

Integration of Population and Climate Change issues into Development Planning Frameworks

Abstract: *This paper presents a meta-analysis of the existing literature on need to integrate and harmonize population and climate change issues into development planning process as well as policy experiences from unpublished and published documents. It highlights a multi-level intervention that targets policy, decision makers, community members and other stakeholders. The linkage between Population and climate change is undeniable, yet not well understood. It is unequivocal that human activity is contributing to climate change and environmental issues in general. Climate change poses the most serious threat to humans and its eco systems for the present and future generations. The only lasting solution to the climate change challenges will be one that puts people at its centre. Countries can reduce risks to the lives and livelihoods of people caused by climate change as well as increase resilience, security and equity of socio-economic development in vulnerable communities. There is need to set up concrete and practical adaptation actions as the most appropriate approach to addressing climate change. Efforts should be made to integrate, harmonize population and climate change issues into development planning process as well as create awareness amongst the people to enable their contribution to achieving the set climate change objectives.*

1.0 Introduction

Today, planners have the opportunity and obligation to address the challenge of global climate change. The planning process and profession are uniquely suited to help communities rise to this historic and wide scope challenge. There is need to note that the earth is getting warmer and it will continue to do so well into the future, creating a wide range of impacts that include sea-level rise, droughts, and heat waves.

The key question and task ahead is how fast and how severe the impacts will be and whether we can adopt policies/interventions for mitigating and adapting to these impacts. A Guide on *Planning & Climate Change, Adopted April 27, 2008; Updated April 11, 2011*; reveals that Climatologists see human activities as almost certainly the major contributor to current global warming and express growing fears that such warming will accelerate in the coming years with potentially devastating impacts. Population dynamics, Reproductive Health and gender equity are not always considered as central in supporting climate change interventions.

New scientific findings and media coverage have brought the issue of climate change to the attention of planners, policy makers and the public. Each of the last three decades has consecutively been the warmest on record, validating the contention that climate system warming is “unequivocal.” Scientists anticipate climate change (CC) impacts that include: accelerated sea-level rise, drier conditions, higher amounts of precipitation, and more frequent heat waves. These conditions make it imperative that planners and policymakers need to work immediately to implement new policies to address climate change. For instance there is need to note that Population and climate change are complementary factors.

In April 2007, the Intergovernmental Panel on Climate Change (IPCC) concluded that there is a significant human-induced contribution to climate change and that this human component is currently the single greatest contributor to worldwide climate change. The IPCC also concluded that climate change impacts are going to be extensive and will continue to occur for hundreds of years regardless of the scale and expedience of human intervention. According to the IPCC, these climate impacts will manifest themselves in regionally variable droughts, flooding, thawing permafrost,

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stronger storms, sea-level rise, wildfires, heat waves, and other weather and climate effects on the natural and built environments.

According to advances in scientific analysis discernible human influences extend beyond average temperature to other aspects of climate such as: (1) sea-level rise; (2) changes in tropical and extra-tropical storm intensity; (3) increased heat waves; and (4) increased risk of both drought and heavy precipitation events. And despite current climate change mitigation policies and related sustainable development practices, global Green House Gases (GHG) emissions will continue to grow over the next few decades. Human induced global warming and sea-level rise will continue due to the time scales associated with climate processes. Even if GHG concentrations are stabilized, there will be increased global warming which is likely to create impacts that are abrupt or irreversible, such as the extinction of many plants and animal species.

The ability of populations to adapt to the effects of climate change is intimately connected to social and economic development but is unevenly distributed across and within societies with greater impacts on the poorer and more vulnerable. Neither adaptation nor mitigation alone can eliminate all climate change impacts; however, they can complement each other and together can significantly reduce the risks of climate change. It is possible that some of the impacts of climate change can be reduced, delayed or avoided by aggressive implementation of mitigation strategies.

