Seventh African Development Forum

Acting on Climate Change for Sustainable Development in Africa

Climate Change and Ecosystem Sustainability

Issues Paper #9

ADF VII • 10 - 15 October 2010 • United Nations Conference Centre • Addis Ababa, Ethiopia

African Union

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I. OVERVIEW

1. Our natural environment is in crisis – globally and in Africa. Ecosystems (both terrestrial and aquatic) and biodiversity are all being degraded rapidly under the present global economic system which treats the environment as an 'externality' – negative impacts on the environment are not included in economic valuation. Thus environmental 'capital' is squandered and ecosystem services including those from terrestrial, coastal and aquatic ecosystems are being lost for future generations. This is unsustainable development by any definition.

2. Now the planet as a whole is responding to the multitude of local changes. Mankind has upset the planetary heat balance by burning vast amounts of fossil fuels and removing huge areas of natural vegetation and depleted marine living resources. Climates are changing and will further pressurize our finite and already deeply stressed natural environment resulting in extreme weather events, water scarcity, flooding and sea-level rise with immediate and direct impact on large numbers of people transcending national boundaries.

3. Furthermore, Africa's capacity to adapt to and mitigate the impacts of climate change is intricately linked to its ability to conserve its ecosystem base, its biodiversity and other environmental assets, thereby sustaining the livelihoods of millions that depend on the associated services that these ecosystems provide – including clean and healthy food derived from terrestrial and aquatic ecosystems, water, and air as well as regulatory services such as climate, weather, flood control, amelioration of droughts, and coastal erosion and disease control. The Millennium Ecosystem Assessment inventoried the many obvious and subtle services provided by ecosystems, and the Green Economy Report 2010 addresses the way forward.

II. THE MAIN ISSUES AT STAKE

4. The main issues in relation to climate change and ecosystem sustainability are:
   a) Establishment of a green, climate-resilient economy;
   b) Priority areas of action to ensure sustainability of ecosystem services including provisioning, regulating, supporting and cultural services;
   c) The role of biodiversity conservation and ecosystem management for adapting/mitigating climate change, Payment for Ecosystem Services (PES) and financing ecosystem conservation and restoration; and
   d) Working together: Agriculture, Environment, Water and Energy, promoting ecosystems to approach the management of terrestrial and marine resources.

A. The Green Economy Initiative

5. A Green Economy involves inclusion of the full value of ecosystem goods and services in all economic considerations. Such a change requires a wholesale revolution in the way humans do business, consume, and think about their lives. Nature is not something to be vanquished and conquered, but rather something to be cherished, managed and sustained. It is not 'man against nature' but rather 'man as an integral part of a living planet'. In a *Green Economy* communities should be paid for conserving nature rather than depleting or degrading it, and companies given strict limits on what they

can take from the environment. Subsidies worth more than $US1.00 per ton a year for industries like agriculture, fisheries, energy and transport should be reformed to have to publish accounts on their use of natural and human capital. A few have started already by indicating their 'carbon footprint'. This 'carbon footprint' must, however, be comprehensive, covering all ecosystems including terrestrial, coastal, and aquatic resources.

6. According to the Economics of Ecosystems and Biodiversity (TEEB), investment in restoring or conserving biodiversity and ecosystems services can significantly enhance agricultural sustainability, especially in developing countries, and it can improve freshwater supplies and reduce future insecurity. It can considerably reduce the impacts of natural hazards and extreme weather events. Such investment can also improve skills and create decent jobs in poor communities.

B. Priority areas

7. Priority areas of action to ensure sustainability of ecosystems and their services include: (a) integrated water resources management; (b) combating land degradation, deforestation and desertification; and (c) biodiversity conservation.

1. Integrated water resources management

8. Lack of water is a major constraint on development in Africa. Although Africa contains rich water resources with large rivers and lakes, it is the second driest continent in the world, after Australia. This dichotomy is due to the uneven spatial distribution of Africa water resources when matched with demands from population centres. Currently, some 300 million people in Africa suffer from water shortages due to climate variability, increasing water demand, and poor management of existing resources. About 75 per cent of the African population relies on groundwater as the major source of drinking water. Current water usage is far from optimal - about 70 per cent of water diverted is used for irrigated agriculture, but few developments have been designed with sustainable management of water resources in mind. In addition, most surface water in Africa is found in transboundary waterways, which complicates management. Water quality is also a major concern. Almost half the people in Africa suffer from one or more of the six major water-related diseases.

9. Available water is a scarce and valuable resource, but is often managed as if it were still in abundance. Climate change will highly aggravate water stress in arid, semi-arid and dry sub-humid areas. By 2025, nearly 50 per cent of Africa's predicted population of 1.45 billion people will be faced with water stress or scarcity. Water policies must address this growing scarcity through water pricing or other means for ensuring that: (a) water is used efficiently; (b) watersheds are conserved; and (c) finance is available for further investment. Competition for water is a primary contributor to environmental insecurity: climate change will make it even worse. A particularly unnoticed phenomenon is the availability of water for increasing populations congregating in urban conglomerations and mega cities, which are forming mainly along the coastal areas, major rivers, and lakes in Africa. It is therefore crucial to achieve integrated management of riverine, coastal and marine areas, which increasingly support larger segments of Africa's populations.

