

# Climate Change and Forest Communities: Prospects for Building Institutional Adaptive Capacity in the Congo Basin Forests

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**Abstract** Tropical forests are vulnerable to climate-change representing a risk for indigenous peoples and forest-dependent communities. Mechanisms to conserve the forest, such as REDD+, could assist in the mitigation of climate change, reduce vulnerability, and enable people to adapt. Ninety-eight interviews were conducted in three countries containing the Congo Basin forest, Cameroon, CAR, and DRC, to investigate perceptions of decision-makers within, and responses of the institutions of the state, private sector, and civil society to the challenges of climate change. Results indicate that while decision-makers' awareness of climate change is high, direct institutional action is at an early stage. Adaptive capacity is currently low, but it could be enhanced with further development of institutional linkages and increased coordination of multi-level responses across all institutions and with local people. It is important to build networks with forest-dependent stakeholders at the local level, who can contribute knowledge that will build overall institutional adaptive capacity.

**Keywords** Africa · Congo Basin forest · Climate change · Adaptive capacity · Institutions · Perception

## INTRODUCTION

The increasing recognition of climate change impacts has heightened the discussion concerning societal adaptation to such changes, particularly in the global south. African populations are expected to be more vulnerable as a result of a higher than global average degree of change, high levels of dependence on natural resources, and a low degree of adaptive capacity (Eastaugh 2010). Forests will face significant pressure from climate change over the next century disrupting the important ecological, economic,

social, and esthetic services they provide to other natural systems and humankind (Bonan 2008). More than 1.6 billion people worldwide depend on forests for their livelihoods, with 350 million being highly dependent, 1.2 billion dependent on agroforestry, and 60 million indigenous peoples totally dependent (Sunderlin et al. 2005; The World Bank 2008). In Africa, over two-thirds of the population rely directly or indirectly on forests and woodlands for their livelihood, including medicinal plants and other forest resources for essential food, fuel wood, grazing, and other needs (The World Bank 2004). Climate disruptions will be particularly difficult for indigenous peoples and other forest-dependent communities, who form a large part of the rural poor.

As the second largest contiguous rainforest in the world, the Congo Basin represents a carbon reserve of global significance for regulating greenhouse gas emissions and the development of the regional economy (Congo Basin Forest Partnership 2006; Hoare 2007). Estimated at approximately 200 million ha in size, it is found in six countries of which three, the Republic of Cameroon, Central African Republic (CAR), and the Democratic Republic of Congo (DRC), are the subject of this study. The forest's vulnerability to climate change is exacerbated by historical and contemporary problems related to natural resource mismanagement, weak institutional capacity, conflict and inequality (Dixon et al. 2003). The population, representing over 150 ethnic groups, depends on the forest for food, shelter, and other livelihood activities (Congo Basin Forest Partnership 2006). Poverty is common among the majority of the close to 100 million inhabitants of the Congo Basin subregion. The DRC and CAR, with close to three-quarters of the population, are classified among the lowest-income countries in the world (The World Bank 2010b). See Box 1 for list of acronyms.

Box 1: Glossary of Acronyms	
Name	Acronym
Central Africa Republic	CAR
Central African Regional Program for the Environment	CARPE
Clean Development Mechanism	CDM
Economic and Monetary Community of Central Africa	CEMAC
Central African Forest Commission	COMIFAC
Democratic Republic of Congo	DRC
Food and Agriculture Organization of the United Nations	FAO
Forest Carbon Partnership Facility	FCPF
Forest Law Enforcement, Governance and Trade	FLEGT
International Union for the Conservation of Nature	IUCN
National Adaptation Program of Action	NAPA
Nongovernmental Organization	NGO
Readiness Preparation Plan	R-PP
Readiness Preparation Idea Note	R-PIN
Reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries	REDD+
United Nations Development Program	UNDP
United Nations Framework Convention on Climate Change	UNFCCC
Wildlife Conservation Society	WCS
The World Wide Fund for Nature	WWF

