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POPULATION DYNAMICS, CLIMATE CHANGE, AND SUSTAINABLE DEVELOPMENT IN KENYA

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The African Institute for Development Policy promotes use of research evidence in decision-making processes related to population change, family planning, maternal and child health, and sustainable development in Africa.

Population Action International advocates for women and families to have access to contraception in order to improve their health, reduce poverty and protect their environment.

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LIST OF ACRONYMS

AFD	L'Agence Française de Développement
AFIDEP	African Institute for Development Policy
CBS	Central Bureau of Statistics
DDO	District Development Officer
DHS	Demographic and Health Survey
DFID	Department for International Development
FDP	Forest Development Plan
GEF	Global Environment Facility
GHG	Green House Gas
IEC	Information Education and Communication
IMCE	Inter-Ministerial Committee on Environment
JICA	Japan International Coordination Agency
KARI	Kenya Agricultural Research Institute
KEFRI	Kenya Forestry Research Institute
KIRDI	Kenya Industrial Research and Development Institute
KMD	Kenya Meteorological Department
KWS	Kenya Wildlife Service
LDCs	Least Developed Countries
MEMR	Ministry of Environment and Mineral Resources
MoPHS	Ministry of Public Health and Sanitation
MoFW	Ministry of Forestry and Wildlife
MoA	Ministry of Agriculture
MoWA	Ministry of Water and Irrigation
MSPND&V2030	Ministry of State for Planning, National Development and Vision 2030
MRV	Measurement Reporting and Verification
NAMA	National Mitigation Action
NCCACC	National Climate Change Activities Coordination Committee
NCCRS	National Climate Change Response Strategy
NCPD	National Council for Population and Development
NEMA	National Environment Management Authority
NGOs	Non-Governmental Organizations
PAI	Population Action International
PRB	Population Reference Bureau
REDD	Reduce Emissions from Deforestation and Degradation
SAGA	Semi-autonomous Government Authorities
SRH	Sexual and Reproductive Health
TFR	Total Fertility Rate
TICAD	Tokyo International Conference on African Development
UN	United Nations
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WHO	World Health Organization

FOREWORD

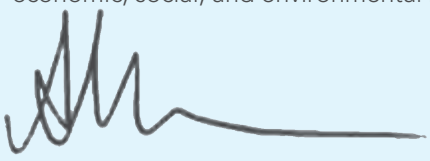
This report by the African Institute for Development Policy (AFIDEP) and Population Action International (PAI) presents a timely assessment of the role of population dynamics and climate change in sustainable development in Kenya. It is based on sound analysis of the issues, utilizing the most up-to-date data, which is complemented by a policy and programme assessment, and informed by the views of key policy makers and implementers from government, development practice, and civil society.

Like many other sub-Saharan African countries, Kenya faces dual pressures from population dynamics and climate change that mutually undermine poverty alleviation, social development and economic growth efforts. The pressure of a rapidly growing population, combined with erratic rainfall patterns, increases the risk of disasters, food insecurity and environmental degradation. Addressing population dynamics and climate change together should be a top development priority for Kenya. Joint investment in family planning and climate change strategies will help to preserve the environment and natural resources, and reduce poverty and inequalities by lowering the child dependency burden and creating more livelihood and investment opportunities for women, families and communities.

Kenya is well placed to tackle these issues jointly through formulation of integrated policies and programmes. Kenya's potential is demonstrated by the political will and commitment to address these issues, as evidenced by the country's policy framework. The 2013-2017 Medium Term Plan for the implementation of Kenya's long term development strategy, Vision 2030, recognizes the role of population growth and climate change. The 2010 climate change strategy laid a sound foundation for streamlining and strengthening climate change responses in the country. Further, the recently launched Population Policy for National Development, and other sectoral policies tackling reproductive health, gender and a range of environmental issues all acknowledge the link between population pressure and environmental degradation. Kenya has also undertaken the development of a climate change policy framework and the establishment of mechanisms for implementation and coordination of climate change activities across the country, thereby setting the stage for integration and linkages at the implementation level. We commend the Government of Kenya for all these efforts and urge it and other stakeholders to intensify efforts to harmonize coordination processes for climate change, complete all outstanding policies, provide requisite recourses, and swiftly implement intervention s on population and climate change in an integrated manner.

UNFPA-Kenya endorses the use of population data as a basis for evidence-based poverty alleviation, which directly falls within our mandate, and is pleased to be associated with this report, having provided technical support to this study. It is my sincere hope that this report will be put to good use by decision makers and programme implementers in government, development partners, non-governmental organisations, and researchers alike, with the ultimate aim of improving the well-being of Kenyan citizens.

This report strengthens the case for the centrality of population dynamics and climate change to sustainable development, and further highlights the importance of their integration and multisectoral coordination to reaping economic, social, and environmental benefits for Kenyans in present and ensuing generations.



Dr. Alexander Ilyin
UNFPA Kenya Representative

The views expressed herein are those of the author and do not necessarily reflect the views of UNFPA or the United Nations.

EXECUTIVE SUMMARY

The combined effects of climate change and population dynamics in Kenya are increasing food insecurity, environmental degradation, and poverty. However, these two issues are not prioritized and addressed together in the country's development plans. The African Institute for Development Policy (AFIDEP) and Population Action International (PAI) conducted a study between January and June 2012 to assess the landscape for integrating population and climate change in Kenyan development policies and strategies.

Like many other African countries, Kenya is faced with a rapidly growing population and low resilience to climate change. Its current population of about 41 million people is projected to grow to 97 million by 2050, and reach 160 million by 2100. This growth is largely a result of high and slowly declining fertility (currently at 4.6 children per woman) in addition to a decline in mortality over the past four decades. Forty-three per cent of recent births are mistimed and 26 percent of married women who want to stop childbearing or postpone the next birth need contraception. Rapid population growth places increased demands on natural resources such as land, forests and water. It also worsens environmental degradation and undermines economic growth.

Most Kenyans are dependent on natural resources and therefore vulnerable to climate change effects. Erratic rainfall, droughts, floods, dry spells, cold spells, landslides, mudslides and heat waves have resulted in crop failure and a reduction in land for agriculture. Changes in climate have also reduced hydroelectric power generation, escalated water shortages and deforestation, and displaced many people. Communities are not ready or able to adapt to these effects; for example, only about 4 percent of agricultural land is under irrigation. To adapt to climate change, there is an urgent need to diversify food crops, modernize agricultural production, expand irrigation programs, and explore alternative sources of energy to reduce deforestation.

Kenya's development blueprint, Vision 2030, recognizes population growth and urbanization as priority challenges for the country's development. Although climate change was not highlighted in the original Vision 2030 document, it has since been included in the Vision's Second Medium Term Plan for 2013-2017. Kenya has made progress in establishing an institutional and policy framework for coordinating climate change work. However, while the 2010 National Climate Change Response Strategy calls for efforts to address climate in other sectors, there is no reference to population dynamics.

The 2012 Population Policy states that population pressure contributes to climate change through environmental degradation. However, it does not mention how population affects resilience to climate change or how the two issues can be addressed. Several sectoral policies that tackle climate-related issues like water, forestry, and land use recognize the role of population growth in environmental degradation. But they leave it to the Ministries of Health and Planning to address population challenges. In general, policy makers and experts see the need to link population dynamics and climate change at policy and program levels. However, they also report that the two issues are not well integrated and that programs addressing them are implemented separately. The reasons for this lack of integration are:

a) Weak coordination mechanisms of multi-sectoral climate change policies and programs

b) Fragmentation of policies

c) Insufficient funding

d) Weak technical capacity in research, program design, implementation, and evaluation

e) Poor harmonization of population and climate change programs at the community level.

Unless population dynamics and climate change are fully prioritized in overall development strategies and implemented in an integrated manner, it will be very difficult for Kenya to achieve sustainable development. Improved policies, better coordination, and adequate financial and human resources are needed to ensure effective implementation of programs. Meeting women and their partners' needs for family planning and enhancing resilience to climate change effects should be top development priority in Kenya.

INTRODUCTION

The United Nations' (U.N.) report, Our Common Future, defines sustainable development as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[1] Using this definition, the U.N. built a sustainable development framework with three pillars of sustainable development: environmental protection, economic growth, and social equity. Population falls under the social pillar in this framework. However, population size, growth, distribution, density, age structure, migration and urbanization matter for all three pillars.[2]

To have sustainable economic development, the links between population dynamics, climate change and the environment need to be well understood and addressed together. The size, composition, and distribution of human populations are constantly changing, and these changes affect our climate and the ability of people to adapt to it. As countries develop and implement climate change strategies, understanding the implications of population dynamics will be critical.

Analyses of links between population dynamics and climate change conducted by PAI and AFIDEP categorize Kenya as among countries having a rapidly growing population, water scarcity and falling food production.[3] Kenya's population has grown dramatically from about 5.4 million in 1948 to about 41 million today, and is projected to grow to 97 million by 2050, and reach 160 million by 2100.[4] 42 percent of Kenya's population is under age 15.[5] Caring for so many children and young people makes it difficult for families and governments to invest in education and health care and save for the future. Currently, about 24 percent of Kenyans live in urban areas, but the country is urbanizing at a rapid rate and it is projected that 45.7 percent of Kenyans will be living in urban areas by 2050.[6]

The country's economy is driven by agriculture, which contributes about a quarter of GDP, 60 percent of the country's export earnings, and supports 75 percent of the population.[7] Most are smallholder farmers whose land will be subdivided further for future generations. Kenya has among the highest deforestation rates in the world because of agricultural expansion, growth of human settlements, dependence on wood for cooking, reliance on burnt bricks for construction, and low levels of reforestation. The situation is likely to get worse in the future as the population grows, and more people live in urban areas.

Despite links between population, climate change and sustainable development, these issues have not been addressed together in policies or programs in Kenya.

About This Report

This report contributes to the understanding of links between population dynamics, climate change, and sustainable development in Kenya, a country that typifies the core population and climate change challenges highlighted above. The report analyzes population and climate change challenges that Kenya faces, and identifies opportunities for integrating these issues based on an assessment of the policy and program landscape. The report is aimed at helping policymakers, donors and civil society organizations understand the importance of prioritizing population issues and climate change in development planning and funding, and the need for integrated responses to these challenges in order to ensure sustainable development in Kenya.

A 2009 government report that examined links between population dynamics and climate change in Kenya

highlighted the need to address the combined effects of climate change and population dynamics in order for Kenya to enhance environmental conservation, poverty alleviation, socioeconomic development and attainment of MDG as well as Vision 2030 goals.[8] A major addition of this report to the 2009 report is the analysis of the policy and program landscape that helps identify opportunities for optimizing integrated responses for addressing population and climate change challenges in Kenya.