Adapting to population gains associated with climate change is just another form of growth management, with some subtle distinctions. People and businesses relocating as a result of climate change will be relatively more attracted to communities that demonstrate climate change resilience; in general, they will not substitute one type of climate vulnerability for another. Consequently, communities interested in attracting and accommodating climate change-related growth will want to create mitigation and adaptation plans and programs that respond to their local and regional climate change issues.. Additionally, such communities may want to consider customized social services outreach to these new residents, especially if there are substantial numbers of people relocating due to traumatic events (hurricanes, wildfires, inundation, etc.). In some cases, in-migration may be the result of humanitarian efforts to relocate threatened populations from other regions and nations.

As disaster and/or catastrophic mortality figures as a result of hurricanes and heat wave etc teach us, lower income and elderly populations are more at risk and will bear the brunt of many climate change impacts. Additionally, indigenous populations, subsisting in traditional ways, will also face significant difficulties disproportionate to other populations as a result of climate change. As a consequence, planners and policy makers need to note that the responses they develop to address the impacts of climate change take into account the varied needs of all sectors of the community in order to equitably meet the significant challenges facing the population.

In integrating and harmonizing population and climate change issues into development planning process, *the* responses to climate change can be put into one of two categories. Responses intended to address the “cause” of human-induced climate change (e.g., production of CO₂ and other greenhouse gas emissions and deforestation) through reductions such as in vehicle-miles traveled, green building techniques, and reforestation which are classified as *mitigation* measures. Efforts to address the “symptoms” of climate change (e.g., drought, intense precipitation, sea

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level rise, and heat waves) through water resource management, storm-water control, coastal hardening, and providing shelters for at-risk populations can be considered measures of *adaptation*.

This paper therefore, stresses the need (what, how and where and where) to integrate population, climate change/environment issues into development planning frameworks so as to effectively address CC/environment interventions.

2.0 Methodology

A meta-analysis/review of the existing literature on need to integrate and harmonize population and climate change issues into development planning process as well as policy experiences from unpublished and published documents. It is based on use of available secondary data covering both qualitative and quantitative studies, reports and training manuals on Uganda and other selected African countries as well as the author's work related personal experiences. The aim of this analytical review is three fold as follows:

- Discuss a simple strategy/guide that takes into consideration the integration and harmonization of population and climate change issues into development planning process/frameworks;
- Highlight strategic issues and themes that will guide effective future action on climate change and population interventions in the region including strategic synergies.
- Share a brief on Uganda;s input to the integration and harmonization of population and climate change issues into development planning process and/or frameworks

3.0 Documentary review Findings

According to *Africa Environment Outlook 2: "Our Environment, Our Wealth"* by Ossama Salem *etal*, policies that are comprehensive and adopt an inter-linkages approach provide better opportunities for addressing multiple, related challenges and for developing effective solutions. An inter-linkages approach recognizes the complexities inherent in ecosystem dynamics and their interface with the equally complex social, economic and population dynamics inherent in human development and governance, particularly policies, laws and institutions. It stresses the importance of coordination of action across the relevant dimensions of sustainable development. By adopting an inter-linkages approach, policy may maximize the opportunities across a number of domains.

When effective institutional systems are developed to implement an inter-linkages approach, it can give policymakers the advantage of having a better grasp of the range of options available, the costs and benefits of their decisions, and how to determine the interagency links that are necessary to promote "joined-up policies". An inter-linkages approach in the formulation of policy, the development and implementation of programmes can help to ensure that interventions are more relevant, robust and effective, and that these policies are based on principles that are cross-sectoral and interdisciplinary. It can also help to sharpen the focus of policy and action, while at the same time ensuring that spatial and temporal factors across multiple sectors and ecosystems are fully considered. Inter-linkages may help bring into focus certain issues, such as gender, that are often neglected. Both the *state of the world population report 2009* and *State of Uganda Population Report, 2009* agree that human activities are producing large quantities of green house

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gases, particularly carbondioxide' and the concentration of green house gases in the atmosphere are very likely the cause of most of the temperature increases the world has experienced since the middle of the 20th century.