Containing an estimated 25–30 billion metric tons of carbon (Hoare 2007), the Congo Basin forest has become a focus for REDD+ (reducing emissions from deforestation and forest degradation in developing countries, and the roles of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries). REDD+ is an effort to implement policies and measures and create a financial value for the carbon stored in forests. This includes offering incentives and building capacity for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development (UN-REDD Programme 2013). REDD+ has the potential to contribute to multiple goals in the areas of climate-change mitigation, forest conservation, economic development, and poverty reduction; however, accomplishing such multiple goals is not without its challenges. These include insecure tenure, the process for benefit sharing, and the technical capacity for the implementation of such a complex mechanism as REDD+ (Rights and Resources Initiative 2008; Brown et al. 2011).

Given the diverse challenges of climate change in the Congo Basin forest region, it is important to seek ways to build the capacity to adapt. Adaptive capacity refers to the

potential or capability of a system to adjust to and thereby limit risk (Adger 2003). Adaptive capacity is often limited because of a lack of key determinants such as economic wealth, technology, information and skills, infrastructure, institutions, social capital, and equity (Smit and Pilifosova 2001, 2003). In social–ecological systems, the existence of institutions and networks that learn and store knowledge and experience, create flexibility in problem solving, and balance power among interest groups enhances adaptive capacity (Tompkins and Adger 2004; Pahl-Wostl 2009). Pahl-Wostl (2009) identified the importance of multilevel interactions between formal and informal institutions in actor networks as characteristic of adaptive capacity or resilience in a governance regime. The formation of informal networks especially in the early stages fosters the exchange of different types of knowledge, which is essential to support double-loop learning. Engle and Lemos (2010) also emphasize that adaptive capacity increases with the increasing networking and connectivity between groups and stakeholders involved in management processes. However, in situations of conflict, such interactions can be limited (Busby et al. 2010).

Climate change research has indicated the importance of the institutions of the state, the market, and civil organizations in determining response to changing environmental and policy conditions and risks (Adger 2000; Adger and Vincent 2005). Studies have shown that a significant factor influencing the climate policies that are adopted is the way in which decision-makers perceive climate change (Pielke 1998; Koch et al. 2007; Bozmoski and Hultman 2009). The aim of this research is to analyze the perceptions of decision-makers within diverse national, regional, and international institutions regarding the complex challenges of climate change in the three Congo Basin countries: Cameroon, CAR, and DRC. Institutional action on climate change was also noted. Since increased networking and connectivity that foster participation of diverse groups and exchange of knowledge have been shown to enhance adaptive capacity, we investigated their existence, nature, and composition. This article concludes with a discussion of the results and suggests opportunities for building adaptive capacity to climate change in the region.

## MATERIALS AND METHODS

This research was carried out in Cameroon, CAR, and DRC in Central Africa, whose land surface area contains the majority of the Congo Basin forest (Fig. 1). This study investigated the perceptions of formal national, regional, and international institutions with a decision-making role in climate change or forest issues, and of those that might be involved in climate change issues in the future. The



**Fig. 1** Map of Africa showing location of the three research countries

selected institutions represented various government ministries (e.g., forestry, agriculture, and rural development), regional institutions (e.g., Central African Forests Commission, COMIFAC; and Economic and Monetary Community of Central Africa, CEMAC) and international institutions (e.g., Food and Agriculture Organization of the United Nations, FAO; United Nations Development Program, UNDP; International Union for the Conservation of Nature, IUCN; Central African Regional Program for the Environment, CARPE), the private sector (forestry companies), civil society, and indigenous peoples (Table 1).