Study Methods

The study used a triangulation of methods to explore the links between population dynamics and the environment.[9] To identify policy challenges and opportunities for integrating population and climate change factors in development planning and implementation, the study team conducted a policy environment assessment in Kenya. The first component of the assessment involved a desk review and synthesis of published and grey literature on population and climate change, including government policies, strategies, and program documents. Policy documents were sourced from the following ministries: Ministry of Forestry and Wildlife (MOFW); Ministry of Agriculture (MOA); Ministry of Water and Irrigation (MOWA); Ministry of State for Planning, National Development and Vision 2030 (MSPND & V2030); Ministry of Finance (MOF) as well as from government departments or semi-autonomous government authorities (SAGAs) such as the National Environment Management Authority (NEMA) and the National Council for Population and Development (NCPD). See Appendix 1 for the full list of policy documents that were reviewed.

The second component involved in-depth interviews with stakeholders working on population, environment, climate change, and general development issues in Kenya between January and March 2012, using a semi-structured interview guide (Appendix 2). The interviews aimed to understand how policy and program frameworks are responding to population and climate change challenges. They also looked for opportunities to incorporate and prioritize population and climate change in broader development plans. We interviewed 20 key informants representing government (11), development partners (3) and non-governmental organizations (NGOs) (6) working on population, environment, and climate change issues. Verbal consent to be interviewed was obtained from all respondents prior to all interviews. The full list of stakeholder representation of interviewees is provided in Appendix 3.

Three members of the study team conducted a thematic analysis of the field notes and transcripts. Initial descriptive themes were derived according to the interview guide framework and then discussed iteratively to produce a final set of descriptive themes that are highlighted in this report.

Population projections data are obtained from the online databases of the U.N. Department of Economic and Social Affairs' Population Division. Unless otherwise stated, these population projections are based on the medium variant assumption.[10] Data on fertility rates, contraceptive use, mortality, and fertility preferences were sourced from the *Kenya Demographic and Health Survey (DHS)* reports as well as the U.N. databases. The projection software SPECTRUM was used to generate the projected province-level population figures for 2030 for assessing effects of population growth on availability of land.[11]

BACKGROUND

The Republic of Kenya is located in East Africa and borders with Sudan and Ethiopia to the North, Uganda to the West, Somalia to the East and Tanzania to the South. The country is divided into eight provincial administrative units. The 2010 Constitution of Kenya created 47 semi-autonomous counties, which are expected to be fully operational in 2013.

Kenyan landscape

The vast arid and semi-arid regions are mostly in the Eastern and Northern parts of Kenya. The country has five major drainage basins: Lake Victoria, the Rift Valley, Athi, Tana and Ewaso Nyiro. The main rivers drain from the Central highlands and Rift Valley and flow into the Indian Ocean in the East, Lake Victoria in the West and Lake Turkana in the North. Kenya has diverse ecosystems such as forests, mountains, lakes, grassland and arid areas and desert. Table 1 presents key demographic and environmental indicators for Kenya.

According to U.N. categorization of countries, Kenya is among the world's less-developed countries, with a per capita gross national income (GNI) of $820 and 46 percent of the population living below the poverty line.[12] The country's economy is principally driven by rain-fed agriculture, which contributed between 21.5 percent and 23.5 percent of gross domestic product (GDP) between 2006 and 2010.[13] Agriculture and related activities support the livelihoods of at least 75 percent of the population and it is dominated by cultivation of maize, the country's staple food crop. Tea, coffee, and horticultural products are the main cash crops.[14]

The well-being of the majority of Kenyans is vulnerable to climate change because of the economy's dependence on rain-fed agriculture. Only about 20 percent of Kenya's total land-area of 582,646 square kilometers is suitable for agricultural production, and about 3.8 percent of the total agricultural land is under irrigation.[15] As a result, any erratic rain season results in a huge loss in agricultural productivity.

TABLE 1. KEY SOCIO-ECONOMIC AND ENVIRONMENTAL INDICATORS FOR KENYA	
PARAMETER	**INDICATOR**
Land area (square kilometers)[16]	582,646
Arable land area (medium-high potential agricultural land) (square kilometers)[17]	116,529
% of land area that is arable[18]	20%
Per capita Gross National Income (2011)[19]	$820
Population size (millions) (2010)[20]	40.5
Projected population size (millions) (2050)[21]	96.9
Population density (number of people per square kilometer) (2010)[22]	71
Projected population density in 2050 (number of people per square kilometer)[23]	170
Population density per arable land (2010)	348
Projected population density per arable land (2050)	831
Proportion (%) of people living below the poverty line (2010)[24]	46%
Proportion (%) of total population living in urban areas (2010)[25]	23.6%
Projected % of total population living in urban areas (2050)[26]	45.7%
Proportion (%) of urban residents living in slum settlements (2007)[27]	55%
Total Fertility Rate (average number of children borne per woman) (2008)[28]	4.7
Annual population growth rate (%) (2011)[29]	2.9
Proportion (%) of married women using any method of family planning (2008)[30]	46%
Proportion (%) of married women with unmet need for family planning (want postpone next birth or stop childbearing but not using family planning) (2008)[31]	25.6%
Proportion (%) of land area covered by forests (2010)[32]	3%
Proportion (%) of households dependent on wood fuel (2011)[33]	70%
Proportion (%) of agricultural land under irrigation[34]	3.8%

POPULATION DYNAMICS

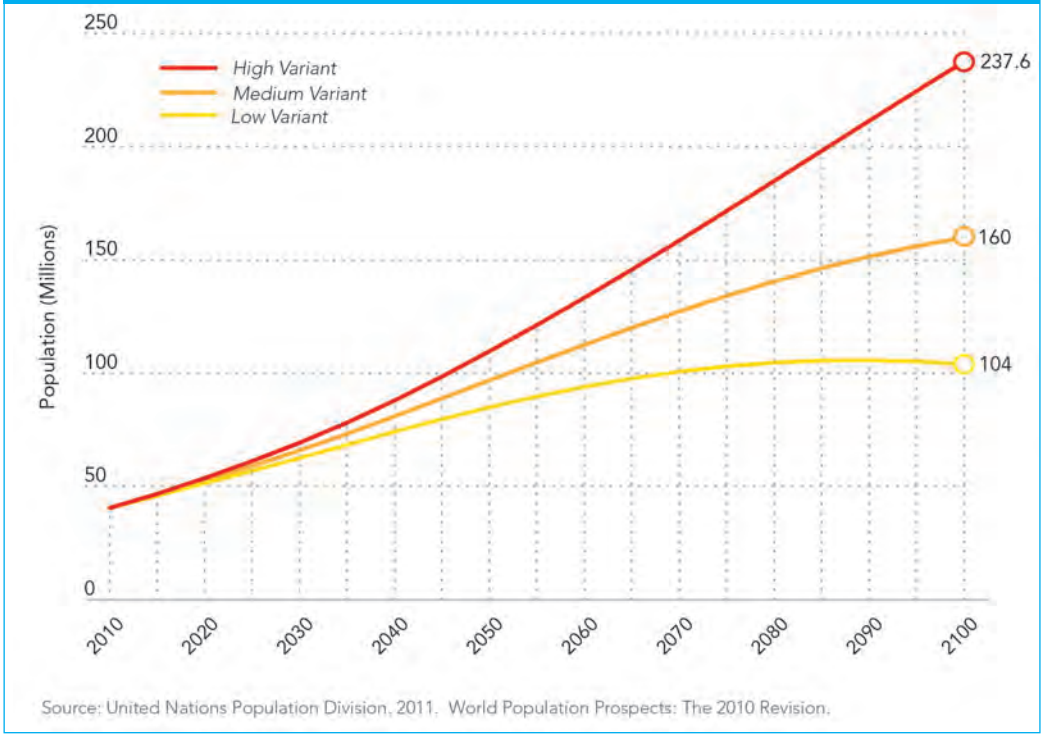
Kenya's population grew five-fold from about 5.4 million in 1948 to 28.7 million in 1999, and 38.6 million in 2009.[35] The annual growth rate of the population was around 2.8 percent in the 1950s, it peaked at 3.8 percent in the 1980s, and it is now at 2.8 percent.[36]

Kenya's high population growth is driven by high fertility. Fertility has declined at a sluggish pace over the past three decades, while child mortality has declined substantially. The infant mortality rate (number of deaths per 1,000 live births) fell from 147 in 1950 to 52 in 2008.[37]

In 1978, Kenya had the highest total fertility rate in the world at 8.1 children per woman. Fertility started declining in the late 1980s primarily due to increased education for women (that delayed entry into marriage and childbearing) and increased use of family planning.[38] Fertility was 6.7 children per woman in 1989, 4.7 children per woman in 1998, and 4.6 children per woman in 2008. This decline stalled between 1998 and 2003, and child mortality increased in the 1990s.[39]

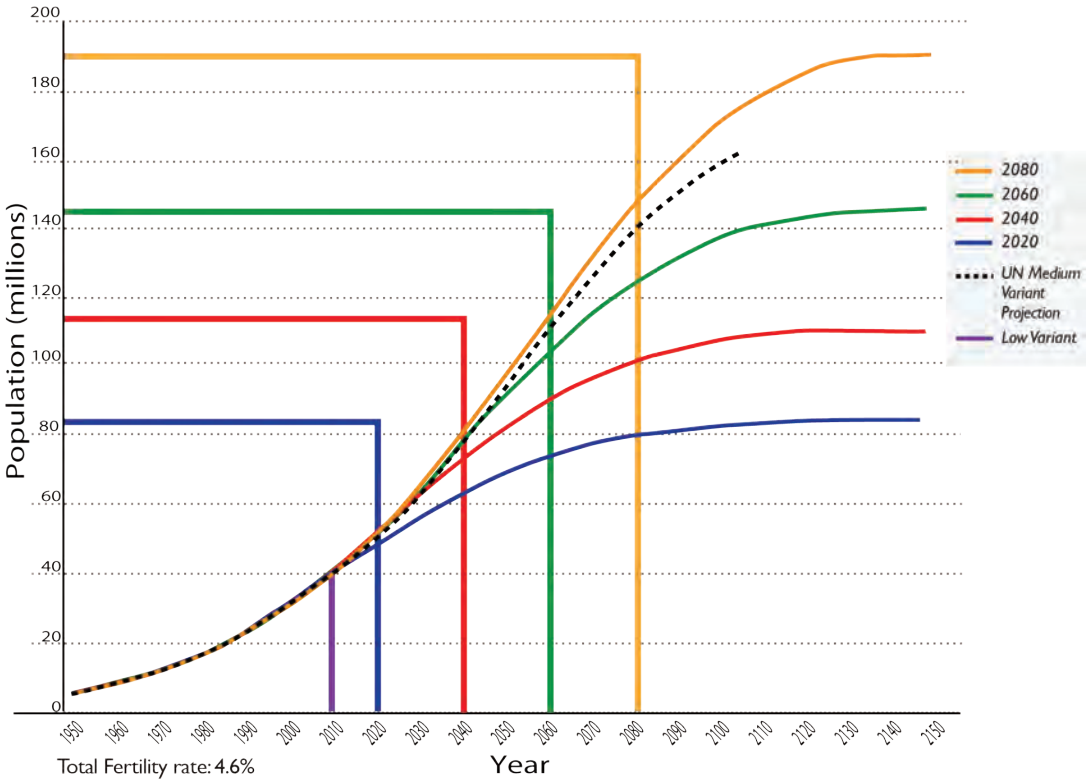
Kenya's population of about 41 million people is projected to grow to 96.9 million by 2050 and 160 million by 2100.[40] The U.N. medium projection variant assumes the total fertility rate will decline from 4.6 children per woman to 4 children per woman by 2030 and to 3 children per woman by 2050.[41] However, if the fertility rate is higher by 0.5, the country's population could reach 109.7 million by 2050 and 237.6 million by 2100.[42] If the fertility rate is lower by 0.5, the population size would be 85 million by 2050 and 104 million by 2100. Given the slow pace at which fertility has declined since 2003, it is conceivable that the country's fertility will follow the medium variant or even higher (Figure 1).