3.1 Mainstreaming population –environment linkages

Examining a community's vulnerability to the impacts of climate change is a key aspect of mainstreaming population – environment/CC linkages into development planning. Among the issues decision-makers need to consider are the effects of climate change/ environment on population poverty and growth and potential strategies for adaptation to environment/climate change impacts in the immediate and longer terms. The types of possible effects of climate change and their severity will vary by country and region. Effective and efficient population-environment mainstreaming should, at a minimum, do the following:

- Identify target audiences such as the population groups, regions and sectors currently at greatest risk (for example, due to poverty, lack of development or existing degradation of natural resources);
- Consider the degree to which current development strategies and sector programmes are vulnerable to climate variability and examine options to enhance their resilience;
- Explore ways to factor the impacts of projected climate change into development planning decisions to minimize risk and build resilience.

The challenge for population-environment mainstreaming is to increase planners and decision-makers' awareness of climate change, identify the aspects of national economies that are most sensitive to current risks and vulnerabilities, and build national capacity for ongoing analysis of future risks and potential adaptation strategies.

There are key messages to take note of, when mainstreaming population and environment. They include the following:

- Successful mainstreaming requires the involvement of many key stakeholders, whose various efforts can be strengthened and connected by adopting a programmatic approach;
- The champions taking the lead will vary from community to community and possibly throughout the process
- Close collaboration with development actors is vital for ensuring the relevance and effectiveness of the initiative and for obtaining political, technical and financial support

3.3 Programmatic Approach

Various studies and guides agree that the aim of population -environment /CC mainstreaming is to integrate the contribution of the environment to human well-being, pro-poor economic growth and achievement of the MDGs in the core business of government, overall national development and poverty reduction strategies, and sector and sub-national planning and investment.

For instance, most planning guides including a "*Guide on Planning & Climate Change, Adopted April 27, 2008; Updated April 11, 2011*" agree on the three key components to programmatic approach for mainstreaming population-environment/CC linkages into national development planning. The guides agree on the integration process as follows:

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3.3.1 Finding the Entry Points and Making the Case

This sets the stage for mainstreaming. It includes activities that help communities identify desirable pro-poor environmental outcomes and entry points into the development planning process as well as those aimed at making a strong case for the importance of population-environment mainstreaming. This stage therefore, consists of the initial set-up work that must take place before a full mainstreaming initiative goes forward. Key activities include the following:

- **Conduct preliminary assessments.** These preliminary assessments enable planners, communities to identify the right entry points and possible champions for population-environment mainstreaming. It starts with conducting assessments of the nature of population-environment linkages and vulnerability to climate change in the community, and other assessments that increase understanding of the community/country's governmental, institutional and political contexts. It entails identifying pro-poor and/or vulnerable environmental outcomes to be achieved and the governance, institutional and development factors that affect planning and decision-making at national, sector and subnational levels. It is also important to understand government, donor and civil society processes that shape development priorities..
- **Awareness raising and building partnerships.** The preliminary assessments described above provide the information needed to raise the awareness of decision-makers and to develop convincing arguments for partnerships within and beyond government. The priority is to engage with the finance and planning ministries responsible for economic development, and to bring the environmental institutions into the planning process.
- **Evaluation of institutions and their capacities.** This activity helps planners and policy makers design a better population-environment mainstreaming initiative, rooted in national and local institutional capabilities. These rapid assessments of institutional and capacity needs complement the preliminary assessments.
- **Set up working mechanisms.** This entails securing commitment on the part of stakeholders specifically participants from key sectors such as planning and finance, local government ministries and those in environment-related agencies. The arrangements made must be conducive to building consensus among the diverse participants in Population-environment mainstreaming. Establishing working arrangements that can sustain a long-term effort to mainstream population-environment linkages is an essential preparatory activity.