The representatives of the institutions were chosen for interviews because of their knowledge or involvement in climate change and forestry issues. Where there was no

**Table 2** Types of questions that were explored during interviews with representatives of government, the private sector, and civil society

Sample interview guide
Could you explain to me the mandate of your government department, NGO, or the type of business that your company does? Please specify the types of activities that you do
Are any of your activities related to climate change mitigation or adaptation? Please specify the types of activities that you are doing
What are the opportunities and constraints in carrying out your work? Either in the climate change area or in general?
What will be the impact of climate change on the people of your country?
Are you aware of international policies related to climate change?
What measures will enhance the adaptive capacity of your country to respond to climate change?
What is your primary way of communicating or relating to others in government or other organizations or local people? On the issue of climate change?

active institutional participation on climate change issues, the positions of those chosen exposed them to the issues in general terms. In most cases, one respondent from each institution was interviewed; however, depending on the preference of the institution, sometimes several representatives of an institution participated in a group interview. Use of this qualitative approach in data collection, and semistructured, open-ended interviews, allows the interviewer to use a guide to explore similar questions with all the institutional representatives. The approach is also flexible and allows the interviewer to ask further questions to elucidate the subject (Patton 2002). See Table 2 for the general interview guide.

Twenty-seven interviews were conducted in Cameroon in September and October 2008. In December 2009, 26

**Table 1** Summary of participating institutions by country

Country	Government	International NGO	National organization <sup>a</sup>	Private sector <sup>b</sup>	International organization	Other <sup>c</sup>
Cameroon	6	4	4	6	3	1
CAR	5	1	8	0	3	3
DRC	14 <sup>d</sup>	5	8	4	7	1
Total	25	10	20	10	13	5

<sup>a</sup> Includes civil society and indigenous peoples' organizations, including those focused on women

<sup>b</sup> In Cameroon, six private forestry companies were interviewed. In DRC, three private forestry companies as well as the General Secretary of the Forest Industries Federation, which represents most of the approximately 20 forestry companies in DRC, were interviewed. Information on the forestry sector in CAR was obtained from the internationally funded Forest Management Plan Implementation Support Program which provides support for the development of forest management plans. This is included under International Organizations

<sup>c</sup> Includes regional organizations and universities

<sup>d</sup> Since the Ministry of Environment, Nature Conservation, and Tourism is composed of multiple branches, each of the six branches interviewed was counted as a separate institution

interviews were conducted in CAR. Forty-five interviews were conducted in November 2009 and January and February 2010 in DRC. Interviews were conducted in French or English, depending on the preference of the person being interviewed and were digitally recorded for later transcription. Direct quotations from French have been translated into English. Interview data were supplemented by a review of relevant documents; the National Adaptation Program of Action (NAPA), and those related to the REDD+ preparation process of the Forest Carbon Partnership Facility (FCPF), a multidonor initiative led by the World Bank.

Content analysis of the data was done to identify, code, and categorize the patterns in the data following the key themes of respondents' perception of the effects of climate change on their country's population, institutional activities, and institutional relationships related to action on climate change (Patton 2002). A multilevel stakeholder framework was used to analyze the relationships occurring among different institutions and with other important stakeholders, specifically related to climate change (Keskitalo 2004; Koch et al. 2007). Linkages were classified by the researcher as no evidence of linkages, weak (little contact), moderate (occasional contact), and strong (ongoing regular contact). The institutions involved and the nature of the interaction in networks were also noted. Comparisons were drawn across institutions and countries. Individual country research results for Cameroon and CAR have already been published (Brown et al. 2010, 2013), and those for DRC are under review.

## RESULTS

### Perceptions of Climate Change Impact

All the respondents in the three countries were aware of the issue of climate change, and most felt that it was already evident. They described changes in the agricultural calendar, including a much wider variation in the timing of rains and length of the dry season. They perceived that this was making it difficult for people to know when to prepare their fields and plant their crops, leading to drops in productivity. A respondent from the agricultural research center in DRC also said that the same quantity of rain is falling, but in a shorter period affecting the timing of planting. He stated that local people have said that the dry season was on average hotter and more severe. There was broad consensus across countries and institutions that rural small-holder farmers would be the most affected by climate change. These subsistence farmers, who comprise 70–90 % of the population, depend on rain-fed agriculture as a source of livelihood.

Respondents stated that streams were drying up earlier in the dry season primarily affecting women and children who have to go longer distances to get water, having a negative effect on home life. River transport was being affected as there are fewer months of navigability on some rivers. Respondents said that flooding has become more frequent during the rainy season, which they felt would increase with severity of climate change. In CAR, some respondents felt that a longer dry season had led to more fires in savannah forests.