2. Combating land degradation, deforestation and desertification

10. Land degradation is a global problem manifested through *inter alia* loss of biological diversity, deforestation, destruction of coastal habitats and mangroves, soil erosion by wind and water, coastal

storm surges, sea level rise. This phenomenon coupled with climate change and variability will cause the spread of desertification as well as flooding and coastal erosion on the other extreme. Land degradation affects people differentially according to their economic, social and political circumstances. In Africa, about 65 per cent of agricultural lands are degraded, mainly by erosion. This forces farmers either to continue working on less productive soil or to migrate (mostly to urban areas along the coasts of Africa). It also affects the hydrology, increasing flooding from excessive runoff, silting up of dams and waterways, increasing pollution and reducing dry-season flows. Similarly sea-level rise and storm surges are rapidly eroding coastal and marine habitats as the population equilibrium shifts from inland terrestrial ecosystems to the large marine ecosystems, as a consequence of rapid rural-urban migration.

11. Thirty-one per cent of the region's pasture lands are overgrazed and 19 per cent of its forests and woodlands are also classified as degraded. Forests account for over 20 per cent of Africa's 30 million km^2 of land area, but are being destroyed and degraded by logging, conversion for agriculture, roads, and settlements, and use for firewood and charcoal. As a region, Africa is losing more than four million hectares of forest every year-twice the world's average deforestation rate. Climate change and its impact on water scarcity aggravates the situation even further: deforestation is reported to be a main concern in 35 countries in Africa, while land degradation and threats to biodiversity are issues of concern in 32 and 34 countries respectively. Similarly, over-fishing and coastal degradation affects 23 African countries.

3. Biodiversity conservation

12. Africa is rich in biological diversity. It has about one quarter of the world's 4700 mammal species, more than 2000 species of birds—one fifth of the world's total, and at least 2000 species of fish. African mainland has between 40 000 to 60 000 plant species: eight of the world's 34 biodiversity hotspots are in Africa. It is also the cradle of mankind, and African forests support more than 20 species of primates, often in small, vulnerable locations. Africa contains over 3,000 protected areas including 198 Marine Protected Areas, 50 Biosphere Reserves, and 80 Wetlands of International Importance. Despite their recognized status, protected areas remain under threat by civil unrest and encroachment, as well as the introduction of Invasive Alien Species (IAS) Acidification, overexploitation including depletion of living and non-living resources in the five Large Marine Ecosystems (LMEs) threaten the equilibrium of oceans and marine ecosystems that are important in terms of climate regulation. Fine tuned mountain and freshwater ecosystems are also at risk due to glacier melting, invasive species and a more hostile climate.

13. In the context of biodiversity, climate change stands to be the greatest challenge for the coming generation and is predicted to become the biggest single driver of biodiversity loss over the next 50–100 years, bigger than loss of habitat, over-exploitation, and introduction of invasive species. Much genetic resource as yet unexploited will be lost.

14. It is noteworthy that climate change, watershed mismanagement, land degradation and biodiversity loss comprise an environmental nexus. Each problem is interlinked with the others and is difficult and expensive to address on its own – yet there are multiple and major benefits from concerted actions to address all aspects together. The Large Marine Ecosystem approach currently promoted by Global Environment Facility (GEF) provides a framework for such desirable concerted actions. Further, the value to human society of saving "natural goods and services" such as pollination, medicines, fertile soils, clean air and water, will be even higher – between 10 and 100 times the cost of saving the habitats and species..

C. The role of ecosystems in mitigation and adaptation

15. In addition to the above mentioned benefits, there is major potential for employing ecosystems management and conceptual approaches to help us mitigate emissions and especially adapt to climate change in Africa. The role of natural ecosystems in mitigation is now strongly recognized globally, with the 'Reduction of Emissions from Deforestation and Forest Degradation' (REDD), which is under negotiation and it is hoped that the Sixteenth Conference of Parties (COP-16) to the United Nations Framework Convention on Climate Change (UNFCCC) in Cancun, Mexico will define a mechanism to support REDD+. This is important for Africa, however, there are still important hurdles to overcome in terms of implementing REDD+ approaches. These include dealing with the issue of 'leakage' e.g. deforestation shifts to other locations, compensating countries with good conservation records as opposed to current proposals, which channel most funding to countries with high recent deforestation, effective policy tools that enable national level REDD+ carbon targets, funding to be translated into local 'compensation' for carbon conservation, and concerns that the growing focus on REDD+ approaches may reduce pressure on northern countries to set and achieve ambitious carbon reduction targets at home. Complex or ill-defined land tenure is often a significant constraint on practical action.

16. REDD+ action goes beyond trees: concerted actions can include simultaneous conservation of habitat, biodiversity and watersheds along with enhancement of carbon stocks and employment and livelihood support for local communities. Wetlands also can be significant sources or sinks for carbon; their conservation and management has potential to mitigate emissions, nurture biodiversity, regulate river flows and protect coastal areas.