3.3.2 Mainstreaming Population-Environment Linkages into Policy Processes

This is concerned with integrating population- environment/CC linkages into a policy process and the resulting policy measures. The effort targets a specific policy process—such as a national development plan or sector strategy—previously identified as an entry point. Its activities build on previous work, especially preliminary assessments, awareness-raising and partnership-building, and include the following:

- **Collecting country-specific evidence.** Targeted evidence-based analytical studies are undertaken that complement and build on the preliminary assessments to unearth evidence about the nature of population-environment linkages in the country. These studies further build the case for the importance of population-environment mainstreaming and help examine the issue from different perspectives. Such studies might

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include extensive amounts of national data to elucidate the specific contributions of the environment and natural resources to both the national economy and human well-being in the country. The likely effects of climate change on population are integrated into these studies, by making use of additional analyses such as vulnerability and adaptation assessments and by taking into account the content and lessons learned when developing national communications and national adaptation programmes of action under the United Nations Framework Convention on Climate Change.

- **Influence policy processes.** Armed with evidence, practitioners are better able to identify priorities and craft the arguments necessary to have an impact on the targeted policy process and its associated documents. The collection of country-specific evidence provides a sound basis for efforts to influence the targeted policy process. This requires attention to alignment with governance mechanisms shaping the policy process, which may entail engagement with institutional working groups and stakeholders and coordination with relevant donors. The resulting output of the targeted policy process should include strategic and sector-specific goals and targets, supported by specific plans for implementation.

- **Develop and cost policy measures.** Mainstreaming efforts continue with the development and initial costing of policy measures, once population-environment linkages have been integrated in the policy document. The measures might be systemic interventions (such as fiscal measures), or they might be more narrowly focused, such as sector interventions (targeting, for example, agricultural legislation, promotion of renewable energy or the conservation of protected areas) or sub-national interventions (targeting a specific region of the country).

- **Institutional capacity building and strengthening.** This occurs throughout the mainstreaming initiative and is accomplished through tactical capacity-building, including the sharing of analytical results, policy briefs, on-the-job learning/mentoring and more formal types of training. In addition, demonstration projects can illustrate on the ground the contribution of the environment to the economy while strengthening institutions and national capacities.

3.3.3: Meeting the Implementation Challenge

These activities are aimed at ensuring that population-environment mainstreaming becomes established as standard practice within the community. The final and most sustained set of activities in the mainstreaming effort focuses on making population-environment mainstreaming operational through engagement in budgeting, implementation and monitoring processes. They include the following:

- **Integrate population-environment linkages in the monitoring system.** The integration of these linkages in the national monitoring system enables a community to track trends and the impact of policies as well as emerging issues such as climate change. The key priorities are to design appropriate population-environment indicators, strengthen data collection and management, and fully integrate population-environment linkages in the national monitoring system.

- **Budget for and finance population-environment mainstreaming.** This activity entails engaging in budgeting processes to ensure the policy measures associated with population-environment mainstreaming are funded. The government also needs to develop financing options, including interventions to improve the domestic financial base for environmental institutions and investments.

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- **Support policy measures at national, sector and subnational levels.** This activity involves collaborating with sector and sub-national bodies to build their capacities to mainstream population-environment linkages within their work and effectively implement policy measures at various levels.
- **Strengthen institutions and capacities.** In order to strengthen institutions and capacities in the long term, it is critical to establish population-environment mainstreaming as standard practice in government and administrative processes, procedures and systems at all levels.
- **Stakeholder engagement:** This occurs throughout, from inception through policy development, implementation and monitoring. Each successive component builds on previous work, but the chronology is not fixed. Rather, mainstreaming is an iterative process in which activities may take place in parallel or in an order different from that presented here, according to a community's particular priorities and needs. Some modules or activities may even be skipped, in particular when already undertaken by other actors. However, it is likely that a certain number of them will need to be carried out so that the mainstreaming effort leads to the expected outcomes and provides lasting results.

Most studies/guides agree that the efforts to mainstream population-environment, climate change adaptation into national development planning are still at a relatively early stage in many countries, and the proposed approach will need to be tested and improved as the wealth of experience across regions increases. By continuing this work, practitioners can help ensure that climate change adaptation is factored in a way that reduces poverty, promotes sustainable economic growth and helps achieve the Millennium Development Goals.