FIGURE 1: Kenya's projected population



Source: United Nations Population Division. 2011. World Population Prospects: The 2010 Revision.

FIGURE 2: Kenya's projected population according to the year Kenya will attain replacement level fertility



Source: Venture Strategies for Health and Development. 2012.
Demographic Momentum Graphs. Berkeley: Venture Strategies for Health and Development.

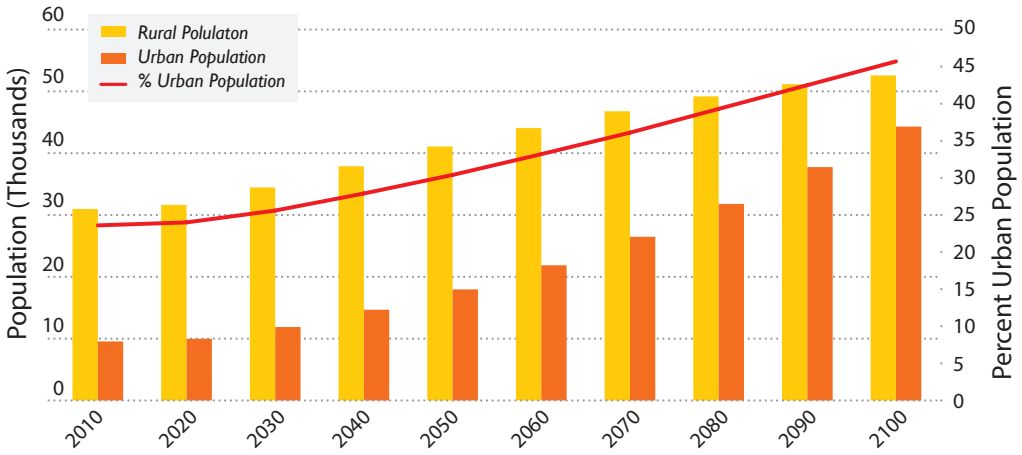
Rapid population growth makes it difficult for a government to adequately meet the expanding needs of its people. It also puts pressure on natural resources and hurts communities' and countries efforts to adapt to climate change. Voluntary family planning programs and women's empowerment should be expanded and prioritized if the country is to slow its population growth and achieve sustainable development.

Due to high fertility, Kenya's population is dominated by young people, with about 42 percent of the total population below age 15, and only 3 percent above age 65.[43] Such youthful populations put burdens on both families and governments since resources are mostly spent on dependents who are not in the labor force and do not contribute to economic productivity. High fertility also limits women's participation in the economy.

A youthful population also creates population momentum, where populations continue growing for several generations after reaching replacement level fertility (approximately 2.1 births per women). This happens because of high numbers of young people starting families. If Kenya attains replacement level fertility by 2020, its current population of about 41 million people would continue growing and stabilize at about 80 million people around 2080.[44] However, if the country reaches replacement level fertility by 2060, the population would stabilize at 140 million around 2120. If replacement level fertility is reached by 2080, the population would stabilize at about 190 million around 2140. The year that a country reaches replacement level fertility affects both the timing and level at which population size peaks.

Reducing fertility would also increase Kenya's chances of benefitting from what is known as the "demographic dividend"— economic growth arising from increased numbers of working-aged adults relative to young dependents. When birth rates decline, the age structure shifts in favor of more working-aged adults (aged 15-64), allowing for increased productivity, greater household

FIGURE 3: Kenya's projected population in rural and urban areas



Source: United Nations Department of Economic and Social Affairs, Population Division. 2012. *World Urbanization Prospects: The 2011 Revision.* New York: UN Population Division.

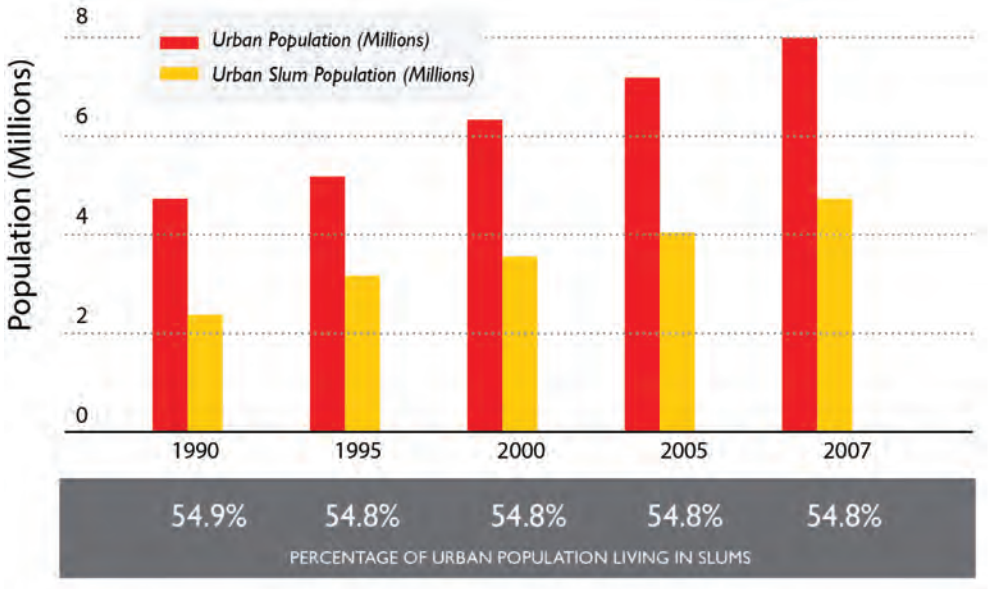
savings, and lower costs for basic social services provided to a young population. Such economic benefits are optimized when accompanied by investments in health and education, and pro-growth, job-creating economic reforms.

Urbanization

Kenya is one of the most rapidly urbanizing countries in Africa; its urban growth rate between 2010 and 2015 is estimated at 4.4 percent per year, while the average rate for Africa is 3.3 percent per year.[45] Currently, about 24 percent of Kenyans live in urban areas, and it is projected that close to half of the population (45.7 percent) will live in urban areas by 2050[46] (Figure 3). Urban population growth in Kenya is primarily driven by rural-urban migration and natural increase in urban areas.

According to estimates by U.N.-HABITAT, about 55 percent of Kenya's urban residents live in informal settlements, commonly known as slums.[47] Although the proportion of urban residents living in slums remained constant between 1990 and 2007, their numbers have grown from 2.35 million to 4.37 million due to rapid growth

FIGURE 4: Trends in urban poverty in Kenya



Source: UN-HABITAT. 2011. *State of the Worlds Cities 2010/2011: Bridging the Urban Divide.* Nairobi: UN-HABITAT.

of the urban population (Figure 4).[48] In Nairobi, more than 1.6 million people (out of a total population of 3.5 million) live in slums and most of them earn less than U.S. $1 a day.[49] The proliferation of slums is a huge concern to development planners because slum residents are at risk of economic insecurity, poor health outcomes, and climate change effects. Studies in Kenya show that slum residents are exhibiting poorer health and socioeconomic outcomes than other urban residents and rural residents. They face poor housing conditions, overcrowding, exposure to hazardous chemicals, high insecurity, and lack of basic amenities and social services including clean water, sanitation, health care, and education.[50] Slum settlements are also vulnerable to flooding.

If not adequately planned for, urbanization could result in increased poverty in urban areas. Better urban policies, plans, and programs are needed to enhance job creation and provide basic social services for growing cities. Additionally, more research is needed on urbanization and its implications in Kenya. Topics could include the relative contributions of migration, natural increase and boundary changes on urban population growth, patterns of urbanization in big cities versus small towns, and the economic and environmental implications of growing urban poverty.[51] One donor agency official described climate change challenges in relation to urbanization:

> *"Everyone cannot be supported in the urban centers and that is why it is important to ensure that people who live in climate-sensitive areas and depend upon climate-sensitive livelihoods are empowered socioeconomically."*
> — Donor agency official

Family Size and Contraceptive Use

In the 1980s and 1990s Kenya was a pioneer (alongside Botswana and Zimbabwe) in increasing contraceptive use in sub-Saharan Africa. The percentage of married women using family planning in Kenya rose from 7 percent in 1978 to 27 percent in 1989, and further to 39 percent in 1998. However, no further progress was made between 1998 and 2003, and fertility slightly increased during this period. The average number of births per woman declined by 2 children from 6.7 to 4.7 between 1989 and 1998, but hardly changed in the following decade, reaching 4.6 in 2008.

This generation of Kenyans prefers to have fewer children, and they would like to have fewer children than they are actually having. For example, the desired fertility rate for married women in 2008 was 3.4 children, while the actual fertility rate was 4.6 children.[52] The discrepancy between desired and actual fertility is highest among women in the poorest 20 percent, who want to have 5.3 children, but are having an average of 7. Those in the richest 20 percent are having close to the number of children that they desire, with a desired fertility rate of 2.5 versus a total fertility rate of 2.9. High fertility regions (Western, Nyanza and the Rift Valley provinces) also have the highest gaps between desired and actual fertility rates. Western province has a desired fertility rate of 3.6 children per woman and a total fertility rate of 5.6 children per woman.

Many women in Kenya who would like to delay the next birth or stop childbearing altogether need contraception. Such women are understood to have unmet need for family planning. The 2008 DHS estimated that 26 percent of married women fell into this category.[53] The unmet need for family planning is highest among the poorest women. Thirty-eight percent of women in the poorest 20 percent want to prevent pregnancy but lack contraception, and 32.5 percent lack contraception among the second-poorest group. These levels of unmet need for family planning and unwanted fertility show there is potential to increase contraceptive use and reduce fertility among the most underserved groups.

