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Central Africa is not only carbon stock: Preliminary efforts to promote adaptation to climate change for forest and communities in Congo Basin.

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Summary:
In Central Africa, REDD+ (Reduced Emissions from Deforestation and Forest Degradation and conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries) is receiving political attention with the support of the international community who have interest in conserving biodiversity and maintaining carbon stocks. However, adaptation which is closely related to development and which seems to be priority for vulnerable societies, is not receiving the same level of attention in the region. By giving political priority to REDD+ projects and other mitigation approaches, national efforts at adaptation may become weakened. In this paper, the authors, (1) present the state of the forests of the Congo Basin and give a very brief summary of efforts to combat climate change; and (2) highlight some preliminary efforts of the Center for International Forestry Research (CIFOR) and partners aimed at improving adaptation to climate change of forest and forest dwelling communities in countries of the Congo Basin.

The international community is looking for solutions to combat climate change, mainly by focusing on reducing the emission of greenhouse gases (GHGs) and also by developing strategies for adaptation. Emphasis is on mitigation, which tackles the source of the problem. Recently, there has been a call to include emission reductions from deforestation and forest degradation in many developing countries through the REDD+ mechanism. This offers opportunities to developing countries to contribute to global mitigation efforts. The other set of strategies, which is centered on adaptation, has not attracted as much political attention as the mitigation option. Adaptation consists of developing strategies to cope with the impacts of climate variability and change. It aims to reduce the vulnerabilities of human populations and ecosystems exposed to climate variability and change. Developing countries are generally the

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most vulnerable to climate change due to their poverty, poor infrastructure, weak governance, amongst others (IPCC, 2007).

Adaptation strategies are closer to development and this present more legitimacy for development than mitigation, especially in many developing countries contexts (Kok et al., 2008). In the Congo Basin region, the perceived risks is that by giving political priority to REDD+ projects and other mitigation approaches, national efforts on adaptation may become weakened. The consequence would be exposure of local poor communities to negative impacts of climate variability and change. The aim of this article is to (1) present the state of the forests of the Congo Basin and give a rapid summary of efforts to combat climate change, and (2) highlight some preliminary efforts of the Center for International Forestry Research (CIFOR) and partners aimed at improving adaptation to climate change of forest and forest dwelling communities in countries in the region.

Congo Basin forests and Climate Change

The Congo Basin forest covers more than 40% of the total land area of the six countries in the basin: Cameroon, Central Africa Republic (CAR), Democratic Republic of Congo (DRC), Equatorial Guinea, Gabon and Republic of Congo. The population of the six countries was estimated at 86.11 millions in 2005 and is projected to reach 100 million inhabitants in 2010. Poverty is common in this part of the world, especially in the rural communities. Agriculture remains the primary activity and pre-occupation of the people, and practices such as slash and burn, shifting cultivations have continued to contribute to forest loss. In Cameroon for example, close to 30% of its GDP comes from agriculture (Molua, 2008).

The Congo basin is known to be rich in biodiversity, and this has stimulated the interest and willingness of the international community to conserve this vast diversity of endemic plant and animal species (Kamdem et al. 2006). Protected areas are established and currently countries like CAR, Cameroon and Equatorial Guinea have more than 20% of their national territory in protected areas (IUCN Category 1-6), while others like Congo and DRC have designated around 10% of their land as protected areas. Some of the protected areas have also been recognized as UNESCO-World Heritage (*Patrimoine Mondial de l'Humanité*) (White and Vande Weghe, 2008). Beside these protected areas, sustainable forest management has continued to be promoted as a means of protecting the forest as well as improving the livelihoods of people that depend directly on these forests (Nasi et al. 2006).

From 1990 to 2000, the annual deforestation rate has been reported to rise from 0.17% (Nasi et al. 2009) to 0.38% (FAO, 2005). With climate change increasingly taking centre stage in the international agenda, it is becoming more apparent now that the Congo Basin forest is receiving a renewed interest in terms of the amount of carbon they have stored in the vegetation (Brown et al., 2010). It is estimated that 46 billions of carbon stock are stored in forest of the Congo Basin (Nasi et al. 2009). As efforts continue to be put in place to protect these current carbon stocks through many management systems, it is fast becoming the norm to reduce present and future deforestation and degradation, and if possible, increase future carbon stocks through afforestation and reforestation.

The forest and community of the Central Africa are exposed to climate change. In Cameroon for example, temperature had increased by 0.7 ^{0}C since 1960 and the number of hot nights per year had increased by 79 (an additional 21.7% of night) between 1960 and 2003 (McSweeney al. 2009). Annual precipitations have decreased by 2.9 mm/month between 1960 and 2003. The projection gives 1.0 to 2.9 degree for temperature and -12 to +20mm per month (-8 to +17%) by the 2090s for rainfall change (McSweeney et al. 2009). Forest and communities are sensitive and vulnerable to climate change and variability. National reports submitted to the UNFCCC by the countries in the region point out vulnerabilities of the countries due to factors varying from poverty, political instability, civil wars and unsustainable forest management practices (Bele et al., 2010). A recent study shows that forests in Africa are sensitive to green house gases increase which has a resultant effect on the carbon stock of these forests (Lewis et al. 2009).. The economy of a country like Cameroon is heavily linked to climate: An increase of 3.5% in temperature and 4.5% precipitation without irrigation facilities will lead to a loss of 46.7% in output value (Molua, 2008).

