

CONCLUSIONS

The forests of Central Africa: abundant resources, uncertain future

An abundant and diverse resource base to contribute to global climate regulation

Central Africa is covered by more than 2,870,000 km² of forests, including humid and dry forests altogether. The dense humid forests stretch from the Gulf of Guinea to the Rift Valley, on more than 1,700,000 km². These forests are uneven and include various forest types which present specific issues in terms of exploitation and conservation. The most diverse and the ones with the higher levels endemism are the forests bordering the Gulf of Guinea and the ones of the Albertine Rift.

Forests in Sub-Saharan Africa account for 10 to 20 % of global plant carbon stock and about 46 billion metric tons of carbon are stored in the Congo Basin countries (Nasi *et al.*, in de Wasseige *et al.* (2009). Dense evergreen lowland forests represent 60 % of this amount while only covering 35 % of the area. Biomass studies at the scale of the whole Congo Basin are on-going (Shapiro and Saatchi, 2014) and will specify previous analyses performed at a global scale (Saatchi *et al.*, 2011).

Forests as a life support system in Central Africa

Forests offer many functions beyond carbon sink and storage, or timber production, what is usually referred to as “ecosystem services” such as production of Non Timber Forest Products (NTFP), soil erosion and siltation control, water quality or local climate regulation, etc. These services are of paramount importance with regard to the subsistence of certain populations and their livelihood, and bring some diverse sources of revenue at local and national level.

The forests of Central Africa provide subsistence means to 60 million people who live either inside or in the vicinity of the forests. They also fulfil social and cultural functions essential to local and indigenous populations, and contribute to feed 40

million people who live in the urban centres close to these forest areas (Nasi *et al.*, 2011 ; de Wasseige *et al.*, 2014). In the case of Cameroon, for example, bush meat represents an economic value estimated at 80 billion CFA (about 122 million Euros) per annum (Lescuyer, 2014). In addition to their contributions to community livelihoods, forests of Central Africa contribute substantially to national economies of countries in the sub-regions. In Gabon for example, the timber sector is the second most important provider of employments after the State. In the Republic of Congo it is often the unique source of salaried jobs in remote rural areas and, in Cameroon, it is estimated that the forestry sector contributes at 4 % to the Gross Domestic Product (Eba'a Atyi *et al.*, 2014).

Threats to the forests of Central Africa

Forests of the region have so far been relatively well protected thanks to low demographic pressure reinforced by rural exodus, difficult access, absence of transport and communication infrastructure, and a business climate very little conducive to long term investments (Burgess *et al.*, 2006; Megevand *et al.*, 2013). Available studies give an annual net deforestation rate of 0.14 % for the humid dense forest of Central Africa between 2000 and 2010, with a higher rate for dry forests during the same time period (about 0.40 %).

However, current policy programmes defined by Central Africa States aim at economic emergence between 2025 and 2035. These programmes are based upon the continuation of natural resources exploitation (wood, oil, and minerals), agricultural production for

domestic needs and exports, as well as the strengthening of industrial processing activities. Social and political stability prevailing over the last decade in certain countries of the sub-region has allowed the development of large-scale road infrastructure, power supply in the main urban areas and counties, and an improvement in the business climate. Added to this context, the rise in the price of minerals and agricultural products in the international market place in the early 2000s have acted like investment incentives.

At present, small-scale agriculture and to a lesser extent the harvest of fuelwood are considered the main drivers of deforestation in the Congo Basin (Defourny *et al.*, 2011) but projects for large scale agribusiness plants are developing in various countries and may become more and more important in the future.

An emerging threat to the forest of Central Africa consists of mining. Many mining exploration permits have been granted by the Central African countries and such permits concern large areas of rainforests already granted to logging companies, to communities or simply reserved as conservation areas, favouring the emergence of land use and resource use conflicts.

Additionally, logging still represents a noticeable driver of deforestation and forest degradation in the Congo Basin. Currently, 49 million hectares of forests have been allocated as forest concessions in the area. If those concessions should be sustainably managed, they are not under the threat of deforestation but remain under

the threat of forest degradation. However, one must admit that the bulk of forest exploitation in the Congo Basin countries is not conducted according to sustainable management rules as of today. In the whole region, 40 % of concessions are under management plans but it is necessary to reach 100 % in the medium run.