Respondents stated that climate change would have a long-term effect on biodiversity, leading to changes in the range of plants and animals and possibly their disappearance. In DRC, a respondent from the Kisantu Botanical Garden said that differences were noted in 2009 in the timing of flowering of some plants. Respondents suggested that low water levels of some lakes and streams would affect fish populations. These changes would have a negative effect on local communities who depend on the forest zone for their livelihood, with indigenous populations being the most acutely affected. Others suggested that climate change could also affect the distribution and incidence of disease in the long term.

In DRC, one international nongovernmental organization (NGO) representative said that with over 60 % forest cover, it is buffered against climate change compared with other parts of Africa. However, a long-term effect of climate change might be a drastic reduction in the water in the Congo Basin, which would be devastating not only for the region but also for the rest of Africa. He felt that with the discussions around the diversion of rivers to replenish Lake Chad, a reduction in water resources in the Congo Basin could become reality in the very long term. All respondents in all the countries felt that climate change would exacerbate unsustainable use of forest or water resources, leading to deforestation and desertification in the long term. In Cameroon, respondents also suggested that an indirect effect of climate change on the forest could result from increased migration from the drier north. Such in-migration to the southern part of the country would place pressure on forest resources.

Respondents from forestry companies in DRC had not noticed any impact of climate change. While they have observed changes from year to year, most respondents felt that it was a result of normal climate variability. In Cameroon, forestry companies said that some amount of the variability in the climate could be because of climate change.

### Institutional Action on Climate Change

Initially, climate change had been primarily a discussion of experts, but it was beginning to emerge as a priority in

most institutions interviewed in all the three countries, though concrete action was at an early stage. Governments of all the three countries have already ratified the Kyoto protocol and created a national designated authority for the Clean Development Mechanism (CDM). Each of the countries has a national focal point to the United Nations Framework Convention on Climate Change (UNFCCC) within their respective governments' environmental departments. Both DRC and CAR, as low-income countries had developed their NAPA.

Given the international discussions about REDD+, all the three countries submitted their Readiness Preparation Idea Notes (R-PINs) and were accepted to the program of the FCPF. DRC had its Readiness Preparation Plan (R-PP) approved and signed its R-PP Implementation Grant in March 2011 (Forest Carbon Partnership Facility 2011). CAR completed its Readiness Preparation Proposal and was to have prepared its R-PP by 2013 (Ministry of Water Forests Hunting Fishing and the Environment of the Central African Republic 2011). In 2010, Cameroon received a grant to prepare its Readiness Preparation Proposal, and a draft has been prepared (The World Bank 2010a; Republic of Cameroon 2013). All the three countries are partners in the UN-REDD program, with DRC receiving support for national programs (UN-REDD Programme 2013). They are also engaged in a process of harmonization of sustainable forest management practices in the region through the Congo Basin Forest Commission (COMIFAC).

In all the three countries, most actions related to climate change could be considered as actions to mitigate climate change, particularly reforestation efforts, and development of clean energy projects or REDD+. In DRC, given the vastness of its forest, the focus of all institutions appeared to be exclusively on mitigation through REDD+. While REDD+ was a preoccupation for all the institutions in CAR, some NGOs were already helping the population to adapt to climate change through promotion of agroforestry and reforestation on degraded lands. Despite being limited in its resources, the government's agricultural research center was trying to develop local varieties that are more resistant to an increasingly variable climate and that do not require inputs such as fertilizer. Following recent floods in Bangui, the local Red Cross made climate change adaptation a priority for their action plan from 2010 to 2014. Environmental NGOs have been involved in discussions as part of the association of NGOs to inform civil society about REDD+, and a few of them are developing REDD+ projects. Cameroon established a regional Climate Change Observatory to monitor climate data for the subregion. The government has also embarked on a few tree-planting projects in northern Cameroon. Some NGOs have already made climate change a priority for their work, through

building knowledge and investigating alternative sources of energy.

Forestry companies noted that while climate change might be affecting their harvesting operations, they did not see it as an immediate priority in the overall operations of their companies. During the research period, there seemed to be an increasing knowledge and interest of a few in the forest industry about the discussion on REDD+, and its potential for private forestry companies.

