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Financing Climate Change Mitigation – With Special Focus on Africa

**Issue Paper for the Ministerial Session and Expert Group Segments, including
relevant policy options emanating from the Tenth special session of the Governing
Council/Global Ministerial Environment Forum**

Presented on behalf of the Executive Director by UNEP's DTIE

EXECUTIVE SUMMARY

A. General

1. At UNEP's Governing Council/Global Ministerial Environment Forum held in Monaco February 22-24, 2008, Ministers held discussions around the theme "Mobilising finance to meet the climate change challenge". The Forum concluded that sufficient investment capital is available at a global level to avoid irreversible climate change. To attract that capital, however, governments must implement the right policy environment. This is particularly true for developing countries in Africa where a cluster of uniquely challenging market development barriers can block investment even in the more cost-competitive low-carbon technologies.

2. The Monaco conclusions are premised on the realization that the removal of market barriers essentially entails building capacities and easing the costs and risks of entry of new financial actors in the climate-mitigation sectors. The Forum recognized that for developing countries, climate change and development issues are closely linked and need to be addressed comprehensively. Moreover, these countries need a significant scaling up of international assistance, including financial support, if they are to realize sustainable development alongside climate change mitigation¹ and adaptation².

3. The present document has been prepared in support of the upcoming 12th Session of the African Ministerial Conference on the Environment (AMCEN, 2008). It articulates the essentials of the climate change challenge in the African context and highlights a number of key issues that need to be addressed to inform the formulation of appropriate policy responses by African governments with international stakeholder support. This paper concludes with a brief overview of specific actions UNEP initiated following the Monaco Forum (the 'UNEP Monaco actions') to support efforts by African governments to pursue the policy options offered in this document. The main thrust of the UNEP Monaco actions is to help build capacities and ease the costs and risks of financing climate change mitigation in developing countries, including those in Africa.

B. Key issues relevant to African context and needs

4. As background to the consideration of policy recommendations, this paper invites ministers and heads of delegation to discuss the following key issues concerning the financing of climate change mitigation in Africa:

- a) Recognizing that national policies are critical to the establishment of enabling environments for financing, what types of policy frameworks are needed to mobilize investments for climate change mitigation in Africa? (See paragraph 38 for related questions).
- b) Recognizing that African countries lag behind others in the developing world (notably China and India) in renewable energy and carbon finance investment activity, how can financial markets on the continent be strengthened to mobilize the needed flows of investment? Closely related to this question is whether analysts and investors have sufficient information and reporting methodologies to make climate-friendly investment decisions concerning African markets? (See paragraph 39 for other related questions).
- c) Recognizing the importance of local capital mobilization, what has been the experience of local entrepreneurs and industry leaders in mobilizing investment for the few climate projects/initiatives that have/are being developed in Africa? (See paragraph 40 for related questions).

¹ Defined as an "anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases" (IPCC, 2001a).

² Defined as an "[a]djustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (IPCC, 2001a)

C. Policy options for consideration by African governments

5. Building on the knowledge generated through discussion of the issues identified above, ministers may then wish to consider the policy options presented below. These have been crystallized from a variety of sources in the on-going discourse on financing climate change mitigation and put forward as a basis for interactive discussions during the ministerial dialogue:

- a) Strengthen capacities in all aspects of climate mitigation markets development, including policy formulation and implementation; technology research and development and commercialization; business planning and development; reporting on greenhouse gas (GHG) emissions; business and project financing; and consumer outreach and awareness.
- b) Address the environmental, social, and political challenges associated with the utilization of the large hydro power potential that exist on the continent.
- c) Remove regulatory barriers and create financial incentives for small and medium-scale energy enterprises to expand access of poorly served populations in rural and urban areas to clean and affordable energy and transport technologies and services.
- d) Increase the focus on energy efficiency, including demand side management initiatives that combine developmental benefits with significant GHG emission reductions.
- e) Increase the share of renewable energy supply within the energy and transport sectors by setting realistic targets, designing, implementing, and enforcing necessary regulations and providing incentives needed by the finance sector to mobilise the needed capital.
- f) Improve the availability of appropriate forms of financing for climate mitigation technologies, companies, and projects in Africa through new regulatory approaches carbon finance, public funding, and public or private risk sharing.
- g) Develop new strategies for reducing GHG emissions from deforestation and forest degradation that also achieve shared benefits for livelihoods and biodiversity conservation, while ensuring that emerging carbon markets are not affected negatively.
- h) Negotiate fair trade agreements covering environmental goods and services through the World Trade Organization that could lead to increased trade in, and dissemination of, climate-friendly technologies in African countries.
- i) Eliminate or sharply reduce fossil fuel price subsidies that are for the most part not economically sustainable, distort investment decisions, and primarily benefit the more privileged people in a community rather than those most in financial need.
- j) Develop a coordinated and credible process for delivering government climate mitigation targets.

