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Cities and climate change

I. Challenge

1. Human-caused global warming, to which the contribution of African, Caribbean and Pacific countries is minimal compared to that of the rest of the world, is recognized as one of the defining challenges of the twenty-first century. According to fourth assessment report of the Intergovernmental Panel on Climate Change, published in 2007, global temperatures are projected to rise between 1.4° C and 6.4° C over the period from 1990 to 2100, while, as was said at the International Scientific Congress on Climate Change, held in Copenhagen from 10 to 12 March 2009, global sea level rise is expected to rise by one metre or more in the same period.

2. As a result, the biggest challenge for African, Caribbean and Pacific cities, particularly for coastal and small island developing States, is the possible need to relocate populations in response to the flooding caused by sea-level rise, besides existing problems caused by weather-related disasters, such as floods and droughts. Sea-level rise has accelerated, mainly as a result of the surge in greenhouse gas emissions, with global warming causing the rate of sea-level rise worldwide to double. At the same time, urban populations are growing exponentially, especially in developing countries, where slums already pose problems. Slum areas are anticipated to be the most vulnerable to weather events and sea-level rise, given the paucity of shelter and the absence of public services. Climate change will therefore hamper the timely attainment of the Millennium Development Goals. Of the 100 countries most vulnerable to climate change, most are African, Caribbean and Pacific countries: 60 are small island developing States and 12 are among the least developed nations.[1]

3. According to data gathered by the Geographical Observer Unit of the United Nations Human Settlements Programme (UN-Habitat), the low-elevation coastal zone – the continuous area along coastlines that is less than 10 metres above sea level – represents 2 per cent of the world's land mass but contains 10 per cent of its total population and 13 per cent of its urban population. In Northern Africa, 18 per cent of the urban population lives in that zone, while in sub-Saharan Africa, the figure is 9 per cent of the total urban population. In the island States of Oceania, more than 20 per cent of the urban population inhabits that zone. There are 3,351 cities in such zones worldwide. Of these, 64 per cent are found in developing regions: Latin America and the Caribbean (27 per cent) and Africa (15 per cent).

4. Urbanization levels in such zones are higher than in other types of ecosystems. Globally, some 60 per cent of inhabitants of such zones live in cities, compared with 44 per cent in dryland ecosystems and 47 per cent in cultivated areas. In sub-Saharan Africa, over two thirds of the people living in low-elevation coastal zones belong to urban populations; in contrast, only 30 per cent of the population living in cultivated areas is urban, and dryland ecosystems are the least urbanized, with only one quarter of their populations living in cities.

1 Huq, S., and Ayers, J. 2007. *Critical list: the 100 nations most vulnerable to climate change*. Sustainable Development Opinion, International Institute for the Environment and Development, London.

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5. *Human settlements:* The main challenges likely to face African, Caribbean and Pacific populations will emanate from extreme climate events such as floods (and resulting landslides in some areas), strong winds, droughts and tsunamis. Inhabitants of marginal areas may be forced to migrate to urban areas (where infrastructure is already approaching its limits as a result of population pressure) if marginal lands become less productive under new climatic conditions. Climate change could worsen current trends in the depletion of biomass energy resources. Reduced stream flows reduce hydropower production, leading to negative effects on industrial productivity and costly relocation of some industrial plants. The management of pollution, sanitation, waste disposal, water supply and public health, in addition to the provision of adequate infrastructure in urban areas, could become more difficult and costly under changed climatic conditions.

6. *Human health:* African, Caribbean and Pacific populations are expected to be at risk primarily from increased incidences of vector-borne diseases and reduced nutritional status. A warmer environment could open up new areas for malaria; altered temperature and rainfall patterns also could increase the incidence of yellow fever, dengue fever, onchocerciasis and trypanosomiasis. Increased morbidity and mortality in subregions experiencing an increase in vector-borne diseases following climatic changes would have far-reaching economic consequences.

7. *Ecosystems:* In the African, Caribbean and Pacific region today, tropical forests and rangelands are threatened by population pressures and land-use systems. Generally apparent effects of these threats include the loss of biodiversity, rapid deterioration in land cover and the depletion of water availability through destruction of catchments and aquifers.

