACA), 1983.
- Chen, Lincoln. "Child Survival: Levels, Trends and Determinants." Determinants of Fertility in Developing Countries. Vol. 1 (1983): 199-232.
- Chogoria Area Community Survey. Assisted by U.S. Center for Disease Control. Preliminary Report, 1986.
- Clark, M. "Household Economic Strategies and Support Networks of the Poor in Kenya. A Literature Review." Water and Urban Development Department, Discussion Paper, The World Bank, 1985.
- Clark, M. "Support Networks and Survival Strategies of the Urban and Rural Poor in Kenya: A Literature Review." Urban Development Department, World Bank. Mimeo, 1983.
- Cochrane, Susan H. Fertility and Education What Do We Know? Oxford: Oxford University Press, 1979.
- Cochrane, Susan H. "The Effects of Education on Health." Staff Working Paper No. 405. The World Bank, Washington, D.C., July 1980.
- Collier, P. & Lal, D. "Poverty and Growth in Kenya." World Bank Staff Working Paper No. 389. Washington, D.C., World Bank, 1980.
- Court, David & Dharam P. Ghai, eds. Education, Society and Development: New Perspectives from Kenya. Nairobi, Kenya: Oxford University Press, 1974.
- Court, David & Kabiru Kinyanjui. "Education and Development in Sub-Saharan Africa: The Operation and Impact of Education Systems." Working Paper No. 421. Institute for Development Studies, University of Nairobi, 1985.
- Court, David & Kabiru Kinyanjui. "Development Policy and Educational Opportunity: The Experience of Kenya and Tanzania." IIEP provisional text HEP/Rp/19/14A (Rev.1). Copyright UNESCO, 1978.

- Crawford, E. & Thorbecke, E. "Employment, Income Distribution, Poverty Alleviation and Basic Needs in Kenya: Report of an ILO Consulting Mission." Ithaca, N.Y., Cornell University.
- Crawford, E. & Thorbecke, E. "The Analysis of Food Poverty: An Illustration from Kenya." Cornell University. Mimeo, 1979.
- Crawford, E. & Thorbecke, E. "The Analysis of Food Poverty: An Illustration from Kenya." Pakistan Development Review, 19:4.
- Curtis, V. Women and the Transport of Water. Intermediate Technology Publications, 1986.
- Donaldson, D. Evaluation of the Care Water Supply Program in Kenya. WASH Field Report No. 106, Washington, D.C., 1984.
- Dworkin, D. Kenya Rural Water Supply: Programs, Progress, Prospects. AID Project Evaluation Report No. 7. Washington, D.C., 1980.
- Eide, W.B., Skjonsberg, Bathily, A. & Pala, A. "Women in Food Production, Food Handling and Nutrition, with Special Emphasis on Africa." N.Y., U.N. Protein-Calorie Advisory Group, 1977.
- Elmendorf, M. & R. Isely. Water and Sanitation Related Health Constraints of Women's Contributions to the Economic Development of Communities. WASH Technical Report #17, 1982.
- Eshiwani, G.S. "A Study of Women's Access to Higher Education in Kenya With a Special Reference to Mathematics and Science Education," Bureau of Educational Research, Kenyatta University College, Nairobi, 1984.
- Eshiwani, G.S. "Science and Technology Education in Kenya: Strategies for Improvement." Post, Vol. 8, No. 1-3 (1983): 5-9.
- Eshiwani, G.S. The Education of Women in Kenya: 1975-1984, Bureau of Educational Research, Kenyatta University College, Nairobi, 1985.
- Eshiwani, G.S. "Women's Access to Higher Education in Kenya: A Study of Opportunities and Attainment in Science and Mathematics Education." Journal of Eastern African Research and Development 15 (1985): 91-110.
- Ferguson Alan G. "A Survey of Schoolgirl Pregnancy in Kenya", Nairobi, 1988.
- Food and Nutrition Studies Programme. "Seasonal and Regional Food Shortages in Kenya." Food and Nutritional Planning Unit, Ministry of Economic Planning and Development and African Studies Centre (Leiden), Mimeo, 1983.

- Fryer, Michelle L. "World Bank Education Lending in Sub-Saharan Africa: Expenditures on Females, 1983-1985." The World Bank, Washington, D.C., 1985.
- Fuller, Bruce. "Raising School Quality in Developing Countries: What Investments Boost Learning?" Report No. EDT7. The World Bank, Washington, D.C., 1985.
- Gachukia, E. "Women's Self-Help Efforts for Water Supply in Kenya." Assignment Children (1979) 45/46:167-174.
- Getechah, W. "The Role of Women in Rural Water Development in Kenya", in Rural Water Supply in Developing Countries. Proceedings of a workshop on training held in Zomba, Malawi, 5-12 August 1980. IDRC, Ottawa, 1981.
- Gicheru, E.W. "Women's Access to Institutional Credit and Savings Facilities in Murang'a, Kirinyanga and Nyeri District, Central Province, Kenya", in: Womens' Programme in Agricultural Credit and Banking, Nairobi: African Regional Agricultural Credit Association (AFRACA), 1983.
- Godfrey, M. "Kenya: Economic Prospects to 1985." EIU special Report No. 99. London, Economist Intelligence Unit, 1981.
- Godfrey, M. "Education, Training and Productivity: A Kenyan Case-Study." Comparative Education Review 21: 29-36, 1977.
- Government of Kenya. Central Bureau of Statistics. Educational Trends, 1973-1977. Republic of Kenya: Central Bureau of Statistics, Ministry of Economic Planning and Community Affairs (n.d.).
- Government of Kenya. "Child Nutrition in Rural Kenya", Nairobi, Central Bureau of Statistics (CBS) & UNICEF, n.d.
- Government of Kenya. Development Plan 1979-1983, Part 1. Nairobi, Government Printer, 1979.
- Government of Kenya. Development Plan 1984-1988. Nairobi, Government Printer, 1983.
- Government of Kenya. Economic Survey 1981. Nairobi, Central Bureau of Statistics, 1981.
- Government of Kenya. Economic Survey 1982. Nairobi, CBS, 1982.
- Government of Kenya. Economic Survey 1983. Nairobi, CBS, 1983.
- Government of Kenya. "Educational Trends 1973-1977." Nairobi, CBS & UNICEF, (n.d.).

- Government of Kenya. Focus for Rural Development. Nairobi, Office of the President, 1983.
- Government of Kenya. "Food and Nutrition in the Magarini Settlement Scheme." Food and Nutrition Planning Unit, Ministry of Economic Planning and Development. Mimeo, 1981.
- Government of Kenya. Health Information Bulletin, 4:4, Nairobi, Ministry of Health, 1982.
- Government of Kenya. "Health Information System in-Patient Report." Nairobi, Ministry of Health, 1978.
- Government of Kenya. "Incidence of Soil Erosion in Kenya." National Environment Secretariat. Mimeo, (n.d.).
- Government of Kenya. Integrated Rural Survey 1974-1975 Basic Report. Nairobi, CBS, 1977.
- Government of Kenya. Integrated Rural Surveys 1976-1979 Basic Report. Nairobi, CBS, 1981.
- Government of Kenya. Kenya Contraceptive Prevalence Survey 1984. Two Volumes, Central Bureau of Statistics, Ministry of Planning and National Development, Nairobi, Kenya. December 1984.
- Government of Kenya. "Kenya Education Sector Analysis," Analytical Document No. 3. Internal Distribution of Resources and the Implications for Student Flows, Central Bureau of Statistics, (n.d.).
- Government of Kenya. "Kenya Education Sector Analysis", Analytical Document No. 1. Access and Coverage in the Primary Educational System: 1969-1979, Central Bureau of Statistics, (n.d.).
- Government of Kenya. Kenya Fertility Survey 1977-1978, First Report. Vol. I, Nairobi, Central Bureau of Statistics, 1980.
- Government of Kenya. Kenya Population Census 1962. Vol. III. Nairobi, Statistical Division, Ministry of Economic Planning and Development, 1966.
- Government of Kenya. Kenya Population Census 1969. Vol. II. Nairobi, Statistical Division, Ministry of Finance and Economic Planning, 1972.
- Government of Kenya. Kenya Population Census 1979. Vol. IV. Nairobi, Central Bureau of Statistics, 1983.
- Government of Kenya. Ministry of Health, Development Plan 1984-1988, 1983.

- Government of Kenya. Population projections for Kenya 1980-2000. Central Bureau of Statistics, Ministry of Economic Planning and Development, Nairobi, Kenya.
- Government of Kenya. "Report of the Child Nutrition Survey 1978-1979." Nairobi, Central Bureau of Statistics.
- Government of Kenya. Session Paper No. 10. African Socialism and its Applications to Planning in Kenya. Government Printer. 1965.
- Government of Kenya. Sessional Paper No. 4 for 1981 on National Food Policy. Nairobi, Government Printer, 1981.
- Government of Kenya. Sessional Paper No. 1 of 1986. Economic Management for Renewed Growth, 1986.
- Government of Kenya. Social Perspectives: Non-Farm Activities in Rural Kenyan Households, 2:2. Nairobi, Central Bureau of Statistics, 1977.
- Government of Kenya. Social Perspectives: The Rural Kenyan Nutrition Survey, Feb.-March 1977, 2:4. Central Bureau of Statistics, 1977.
- Government of Kenya. Social Perspectives: Women in Kenya, 3:3. Central Bureau of Statistics, 1978.
- Government of Kenya. Social Perspectives: Infant Mortality in Kenya, 5:2. Central Bureau of Statistics, 1981.
- Government of Kenya. Social Perspectives: Infant Mortality in Kenya, Past and Present Differentials, 6:1. Central Bureau of Statistics, 1981.
- Government of Kenya. Social Perspectives: Literacy in Rural Kenya, 1980-81. 7:1, Central Bureau of Statistics, 1982.
- Government of Kenya. Social Perspectives: The Prospects for Fertility Decline in Rural Kenya: 7:4. Central Bureau of Statistics, 1982.
- Government of Kenya. Social Perspectives: Infant Feeding Practices in Nairobi, Kenya. forthcoming.
- Government of Kenya. The Performance of the National Extension Programme, Part A, Results of a Survey Conducted with Frontline Extension Staff in Thirty Districts, 1986. Nairobi: Ministry of Agriculture and Livestock Development, Monitoring and Evaluation Unit, 1986.
- Government of Kenya. Third Rural Child Nutrition Survey, 1982. Central Bureau of Statistics, 1983.
- Government of Kenya. "Women of Kenya: Review and Evaluation of Progress for the End of Decade Conference", 1985.

- Greer, J. & Thorbecke, E. "Pattern of Food Consumption and Poverty in Kenya and Effects of Food Prices". Cornell University, Mimeo, 1983.
- Hanger, J. & Morris, J. "Women and the Household Economy." In R. Chambers and J. Morris (eds.), *Mwea: An Irrigated Rice Settlement in Kenya*. Afrika-Studien No. 83. IFO, Munchen, 1973.
- Harris, John R. & M.P. Todaro. "Migration, Unemployment, and Development: A Two-Sector Analysis", American Economic Review, 1970.
- Herz, Barbara & Anthony R. Measham. "The Safe Motherhood Initiative: Proposals for Action", World Bank Discussion Paper No. 9, 1987.
- Herz, Barbara. Demographic Pressure and Economic Change: The Case of Kenyan Land Reforms, Yale University dissertation in Economics, New Haven, Connecticut; 1974.
- Heyer, J. & Waweru, J. "The Development of the Small Farm Areas." In J. Heyer, J. Maitha & W. Senga (eds.), Agricultural Development in Kenya. Nairobi, Oxford University Press, 1976.
- Heyneman, Stephen P. & William A. Loxley. "The Effect of Primary-School Quality on Academic Achievement across Twenty-nine High- and Low-Income Countries." American Journal of Sociology, Vol. 88, No. 6 (1983): 1162-1194.
- Hoorweg, J. & Niemeyer, R. "Preliminary Studies on some Aspects of Kikuyu Food Habits." Ecology of Food and Nutrition, 9, 1980.
- Hoorweg, J. & Niemeyer, R. "The Effects of Nutrition Rehabilitation at Three Family Life Training Centres in Central Province, Kenya." ASC Research Report No. 14. Leiden, African Studies Centre, 1982.
- House, W. & Killick, T. "Inequality and Poverty." In T. Killick (ed.), Papers on the Kenyan Economy: Performance, Problems and Policies. Nairobi, Heinemann Educational Books, Ltd., 1981.
- Hughes, Rees & James Gituro Wahome. "Higher Education and Employment in Kenya: A Liberal Interpretation of the Literature." Working Paper No. 426. Institute for Development Studies, University of Nairobi, 1985.
- International Labour Office (ILO). Employment, Incomes and Equality: A Strategy for Increasing Productive Employment in Kenya. Geneva, ILO, 1972.
- International Labour Office. Rural-Urban Gap and Income Distribution: The Case of Kenya. Addis Ababa, ILO Jobs and Skills Programme for Africa, 1982.

- Jabara, Cathy L. Agricultural Pricing Policy in Kenya, Harvard Institute for International Development, Development Discussion Paper 185, 1984.
- Jamison, Dean T. & Marlaine E. Lockheed. "Participation in Schooling: Determinants and Learning Outcomes in Nepal." Economic Development and Cultural Change, 35 (2), 279-306, 1987.
- Johnson, C. & G. Newman. "Alternative Sanitation Systems for the Kenyan Small Towns Shelter and Community Development Project." WASH Working Paper No. 40, Washington, D.C., 1986.
- Johnson, G. & Whitlaw, W. "Urban-Rural Income Transfers in Kenya." Economic Development and Cultural Change, 22:47, 1974.
- Kabira, W.M. & W. Njau. "Barriers to Rural Women's Contribution to Economic Development, Kiambu District:" A Case-Study, in Olembo, N.K., et alia, eds., op. cit., 1985.
- Kabutha, Charity N. "Maternal Mortality in Kenyan Health Institutions", in Olembo, N.K., et alia, eds., op. cit., 1985.
- Kagia, Ruth. "Equality, Access and Relevance of Education for Women." Report on the NGO Education Sub-Committee Pre-Conference Seminar on Education, Nairobi, 22-24 May 1985 (Kenyatta University College, Nairobi), 1985.
- Kenya Women's Finance Trust. "Credit Position of Women in Kenya", Nairobi, 1985.
- Killick, T. (ed.). Papers on the Kenyan Economy: Performance, Problems and Policies. Nairobi, Heinemann Educational Books, Ltd., 1981.
- Killick, T. (ed.). "The Fourth Development Plan". In T. Killick (ed.), Papers on the Kenyan Economy: Performance, Problems and Policies. Nairobi, Heinemann Educational Books, Ltd., 1981.
- Kinyanjui, Kabiru. "Education and Formal Employment Opportunities for Women in Kenya: Some Preliminary Data", Kenya Education Review 2, 1975.
- Kinyanjui, Kabiru. "Education and Inequality in Kenya: Some Research Experience and Issues." Working Paper No. 373. Institute for Development Studies, University of Nairobi, 1981.
- Kinyua, H.J.M. & P.E.O. Olang'. "Cost Sharing in Education." MEST Mimeo, 1985.
- Kioko, P.S. "A Report on the Second National Training Seminar on Education Statistics (19th - 30th August, 1985)." Republic of Kenya, Ministry of Education Science and Technology, 1985.

- Knowles, J. & Anker, R. "An Empirical Analysis of Mortality Differentials in Kenya at the Macro and Micro Levels." Population and Employment Working Paper No. 60. Geneva, ILO, 1977.
- Koblinsky, Marge. "Reproductive Health Care in Kenya: An Overview and Program Recommendations", Informal Report to the Ford Foundation, 1987.
- Krystall, A. & Gomes, M. "Women's Use of Water and Time in Rural Kenya", mimeo, 1979.
- Krystall, A. "The Education of Women since Independence". Bureau of Educational Research, Kenyatta University College, Mimeo, 1976.
- Krystall, A. "Women's Access to Education in Kenya. In Proceedings of a Conference on Research and Education in Kenya." Nairobi, Bureau of Educational Research, Kenyatta University College, 1980.
- Krystall, Abigail. "The Education of Women Since Independence." University of Nairobi, Bureau of Educational Research, (n.d.).
- KWAHO. KWAHO: Helping to Meet the Need.
- KWAHO. KWAHO: Women and Water in Kenya.
- Kwofie, K. "An Approach to the Introduction of Nutrition Considerations into Rural and Agricultural Development Projects." Food and Nutrition Planning Unit, Ministry of Economic Planning and Development. Mimeo, 1983.
- Lake Basin Development Authority. A Socio-Cultural Investigation into the Use and Functioning of the Completed Shallow Wells in Nyanza Province, 1983.
- Livingstone, Ian. Rural Development, Employment and Incomes in Kenya, Addis Ababa: International Labour Office, Jobs and Skills Programme for Africa, 1981.
- Lockhart, L., 1982. "The Economics of Nine Years Education for All." In T. Killick (ed.), Papers on the Kenyan Economy: Performance, Problems and Policies. Nairobi, Heinemann Educational Books Ltd.
- Lockheed, Marlaine E., Dean T. Jamison, & Lawrence J. Lau. "Farmer Education and Farm Efficiency: A Survey." Economic Development and Cultural Change, 29 (1), 37-76, 1980.
- Lewis, Maureen. "Girls' Education in Kenya: Performance and Prospects", Urban Institute, Washington, D.C., 1986.
- Maitha, Joseph. "Review of Credit for Women in Kenya", Report to the World Bank Women in Development Division, 1986.

