

and national governments, and other stakeholders into uncertainties. All stakeholders should effectively collaborate to implement climate change adaptation projects and build upon successful strategies.

### Recommended Reading

AEO (2005) Africa Environment Outlook Handbook: Past, Present and Future Perspectives on Policy Analysis for Integrated Environmental Assessment and Reporting, UNEP, Nairobi

AfDB (2006) African Development Bank, with link to <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/CM-2005-114-EN-ADF-BD-WP-CAMEROON-YAOUNDE-SANITATION-PROJECT-PADY.PDF>

AfDB (2000) African Development Report, Abidjan, Côte d'Ivoire: African Development Bank

IPCC (2007) Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge, UK: Cambridge University Press

IPCC (1998) The Regional Impacts of Climate Change: An Assessment of Vulnerability, edited by R.T.Watson, M.C.Zinyowera, R.H.Moss. Special Report of International Panel on Climate Change, Working Group II, Cambridge University Press, Cambridge, United Kingdom. pp. 253-330.

UN-Habitat (2010) The State of African Cities 2010: Governance, Inequality and Urban Land Markets, Nairobi, Kenya: United Nations Human Settlements Programme

UN-Habitat (2008) State of the World's Cities 2008/2009: Harmonious Cities, Nairobi, Kenya: United Nations Human Settlements Programme

UN-Habitat (2001a) Cities in a Globalizing World: Global Report on Human Settlements 2001, Nairobi, Kenya: United Nations Human Settlements Programme

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UN-Habitat (2001b) State of the World's Cities 2001, Nairobi, Kenya: United Nations Human Settlements Programme

UN-Habitat (2001c) Synthesis of National Reports on the Implementation of the Habitat Agenda in the Economic Commission for Europe (ECE) Region, Nairobi, Kenya: United Nations Human Settlements Programme

World Bank (2013) Planning, Connecting, and Financing Cities – Now: Priorities for City Leaders, Washington DC: The World Bank

**About AfricalInteract** : AfricalInteract is a platform enabling research-to-policy dialogue for adaptation to climate change among a broad range of African stakeholders in sub-Saharan Africa. These include civil society, researchers, policy-makers, donors, and the private sector working on adaptation to climate change in the agriculture and health sectors as well as urban areas with water and gender as cross cutting issues. The overall objective of AfricalInteract is to develop a platform for the effective and efficient transfer of information to policy makers, with the ultimate aim of enhancing the resilience of vulnerable populations. AfricalInteract is funded by the International Development Research Centre (IDRC) and coordinated by the West and Central African Council for Agricultural Research and Development (CORAF/WECARD) under the auspices of the Forum for Agricultural Research in Africa (FARA). The regional focus of AfricalInteract is based on the Regional Economic Communities in the four sub regions of sub-Saharan Africa. Focal organizations coordinating regional activities are as follows: The Association for Strengthening Agricultural Research in East and Central Africa (ASARECA) – East Africa; Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) – Southern Africa; Commission des Forêts d'Afrique Centrale (COMIFAC) – Central Africa; and Energie-Environnement et Développement (Enda) – West Africa.



# Enabling research-to-policy dialogue for adaptation to climate change in Africa

## Policies for Climate Change Adaptation in the Central Africa Urban Areas

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lack access to basic municipal services and harbour residents compelled to live in risky sites (Bull-Kamanga et al. 2003;). Thus, increased climate hazards together with rapid urbanisation are likely to place increased strain on the already weak capacity of local governments as they attempt to respond to the vulnerabilities of urban populations, particularly the urban poor.