In obvious contrast to the trend towards sustainable forest management, the whole forest is, at various levels, prone to illegal logging which, depending on the country, can cause some degradation or even deforestation of greater magnitude when compared with legal exploitation.

Vulnerability of human communities and forest ecosystems

The socio-economic sectors and livelihoods of central African countries and its populations present different abilities to react to climate stimuli. Furthermore, they are highly dependent on the surrounding ecosystems that constitute a significant proportion of the gross domestic product of the countries. This implies that, depending on the health and the resilience capacity of the ecosystems, climate change might jeopardize the successful implementation of any sustainable economic and national development plans. Furthermore, climate change may constrain countries in the region to realize global targets such as the Sustainable Development Goals (SDGs).

Projections towards the 21st century show that temperatures, evapotranspiration and precipitation might slightly increase on the whole region, but also that various parts of Central Africa might react differently. Studies on climate and hydrology have shown that, since the 70s and 80s, water discharge of equatorial rivers do not show any clear trend while tropical rivers seem to decrease and Sahelian river discharges tend to increase. The impacts of climate change will also be very different according to the magnitude of human activities, namely deforestation and ecosystems degradation or pollution.

Water and temperature regimes condition agricultural production. This is particularly important in Africa where subsistence agriculture predominates and smallholders produce about 80 % of

the food consumed (AGRA, 2014). As such, crop production is mostly rain-fed, and technologies to control temperature (such as greenhouses) are not yet widely applied. Projected variability across zones indicates that the northern sahelian zone will be less prone to drought with increases in agricultural production. However, in the central region, increases in water might be such that they can lead to floods damaging crops. In the southern zones agricultural production will start decreasing halfway the century, due to changing evapotranspiration balances, being prone to droughts as well (CSC, 2013). In addition, changes in humidity will influence nutrient availability, and impacts of pest and diseases (de Wasseige *et al.*, 2014).

Another important sector that might be affected is health. It is recognized that climate change is a direct (insufficient access to safe water and improved sanitation, food insecurity) and indirect (limited access to health care and education) multiplier of existing health vulnerabilities (IPCC, 2014). Changing temperature and precipitation patterns will impact health due to malnutrition, diarrheal diseases, and malaria and other vector-borne diseases. Malnutrition problems could be tackled in the northern part of the region due to increased agricultural production, but diarrheal diseases, malaria and water-borne diseases could further affect throughout the region due to increased temperatures and floods. Health is especially vulnerable in context of poor healthcare systems combined with poor governance and lack of infrastructure.

Policy and management responses to threats

The importance of tropical forests of the Congo Basin has gradually given these ecosystems the value of a world common asset and many multilateral agreements address today the

management and conservation of these ecosystems in partnerships with the states of the region.

Adapting to climate change

All the countries of the Central Africa region are parties to the UNFCCC, which underscores their interest to provide policy response to combat climate change. Their efforts are stated through the UNFCCCs National Communications (NCs) and the National Adaptation Program of Action (NAPA) initiatives. NCs highlight vulnerable sectors and potential measures to facilitate adaptation to climate change. The NAPA initiative tailored for Least Developed Countries (LDCs) is relevant for some countries of the Central African region, where they have made attempts to identify priority areas and activities that respond to their urgent needs related to climate change adaptation.

At the regional level, the COMIFAC, with support from national and international governmental organizations, national and international non-governmental and research institutions, is making attempts to propel the adaptation agenda and climate

change response in general. In its recent 10-year (2015-2025), convergence plan, the fight against climate change is included as one of the priority areas.

Almost all COMIFAC countries have submitted the first and second NCs and NAPAs, with Gabon to be the first to complete the Intended Nationally Determined Contribution (INDC) including a chapter on adaptation. Eligible COMIFAC LDCs countries have submitted a total of about 70 projects cutting across different sectors and levels. A limited number of these projects (9%) explicitly take into consideration adaptation for forest and the role of forest for the adaptation of local communities (UNFCCC, 2015d). This might be due to the fact at the time of developing NAPA priority projects, COMIFAC countries had limited information and knowledge on the vulnerability of forest ecosystems to climate change and the role of forests for adaptation.