- Makau, B.M. "Educational Planning and Development in Kenya: The 8-4-4 School Curriculum and Its Implications for Self-Employment." Working Paper No. 433. Institute for Development Studies, University of Nairobi, 1985b.
- Makau, B.M. "Equity and Efficiency in Financing Secondary Education in Kenya: Key Issues in State-Community Partnership." Working Paper No. 429. Institute for Development Studies, University of Nairobi, 1985a.
- Masai, W. "The Nutritional Status of Kenyans and Major Factors Influencing It." Paper presented at a Workshop organized by the Ministry of Economic Planning and Development on Nutrition in Agricultural Development Projects. Institute for Development Studies, University of Nairobi. Mimeo, 1983.
- Masimba, L. "Food and Nutrition: Identification of groups at Nutritional Risk in Kakamega District." University of Nairobi, Mimeo, 1982.
- Mbithi, Philip M. & Carolyn Barnes. The Spontaneous Settlement Problem in Kenya, Nairobi: East African Literature Bureau, 1975.
- Ministry of Water Development, Government of Kenya, Water Use Study - Draft Main Report, 1983.
- Ministry of Water Development. Water Use and Tariff Study. Policy Options, (Interconsult Sweden AB, Valdelin), 1984.
- Ministry of Water Development, FINNIDA, and UNDP/World Bank Review Team. Kenya: Finland Rural Water Supply Development Project in Western Province. Report of the Review Mission May 1987 at Mid-Implementation of the Second Phase, 1987.
- Molnos, A. Cultural Source Materials for Population Planning in East Africa, Nairobi, East Africa Publishing House for Institute of African Studies, University of Nairobi, 1973.
- Moock, J. "The Context and Maintenance of Social Ties Between Urban Migrants and Their Home Based Support Groups: The Maragoli Case", African Urban Studies, 3:15, 1978.
- Moock, Peter. "Managerial Ability in Small-Farm Production: An Analysis of Maize Yields in the Vihiga Division of Kenya", Ph.D. dissertation in Economics, Columbia University, New York, 1973.
- Moock, P. "Education and Technical Efficiency in Small-Farm Production", Economic Development and Cultural Change, Vol. 29, No. 4, 1981.

- Mosley, H. "Will Primary Health Care Reduce Infant and Child Mortality? A Critique of some Current Strategies with Special Reference to Africa and Asia." Paris, International Union for the Scientific Study of Population, 1983.
- Mosley, H., Werner, L. & Becker, S. "Dynamics of Birth Spacing and Marital Fertility in Kenya." World Fertility Survey Scientific Reports. Voorburg, International Statistical Institute, 1981.
- Mott, F. "Infant Mortality in Kenya: Evidence from the Kenyan Fertility Survey." World Fertility Survey Scientific Report No. 32. Voorburg, International Statistical Institute, 1982.
- Munguti, K. & R. Mulama. "Up-date (South Coast Handpump Project, Kenya)." in Rural Water Supply Handpumps Project. UNDP Project Management Report No. 4, Washington, D.C.: World Bank, 1984.
- Musyoka, L. Low Cost Rural Water Supplies Development and Community Participation in Kenya. Masters thesis, Tampere University, 1986.
- Muwonge, W. "Urban Policy and Patterns of Low-Income Settlement in Nairobi, Kenya", Population and Development Review, 6, 1980.
- Muzaale, P.J. & D.K. Leonard. "Kenya's Experience with Women's Groups in Agricultural Extension: Strategies for Accelerating Improvements in Food Production and Nutritional Awareness in Africa", Agricultural Administration, 19(1985).
- Muzaale, P.J. & D.K. Leonard. "Women's Groups and Extension in Kenya: Their Impact on Food Production and Malnutrition in Baringo, Busia and Taita-Taaveta." Report to the Ministry of Agriculture. Project on Managing Decentralization, University of California, Berkeley. Mimeo, 1982.
- Monsted, M. "The Changing Division of Labour within Rural Families in Kenya." CDR Project Paper 76.1. Copenhagen, Centre for Development Research, 1976.
- Nelson, N. "Dependence and Independence: Female Household Heads in Mathare Valley, a Squatter Community in Nairobi, Kenya." Ph.D. Thesis, University of London, 1978.
- Nissen-Petersen, E. "Water from rocks." Waterlines (1985) 3.
- Nkinyangi, J.A. (n.d.). "The Impact of Government Policies on Primary School Repetition and Drop-out Rates in Kenya", 1970-78. Institute for Development Studies, University of Nairobi. Mimeo.
- Nkinyangi, John A. "Access to Primary Education in Kenya: The Contradictions of Public Policy." Comparative Education Review (1982): 199-217.

- Nkinyangi, John A. "Socio-Economic Determinants of Repetition and Early School Withdrawal at the Primary School Level and Their Implications for Educational Planning in Kenya." Ph.D. dissertation, Stanford University, 1980. (Ann Arbor, MI: University Microfilms International).
- Nkinyangi, John A. "Socio-Economic Determinants of Repetition and Early School Withdrawal at the Primary School Level and Their Implications for Planning in Kenya." Working Paper No. 325. Institute for Development Studies, University of Nairobi, 1977.
- Noage, J.E. "Enrollment Trends in forms I and V in Secondary School in Kenya: Schooling Indices of Opportunity Since Independence." Mimeo, 1981.
- Norconsult/SIDA. "Kwale District Community Water Supply and Sanitation Project. Project Plan.", 1985.
- Nordberg, E. "On the True Disease Pattern Kibwezi Division." Discussion Paper No. 1. Nairobi, AMREF, 1981.
- Nordberg, E. "The True Disease Pattern in East Africa, Part 1, East African Medical Journal", 60:7, 1983.
- Nyamwanga, E. "Correlates of Child Mortality Differentials in the Nairobi Metropolitan Area." Thesis. Population Studies and Research Institute, University of Nairobi, 1982.
- Nyamwaya, D. & S. Momanyi. "Rural Water Supply Benefit Study. Kwale District - South Coast, Kenya."
- Nyangeri, E. Rehabilitation of Hand-Dug Wells and Protected Springs in Kisii, Kenya. Masters Thesis, Tampere University, 1986.
- Obura, Anna. "The Image of Girls and Women in Primary School Textbooks in Kenya: Interim Findings of a Research Team." Report on the NGO Education Sub-Committee Pre-Conference Seminar on Education, Nairobi, 22-24 May 1985. Kenyatta University College, Nairobi, 1985.
- Oendo, A. "Socio-Cultural Study for the Establishment of A Community based Handpump Maintenance Scheme." African Medical and Research Foundation, 1983c.
- Oendo, A. Water Health, and the Community in Kibwezi. African Medical and Research Foundation, 1983a.
- Oendo, A. Water, Sanitation, and the Community in Kibwezi. African Medical and Research Foundation, 1983b.

- Olembo, Norah K., et alia, eds. Kenyan Women in Development: Research Papers for NGO Forum '85 of the World Conference of the U.N. Decade for Women, 1985.
- Ominde, S.H. (n.d.). "Urbanization in Africa: A Kenya Case Study." ILO Study Course on Social and Economic Development of Southern Africa. Mimeo.
- Oomen, H., Jansen, A. & Mannetji, W. "Growth Patterns of Rural Akamba Pre-School Children", Tropical Geographical Medicine, 31, 1979.
- Osman, Dina Sheikh. "Impact of Land Tenure Systems on Women Farmers in Eastern Africa", informal report to World Bank, Women in Development Division, 1987.
- Otega, Margaret A. Law and the Status of Women in Kenya, Paper for the End of U.N. Decade for Women Conference, Nairobi, 1985, Kenya School of Law, Nairobi, 1985.
- Pala, A. & Krystall, A. "Women and Education", Kenya Education Review, 2 1975.
- Pala, A. (n.d.). Educational Attainment and Women's Self-Image. Mimeo.
- Pala, A. "A Preliminary Survey of the Avenue for and Constraints on Women in the Development Process in Kenya", Nairobi: University of Nairobi, Institute for Development Studies, Discussion Paper No. 218, 1975.
- Paterson, Douglas B. "Coping with Land Scarcity: The Pattern of Household Adaptations in One Luhya Community", Nairobi: University of Nairobi, Institute for Development Studies, Working Paper No. 360, 1980.
- Poluha, E. "The Water Sector Review", March 1984: Report of the Consultant Social Anthropologist, SIDA report, 1984.
- Psacharopoulos, George. "Returns to Education: An Updated International Comparison." Comparative Education, 17, 321-341, 1981.
- Reno, Barbara Morrison, Ed. Credit and Women's Economic Development: A Dialogue Among Entrepreneurs, Bankers and Development Specialists on Issues Related to credit for Business Enterprise, Washington, D.C.: World Council of credit Unions, Inc, 1981.
- Reynolds, Dorene. "The Household Divided: Competition for Cash Between Husband and Wives in west Pokot, Kenya", paper presented at the 81st Annual Meeting of the American Anthropological Association, Washington, D.C., 1982.

- Roark, P. & P. Mbithi. "Kitui District Water Supply Study in Kenya. Annex C. Sociology.", 1985.
- Romain, Ralph. "Lending in Primary Education: Bank Performance Review, 1962-1983." Report No. EDT20. The World Bank, Washington, D.C., 1985.
- Rukandema, Mwita. "Determinants of Crop Yields on Smallholder Farms in Kenya," Eastern Africa Journal of Rural Development, Vol. 13, nos. 1 and 2, 1980.
- Rukandema, Mwita, Mavua, John K. & Audi, Patrick O. The Farming System of Lowland Machakos District, Kenya. Nairobi: UNDP/FAO/GK Dryland Farming Research and Development Project, Report on Farm Survey Results from Mwala Location, Technical Report No. 1, 1981.
- Rukandema, Mwita, Muhammed, Lutta, & Jeza, Aggrey. "The Farming Systems of Semi-Arid Southern Kitui, Eastern Province, Kenya", mimeo, 1983.
- Sabot, R., A. Berry, A. Hazlewood, J. Knight, J. Armitage, & M. Boissiere. "Cognitive Skills: Their Determinants and Influence on Earnings in Two Poor Urban Economies." Discussion Paper No. 81-4. The World Bank, Washington, D.C., 1981.
- Sabot, R., A. Berry, A. Hazlewood, J. Knight, J. Armitage & M. Boissiere. "Correlates of Educational Attainment in Kenya." Population and Human Resources Division Discussion Papers No. 81-41. Washington, D.C.: World Bank Mimeo, 1981.
- Safilios-Rothschild, Constantina. Women in Sheep and Goat Production and Marketing, Rome: Food and Agriculture Organization of the United Nations, Expert Consultation on Women in Food Production (ESH:WIFP/83/8), 1983.
- Safilios-Rothschild, Constantina & Mburugu, Edward K. "Women's Income and Fertility in Rural Kenya", Nairobi: University of Nairobi, Institute for Development Studies, Working Paper No. 441, 1986.
- Safilios-Rothschild, Constantina. "Women Farmers in Kenya". Unpublished manuscript report to World Bank, Women in Development Division, Washington, D.C., 1986.
- Savage, M. "Examinations and Their Role in Supporting Curriculum Innovation in the Teaching of Science at the Primary and Teacher Education Levels in Kenya." Mimeo, 1984.
- Schofield, S. "Seasonal Factors Affecting Nutrition in Different Age Groups and Especially Pre-School Children." Journal of Development Studies, 11, 1974/75.

- Schultz, T.W. "The Value of the Ability to Deal with Disequilibrium", Journal of Economic Literature, 13 (1975).
- Senga, W.M., et alia. "Population Growth and Agricultural Development in Kenya", IDS Occasional Paper No. 40, Nairobi, 1981.
- Shanghvi H.C.G. "Nairobi Birth Survey", Nairobi, 1984.
- SIDA/Business and Economic Research. "Summary of Recent Recommendations on the Rural Water Sector in Kenya.", 1985.
- Simmons, G., C. Smucker, S. Berstein, & E. Jensen. "Neonatal Mortality in Rural India." Implications of the Economic Model." Demography 19, 3 August 1982.
- Simmons, George G. & Stan Berstein. "The Educational Status of Parents, and Infant and Child Mortality in Rural North India." Health Policy and Education 2, 3-4 March 1982.
- Smock, A. "Women's Economic Roles." In T. Killick (ed.), Papers on the Kenyan Economy: Performance, Problems and Policies. Nairobi, Heinemann Educational Books, Ltd, 1981.
- Smock, Audrey C. "Overview of Kenya's Educational System Priorities, Other Donor Activities and US Intervention." (n.d.) Mimeo.
- Smock, Audrey C. "Women's Education and Roles in Kenya." Working Paper No. 316. Institute for Development Studies, University of Nairobi, 1977.
- Smock, Audrey C. Notes on education in Kenya (n.d.).
- Smock, Audrey C. Women's Education in Developing Countries: Opportunities and Outcomes. New York: Praeger Special Studies, 1981.
- South Coast Handpumps Project, Draft Final Report.
- Staudt, K. "The Effects of Government Agricultural Policy on Women Farmers: Preliminary Findings from Idakho Location in Kakamega District." Working Paper No. 225. Institute for Development Studies, University of Nairobi. Mimeo, 1975.
- Stephenson, et. al. "Water, Sanitation, and Knowledge about Urinary Schistosomiasis in a Kenyan Coastal Community: A Study Combining Ethnographic and Survey Techniques" in Schistosomiasis and Malnutrition. Cornell International Nutrition Monograph Series. No. 16 (1986).

- Stewart, F. "Strategies for Development." In T. Killick (ed.), Papers on the Kenyan Economy: Performance, Problems and Policies. Nairobi, Heinemann Educational Books, Ltd., 1981.
- Study on the Production and Marketing of Women's Groups Products in Kenya, 1984. Nairobi: Business and Economic Research Co., Ltd. submitted to SIDA, Vol. 1, Main Report.
- Todaro, M. "Education and National Economic Development in Kenya." In T. Killick (ed.), Papers on the Kenyan Economy: Performance, Problems and Policies. Nairobi, Heinemann Educational Books Ltd., 1981.
- Toomey, G. "A Kenyan Community Fights Schistosomiasis." IDRC Reports, (1986).
- UNDP/PROWESS. "Kenya: Participatory Training-of-Trainers Workshop. Alternative Strategies for Involving Rural Women in the Water Decade." UNDP/PROWESS project INT/83/003, 1986.
- UNICEF Social Statistics Bulletin. "Nutritional Status of Young Children", 4.1. Nairobi, East Africa Regional Office, 1981.
- UNICEF. The State of the World's Children Report 1984, Oxford University Press, 1984.
- UNICEF. Situation Analysis of Women and Children (4 Volumes) also published by Government of Kenya.
- Vandemoortele, J. & Van der Hoeven R. "Income Distribution and Consumption Patterns in Urban and Rural Kenya by Socio-economic Groups." World Employment Research Working Paper No. 38. Geneva, ILO, 1982.
- Vandemoortele, J. "The Public Sector and the Basic Needs Strategy in Kenya: The Experience of the Seventies." World Employment Programme Research Working Paper No. 46. Geneva, ILO, 1983.
- Warner, D. Evaluation of the Development Impact of Rural Water Supply Projects in East African Villages. Stanford University, Ph.D. dissertation, 1973.
- Weisner, B. "Man-made Famine in Eastern Kenya: The Interrelationship of Environment and Development." In P. O'Keefe & B. Weisner (eds.), Land Use and Development. African Environment Special Report 5. London, International African Institute, 1977.
- Were, Miriam K. "Health Trends in Kenya with Special Reference to Women and Health: 1974-1984", Prepared for U.N. Decade for Women Conference, University of Nairobi, 1985.

- Were, Miriam K. "Organization and Management of Community Based Health Care." (n.d.).
- Wheeler, David. "Female Education, Family Planning, Income, and Population: A Long-Run Econometric Simulation Model." The World Bank, Washington, D.C. (n.d.).
- White, G., D. Bradley, & A. White. Drawers of Water. Domestic Water Use in E. Africa. Chicago: University of Chicago Press, 1972.
- Whiting, M. & A. Krystall. "The Impact of Rural Water Supply Projects on Women." Draft of report, CARE, Nairobi, Kenya, 1977.
- Whittington, D. & X. Mu. "Calculating the Value of Time Spent Collecting Water: Some Estimates for Ukunda, Kenya." Report to the UNDP/World Bank Handpumps Project, 1987.
- WHO. International Drinking Water Supply and Sanitation Decade. Review of National Programs 1983, 1985.
- Winblad Konsult/SIDA. "Sanitation and Health. A Study of three SIDA supported Programmes in Kenya", 1987.
- World Bank. Kenya: Population and Development: A World Bank Country Study. Washington, D.C., World Bank, 1980.
- *World Bank. Kenya Country Economic Memorandum. Washington, D.C., World Bank, 1981.
- *World Bank. Growth and Structural Change in Kenya: Basic Economic Report 1982, with Annex. 1: Poverty and Growth in Kenya, Annex. 2: Issues in Kenyan Agricultural Development, Annex 3: The Industrialization Process: Growth and Structural Adjustment. Washington, D.C., World Bank, 1982.
- *World Bank. Staff Appraisal Report: The Republic of Kenya Sixth Education Project. Report No. 5864-KE. Washington, D.C., November 13, 1985.
- *World Bank. Staff Appraisal Report: Kenya: Third Population Project, 1987. Report No. 7053-KE. Washington, D.C., 1987.
- *World Bank. Kenya Country Economic Memorandum, Report No. 6704-KE, 1987.
- *World Bank. Kenya: Policies and Prospects for Restoring Sustaining Growth of per capita Incomes, Report No. 6021-KE, 1986.
- World Bank. Population Growth and Policies in Sub-Saharan Africa, A World Bank Policy Study, 1986.
- * RESTRICTED DOCUMENT FOR INTERNAL USE ONLY.

- *World Bank. Report and Recommendations of the President of the International Development Association to the Executive Directors on a Proposed Credit and a Proposed African Facility Credit to the Republic of Kenya for an Agricultural Sector Adjustment Operation, 1986. Washington, D.C.: The World Bank, Report No. P-4278-KE.
- World Bank. World Development Report 1987. Oxford University Press, 1987.
- *World Bank. Kenya Agricultural Inputs Review, Vols. I and II, 1985. Washington, D.C.: The World Bank, Eastern and Southern Africa Projects Department, Central Agricultural Division.
- *World Bank. Kenya Policies and Prospects for Restoring Sustaining Growth of per Capita Incomes, 1986. Nairobi: The World Bank: Eastern and Southern African Regional Office.
- *World Bank. Kenyan Women and Smallholder Agricultural Productivity, Washington, D.C.: The World Bank, Office of the Advisor on Women in Development, 1982.
- World Fertility Survey. Kenya Fertility Survey, 1978: A Summary of Findings. Report 26. Voorburg, International Statistical Institute, (n.d.).
- World Health Organization. Risk Approach for Maternal and Child Health Care. WHO Offset Publication 39. Geneva, WHO, 1978.
- World Health Organization, 1979. Formulating Strategies for Health for All by the Year 2000. Geneva, WHO, 1979.