4.0 A Case of Uganda, in its attempt to addressing Climate Change and harmonization of population and climate change issues into development planning frameworks: According to Global Climate Change Alliance (GCCA), Uganda: *Agriculture adaptation to climate change, 2011*, several recent studies confirm that Uganda is highly vulnerable to Climate Change and Climate variability. Sustainable economic and social development of Uganda largely depends on Agriculture and the exploitation of its environment and natural resources. Uganda is a party to UN Framework Convention on Climate Change (UNFCCC); the country established a climate change Unit and adopted in 2008 a National adaptation Programme of Action (NAPA).

The Government of Uganda identified addressing climate change as a key issue in its National Development Plan and in its ability to achieve the Millennium Development Goals. In the National Development Plan, launched in 2010, the government of Uganda set 4 objectives related to climate change. These were:

1. Develop national capacity for coordination and implementation of climate change adaptation and mitigation activities through: a) domestication and enforcement of the UNFCCC and its protocols; b) strengthen the capacity and mandate of the Climate Change (CC) unit; c) undertake sector studies; d) develop a national CC policy which is still being formulated.

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2. Ensure climate proof development through a) CC awareness, training and education; b) implement the NAPA with focus on building community and ecosystem's resilience to CC.; c) build capacity and strengthen weather and climate monitoring; d) CC research; e) develop mainstreaming guidelines;
3. Promote low carbon economic development through: a) public education; b) incentive mechanisms to reduce or avoid emissions, c) build capacity of the private sector;
4. Meet Uganda's International obligations through: following up commitments and obligations; b) implementing COP decisions; c) participation in CC fora.

The government of Uganda also included in its NDP, the integration of Population factors and variables at various levels of development planning inclusive of sector ministries.

Following the Government's lead, the United Nations in Uganda recognized, for its part, that it has an important role to play in helping Uganda to frame, implement, and resource its programme and plans for tackling climate change. To this effect, the United Nations (UN) system in Uganda re-aligned its efforts behind those of the Government on the issue of climate change. Critically, the United Nations Development Assistance Framework (UNDAF) - which covers the period 2010 to 2014 - includes specific outcomes relating to addressing climate change that directly support the Millennium Development Goals and the National Development Plan Objectives. In the UNDAF, the issue of climate change falls under Outcome 2, within which there are three 'Agency Outcomes.

In the spirit of "*delivering as one*" the UN launched a Joint Programme on climate change that focused on UNDAF outcome 2: *Vulnerable segments of the population increasingly benefit from sustainable livelihoods, and in particular, improved agricultural systems and employment opportunities to cope with the population dynamics, increasing economic disparities, economic impact of HIV and AIDS, environment shocks and recovery challenges by 2014.* There is also a UN agency specific outcome that links to climate change interventions: *Vulnerable communities, government, civil society and the private sector are managing in a sustainable way and utilizing the environment and natural resources for improved livelihoods and to cope with the impact of climate change.*

Specifically, UNFPA Uganda supported the identification and selection of population and development, gender and reproductive health champions at national and sub-national levels to advance the discourse on population and development issues. Such issues advanced by these champions entail inter alia: a) mobilizing resources for climate change interventions; b) Strengthening national and sub-national levels' capacity for climate change adaptation and mitigation as well as harmonization of interventions with population issues especially in the areas of policy, planning, advocacy and research. Advocacy materials/messages addressing the linkage between the population and the environment/climate change were developed and are being used by population champions.

UNFPA country office also prepared advocacy notes/messages in 2010 that were shared and used by the Uganda's delegation to the Bonn, Tianjin China and Cancun Climate Change International conferences. The messages mainly covered the following:

- (a) Rationale for Integration of Population issues in Climate Change Interventions;
- (b) enabling measures that put people at the centre of addressing the effects of climate change;
- (c) A better understanding of population dynamics, gender and reproductive health in the integration of climate change and environmental measures into national and regional development plans, policies and strategies including the

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National Adaptation Plans of Action at all levels and, where appropriate with a view to ensuring adequate adaptation to climate change.