Contributing to climate change mitigation

Mitigation of climate change has been approached by three main sets of policies and measures in Central Africa. These include, the adoption of sustainable forest management techniques, the improvement of forest governance and the current engagement in the REDD+ process.

Sustainable forest management (SFM) may at first glance not have the same climate change mitigation potential as classical REDD+ projects (because SFM still entails timber extraction, building of forestry roads, etc.) and it is often overlooked in Central Africa. Nevertheless, preliminary analyses conducted in some countries suggest that the implementation of SFM over 20 million hectares of forest concessions has the potential to reduce emissions by more than 35 million tCO₂eq over a period of 25 years. Furthermore, the implementation of Reduced Impact Logging (RIL) might reduce gross carbon emissions from logging concessions by 1.3 million tCO₂eq/year.

Recent development **in forestry governance** should also contribute to climate change mitigation although there exist no

available attempts to quantify such contributions. Fighting illegal deforestation – as defined by the developing country's own laws – can be seen as a key part of any carbon emission reduction strategy from the forestry sector. Therefore countries of Central Africa that have embarked in improving forest governance have put themselves in a positive momentum for the reduction of forest based emissions. Nevertheless, difficulties to control the informal forestry sector are still big challenges for all countries.

The Congo Basin forests are the second largest area of rainforests globally, and hence potentially represent a “prime location” **for implementing REDD+**. Although countries of Central Africa are at different stages in the implementation of the REDD+ process, about all of them find themselves locked in the first phase (readiness phase) as described in Chapter 5 above. The most advanced is certainly the DRC that is between the completion of phase 1 (readiness) and the beginning of phase 2 (investment) and has put in place a number of demonstration projects.

Pending challenges

Obstacles that have prevented effective and efficient climate policies implementation in Central Africa are mostly linked to the underlying political economy of deforestation and forest degradation in a context of often weak (forest) governance, existing

multilevel and multisectoral coordination challenges, and competitive national development objectives (Martius 2015). However, problems with scale, measurement, reporting and verification (MRV), and social safeguards are also relevant.

International support

If the world is committed to reduce land-based emissions, efforts may be needed to support this goal that go far beyond the current endeavors and are much more encompassing than narrowly focusing on climate policies. At the global level, REDD+ discourses emphasize carbon sequestration and avoided emissions from land-use change as the principal benefit, while forest contributions to livelihoods, biodiversity, institutional improvement; other ecosystem services are externalized as co-benefits. The emphasis reverses at the local level. For local actors — smallholders, communities and decision-makers — the main expected benefits of REDD+ are often cash income or other livelihoods benefits, better infrastructure and services or a palpable increase in indicators of development. Mismatched expectations are shaped by

power relations and have slowed the pace of progress in REDD+ negotiations and implementation. This is a powerful argument for emphasizing poverty alleviation and sustainable development goals over climate goals if REDD+ is to be implemented with reasonable expectations for success.

One of the most important challenges that have to face the Central African countries is to meet their development goals while taking into account the constraints climate changes and their commitments related to the global environment. This will be effective only if these countries have access to clean and efficient technologies related to carbon emissions.

Necessary financial support

Climate change adaptation is a financial burden for countries in the Central Africa region (Somorin *et al.*, 2012). It is important to note that, globally it is unclear whether sufficient funds will be available to address the adaptation needs of developing countries which threatens to surpass US\$50 billion per year after 2020 (Smith *et al.*, 2011). COMIFAC States have accessed and benefited differently from the adaptation fund under the

UNFCCC framework (chapter 4). Many opportunities are still available, highly dependent on the countries' capacities to propose adaptation projects. Apart from the funding sources under the UNFCCC framework, other policy and funding options relevant for Central African countries include multilateral and bilateral assistance through development banks and overseas Development Assistance (ODA).