D. Role of UNEP

6. Following the Monaco Forum, UNEP committed itself to a number of concrete actions elaborated in the main Monaco Forum follow-up document³ to help governments in developing countries, including those in Africa to increase financing for climate change mitigation in Africa. Table 3 (paragraph 48) summarizes how the Monaco action items might support African government efforts under each of the suggested policy options. The suggested matching of actions to government initiatives is open to further review and not intended as a rigid or formal structure at this stage. The actions, however, are

³ “Creating the Climate for Change Building Capacities to Mobilise Investment Draft,” April, 2008.

firmly grounded in UNEP's experience and comparative advantage as a provider of strategic advice and incentives aimed at changing attitudes and helping to mainstream climate investment as an important complement to the more financial mandate of the development banks. Specifically, UNEP has during the past decade, been working at the country level to help banks and investors at the forefront to launch new climate-focused financial products. It has also been working at a broad industry engagement level, trying to scale-up and mainstream these first mover actions across the commercial finance sector.

7. UNEP's in-country work during this period has been focused on: (i) improving access to seed capital financing and enterprise development support for clean energy SMEs; (ii) helping domestic banks set up consumer loan and micro-credit programmes for small-scale energy technologies; (iii) supporting the development and deployment of new risk management tools; and (iv) fostering development of the carbon finance markets.

8. UNEP's finance industry engagement work on renewables, efficiency, and other climate mitigation approaches is done through the work of the Sustainable Energy Finance Initiative, the UNEP Finance Initiative Climate Change Working Group, and the United Nations Principles for Responsible Investment. In addition, UNEP has a number of programmes working to improve regulatory frameworks and the institutional capacities needed for clean energy uptake and other climate mitigation sectors.

FINANCING CLIMATE CHANGE MITIGATION – WITH SPECIAL FOCUS ON AFRICA

1. CLIMATE CHANGE AND AFRICA⁴

9. **Although it is the region of the world that contributes least to global emissions of GHGs, Africa is one of the most vulnerable regions to climate change and climate variability.** This condition is aggravated by the interaction of ‘multiple stresses’, occurring at various levels, and low adaptive capacity. Africa’s major economic sectors are vulnerable to current climate sensitivity, with huge economic impacts. Such vulnerability is exacerbated by existing developmental challenges such as endemic poverty, complex governance and institutional dimensions; limited access to capital, including markets, infrastructure and technology; ecosystem degradation; and complex disasters and conflicts. These in turn have contributed to Africa’s weak adaptive capacity, increasing the continent’s vulnerability to projected climate change.

10. **African farmers have developed several adaptation options to cope with current climate variability, but such adaptations may not be sufficient for future changes of climate.** Agricultural production and food security (including access to food) in many African countries and regions are likely to be severely compromised by climate change and climate variability. A number of countries in Africa already face semi-arid conditions that make agriculture challenging, and climate change will be likely to reduce the length of growing season as well as force large regions of marginal agriculture out of production. Projected reductions in yield in some countries could be as much as 50% by 2020, and crop net revenues could fall by as much as 90% by 2100, with small-scale farmers being the most affected. This would adversely affect food security in the continent.