UNFPA will continue to provide technical support to Uganda's Delegations to Climate Change International conferences including the one in Durban, South Africa 2011.

UNFPA also facilitated and continues to facilitate sensitization interactive learning and experience sharing fora on climate change that led to the following:

- A shared understanding among civil society of the challenges and opportunities related to climate change and population in the Horn of Africa;
- Design of regional strategic issues and/or declaration/ action work plan that guides future action on climate change and population interventions in the region;
- Established a regional civil society forum on climate change and population as an innovative approach to climate change mitigation and adaptation in the Horn of Africa;
- Empowered participants to influence their countries' National Adaptation Plans of Action (NAPAs) to highlight the ways in which population trends interact with the effects of climate change and to integrate measures to reduce population growth in projects submitted for adaptation funding;
- Informed and influenced population and climate change decisions at the October, 2010 UNFCCC Climate Change Conference in Tianjin China and COP16, including organizing a side event to disseminate workshop outcomes.

UNFPA country office provided technical and financial support the development and dissemination of population and development indicators to be mainstreamed in all sectors as well as included in the Ministry of Local government policy assessment checklist for local governments minimum standards of service delivery.

Although the response to climate change is still at an early stage in Uganda some lessons can be derived from the efforts so far. These include:

- In 2007, the Government launched the National Adaptation Programme of Action (NAPA), specifying "urgent and immediate" priorities for adaptation to climate change. However, they did not receive the support from the international community in terms of technical and financial assistance and hence limited progress has been made in the implementation. Financial commitments by donors to support adaptation interventions on the ground have remained very limited.
- Secondly, the alignment of the UN's efforts squarely behind government-led priorities increases the likelihood that they will be sustainable;
- Thirdly, adaptation and capacity strengthening are themselves areas in which UN agencies have particular expertise and comparative advantages, thereby maximizing the potential for impact;

An assessment done by DFID identified the main constraints to the climate-proofing of Uganda's development as follows:

- Explicit capacity constraints in terms of expertise and institutional/financial resources;
- Tacit constraints for effective institutional action such as confused mandates, dysfunctional arrangements for inter-agency working, poor institutional incentives, competing policy priorities and a workplace culture that does not reward proactive action;
- Insufficient and unreliable weather and climate data and capacity to forecast and assess future CC impacts in Uganda;

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Insufficient resources and finances to support: effective adaptation on the ground; effective operation of a national coordination process; Uganda to strengthen its voice at international negotiations on CC.

5.0 Conclusion:

A policy framework that fully put people at the centre of addressing the effects of climate change will assist target communities in dealing with climate change/environment issues and its implications. Success requires policies and a bold new approach to planning, including the recognition that there will be enormous challenges to our political and economic institutions to address the myriad impacts of climate change;

The linkage between Population and climate change is undeniable, yet not well understood. It is unequivocal that human activity is contributing to climate change and environmental issues in general. The integration and harmonization of population and climate change issues into development planning process is key to enabling the achievement of the set climate change objectives.

Elected leaders and citizens will rely on plans, direct investment, design, and development strategies that are efficient and sustainable and which harmonize with other community priorities. Planners will also have to address the potential costs imposed on households by climate change and the policies adopted to address it. The climate challenge will require the comprehensive, long-term perspective that planning is uniquely qualified to provide.

Weather and climate on the Earth are quite variable. Consequently, no single weather event, such as a drought or a hurricane, can be unequivocally identified as a specific product of climate change. Climate is usually defined as the “average weather” over a thirty year period of time. Therefore, if there is a statistically significant increase in hurricane intensity, precipitation and sea-level over a thirty year period, such impacts can be considered to result from climate change.

6.0 The way forward

The following measures are the suggested way-forward:

Need to set up concrete and practical adaptation actions as the most appropriate approach to addressing climate change. All efforts should be made to integrate and harmonize population and climate change issues into development planning process as well as create awareness amongst the people to enable their contribution to achieving the set climate change objectives.