### Institutional Networks

Interinstitutional activity on the issue of climate change was limited but appeared to be most closely related to the development of strategic documents related to climate change, namely the NAPA and those of the REDD+ process. In all the three countries, these processes brought together a variety of stakeholders from different governmental departments, international organizations, the private sector, civil society, and indigenous groups. However, there was little indication that this represented evidence of ongoing regular contact between the different institutions on the issue. Furthermore, there appeared to be limited interaction within or between various institutional groups in general (Figs. 2, 3, 4). Opportunities for direct participation of forest community members or indigenous people in discussion of issues or decision-making related to climate change were extremely limited.

In Cameroon at the time of the research, interdepartmental governmental activity on the issue of climate appeared to be limited, although there was some indication that interdepartmental discussions were occasionally taking place. The increased discussion of REDD+ at the international level appeared to foster networking among governmental departments. While there may be some institutional links at the national level on climate change, there was no indication of any linkages with lower levels of government or communities at the time of the research.

In DRC, a national commission on climate change with representation from various departments and the President's office exists but it is not clear how often they meet. It is notable that the Ministry of Gender, Family and Children did not seem to be a member of this forum at the time of the research. In CAR, it appeared that the collaboration between governmental departments did not begin with the preparation of the NAPA. In the past, the meteorological and the agricultural departments were part of a multidisciplinary group that worked on providing infrastructure for measuring climate variables relevant to the agricultural sector, which has since been destroyed by civil conflict. Interaction between governmental departments did not appear to happen on an ongoing basis.