11. **Climate change will aggravate the water stress currently faced by some countries, while some countries that currently do not experience water stress will become at risk of water stress.** Climate change and variability are likely to impose additional pressures on water availability, water accessibility and water demand in Africa. Even without climate change, several countries in Africa, particularly in northern Africa, will exceed the limits of their economically usable land-based water resources before 2025. About 25% of Africa’s population (about 200 million people) currently experience high water stress. The population at risk of increased water stress in Africa is projected to be between 75-250 million and 350-600 million people by the 2020s and 2050s, respectively.

12. **Changes in a variety of ecosystems are already being detected at a faster rate than anticipated, particularly in southern African ecosystems.** Climate change, interacting with human drivers such as deforestation and forest fires, are a threat to Africa’s forest ecosystems. Changes in grasslands and marine ecosystems are also noticeable. It is estimated that, by the 2080s, the proportion of arid and semi-arid lands in Africa is likely to increase by 5-8%. Climate change impacts on Africa’s ecosystems will probably have a negative effect on tourism as, according to one study, between 25 and 40% of mammal species in national parks in sub-Saharan Africa will become endangered.

13. **Climate variability and change could result in low-lying lands being inundated, with resultant impacts on coastal settlements.** Climate variability and change, coupled with human-induced changes, may also affect ecosystems e.g., mangroves and coral reefs, with additional consequences for fisheries and tourism. The projection that sea-level rise could increase flooding, particularly on the coasts of eastern Africa, will have implications for health. Sea-level rise will probably increase the high socio-economic and physical vulnerability of coastal cities. The cost of adaptation to sea-level rise could amount to at least 5-10% of gross domestic product.

14. **Human health, already compromised by a range of factors, could be further negatively impacted by climate change and climate variability, e.g., malaria in southern Africa and the East African highlands.** It is likely that climate

⁴ The bulk of the material in this section is extracted from the Executive Summary in Chapter 9 of the IPCC 4th Assessment Report. Boko, M., I. Niang, A. Nyong, C. Vogel, A. Githeko, M. Medany, B. Osman-Elasha, R. Tabo and P. Yanda, 2007: Africa. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge UK, 433-467.

change will alter the ecology of some disease vectors in Africa, and consequently the spatial and temporal transmission of diseases of such. Most assessments of health have concentrated on malaria and there are still debates on the attribution of malaria resurgence in some African areas. The need exists to examine the vulnerabilities and impacts of future climate change on other infectious diseases such as dengue fever, meningitis and cholera, among others.

15. Urgent action is needed to enhance Africa's capacity to adapt to climate change. These actions must take into account not only Africa's acute vulnerability but also its legitimate development needs and the significant additional financial burden adaptation will create.

16. Recent findings from climate change studies reported in the IPCC Fourth Assessment Report (2007) suggest strong interrelationships between adaptation and mitigation. Creating synergies between adaptation and mitigation can increase the cost-effectiveness of actions and make them more attractive to stakeholders, including potential funding agencies (medium confidence). Of particular relevance to African countries development agenda is the finding that opportunities exist to integrate adaptation and mitigation into broader development strategies and policies.⁵

17. Studies have begun to throw light on critical success factors for building mitigative capacities at national level including: access to viable technological options for reducing emissions; viability of policy instruments with which the country might affect the adoption of these options; existence of critical institutions and the derivative allocation of decision-making authority; availability and optimizing the distribution of resources required to underwrite the adoption of mitigation policies and the associated broadly-defined opportunity cost of devoting those resources to mitigation; the stock of human and social capital, including education and personal security and property rights; access to risk-spreading processes (e.g., insurance, options and futures markets); and the capacity of decision-makers to manage information, the processes by which these decision-makers determine which information is credible, and the credibility of the decision-makers themselves.⁶

18. The preceding factors (paragraph 17) may be poorly developed or non-existent in the majority of African countries, which will thus require substantial financial support from the international community to develop. In addition, the ability of societies to form networks through collective action that insulates them against the impacts of climate change – a phenomenon first described by Woolcock and Narayan (2000) and reported in the IPCC Fourth Assessment Report (2007) -- may be especially important in sub-Saharan African countries where policy instruments are not fully developed and where institutional capacity and access to resources are limited.

19. This paper will focus on mitigation as an integral part of Africa's portfolio of responses to climate change; adaptation is fully covered in a separate background paper.