17. In addition, ecosystem-based approaches for adaptation use biodiversity and ecosystem services to help people adapt to the adverse effects of climate change. These approaches can be cost-effective and generate social, economic and cultural co-benefits and contribute to the conservation of biodiversity. For example, the conservation of agro-biodiversity can provide specific gene pools for crop and livestock adaptation to climate change, while the maintenance and/or restoration of mangroves can reduce coastal flooding and coastal erosion in the face of extreme weather events.

18. The important role of aquatic ecosystems, particularly oceans, as carbon sinks needs to be recognized and harnessed.

D. Working together in a green economy

19. In 2009, the Heads of States urged AU and New Partnership for Africa's Development (NEPAD) to establish an inter-ministerial mechanism to bring together Ministries of Agriculture, Environment, and Water in order to advance an inter-sectoral approach in addressing the climate change agenda. The initiative built on the strengths of the Comprehensive Africa Agriculture Development Programme (*CAADP)* Sustainable Land and Water Management (see Issues Paper 2). *Such a three-pronged approach offers many benefits* from synergies in addressing common problems. Coherence in action will need clear policy convergence, including rural energy. A necessary addition to this inter-ministerial mechanism remains the Ministries and Departments of Fisheries and Aquaculture. This has been recognized by the AU with the formation of the Committee of African Ministers of Fisheries and Aquaculture (CAMFA) to complement the structure of CAADP.

III. CONCLUSION

20. **Green is green with economic benefits:** Assuming that the pressing demands of climate change force global transformation within the very near future – and the enormous current value of goods and services provided by the natural world are factored into national economies – then Green Development in a green low-carbon economy would appear to be the most (if not only) feasible way for sustaining ecosystems and their services for the long term benefit of Africa. Developing such a 'Green Economy' will be challenging with widespread change in current practices. But Africa with its minimal investment in fossil energy and abundant land and aquatic resources is in a unique position to benefit from the possibility through, for example, multiple carbon sequestration actions as well as adaptation actions related mainly to the management of Africa's water resources. Many practical questions remain concerning how economic, social and cultural transformation will be achieved in practice, and how already degraded ecosystems can be conserved and restored to fulfil critical roles in both mitigation and adaptation. Biodiversity loss, climate change and land and marine degradation are four problems linked by common solutions; it is essential to treat them in a coherent and integrated manner using ecosystem approaches such as the Large Marine Ecosystem Approach being applied in the Canary, Guinea, Benguela and Agulhas LMEs.

IV. KEY QUESTIONS

1. Green development

21. Can Africa develop a Green Economy through a low-carbon development pathway which avoids further damage to ecosystems? Is this a practical way to meet the needs of a rapidly growing population seeking higher living standards? Is there any practical alternative to a Green Economy for Africa? What are the major pathways to implement the adoption agenda for ameliorating the negative impacts of Climate Change within the African social, economic and cultural context?

2. Ecosystem services

22. Can a new culture be created in public and private sector governance that optimizes sustainability in production and resource utilization for both terrestrial and aquatic ecosystems? How should incentives be changed to sustain a productive and quality environment? Do we have appropriate tools for assessing and evaluating ecosystem sustainability?

3. Water scarcity

23. Is there any alternative to water pricing to ensure increasingly scarce available water is best managed? Do present policies and practices subsidize wasteful or non-sustainable use of water? Are MDG water and sanitation targets so poorly addressed because they demand major investment in unsustainable practices based on unrealistic assessment of future water resources in a warmer climate, with no return on the investment? Beyond the MDGs, how does Africa move to attain the comprehensive Goals and Targets of the African Water Vision 2025 including its Framework of Action, which serves as the fundamental policy document for the African Union/AMCOW, the UN Water Africa and the African Development Bank?

4. Multilateral Environmental Agreements

24. How can the many opportunities for improving degraded terrestrial and aquatic ecosystems and their vital services best be realized? Would there be benefit in synergistic implementation of the three Rio Conventions that address climate change, desertification and loss of biodiversity as well as the marine target of the World Summit on Sustainable development (WSSD)? How can Africa ensure that all potential sources of green income are recognized in the United Nations Framework Convention on Climate Change (UNFCCC) processes such as the Clean Development Mechanism (CDM)?

5. Agriculture and environment

25. The CAADP Sustainable Land and Water Management programme is excellent for agriculture, but how well does it link to water (both fresh and marine), biodiversity and desertification? How can agriculture, environment and water be managed together in an integrated, coherent and sustainable manner? And rural and urban energy too? Are there examples of best practices in integrated ecosystems approaches to the sustainable management of Africa's terrestrial and aquatic resources to ensure economic, social and environmental resilience?

6. Environmental monitoring

26. Do environmental monitoring mechanisms need to be strengthened? Would there be benefit in integrating monitoring services, for example, coherent monitoring of climate, weather, water, land, marine and pollution in relation to man's activities? What should be the role of and how should the various stakeholders including local communities, private sector, civil society, government actors, and international entities be involved in environmental monitoring?