8. *Coastal zones:* Coastal cities in the African, Caribbean and Pacific region – many of which are already under stress from population pressure and conflicting uses – would be adversely affected by sea-level rise associated with climate change. The coastal cities have low-lying lagoonal coasts that are susceptible to erosion and hence are threatened by sea-level rise, particularly because most countries have major and rapidly expanding coastal cities. Most such cities are often buffeted by storm surges and are at risk from erosion, flooding and extreme storm events.

9. *Water resources and hydrology:* There are more water-stressed countries in the African, Caribbean and Pacific region than in any other, independent of climate change, as a result of the increased demands resulting from population growth, the degradation of watersheds caused by land-use change, sea-level rise and the siltation of river basins.

10. *Livestock, agriculture and food security*: In most African, Caribbean and Pacific countries, farming depends entirely on the quality of the rainy season, a situation that makes such countries particularly vulnerable to climate change. Productivity of fisheries will be affected. Changes in ocean dynamics could lead to changes in the migratory patterns of fish and possibly to reduced fish landings, especially in coastal artisanal fisheries.

11. *Tourism and wildlife:* Tourism is based on wildlife, nature reserves, coastal resorts and an abundant water supply for recreation. Sea-level rise, droughts and variations in precipitation would devastate ecosystems, coastal resorts and wildlife, which would reduce the attractiveness of some nature reserves, thereby reducing income from current vast investments in tourism.

II. Response

12. Since its creation in 1978, UN-Habitat has supported hundreds of cities in improving their living environment through its various programmes, including the Sustainable Cities programme, Localizing Agenda 21 programme, Disaster Management programme, Safer Cities programme, Water for African Cities programme, Water and Sanitation programme and the Lake Victoria initiative. Most were designed and implemented in close collaboration with various partners, such as other United Nations agencies, especially the United Nations Environment Programme and the United Nations Development Programme, Local Governments for Sustainability (ICLEI), national Governments, local authorities, non-governmental organizations and education, training and research institutions.

13. The experience acquired by UN-Habitat over more than three decades, and its success in tackling the various challenges and constraints in spite of the trends in global urbanization, are testament to the organization’s capability and knowledge base. The expertise acquired and the skills in using urban management knowledge are some of the advantages of UN-Habitat in this regard. The current challenge posed by climate change and its interaction with cities is globally recognized. Cities are a major part of the cause, suffering the most impacts and therefore play a primary role in finding the appropriate solution. Urbanization and climate change are virtually inseparable.

14. Key to success in coping with the effects of climate change in cities is the resolution of the issues of governance, poverty reduction, participation of young people, the role of gender, care for children and the proper urban planning and management. These issues are directly related to slum upgrading, where poverty alleviation and health care are crucial. Special care must be given to environmental degradation, ecosystems, biodiversity and problems connected with desertification, land tenure, erosion and flooding, all of which are subject to the impacts of climate change. All stakeholders have roles to play in encouraging activities. Some of these roles include the creation of incentives or disincentives, education and training about climate change mitigation strategies and research into and the creation and promotion of new technologies that restore the environment and curb climate change. Partnerships between stakeholders therefore form a basis for mitigating climate change.

15. The Global Campaign on Sustainable Urbanization launched by UN-Habitat is regarded as one of the core pillars for realizing the outcomes of the UN-Habitat medium-term strategic and institutional plan and seeks to enhance the catalytic role played by the organization with a systemic approach towards partnership, advocacy and networking. Within the framework of the Global Campaign, UN-Habitat launched, in late 2008, a new initiative for structured and systematic support through a global network for sustainable urban development, offering a coordinated approach and actions at the local, national, regional and global levels. It is a global network of partners and extant networks to further the understanding and application of the principles of sustainable urbanization at all levels. The long-term goal is sustainable urbanization, to be championed in global debates, forums and development agenda-setting organizations and meetings, and also at the local level through sustainable urban development practices. At the local level, the network gives practical meaning to its long-term vision through the specific objective of sustainable urban development, demonstrated through the attainment of local development goals. This results-based approach is accompanied by an indicator-based monitoring and evaluation system.

