

Synergizing climate change mitigation and adaptation in Cameroon

An overview of multi-stakeholder efforts

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Faith Ngum

Independent Consultant, Yaoundé, Cameroon

Dieudonne Alemagi

FOKABS Inc, Ottawa, Canada

Lalisa Duguma

*Sustainable Landscapes and Integrated Climate Actions,
World Agroforestry Centre, Nairobi, Kenya*

Peter A. Minang

World Agroforestry Centre, Nairobi, Kenya

Anderson Kehbila

International Institute of Tropical Agriculture (IITA), Kinshasa, Congo, and

Zac Tchoundjeu

World Agroforestry Centre Regional Office, Yaoundé, Cameroon

Abstract

Purpose – This paper aims to examine the policy environments, institutional arrangements and practical implementation of some initiatives undertaken by the Government of Cameroon, together with some relevant stakeholders, in addressing climate change mitigation and adaptation at various levels in the country, which are prerequisites to promote synergistic ways of addressing climate change mitigation and adaptation.

Design/methodology/approach – Using a qualitative approach to data collection, the paper draws upon information collected from relevant literature and interviews with 18 key country resource personnel.

Findings – Results revealed that most reviewed policies/programs/strategies do not mention “climate change” explicitly but propose some activities which indirectly address it. Interaction is fair within the government ministries but weak between these ministries and other institutions. Inadequate financial resources are being opined as the most important challenge stakeholders are (and would continue) facing as a result of adopting integrated approaches to climate change. Other challenges include inadequate coordination, insufficient sensitization and capacity building, ineffective implementation, inadequate compliance, lack of proper transparency and inadequate public participation. To redress the aforementioned constraints and challenges, the paper concludes by outlining a number of recommendations for policy design.



Originality/value – The following recommendations were made: create a national technical committee to oversee and provide scientific guidance to the government on synergistic approaches; promote private sector investment and sponsorship on synergistic approaches; create local awareness, etc. It is important to underscore that minimal studies have been conducted to analyze multi-stakeholder perspectives on synergies between climate change mitigation and adaptation in Cameroon. This study attempts to bridge this major gap.

Keywords Adaptation, Climate change, Mitigation, Cameroon, Synergy

Paper type Research paper

1. Introduction

In the world today, climate change is at the center of most global debates. While the Intergovernmental Panel on Climate Change (IPCC) attributes these climatic changes to anthropogenic emissions of greenhouse gases (GHGs), a changing climate has and will continue to have adverse effects on agro-ecosystems and societies in multiple ways, with negative consequences dominating (Rosenzweig and Tubiello, 2007). Thus, the central question is no longer whether the climate will change but rather how we should respond. As a response, the United Nations Framework Convention on Climate Change (UNFCCC) has identified two options: mitigation, “an intervention that comprises all human activities aimed at reducing the emission sources or enhancing the sinks of greenhouse gases,” and adaptation, “any adjustment in natural or human system in response to actual or expected climatic stimuli or their effects, aimed at moderating harm or exploiting beneficial opportunities” (Klein *et al.*, 2005, p. 580). Although the benefits of adaptation and mitigation have been well documented, differences also exist in their objective/nature, co-benefits and limits, who decides and who pays the price versus who receives the benefits of mitigation and adaptation (Wilbanks *et al.*, 2003; Klein *et al.*, 2005; Locatelli *et al.*, 2011). Regardless of which global actions are taken to slow GHG emissions (e.g. clean development mechanisms [CDM] and REDD+ [reducing emissions from deforestation and forest degradation and fostering conservation, sustainable management of forest and enhancement of carbon stocks]), cumulative past emissions have already committed the planet to a certain degree of climate change and associated impacts (Rosenzweig and Tubiello, 2007), thus the need to adapt.

However, although the UNFCCC refers to both mitigation and adaptation, the development of their activities has been dealt with as separate matters with adaptation highly ignored in favor of mitigation (Verchot *et al.*, 2007). In the first decade of the UNFCCC, there was hope that mitigation efforts as a first line of defense could be sufficient to address climate change, not requiring intensive active adaptation. With that hope gone, coupled with the exacerbated vulnerabilities of several developing nations, adaptation has slowly, but steadily, moved up the scale to international policy attention as it has become clear that some impacts of climate change will spread beyond national borders (Duguma *et al.*, 2014a). Thus, this paper examines efforts that have been made by stakeholders in Cameroon to promote synergy between climate change mitigation and adaptation and prescribed recommendations for improvement.