Stalled contraceptive use and fertility rates reflect reduced prioritization and funding of family planning programs during the latter part of the 1990s when the Kenyan government and development partners shifted their attention from family planning to HIV/AIDS.[54] Decline in child mortality also stalled during the 1993-2003 decade. Since 2003, mortality has declined, family planning use has increased, and fertility has declined in the country. Renewed interest in family planning has resulted in a modest increase in contraceptive use from 39 to 46 percent by 2008. In 2005 the government of Kenya created a budget line for contraceptives in order to reduce stock-outs and curb overdependence on donor funds. In 2009 a "National Leaders Population and Family Planning Conference" was organized to engage national leaders in efforts to reposition population and family planning as central to the country's overall development. In 2012, the government re-launched its family planning program to address both service and demand barriers to contraceptive use.

IMPLICATIONS OF POPULATION GROWTH AND CLIMATE CHANGE FOR SUSTAINABLE DEVELOPMENT

Like many other African countries that depend on the environment and natural resources for economic survival, Kenya is vulnerable to the effects of climate change. Some of these effects are already being seen in Kenya. They include: erratic rainfall, water scarcity, rising temperatures, and heat waves, floods and droughts. Decreases in agricultural production and environmental degradation due to climate change threaten Kenya's economy and its people's well-being. Policy makers, development partners, civil society organizations, and other stakeholders highlighted the following climate change and environmental challenges in Kenya:

BOX 1: THE MAIN CLIMATE CHANGE AND ENVIRONMENTAL CHALLENGES IN KENYA

- Unpredictable weather patterns, including rainfall
- Flooding and displacement of people from flood-prone areas
- Droughts
- Short rainy seasons and prolonged dry spells during rainy seasons
- Drying up of rivers and lakes
- Rising sea levels and changes in the intensity of ocean currents
- Desertification of arid and semi-arid regions
- Water scarcity
- Bush fires
- Low and unstable hydro-electricity production
- Declining flora and fauna, and declining rare natural species

The interactions between population dynamics and these climate change risks can potentially have far-reaching ramifications for human and environmental well-being. Because of climate and population change, more Kenyans are settling in fragile ecosystems; agricultural productivity and fish production are declining; and Kenyans' livelihoods are at risk.

Women are more vulnerable to climate change than men partly because they make up the larger share of the agricultural work force, they tend to have limited access to income-earning opportunities, and they bear the burden of collecting resources like water and firewood, which are becoming increasingly scarce. In most Kenyan communities, women manage households and take care of family members, which may limit their mobility and increases their vulnerability to sudden weather-related natural disasters. Frequent drought and erratic rainfall force women to work relatively long hours to secure food, water and energy for their homes. In semi-arid areas girls are more inclined to drop out of school in order to help their mothers with household chores. This cycle of deprivation, poverty and inequality undermines the social capital needed to deal effectively with climate change.[55]

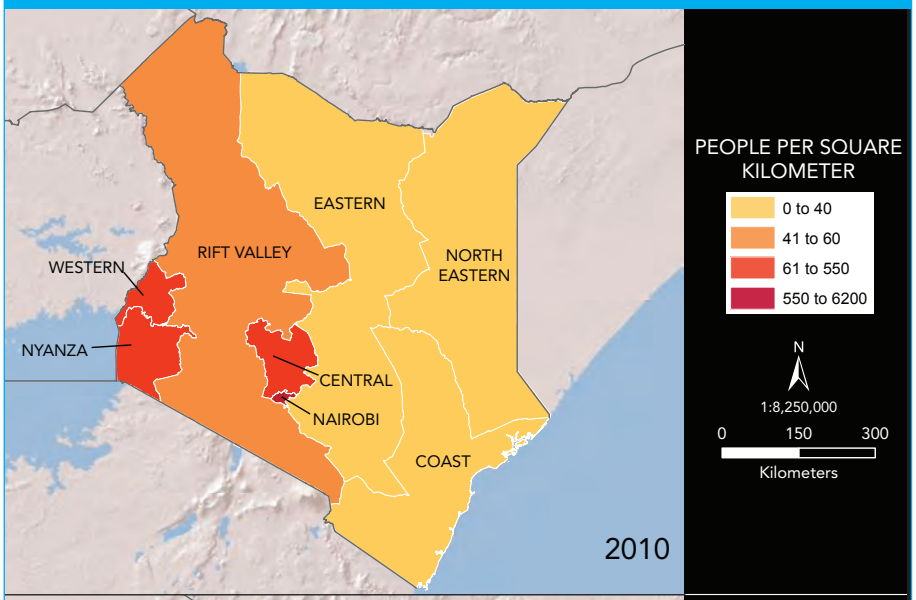
Population Growth and Land Availability

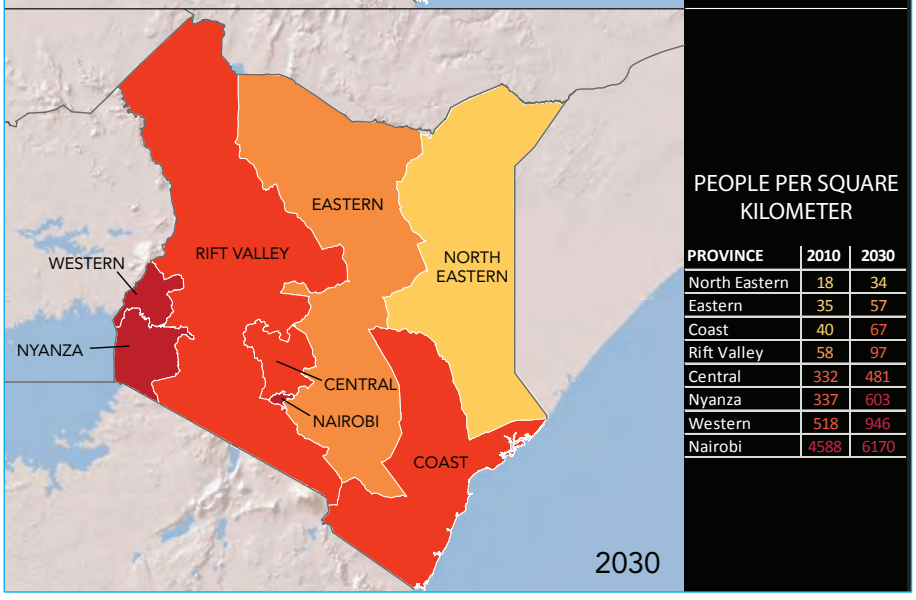
Kenya's rapid population growth has led to fragmentation of smallholder land holdings, and over-exploitation of land and other natural resources. These effects will be compounded as the population continues to grow. Kenya's population density varies by region, reflecting the country's agricultural land potential. Only about 20 percent of land in Kenya is suitable for agricultural production.[56] Most of the agriculturally productive areas are found in the densely populated Central, Rift Valley, Western and Nyanza provinces.

There are about 71 people per square kilometer of total land area and 348 people per square kilometer of arable land. This reflects a shortage of farming land in the country.[57] Overall population density will increase to 114 people per square kilometer by 2030 (Figure 5) and 170 people per square kilometer by 2050. Density for arable land will increase to 831 people per square kilometer by 2050.

Other than Nairobi, Western and Nyanza Provinces already have the highest population densities. Density is projected to increase as the regions' high fertility (5.6 and 5.4 children per woman respectively in 2008-9) and propel rapid population growth.[59] Population density is also rising rapidly in the Rift Valley, one of the main breadbaskets for the country.

FIGURE 5: Projected population densities in Kenya





PROVINCE	2010	2030
North Eastern	18	34
Eastern	35	57
Coast	40	67
Rift Valley	58	97
Central	332	481
Nyanza	337	603
Western	518	946
Nairobi	4588	6170

Source: Created using data from Kenya National Bureau of Statistics and projections from SPECTRUM model.[58]

In addressing land shortages, it is important to consider equity issues:

> *"Land tenure should be improved to make sure land is equitably distributed. It is not necessary to provide somebody with a piece of paper saying 'this is your land', if that person does not use the land. If you drive along the Nairobi to Naivasha to Nakuru highway, you see large stretches of land where little is happening, yet at the same time you see areas where forests are being encroached and degraded."*
>
> — Donor agency official

Kenya is experiencing rapid urbanization due to high rural-urban migration, natural increase in urban settings, and the reclassification of rural and agricultural areas to urban centers. This increasing urbanization will also lead to a reduction in land available for agricultural production and wildlife preservation. As urban populations grow and physical urban areas can no longer expand, residential land in cities will become expensive and limit development of low-income housing. This is likely to result in more people living in slums and other marginalized areas that are prone to the effects of climate change. Coastal urban centers like Mombasa, Kilifi, and Malindi already face climate change stresses. In the short-term, this leads to effects such as dwindling of fish stocks due to overfishing and changing water temperatures. Longer-term, it could lead to challenges such as rising sea levels, causing flooding and displacement of millions.[60]

Government officials in Kenya noted the links between population movement, urbanization and development, and their impact on the environment:

> *"Population is a key driver …. People are being forced to move from one area to another …. As we move forward this country is likely to be more urbanized and this is projected in Vision 2030. Challenges of climate change and urbanization are likely to come up."*
>
> — Government official

> *"In Nairobi city you find most of the informal settlements develop in areas which are close to quarries and industries, which are remitting hazardous gases into the environment. People who move are the most vulnerable and tend to move to areas that are very vulnerable."*
>
> — Government official

Population Growth, Climate Change, and Deforestation

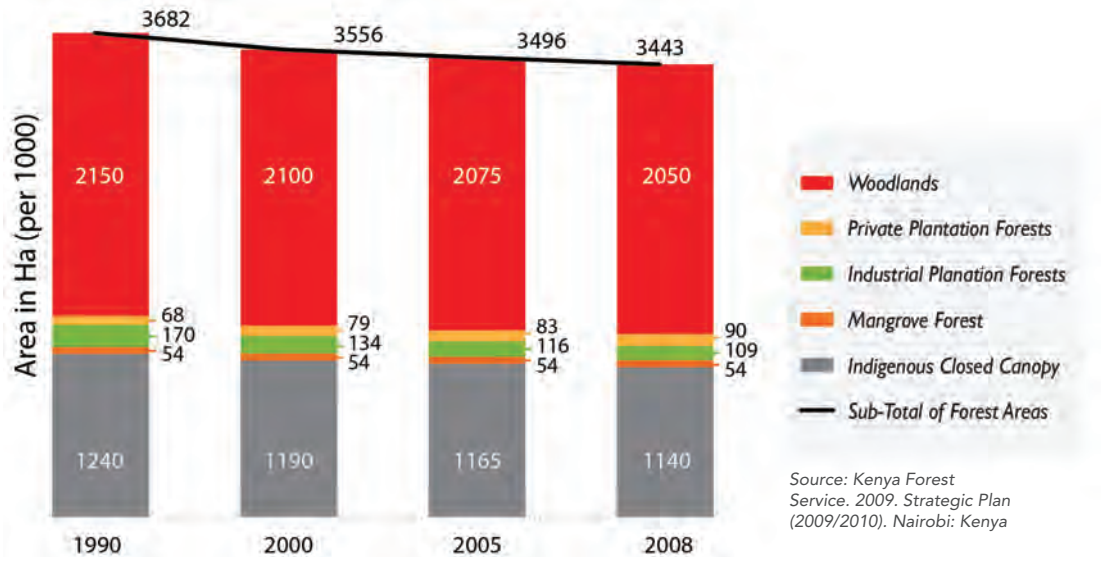
Population growth, agricultural expansion, growth of human settlements, over-dependence on wood for cooking, and low levels of reforestation have accelerated deforestation in Kenya.[61] Kenya has less forest cover than other countries in sub-Saharan Africa, with forests covering only about 3 percent of total land area.[62] Between 1990 and 2010, Kenya lost 6 percent of its forest cover at an annual rate of 0.3 percent (Figure 6).[63] At least 90 percent of rural households use firewood for cooking and heating, and about 80 percent of urban households use charcoal for cooking.[64]