16. The effects of climate change on human settlements and the adaptive capabilities of local governments, in addition to their responsiveness in the context of governance structures and the participation of the civil society, are the initial testing ground for the network. The objective of the cities and climate change initiative is to enhance climate change adaptation and mitigation and the preparedness of cities in developing countries. The initiative is playing a coordinating role in ensuring a coherent approach to cities and climate change throughout the UN-Habitat programmes. Its specific objectives are as follows:

(a) To promote the active cooperation of local governments and their associations in global, regional and national networks to pursue the goals of sustainable urbanization, using the challenges of climate change as entry points;

(b) To enhance policy dialogue between local and national governments to forge synergies and links between local and national climate change policies with a view to enhancing strategies and cooperation;

(c) To support local governments applying strategies to change climate change management by promoting tools and knowledge management strategies to adopt innovations and undertake reforms to optimize their responses to climate change;

(d) To foster the implementation of awareness, education, training and capacity-development strategies targeting the general public, tertiary education and continued learning institutions, supporting the implementation of climate change strategies.

17. In conjunction with the initiative, UN-Habitat is participating in the joint work programme between the Cities Alliance, United Nations Environment Programme and World Bank with a view to contributing to a more coordinated and focused response to environmental issues facing cities, particularly with regard to climate impacts, especially in developing countries.

A. African cities

18. In Africa, the initiative is currently working with two pilot cities (Maputo and Kampala) and will add another five (Saint-Louis (Senegal), Bobo-Dioulasso (Burkina Faso), Kigali, Walvis Bay (Namibia) and Mombasa (Kenya)). It will provide knowledge management, operational support, monitoring, awareness-raising and coordination. Important outputs will be databases**,** research, city development strategies, greenhouse gases indexes for cities and joint handbooks for mayors. Another UN-Habitat strategic initiative is to promote energy efficiency in buildings in Eastern Africa. It will be implemented in conjunction with the United Nations Environment Programme and the Governments of East African countries (Burundi, Kenya, Rwanda, Uganda and the United Republic of Tanzania) with

funding from the focal area on climate change under the Global Environment Facility. The objective is to mainstream energy-efficient measures into housing policies, building codes and standards and practices in East Africa**.** None of the building regulations in the region currently provide for energy savings. The project will assist Governments, the private sector and the public to adopt energy-efficient practices in buildings.

B. Caribbean and Pacific cities

19. Climate change and sea-level rise are the main consequences of global warming and their effects pose serious challenges to humanity. African, Caribbean and Pacific countries, especially those in the Caribbean and Pacific, are most vulnerable to the impacts of projected changes because of factors such as widespread poverty, recurrent droughts and flooding, inequitable land distribution and limited capacities.

20. Additional challenges include small populations, limited resources, remoteness, susceptibility to natural disasters, vulnerability to external shocks and excessive dependence on international trade. The cities' growth and development is also hampered by high transportation and communication costs, disproportionately expensive public administration and infrastructure as a result of their small size and scant opportunity to create economies of scale.

21. Coastal cities are particularly vulnerable to changes in mean temperatures, extreme weather events and, in the long term, rising sea levels. The strategy for coastal cities and small island States must, besides the above, take into consideration erosion, protection of coastal settlements and infrastructure. A framework has been prepared by UN-Habitat to assist coastal cities and small islands, according to their specific needs and characteristics. UN-Habitat has also prepared concept notes to assist Caribbean and Pacific islands, where various pilot cities have been selected. Actions can be replicated for those cities that meet specific criteria in each region. The implementation of such work foresees the involvement, in addition to local authorities, stakeholders, the local institutions and key partners. The framework is suitable for and applicable to all coastal cities and other groups of islands.

22. The integration of the Participatory Slum Upgrading Programme with climate resilience measures seeks to advise and support cities and towns located on Caribbean islands to identify and quantify the low-lying coastal areas vulnerable to the adverse effects of climate change and sea-level rise, categorizing these vulnerable sectors, regions and resources in response to the projected sea-level rise scenarios. It also seeks to help to develop feasible and effective adaptation and mitigation measures that might be adopted in specific cases to minimize impacts.