Urban areas in the Central African region are highly vulnerable to climate change, which is one of the most important challenges facing cities in Africa. Climate change adaptation in urban areas in Central Africa is not only a set of actions for the future but also an immediate imperative. The urban sector in Central African countries has experienced very rapid growth. For example, it is estimated that the urban population of Central Africa has more than doubled from 23.7m in 1990 to an estimated 55.6m in 2010; the 100m mark could be reached by 2022, with further growth to 112.7m by 2030 (UN-Habitat 2010). Urban centres in Central Africa are at risk due to (i) high density of populations; (ii) lack of adequate drainage channels; (iii) concentration of solid and liquid waste; and (iv) unplanned settlements which often

Uncontrolled urbanisation in the Central Africa region spreads into fragile ecosystems, including delicate or highly erodible slopes, natural drainage waterways or valleys and areas that are prone to flooding. Due to the intense competition for space in urban areas, green spaces are rapidly disappearing and areas usually deemed unsuitable for housing are the only refuges available for the urban poor, who are then vulnerable to flooding, landslides and outbreaks of pests and diseases. Central Africa currently experiences the consequences of unplanned settlements and uncontrolled urbanisation. Water supply and sanitation provision has also fallen behind rates of urban growth largely due to lack of municipal funds and capacities. These issues have important implications for addressing the impacts of climate change to urban populations and the environment.



As Central Africa becomes more urbanised, environmental change, including climate change, is becoming a major and complex development challenge. The impacts of climatic variability and change on cities and urban areas are varied and complex. Despite increased attention to and improved understanding of these issues, more information and actions are required to manage the multitude of risks associated with environmental and climate change in Central African cities. Rapid urbanisation, increasing vulnerability and an urgent need to strengthen the capacity of institutions in Central Africa to work together to manage risks and manage adaptation and resilience through informed decision-making are vitally urgent to respond to the impacts of climate change in the region.

### Regional Policies related to Climate Change Adaptation in Central Africa Urban Areas

In Central Africa, Chad, Central African Republic, Democratic Republic of Congo and Burundi have submitted their National Adaptation Programmes of Action (NAPA). Climate change NAPA is a mechanism designed to assist Least Developed Countries to identify priority options for climate change adaptation. In addition to NAPAs, Central African countries have adopted other policies of particular relevance to urban areas and how they relate to climate variability and change. These policies were presented at the 25th Special Session of the United Nations General Assembly and Istanbul+5 Conference in June 2001. At this event, Cameroon reported the development of an environmental management plan which includes a strategy for urban development. The Congolese delegation presented the Human Settlement Development Strategy of Congo, consisting of four major components, namely (i) security of tenure, (ii) adequate housing for all, (iii) promotion of equality in access to credit and (iv) provision of basic social services. Gabon reported that a National Habitat Committee had been established, partnerships between national and local government and civil society had been forged and community infrastructure projects had been implemented with financial assistance from the World Bank.

Cameroon was part of the Accra Declaration and has approved the Declaration for Environmentally Sustainable Development of the Large Marine

Ecosystem of the Gulf of Guinea (AEO 2005). The Declaration pledged political commitment to environmentally sustainable development in the Gulf of Guinea, and noted that one way of enhancing environmental conditions in the Gulf of Guinea was to develop integrated coastal zone management (ICZM) plans and relevant institutions to implement policy at the national level. Gabon and Congo have also designed ICZM plans to take into account issues of coastal erosion and sea level rise in every socioeconomic development coastline scheme.

There are gaps in the current policy environment. These include lack of integration among adaptation strategies in urban sector and development strategies. NAPAs so far have placed emphasis on climate sensitive natural resource-based livelihoods. There are issues relating to effectively communicating what climate change actually is to different groups living in cities. Insufficient long-term perspective, aggravated by short-term funding cycles; and insufficient integration between institutions.

### Key research findings to be considered for informed decision making in Climate Change Adaptation in Central Africa Urban Areas

Research on climate change in Central Africa was conducted in seven research projects at the University of Douala, University of Yaoundé I and University of Buea, all in Cameroon, with a clear focus on adaptation efforts in urban settings. The results reflect climate change impacts in large cities in Central Africa.