2. The case for synergizing mitigation and adaptation efforts in Cameroon

Before the Paris Agreement in 2015, international policies primarily focused on mitigation, as the need for adaptation was perceived as a failure of mitigation or a way to weaken mitigation efforts (Wilbanks *et al.*, 2003; Klein *et al.*, 2005; Locatelli *et al.*, 2011). It was also argued that the implementation of synergy measures will encounter institutional and

organizational complexity at the international and national levels, and forcing them together might be counterproductive (Locatelli *et al.*, 2011). However, as climate change seems inevitable, posing a risk for people and the planet, both mitigation and adaptation are important; the former attempts to reduce future impacts and the later effects short-term impacts (Wilbanks *et al.*, 2007). Although mitigation and adaptation measures were previously handled separately, there is a growing argument that synergistic approaches to adaptation and mitigation could bring substantial benefits at multiple scales (Duguma *et al.*, 2014a). It is therefore imperative that to address the impacts of climate change, strategies combining mitigation and adaptation are selected. Thus, as developing countries take on a more active role in climate change mitigation and simultaneously realize their great need for adaptation, pursuing synergies between the two measures is gaining impetus as a viable option for their response to climate change (Duguma *et al.*, 2014a, 2014b).

Klein *et al.* (2005), representing some of the few pioneer literatures on synergy, stated that synergies are created when measures that control atmospheric GHG concentrations also reduce adverse effects of climate change, or vice versa. According to the IPCC, synergy refers to the “intersection of adaptation and mitigation so that their combined effect is greater than the sum effect if implemented separately” (IPCC, 2007). Duguma *et al.* (2014a) described synergy between mitigation and adaptation as “an approach in which both mitigation and adaptation measures are addressed without any prioritization, mainly undertaken within a systems-thinking context to address climate change issues”. Some arguments in favor of synergistic approaches have been explored in the past decades. For instance, Klein *et al.* (2007) posited that synergies between mitigation and adaptation can increase the efficiency of climate change measures, making it more attractive to funding agencies. Dang *et al.* (2003) also argued that if the balance between mitigation and adaptation could be achieved, climate policies may be socio-economically efficient and may even foster sustainable development. Thus, synergy approach is gradually gaining impetus as a basis for future climate policy.

As climate change is projected to hit the poorest the hardest, it is particularly important that developing countries such as Cameroon pay particular attention to the management of its natural resources, especially its large expanse of dense tropical rainforests of the Congo Basin, which can play a vital role toward mitigating and adapting to climate change (Bele *et al.*, 2011). In Cameroon, as in other countries of the Congo basin region, policy processes and activities related to climate change have been hitherto geared mostly toward mitigation and related questions, with limited concern about adaptation issues (Chia *et al.*, 2015). In 1992, Cameroon signed the UNFCCC convention and ratified it in 2004, signifying its readiness to contribute in the reduction of GHG emissions. This provided a basis for concerted international action to mitigate climate change and adapt to its impacts (Bele *et al.*, 2011). Cameroon has also signed and ratified the Kyoto Protocol and has been taking part in deliberations leading to future regional and global climate change response processes (Chia *et al.*, 2015). Like most countries in the Congo Basin, Cameroon is well represented in REDD/REDD+ debates and is also engaged in the REDD+ readiness process (Alemagi *et al.*, 2014). Also, in 2005, the government developed and submitted the country’s First National Communication to the UNFCCC, principally focusing on climate change mitigation and related issues. Additionally, as Bele *et al.* (2011) opined, Cameroon’s Forest and Environment Support Program document and its Poverty Reduction Strategy Paper (PRSP) is replete of forest management actions required to respond to the effects of climate change. As of 2011, Cameroon was yet to design a formal institutional framework for climate change adaptation (Chia *et al.*, 2015). However, as the impacts of climate change are being felt, adaptation is moving up the scale of climate change discourse in Cameroon. In June 2015, Cameroon

validated a national adaptation plan for climate change (INDC, 2015). Furthermore, in addition to mitigation-related issues, adaptation strategies to curb the impacts if climate change were proposed in the country's Second National Communication to the UNFCCC (NC2) submitted in September 2015 (MINEPDED, 2015). This is a step toward synergy, further accentuated by propositions to integrate mitigation and adaptation strategies in national plans and development policies (Cameroon's INDC, 2015).