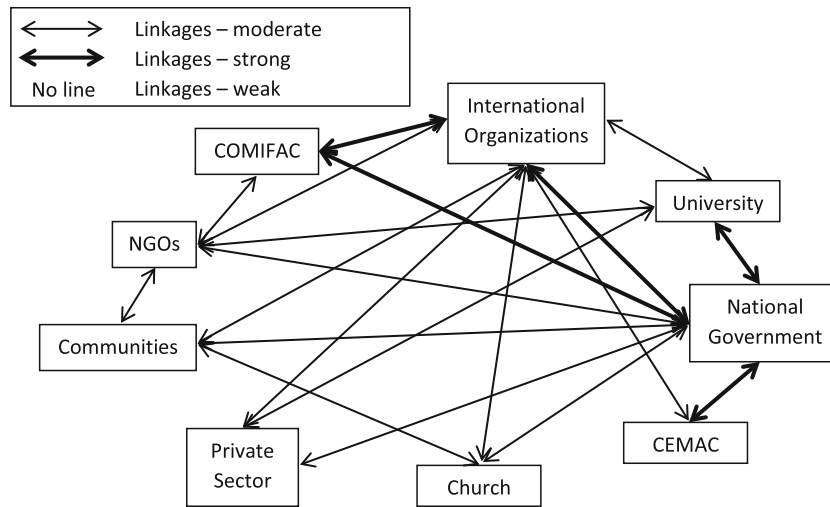


Fig. 2 Current interinstitutional linkages on climate change in CAR

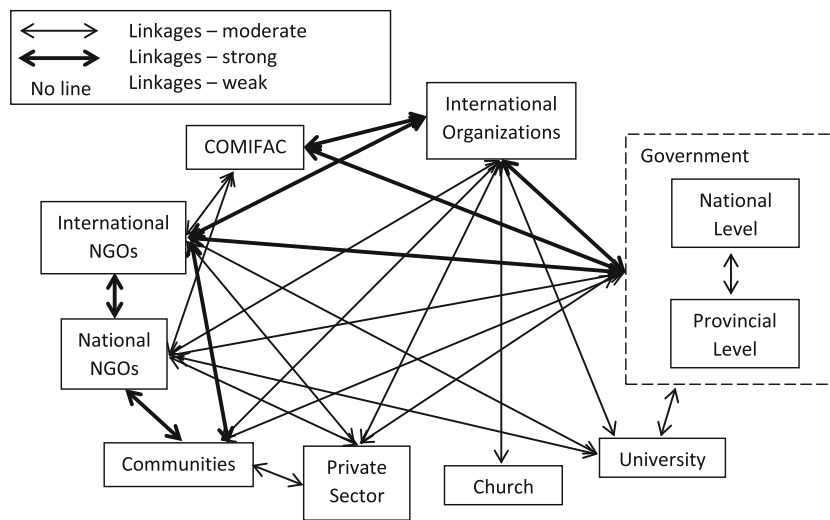


Fig. 3 Current interinstitutional linkages on climate change in DRC

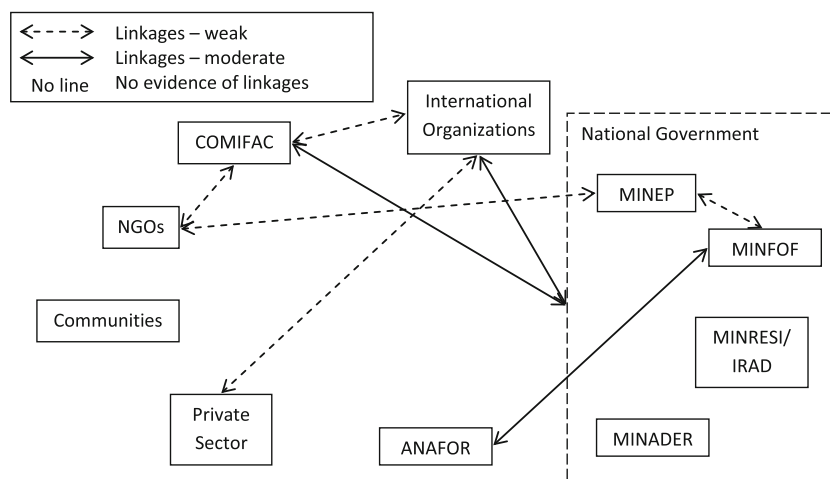


Fig. 4 Current interinstitutional linkages on climate change in Cameroon

A few of the larger international NGOs, such as IUCN, Wildlife Conservation Society (WCS), or The World Wide Fund for Nature (WWF), work closely with government in all the three countries, in some cases to strengthen capacity in the area of biodiversity conservation and, more recently, in the area of climate change. International institutions, such as FAO and UNDP work closely with governments in all countries. In some cases, representatives of bilateral institutions, such as the French Cooperation, are embedded within national forestry or environmental departments.

In CAR, the interaction of most local NGOs with the government was limited on any issue. However, both development of the NAPA and the REDD+ documents has provided an opportunity for more civil society and government interaction. Civil society respondents also said that their institutional linkages with the government and the forestry industry were enhanced through the Forest Law Enforcement, Governance and Trade (FLEGT) process supported by the European Union. These processes were also increasing linkages among diverse civil society organizations, such as national environmental NGOs, developmental NGOs, and church groups. At the time of the research in Cameroon, most national NGOs felt that they had few links with government in any area and were not currently part of any discussion on issues of climate change.

In DRC, the creation of the national coordination office for REDD+ in May 2009 provided an important focal point for all the interventions and coordination of activities by various national institutions and international partners. Respondents in the national coordination office said that the process is participatory in nature, and so they work closely with civil society groups which provide them with a link with local communities. Three-day workshops were held to explain REDD+ in a few provinces which brought together the local governmental authorities, the NGOs, the church, and the representatives of local communities. Unfortunately, limitations of time and money have prevented them from holding these workshops in each province.

While the REDD+ process in DRC was increasing the linkages with the local level, for the most part in all countries, the governmental linkages with local communities were not well developed. In CAR, government's respondents stated that the development of the NAPA followed the required participatory process, and so input was sought at the community level including that of village women. It is difficult to determine if this was an in-depth participatory process for either local women or men. In all the three countries, interaction between local communities or indigenous peoples was primarily mediated by civil society organizations and, in some cases, international NGOs. In commenting on the increased interaction fostered

by the REDD+ process in DRC, one NGO expressed it this way:

in the REDD+ group, we have a strong representation of Pygmies... we also have associations that lobby on behalf of forest people and local communities. And in that way the debate does not remain just a debate of the central state or the government.