Regional and national coordination

The major challenge for the COMIFAC countries is to develop climate change adaptation strategies for the transboundary forest system, without endangering the integrity for these forests to ensure the continuous provision of ecosystem goods and services critical for community livelihoods, national development and the economic growth of the region. A certain level of progress has been achieved concerning regional coordination of mitigation initiatives, and particularly REDD+ for which COMIFAC has

established a consultation mechanism for UNFCCC negotiators of member countries. In addition COMIFAC is implementing regional projects focusing on REDD+ capacity building.

At the national level of individual countries, the policy and institutional processes are still characterized by limited coordination, weak institutional linkages and lack of coherence between sectoral policies (Kengoum, 2013; Dkamela, 2011).

Mainstreaming climate change in development policies

In the context of the Central Africa region, the challenge for adaptation in the climate change policy process might be easier to overcome due to the strong links between climate vulnerability and poverty and development strategies. Development and poverty reduction are priority areas for countries in the COMIFAC space. Thus, this should be used as an opportunity for adaptation, by integrating adaptation strategies into current development plans and poverty reduction strategies (Sonwa *et al.*, 2012b).

In the other hand, REDD+ will remain a viable option for countries if they manage to do three things: 1) they need to embed REDD+ in the broader context of development policies; 2) they need to develop other, non-market based mechanisms that reduce pressure on forests and forest resources; 3) they need to engage in broad policy reform which need to take into account climate challenges in all sectors.

Need for stronger information and knowledge basis

At present, there is insufficient knowledge on regional climate change patterns, unknown quality, quantity, and spatio-temporal pattern of risk occurrence and the lack of clear adaptation possibilities. There is a real need to enhance climate change information generation and its delivery through the improvement of

climate change information infrastructure e.g. weather/meteorological stations and technology, and information centralization, delivery and sharing services. There is a need to move from cross-continental analysis to sub-regional and national, since the ecological and socio-economic settings vary greatly across countries.

Capacity gaps

There is a need to build capacities and to strengthen institutional networks both at the level scientific and technical competences as well as policy-making, at the level of implementation of both mitigation and adaptation strategies. REDD+ MRV systems

need to be designed based on each country's characteristics and capacities. Countries with good capacities could play a larger role through regional bodies such as COMIFAC on that matter.

On sustainable forest management

Lessons learned from early mitigation initiatives indicates that significant progress has been made on SFM in Central Africa for the last 20 years, due to a number of factors that include (i) the political will from governments of the COMIFAC member countries, (ii) the engagement of the private sector encouraged by market tools such as forest certification to meet demand

from environment sensitive timber products markets and (iii) the involvement of the donor community that provided support both to national government and private sector enterprises. These efforts should be continued through the evolution of management plans and the integration of this SFM approach into the multiple use of forests.

Looking forward

In the advent of climate change responses, institutions involved in policy development and implementation need to revise, change and take on new roles to be in a position to facilitate and enforce new policies, become flexible and able to learn and adapt to the changing human-environmental system which is characterized by uncertainty (Locatelli *et al.*, 2008). First, state agencies should be responsible for mainstreaming adaptation and mitigation into national policies, sourcing financial resources and influencing and coordinating the course of action at the international, national and local levels. Second, non-state agencies which include national and international NGOs and research organizations should provide support related to awareness raising, mobilization of efforts, promotion of inter-ministerial dialogue, collaboration, networking, knowledge generation and capacity building (Chia *et al.*, 2014).

In this context, it is argued that climate change adaptation should be factored in all development assistance that are climate sensitive (Huq and Burton, 2003). Thus, coordinating the two

funding streams at the national and international levels may provide more effective support for both sustainable development goals and climate change adaptation. This approach is crucial for COMIFAC countries.

Future climate change and forest vulnerability is characterized by uncertainty and the dynamics of human-environmental systems. Thus, policy and institutional approaches should be diverse, flexible, adaptive and continuous to take advantage of new knowledge and insights (Bele *et al.*, 2014). Building policy-science dialogue is necessary. Findings generated by rigorous research should be transformed into policy relevant language and put into the policy process. Science should inform decision makers about assessing vulnerabilities, identifying response options and designing adaptation strategies. Decision makers in the region need frequently updated information and knowledge to support regional and national positions on climate change adaptation (Tiani *et al.*, 2015).