However, the bulk of the current research discusses synergy at the theoretical and conceptual level without pointing out how it can be planned and implemented. Despite the promising potential of the synergy concept and the salient need for synergistic approaches for addressing climate change, knowledge on how the approach is being implemented "on-the-ground" in Cameroon is lacking, as research conducted thus far is restricted on either mitigation or adaptation with little emphasis on synergies between mitigation and adaptation (Nkem *et al.*, 2010; Brown *et al.*, 2011; Sonwa *et al.*, 2012; Somorin *et al.*, 2014; Awono *et al.*, 2013; Chia *et al.*, 2016). Therefore, the objective of this paper is twofold:

- (1) analyze efforts made by the Government of Cameroon and other stakeholders to promote synergies between climate change mitigation and adaptation; and
- (2) suggest possible options for promoting these synergies in Cameroon.

3. Methods

To accomplish the objective of this study, qualitative methods were used for analysis. A number of metrics were adopted from a study by Duguma *et al.* (2014a) as indicators of potential synergy between adaptation and mitigation. These indicators were the basis for the two-pronged approach applied in data collection, namely, document review and interviews.

3.1 Metrics

A number of metrics were adopted from a study by Duguma *et al.* (2014b) as indicators of potentials for synergy between mitigation and adaptation. These relate to national-level policy-making and implementation processes and are aimed at assessing to what extent synergy is considered at this level. The following metrics were adopted:

- *National-level laws, policies and strategies for climate change*: Climate change-specific documents, laws, policies and strategies governing sectors that significantly contribute to and/or are affected by climate change were analyzed for whether and how they captured climate change and synergy.
- *Projects for synergy*: Respondents were asked to provide details of projects which addressed both mitigation and adaptation to gain a better understanding of components that were crucial to their implementation, success and possible scale-up.
- *Implementing institutions and associated funding*: State and non-state institutions were surveyed to gain an understanding of their role in addressing climate change. The study limited itself to institutions at the national level given their decision-making roles in climate change issues. They were drawn from various government ministries, international organizations, non-governmental organizations (NGOs) and research bodies.

3.2 Data sources

Document review: A synthetic review of some national documents was carried out to gain insights on whether and (if applicable) how climate change is addressed. These documents included government legislations, policies, strategies, programs and plans. A total of nine of these were reviewed. Furthermore, journal articles, civil society reports and working papers were reviewed to gain further insights on synergies between climate change mitigation and adaptation.

Interviews: Semi-structured open-ended interviews were conducted with state and non-state actors from institutions (e.g. the Ministry of Forestry and Wildlife [MINFOF]; the Ministry of Environment Protection of Nature and Sustainable Development [MINEPDED]; the Ministry of Agriculture and Rural Development; the Ministry of Livestock Fisheries and Animal Industry; Ministry of Water Resources and Energy; the Ministry of Social Affairs; the Ministry of Territorial Administration and Decentralization; and the Ministry of Social Affairs) whose mandate include (or is greatly affected by) climate change. In total, 18 key country resource personnel were interviewed. Specifically, they included representatives from the government, NGOs, private sector and university institutions; they were strategically selected for the following reasons:

- Government institutions are often involved in formulating laws, policies, strategies and programs to address climate change.
- NGOs and private sector are widely engaged in implementing climate change related projects.
- Universities are engaged in climate change through research and training activities.

Interview protocols focused on institution and actors, role, participation, network, motivations, challenges and projects/activities for synergies between climate change mitigation and adaptation.