ANNEXES

STATISTICAL ANNEX
ON AGRICULTURE

Table 1

Percent Distribution of Women 15-49
by Selected Characteristics
1984

	<u>NAIROBI</u>	<u>COAST</u>	<u>EASTERN</u>	<u>CENTRAL</u>	<u>RIFT</u>	<u>NYANZA</u>	<u>WESTERN</u>
<u>Area of Residence</u>							
Urban	100.0	29.0	1.8	7.6	9.6	8.9	9.5
Rural	-	71.0	98.2	92.4	90.4	91.1	90.5
<u>Level of Education</u>							
None	14.3	55.7	32.2	20.6	43.1	34.6	34.2
1-4	9.4	9.9	17.1	14.4	16.1	21.6	14.8
5-8	33.8	22.0	32.8	42.5	29.1	30.8	31.9
9+	42.5	12.2	17.6	22.3	10.8	12.6	19.0
<u>Literacy Status</u>							
Illiterate	12.2	51.9	34.9	21.9	39.1	38.5	35.9
Literate	87.8	48.1	65.1	78.1	60.9	61.5	64.1
H Literate	96.1	71.9	84.2	90.9	76.3	87.9	83.0
<u>Work Status</u>							
Currently working	32.9	16.3	62.3	14.4	20.3	19.9	15.3
Worked in past	10.2	9.8	47.6	14.6	11.1	14.5	9.3
Never work	56.9	14.0	40.1	71.1	68.6	65.6	75.4
<u>Marital Status</u>							
1. Never Married	33.9	21.4	24.6	36.3	24.4	15.8	29.1
2. Married in past	5.3	9.2	7.9	7.4	8.7	7.6	5.5
3. M, H away	4.7	13.7	18.8	14.7	10.9	20.4	20.2
4. M, H present	56.1	55.6	48.7	41.6	56.9	50.2	45.2
5. (1+2+3)	43.9	44.4	51.3	58.4	43.1	43.8	54.8
6. Not married (1+2)	39.2	30.6	32.5	43.7	33.1	23.4	34.6

Source: GOK, KCPR, 1984

TABLE 2

PERCENTAGE DISTRIBUTION OF POPULATION OVER 15 YEARS OF AGE BY SEX
AND ACTIVITY, BY FREQUENCY OF ACTIVITY AND PROVINCE

		COAST		EASTERN		CENTRAL		RIFT VALLEY		MYANZA		WESTERN		NATIONAL	
		R	S	R	S	R	S	R	S	R	S	R	S	R	S
POULTRY CARE	M	2.4	3.7	2.7	3.0	3.0	1.3	3.4	4.5	4.6	6.3	1.1	0.7	3.0	3.5
	F	8.2	3.7	5.7	3.6	7.5	2.3	14.6	1.1	11.8	3.7	4.2	0.7	9.2	2.5
STALL FEEDING	M	0.8	0.0	9.7	4.3	25.6	9.5	4.6	3.1	3.2	1.2	6.7	4.2	8.1	3.7
	F	1.2	0.0	14.1	4.2	45.2	5.9	6.8	1.7	2.8	1.6	9.9	1.8	12.3	2.7
GRAZING CATTLE	M	9.8	3.3	25.3	12.7	28.5	8.9	24.8	20.4	34.0	11.1	22.6	11.7	25.2	13.1
	F	4.9	4.5	24.8	13.7	29.8	7.9	36.1	16.9	15.7	19.4	15.2	14.1	24.1	14.0
MILKING CATTLE	M	6.5	1.2	11.3	5.5	19.7	10.5	7.9	13.4	14.8	10.2	14.8	4.6	11.8	8.3
	F	6.9	2.0	38.3	4.6	35.1	9.8	57.9	3.0	32.6	7.2	19.1	4.6	37.4	4.9
GRAZING GOATS OR SHEEP	M	19.6	10.6	25.0	17.0	24.6	10.5	17.6	12.8	21.5	9.3	13.4	7.4	20.9	12.5
	F	15.1	9.8	35.9	15.4	39.3	6.2	28.7	10.8	10.6	17.1	16.6	7.1	26.7	12.2
FOOD PREPARATION AND COOKING	M	6.9	2.0	4.6	3.3	5.6	5.6	4.9	3.1	3.0	1.4	3.9	6.0	4.7	3.4
	F	91.0	1.6	88.2	1.7	88.9	1.0	92.1	1.1	88.9	0.9	91.5	1.1	90.0	1.3
HOUSE CLEANING	M	9.0	1.6	4.9	3.3	6.6	2.6	4.2	1.5	2.1	1.9	2.8	6.7	4.6	2.8
	F	88.2	2.4	88.2	2.0	89.8	1.0	90.6	2.8	90.5	1.6	92.2	1.4	89.7	2.0
CHILD CARE	M	2.9	5.7	1.5	3.4	1.6	4.3	1.0	1.4	0.7	9.0	0.4	9.9	1.3	4.7
	F	63.3	2.0	58.7	3.6	65.9	0.7	64.8	2.5	66.2	3.0	64.3	0.4	63.2	2.4
BUYING FOOD	M	37.6	19.2	23.1	16.6	18.0	17.4	30.7	25.9	6.3	31.9	20.8	27.6	22.9	22.8
	F	52.2	16.7	72.7	9.0	85.6	4.6	66.1	16.3	76.6	10.0	74.2	9.5	71.4	11.3
FETCHING WATER	M	9.0	3.3	4.8	3.6	6.6	3.0	4.9	3.2	3.5	1.2	3.9	3.2	5.1	3.0
	F	88.2	2.0	86.5	2.1	88.5	1.0	90.7	2.5	90.5	1.4	91.9	1.8	89.1	1.9
FETCHING FIREWOOD	M	9.0	2.0	5.2	4.8	7.9	6.2	4.2	2.7	3.0	1.4	4.9	5.7	5.2	3.7
	F	85.7	3.7	87.1	2.5/	89.2	2.0	89.7	2.5	88.9	1.6	91.5	1.8	88.6	2.3

R = Regularly S = Sometimes

* Percentage do not add up to 100 since "not stated" and those not performing any activity are excluded.

Source: The integrated Rural Surveys, 1976-1979, Nairobi: Central Bureau of Statistics, November 1981.

TABLE 3

PERCENTAGE DISTRIBUTION OF POPULATION OVER 15 YEARS OF AGE ENGAGED IN PRODUCTION OF CROPS FOR MARKET
BY FREQUENCY OF ACTIVITY AND SEX, BY ACTIVITY AND PROVINCE.

	COAST				EASTERN				CENTRAL				RIFT VALLEY				NYANZA				WESTERN				NATIONAL TOTAL			
	P	W	H	M	P	W	H	M	P	W	H	M	P	W	H	M	P	W	H	M	P	W	H	M	P	W	H	M
Males																												
regularly	0.0	0.0	0.0	0.0	24.8	23.9	22.4	20.4	21.3	21.6	20.0	16.7	0.3	0.3	0.3	0.3	12.7	11.3	12.0	9.5	8.8	7.4	7.8	8.5	12.5	11.9	11.4	10.2
sometimes	0.0	0.0	0.0	0.0	4.1	5.4	4.7	4.1	2.6	3.0	3.0	3.0	0.1	0.1	0.1	0.1	1.9	3.5	2.8	4.2	1.1	2.1	2.1	1.4	1.9	2.7	2.4	2.3
Females																												
regularly	0.0	0.0	0.0	0.0	23.2	29.3	28.9	25.3	31.1	35.4	32.1	30.5	0.6	0.6	0.6	0.3	11.8	16.2	15.7	12.7	6.4	10.2	9.9	5.7	12.8	16.1	15.5	13.3
sometimes	0.0	0.0	0.0	0.0	2.5	3.6	1.6	3.2	0.3	0.0	0.3	0.3	0.0	0.0	0.0	0.0	1.6	2.3	2.8	3.9	0.4	0.7	0.4	1.1	1.0	1.5	1.0	1.7
Males																												
regularly	0.0	0.0	0.0	0.0	3.9	3.8	3.4	3.3	17.0	15.1	12.8	7.5	3.2	3.0	3.4	3.4	8.1	7.4	7.2	5.6	0.4	0.7	1.1	1.1	5.1	4.7	4.5	3.6
sometimes	0.0	0.0	0.0	0.0	0.4	0.5	0.6	0.5	1.3	3.9	3.6	5.2	0.6	0.7	0.6	0.4	1.4	2.5	2.3	2.8	0.0	0.4	0.0	0.0	0.6	1.2	1.1	1.3
Females																												
regularly	0.0	0.0	0.0	0.0	3.2	3.8	3.8	3.7	18.4	23.3	21.6	21.3	3.4	3.2	3.8	3.2	5.8	10.0	10.2	9.5	1.1	1.8	2.1	2.1	4.8	6.2	6.2	5.9
sometimes	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	3.6	1.3	1.0	1.0	0.3	0.7	0.3	0.7	3.0	0.7	0.2	0.9	0.0	0.0	0.0	0.0	1.0	0.5	0.2	0.5
Males																												
regularly	0.0	0.0	0.0	0.0	0.4	0.2	0.1	0.1	5.9	5.2	4.3	3.3	12.1	11.3	10.7	10.8	8.1	8.6	8.6	5.6	0.0	0.0	0.0	0.0	5.1	4.8	4.6	4.0
sometimes	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	1.0	1.3	1.6	1.0	1.3	1.3	1.4	1.3	1.6	1.6	1.4	2.5	0.0	0.0	0.0	0.0	0.7	0.7	0.8	0.9
Females																												
regularly	0.0	0.0	0.0	0.0	0.4	0.4	0.2	0.2	9.2	9.5	8.9	7.9	14.8	15.0	14.1	7.7	11.6	11.6	11.6	11.1	0.0	0.0	0.0	0.0	6.7	6.8	6.4	4.6
sometimes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.7	1.0	0.3	0.3	0.6	1.7	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.6
Males																												
regularly	2.0	2.9	2.4	1.6	9.6	10.2	10.2	9.0	1.3	1.0	1.3	0.7	2.8	2.8	2.7	2.4	11.8	10.0	10.6	9.0	3.2	3.2	3.2	3.2	6.0	5.9	6.0	5.2
sometimes	0.0	0.0	0.0	0.0	1.8	1.6	1.5	1.4	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.3	0.9	2.3	1.9	2.3	4.9	4.9	4.9	4.6	1.3	1.4	1.3	1.4
Females																												
regularly	4.5	4.5	4.5	4.5	13.2	13.8	13.7	9.1	3.3	3.3	3.3	3.3	2.4	2.4	2.4	0.4	11.6	10.2	12.5	9.3	7.4	7.4	7.4	5.7	7.7	7.7	8.0	5.5
sometimes	0.0	0.0	0.0	0.0	0.9	0.2	0.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.9	3.0	0.9	2.5	1.4	1.4	1.4	1.4	0.7	0.7	0.4	1.5

Percentages do not add up to 100 since not stated and those not performing the activity are excluded.

P = Planting W = Weeding H = Harvesting M = Marketing

Source= GOK, IRS 1978/79

TABLE 4

PERCENT DISTRIBUTION OF THE DIVISION OF LABOR ON MAIZE, CASH CROPS,
LIVESTOCK AND HOUSEHOLD TASKS, BY TYPE OF HOUSEHOLD HEAD

TYPE OF HOUSEHOLD HEAD AND TASK	WOMAN ONLY	MAN ONLY	WOMAN & MAN	TASKS REGULARY DONE BY:				OTHER	TOTAL %
				WOMEN, MAN & CHILDREN*	WOMEN & CHILDREN*	MAN & CHILDREN*	CHILDREN*		
MAIZE									
<u>Married men</u>									
Maize planting	26%	--	60%	10%	3%	--	--	1%	100%
Maize weeding	25	--	60	10	4	--	--	1	100
Maize harvesting	27	--	60	9	3	--	--	1	100
Maize marketing	52	18	28	1	1	--	--	0	100
<u>Married women</u>									
Maize planting	74	--	18	2	5	--	--	1	100
Maize weeding	71	--	18	3	5	--	--	3	100
Maize harvesting	74	--	18	2	4	--	--	2	100
Maize marketing	93	1	6	---	---	--	--	---	100
<u>Unmarried women</u>									
Maize planting	69	--	19	3	8	--	--	1	100
Maize weeding	69	--	19	3	8	--	--	1	100
Maize harvesting	70	--	19	3	8	--	--	---	100
Maize marketing	89	--	6	2	3	--	--	---	100
COFFEE, TEA, & PYRETHRUM									
<u>Married Men</u>									
Cash crop weeding	22	6	64	7	1	--	--	---	100
Cash crop harvesting	21	4	65	7	2	--	--	1	100
Cash crop marketing	25	20	50	2	2	--	--	1	100
<u>Married Women</u>									
Cash crop weeding	76	5	16	---	3	--	--	---	100
Cash crop harvesting	70	3	19	---	5	--	--	3	100
Cash crop marketing	78	8	11	---	3	--	--	---	100
<u>Unmarried Women</u>									
Cash crop weeding	52	5	31	4	8	--	--	---	100
Cash crop harvesting	46	4	35	3	9	--	--	3	100
Cash crop marketing	63	7	25	2	3	--	--	---	100
LIVESTOCK									
<u>Married Men</u>									
Cattle grazing	22	38	19	5	5	4	7	---	100
Sheep & Goat grazing	28	26	20	5	7	4	10	---	100
Milking cows	66	17	11	---	3	--	3	---	100
<u>Married women</u>									
Cattle grazing	51	22	2	2	9	2	12	---	100
Sheep & Goat grazing	57	11	4	---	9	4	15	---	100
Milking cows	89	7	---	---	2	--	---	---	100
<u>Unmarried women</u>									
Cattle grazing	49	18	8	1	11	2	11	---	100
Sheep & Goat grazing	59	14	8	---	10	1	8	---	100
Milking cows	79	12	4	---	5	--	---	---	100
HOUSEHOLD TASKS									
<u>Married Men</u>									
House cleaning	84	--	---	---	14	--	--	2	100
Childcare	80	--	---	---	16	--	--	4	100
Fetching water	80	--	---	---	18	--	--	2	100
Fetching firewood	81	--	---	---	16	--	--	3	100
<u>Married women</u>									
House cleaning	85	--	---	---	13	--	--	2	100
Childcare	87	--	---	---	11	--	--	2	100
Fetching water	80	--	---	---	18	--	--	2	100
Fetching firewood	82	--	---	---	15	--	--	3	100
<u>Unmarried women</u>									
House cleaning	88	--	---	---	10	--	--	2	100
Childcare	82	--	---	---	11	--	--	7	100
Fetching water	87	--	---	---	11	--	--	2	100
Fetching firewood	87	--	---	---	11	--	--	2	100

* Children aged 6-14 years

Source: Calculations based on data in Barnes & Warner, 1982., from GOK, IRDP, 1976-79.

TABLE 5*

TYPE OF EXTENSION RECOMMENDATION ADOPTED BY WOMEN FARMERS
BY WOMEN'S EXTENSION STATUS IN MURANG'A DISTRICT

TYPE OF RECOMMENDATION	WOMEN'S EXTENSION STATUS	
	CONTACT	FOLLOWER
Spacing maize	16 (94.1)	27 (81.8)
Spacing beans	13 (92.9)	15 (71.4)
Spacing potatoes	3 (50.0)	7 (63.6)
Fertilize maize	13 (81.3)	17 (58.6)
Fertilize beans	9 (81.8)	13 (59.1)
Spraying coffee	7 (70.0)	5 (71.4)
Prunning coffee	8 (88.9)	6 (85.7)
Planting maize & beans seperately	3 (75.0)	4 (33.3)

*The numbers in parentheses are the percentage of contact or follower farmers that adopted the recommendation given to them by the T.A.

Source: Calculated from Safilios, 1986

TABLE 6

FERTILIZER USE BY WOMEN FARMERS ON THEIR PLOTS BY EXTENSION
STATUS AND BY TYPE OF CROP IN MURANG'A DISTRICT

Women's Extension Status	TYPE OF CROPS							
	Coffee		Maize		Beans		Potatoes	
	N	%	N	%	N	%	N	%
Contact farmers	7	(38.9)	18	(100.0)	14	(77.8)	14	(77.8)
Follower farmers	5	(15.2)	33	(100.0)	16	(46.5)	23	(69.7)
Neither contact nor followers	10	(45.5)	19	(86.4)	5	(22.7)	10	(45.5)
TOTAL	22	(30.1)	70	(95.9)	35	(47.9)	47	(64.4)

Source: Calculated from Safilios, 1986

STATISTICAL ANNEX ON AGRICULTURE

TABLE 7

WOMEN'S AGRICULTURAL INCOME BY WOMEN'S EXPENDITURE FOR AGRICULTURAL INPUTS IN MURANG'A DISTRICT

WOMEN'S AGRICULTURAL INCOME	EXPENDITURE FOR AGRICULTURAL INPUTS		
	UP TO SHS 500 PER YEAR	OVER SHS 500/YEAR	NONE
Upto KShs. 2,500	6 (33.3)	1 (5.9)	10 (58.8)
2,720 - 10,000	9 (33.3)	9 (33.3)	9 (33.3)
20,065 and over	3 (17.7)	11 (64.7)	3 (17.7)
No agricultural income			13 (100.0)
TOTAL	18 (24.3)	21 (28.4)	35 (47.3)

Source: Calculated from Safilios, 1986

TABLE 8

WOMEN FARMER'S SOURCES OF SUPPLY OF AGRICULTURAL INPUTS IN MURANGA *

Agricultural Inputs	SOURCES OF SUPPLY			
	K.G.G.C.U.	Store	Coffee Factory	KFA
Improved Seeds	9 (52.9)	30 (48.4)	16 (25.8)	7 (11.3)
Fertilizer	18 (23.4)	29 (37.7)	22 (28.6)	11 (14.3)
Pesticides	5 (10.9)	18 (39.1)	21 (45.7)	

*Frequencies and percentages in this table refer to the number of times a particular source of supply was mentioned alone or in combination.