The countries of Central Africa have different stages of development and implementation of climate change adaptation strategies. Cameroon currently has produced only one report or position statement on climate change, while DRC and CAR have already developed a National Adaptation Program of Actions (NAPA). In the case of Cameroon, 2 main areas, the northern part and the mangrove were seen as highly vulnerable and should be given more attention. Although several countries of the region received funding to support NAPA development, only DRC was able to receive implementation fund (Ecosecurities, 2009). Some countries have received funding to support capacity building of government so that they can include adaptation into national policies. Some countries like DRC and Gabon were able to present some detailed adaptation but this has not been the case with Cameroon and Congo. These Adaptations are not necessarily taking forest in consideration and also fail to consider forest as tools for adaptation despite the importance of forest for livelihood of communities in these countries. Central Africa potentially has the opportunity to use reforestation and aforestation as adaptation and attenuation (Ecosecurities, 2009). Scientific literature is gradually showing the linkage between forest and adaptation. Linkage between forest and adaptation is not yet common in Central Africa Region. The following section describes how CIFOR and partners are making this become a reality in Congo Basin.

Promoting climate change adaptation for forest and communities

With the vulnerability of forest and community of Central Africa, it is thus evident that there is a need to develop strategies for adaptation in this part of the world. Based on the previous experiences in tropical forests including those of West Africa, the Congo Basin Forests and Climate Change Adaptation in Central Africa (CoFCCA) project was developed (Sonwa et al. 2009). The aim was to mainstream climate change in forest policies and forest into climate change policies. Prior to the development of the project, a meeting was organized in 2007 with the aim of brainstorming on the topic. The project is funded by IDRC and implemented in 3 countries: Cameroon, CAR and DRC. The science-policy dialogue is one of the main approaches used in the project. The first dialogue was organized during the kick off meeting of the project in 2008, the

emphasis was on identifying sectors considered to be sensitive to climate change by the stakeholders. Sectors were prioritized for each country. This activity constituted in fact the entry point for future research and development activities on forest and adaptation to climate change in the region.

One of the main challenges is to bring different stakeholders together and develop methodologies for vulnerability assessment and development of adaptation strategies. For the policy dialogue, we used group discussion. For activities at the local level, a workshop with different scientists from different backgrounds and different parts of the world (experience of sub-Saharan Africa and Southern America) was organized. Participatory Action Research (PAR) approach was adapted for the forest context and climate change. The authors through the project are also trying to understand the institutional aspects that can enhance mainstreaming of Adaptation at the regional, national or local level (Brown et al 2010; Nkem et al. 2010; Bele et al. 2010). In conjunction with the Meteorological Office in the United Kingdom and colleagues from West Africa, the authors are using the PRECIS (Providing REgional Climates for Impacts Studies) model (**http://precis.metoffice.com/**) to generate climate change projections for the Congo Basin.

In order to assess vulnerability of communities in each of the sectors that came out of the science policy dialogue, a number of tools including household surveys, GIS, etc were used by students selected within the project. In all, more than 15 students from different relevant disciplines are currently doing their research through fellowships within the project. The project is currently providing internships to communication students to get them used to the terminology of climate change especially forest and climate change adaptation. At the local level, after the vulnerability assessment by communities, they propose some adaptation strategies. Negotiations with different stakeholders helped in initiating some pilot adaptation strategies that will help in the future to explain how adaptation for communities can look like in forest zone. At the moment, these activities are implemented in 6 sites (including 2 biodiversity landscape) of the region. Working in those landscapes help to link adaptation to climate change with other activities of the landscape (such as biodiversity conservation and poverty alleviation). The project is making effort to understand the general contexts of local livelihoods and rural development and the process of mainstreaming adaptation to climate change agenda. From the experience in implementing this project, the CIFOR team has acquired new funding from African Development Bank (AfDB) to work on synergies between mitigation and adaptation. This newly funded project will be useful in generating information that is critical to promoting adaptation and mitigation in the Congo Basin.

Conclusion.

Central Africa countries are vulnerable because of their weak infrastructural and economic development. Although they represent an important carbon stock, especially in the Congo Basin, where the international community is trying to protect and avoid the emission of greenhouse gases through the REDD+ mechanism, significant percentage of the population is still living in poverty. Those conditions could be worse with the advent of climate variability and change. But the international community is putting emphasis on REDD+. This holds the potentials to allow not only

an increase of carbon storage but could also contribute to the conservation of biodiversity. Adaptation which is also one of the important components of the fight against climate change has not received the same level of attention as REDD+ in Central Africa. Adaptation is more closely related to development and thus offers certain legitimate opportunities for populations in alleviating their poverty and vulnerability to climate change/variability. Failing to take into consideration poverty and vulnerability will lead to more pressure on carbon stock and biodiversity. There is thus a need to consider not only protection of carbon pool, but also to take care of the plights of poor populations of these countries. The efforts by CIFOR and partners currently aim at mainstreaming climate change in forest policies and also mainstreaming forest in climate change policies. Other related activities are concerned with science-policy dialogue, institutional studies (at the regional, national and local levels), pilot adaptation strategies, climate change projections, and capacity building, to name a few.... These efforts are still at the early stage but it is hoped that they will help to foster and boost activities on adaptation of forest and communities to climate change.

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