Forest loss can have consequences for ecosystems, food security, and tourism, all significant parts of the Kenyan economy. With much of its population dependent on forests for their livelihoods and energy needs, rapid population growth will increase pressure on this valuable resource. Slowing population growth and strengthening the country's reforestation program could ease this pressure.[65]

Forests influence climate in important ways. They absorb carbon, which is released into the atmosphere during forest fires or when forests are cleared. Reforestation reduces the carbon emissions associated with deforestation and forest degradation, limiting the effects of climate change.[66] Forest loss negatively affects Kenya's ability to withstand natural disasters, including flooding. It compounds women's workloads, as they need to walk longer distances to fetch firewood. And it also means there a fewer trees to absorb carbon dioxide, a major contributor to climate change.

> *"Poverty in our rural areas is a major challenge to forestation in this country, and that directly links to climate change. Most of our population is poor and struggles to meet their basic needs on a daily basis. It is hard to reconcile that with telling people to live sustainably when they know they can cut trees to burn charcoal and earn a living".*
>
> — Government official

FIGURE 6: Trends in forest cover in Kenya from 1990 to 2008



Source: Kenya Forest Service. 2009. Strategic Plan (2009/2010). Nairobi: Kenya

To deal with these challenges and mitigate the adverse effects of climate change, Kenya has already implemented some programs:

> *"We have a farm forestry program, and we have a legal provision that every farm should have 10 percent coverage with trees. This also creates an additional source of income to the farmers because they can sell those trees."*
>
> — Government official

Population Growth, Climate Change, and Agricultural Production

The livelihoods of the majority of Kenyans depend on rain-fed small-scale farming, a practice that is highly vulnerable to the effects of climate change. There have been more frequent erratic rains, floods and droughts in Kenya during the past 15 years. Kenya experienced droughts in 1996-1997, 1999-2001, and 2003-2006.[67] These droughts decimated livestock populations and led to poor harvests, crop failure and food shortages in some areas. Because they happened repeatedly, households lacked sufficient time to recover. In 2009, perennial floods in the Nyando river catchment area alone put more than Ksh. 1 billion (approximately U.S. $11.8 million) worth of livestock at risk in the lower reaches of the Nyakach, Miwani and Nyando Divisions.[68]

More than 10 million people in Kenya suffer from chronic food insecurity and poor nutrition. It is estimated that at any one time, about two million people require assistance to access food.[69] During droughts or floods, the number of people in need could double. According to the Kenya Food Security Steering Group's (KFFSG) *2011/12 Short Rains Assessment Report*, about 2.2 million people in Kenya require food aid as a result of erratic rains and drought.[70] The KFSSG further estimates that food insecurity is getting worse for an estimated 5.2 million people who live in slum settlements. Food insecurity in the country is caused both by droughts in the North Eastern region, and flash flooding in food basket areas such as the Rift Valley region.[71] High levels of food insecurity are associated with conflict and displacement of households*, increased pressure on water and grazing resources, and soaring food prices.[72]

A combination of climate change and a decline in soil fertility will cause agricultural production to decline between 2012 and 2020 while demand for food increases due to population growth.[73] Fragmentation of family-owned farm land due to population growth, use of outdated agricultural technologies, and over-reliance on maize as the staple food is likely to further hamper productivity.[74] While slowing population growth would help alleviate the situation, there is also urgent need for a more diversified economy, development of irrigation, and adoption of better agricultural systems.[75]

> *"We have our traditional way of farming where we depend on rain. We also cannot predict when it will rain, making it very difficult for us to know when to plant. And when the rains don't come, people go hungry, especially the peasant farmers, and the nutrition status of our population is compromised."*
>
> — Government official

"Climate change has affected rainfall in Kenya which is now very erratic, and this in turn has affected food safety. We have aflatoxins when there is a lot of moisture. Pests are occurring at much higher populations than they did because of the loss of biodiversity when forests are cleared for expansion of agricultural land. All this is negatively impacting the population."
— Researcher

Population, Climate Change and Water Resources

Kenya is classified as a water-scarce country, with water demands exceeding freshwater sources.[76] Climate change is a major contributor to the country's water challenges.[77] More than half of Kenya's water resources are shared with its neighbors.[78] Kenya's average annual rainfall is 630 millimeters with a range of less than 200 millimeters in arid Northern Kenya to more than 1,800 millimeters on the slopes of Mt. Kenya.[79] Most parts of the country experience long periods of rain from March to June and short rains from October to November.[80] Eighty percent of the water in the country is used for agricultural production, with the rest going to domestic and commercial use.[81]

Recurring droughts have diminished water supply, rendering many rivers seasonal, or drying them up completely. High rates of deforestation have made the problem worse by severely reducing water catchment capacity.

"Kenya is one of the most water stressed countries in the region. About 10 percent of the dammed water comes from the neighboring countries. There is very little storage capacity and when it floods there are no structures to store the water for future use."
— Development partner

The proportion of Kenya's population using a safe source of drinking water has increased, but continues to lag behind the global average. In 2002, an estimated 62 percent of the population had access to improved drinking water sources.[82] With more people migrating to cities such as Nairobi, and climate change affecting water scarcity, meeting people's needs for sufficient safe drinking water is a growing challenge.

"When you don't have enough water, hygiene is compromised and poverty is increased…people go hungry and the nutritional status of our population is compromised…people become poor because they are losing their livelihoods. So, they cannot meet basic needs like food as a result of climate change"
— Government official

"There are challenges with water availability even for the livestock. Demand for water is a source of conflict…It is for all round use—it is for consumption, it is for livestock and it is for irrigation."
— Government official

Erratic rainfall and over-reliance on hydroelectric power have also led to power shortages.[83] This affects Kenya's economic productivity and makes it less attractive to investors.

Some parts of Kenya, such as Budalangi and Nyando in Western Province and the Tana River area, experience regular flooding that displaces large numbers of people. The North Eastern and North Western areas, such as Mandera and Marsabit, experience recurring droughts.[84] Droughts and floods also affect fisheries. Droughts have been responsible for the decline, or even drying up, of water bodies, resulting in low fish production and loss of biodiversity. The sector is further compromised by unsustainable agricultural practices adding silt to bodies of water, deforestation, and noxious weeds such as water hyacinth.[85]

Heavy rains and flooding increase the risk of spread of waterborne diseases such as malaria, Rift Valley fever, and Ebola hemorrhagic fever, as well as contamination of grain. In urban areas, the destruction of sewer lines during downpours and floods poses a public health risk.[86]

POLICY FRAMEWORK FOR LINKING POPULATION DYNAMICS AND CLIMATE CHANGE

Given the links between population dynamics and climate change, it is important that these issues are tackled jointly at policy and program levels. Linking population dynamics and climate change issues could also help determine who is particularly vulnerable to these twin challenges and help them adapt.

Population growth and climate change are recognized as development challenges in policy documents and among stakeholders in Kenya. Kenya's development blueprint, Vision 2030, recognizes population growth and urbanization as priority areas for the country's development. Although climate change was not highlighted in the original plan developed in 2004, it has since been included in the 2013-2017 Second Medium Term Plan. Vision 2030 calls for an integrated approach to addressing Kenya's development challenges, but does not provide specific guidance on how various sectors can work together.

Population Policies

Kenya was the first African country to develop and approve a population policy in 1967.This policy was updated in 2000 and 2012. Parliament approved the latest policy in September and was launched in October 2012.

The first population policy did not help increase contraceptive use or reduce fertility in the first decade after its approval. It was not until Kenya recorded the highest fertility rate in the world in 1978 that the government and the international community sought to strengthen the country's family planning program and increase contraception use.[87] Kenya established a National Coordinating Agency for Population and Development (NCAPD) in 1982 to coordinate a multi-sectoral response to the country's population challenges.

In 1989 NCAPD organized a national population conference that strengthened support for the country's family planning program. The 2000 National Population Policy for Sustainable Development was developed to align the country's population program with the 1994 International Conference on Population and Development (ICPD) Program of Action. The 2000 policy highlighted population-related priorities in Kenya, including gender equality, youth participation in society, knowledge of and access to reproductive health, and addressing high urbanization. The policy also recognized the damaging effect of rapid population growth on the environment. It noted that rapid population growth leads to poverty, and damages water, land, soil, and ecosystems. The policy did not make any reference to climate change.

Progress made in increasing contraceptive use and reducing fertility in Kenya stalled from 1998 to 2003. To reverse the stalled progress, the Kenyan government took a number of major policy and advocacy actions. In 2005, the government created a budget line for contraceptives for the first time in order to reduce stock-outs and dependence on donor funds. In 2009, the "National Leaders Population and Family Planning Conference" was organized to reposition population and family planning as key development priorities. In 2012 the government repositioned its family planning program to address barriers to contraceptive use.

The 2012 Population Policy seeks to reinforce this by focusing on integration of population in other sectors, and using media to launch community-based family planning and educational campaigns. The new policy cites population pressure as a major factor in environmental degradation and climate change, but does not specifically mention ways that the two issues could be addressed together.

Kenya has a series of policies that reinforce the links between population and the environment. These include the National Reproductive Health Policy (2007), the

Adolescent Reproductive Health and Development Policy (2003), the National Youth Policy (2006) and the National Gender and Development Policy (2000). These policies do not mention climate change, but note population growth's negative effects on the environment and development prospects. The youth and gender policies recognize the role that women and youth play in environmental conservation and call for their involvement in planning and implementation of environmental programs.

Environment, Climate Change, and Related Policies

A 2010 vulnerability assessment in Kenya highlighted that climate change has impacts on various levels: ecological, economic, social, and on physical infrastructure.[88] During the past five years, Kenya has set up a policy and institutional framework for coordinating climate change work. The 2010 National Climate Change Response Strategy (NCCRS) represents the first comprehensive effort to review the knowledge on climate change and explore ways to address climate change issues. The strategy lays the groundwork for both adaptation and mitigation measures to be integrated in government planning, budgeting, and development objectives. The strategy calls for a joint action plan involving the private sector, civil society NGOs, faith-based organizations and others in tackling climate change.