Source: Calculated from Safilios, 1986

TABLE 9A

SIZE OF LAND CULTIVATED BY WOMEN FARMERS' EXTENSION
STATUS IN MERU

WOMEN'S EXTENSION STATUS	SIZE OF CULTIVATED LAND					TOTAL
	No individual land	up to 0.75	1.00 acre	1.25-2.00 acres	2.50-5.00 acres	
Contact farmers	3 (12.0)	4 (16.0)	5 (20.0)	11 (44.0)	2 (8.0)	25 (110.0)
Follower farmers	5 (13.9)	4 (11.1)	7 (19.4)	14 (38.9)	6 (16.7)	36 (100.0)
Neither contact nor followers	6 (17.6)	6 (17.6)	12 (35.3)	6 (17.6)	4 (11.8)	34 (100.0)
TOTAL	14 (14.7)	14 (14.7)	24 (25.3)	31 (32.6)	12 (12.6)	95 (100.0)

Source: Calculated from Safilios, 1986

TABLE 9B
SIZE OF LAND CULTIVATED BY WOMEN FARMERS' EXTENSION
STATUS IN MURANGA

WOMEN'S EXTENSION STATUS	SIZE OF CULTIVATED LAND					TOTAL
	No individual land	less than 1 acre	1 acre acre	1 - 2.5 acres	2.5 - 5 acres	
Contact farmers	6 (26.0)	2 (8.8)	3 (13.1)	6 (26.1)	6 (26.1)	23 (100.0)
Follower farmers	7 (16.3)	10 (11.1)	9 (21.0)	9 (21.0)	8 (18.7)	43 (100.0)
Neither contact nor followers	6 (21.5)	9 (32.2)	5 (17.9)	5 (17.9)	3 (10.8)	28 (100.0)
TOTAL	19 (20.2)	21 (22.4)	17 (18.1)	20 (21.3)	17 (18.1)	94 (100.0)

Source: Calculated from Safilios, 1986

TABLE 10A

AGRICULTURAL DECISION-MAKING FOR WIFE'S PLOT BY HUSBAND'S
PRESENCE OR ABSENCE FROM HOME IN MERU

TYPE OF DECISION BY HUSBAND'S PRESENCE OR ABSENCE	DECISION MAKER					
	HUSBAND		JOINTLY		WIFE	
	N	%	N	%	N	%
A. HUSBAND WORKS NEAR HOME						
What crops to grow	--	-----	6	(12.8)	41	(87.2)
Use of fertilizer	1	(2.3)	6	(14.0)	36	(83.7)
Use of improved seeds	1	(2.1)	5	(10.6)	41	(87.2)
How much to sell	1	(2.1)	6	(12.8)	40	(85.1)
Seeking a loan	3	(6.5)	11	(23.9)	32	(69.6)
Buying agricultural tools	17	(28.8)	30	(50.8)	12	(20.3)
B. HUSBAND WORKS AWAY FROM HOME						
What crops to grow	--	-----	2	(9.1)	20	(90.9)
Use of fertilizer	--	-----	2	(9.5)	19	(90.5)
Use of improved seeds	--	-----	2	(9.5)	19	(90.5)
How much to sell	--	-----	2	(9.1)	20	(90.9)
Seeking a loan	3	(13.6)	4	(18.2)	15	(68.2)
Buying agricultural tools	1	(4.5)	14	(63.6)	7	(31.8)

Source: Calculated from Safilios, 1986

TABLE 10B

AGRICULTURAL DECISION-MAKING FOR WIFE'S PLOT BY HUSBAND'S
PRESENCE OR ABSENCE FROM HOME IN MURANGA

TYPE OF DECISION BY HUSBAND'S PRESENCE OR ABSENCE	DECISION MAKER					
	HUSBAND		JOINTLY		WIFE	
	N	%	N	%	N	%
A. HUSBAND WORKS NEAR HOME						
What crops to grow	1	(3.2)	7	(22.6)	23	(74.2)
Use of fertilizer	5	(16.1)	5	(16.1)	21	(67.7)
Use of improved seeds	4	(12.9)	5	(16.1)	22	(71.0)
How much to sell	1	(3.4)	6	(17.2)	40	(79.3)
Seeking a loan	7	(25.0)	6	(21.4)	15	(53.6)
Buying agricultural tools	21	(47.7)	9	(20.5)	14	(31.8)
B. HUSBAND WORKS AWAY FROM HOME						
What crops to grow	2	(6.3)	1	(3.1)	29	(90.6)
Use of fertilizer	1	(3.1)	-	-	31	(96.9)
Use of improved seeds	1	(3.2)	-	-	30	(96.8)
How much to sell	1	(3.1)	1	-	31	(96.9)
Seeking a loan	5	(16.7)	4	(13.3)	21	(70.0)
Buying agricultural tools	9	(25.7)	34	(8.6)	23	(65.7)

Source: Calculated from Safilios, 1986

TABLE 11A

AGRICULTURAL DECISION-MAKING FOR FAMILY PLOT BY HUSBAND'S
PRESENCE OR ABSENCE FROM HOME IN MERU

TYPE OF DECISION BY HUSBAND'S PRESENCE OR ABSENCE	DECISION MAKER					
	HUSBAND		JOINTLY		WIFE	
	N	%	N	%	N	%
A. HUSBAND WORKS NEAR HOME						
What crops to grow	34	(58.6)	24	(41.4)	--	-----
Use of fertilizer	38	(69.1)	16	(29.1)	1	(1.8)
Use of improved seeds	36	(63.2)	21	(36.8)	--	-----
How much to sell	32	(56.1)	19	(33.3)	6	(10.5)
Seeking a loan	38	(80.9)	7	(14.9)	2	(4.3)
B. HUSBAND WORKS AWAY FROM HOME						
What crops to grow	5	(25.0)	15	(75.0)	--	-----
Use of fertilizer	7	(35.0)	13	(65.0)	--	-----
Use of improved seeds	3	(15.0)	12	(60.0)	5	(25.5)
How much to sell	2	(10.0)	10	(50.0)	8	(40.0)
Seeking a loan	14	(73.7)	5	(26.3)	--	-----

Source: Calculated from Safillios, 1986

TABLE 11B

AGRICULTURAL DECISION-MAKING FOR FAMILY PLOT BY HUSBAND'S
PRESENCE OR ABSENCE FROM HOME IN MURANGA

TYPE OF DECISION BY HUSBAND'S PRESENCE OR ABSENCE	DECISION MAKER					
	HUSBAND		JOINTLY		WIFE	
	N	%	N	%	N	%
A. HUSBAND WORKS NEAR HOME						
What crops to grow	15	(42.9)	7	(20.0)	13	(37.1)
Use of fertilizer	20	(57.1)	7	(20.0)	8	(22.9)
Use of improved seeds	11	(40.7)	6	(22.2)	10	(37.0)
How much to sell	5	(19.2)	7	(26.9)	14	(53.8)
Seeking a loan	26	(81.3)	7	(18.8)	-	-
B. HUSBAND WORKS AWAY FROM HOME						
What crops to grow	15	(71.4)	2	(9.5)	4	(19.0)
Use of fertilizer	16	(72.7)	1	(4.5)	5	(22.7)
Use of improved seeds	13	(61.9)	1	(4.8)	7	(33.3)
How much to sell	14	(70.0)	-	-	6	(30.0)
Seeking a loan	20	(100.0)	-	-	-	-

Source: Calculated from Safilios, 1986

TABLE 12*

TYPE OF EXTENSION RECOMMENDATION ADOPTED BY WOMEN FARMERS
BY WOMEN EXTENSION STATUS IN MERU

TYPE OF RECOMMENDATION	WOMEN'S EXTENSION STATUS	
	CONTACT	FOLLOWER
Spacing maize	22 (78.3)	24 (80.0)
Spacing beans	15 (88.2)	19 (82.6)
Spacing potatoes	8 (88.9)	9 (90.0)
Fertilize maize	8 (50.0)	7 (50.0)
Fertilize beans	4 (40.0)	3 (25.0)
Spraying coffee	8 (88.2)	5 (83.3)
Prunning coffee	2 (66.7)	-- -----
Planting maize & beans seperately	1 (14.3)	1 (11.1)

*The numbers in parentheses are the percentage of contact/follower farmers that adopted the recommendation given to them by the T.A.

Source: Calculated from Safilios, 1986

TABLE 13

FERTILIZER USE BY WOMEN FARMERS ON THEIR PLOTS BY WOMEN'S EXTENSION
STATUS AND BY TYPE OF CROP IN MERU

WOMEN'S EXTENSION STATUS	TYPE OF CROPS		
	MAIZE	POTATOES	BEANS
Contact farmers	13 (100.0)	10 (76.9)	5 (38.5)
Follower farmers	14 (100.0)	9 (64.3)	6 (42.9)
Neither contact nor followers	10 (100.0)	6 (60.0)	2 (20.0)
TOTAL	37 (100.0)	25 (100.0)	13 (100.0)

Source: Calculated from Safilios, 1986

TABLE 14

WOMEN'S AGRICULTURAL INCOME BY WOMEN'S EXPENDITURE
FOR AGRICULTURAL INPUTS IN MERU

WOMEN'S AGRICULTURAL INCOME	EXPENDITURE FOR AGRICULTURAL INPUTS			
	UP TO SHS 96 PER YEAR	OVER SHS 96/YEAR	NONE	TOTAL
Upto KShs. 1,500	--	4	8	12
	-----	(33.3)	(66.7)	(100.0)
1,508 - 3,500	5	11	13	29
	(17.2)	(37.9)	(44.8)	(100.0)
3,560 - 7,440	9	12	3	24
	(37.5)	(50.0)	(12.5)	(100.0)
7,700 and over	1	9	3	13
	(7.7)	(69.2)	(23.1)	(100.0)
No agricultural income	--	--	3	3
	-----	-----	(100.0)	(100.0)
TOTAL	15	36	30	81
	(18.5)	(44.4)	(37.0)	(100.0)

Source: Calculated from Safilios, 1986

TABLE 15

WOMEN FARMER'S SOURCES OF SUPPLY OF AGRICULTURAL
INPUTS IN MERU *

Agricultural Inputs	K.G.G.C.U.	SOURCES OF SUPPLY		
		STORE	COFFEE FACTORY	KFA
Improved Seeds	15	24	--	18
	(24.2)	(38.7)	-----	(29.0)
Fertilizer	5	20	--	11
	(13.5)	(54.1)	-----	(29.7)
Pesticides	8	23	--	23
	(14.5)	(41.8)	-----	(41.8)

* Frequencies and percentages in this table refer to the number of times a particular source of supply was mentioned alone or in combinations.

Source: Calculated from Safilios, 1986

TABLE 16

NUMBER OF SMALLHOLDINGS, NUMBER OF T.A.'S AND J.T.A.'S AND
RATIO OF EXTENSION STAFF TO FARM HOLDINGS IN THREE DIVISIONS OF
MURANG'A DISTRICT

DIVISION AND LOCATION	NUMBER OF SMALLHOLDINGS	NUMBER OF		RATIO OF
		T.A.'S	J.T.A.'S	EXTENSION/ FARMS
KIGUMO DIVISION				
Muthithi Location	5,478	-	6*	913
Nginda Location	7,461	-	6*	1,244
Kamahuha Location	8,067	-	6*	1,345
Kinyona Location	4,807	-	7*	687
Kigumo Location	4,971	-	6*	829
KANGEMA DIVISION				
Lyego Location	6,201	3	4	886
Kamacharia Location	3,524	3	2	705
Kiriti Location	5,119	5	3	640
Kanyenyaini Location	3,673	2	3	735
Kiru Location	6,992	6	-	1,154
Gitugi Location	3,960	3	3	660
MAKUYU DIVISION				
Makuyu Location	4,023	2	2	1,006
Mitombili Location	2,400	2	-	1,200
Ithanga Location	2,413	3	-	804
Kakuzi Location	4,030	3	-	1,343
Samuru Location	2,936	3	-	979

* No data distinguishing between T.A.'s and J.T.A.'s were available.

Source: Safilios, 1986

TABLE 17

STATISTICAL ANNEX ON AGRICULTURE

NUMBER OF FARM HOLDINGS, NUMBER OF T.A.'S AND J.T.A.'S AND RATIO OF
EXTENSION STAFF TO FARM HOLDINGS BY DIVISION
AND LOCATION IN MERU DISTRICT

DIVISION AND LOCATION	NUMBER OF FARM HOLDINGS	T.A.'S'S	NUMBER OF J.T.A.'S	RATIO OF EXTENSION STAFF TO FARM HOLDINGS
<u>South Imenti</u>				
Nkuene Location	5,480	9	5	391
Mitunguu Location	3,580	1	6	511
Kanyakine Location	2,800	3	8	245
Igoji Location	3,000	3	6	333
Mitine Location	2,730	2	5	390
Abogeta Location	1,919	1	8	213
<u>Tigaria Division</u>				
Mituntu Location	3,093	-	1	3,093
Muthaka Location	12,072	2	-	6,036
Thangatha Location	3,760	1	3	940
Mikinduri Location	5,720	1	2	1,907
Uringu Location	2,356	1	2	875
Mberu Location	1,990	1	2	633
Kiangai Location	3,348	-	2	1,674
Akithi Location	5,202	1	3	1,300
<u>Nithi Division</u>				
Chogoria Location	3,297	8	12	165
Muthambi Location	3,884	4	8	324
Kajuki Location	1,250	-	5	250
Magumoni Location	5,008	5	10	334
Kiera Location	5,092	4	9	392
Karingani Location	4,848	6	10	303
<u>North Imenti Location</u>				
Kriirua Location	3,721	1	6	532
Gatimbi Location	4,173	1	3	1,043
Nyaki Location	10,421	3	7	1,042
Kibirichia Location	2,270	3	5	284
Abothuguchi Location	11,203	2	4	1,867
Giaki Location	2,850	1	4	570
Ntima Location	4,549	4	4	569
Mwanganthia Location	2,568	3	5	321
<u>Timan Division</u>				
Buuri Sub-Location	1,379	1	-	1,379
Ngaredare Sub-Location	800	3	-	267
Ngusishi Sub-Location	800	2	-	400
Kithithina Sub-Location	756	2	2	189
Ontulili Sub-Location	830	3	-	277

Source: Safilios, 1986

Table 1

Population Data Age 6-13 (extrapolated from ages 6-12 & 6-14)

	1985				1986			
	M	F	TOTAL	FEMALE/ TOTAL	M	F	TOTAL	FEMALE/ TOTAL
CENTRAL	408,892	401,641	810,533	49.8%	424,316	416,767	641,163	49.5%
COAST	192,519	183,902	376,421	48.9%	208,067	191,067	390,134	46.8%
EASTERN	451,109	441,980	893,088	49.5%	489,021	459,435	928,456	49.5%
NORTH EASTERN	65,096	57,019	122,115	46.7%	65,001	59,632	127,733	46.7%
NYANZA	442,664	437,988	880,662	49.7%	457,639	452,702	916,341	49.7%
RIFT VALLEY	532,124	516,309	1,048,432	49.2%	556,462	538,784	1,094,226	49.7%
WESTERN	299,442	296,332	595,773	49.7%	316,308	307,002	617,310	49.7%
NAIROBI	84,623	93,887	178,310	52.5%	88,962	98,896	187,650	52.6%
TOTAL	2,476,469	2,429,058	4,905,534	49.5%	2,605,776	2,524,285	4,903,013	49.5%

Source: GOK, Kenya Population Projections, 1983

Table 2a

Enrollment in Primary School by Standard and by Province, 1986

	Std 1		Std 2		Std 3		Std 4		Std 5		Std 6		Std 7		Std 8	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
CENTRAL	67,026	62,870	59,535	55,967	54,750	53,665	53,668	54,838	50,472	50,025	49,368	50,675	45,563	46,334	34,419	31,535
COAST	34,150	27,814	26,109	21,136	24,568	18,804	22,740	19,123	21,267	16,238	19,195	15,504	18,233	12,824	15,076	8,803
EASTERN	86,070	82,857	66,370	63,098	60,288	60,247	58,834	59,076	52,364	54,194	49,292	50,282	47,376	46,667	35,065	29,616
NORTH EASTERN	4,379	2,007	3,347	1,237	2,134	863	1,942	681	1,678	549	1,342	407	1,269	357	1,028	240
NYANZA	100,112	93,817	72,604	68,909	64,142	60,251	58,677	56,978	52,453	50,329	47,155	42,968	44,308	36,712	37,728	24,662
RIFT VALLEY	108,976	98,346	84,225	77,769	75,618	69,703	69,894	64,506	64,223	61,200	58,876	54,231	57,004	47,449	40,925	28,756
WESTERN	62,598	62,057	51,195	49,343	47,174	45,990	44,429	43,425	39,727	40,144	36,757	36,892	34,350	33,568	25,003	20,495
NAIROBI	9,680	9,390	9,372	8,984	8,904	8,729	8,769	7,821	8,073	7,643	7,594	7,260	7,158	6,527	5,867	5,736
TOTAL	472,991	439,158	372,757	346,443	337,578	318,252	318,953	306,448	290,257	280,322	269,579	258,219	255,261	230,438	195,111	149,843

Table 2b

Proportion of Girls in Primary School by Standard and by Province, 1986

	% FEMALES/TOTAL												
	TOTAL M	TOTAL F	TOTAL	1	2	3	4	5	6	7	8	TOTAL	
CENTRAL	414,801	405,909	820,710	48.4%	48.5%	49.5%	50.5%	49.8%	50.7%	50.4%	47.8%	49.5%	
COAST	181,338	140,246	321,584	44.9%	44.7%	43.4%	45.7%	43.3%	44.7%	41.3%	36.9%	43.6%	
EASTERN	455,659	446,037	901,696	49.0%	48.7%	50.0%	50.1%	50.9%	50.5%	49.6%	45.8%	49.5%	
NORTH EASTERN	17,119	6,341	23,460	31.4%	27.0%	28.8%	26.0%	24.7%	23.3%	22.0%	18.9%	27.0%	
NYANZA	477,179	434,626	911,805	48.4%	48.7%	48.4%	49.3%	49.0%	47.7%	45.3%	39.5%	47.7%	
RIFT VALLEY	559,741	501,960	1,061,701	47.4%	48.0%	48.0%	48.0%	48.8%	47.9%	45.4%	41.3%	47.3%	
WESTERN	341,233	331,914	673,147	49.8%	49.1%	49.4%	49.4%	50.3%	50.1%	49.4%	45.0%	49.3%	
NAIROBI	65,417	62,090	127,507	49.2%	48.9%	49.5%	47.1%	48.6%	48.9%	47.7%	49.4%	48.7%	
TOTAL	2,512,487	2,329,123	4,841,610	48.1%	48.2%	48.5%	49.0%	49.1%	46.9%	47.4%	39.4%	48.1%	