2.⁷ FINANCING CLIMATE CHANGE MITIGATION IN AFRICA: KEY ISSUES

2.1. Bali Outcomes

20. The Thirteenth Session of the Conference of the Parties (CoP) to the United Nations Framework Convention on Climate Change (UNFCCC) meeting in Bali, Indonesia, December 2007, reached agreement on a roadmap and a

⁵ Klein, R.J.T., S. Huq, F. Denton, T.E. Downing, R.G. Richels, J.B. Robinson, F.L. Toth, 2007: Inter-relationships between adaptation and mitigation. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 745-777.

⁶ Klein, R.J.T., et al. op. cit.

⁷ Much of the material in this section is extracted from the document titled "Background paper for the ministerial-level consultations (Tenth special session of the Governing Council/Global Ministerial Environment Forum Monaco, 20-22 February 2008), including policy options emanating from the President's summary of the ministerial consultations during the twenty-fourth session of the Governing Council/Global Ministerial Environment Forum: Discussion paper presented by the Executive Director of UNEP," January, 2008.

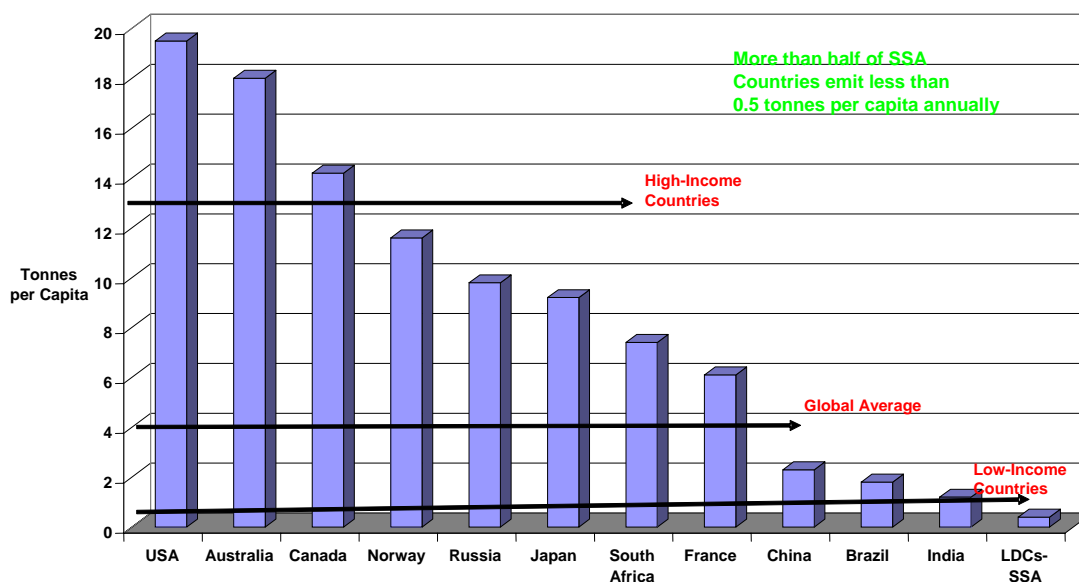
timetable for a two-year process of negotiations designed to reach a new climate treaty by 2009. The decision includes a clear agenda for the negotiation of key issues, including actions for climate change adaptation, approaches for mitigation, climate-friendly technology deployment, and financing both adaptation and mitigation measures. All countries, both developed and developing, were called upon to reduce GHG emissions according to their differentiated capacities and responsibilities. Issues of deforestation, technology transfer, and aid for developing countries were covered.

21. **The importance of – and need for – a broad range of policy approaches to address these issues was highlighted by finance ministers and their deputies from 37 countries, along with heads of a number of development banks and the OECD at an informal meeting during the Bali conference.** While acknowledging the importance of public funds, they stressed, among other measures, the importance of stable policy frameworks as a key requirement for attracting private sector investment.