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Adaptation needs must be assessed and adequate adaptation actions must be prioritized and planned on the basis of scientific information and analytic tools, including the analysis of population trends and population geographic/spatial distribution using demographic data (disaggregated by sex, age and local vulnerabilities). Analysis of socio-economic and demographic data, coupled with data on climate impacts will contribute to better adaptation planning and decision making, particularly in agriculture and food security, coastal zone management, water resources management, urban planning, migration and spatial distribution, design of public facilities, health, tourism, and disaster risk reduction. Investing in data collection and analysis will enable better planning and population changes result from the movement of people like urbanization, migration and displacement that are linked to or have implications for climate change.

Adaptation planning should give priority to the most vulnerable communities and groups, such as women, particularly pregnant women, children, elderly, people living with HIV, disabled, indigenous people, as well as involvement of the private sector and civil society organizations in climate strategies at all levels, especially in the areas of education, awareness-raising and capacity-building, to ensure an effective response to climate change;

There is need to note that women can contribute to changing climate for the better as they influence the resilience and consumption patterns of their families and communities. Empowered women can become resourceful and creative agents for changing behaviour and making consumption patterns and community development more climate friendly. Therefore, assessing the various impacts on climate change on women and men specific activities would allow a better understanding of the -role of women in contributing to effective solutions to climate change based on greater community-based knowledge and awareness.

Improving health infrastructure and services, including promoting reproductive health and voluntary family planning, to enable women plan their families, are an essential component of climate change adaptation, as well as mitigation. Such health interventions not only contribute to the empowerment of women and enable families to adjust and build their family resources, they also contribute to increasing the resilience of people and communities to deal with impact of climate change on livelihoods and living environments and in the long run to slowing population growth and easing population pressure. In relation to climate change, slower population growth has a lot of benefits. These include relieving pressure on natural resources that serve as carbon sinks, slowing the growth of greenhouse gas emissions, reducing the scale of human vulnerability to impacts and buying time for economic development and spread of green technology.

The successful implementation of the adaptation and mitigation areas of work will require the full participation of all stakeholders, including the full involvement and empowerment of vulnerable people such as women and children, and partnership with, civil society. In addition, there is the need for equity in the allocation of funds based on need and, including the use of vulnerability criteria in resource allocation decision-making; as well as strengthen communication, education and awareness-raising at all levels, especially at the local and community levels;

There is need to have a better understanding of population dynamics, gender and reproductive health in the integration of climate change and environmental measures into national and regional development plans, policies and

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strategies including the National Adaptation Plans of Action at all levels and, where appropriate with a view to ensuring adequate adaptation to climate change, in such areas as water resources, agriculture, health, infrastructure, biodiversity and ecosystems, forests, urban management, tourism, food, land, environment and energy security and management of coastal and marine resources, taking into account cross-sectoral implications. Voluntary family planning programmes provide win-win opportunities for climate change because they are relatively easy to implement, are already in demand among women, relatively inexpensive and are likely to strengthen family's resilience to climate change impacts.

The specific impacts of climate change are highly regional and even local in nature. Therefore, climate change policies cannot be based on a one-size-fits-all approach. Planners must be aware of what the future holds for their particular geographic region and formulate their strategies accordingly. While plans and policies must reflect the individual needs of local areas, any successful mitigation effort will require a national, and indeed international, framework for addressing emission.

Adapting to climate change is just as important as mitigating it. Planners can have a significant effect on climate change mitigation through a variety of actions that put people at the centre, including encouraging higher density development, reducing vehicle-miles-traveled (VMT), using green building techniques, and supporting alternative energy sources. However, due to the extent of potential impacts projected under even the most aggressive mitigation scenarios, planners will also need to address the effects of climate change including rising sea levels, greater drought conditions and flood control in planning for adaptation.

All in all, citizen participation and engagement is vital to the success of climate change efforts. Planning is vital because of its comprehensive approach to the built environment, but traditional approaches are not enough to mitigate and adapt to climate change.

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