Source: GOK

STATISTICAL ANNEX ON EDUCATION

Table 2c
Primary School Promotion Repetition and Dropout Rates
by Standard for 1980

Provinces	Rates	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5	Std. 6	Std. 7
Central	Promotion	0.756	0.802	0.831	0.818	0.833	0.658	-
	Repetition	0.141	0.143	0.148	0.150	0.160	0.174	0.209
	Dropout	0.103	0.055	0.021	0.032	0.007	0.168	-
Coast	Promotion	0.761	0.822	0.880	0.911	0.761	-	-
	Repetition	0.107	0.088	0.091	0.088	0.089	0.112	0.153
	Dropout	0.132	0.090	0.031	0.033		0.127	-
Eastern	Promotion	0.687	0.761	0.810	0.783	0.871	0.717	-
	Repetition	0.138	0.126	0.127	0.1334	0.131	0.155	0.123
	Dropout	0.175	0.113	0.063	0.073	0.022	-	-
North Eastern	Promotion	0.561	0.648	0.710	0.721	0.863	0.750	-
	Repetition	0.058	0.068	0.081	0.083	0.099	0.078	0.111
	Dropout	0.381	0.284	0.209	0.196	0.038	0.172	-
Nyanza	Promotion	0.595	0.714	0.782	0.784	0.831	0.752	-
	Repetition	0.147	0.129	0.136	0.129	0.123	0.159	0.120
	Dropout	0.258	0.157	0.082	0.087	0.046	0.089	-
Nairobi	Promotion	0.938	0.950	0.945	0.925	0.896	0.825	-
	Repetition	0.028	0.042	0.055	0.059	0.073	0.104	0.076
	Dropout	0.034	0.008	0.0	0.16	0.021	0.071	-
Rift Valley	Promotion	0.677	0.786	0.842	0.808	0.846	0.736	-
	Repetition	0.137	0.123	0.129	0.134	0.130	0.170	0.115
	Dropout	0.186	0.091	0.029	0.058	0.024	0.094	-
Western	Promotion	0.671	0.755	0.820	0.805	0.860	0.723	-
	Repetition	0.137	0.120	0.126	0.123	0.124	0.150	0.069
	Dropout	0.191	0.124	0.054	0.072	0.016	0.127	-
Kenya Republic	Promotion	0.681	0.769	0.823	0.810	0.854	0.721	-
	Repetition	0.136	0.122	0.128	0.130	0.130	0.158	0.133
	Dropout	0.183	0.109	0.049	0.060	0.016	0.121	-

Source: Kioko (1985).

Table 3a
Secondary School Enrollment by Form and by Province
(1986)

(1) MAINTAINED SCHOOLS	<u>FORM</u>						TOTAL
	1	2	3	4	5	6	
CENTRAL	16,152		16,779	15,855	3,791	3,505	56,082
COAST	5,449		4,164	3,881	895	824	15,213
EASTERN	10,855		10,627	10,084	2,376	1,723	35,665
NORTH EASTERN	628		577	481	67	43	1,796
NYANZA	9,430		9,421	8,982	2,073	1,822	31,728
RIFT VALLEY	12,876		12,555	10,747	3,020	2,762	41,960
WESTERN	7,953		8,362	7,625	1,703	1,371	27,014
NAIROBI	6,119		5,972	5,825	1,572	1,484	20,972
TOTAL	69,462		68,457	63,480	15,497	13,534	230,430
(2) ASSISTED SCHOOLS	<u>FORM</u>						TOTAL
	1	2	3	4	5	6	
CENTRAL	13,130		12,728	8,824	70		34,752
COAST	2,085		1,213	917			4,215
EASTERN	10,947		7,927	5,364			24,238
NORTH EASTERN	45		30				75
NYANZA	9,333		6,946	4,993	194	128	21,594
RIFT VALLEY	12,303		10,624	7,004	230	236	30,397
WESTERN	9,397		9,108	6,002	198	134	24,839
NAIROBI	365		290	224	77	68	1,024
TOTAL	57,605		48,866	33,328	769	566	141,134
(3) UNAIDED SCHOOLS	<u>FORM</u>						TOTAL
	1	2	3	4	5	6	
CENTRAL	4,285		2,537	1,885	757	923	10,387
COAST	2,871		2,108	1,955	560	548	8,042
EASTERN	7,361		4,266	3,797	79	133	15,636
NORTH EASTERN	17						17
NYANZA	7,294		4,907	5,584	356	363	18,504
RIFT VALLEY	6,835		4,467	3,839	414	729	16,284
WESTERN	3,915		1,927	1,524			7,366
NAIROBI	2,902		2,700	2,651	334	335	8,922
TOTAL	35,480		22,912	21,235	2,500	3,031	85,158

SOURCE: GOK

Table 3b

Secondary Schools Enrollment by Gender

(1) MAINTAINED SCHOOLS ENROLLMENT ('000)

	1979	1980	1981	1982	1983	1984	1985	1986
GIRLS	51	61	55	70	74	74	74	84
BOYS	107	129	113	136	145	146	135	142
TOTAL	158	190	168	206	219	220	209	226
% GIRLS/TOTAL	32.3%	32.1%	32.7%	34.0%	33.8%	33.6%	35.4%	37.2%

(2) ASSISTED SCHOOLS ENROLLMENT ('000)

	1979	1980	1981	1982	1983	1984	1985	1986
GIRLS	43	48	43	46	52	53	40	
BOYS	43	48	46	50	56	57	50	
TOTAL	86	96	89	96	108	110	90	
% GIRLS/TOTAL	50.0%	50.0%	48.3%	47.9%	48.1%	48.2%	44.4%	

(3) UNAIDED SCHOOLS ENROLLMENT ('000)

	1979	1980	1981	1982	1983	1984	1985	1986
GIRLS	63	59	69	60	73	73	52	
BOYS	77	72	83	74	91	93	84	
TOTAL	140	131	152	134	164	166	136	
% GIRLS/TOTAL	45.0%	45.0%	45.4%	44.8%	44.5%	44.0%	38.2%	

(4) TOTAL SCHOOLS ENROLLMENT ('000)

	1979	1980	1981	1982	1983	1984	1985	1986
GIRLS	157	168	167	176	199	200	176	189
BOYS	227	249	242	260	292	296	259	267
TOTAL	384	417	409	436	491	496	435	456
% GIRLS/TOTAL	40.9%	40.3%	40.8%	40.4%	40.5%	40.3%	40.4%	41.4%

Source: GOK

Statistical Annex on Education

Table 3c

Percentage of Incoming Form 1 Students who are Retained
by Form, School Type and Sex, 1973-79

	Maintained		Assisted		Unaided		Total	
	M	F	M	F	M	F	M	F
Form I	100	100	100	100	100	100	100	100
Form II	95	93	92	91	86	83	91	88
Form III	94	93	93	89	73	61	86	77
Form IV	90	81	70	59	57	40	73	56
Form V	20	18	2	0.4	3	2	10	6
Form VI	17	16	1	0.1	2	1	8	4

Source: Eshiwani (1985) from GOK data

TABLE 3d EDUCATION ANNEXES

ENROLLMENT IN SECONDARY SCHOOLS BY FORM & SEX, 1981-87

	BOYS						
	1981	1982	1983	1984	1985	1986	1987
Form 1	70,196	76,465	83,090	87,337	0	93,111	95,528
Form 2	59,686	67,003	75,354	70,257	89,111	0	95,340
Form 3	50,191	53,387	61,315	65,437	81,010	80,160	0
Form 4	48,405	50,594	60,266	61,949	72,909	69,955	88,961
Form 5	7,733	6,878	6,876	8,776	13,502	12,262	13,799
Form 6	6,104	6,412	7,426	7,748	13,501	11,435	14,416
TOTAL	242,315	260,739	294,327	301,504	270,033	267,588	308,044

	GIRLS						
	1981	1982	1983	1984	1985	1986	1987
Form 1	53,264	53,137	56,524	63,138	0	68,771	69,719
Form 2	42,876	46,561	51,262	48,704	60,651	0	66,825
Form 3	35,350	37,099	41,711	45,430	52,792	60,075	0
Form 4	29,826	33,730	40,997	43,207	43,244	48,088	61,963
Form 5	3,453	3,705	4,678	4,779	5,914	6,377	7,882
Form 6	2,766	3,453	4,211	4,181	4,713	5,823	7,828
TOTAL	167,535	177,685	199,383	209,439	167,314	189,134	214,217

	TOTAL BOYS AND GIRLS						
	1981	1982	1983	1984	1985	1986	1987
Form 1	123,460	129,602	139,614	150,475	0	162,547	165,247
Form 2	102,562	113,564	126,616	118,961	149,762	0	162,165
Form 3	85,541	90,486	103,026	110,867	133,802	140,235	0
Form 4	78,231	84,324	101,263	105,156	116,153	118,043	150,924
Form 5	11,186	10,583	11,554	13,555	19,416	18,639	21,681
Form 6	8,870	9,865	11,637	11,929	18,214	17,258	22,244
TOTAL	409,850	438,424	493,710	510,943	437,347	456,722	522,261

	GIRLS %						
	1981	1982	1983	1984	1985	1986	1987
Form 1	43%	41%	40%	42%	0	42%	42%
Form 2	42%	41%	40%	41%	40%	0	41%
Form 3	41%	41%	40%	41%	39%	43%	0
Form 4	38%	40%	40%	41%	37%	41%	41%
Form 5	31%	35%	40%	35%	30%	34%	36%
Form 6	31%	35%	36%	35%	26%	34%	35%
TOTAL	41%	41%	40%	41%	38%	41%	41%

SOURCE: MOE

Table 4a

STUDENT ENROLLMENT IN PRIMARY TEACHERS TRAINING COLLEGES

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
MALE	5,157	5,250	5,058	5,382	5,821	6,911	6,845	6,690	6,542	7,413	7,558	7,618
FEMALE	3,064	3,099	2,987	3,296	3,688	4,660	5,047	4,730	4,678	5,188	5,162	5,207
TOTAL	8,221	8,349	8,045	8,678	9,509	11,571	11,892	11,420	11,220	12,601	12,720	12,825
XFEM/TOTAL	37.3%	37.1%	37.1%	38.0%	38.8%	40.3%	42.4%	41.4%	41.7%	41.2%	40.6%	40.6%

Source: GOK

Table 4b

STUDENT ENROLLMENT IN SECONDARY TEACHERS TRAINING COLLEGES

	1980	1981	1982	1983	1984	1985	1986
MALES	821	847	782	1543	1881	2065	1880
Repeaters				37	21	23	
Drop-Outs				15	33		
FEMALES	299	280	416	818	908	981	939
Repeaters				21	22	3	
Drop-Outs				1	8	1	
TOTAL	1,120	1,127	1,198	2,361	2,789	3,046	2,819
Repeaters	0	0	0	58	43	26	0
Drop-Outs	0	0	0	16	41	1	0
%FEM/TOTAL	26.7%	24.8%	34.7%	34.6%	32.6%	32.2%	33.3%

Source: GOK

Repeaters include referrals and dropouts include failures
 U of Nbi, Kenyatta used to train secondary teachers at Diploma level
 Egerton U. used to train agricultural teachers at Diploma level

Table 5a

Enrollment in Polytechnics

	1981	1982	1983	1984	1985	1986
MALES						
Mechanical Eng.	734	652	656	727	720	949
Electrical Eng.	560	935	744	775	1,127	930
Civil Eng.	492	636	719	753	902	769
Science	502	614	591	445	452	424
Business Studies	691	745	1,113	696	702	734
Printing	114	128	221	178	132	223
Institutional Mng.	5	10	6	3	7	11
General Studies	143	121	118	40	36	33
Other (Media & Maths)	57	67	157	116	91	171
TOTAL	3,298	3,908	4,325	3,733	4,169	4,244
FEMALES						
Mechanical Eng.		2	2	2	4	10
Electrical Eng.	4	9	7	19	22	22
Civil Eng.	12	15	18	61	16	22
Science	79	118	112	91	123	102
Business Studies	425	502	638	520	524	524
Printing	11	9	22	22	17	59
Institutional Mng.	102	138	157	121	166	161
General Studies	53	69	81	15	3	13
Other (Media & Maths)	33	33	56	62	31	57
TOTAL	719	895	1,093	913	906	970

Table 5b

Percent of Females Enrolled in Polytechnics

	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
Mechanical Eng.	0.0%	0.3%	0.3%	0.3%	0.6%	1.0%
Electrical Eng.	0.7%	1.0%	0.9%	2.4%	1.9%	2.3%
Civil Eng.	2.4%	2.3%	2.4%	7.5%	1.7%	2.8%
Science	13.6%	16.1%	15.9%	17.0%	21.4%	19.4%
Business Studies	38.1%	40.3%	36.4%	42.8%	42.7%	41.7%
Printing	8.8%	6.6%	9.1%	11.0%	11.4%	20.9%
Institutional Mng.	95.3%	93.2%	96.3%	97.6%	96.0%	93.6%
General Studies	27.0%	36.3%	40.7%	27.3%	7.7%	28.3%
Other (Media & Maths)	36.7%	33.0%	26.3%	34.8%	25.4%	25.0%
TOTAL	17.9%	18.6%	20.2%	19.7%	17.9%	18.6%

Source: GOK

STATISTICAL ANNEX ON EDUCATION
NAIROBI PROVINCE

Table 6a

PER CENT DISTRIBUTION OF WOMEN 15-49 BY LEVEL OF
EDUCATION AND AGE FOR NAIROBI PROVINCE, 1984

Level of Education	Total	15-24	25-34	35-49
Total Per Cent	100.0	100.0	100.0	100.0
None	14.3	8.8	20.7	24.1
1-4	9.4	8.8	6.7	20.4
5-8	33.8	35.2	32.3	30.9
9+	42.5	47.2	40.3	24.6

COAST PROVINCE

Table 6b

PER CENT DISTRIBUTION OF WOMEN 15-49 BY LEVEL OF
EDUCATION AND AGE FOR COAST PROVINCE, 1984

Level of Education	Total	15-24	25-34	35-49
Total Per Cent	100.0	100.0	100.0	100.0
None	55.7	37.8	61.8	78.7
1-4	9.9	10.1	9.1	10.6
5-8	22.0	35.1	15.4	7.7
9+	12.2	16.8	13.4	2.9

EASTERN PROVINCE

Table 6c

PER CENT DISTRIBUTION OF WOMEN 15-49 BY LEVEL OF
EDUCATION AND AGE FOR EASTERN PROVINCE, 1984

Level of Education	Total	15-24	25-34	35-49
Total Per Cent	100.0	100.0	100.0	100.0
None	32.2	11.7	33.0	64.7
1-4	17.1	9.9	23.2	20.9
5-8	32.8	47.0	30.5	12.5
9+	17.6	31.2	13.2	1.3

STATISTICAL ANNEX ON EDUCATION

RIFT VALLEY PROVINCE

Table 6d

PER CENT DISTRIBUTION OF WOMEN 15-49 BY LEVEL OF
EDUCATION AND AGE FOR RIFT VALLEY PROVINCE, 1984

Level of Education	Total	15-24	25-34	35-49
Total Per Cent	100.0	100.0	100.0	100.0
None	43.1	19.0	54.8	67.7
1-4	16.7	14.9	15.6	20.4
5-8	29.1	47.5	21.5	9.0
9+	10.8	18.1	8.1	2.6

WESTERN PROVINCE

Table 6e

PER CENT DISTRIBUTION OF WOMEN 15-49 BY LEVEL OF
EDUCATION AND AGE FOR WESTERN PROVINCE, 1984

Level of Education	Total	15-24	25-34	35-49
Total Per Cent	100.0	100.0	100.0	100.0
None	34.2	11.0	43.1	63.8
1-4	14.8	11.7	20.2	14.7
5-8	31.9	46.1	23.6	16.6
9+	19.0	31.1	13.1	5.0

CENTRAL PROVINCE

Table 6f

PER CENT DISTRIBUTION OF WOMEN 15-49 BY LEVEL OF
EDUCATION AND AGE FOR CENTRAL PROVINCE, 1984

Level of Education	Total	15-24	25-34	35-49
Total Per Cent	100.0	100.0	100.0	100.0
None	20.6	3.0	20.8	49.1
1-4	14.4	5.9	17.6	25.3
5-8	42.5	57.1	40.1	20.9
9+	22.3	34.0	21.0	4.7

NYANZA PROVINCE

Table 6g

PER CENT DISTRIBUTION OF WOMEN 15-49 BY LEVEL OF
EDUCATION AND AGE FOR NYANZA PROVINCE, 1984

Level of Education	Total	15-24	25-34	35-49
Total Per Cent	100.0	100.0	100.0	100.0
None	34.6	15.2	43.3	64.9
1-4	21.6	20.7	23.8	21.0
5-8	30.8	44.0	22.8	12.6
9+	12.6	19.4	9.9	1.4

Source: GOK, KCPS, 1984

TABLE 1

PER CENT DISTRIBUTION OF WOMEN 15-49 BY MARITAL STATUS, PLACE OF RESIDENCE AND
AND PROVINCE, 1984

Place of Residence/ Province	TOTAL	NEVER MARRIED	MARRIED IN THE PAST	CURRENTLY MARRIED
Total	100.0	25.5	7.6	66.9
<u>Place of Residence</u>				
Nairobi/Mombasa	100.0	31.9	5.1	63.0
Other Urban	100.0	33.4	8.6	58.0
Rural	100.0	24.3	7.8	67.9
<u>Province</u>				
Nairobi	100.0	33.9	5.3	60.8
Coast	100.0	21.4	9.2	69.3
Eastern	100.0	24.6	7.9	67.5
Central	100.0	36.3	7.4	56.3
Rift Valley	100.0	24.4	8.7	66.9
Nyanza	100.0	15.8	7.6	76.6
Western	100.0	29.1	5.5	65.4

Source: GOK, KCPS, 1984

STATISTICAL ANNEX ON HEALTH

TABLE 2

PER CENT OF CURRENTLY MARRIED WOMEN IN A POLYGAMOUS UNION BY AGE, EDUCATION LEVEL,
ETHNIC GROUP AND PLACE OF RESIDENCE, 1984

	1977-78 KFS	1984 KCPS			
		TOTAL	Nairobi/ Mombasa	Other Urban	Rural
Total	30	24.5	16.7	22.5	25.2
<u>Age</u>					
15-19	24	21.9	27.0	16.4	22.0
20-24	22	17.3	12.2	18.3	17.7
25-29	28	22.4	10.3	24.2	23.8
30-34	28	23.8	15.2	7.6	25.4
35-39	33	30.1	26.6	34.1	30.2
40-44	38	30.1	29.6	53.5	29.2
45-49	42	34.3	34.7*	67.7*	35.5
<u>Education Level</u>					
None	36	32.2	25.5	36.3	32.3
1-4 years	26	25.8	31.1	25.7	25.6
5-8 years	22	15.2	11.7	22.7	14.9
9+ years	15	10.7	10.0	13.2	9.9
<u>Ethnic Group</u>					
Kikuyu	12	10.3	----	----	----
Luo	43	40.4	----	----	----
Luhya	35	27.7	----	----	----
Kamba	26	15.2	----	----	----
Kisii	33	25.5	----	----	----
Meru-Embu	22	13.9	----	----	----
Mijikenda	39	39.2	----	----	----
Kalenjin	23	23.4	----	----	----
Taita-Taveta	45**	8.2	----	----	----
Others		33.9	----	----	----

* Fewer than 20 unweighted cases.