Data gathered from document review were analyzed for their consideration of whether “climate change” was mentioned in the documents, and if so, to what context it was addressed. Those that integrated both aspects of climate change without a significant bias for either were considered to promote synergy between the two. Data from the interviews complemented the document review, with summary statistics generated using the Windows Excel© software.

4. Results

4.1 Enabling factors for synergy

4.1.1 Policies, laws and strategies. Major policy documents in Cameroon such as the 1994 Forest Law, the 1995 Forest Policy, the 1996 Framework Law on Environment, the PRSP, the 1999 Agricultural Policy, the REDD + Readiness Preparation Proposal (REDD + RPP) and the first National Communication to UNFCCC (NC1), pay little attention to climate change adaptation. As shown in [Table I](#), with the exception of the REDD + RPP, sectoral policies, laws and strategies are void of tangible reference to climate change but make provisions for some activities that directly or indirectly address climate change. Although there is no specific law on climate change in Cameroon, the 1996 Framework Law on Environment sets a basis for all environmental policies, including steps taken to reduce GHG emissions. According to this framework law, “every person shall have a right to a healthy environment, the protection and improvement of which shall be the duty of the state and every citizen”. Furthermore, the forest law and policy obliges the state to “protect the national forest heritage” and “ensure resource (forest) renewal through regeneration and

Law/policy/strategy	Vision/goal	How climate change is addressed
1995 Forest Policy (<i>void of the word climate change</i>)	Preservation of the environment and its resources through the protection of national forests	Forest regeneration through tree planting/reforestation Set up a national policy on environmental management Promote agroforestry activities in slash and burn agriculture and environmental protection Create forest reserves which cover a minimum of 30% of the national territory
1994 Forest Law (<i>void of the word climate change</i>)	Lay down forestry, wildlife and fisheries regulations, with a view to attaining the general objectives of the forestry, wildlife and fisheries policy, within the framework of an integrated management	Forest conservation and regeneration, Re-afforestation, Natural or artificial regeneration Forest protection
PRSP (<i>void of the word climate change</i>)	Ensuring sustainable conservation and use of the said resources and of the various ecosystems	–
1999 Agricultural policy (<i>void of the word climate change</i>)	Provide a framework for domestic policies and programs, as well as for foreign assistance, with the overall aim of reducing poverty Ensure food security of the populations and establish the bases for the launch of the agricultural revolution	–

(continued)

Table I.
Characterization of
sector-specific
policies with regard
to climate change

Table I.

Law/policy/strategy	Vision/goal	How climate change is addressed
First National Communication to UNFCC	Presents an overview of national circumstances, particularly GHG inventory, negative impacts, analyses mitigation strategies, vulnerability and adaptation assessments	Management of protected areas Rational management of marine and coastal resources Integration of an environment component in the spatial planning policy Protection, improvement and conservation all forest resources Referral to cheap alternative energy sources (other than timber) Reforestation Reduce GHG emission and sequester Carbon The practice of fallow Use of improved plant varieties more tolerant to climate hazards Crop diversification and rotation, Adjust farming calendar Creation of reserves and delineation of mangrove removal areas (coastal zones)
1996 framework law on environment (<i>void of the word climate change</i>)	ensure sustainable development through environmental protection and sustainable use of natural resources	Management of protected areas Rational management of marine and coastal resources Integration of the environment component in the spatial planning policy
REDD+ Readiness Preparation Proposal	Present initiatives and projects which can add to the development of activities aimed at sharing information, raising awareness and training all the stakeholders in the REDD+ process	Train stakeholders on concepts on CC and REDD+, as well as the role of forest in mitigating CC Construct and adapt various tools and equipment to provide the stakeholders with relevant information concerning climate change and REDD+

reforestation so as to sustain its potential". The interpretation of this has been stretched to include carbon sequestration and thus climate change.

Although government action and commitment still need to be visibly strengthened through adopting an integrated climate change policy option, the submission of the REDD + RPP in 2013 and the National Adaptation Program of Action (NAPA) to the UNFCCC is expected to "position" the country for future access to climate change financing for addressing synergy challenges at the national level.