The NCCRS attempts to address some of Kenya's policy implementation challenges. For example, the strategy recommends creating a climate change policy and legal framework to ensure coordinated efforts to address climate change. The strategy recognizes the need to strengthen technical capacity in vulnerability assessment, impact monitoring, research capacity, and effective communication, education and awareness campaigns. It also underscores the need for streamlining funding mechanisms and identifies incentives for private sector and government investments to ensure program sustainability.

> *"The government realized that a lot of institutions were actually coming to the country and working in several places in the name of climate change and nobody knew what each institution was doing. There was need for coordination in order to have a one-stop point for information. That is why we decided to come up with the national climate change strategy."*
> — Government official

Kenya's climate change policy is currently under development. The government is also developing a Climate Change Act that will enable parliament to include climate change in the Vision 2030 framework, and a national action plan for the NCCRS. The recognition of climate change as a key development issue in the Medium Term Plan (2013 to 2017) of Kenya's Vision 2030, presents an opportunity to push climate change strategy and coordination mechanisms forward. This will increase awareness of climate change within the government and help mainstream these issues in the country's development agenda.

> *"If we do not coordinate policies on climate change from a development view, we might not be able to achieve much. For so many years it was one person singing about environment (Prof. Wangari Maathai), but now everybody is talking about it. We even have champions of climate change in the Ministry of Finance."*
> — Government official

> *"We have very clear interventions on climate change like cleaner environment mechanisms where we are adopting cleaner technologies to ensure that we are not impacting negatively on environment through climate change."*
> — Government official

Although prioritizing climate change in development is recent, various sectoral policies in Kenya already address climate change and related environmental challenges. Consequently, efforts to combat climate change have been fragmented.

In 1999 the government established the National Environment Management Authority (NEMA) through the Environmental Management and Coordination Act (EMCA). NEMA is under the Ministry of Environment and Mineral Resources (MEMR), and it manages the development and implementation of all environmental policies and programs. Some of the climate change policies in Kenya are: the 2007 Water Policy, the draft Fisheries Policy, the 2005 Forest Policy, the draft Wetlands Policy, the 2007 draft of the Integrated Coastal Zone Management Policy, and the 2008 National Environment Policy.

The National Environment Policy recognizes that

many natural disasters in Kenya are climate-related, and impact the economy. Agriculture, manufacturing, tourism, transport and public health are among the most affected sectors. However, Kenya's Energy Act (2006), Forestry Policy (2007) and Rangelands Policy (2004) all mention environmental management, but not climate change. The draft Integrated Coastal Zone Management Policy highlights climate change's adverse effects on ecosystems and livelihoods of people in Kenya's coastal areas. Climate change is causing rising sea levels and sea temperatures, endangering coral reefs, hurting coastal forests, and reducing fish and other sea resources. The policy also notes that these effects are made worse by rapid population growth. The policy calls for a speedy application of the United Nations Framework Convention on Climate Change (UNFCCC) and other Multilateral Environmental Agreements (MEAs).

Government ministries have also developed policies to address climate change. The Agricultural Sector Development Strategy 2010-2020 (ASDS) deals with better management of land and water, and looks at ways to breed livestock and crops that can adapt to changing weather patterns. The 2007 National Land Policy and Sessional Paper No. 3 of 2009 on National Land Policy do not reference climate change, but do highlight the role of population in land use and preservation. The 2011 National Land Reclamation Policy mentions both population dynamics and the role of land reclamation in responding to climate change. The government also created a Ministry of Northern Kenya and Arid Lands in 2008 to focus on developing the arid regions of the country, which are vulnerable to climate change. In general, climate-related policies identify population as a factor that increases environmental degradation, but they do not include strategies to tackle rapid population growth. This role is left to the Ministry of Health and the Ministry of Planning, National Development and Vision 2030.

The Kenyan government has also demonstrated its commitment to climate change issues through participation in global initiatives and protocols. For example, Kenya ratified the 1994 United Nations Framework Convention on Climate Change (UNFCCC) and the 2005 Kyoto Protocol aimed at reducing global warming. Kenya also ratified the 1995 United Nations Convention to Combat Desertification (UNCCD) and has been taking action to slow or stop desertification and land degradation. Kenya has also provided leadership in ongoing efforts to develop the East African Climate Change Action Plan and legislation. However, what ultimately matters is the extent to which the international protocols are contextualized and implemented within the country.

> *"There have been lots of problems in climate change especially on the international level. The Kyoto Protocol is a step in the right direction... the plans are very good but they have to be put into action."*
>
> — Government official

Coordination of Climate Change Responses

Three bodies currently coordinate and manage climate change activities in Kenya:

- The Inter-Ministerial National Climate Change Steering Committee, which is headed by the Prime Minister and managed through the Climate Change Coordination Unit at the Prime Minister's office
- The Climate Change Secretariat (located at the Ministry of Environment and Mineral Resources)
- The Climate Change Unit at NEMA

This structure was designed to coordinate climate change activities across sectors. The Ministry of Environment and Mineral Resources is the focal point for national environmental matters, including climate change. The climate change unit at NEMA is responsible for technical coordination of climate change issues relating to the environment. The climate change secretariat at the ministry headquarters is mostly responsible for administrative coordination of climate change issues.

> *"The Secretariat is the arm of the government that should coordinate all climate change matters. It was developed in 2010 but it is not yet an established institution within the Ministry. It's a very small unit with five staff including the director."*
>
> — Government official

The Inter-Ministerial Committee on Environment (IMCE) coordinates climate change activities across ministries. The committee has representatives from ministries and departments, academic and research institutions, NGOs and the private sector. IMCE has created eight technical sub-committees on priority areas. The technical sub-

committee on climate change is called the National Climate Change Activities Coordination Committee (NCCACC).

To boost coordination of climate change related activities across sectors, there is a climate change desk officer in the Ministry of Forestry, the Ministry of Regional Development, the Ministry of Fisheries, the Ministry of Wildlife, the Ministry of Agriculture, the Ministry of Planning, and the Ministry of Environment and Mineral Resources. All ministries are supposed to contribute to climate change responses.

> *"In our annual operating plans, there must be something addressing climate change."*
>
> — Government official

> *"The government has already trained 40 climate change officers who are in charge of mainstreaming climate change into their various sectors. This membership is drawn from all the government ministries and local authorities. Capacity building has been done gradually for the last one year under the African adaptation program."*
>
> — Government official

The government is also in the process of decentralizing climate change activities to the district level through the work of District Development Officers (DDOs). The main role of a DDO is to oversee all development programs at the district level and ensure that they are in line with the five-year district development plans.

Disaster Preparedness and Management

High population growth, poverty and reliance on rain-fed agriculture increase vulnerability to climate related disasters.[89] Communities in Kenya are predisposed to disasters because of poverty, aridity, and settlement in areas prone to flooding or slum areas with poor infrastructure and services. Lack of funding and a comprehensive policy framework have been major setbacks in disaster management. For a long time, disaster management was handled without a coordinated policy or framework. This led to fragmentation of efforts and increased vulnerability of disaster victims.[90] The Ministry of State for Special Programmes was established in 2008, and it has drafted a national policy for disaster management. The policy aims to strengthen disaster management institutions, partnerships, and networks. It also strives to mainstream disaster risk reduction in development to help vulnerable groups cope with potential disasters.[91] However, some feel that the ministry has limited impact. For the most part, it operates like disaster relief organizations such as Red Cross and has limited capacity to set up long-term disaster preparedness.

> *The Ministry of Special Programmes is nothing but Red Cross in different clothes. If it could be merged to have a response and planning role under one head you will really have an institution that has teeth and mandate when there is decentralization."*
>
> — Donor agency official

The Ministry has partnered with various organizations to conduct environmental impact assessments, evacuation, law enforcement, peace-building and conflict resolution operations.[92] These organizations include: National Disaster Operation Centre, Kenya Red Cross Society, Occupational Health and Safety Services, Kenya Wildlife Services and the NEMA. These organizations are expanding the scope of their work from simply providing emergency relief to increasing community resilience to disasters.

KEY CHALLENGES IN THE COORDINATION AND IMPLEMENTATION OF CLIMATE CHANGE AND POPULATION POLICIES

The links between population and climate change and their effects on sustainable development are increasingly recognized in Kenya. However, the two issues are rarely integrated in policies and programs, because of a number of challenges. The core of the problem is that development programs (including those addressing population and climate change issues) are designed, funded, and implemented in silos. Although stakeholders focused on population and climate change issues attend each other's meetings, there is limited effort to integrate programs beyond citing the issues in each other's policy documents. Experts on the population side tend to show greater appreciation of the links between population and climate change than their counterparts on the environment side. Five main barriers to addressing population and climate together are: weak coordination mechanisms, fragmented policies, inadequate funding, weak research capacity, and limited program integration.

Weak Coordination Mechanisms

Despite the government's demonstrated efforts to address population and climate change and their impact on the environment, climate change and population programs function separately. NCPD's role in coordinating population issues is clear, but the same cannot be said for the different entities coordinating climate change activities.

> *"The chair of the task force is the Permanent Secretary himself and the members of the task force who are in government have been officially nominated from their own ministries and from civil society, and others have been officially nominated by their chief executives. We need to ensure that the secretariat is able to really monitor and support issues on climate change and guide the way forward."*
>
> — Government official

Further, there is debate on which ministry is best placed to coordinate climate change activities. Some argue that since climate change is a crosscutting issue, it should be placed in the Ministry of State for Planning, National Development and Vision 2030. Others feel that the Ministry of Environment and Mineral Resources should take responsibility because climate change is primarily an environmental issue.

> *"[The] issue of climate change impacts on development issues. It would be better placed under the Ministry of Planning and National Development, the ministry that plays the coordinating role [in development matters]. But if it is under the Ministry of Environment which does not coordinate development planning, it will remain within the environment sector and won't diffuse to other sectors."*
>
> — Government official

Fragmentation of Population and Climate Change Policies

The inclusion of population and climate change in many sectoral policies can be confusing in cases where different positions are given on the issues. The lack of an overarching climate change policy is also a barrier to effective integration of climate change and other development issues, including population. Merely mentioning population in sectoral policies on climate change and environmental issues is not enough to promote integrated responses.