** In the 1977-78 KFS, taita-Taveta was included in the 'others' category.

Source: Central Bureau of Statistics. 1980. Vol. 1, Tables 4.9 and 4.10

Note: Data for ethnic group by place of residence are not shown due to small cell sizes.

Source: GOK, KCPS, 1984

STATISTICAL ANNEX ON
WOMEN'S REPRODUCTIVE HEALTH

TABLE 3

MEAN NUMBER OF CHILDREN DESIRED BY CURRENTLY MARRIED FECUND WOMEN 15-49 BY SELECTED
BACKGROUND CHARACTERISTICS, 1984

Characteristic	Mean Number of Children Desired	Characteristic	Mean Number of Children Desired
<u>Education Level</u>		<u>Ethnic Group</u>	
None	7.0	Kikuyu	6.3
1-4 years	6.4	Luo	5.8
5-8 years	5.6	Luhya	6.4
9+ years	4.8	Kamba	5.7
		Kisii	6.1
		Meru-Embu	6.0
		Mijikenda	7.2
		Kalenjin	7.2
		Taita-Taveta	6.3
		Other	7.0
<u>Literacy Status</u> (Respondent)		<u>Work Status</u>	
Illiterate	6.9	Currently working	6.2
Literate	5.8	Worked in past	6.1
		Never worked	6.4
<u>Literacy of Couple</u>		<u>Couple's Reproductive</u> <u>Intentions</u>	
Both Illiterate	7.3	Both want more	6.3
Both Literate	5.8	Neither wants more	6.4
He literate, she not	6.7	He yes, she no	6.3
She literate, he not	6.3	She yes, he no	5.8
		Don't know	6.4
<u>Religion</u>		<u>Type of Marriage</u>	
Catholic	6.2	Monogamous	
Protestant	6.3	Polygaous	
Moslem	6.0		
None	7.8		
Other	5.4		

TABLE 4

PER CENT APPROVING OF FAMILY PLANNING AMONG EVER-MARRIED NON-USERS OF FAMILY PLANNING WHO KNOW AT LEAST ONE FAMILY PLANNING METHOD, BY SELECTED BACKGROUND CHARACTERISTICS, 1984

Characteristic	Per cent Approving
<u>Age</u>	
15-19	77.5
20-24	80.6
25-29	79.3
30-34	76.8
35-39	74.0
40-44	69.7
45-49	64.8
<u>Education Level</u>	
None	71.1
1-4 years	72.2
5-8 years	85.1
9+ years	82.2
<u>Education Level of Husband*</u>	
None	72.7
1-4 years	73.2
5-8 years	80.1
9+ years	81.5
<u>Desire for Children*</u>	
Want more	76.7
Want no more	77.0
Don't know	70.3
<u>Ever Use of Contraception</u>	
Ever used any	86.9
Never used any	73.0

* Currently married women only.

Source: GOK, KCPS, 1984

STATISTICAL ANNEX ON
WOMEN'S REPRODUCTIVE HEALTH

TABLE 5

PER CENT OF EVERY-MARRIED WOMEN 15-49 KNOWING AT LEAST ONE FAMILY PLANNING METHOD BY SELECTED
BACKGROUND CHARACTERISTICS AND PLACE OF RESIDENCE, 1984

Characteristic	Per Cent Knowing at Least One Method	Characteristic	Per Cent Knowing at Least One Method
<u>Education Level</u>		<u>Desire for Children</u> *	
None	75.0	Both want more	83.1
1-4 years	87.5	Neither wants more	85.1
5-8 years	92.5	He yes, she no	78.1
9+ years	96.1	She yes, he no	85.5
<u>Literacy Status</u>		<u>Ethnic group</u>	
Illiterate	75.4	Kikuyu	94.1
Literate	90.9	Luo	90.9
<u>Literacy of Couple</u> *		Luhya	76.8
Both illiterate	64.1	Kamba	93.2
Both literate	92.1	Kisii	92.8
He literate, she not	80.5	Meru-Embu	91.2
She literate, he not	77.4	Mijikenda	79.9
<u>Number of Living Children</u>		Kalenjin	55.9
0	76.1	Taita-Taveta	91.3
1	80.8	Other	66.6
2	86.2	<u>Work Status</u>	
3	86.6	Currently working	89.9
4	83.6	Worked in past	94.5
5	85.4	Never worked	80.3
6	83.1		
7	82.7		
8+	86.4		

* Currently married women only.

Source: GOK, KCPS, 1984

TABLE 6

PERCENT OF CURRENTLY MARRIED FECUND
WOMEN WHO DON'T WANT MORE CHILDREN BY
NUMBER OF LIVING CHILDREN

FOR NAIROBI PROVINCE, 1984

<u>Living Children (including current pregnancy)</u>	
0	(2.6)
1	2.1
2	14.2
3	28.1
4	51.9
5+	74.2

FOR CENTRAL PROVINCE, 1984

<u>Living Children (including current pregnancy)</u>	
0	4.0
1	4.0
2	19.3
3	22.6
4	35.5
5+	64.0

FOR MYANZA PROVINCE, 1984

<u>Living Children (including current pregnancy)</u>	
0	0.0
1	5.1
2	7.7
3	13.8
4	28.9
5+	52.6

FOR COAST PROVINCE, 1984

<u>Living Children (including current pregnancy)</u>	
0	3.4
1	5.9
2	9.0
3	18.9
4	23.2
5+	38.8

FOR RIFT VALLEY PROVINCE, 1984

<u>Living Children (including current pregnancy)</u>	
0	9.3
1	4.0
2	10.8
3	15.1
4	16.7
5+	51.0

FOR WESTERN PROVINCE, 1984

<u>Living Children (including current pregnancy)</u>	
0	(0.0)
1	11.3
2	11.1
3	17.6
4	18.9
5+	60.3

FOR EASTERN PROVINCE, 1984

<u>Living Children (including current pregnancy)</u>	
0	1.2
1	0.8
2	4.1
3	15.5
4	42.3
5+	76.4

FOR NYANZA PROVINCE, 1984

<u>Living Children (including current pregnancy)</u>	
0	0.0
1	5.1
2	7.7
3	13.8
4	28.9
5+	52.6

NOTE: Percentages shown in parentheses
are based on fewer than 20 cases.

Source: GOK, KCPS, 1984

TABLE 7

PER CENT OF WOMEN 15-49 WHO ARE CURRENTLY USING ANY FAMILY PLANNING METHOD
BY SELECTED CHARACTERISTICS

FOR NAIROBI PROVINCE, 1984

Characteristic	Currently Using
Total	22.6
<u>Marital Status</u>	
Never Married	10.5
Ever Married	28.8
Currently Married	28.3
<u>Age</u>	
15-24	11.5
25-34	34.8
35-49	44.7
<u>Level of Education</u>	
None	10.7
1-4	19.0
5-8	18.7
9+	30.5
<u>Work Status</u>	
Currently working	36.8
Worked in Past	28.4
Never Worked	13.4
<u>Living Children</u>	
0	6.3
1	20.0
2	31.1
3	30.6
4	24.3
5+	41.8

Characteristic	Currently Using
<u>Reproductive Intentions</u>	
Not Last, Not More	40.8
No More	41.1
More Later	17.4
More Soon	10.0
Don't Know	(12.2)
<u>Husband's Characteristics</u>	
<u>Work Status</u>	
Own Farm	(21.4)
Other Farm	(42.2)
Own Business	37.9
Other Business	24.1
Not Working	(52.0)
<u>Couple's Characteristics</u>	
<u>Literacy Status</u>	
Both Illiterate	(11.2)
Both Literate	31.8
He Literate, She Not	8.8
She Literate, He Not	(16.2)
<u>Couple's Reproductive Intentions</u>	
Both Want More	21.1
Neither Want More	49.4
He Yes, She No	(24.2)
She Yes, He No	(24.9)
Don't Know	18.9

NOTE: Percentages shown in parentheses are based on fewer than 20 cases.

(CONTINUED)

STATISTICAL ANNEX ON
WOMEN'S REPRODUCTIVE HEALTH

Table 7
Page 2 of 7

FOR COAST PROVINCE, 1984

Characteristic	Currently Using	Characteristic	Currently Using
Total	9.0		
<u>District</u>		<u>Reproductive Intentions</u>	
Kilifi-Lamu-Tana R.	5.1	Not Last, Not More	16.5
Kwale	6.0	No More	15.3
Mombasa	18.3	More Later	8.8
Taita-Taveta	11.3	More Soon	4.1
		Don't Know	8.2
<u>Marital Status</u>		<u>Husband's Characteristics</u>	
Never Married	4.0		
Ever Married	10.3	<u>Work Status</u>	
Currently Married	10.5	Own Farm	5.7
		Other Farm	7.3
<u>Age</u>		Own Business	14.2
15-24	6.7	Other Business	16.6
25-34	13.3	Not Working	3.1
35-49	7.6		
<u>Level of Education</u>		<u>Couple's Characteristics</u>	
None	5.4	<u>Literacy Status</u>	
1-4	10.0	Both Illiterate	2.3
5-8	8.8	Both Literate	20.5
9+	24.1	He Literate, She Not	6.6
<u>Work Status</u>		She Literate, He Not	(10.8)
Currently Working	15.1	<u>Couple's Reproductive Intentions</u>	
Worked in the Past	11.4	Both Want More	7.3
Never Worked	7.3	Neither Want More	25.0
<u>Living Children</u>		He Yes, She No	8.1
0	1.8	She Yes, He No	(13.8)
1	8.4	Don't Know	9.4
2	15.6		
3	10.6		
4	11.5		
5+	11.7		

NOTE: Percentages shown in parentheses are based on fewer than 20 cases.

(CONTINUED)

STATISTICAL ANNEX ON
WOMEN'S REPRODUCTIVE HEALTH

Table 7

Page 3 of 7

FOR EASTERN PROVINCE, 1984

<u>Characteristic</u>	<u>Currently Using</u>	<u>Characteristic</u>	<u>Currently Using</u>
Total	21.6		
<u>District</u>		<u>Reproductive Intentions</u>	
Embu	20.0	Not Last, Not More	39.9
Kitui	11.1	No More	29.7
Machakos	24.5	More Later	14.8
Meru	24.6	More Soon	9.5
		Don't Know	13.5
<u>Marital Status</u>		<u>Husband's Characteristics</u>	
Never Married	9.4	<u>Work Status</u>	
Ever Married	25.5	Own Farm	24.6
Currently Married	26.4	Other Farm	26.1
		Own Business	37.2
<u>Age</u>		Other Business	28.2
15-24	10.1	Not Working	20.4
25-34	29.0		
35-49	30.4	<u>Couple's Characteristics</u>	
		<u>Literacy Status</u>	
<u>Level of Education</u>		Both Illiterate	13.4
None	21.2	Both Literate	30.2
1-4	28.8	He Literate, She Not	25.0
5-8	20.0	She Literate, He Not	(33.2)
9+	18.3		
<u>Work Status</u>		<u>Couple's Reproductive Intentions</u>	
Currently Working	29.8	Both Want More	10.6
Worked in the Past	24.2	Neither Want More	45.4
Never Worked	19.3	He Yes, She No	31.1
		She Yes, He No	22.5
<u>Living Children</u>		Don't Know	21.9
0	4.6		
1	19.3		
2	16.2		
3	28.5		
4	25.8		
5+	31.0		

NOTE: Percentages shown in parentheses are based on fewer than 20 cases.

(CONTINUED)

STATISTICAL ANNEX ON
WOMEN'S REPRODUCTIVE HEALTH

Table 7

Page 4 of 7

FOR CENTRAL PROVINCE, 1984

<u>Characteristic</u>	<u>Currently Using</u>	<u>Characteristic</u>	<u>Currently Using</u>
Total	27.0		
<u>District</u>		<u>Reproductive Intentions</u>	
Kiambu	23.6	Not Last, Not More	41.8
Kirinyaga	25.8	No More	43.0
Muranga	27.6	More Later	19.9
Nyandurua	22.4	More Soon	9.4
Nyeri	30.9	Don't Know	22.2
<u>Marital Status</u>		<u>Husband's Characteristics</u>	
Never Married	14.4		
Ever Married	34.2	<u>Work Status</u>	
Currently Married	34.1	Own Farm	44.0
<u>Age</u>		Other Farm	28.4
15-24	15.3	Own Business	28.7
25-34	35.3	Other Business	41.7
35-49	38.6	Not Working	23.7
<u>Level of Education</u>		<u>Couple's Characteristics</u>	
None	28.4	<u>Literacy Status</u>	
1-4	31.3	Both Illiterate	16.4
5-8	23.4	Both Literate	37.8
9+	29.3	He Literate, She Not	30.8
<u>Work Status</u>		She Literate, He Not	(18.5)
Currently Working	38.1	<u>Couple's Reproductive Intentions</u>	
Worked in the Past	28.5	Both Want More	24.9
Never Worked	24.4	Neither Want More	50.6
<u>Living Children</u>		He Yes, She No	(15.9)
0	10.6	She Yes, He No	14.3
1	24.2	Don't Know	25.6
2	28.0		
3	21.9		
4	42.7		
5+	40.0		

NOTE: Percentages shown in parentheses are based on fewer than 20 cases.

(CONTINUED)

STATISTICAL ANNEX ON
WOMEN'S REPRODUCTIVE HEALTH

Table 7

Page 5 of 7

FOR RIFT VALLEY PROVINCE, 1984

<u>Characteristic</u>	<u>Currently Using</u>
Total	14.5
<u>District</u>	
Kericho	14.9
Nakura	22.1
Nandi	7.7
Narok-Kajiado	39.9
Baringo-Laikipia	9.1
Trans-Nzoia	4.2
Uasin Gishu	0.8
Pokot-Elg. Mara.	4.6
<u>Marital Status</u>	
Never Married	9.8
Ever Married	16.1
Currently Married	15.1
<u>Age</u>	
15-24	11.6
25-34	16.0
35-49	17.5
<u>Level of Education</u>	
None	12.2
1-4	15.2
5-8	15.7
9+	19.8
<u>Work Status</u>	
Currently Working	25.1
Worked in the Past	27.1
Never Worked	9.4
<u>Living Children</u>	
0	6.9
1	17.0
2	14.5
3	14.7
4	13.8
5+	18.1

<u>Characteristic</u>	<u>Currently Using</u>
<u>Reproductive Intentions</u>	
Not Last, Not More	22.5
No More	17.5
More Later	13.1
More Soon	9.0
Don't Know	12.5
<u>Husband's Characteristics</u>	
<u>Work Status</u>	
Own Farm	14.3
Other Farm	18.0
Own Business	33.7
Other Business	17.0
Not Working	10.5
<u>Couple's Characteristics</u>	
<u>Literacy Status</u>	
Both Illiterate	5.8
Both Literate	21.0
He Literate, She Not	13.1
She Literate, He Not	5.8
<u>Couple's Reproductive Intentions</u>	
Both Want More	15.0
Neither Want More	21.9
He Yes, She No	14.9
She Yes, He No	1.6
Don't Know	12.0

(CONTINUED)

STATISTICAL ANNEX ON
WOMEN'S REPRODUCTIVE HEALTH

Table 7
Page 6 of 7

FOR NYANZA PROVINCE, 1984

<u>Characteristic</u>	<u>Currently Using</u>	<u>Characteristic</u>	<u>Currently Using</u>
Total	8.1		
<u>District</u>		<u>Reproductive Intentions</u>	
Kissii	7.9	Not Last, Not More	19.0
Kisumu	9.0	No More	7.8
Siaya	9.2	More Later	7.4
South Nyanza	7.3	More Soon	2.2
		Don't Know	8.9
<u>Marital Status</u>		<u>Husband's Characteristics</u>	
Never Married	7.3		
Ever Married	8.2	<u>Work Status</u>	
Currently Married	8.6	Own Farm	4.7
<u>Age</u>		Other Farm	7.9
15-24	6.3	Own Business	11.7
25-34	8.7	Other Business	13.5
35-49	11.1	Not Working	6.5
<u>Level of Education</u>		<u>Couple's Characteristics</u>	
None	5.1	<u>Literacy Status</u>	
1-4	5.9	Both Illiterate	4.1
5-8	9.4	Both Literate	12.3
9+	16.9	He Literate, She Not	4.7
<u>Work Status</u>		She Literate, He Not	3.9
Currently Working	15.4	<u>Couple's Reproductive Intentions</u>	
Worked in the Past	9.9	Both Want More	4.9
Never Worked	5.5	Neither Want More	21.8
<u>Living Children</u>		He Yes, She No	7.4
0	2.9	She Yes, He No	86.7
1	10.5	Don't Know	9.4
2	2.6		
3	11.6		
4	6.8		
5+	12.3		

(CONTINUED)

STATISTICAL ANNEX ON
WOMEN'S REPRODUCTIVE HEALTH

Table 7
Page 7 of 7

FOR WESTERN PROVINCE, 1984

Characteristic	Currently Using	Characteristic	Currently Using
Total	3.9		
<u>District</u>		<u>Reproductive Intentions</u>	
Bungoma	4.2	Not Last, Not More	6.7
Busia	6.1	No More	4.4
Kakamega	3.4	More Later	4.5
		More Soon	1.1
		Don't Know	1.8
<u>Marital Status</u>		<u>Husband's Characteristics</u>	
Never Married	2.2		
Ever Married	4.6	<u>Work Status</u>	
Currently Married	4.6	Own Farm	3.2
		Other Farm	4.2
		Own Business	(15.1)
		Other Business	8.8
		Not Working	2.0
<u>Age</u>		<u>Couple's Characteristics</u>	
15-24	2.3	<u>Literacy Status</u>	
25-34	5.4	Both Illiterate	0.0
35-49	5.2	Both Literate	7.8
		He Literate, She Not	2.5
		She Literate, He Not	0.0
<u>Level of Education</u>		<u>Couple's Reproductive Intentions</u>	
None	2.5	Both Want More	4.0
1-4	3.0	Neither Want More	6.9
5-8	3.3	He Yes, She No	4.5
9+	8.4	She Yes, He No	(4.2)
		Don't Know	4.0
<u>Work Status</u>			
Currently Working	11.0		
Worked in the Past	1.3		
Never Worked	2.8		
<u>Living Children</u>			
0	1.2		
1	0.5		
2	7.6		
3	5.5		
4	5.9		
5+	5.7		

NOTE: Percentages shown in parentheses are based on fewer than 20 cases.