Ecosystem-based adaptation (EbA) is defined as “the use of ecosystems to support societal adaptation through their management, conservation, and restoration to provide services that enable people to adapt to the impacts of climate change. It aims both at increasing the resilience and reducing the vulnerability of ecosystems and people in the face of climate change” (UNEP, 2009). EbA strategies range from sustainable water management for water storage, flood regulation and coastal defenses, disaster risk reduction through tree cover, sustainable and ecologically intensive agriculture using locally available genetic resources, etc. (de Wasseige *et al.*, 2014). Ecosystem-based adaptation appears as a cost-effective option with significant social, economic and environmental co-benefits (UNEP, 2009). Furthermore, in a region with high mitigation potential the donors concentrate their focus on carbon conservation, with adaptation financing focusing on arid and semi-arid regions. Finally, EbA is more accessible to the rural poor than infrastructure and engineering-based adaptation. With a 54% the total population living in rural areas in Central Africa, EbA seems as a likely alternative (UN, 2015).

Since government cannot count solely on external funding, no-regrets adaptation is advised:

- Increase climate change adaptation in the national and regional policy spaces, by raising policy and public awareness on climate change, and reflecting on the need for adaptation
- Harness the regions carbon potential not only for climate change mitigation, but for achieving sustainable economic growth, poverty reduction and climate change adaptation.
- Balance the interest of multiple stakeholders when setting priorities intended to achieve the national economic growth, environment and social sustainability objectives.
- Improve ecological safety nets in forests so that valued resources are more resilient to climate variability and change.
- Improve science-policy dialogue, with a broad public participation (Nkem *et al.*, 2008).

The notion of designing and implementing climate change response policies and projects that produce simultaneous positive outcomes for mitigation and adaptation is gaining grounds in the national and international research and decision making agendas (Elias *et al.*, 2014). In the Congo basin countries, there is urgency for both mitigation and adaptation. First, the forest ecosystems of the Congo basin are pertinent for the global carbon balance through their huge carbon sequestration and storing potential. Second, the forests and forest dependent communities could be impacted by climate change. In this light the design and implementation of adaptation policies and projects cannot be avoided. Thus, planning to design and use the same strategy and policy

package for positive mitigation and adaptation outcomes is critical for the region.

There are a growing number of actors, encouraging and promoting mitigation and adaptation efforts in the Congo Basin in different contexts. For example, the African Development Bank (AfDB), the COMIFAC via the PACEBCo, research institutions such as CIFOR via the COBAM and GCS projects, and others such as the African Network of Model Forests (RAFM), UEFA in DRC, the ROSE in Cameroon, ARECO in Rwanda, and INDEFOR in Equatorial Guinea. However, despite initiating activities that promote joint mitigation and adaptation outcomes; these projects do not always fit into clear national climate policy frameworks.

Challenges in integrating mitigation and adaptation policies in the Congo Basin are mostly governance based. Climate and forest matters are cross-sectorial and this is in contrast with the ongoing sectorial governance approach. In the current state of governance fragmentation, integrating mitigation and adaptation is more challenging and resource intensive, than just implementing both mechanisms separately (Kengoum *et al.*, 2015). However, resource wise, mitigation and adaptation are mostly financed by international organizations, with a very low contribution from local governments and there seem to be no existing finance for producing joint mitigation and adaptation policy outcomes despite the urgent need.

Congo Basin countries are still experiencing neo-patrimonial governance that hinders coordination across sectorial ministries and could be a stumbling block for climate change response. Furthermore, the cumbersome nature of governmental procedures observed in some countries could also be a challenge for progress in climate response, such as in Cameroon and DRC (Kengoum *et al.*, 2015).

As an opportunity for COMIFAC countries, options for exploring the synergy between adaptation and mitigation need to be explicitly introduced into ongoing and future market and non-market climate change mechanisms. In this light, present and post 2015 negotiations should continuously give space for dialogue on how best synergy options can be pursued. There is need to speed-up efforts in terms of governance, methodological and technical issues, to fill the gap of the current lack of experience on integrated mitigation and adaptation activities. Sourcing finance and funding holistic and sustainable pilot initiatives in the region may be useful to experience and generate lessons learned.