However, an indigenous organization in DRC stated that they are concerned that nonindigenous groups are speaking on their behalf and may not adequately represent their concerns. A statement of Central African Civil Society criticized the process to develop the Readiness Preparation Proposal as not being representative of the views of all of civil society or indigenous peoples (Central African Republic Civil Society representatives 2011).

## DISCUSSION

### Perceptions and Priorities

There was widespread awareness among all the institutions of climate change and its negative effects on the poor who depend on natural resources for their livelihoods, and who represent most of the population. While climate change is a stated priority for representatives of government and civil society institutions, concrete action was clearly at an early stage in all the three countries. Similar findings have been noted in other African countries. This may be due to the need to focus on other pressing priorities of poverty reduction and development, rather than long-term climate change, although separation of these issues is counterproductive (Adger et al. 2003; Koch et al. 2007). Action on climate change could also be affected by the perception that forest peoples are less vulnerable to climate change than people in other drier parts of the continent (Somorin et al. 2012). The reality is that both rural and urban populations of the region depend directly and indirectly on the forest ecosystem goods and services for their wellbeing, which is sensitive to changes in climate (Sonwa et al. 2012).

The types of activities that have been prioritized, particularly by government institutions, have been related to their interaction with international institutions and the international discourse on climate change mitigation and adaptation. The development of the NAPA raised the level of awareness particularly in CAR. The recent emphasis on the role of the Congo Basin forests in mitigation of climate change through REDD+ appears to have become the major driver in building awareness of climate change in all the three countries. Government and civil society institutions are interested in the opportunities presented by REDD+,

and are also concerned about its challenges in terms of implementation (Brown et al. 2011). While REDD+ preparation was the most advanced in DRC, action to take advantage of opportunities or address apparent challenges is still at an early stage. This is not surprising given the human, technical, and infrastructural challenges in each of the three countries. Given the global significance of the Congo Basin forest, REDD+ can be expected to dominate the discourse on climate change in the region in the near future.

In contrast, the forestry sector did not yet see climate change as a priority, perhaps because it is not currently affecting the economic viability of their companies. However, there was growing interest in REDD+ as the international discussion developed over the period of the research. The companies interviewed, particularly in Cameroon had been certified, or were in the process of becoming certified, as practitioners of sustainable forest management, which they said was a result of pressure from their European customers. Similar pressure regarding climate change mitigation related to REDD+ could result in it becoming more of a priority for forestry companies in the future.

### Enhancing Adaptive Capacity

Similar to other parts of Africa, the research countries are considered to have a high level of social vulnerability to the direct effects of climate change because of many factors, such as level of poverty and the level of corruption (Adger and Vincent 2005; Busby et al. 2010). As conflict-affected developing countries with a history of poor governance, both CAR and DRC have specific challenges in enhancing their capacity to adapt to climate change. They suffer from weak or the absence of infrastructure, and minimal government operating budgets which hinder communication and travel. Recent conflicts have compounded this. Educational systems are poor, because of lack of investment and political instability. This has led to a crisis in human capital at all levels. While there had been some international investment in sustainable development initiatives before and during the conflict, these initiatives have suffered because of the instability created by the conflict which is ongoing in some areas of both countries. Cameroon is somewhat better since it has not had a history of armed conflict, but it still faces limitations of human, technical, and physical capacities required to respond to the challenges and opportunities presented by climate change and REDD+.

The linkages of international organizations, international NGOs, and some national NGOs, with the government are playing an important role in enhancing the capacities of the countries to respond. Climate change has

clearly been an issue that has fostered the development of such interinstitutional linkages. However, these linkages remain underdeveloped, which limits ongoing collaboration. The lack of strong institutional linkages on climate change has also been noted in other African countries (Koch et al. 2007; Owuor et al. 2011). Since the development and implementation of REDD+ agreements requires the ongoing collaboration of different groups, the interactions between different institutions at different scales may increase. The regional linkages fostered by COMIFAC could play an important role in the capacity building and harmonization of policies and practices in these areas.