Source: GOK, KCPS, 1984

TABLE 8

Age of Female VSC Acceptors by Number of Living Children
by Age of Contraceptive Acceptor
Nyeri Clinic of FPAK

Number of living Children	(a) 19 & under	(b) 20-24	(c) 25-29	(d) 30-34	(e) 35-39	(f) 40 & over	(g) Unknown	Total Acceptors by Number of living Children
(A) 0	-	--	---	---	---	---	-	-
(B) 1	1	--	---	---	---	---	-	1
(C) 2	-	28	10	3	---	---	-	41
(D) 3	-	18	130	8	---	---	-	156
(E) 4	-	7	176	151	97	17	-	448
(F) 5	-	6	275	225	101	9	-	616
(G) 6 or more	-	--	54	609	584	400	5	1652
(H)								
(I) Unknown	-	--	---	---	2	---	-	2
Total Acceptors by Age Group	-	60	645	996	784	426	5	2916

Source: FPAK monthly, annual reports (not published).

VSC = Voluntary Surgical Contraception

TABLE 9a

Distribution of Clients Who Used and Who Did Not Use Family
Planning Methods Prior to VSC at FPAK Nyeri Clinic
(1982-1986)

	USED FP METHOD	NOT USED ANY FP METHOD	NOT STATED	TOTAL
Number of Cases	1175	624	154	1953
Percentage	60.1%	32.0%	7.9%	100.0%

Source: FPAK monthly, annual reports (not published).

TABLE 9b

FAMILY PLANNING METHODS USED BY CLIENTS PRIOR TO VSC
AT FPAK NYERI CLINIC (1982-1986)

<u>METHODS</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>TOTAL</u>	<u>PERCENTAGE</u>
Pills	25	32	91	170	145	463	23.7%
IUD	11	19	61	94	121	306	15.7%
Condoms	5	8	20	26	12	71	3.6%
Foaming Tablets	8	17	21	38	19	103	5.2%
Injection	28	20	51	72	63	232	11.9%
Diaphragms	0	0	0	0	0	0	-----
None	29	38	103	252	202	624	32.0%
Not Stated	5	34	56	14	45	154	7.9%
TOTAL	109	168	403	666	607	1953	100.0%

Source: FPAK monthly, annual reports (not published).

STATISTICAL ANNEX ON
WOMEN'S REPRODUCTIVE HEALTH

TABLE 10

Place of Residence of VSC Clients at FPAK Nyeri Clinic
(1982-1986)

PLACE OF RESIDENCE	1982	1983	1984	1985	1986	TOTAL	PERCENTAGE
Nyeri	49	90	179	246	171	735	37.6%
Kirinyaga	10	20	52	109	75	266	13.6%
Murang'a	12	23	86	207	289	617	31.6%
Nyandarua	7	16	23	27	15	88	4.5%
Kiambu	17	0	11	2	2	32	1.6%
Nairobi	4	4	2	3	2	15	0.8%
Embu	3	7	22	18	15	65	3.3%
Meru	0	7	8	9	3	27	1.4%
Machakos	0	0	1	0	0	1	0.3%
Nakuru	0	0	9	5	5	19	0.9%
Laikipia	7	1	10	33	30	81	4.1%
Not Stated	0	0	0	7	0	7	0.3%
TOTAL	109	168	403	666	607	1953	100.0%

Source: FPAK monthly, annual report (not published).

VSC - Voluntary Surgical Contraception

TABLE 11

Distribution of VSC Cases Done at FPAK Nyeri Clinic by Marital Status
(1982-1986)

<u>Marital Status</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>TOTAL</u>	<u>PERCENTAGE</u>
Married	104	160	355	577	530	1726	82.0%
Single	4	4	11	30	50	99	5.0%
Divorced	0	0	1	3	5	9	4.6%
Separated	0	0	0	1	4	5	2.6%
Widowed	1	4	9	9	17	40	2.0%
Not Stated	0	0	27	46	1	74	3.8%
TOTAL	109	168	403	666	607	1953	100.0%

Source: FPAK monthly, annual reports (not published)

Official Government Machinery to Address Women: The Women's Bureau

The Government of Kenya has provided technical and financial support to women since Independence. In the early post-Independence years, this support was channelled mainly through Maendeleo Ya Wanawake, the largest and oldest formal women's organization. In the late 1960s, the Community Development Office in the Department of Social Services was given central responsibility for the administration of all matters related to women. In 1975, the Mexico World Conference called for specific Government structures to assist women, the Kenyan Government responded in 1976 by creating the Women's Bureau as a division within the Ministry of Culture and Social Services. It provides overall analysis on women's issues, sponsors on-the-ground activities (usually at a small scale and of an innovative character) and coordinates with the line ministries, which retain the responsibility for addressing women as part of their normal operation.

A. Mandate of the Women's Bureau

The formal mandate of the Women's Bureau is to uplift the status of women and increase their involvement in the national development process. The Bureau is intended to:

- (a) formulate policies that affect women's programs overall;
- (b) coordinate women's activities performed by other government ministries and voluntary organizations;
- (c) collect and analyze data and information on women as well as monitor and evaluate women's projects;
- (d) plan and design women's projects for implementation (Mbua, M; "Women's Bureau", cited in CIDA, 1987).

In addition to the Bureau's formal mandate, specific current policy initiatives are articulated (but not elaborated) in the successive National Development Plans. For example, the 1979/83 Plan emphasized the formulation of programs to meet women's needs and coordination of all women's programs in the country.

For the broader Department of Social Services, the Plan stressed the:

- (a) encouragement of women, through women's groups, to engage in "income earning opportunities" in agriculture, small industrial and commercial business;
- (b) provision of relevant training in leadership, craft development and other special skills as a requirement for successful women's programs (Ibid).

By 1983, when the 1984-88 Development Plan was published, statements regarding the Women's Bureau and women's concerns had become more operational. The Plan states that the Bureau's program "seeks to promote and improve the position and lives of women and hence the welfare of the entire family" (Dev. Plan 1984-88). This is to be achieved by involving women "in income generating activities and in decision making at many levels" (Ibid). Toward this end, the Bureau "participates with voluntary organizations in systematic training, research studies and surveys" (Ibid).

At a broader level, the Plan's employment initiative identifies special targets for "women and disadvantaged groups" including improved access to credit schemes and loan systems; group registration as cooperative societies in order to create employment and income generating opportunities; and an effort to ensure that in "all government financial rural development projects... women are employed and remunerated on the basis of equality with men" (Ibid). In the Plan's poverty initiative, the Government identifies five target groups among the nation's poor to receive special attention. These include "the pastoralists, the small farmers, the landless rural workers, the urban poor, and the handicapped" (Ibid). While women are certainly captured within these categories of poverty groups, the Plan does not explicitly recognize them as a differentiated target group with special needs that may differ from those of men in parallel circumstances.

In line with this mandate, the Women's Bureau originally identified five objectives for its programs and projects:

- (a) to create an awareness of their potential in national development and to enlighten women about obstacles they face in realizing this potential;
- (b) to mobilize women to take part in their own development, that of their families and the nation at large;
- (c) to orient and train voluntary leaders and government extension personnel to better assist women in national development;
- (d) to facilitate coordination between women's groups, government and the NGOs;
- (e) to carry out research on the problems related to women's programs and to evaluate activities already undertaken, with the aims of improving the programs and to benefit women from these activities (Ibid).

B. Structure of the Women's Bureau

The organization chart locates the Women's Bureau within the Ministry of Culture and Social Services (see attached chart). The Bureau is composed of eleven structural units:

- (a) Administration
- (b) Research and Evaluation
- (c) Handicraft Development
- (d) Small-Scale Industries and Businesses
- (e) Training
- (f) Planning
- (g) Agricultural Projects
- (h) Communication and Information
- (i) Non-Governmental Organizations
- (j) Legal
- (k) Appropriate Technology

The Women's Bureau is staffed sparsely. There are 13 officers at headquarters plus the Bureau Head. At the end of 1985, there were also 18 "volunteers" from international donor agencies and NGO's who work with women's groups through the Women's Bureau (data from the annual report, so 1985 is the most recent year for which this information is available). In the field, the Bureau relies on Ministry staff as far as the district level. Below this, at the divisional and locational levels, the Bureau uses Community Social Development Assistants who are hired by the local authorities, but who perform the function of registering and coordinating the flow of services to women's groups, in addition to their other responsibilities. At these administrative District, Division and lower grassroots levels, there are no officers assigned specifically to women's programs. In summary, the line of reporting flows up from the Divisional Social Development Assistants to the District Social Development Officers to the Provincial Directors of Social Services to the Assistant Commissioner for Social Services and Head of the Women's Bureau to the Commissioner for Social Services to the Permanent Secretary.

At the grassroots level, the programs of the Bureau are geared primarily toward income generating activities (livestock keeping, handicraft development, water projects, small scale industries, vegetable

growing, etc.), and at present, the Bureau is associated with about 20,000 women's groups undertaking income generating activities.

Thus, in spite of an apparently complex organizational structure, the Women's Bureau is quite thin on the ground. This is reflected in the mechanics of program operations. The Bureau is intended to liaise with other ministries to obtain requisite expertise and assistance.

To streamline the administrative aspects of such cooperation, the Bureau is presently seeking to form an inter-ministerial committee to be headed by the Women's Bureau and including a representative from each ministry. These representatives would then be responsible to coordinate women's activities from a "women's desk" in each ministry. Each ministry would retain line authority, but the Women's Bureau would have increased capacity to coordinate.

At the bottom end of the chain of command, the Women's Bureau has worked to establish District Women's Development Committees under the District Development Committees (DDC's) in each of Kenya's 41 districts. At the end of 1985, 31 such committees had been established. These committees are composed of representatives of the various registered women's groups, and serve to oversee and promote women's activities at the local level, and to advise the DDC's about projects to be funded or other special needs. The success of this informal advisory structure is critically dependent on the support and attention received from the DDC's.

C. Budget

The Budget of the Bureau is still very small, although it has grown rapidly:

Budget Allocations for Women's Programs

	<u>(KL)</u>	<u>(Percent of Recurrent Budget of Min. Culture and Social Services)</u>
1975/76	8,400.	0.54
1984/85	1,285,700.	11.64

(The implied nominal growth rate of allocations annually is of 75%)

Source: Women's Bureau 1985.

D. Operational Activities of the Women's Bureau

Operations of the structural units of the Bureau are governed by five year plans. The 1982-1985 Plan of Action is the latest available. The plan lays out objectives for the Bureau in each year in each of the

following activities: training, information and communication, non-governmental organizations, and research and evaluation. These correspond to the principal operational units of the Bureau, although there is obvious overlap.

Under training, three areas of concern were identified:

- i) training of women's group leaders in management, bookkeeping, and budgeting; and skills training for women's group members in handicraft development and marketing;
- ii) small scale business management skills development, technical assistance, and credit;
- iii) training of agricultural extension workers in the provision of advice and skills training to women farmers, and coordination with the Ministry of Agriculture and Land Development on the supply of inputs to women farmers.

Under research, selected topics for study included: NGO's, income generating activities (and attendant skills training requirements), rural women's situation and needs, review of women's activities at the district level, and an evaluation of women's groups.

Under information collection and communication, the Bureau outlined plans to collect published and unpublished information about women and to disseminate this through a variety of media, including an annual Women's Bureau Magazine.

NGO's receive special attention in the Plan, as they provide an efficient and broad based means for the Bureau to reach women and women's groups. There are 39 registered women's NGO's in Kenya active in a range of fields. The Bureau seeks to identify these NGO's by activity and to serve as a coordinating clearing house of these activities so as to avoid unnecessary duplication of efforts in a given area. Further, the Bureau extends support to the NGO's through the provision of funds and technical and rural support.

In review of the execution of this five year plan, the most recent available Annual Report of the Women's Bureau is for 1984-85. Unfortunately, this may not be the most representative year for review, as much of the targeted work plan for the Bureau in that year was put aside in preparation for the 1985 Nairobi Conference marking the end of the UN Decade for Women. Moreover, no more than a general qualitative assessment may be made, as the Bureau has no financial statements or other statistical documentation of its activities.

E. Operational Issues

In general, it is possible to say that the Bureau has recorded substantial achievements, but there remains a major discrepancy between the wide official mandate given to the Bureau and the resources made available to it to execute this mandate. The critical needs are: (1) sufficient administrative authority and political support; (2) adequate financial and material resources; 3) adequate staffing with skilled and experienced personnel.

In particular, the Bureau could benefit from a clear policy statement by the Government incorporating objectives and approaches to gain influence in the line ministries who retain responsibility for sector programs.

Further, the coordinating task of locating or developing skills which cover the combined expertise of all the sectoral Ministries -- and their management -- is formidable. Added to this are responsibilities for program and project formulation, implementation and evaluation. This requires a broad range of skills which must be well developed if they are to be effective at the national policy making level. To improve the effectiveness of the Women's Bureau, the Bureau itself is rethinking its priorities. It should be encouraged in this effort. Its comparative advantage appears to lie in developing innovative approaches at the local level and in channeling the views of women throughout Kenya toward the decision-makers in Government line ministries, who will have responsibility for sector programs, and toward the other organizations headquartered in Nairobi.

Safe Motherhood Model

The model is planned for a district of some 200,000 people with a total fertility rate of 7, a crude birth rate of 45, and a maternal mortality rate of 800 per 100,000 live births. Fewer than 10 percent of couples are assumed to be practicing family planning, life expectancy is assumed to 55 years and infant mortality 100 per 1,000 live births, most children are assumed to be in school, and per capital income is assumed to be \$350. The district has one 50-bed hospital and 3 health centers plus 10 community health posts. In 1985 the district hospital supposedly reported 1,000 deliveries, with 15 deaths, and 300 septic abortion cases, with 15 deaths. The remaining 8,000 births occurred at home attended by traditional birth attendants. The Government, under this model, has determined to strengthen the health care system to achieve the following goals.

- Reduce maternal mortality by two-thirds in a decade.
- Increase institutionalized deliveries from the current 11 percent to 50 percent in a decade, giving priority to high-risks.
- Increase family planning practice to 35 percent of childbearing couples in 5 years and 40 percent in 10 years, to reduce the birth rate to 30 per 1000 population (Ibid).

The model proposes the following actions.

- Establish a community-based outreach system to identify pregnant women, advise them on nutrition and possible problems in pregnancy, and encourage them to go to health posts or centers for prenatal care. The outreach workers will also provide family planning education and pills and barrier methods and advise on sexually transmitted diseases and on children's health and nutrition.
- Increase the number of health posts from 10 to 20 (one per 10,000 population), with labor and in-kind contributions from communities.
- Rely on traditional birth attendants to handle routine deliveries (and train all of them in risk screening, prenatal care, clean deliveries and family planning within 5 years).
- Look to health centers to handle more moderate risk deliveries and gradually more of the routine deliveries. Increase the number of centers from the current 5 to 8 and provide several beds and intravenous therapy capacity.
- Strengthen the existing district hospital by adding 10 maternity beds and providing a functional operating room equipped to handle high risk deliveries, caesarean sections, and clinical and surgical contraception.

Improve staff training to strengthen basic health care including family planning: train nurse-midwives to provide contraceptive pills, IUDs, and barrier methods; establish sterilization capability at the district hospital; provide sterilization periodically at clinics through visiting personnel; train center staff to give intravenous therapy; and provide an assistant nurse-midwife for the health post who can help with pregnancy risk screening, prenatal care, and deliveries.