C. Key issues, stakeholders and roles for climate change and African, Caribbean and Pacific slums

23. The slums targeted could be included in the global sustainable urban development network as a flagship project of the UN-Habitat Global Campaign on Sustainable Urban Development. This is to contribute to the overall aim of achieving liveable, productive and inclusive slums within cities and towns through an ecologically sound growth that is people-centric and embraces social harmony, economic vitality and environmental sustainability.

24. Although adaptation options, including traditional coping strategies, are theoretically available, in practice the human, infrastructural and economic response capacity to effect timely response actions may well be beyond the economic means of some countries and many cities, particularly slums. In view of the poor economic status of most African, Caribbean and Pacific nations, global efforts will be necessary to tackle the potential climate change impacts

25. The mandate consists of supporting coordination and follow-up on project activities to ensure the delivery of outputs under the Participatory Slum Upgrading Programme, which includes the implementation of rapid urban sector profiling for sustainability.

26. The Programme aims to build capacities at the local and national levels to attain the Millennium Development Goals by developing policies pertaining to slum upgrading and the implementation of pilot projects. Needs are diagnosed through the use of urban sector profile studies at the local level. The approach is based on European Commission guidelines produced by UN-Habitat and implemented in 12 African countries from 2004 to 2005. A further 18 African, Caribbean and Pacific countries will undertake local profile studies and all participating countries will exchange experiences as part of this action.

27. The next step focuses on feasibility studies in priority slums identified in the profile studies. Regional policy seminars and capacity-building workshops will cover issues of sustainable slum

upgrading (governance, social and economic development and environment). Environmental issues that are directly related to climate change will also have implications for those aspects of slum upgrading – namely, governance, social and economic development. Follow-up capacity-building and policy development action plans will be developed. The first two phases of the Programme are financed by the European Commission and its Intra-Africa, Caribbean and the Pacific fund. The two phases will be implemented in 30 countries and, in each of them, in three cities. The first phase will be implemented in Caribbean and Pacific small island States and the UN-Habitat regional offices for Latin America and the Caribbean and for Asia and the Pacific will therefore also have roles to play. Implementation will be guided by the Regional Office for Africa and the Arab States, since it has experience of implementing the programme in over 20 countries.

28. Part of this assignment is to contribute to ensure future activities as part of the following:

(a) Helping to raise the awareness of populations in Africa, the Caribbean and the Pacific of the dangers of climate change through the mass media and conjunction with Governments;

(b) Developing policy and possible options on climate change in African, Caribbean and Pacific countries;

(c) Helping to finance or source finance for projects relating to vulnerability and adaptation assessment and other issues relating to climate change in Africa, the Caribbean and the Pacific, with particular reference to human settlements issues, especially urban issues and slums;

(d) Extending the sustainable use of alternative climate-friendly energy use, consumption patterns and human settlements planning to assist in slum upgrading;

(e) To urge and assist the local and national Governments of Africa, the Caribbean and the Pacific to formulate and implement suitable adaptation measures while mitigation measures are pursued.

III. Conclusion

29. Cities identified for consideration under the cities and climate change initiative are combined with cities under the Participatory Slum Upgrading Programme and work will be complementary and effective, provided that efforts take place with a shared focus and funds. This means that UN-Habitat activities to combat climate change tally with the Millennium Development Goals and support to African, Caribbean and Pacific strategies for poverty alleviation and slum upgrading. These plans:

(a) Mainstream policy and assist decision-making to improve slum upgrading and emergency plans ;

(b) Link stakeholders, local institutions, local- and national-level research and strengthen predictive capacities;

(c) Build local capacities in monitoring and evaluating climate change impacts on slums and using information for the appropriate response;

(d) Develop local information on capacity-building services; technical skills, tools, mechanisms, and also ensure the sustainability of local capacity;

(e) Ensure effective and efficient implementation of the Participatory Slum Upgrading Programme in African, Caribbean and Pacific countries;

(f) Share substantive, technical and logistic inputs that can help and support implementation partners;

(g) Coordinate tasks and responsibilities for successful programme implementation;

(h) Contribute to the coordination of relevant activities within the Participatory Slum Upgrading Programme so as to implement the Programme;

(i) Support African, Caribbean and Pacific institutions and partners to attain the Millennium Development Goals.