Forest-dependent communities and indigenous peoples will be affected by climate change and REDD+. Research has shown that adaptation and mitigation goals are more likely to be achieved if there are democratic and interactive processes for local participation (Gebara 2013). There has been some progress, particularly due to the international requirements that the NAPA and REDD+ processes be “inclusive of the key national stakeholders” (Forest Carbon Partnership Facility 2011; UNFCCC 2012; UN-REDD Programme 2013). The formation of informal networks, especially in the early stages, fosters exchange of different types of knowledge which builds adaptive capacity (Pahl-Wostl 2009). Therefore, it is important that further engagement with the local population takes place. Since communities are not homogenous, this will require recognition of the different vulnerabilities and capacities among groups of stakeholders. It is also necessary to ensure that those who are included in the process have a voice or the ability to influence outcomes. Agency requires that an actor that participates in decision-making have the capacity to make decisions or influence the decisions of others. It intersects with issues of power, norms, and knowledge (Biermann et al. 2009).

Nongovernmental organizations already play a key role in linking higher level institutions with communities in decentralized forest management in the Congo Basin (Brown et al. 2008). Therefore, it is not surprising that international and national NGOs, who already have close relations in working with communities, are providing the avenue for forest communities and indigenous peoples to have input to the REDD+ process. Since local NGOs are sometimes limited in their knowledge of climate change, this reality requires that capacity be built in these local NGOs on issues relevant to climate change. However, it remains important to continue to build the capacities of forest communities and indigenous peoples with respect to understanding their rights. This will empower those who are typically marginalized in decision-making in all the three countries, to share their knowledge, and have an effective voice on climate change issues. The history of participatory development and resource management has



shown that despite inclusive language, efforts are not always successful in engaging marginalized groups. Traditionally powerless groups, like women and minorities, are often limited in their access and effectiveness by informal rules, norms, and bias that act as barriers against their participation in decision-making (Mvondo 2006; Bandiaky and Tiani 2010). While some important efforts have been made to engage local communities, these initiatives need to be expanded and strengthened. Such engagement will increase adaptive capacity as it will provide the opportunity for sharing of knowledge and concerns and improve overall outcomes.

## CONCLUSIONS

Africa is expected to have enhanced vulnerability to climate change as a result of increasing temperatures, dependence on natural resources, and a low degree of adaptive capacity. The Congo Basin forest of Central Africa has also become a focus for REDD+ because of its carbon reserves which are of global significance for regulating greenhouse gas emissions. Given the diverse challenges and opportunities of climate change, particularly for forest-dependent communities, it is essential to have a better understanding of the institutional capacity of the system to adapt. The existence of institutions and networks that learn and store knowledge and experience, create flexibility in problem solving, and balance power among interest groups enhances adaptive capacity. Therefore, this research aimed to analyze the perceptions and responses of decision-makers within diverse national, regional, and international institutions, and their interinstitutional linkages related to climate change in the three Congo Basin countries: Cameroon, CAR, and DRC.

Results showed that while all institutions are generally aware of climate change and its potential negative effects on the local population, concrete action to adapt is at an early stage. Many institutions, particularly in DRC, were focused on mitigation through REDD+. Results show that some interinstitutional links have been created in the process of the development of policy documents related to climate change or REDD+. However, it is of concern that these networks remain underdeveloped, which weakens the response. In particular, the limited linkages with different levels of government and local communities and indigenous peoples constrain adaptive capacity and could increase the vulnerability of local populations. In order to build adaptive capacity, it is essential that there be a committed, integrated response that cuts across state–private sector–civil society boundaries and that provides for effective inclusion of local people. While national and international NGOs are playing their respective roles in

linking government and local communities, it remains important to continue to build the capacities of forest communities and indigenous peoples. This would empower those, who are typically marginalized in decision-making, to share their knowledge and have an effective voice on climate change issues. In order to achieve progress, particularly in DRC and CAR, increased efforts need to be made to establish a context of political stability, security, and good governance.

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