ANNEX B Table

Safe Motherhood Initiative: Moderate Effort Model
Annual Operating Costs for Maternal Health and Family Planning
District of 200,000 population
(US\$)

A. STAFF US\$115,000

HOSPITAL			HEALTH CENTER			HEALTH POST		
Type	% of Time	Cost	Type	% of Time	Cost	Type	% of Time	Cost
Project Director	100	\$3,000	Clinical Officer	30	\$ 700	Ass't nurse-midwife	100	\$1,000
Physician	100	\$3,000	Nurse-Midwife	100	\$1,500	Outreach workers (2)	50	\$1,600
Outreach Supervisor	100	\$2,000	Ass't Nurse-Midwife	100	\$1,000	Outreach Coordinator	40	\$ 400
Information Officer	50	\$1,000	Aide	30	\$ 200			
Driver (2)	50	\$1,000	Outreach workers	100	\$1,600			
Nurse-Midwife (2)	100	\$3,000						
Ass't Nurse - Midwife (2)	100	\$2,000						
Subtotal		\$15,000			\$5,000			\$3,000
Number of units		1			8			20
TOTAL		\$15,000			\$40,000			\$60,000

B. TRANSPORT (Vehicles - repairs, maintenance and gas) US\$ 25,000

Function	Cost
Supervision	\$ 8,000
Clinic/Hospital	\$ 7,000
Obstetrical Emergencies	\$10,000

C. IN-SERVICE TRAINING AND SUPERVISION (Fees & per diem) US\$ 30,000

20 TBAs (20%): 5 days @ \$30 daily cost	\$3,000
20 Outreach Coordinators (50%) 5 days @\$30 daily cost	\$3,000
50 Outreach Volunteers (25%): 3 days @ \$20	\$3,000
20 Nurse-Midwives/Ass't Nurse Midwives (c. 25%) 5 days @\$30	\$3,000
Training for caeserean:	\$6,000
Training for sterilization:	\$6,000
Supervision of clinics, posts, outreach:	\$6,000

D. EQUIPMENT AND SUPPLIES US\$ 60,000

Operating room	\$15,000
Contraceptives for 7,000 persons	\$10,000
Iron/vitamins etc. for pregnant women	\$ 7,000
Medicines, other supplies for MH/FP	\$28,000

E. HEALTH EDUCATION US\$ 10,000

F. MONITORING AND EVALUATION* US\$ 10,000

GRAND TOTAL, ANNUAL OPERATING COSTS US\$250,000

ANNUAL COST PER CAPITA US\$ 1.25

* Rigorous scientific evaluation would cost more.
Source: Herz and Measham, 1987

Distributors of World Bank Publications

ARGENTINA
Carlos Hirsch, SRL
Galeria Guemes
Florida 145, 4th Floor-Oct. 453/448
1333 Buenos Aires

**AUSTRALIA, PAPUA NEW GUINEA,
FIJI, SOLOMON ISLANDS,
VANUATU, AND WESTERN SAMOA**
D.A. Books & Journals
11-13 Station Street
Mitcham 3132
Victoria

AUSTRIA
Carold and Co.
Graben 31
A-1011 Wien

BAHRAIN
Bahrain Research and Consultancy
Associates Ltd.
P.O. Box 22103
Manama Town 317

BANGLADESH
Micro Industries Development
Assistance Society (MIDAS)
House 56, Road 7A
Dhanmondi R/Areas
Dhaka 1209

BELGIUM
Publications des Nations Unies
Av. du Roi 202
1060 Brussels

BRAZIL
Publicacoes Tecnicas Internacionais
Lda.
Rua Patrocinio Gomide, 209
01409 Sao Paulo, SP

CANADA
Le Diffuseur
C.P. 85, 1501B rue Ampere
Boucherville, Quebec
J4B 5B6

CHINA
China Financial & Economic Publishing
House
8, Da Fo Si Dong Jie
Beijing

COLOMBIA
Enlace Ltda.
Apartado Aereo 34270
Bogota D.E.

COSTA RICA
Libreria Trejos
Calle 11-13
Av. Fernandez Guefi
San Jose

COTE D'IVOIRE
Centre d'Édition et de Diffusion
Africaines (CEDA)
04 B.P. 541
Abidjan 04 Plateau

CYPRUS
MEMRB Information Services
P.O. Box 2096
Nicosia

DENMARK
Samfundslitteratur
Rosencærns Allé 11
DK-1970 Frederiksberg C

DOMINICAN REPUBLIC
Editora Taller, C. por A.
Restauracion e Isabel la Católica 309
Apartado Postal 2190
Santo Domingo

EL SALVADOR
Fonades
Avenida Manuel Enrique Araujo #3530
Edificio SISA, 1er. Piso
San Salvador

EGYPT, ARAB REPUBLIC OF
Al Ahram
Al Galaa Street
Cairo

The Middle East Observer
8 Chawarbi Street
Cairo

FINLAND
Aistameninen Kirjakauppa
P.O. Box 128
SF-00101
Helsinki 10

FRANCE
World Bank Publications
66, avenue d'Iéna
75116 Paris

GERMANY, FEDERAL REPUBLIC OF
UNG-Verlag
Poppeladofer Allee 53
D-5300 Bonn 1

GREECE
KEMB
24, Ippodamou Street Platia Plastiras
Athens-11635

HONG KONG, MACAO
Asia 2000 Ltd.
6 Fl., 146 Prince Edward Road, W.
Kowloon
Hong Kong

HUNGARY
Kultura
P.O. Box 139
1389 Budapest 62

INDIA
Allied Publishers Private Ltd.
751 Mount Road
Madras - 600 002

Branch offices:
15 J.N. Heredia Marg
Ballard Estate
Bombay - 400 038

13/14 Anaf Ali Road
New Delhi - 110 002

17 Chittaranjan Avenue
Calcutta - 700 072

Jayadeva Hostel Building
5th Main Road Gandhinagar
Bangalore - 560 009

3-5-1129 Kachiguda Cross Road
Hyderabad - 500 027

Prarthana Plaza, 2nd Floor
Near Thakore Bag, Navrangpura
Ahmedabad - 380 009

Patiala House
16-A Ashok Marg
Lucknow - 226 001

INDONESIA
Pt. Indira Limited
Jl. Sam Ratulangi 37
Jakarta Pusat
P.O. Box 181

IRELAND
TDC Publishers
12 North Frederick Street
Dublin 1

ISRAEL
The Jerusalem Post
The Jerusalem Post Building
P.O. Box 81
Rometa, Jerusalem 91000

ITALY
Licosa Commissionaria Sansoni SPA
Via Benedetto Fortini, 120/10
Casella Postale 552
50125 Florence

JAPAN
Eastern Book Service
37-3, Hongo 3-Chome, Bunkyo-ku 113
Tokyo

KENYA
Africa Book Service (B.A.) Ltd.
P.O. Box 45245
Nairobi

KOREA, REPUBLIC OF
Pan Kores Book Corporation
P.O. Box 101, Kwangwhamun
Seoul

KUWAIT
MEMRB
P.O. Box 5465

MALAYSIA
University of Malaya Cooperative
Bookshop, Litchfield
P.O. Box 1127, Jalan Pantai Baru
Kuala Lumpur

MEXICO
INPOTEC
Apartado Postal 22-860
14060 Tlalpan, Mexico D.F.

MOROCCO
Societe d'Édition Marketing Marocaine
12 rue Mozart, Bd. d'Anda
Casablanca

NETHERLANDS
InDy-Publikaties b.v.
P.O. Box 14
7240 BA Lochem

NEW ZEALAND
Hills Library and Information Service
Private Bag
New Market
Auckland

NIGERIA
University Press Limited
Three Crowns Building Ichico
Private Mail Bag 8095
Ibadan

NORWAY
Narvesen Information Center
Bertrand Narvesens vei 2
P.O. Box 6125 Etterstad
N-0602 Oslo 6

OMAN
MEMRB Information Services
P.O. Box 1613, Soeb Airport
Muscat

PAKISTAN
Mirza Book Agency
65, Shahrah-e-Quaid-e-Azam
P.O. Box No. 729
Lahore 3

PERU
Editorial Desarrollo SA
Apartado 3824
Lima

PHILIPPINES
National Book Store
701 Rizal Avenue
P.O. Box 1934
Metro Manila

POLAND
ORPAN
Polec Kultury i Nauki
00-901 Warszawa

PORTUGAL
Livreria Portugal
Rua De Carmo 70-74
1200 Lisbon

SAUDI ARABIA, QATAR
Jarir Book Store
P.O. Box 3196
Riyadh 11471

**SINGAPORE, TAIWAN, BURMA,
BRUNAI**
Information Publications
Private, Ltd.
02-06 1st Fl., Pei-Fu Industrial
Bldg.
24 New Industrial Road
Singapore 1953

SOUTH AFRICA
For single titles:
Oxford University Press Southern
Africa
P.O. Box 1141
Cape Town 8000

For subscription orders:
International Subscription Service
P.O. Box 41096
Craighall
Johannesburg 2024

SPAIN
Mundi-Press Libros, S.A.
Castello 37
28001 Madrid

SRI LANKA AND THE MALDIVES
Lake House Bookshop
P.O. Box 244
100, Sir Christampalam A. Gardiner
Newatha
Colombo 2

SWEDEN
For single titles
Prisma Fackhögskoleföretag
Regeringsgatan 12, Box 16356
S-103 27 Stockholm

For subscription orders
Wennergren-Williams AB
Box 30004
S-104 25 Stockholm

SWITZERLAND
For single titles
Librairie Payot
6, rue Grenus
Case postale 381
CH-1211 Geneva 11

For subscription orders
Librairie Payot
Service des Abonnements
Case postale 3312
CH-1002 Lausanne

TANZANIA
Oxford University Press
P.O. Box 5299
Dar es Salaam

THAILAND
Central Department Store
306 Silom Road
Bangkok

**TRINIDAD & TOBAGO, ANTIGUA,
BARBUDA, BARBADOS,
DOMINICA, GRENADA, GUYANA,
JAMAICA, MONTSERAT, ST.
KITTS & NEVIS, ST. LUCIA,
ST. VINCENT & GRENADINES**
Systematic Studies Unit
55 Eastern Main Road
Curepe
Trinidad, West Indies

TURKEY
Haset Kitapevi, A.S.
Istiklal Caddesi No. 469
Beyoglu
Istanbul

UGANDA
Uganda Bookshop
P.O. Box 7145
Kampala

UNITED ARAB EMIRATES
MEMRB Gulf Co.
P.O. Box 6097
Sharjah

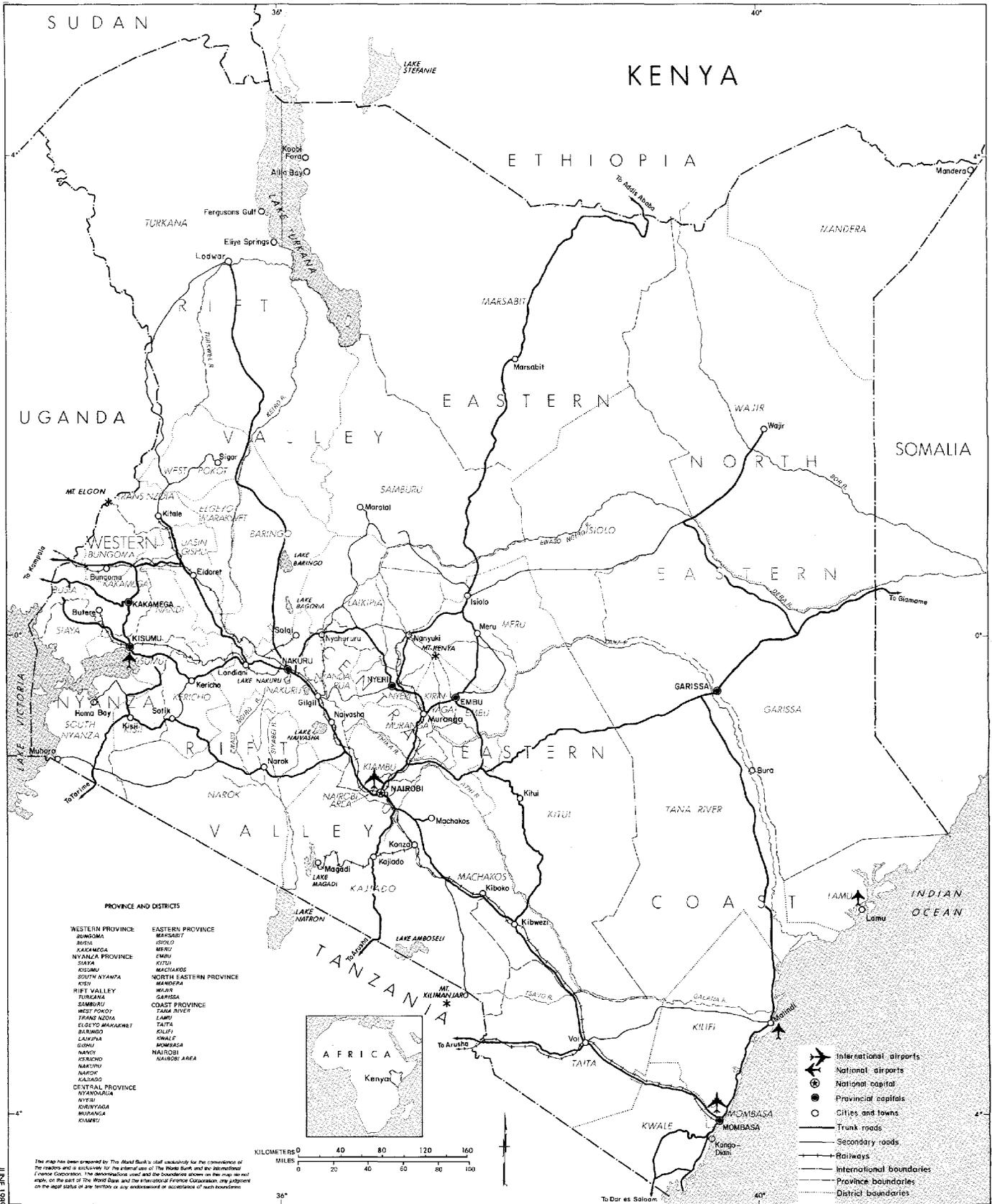
UNITED KINGDOM
Microinfo Ltd.
P.O. Box 3
Alton, Hampshire GU34 2PG
England

URUGUAY
Instituto Nacional del Libro
San Jose 1116
Montevideo

VENEZUELA
Libreria del Este
Aptdo. 60337
Caracas 1060-A

YUGOSLAVIA
Jugoslovenska Knjiga
YU-11000 Belgrade Trg. Republika

ZIMBABWE
Longman Zimbabwe
P.O. Box 5T 125, Southern
Harare



JUNE 1989

IBRD 21659

This map has been prepared by The World Bank in collaboration with the Government of Kenya and is published by the International Bank for Reconstruction and Development. The boundaries shown on the map do not imply on the part of The World Bank and the International Bank for Reconstruction and Development any judgement on the legal status of any territory or any endorsement or acceptance of such boundaries.

RECENT WORLD BANK DISCUSSION PAPERS (continued)

- No. 31. Small Farmers in South Asia: Their Characteristics, Productivity, and Efficiency. Inderjit Singh
- No. 32. Tenancy in South Asia. Inderjit Singh
- No. 33. Land and Labor in South Asia. Inderjit Singh
- No. 34. The World Bank's Lending for Adjustment: An Interim Report. Peter Nicholas
- No. 35. Global Trends in Real Exchange Rates. Adrian Wood
- No. 36. Income Distribution and Economic Development in Malawi: Some Historical Perspectives. Frederic L. Pryor
- No. 37. Income Distribution and Economic Development in Madagascar: Some Historical Perspectives. Frederic L. Pryor
- No. 38. Quality Controls of Traded Commodities and Services in Developing Countries. Simon Rottenberg and Bruce Yandle
- No. 39. Livestock Production in North Africa and the Middle East: Problems and Perspectives. John C. Glenn [Also available in French (39F)]
- No. 40. Nongovernmental Organizations and Local Development. Michael M. Cernea
- No. 41. Patterns of Development: 1950 to 1983. Moises Syrquin and Hollis Chenery
- No. 42. Voluntary Debt-Reduction Operations: Bolivia, Mexico, and Beyond... Ruben Lamdany
- No. 43. Fertility in Sub-Saharan Africa: Analysis and Explanation. Susan Cochrane and S.M. Farid
- No. 44. Adjustment Programs and Social Welfare. Elaine Zuckerman
- No. 45. Primary School Teachers' Salaries in Sub-Saharan Africa. Manuel Zymelman and Joseph DeStefano
- No. 46. Education and Its Relation to Economic Growth, Poverty, and Income Distribution: Past Evidence and Further Analysis. Jandhyala B.G. Tilak
- No. 47. International Macroeconomic Adjustment, 1987-1992. Robert E. King and Helena Tang
- No. 48. Contract Plans and Public Enterprise Performance. John Nellis [Also available in French (48F)]
- No. 49. Improving Nutrition in India: Policies and Programs and Their Impact. K. Subbarao
- No. 50. Lessons of Financial Liberalization in Asia: A Comparative Study. Yoon-Je Cho and Deena Khatkhate
- No. 51. Vocational Education and Training: A Review of World Bank Investment. John Middleton and Terry Demsky
- No. 52. The Market-Based Menu Approach in Action: The 1988 Brazil Financing Package. Ruben Lamdany
- No. 53. Pathways to Change: Improving the Quality of Education in Developing Countries. Adriaan Verspoor
- No. 54. Educating Managers for Business and Government. Samuel Paul, Jacob Levitsky, and John C. Ickis
- No. 55. Subsidies and Countervailing Measures: Critical Issues for the Uruguay Round. Bela Balassa, editor

The World Bank

Headquarters

1818 H Street, N.W.
Washington, D.C. 20433, U.S.A.

Telephone: (202) 477-1234

Facsimile: (202) 477-6391

Telex: WUI 64145 WORLDBANK

RCA 248423 WORLDBK

Cable Address: INTBAFRAD

WASHINGTONDC

European Office

66, avenue d'Iéna
75116 Paris, France

Telephone: (1) 40.69.30.00

Facsimile: (1) 47.20.19.66

Telex: 842-620628

Tokyo Office

Kokusai Building
1-1 Marunouchi 3-chome
Chiyoda-ku, Tokyo 100, Japan

Telephone: (3) 214-5001

Facsimile: (3) 214-3657

Telex: 781-26838

