

Submission of African Governments to the  
5th Session of the Ad Hoc Working Group on Long-term Cooperative Action under the  
Convention (AWG-LCA 5), Bonn, Germany, 29 March - April 2009

Ideas and proposals on Paragraph 1 of the Bali Action Plan: Concrete action for the inclusion of soil organic carbon restoration as a significant mitigation and adaptation tool to climate change

**The Republics of: The Gambia, Ghana, Lesotho, Mozambique, Niger, Senegal, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe**

These African countries have jointly prepared this submission to flag the importance and relevance of a decision for including the potential of soils in drylands in sequestering carbon. One such exponent is biochar, a soil amendment technology and bio-energy co-production from agricultural and forestry biomass that can significantly help reducing emissions<sup>1</sup> by displacing fossil fuel use and sequestering carbon in stable soil carbon pools<sup>2</sup>.

**Linkages between climate change and land degradation: Making the case for carbon in soils.**

Today the world faces a situation of growing urgency given the combined consequences of and the intricate linkages between climate change and frequent and severe droughts, land degradation and desertification. The effects of these phenomena take place and are most severe in the villages and in the countryside of developing countries, with negative impacts on the ability of the inhabitants to cope with and adapt to climate change.

When these linkages are combined with biodiversity loss, drought and water scarcity, they have a major bearing on the potential of the arable lands to produce adequate food and on the availability of water for agricultural purposes, human consumption and economic development. This exacerbates poverty, food insecurity and malnutrition among the affected populations and reduces their capacity to cope with and adapt to climate change.

Available information indicates that occurrences of food shortages, hunger and malnutrition as well as economic underdevelopment are prevalent in those regions of the world, where local level livelihood conditions, especially rural poverty, land degradation, desertification and climate change and frequent droughts, result in low agricultural productivity. Simultaneously, climate change, drought, land degradation and desertification have the potential to drive populations, scaled in the millions, from their lands, exacerbating poverty, provoking environmental conflicts and creating a wave of environmental refugees and forced migrations.

**Including carbon in soils under the climate change mechanism to reduce emissions**

Unless the livelihoods of the poor and vulnerable inhabitants of the drylands and the natural resource base upon which they depend and which entirely determine the economic opportunities available to them, can be made more resilient, coping with and adapting to climate change may be impossible for them. The general population of the drylands, who are mostly poor, can be made less vulnerable to these phenomena with greater socio-economic and scientific knowledge-

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1 Reducing emissions of nitrous oxides, which is a more potent greenhouse gas than carbon dioxide.

2 The main ideas of this paragraph were taken from Biochar White Paper: [http://www.biochar-international.org/images/White\\_Paper.doc](http://www.biochar-international.org/images/White_Paper.doc). Original source: Yanai et al., 2007, Effects of charcoal addition on N<sub>2</sub>O emissions from soil resulting from rewetting air-dried soil in short-term laboratory experiments, *Soil Science and Plant Nutrition*, 53:181-188. And Rondon, M., Ramirez, J.A., and Lehmann, J.: 2005, Charcoal additions reduce net emissions of greenhouse gases to the atmosphere, in *Proceedings of the 3<sup>rd</sup> USDA Symposium on Greenhouse Gases and Carbon Sequestration*, Baltimore, USA, March 21-24, 2005, p. 208.

based interventions and appropriate synergistic responses to climate change, land degradation, desertification and drought.

These linkages among climate change, drought, land degradation and desertification must be capitalized on when undertaking the most appropriate synergy responses that simultaneously address all these phenomena and enhance the potentials for reducing greenhouse gas emissions and adapting to climate change.

The African countries that submit this proposal acknowledge that the resilience of the dryland populations can be brought about with innovative and proven technologies, such as biochar, in which the LCA can play a fundamental role to tap the potential of soils in sequestering carbon thus achieving the objective of reducing emissions and simultaneously adapting to climate change.

The problem is crucial for African countries. However the same IPCC asserts that land degradation and desertification are major problems that are caused either by natural factors (e.g., prolonged droughts) or by human activities, particularly overgrazing, uncontrolled cultivation, fuel-wood gathering, inappropriate irrigation practices, uncontrolled urbanization, and tourism development<sup>3</sup> affect other developing areas of the world. Urbanization and related activities (e.g., road construction) have resulted in losses of permanent pasture and increases in the agricultural use of marginal lands, leading to further natural environment and land degradation<sup>4</sup>. Dryland salinity and water logging, especially in low-lying countries in the Middle East and parts of central Asia (e.g., around the Aral Sea), also are contributing to land<sup>5</sup>.

As Africa is relevant, Desanker and Magadza, et. al<sup>6</sup> stress that in the continent, climate change and desertification remain inextricably linked through feedbacks and counter-feedbacks between land degradation and precipitation. These authors stress that changing climate in the continent might worsen desertification due to alteration of spatial and temporal patterns in temperature, rainfall, solar insolation and winds. Conversely, desertification aggravates carbon dioxide (CO<sub>2</sub>)-induced climate change through the release of CO<sub>2</sub> from cleared and dead vegetation and reduction of the carbon sequestration potential of degraded lands. Although the relative importance of climatic and anthropogenic factors in causing desertification remain unresolved, evidence shows that certain arid, semi-arid, and dry sub-humid areas have experienced declines in rainfall, resulting in decreases in soil fertility and agricultural, livestock, forest, and rangeland production. Ultimately, these adverse impacts lead to socioeconomic and political instability.