2.2 Capital requirements for climate change mitigation: Global and African perspectives

22. **The global climate needs to be stabilized soon.** Greenhouse gas emissions in the atmosphere are approximately 455 ppm CO₂-equivalent.⁸ CO₂ – the main GHG – is rising 1.9 ppm/year⁹ due to annual emissions of 49 gigatonnes (Gt) of CO₂ equivalent (CO₂-eq).¹⁰ As illustrated in Figure 1¹¹, **Africa’s contribution to the current levels of emissions is almost negligible.** The IPCC has concluded that to stabilize atmospheric concentrations of CO₂ at 535–590 ppm, global emissions in 2050 will need to decrease to within the 18–29 Gt CO₂ range worldwide and emissions must peak between 2010 and 2030,¹² depending on model scenarios. All Parties need to adopt climate change policies. International coordination of

Figure 1. Carbon Dioxide Emissions For Selected Countries in 2002



⁸ IPCC, “IPCC Fourth Assessment Report AR4 Synthesis Report. Climate Change 2007: Summary for Policymakers of the AR4 Synthesis Report.” Table SPM.6, p. 21.

⁹ IPCC. “IPCC Fourth Assessment Report – Working Group I Report, ‘The Physical Science Basis.’ Chapter 2, p. 131.

¹⁰ IPCC, Working Group III Technical Summary, p. 27. Figure quoted is for 2004.

¹¹ Ogunlade Davidson, “Preparation of the Thirteenth Conference of the Parties (Cop 13) of the United Nations Framework Convention on Climate Change (UNFCCC) and the Third Meeting of the Parties (Cop/Mop 3) of the Kyoto Protocol: Position Paper for African Negotiators,” Figure 1, p.7.

¹² IPCC, Fourth Assessment Report, Table 5.1 and Figure 5.1, pp. 5-6

policies in an appropriate forum are often effective. Areas where international coordination would be beneficial include: a) technology R&D and deployment with priority given to renewable energy and energy efficiency; and b) energy efficiency standards for internationally traded appliances and equipment. While it is obvious that **OECD countries must take the lead in cutting the climate-changing emissions, Africa can take advantage of the links between building mitigative capacity and achievement of broader sustainable development objectives, and adopt low-carbon paths to development now.**

23. Funding from external sources will play an important role in helping African countries meet the capital requirements for mitigation measures including substantial increases in low-carbon investments especially, renewable energy, and energy efficiency.

2.3 Global and African responses: Low-carbon investment trends

24. **Relative to global levels, low-carbon investments in Africa are either stagnant or growing too slowly** with the bulk of the action concentrated in North African countries and South Africa. The vast potential in sub-Saharan Africa – arguably the region that has the most to gain from increased utilization of renewable energy and reduction of energy waste – remains largely unexploited. However, there are indications of growing investor interest in renewable energy projects in the region. For example:

- a) Discussions are underway to develop a US\$290 million bioethanol plant in Mozambique with capacity of 295 ml per annum. Initial investment of US\$70 million has been raised by Principle Capital. An impressive array of foreign investors came in at this initial fund-raising, including RAB Capital, Tudor, Societe Generale, and GLG Partners.¹³
- b) State-owned Compagnie Sucriere Senegalaise invested US\$135m in a 21.9ml per annum bioethanol plant in Senegal.¹⁴
- c) The Hidraluapasso mini-hydro project in northern Angola is a 26MW project initiated in October 2007. It is being developed jointly by the Angolan Government, Escom Mining Energy, and the Angolan National Agency of Private Investment at a cost of US\$120 million.¹⁵
- d) Kenya Electricity Generating Company (KenGen) raised US\$91m to build a 35MW expansion to the existing 70MW Olkaria II geothermal plant. The expansion will be completed by the end of 2009 and produce 276GWh. It will be funded by KenGen, the International Development Association (World Bank), and the EIB. Ormat, the US geothermal developer, is expanding its 13MW plant, Olkaria III, by 35MW. Olkaria III is Africa's first privately funded geothermal plant and is expected to qualify for CDM. The World Bank's Multilateral Investment Guarantee Agency (MIGA) is providing US\$88.3 million of political risk insurance for the project. Olkaria IV, a 60MW plant funded by the Kenyan Government and KfW, is in the planning stage. Kenya is Africa's leading source of geothermal power, with about 130MW of installed generation capacity.¹⁶

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