Scientific evidence for implications of climate change for urban areas Washington et al. (2006) observed that Central African stream flow from Congo River gauge stations shows no long term trends. The time series is dominated by multi-decadal variability with links to the Atlantic atmospheric circulation but not to the El Niño Southern Oscillation. Other IPCC scenarios projected that sea level rise and increased vulnerability to flood and storm surges will render some of the coastal areas of Central Africa uninhabitable, displace millions of people and threaten low-lying urban areas, such as Douala in Cameroon (IPCC 2001; IPCC 1998).

In Central Africa, meeting the challenge of increasing agricultural productivity to provide substantial income to small scale farmers, while protecting environment sustainability is complicated by climate variability and change. The IPCC (2007) further stresses that climate change would translate into increasing incidence of climate shocks such as drought and flooding, depleting underground water, decreasing crop yield and/or crop suitability and proliferation of pests and diseases. In this scenario, semi-arid zones of Central Africa are particularly at risk and among the most vulnerable areas.

### Causes of vulnerability

Urban areas in Central Africa are confronted with increased risks from water scarcity and flooding. For the city of Douala in Cameroon, Moutila (2011) showed that coastal areas are threatened by sea level rise as urban demographic pressures mount. These findings underscored the importance of improving city-dwellers' understanding of coastal ecosystem protection to reduce pressure on mangrove forests. According to Bull-Kamanga et al. (2003), recurrent inundation in large cities across Central Africa results from multiple factors, such as coastal erosion that renders coastal settlements and economic activities more vulnerable to sea level rise caused by global climate change.

As more people move to cities, unplanned and uncontrolled settlements cover large tracts of land with houses built on particularly risky sites, roads and other infrastructure which compound flooding as soils cannot absorb runoff water. Research on the drainage systems in the city of Douala, (Tchoukoua (2010) revealed that uncollected garbage, impermeable surfaces and concentrations of buildings disrupt natural drainage channels, block storm water drains and slow down runoff water flows that trigger inundation.

Concentrations of solid and liquid wastes places Douala at particular risk from climate hazards. In terms of health and sanitation, Mbeugang (2013) characterised the Logbessou II district (a peri-urban area of the city of Douala) as ranking lowest in access to potable water supply and good sewerage management. Furthermore, he pointed out that intense inundations cause latrines to run over thereby polluting drinking water wells and increasing the spread of waterborne diseases such as cholera.

### Policy Options for consideration in the Urban Areas of the Central Africa Region

Policy options to address the major challenges of direct and indirect impacts of climate change in the Central Africa Urban sector should address the following issues :

#### 1. Invest in research, capacity building and documenting best practices

Documentation and shared learning in adaptation research and practice should be organised. To achieve this objective, investment should be increased in research in climate change adaptation and in building capacity of staff working in ministries and knowledge centres, thereby enabling them to write their work in a manner that promotes learning.

#### 2. Improve living conditions in urban areas.

Central African governments need to plan urban development and support programmes that contribute to climate change mitigation and adaptation in the context of wider development objectives. These may include business opportunities, sustainable water management and sanitation projects. Other measures that deal with climate variability (e.g. long-term weather forecasting and early warning systems) may also fall into this category. Governments should formulate appropriate human settlement and waste management policies, laws and regulations, and promote private sector participation in improving urban infrastructure and the provision of municipal services. Central African governments should also fulfil their obligations under the Habitat Agenda, and prepare integrated water and waste management strategies and action plans, ICZM and zoning.

#### 3. Provide an enabling environment for the implementation of policies and uptake of research to inform policymaking.

Adaptation to climate variability and change in urban areas is a development issue which should be addressed through collaboration amongst sector ministries, researchers, educators, policymakers, urban planners, development practitioners, donors, non-governmental and community-based organisations and private business sector.

#### 4. Monitoring and evaluation frameworks for adaptation.

Monitoring, evaluating and learning of climate change adaptation projects should be undertaken because climate change is taking communities, local