Drylands cover more than 41% of the Earth's land surface<sup>7</sup> and affect directly to more than two billion people<sup>8</sup> whose livelihoods are susceptible to degrade further due to desertification, land degradation and drought (DLDD). The mandate of the United Nations Convention to Combat Desertification and mitigate the effects of Drought (UNCCD) is to address these issues of DLDD. Synergy action is envisaged when implementing the UNCCD. Therefore, the interest is that the Desertification Convention aims to tackle these issues under the framework of the strategic programme 2008-2018 and by taking into consideration the programme of work to be adopted at COP 15 of the UNFCCC as pertains adaptation and mitigation.

### **First Measures that can be taken: Actions towards Copenhagen**

<sup>3</sup> Kharin, 1995; IPCC 1996, WG II, Chapter 2; and Schreiber and Shermuchamedov, 1996; UNEP, 1997.

<sup>4</sup> Source: UNEP, 1997.

<sup>5</sup> <http://www.ipcc.ch/ipccreports/sres/regional/165.htm>. See also degradation Kharin, 1997; and UNEP, 1997.

<sup>6</sup> <http://www.ipcc.ch/ipccreports/tar/wg2/pdf/wg2TARchap10.pdf>.

<sup>7</sup> UNCCD, 2008.

<sup>8</sup> Ibid.

Actions to combat desertification, land degradation and mitigation drought impacts are mostly undertaken on the land to boost the productivity of the soil and guarantee the availability of all other resources with a view to enhance sustainable development and eradicate poverty. Invariably, the desired end results such as availability and secured water resources, agriculturally productive land and increased food security, sustainable rangelands and improved livestock production, sustainable wildlife management and utilization, among others, all reduce the vulnerability and enhance the capacities of the inhabitants of the drylands to cope with and adapt to climate change.

Subsequently, it becomes imperative to put in place practical measures to promote sustainable land management in line with the expected results of the UNFCCC COP 15 outcomes. One such practical measure is the utilization of biochar to increase soil organic matter (SOM) and improve its oxidation, a process that could enhance the long-term water-retention capacity of the soil, enabling it to sustain terrestrial vegetation that will help to arrest land degradation and desertification. Concomitantly, direct action targeting the drylands would mean that carbon sinks would be enhanced as drylands have an enormous potential just by the fact of their degradation status.

Soils in the drylands constitute a significant sink for carbon, and they have potential to further increase carbon sequestration. Increased attention to action on land and soils during the climate change negotiations could provide considerable results towards adaptation to and mitigation of climate change. Bringing agricultural land use into the realm of implementation mechanisms on climate change would not only foster carbon sequestration, but could also create considerable added value through simultaneous impact on land fertility.

Furthermore, the African countries that have jointly made this submission believe that the necessity to work in collaboration among conventions can be best achieved in concrete action, one of which is provided by raising awareness and advocating for the inclusion of Biochar into the set of decisions of COP 15 of UNFCCC as one more tool that highlight the climatic importance of the land and Biochar technologies. Adopting biochar technologies could change the landscape of international development cooperation by strengthening the role and responsibility of private sector financing in the development of rural areas in developing countries.

The political implications, as well as the increase of volume in financial and technological transactions targeting agriculture, could be enormous. In concrete terms, one way forward would be to expand the coverage of the Clean Development Mechanism towards agricultural land uses. This would require new conceptual approaches, appropriate monitoring methodologies and, last but not least, strong political will, expertise and negotiation skills from interested Parties.

### **New rationale for addressing climate change mitigation and adaptation**

For developing countries, strengthened attention to agricultural land use in the context of climate change could provide a new rationale for engaging into the adaptation and mitigation agendas, considering that for many of them the land and soils are the most important natural resource. Up to now land and soils have not featured as major themes in the climate negotiations, and raising awareness on the political significance of related issues would be important.

For developed countries, the inclusion of carbon pools in drylands is an opportunity to expand cooperation schemes that directly target the most vulnerable populations.

For the negotiation of the UNFCCC towards COP 15 in Copenhagen, there is the need to compile what is already known on carbon pools in soils, including biochar, soils emissions, as well as accountability issues of opportunity costs of reducing DLDD. These are some of the recommendations to move forward the soils issues within the LCA as well as the future SBSTA

agenda that addresses the linkages between soils and climate change. Another related link is with REDD that includes low forest cover countries. The impacts on the UNFCCC negotiations could be enormous if there is an agreement to immediately consider soils as part of the climate change mechanisms for carbon sequestration.

The signing African countries suggest that the parties need to agree in a decision on the issue of soils by COP 15. The same must include the possible approaches and needed adjustments to the legal and policy framework for further support to climate change action at the national level, including the CDM and adaptation finance. The policy framework for the overall direction on climate change action, starting with Copenhagen, will only be complete if the synergy potential of soils in sequestering carbon is included.

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