> *"We must prevent duplication and ensure that resources are being used efficiently. We realize that we are so fragmented. Merely mentioning that you have a line item on climate change is not effective. Right now things are jumbled up."*
> — Government official

> *"There are too many people working on one thing [climate change]. Different ministries come up with the same policies, and sometimes you find that they are conflicting. Harmonization is key and that is why we talk of merging. It is important to come up with one policy."*
> — Government official

Legislation on climate change is also needed:

> *"In Kenya we have been formulating policies, formulating strategies, and formulating action plans, but most of our pieces of legislation are not intact."*
> — Government official

Another concern is for policies to take note of local contexts and promote balance between people and natural resources. For example, a government official highlighted the challenge of implementing the United Nations' Reducing Emissions from Deforestation and Degradation (REDD) strategy and expected benefits from carbon credits.

> *"The reporting and verification is not easy because it might prevent people from getting benefits from forests. For example, farmers are discouraged from cutting firewood from the forest despite the fact that 70% of the population depends on wood for energy."*
> — Government official

> *"It is not good to sign to things like that because you become the first victim. People are usually attracted where there is money, but that money comes at a cost. The people who are marketing are saying that they will pay five dollars per hectare of a forest and give you money for the carbon credits. You might be tempted to get that little money now, but in the end you will have sold everything."*
> — Government official

Inadequate Funding

Lack of funding is one of the major constraints to development and implementation of climate change adaptation measures and population interventions. As noted before, progress in addressing population stalled between 1998 and 2008, primarily because of reduced funding for family planning. Although the government has increased its funding for contraceptives, resources are still inadequate to meet the full reproductive health needs of Kenyans.

Climate change work also faces funding challenges. Despite the government's multi-sectoral approach to climate change, limited government funds are allocated for the issue.

> *"When budgeting for climate change you hardly find money that the government has directly prioritized for it. But development partners are asking us to budget for capacity building and research to improve our knowledge and understanding of the climate change agenda."*
> — Government official

The government's limited investment in climate change adaptation has led to heavy donor dependency. Key donors include the World Bank, UK's Department for International Development (DFID), and the Japanese International Cooperation Agency (JICA).

> *"When I talk to my Finnish colleague sitting in Kenya Forestry Service (KFS), and they say that KFS does not have remote sensing capacity, I think we should propose that some of the Finnish funding should go to KFS to build a remote sensing unit. Otherwise we will be forced to overstretch limited resources and may create something which will fall apart the moment funds are not available."*
>
> — Development partner

Lack of funding is also a major obstacle in implementing climate change efforts in ministries where this is not the core business. For instance, although the Ministry of Health is supposed to address the disease impact of climate change, the ministry does not receive funding for this.

> *"When we present something on climate change, we are told that is not our core mandate, that we need to address our core mandate, and if there is surplus then we can look at climate change….It [climate change] is something that needs a lot of funding."*
>
> — Government official

> *"The Forestry Ministry has been assigned three or four flagship projects which must be implemented in order to realize Vision 2030. One of them is to brand five national parks to support the government in terms of revenue generation from foreign and local tourism, protection of water towers, and increasing the forest cover by 10% by 2030. This is in line with requirement of the new constitution. The Ministry of Planning needs to make sure that there are enough funds from Treasury to implement the projects."*
>
> — Government official

The impact of the imminent devolved system of government on resource allocation is unknown, and mechanisms are needed to ensure that resources are fairly distributed.

> *"With devolution, my fear is that there will be uneven distribution of resources and those people in disadvantaged areas of the country may have to go through much more hardship than those sitting much more closely to the honey pot because of clear distribution of resources."*
>
> — Donor agency official

Several initiatives are being explored to mobilize more climate change funds in the country. One such initiative is the Adaptation Fund established under the U.N. Framework Convention on Climate Change (UNFCCC). The Fund aims to finance projects relating to adaptation; technology transfer and capacity building; energy, transport, industry, agriculture, forestry and waste management; and economic diversification. NEMA is accredited by the Adaptation Fund Board as a national implementing entity to receive funds for adaption projects and programs. It is envisioned that such funds can then be passed to local programs, in line with local needs and priorities.

Weak Technical Capacity in Programming and Research

Weak technical capacity in program design, implementation, and evaluation hampers the development of effective responses to climate change across sectors.

> *"Climate change is an emerging issue although we say it has been there for quite some time, but I think its effects are becoming more pronounced. I think it will be naive for us to assume that we are up to the task because issues come up every day which need to be investigated and addressed."*
>
> — Government official

Most climate change research remains on a global scale, and there is little contextualization and application of this data at national and sub-national levels. For example, there has not been consistent mapping of communities that are vulnerable to climate change risks in order to devise targeted programs.

> *"Population pressure introduces what we call micro-climates; climates within certain small areas that have been introduced because of the influence population has on the environment. For us to monitor these we need a better data network for our observations, and a very good communication and dissemination system to create awareness in terms of what exactly people are supposed to do to minimize some of the impacts of climate change disasters."*
>
> — Government official

There is limited technical capacity for developing sound and competitive proposals than can attract donor funding.

> *"Part of the reason why everyone is saying there is a lot of money in climate change, yet we are unable to operationalize well-intended policies is that we lack technical capacity to develop strong proposals that can tap into the global funding mechanisms for climate change."*
>
> — Government official

There is also some concern among informants about the reliability of data generated by the Kenya Meteorological Department (KMD), especially with respect to rainfall patterns. Lack of advance warning information on when it will rain and how much rain to expect enhances the vulnerability of farmers to consequences of climate change.

Kenya has a number of well-established research organizations that can fill knowledge gaps in understanding the impact of climate change on agriculture, forestry, water, terrestrial ecosystems, human health, human settlement, energy, transport, industry, and waste management. These include the Kenya Agricultural Research Institute (KARI), the Kenya Forestry Research Institute (KEFRI), the Kenya Industrial Research and Development Institute (KIRDI), the Kenya Marine and Fisheries Research Institute (KEMFRI), the East African Institute of Meteorological Training and Research, the Kenyan Meteorological Department (KMD); International Livestock Research institute (ILRI), and World Agroforestry Centre (ICRAF). Various Kenyan institutions of higher learning are also involved in climate change research. Some international organizations such as the World Bank, the United Nations Development Programme (UNDP), the Japan International Coordination Agency (JICA), and the French Development Agency (AFD) also provide technical assistance in policy formulation, project design and research on climate change.

Multidisciplinary research approaches are needed to apply this knowledge. Academic institutions also need to introduce more multidisciplinary graduate training programs. Technical capacity should be developed at national and sub-national levels, especially in the light of the devolved governance system Kenya will roll out in 2013.

Weak Integration of Population and Climate Change Programs

Lack of a policy framework and poor coordination have prevented effective integration of climate change programs and the mainstreaming of climate change within other sectors like population. There is a need to enhance awareness about the benefits of linking these issues during program implementation. Furthermore, good policies aren't being implemented. This is mostly because of weak coordination, poor funding and lack of technical capacity.

> *"There are too many policies. We have the environment policy, we have the climate change bill, the national planning change strategy, national environment policy, but it doesn't matter unless you have internalized this and you start implementing it from the ground. What we would like to see are people on the ground start internalizing climate change and environment into their work, not more policies"*
>
> — Donor agency official

It's also unclear how programs will be implemented in 2013 and beyond, under the new, decentralized government structure.

> *"There is multiplicity of policies and little integration, and integration has not been harmonized with devolution. We need to be clear what will be done centrally, what will be done in the districts and what will be done in the counties… when money is released in the counties the people on the ground will need to know what will be allocated for drought, for agriculture and so on"*
>
> — Donor agency official

To promote understanding, messages about climate change and population links should be integrated in advocacy and educational materials, in school curriculums, and widely disseminated.

> *"Climate change for people does not mean climate as such. It means loss of life, loss of livelihood, loss of water, loss of agriculture. You have to communicate it in this way to people, by translating what climate change means for them."*
>
> — Donor agency official

> *"People rush to high grounds when it floods and come back when it subsides. Also in this country we have had a lot of outbreaks of cholera, the worst one being in 1997/1998. You note that people tend to be very careful during the outbreak, but go back to unhygienic practices immediately after… We must address attitudes to change practices."*
>
> — Government official

RECOMMENDATIONS

mmediate and decisive action on the following recommendations would improve Kenya's capacity to address its climate change and population challenges and promote sustainable development:

1. **Incorporate population dynamics in all climate change policies and strategies.** These include the Climate Change Act, the Climate Change Action Plan, and the Climate Change Policy that are being developed in Kenya. The new climate change policy should help harmonize sectoral policies on climate change issues. The policy should also be compatible with the country's plan to transition to a devolved government structure in 2013.

2. **Strengthen climate change coordination and governance mechanisms.** Roles and responsibilities of different entities coordinating climate change activities in Kenya, such as the Climate Change Units, should be clarified. Institutions should embrace and promote the multidimensional nature of climate change and ease its mainstreaming in other development sectors, including population.

3. **Secure financial resources from the government of Kenya, development partners, and non-governmental sources.** Currently, climate change and population initiatives in Kenya are largely donor-driven. The government should continue providing its own funding for family planning as it has done since 2005. The establishment of the "Special Climate Change Adaptation Fund" is a start in addressing funding challenges. The government should provide more funds and staff for climate change units in ministries to ensure effective responses to climate change.

4. **Mainstream population issues within other development sectors, including environment and climate change.** The new population policy should be fully implemented. Incorporating population issues in the work of the climate change units would help integrate the two issues at implementation level. The government should also address population issues such as urban planning, infrastructure development, and safeguarding the lives of the urban poor against effects of climate change.

5. **Take gender issues into account in the design of climate change policies and adaptation strategies.** Target women with climate change adaptation strategies, involve them in planning and implementation of interventions, enhance access to education, and create more livelihood opportunities for women. Strengthening the resilience of women will help communities respond to climate change and reduce poverty.

6. **Prioritize meeting of women and their partners' needs for family planning.** Family planning can help reduce unplanned births, improve health outcomes for women and children, and slow population growth. It would help ease pressure on the environment and natural resources, strengthen resilience to climate change, and enhance economic growth by empowering women.

7. **Enhance investments in public health, education and empowerment of women, and adopt pro-growth, investment-conducive, and job-creating economic reforms.** These steps will help optimize Kenya's potential to benefit from the demographic dividend.

8. **Enhance the design and implementation of programs that help Kenyans to adapt to climate change.** These programs could include diversification of food crops and alternative energy sources, reforestation, water conservation and recycling,

modernization of agricultural production, expansion of agricultural land under irrigation, and safeguarding coastal populations against rising sea levels and temperatures. These interventions will help to reduce food insecurity and poverty, slow deforestation, and enhance Kenya's carbon credits.

9. **Enhance local technical capacity of governments, and NGOs.** Building local capacity in proposal development can boost the country's chances of tapping into international funding for climate change work, such as the Adaptation Fund and the Green Climate Fund. Investments should be made in the Meteorological Department, to buy equipment and enhance its capacity to generate timely and reliable data. Local research capacity should also be enhanced to ensure evidence-based programs.

10. **Train local researchers and other experts in multidisciplinary approaches and encourage networking among professionals working in climate change, population dynamics, and other development sectors.** Lack of evidence on links between climate change and population dynamics has contributed to the lack of integrated policies and programs. Local experts should be trained on climate change issues from a multidisciplinary perspective, both in institutions of higher learning and workshops. The Kenya Population, Health and Environment (PHE) Network, which is housed at the National Council for Population and Development, provides a valuable entry point for enhancing networking and collaboration on these issues.

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APPENDIX 1: LIST OF REVIEWED POLICIES

–National Population Policy for Sustainable Development (2000)

–National Youth Policy (2006)

–National Policy on Gender and Development (2000)

–National Reproductive Health Policy (2007)

–Adolescent Reproductive Health and Development Policy (2003)

–National Housing Policy (2004)

–National Climate Change Response Strategy (NCCRS) (2010)

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–Water Policy (2007)

–Kenya's Climate Change Action Plan: National Adaptation Plan

–Wetlands Policy (draft)

–Integrated Coastal Zone Management Policy (2007 Draft)

APPENDIX 2: INTERVIEW GUIDE

Interview Guide: Population Dynamics, Climate Change and Sustainable Development in Kenya

BACKGROUND INFORMATION

Name of interviewee	Date of interview
Position of interviewee	Name of interviewer
Interviewee's institution	Interviewee's ID no.

Thank you so much for meeting with me today. My name is **[name]**. **The African Institute For Development Policy** (AFIDEP), based in Nairobi, Kenya and **the Population Action International** (Washington DC, USA), are conducting a study to identify policy and program opportunities for enhancing linkages between climate change, and population dynamics, and broader development policies and strategies **in Kenya**. As part of this study, we are talking to a range stakeholders including policy makers, program managers, donors, civil society organizations in order to gain an in-depth understanding of the status of these linkages, identify key challenges affecting the linkages, and make recommendations for improving the linkages at policy and service delivery levels in the country.

I have requested an interview with you because we believe that in your position as a**[position/job title]** in the **[name of office]**, you will provide useful perspectives and insights on these issues, and I look forward to learning from you today. I have some guiding questions, but want you to feel free to talk about anything you think is important for us to know. I will be taking notes as we talk to be sure I don't miss anything. Is that alright?

Before we get started, I just want to emphasize that everything we talk about today is confidential. No one will have access to the notes I am taking except for those of us working on the project. When we write up our report, we will not use the names of any interviewees so that no one can be identified. Also, if at any point during the interview you would like to stop, or if there are any questions you would rather not answer, just let me know —that's fine. Is there anything you'd like to ask me at this point? [**answer any questions regarding the interview**].

Please, let me know if it is fine for us to proceed with the interview.

YES _____ NO_____

I. WORK ON CLIMATE CHANGE

I would like to ask you a few questions regarding the kinds of activities your organization does in relation to Climate Change in Kenya.

1. What do you consider as the most crucial issues/challenges on climate change in Kenya?
2. Does your organization carry out activities related to climate change?
3. When did your organization start working on climate change issues?
4. What prompted you?
5. What sort of activities have you carried out?
6. What are some of the challenges faced in your work?

WORK ON POPULATION DYNAMICS

1. What do you consider as the most crucial issues/challenges on population in Kenya?
2. Does your organization carry out activities related to population dynamics
3. When did your organization start working on population issues?
4. What prompted you to start working on population issues?
5. What sort of activities have you carried out?
6. What are some of the challenges faced in your work

If institution works on both issues:

A. Do you consider your work on population dynamics and climate change to be well integrated?
   - Explain
   - Probes
     - Why do you integrate the two?
     - When did you start the integration?
     - What challenges have you faced?
     - Are there plan to scale-up this integration?
       - Probes:
         - If no, why not?
         - If yes: what mode of scale up are you going to use (e.g. Hot spots? vulnerable areas?)

B. Are there any perceived opportunity costs of integration?

If they don't work on both:

A. Why not?
B. Has your organization considered integrating population/climate change with population/climate change?
   - Explain:
     - Which aspects in particular?
C. Are there any perceived opportunity costs of integration?

II. POLICY FRAMEWORK

CLIMATE CHANGE POLICIES FRAMEWORK

1. What are the main policies to guide Climate Change operations in Kenya?

a. Please give me a brief description of what issues the policies address or what audience they target?
b. Do these policies incorporate population dynamics?
c. How do the Climate Change policies address the following vulnerability factors:
   - Gender inequality
   - Vulnerable and marginalized communities

2. What are the main strategies on Climate Change operations in Kenya?

a. Could you list them?
b. Please give me a brief description of what issues the strategies address or what audience they target?
c. Do these strategies incorporate population dynamics?
d. How do the Climate Change strategies address the following vulnerability factors:
   - Gender inequality
   - Vulnerable and marginalized communities

3. What are the main intervention programs for addressing the impacts of climate change in Kenya?
    a) Please give me a brief description of what issues the interventions address?
    b) Do these interventions incorporate population dynamics?
    c) How do the Climate Change interventions address the following vulnerability factors:
        - Gender inequality
        - Vulnerable and marginalized communities

POPULATION DYNAMICS POLICY FRAMEWORK

1. What are the main policies on population issues in Kenya?
    a. Could you list them?
    b. Please give me a brief description of what issues the policies address or what audience they target?
    c. Do these policies incorporate climate change issues?
    d. How do the population policies address the following vulnerability factors:
        - Gender inequality
        - Vulnerable and marginalized communities

2. What are the main strategies or guidelines on population issues in Kenya?
    a. Could you list them?
    b. Please give me a brief description of what issues the strategies address or what audience they target?
    c. How do the population strategies address the following vulnerability factors:
        - Gender inequality
        - Vulnerable and marginalized communities
        -
3. What are the main intervention programs for addressing population challenges in Kenya?
    d) Please give me a brief description of what issues the interventions address?
    e) Do these interventions incorporate climate change issues?
    f) How do the population interventions address the following vulnerability factors:
        - Gender inequality
        - Vulnerable and marginalized communities

III. SYSTEMS AND PARTNERSHIPS

3. PLANNING

a. How is planning for Climate Change undertaken?
b. To what extent are people in the population/census/statistics bureau unit(s) involved?
c. To what extend do professionals and key stakeholders in population get involved in developing climate change policies and strategies and vice versa?

4. STAFFING, HR AND CAPACITY DEVELOPMENT

a. What is the level of technical capacity in climate change work?
b. What are the training needs in Climate Change?
c. Does training on Climate Change integrate role of population dynamics?
d. What about population?

5. **FUNDING/BUDGETARY SUPPORT/PARTNERSHIPS**
    a. Who are the main funders of climate change in Kenya?
    b. What activities do they fund?
    c. Who is mostly funded?
        - To the government
        - CSOs
        - Private Sector

    What about population?

6. **LOGISTICS AND SUPPLIES**
    a. What are the main challenges in obtaining and distributing supplies for addressing population issues e.g. FP commodities?
    b. What is being done to address these challenges?
    c. Are there related logistical challenges in climate change responses?

7. **MONITORING AND EVALUATION**
    a. How do you measure your process and outcome indicators in climate change work?
    b. How is the reporting done?
    c. What challenges do you face in monitoring and evaluation of climate change work?
    d. What are the main knowledge/evidence gaps in climate change work?

What about monitoring and evaluation of population change issues?

If they work on both population and climate change:

- How do you integrate the M&E systems and indicators for population and climate change?
- What challenges are you facing on this?

8. **LEGISLATIVE/LEGAL ISSUES**
    a. Is there a legal framework governing Climate Change in Kenya?
    b. How has the law changed things?
    c. Are there contentious issues in relation to Climate Change?

9. **PARTNERSHIPS**
    a. What are the keys roles that NGOs play in climate change issues?
    b. What about the private sector?
    c. How can these roles be enhanced?

10. **INTERNATIONAL PROTOCOLS**
    a. What international protocols govern work on climate change in Kenya?
    b. In what way do these facilitate or inhibit your work?
    c. What about protocols facilitating population issues?

11. **FEEDBACK AND DISSEMINATION**
    a. Would you be interested in giving feedback to the draft of our report on this project?
    b. What advice would you give us in order to make this report most useful?
    c. Probes: specific issues to highlight
    d. Phrasing of the report
    e. Key people to target (e.g. send the report to)

CONCLUDING QUESTIONS

We're almost done with the interview. Your comments so far have been very useful in helping us understand the **[name of office]**'s role in the Climate Change/population linkages. I just have some final questions for you: given your knowledge and experience as a **[position/job title]** in the **[name of office]**, what is your overall impression of the adequacy and effectiveness of policies and strategies, Systems and programs for Climate Change in Kenya especially with regards to population dynamics?

1. Please give me key recommendations that would help improve work on:
    - climate change
    - Population dynamics
    - Integrations of the two issues

2. Finally, – remember, you're the expert and I am the learner – given my interest in understanding Climate Change, are there any important issues that I have not asked you about climate change?
3. What about population dynamics?
4. Do you have any questions for me?

CONTACTS AND REPORTS

1. Are there any relevant reports of work that your organization has supported on Climate Change and population dynamics? Please, give me copies of the reports or give me details on how I can access them.
2. Is there someone that you think we should talk to regarding this topic – just in case we have not already included the person on our list?

That covers the things I wanted to ask. Is there anything you would like to add?

Thank you so much for you time. I've really learned a lot from you today and I really appreciate your insights.

APPENDIX 3: REPRESENTATION OF KEY INFORMANTS

	ORGANIZATION	DEPARTMENT
GOVERNMENT	Ministry of State for Planning, National Development and Vision 2030	Poverty Environment Initiative, Environmental Services, Resource Management
	National Council for Population and Development	Programme Coordination Monitoring and Evaluation Resource Management
	Ministry of Public Health and Sanitation	Department of Environmental Health and Sanitation
	National Environment Management Agency	Environmental Planning & Research
	Ministry of Forestry and Wildlife	Wildlife Conservation Forest Conservation
	Ministry of Environment and Mineral Resources	Climate Change Secretariat Kenya Meteorological Department
	Ministry of Agriculture	Agriculture Environmental Management, Technical Department: Food security, Food and Industrial Crops Division, Cross Cutting Issues Unit
	Ministry of Regional Development	Natural Resource Management
	Office of the Prime Minster	Environment & Climate Change Coordination Unit, Green Energy/Climate Change
DEVELOPMENT PARTNER	DFID (UKAID)	Regional Climate Change
	World Bank	Natural Resource Unit
	USAID	Office of Population and Health
NGOS	ILRI	Challenge Program for Climate Change, Agriculture and Food Security unit
	ICRAF	Global Research, Tree and Landscape Diversity
	UNFPA	Country Representative Office, Population and Development Unit
	UNEP	Regional Office for Africa, Regional Program — Climate Change, Partnerships and Resource Mobilization
	UNDP	National Adaptation Program

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