4.1.2 Practice dimension (projects). Although some national documents propose various activities (projects) which directly or indirectly addresses climate change (Table II), the sampled institutions/organizations assert having activities and projects exhibiting climate change mitigation and/or adaptation with potentials for synergy (Table III). These projects details reveal some of the collaborations between different actors. Although much of the financing and to a lesser extent technical support still comes from foreign governments and development partners, local institutions take a lead in implementation. Generally, besides being the project initiators, there also seems to be great involvement of government

Policy/strategy	Program/projects/activities related to climate change
1994 Forest Law	Annual inventory of volume of trees to be logged
First National Communication to UNFCC	Develop, inform and sensitize the population on a National Action Plan to Fight against desertification Develop an ozone program aimed at progressively controlling and eliminating chloro-fluoro-carbon in the atmosphere National capacity building and development of activities geared at sensitizing the public on issues of climate change Develop projects (an activities) geared at sequestering carbon and reducing GHG emission
1996 Framework Law on Environment	Creation of a database, website and information system on climate change Development of sectoral projects for climate change mitigation and adaptation National capacity building and development of activities geared at sensitizing the public on issues of climate change
REDD+ Readiness Preparation Proposal	Identification of the present and future causes of deforestation and forest degradation by agro-ecological zone and by sector Analysis of the REDD+ initiatives/pilot projects developed by civil society Development of plantations with a direct link to afforestation Promotion of crop rotation and reclamation of fallow land Fertilization through the development of ecological farming techniques, particularly the development of agroforestry, composting, cover cropping methods/systems The improvement of carbonization techniques (improved haystack for carbon production) Development of renewable and alternative energies Development of plantations/reforestations for energy purposes (in particular in the arid regions) Strengthening the regulatory framework for forestry to adapt it to all agro-ecological zones and to all ecosystems including mangroves Reforestation, restoration and replanting for the sequestration of carbon and the recycling of wood for various purposes in function of the agro-ecological zone Pilot projects that allow reduction of pressure on resources and thus on GHG emissions in various agroecological zones

Table II.
Proposed activities (projects) directly or indirectly addressing climate change

Table III.
National-level
projects with
synergy potential

Project name	Project goal/objective (or brief description)	Implementing agency	Project initiator	Funder	Partners
PACC	The project seeks to: Create a National adaptation program Develop a national Action plan for climate change adaptation Multiplication of National adaptation plan The project seeks to promote the sustainable management of rainforests and savanna lands: Increase local community involvement in and benefits from sustainable management of natural resources, Improve the institutional and organizational capacity to implement new policies and regulations for forest management and timber industry development, Enhance conservation of biodiversity, Supply environmental services of national and global relevance, Assist in the finalization of the National adaptation plan, and Promote multiplication of National adaptation plan	UNDP (United Nations Development Programme)	MINEPDED	Japanese government	MINADER, MINEPIA, Civil society, NGOs
PSEF		Japan International cooperative system	MINEPDED	Japanese government	MINEPDED MINFOF
Program with an integrated approach to climate change	Mitigation of Climate Change by developing a national strategy for REDD+	UNDP MINEPDED	CN-REDD+ MINEPDED	Japanese Government	-

(continued)

Project name	Project goal/objective (or brief description)	Implementing agency	Project initiator	Funder	Partners
Ngoyla Mintom Project	Has three main components; <i>Component 1</i> : strengthen government and civil society capacity for participatory planning and management of the core areas that are proposed for conservation and low impact community <i>Component 2</i> : design and implement a livelihood support mechanism <i>Component 3</i> : design and implement a long-term monitoring and Evaluation system for the Ngoyla Mintom Forest Block	–	MINFOF	GEF (Global Environmental Fund)	MINEPDED MINEPAT
Support to reforestation activities	The project aims at increasing existing forest cover by supporting reforestation activities and forest regeneration	–	MINFOF	Government of Cameroon	–
“Project Sahel Vert”	The project aims at fighting desertification in the Savannah zones of the Northern regions of the country through reforestation and afforestation	MINEPDED, Local NGOs	MINEPDED	MINEPDED	Local NGO
Strategy for the modernization of wood energy	Faced with the present challenges of illegal wood exploitation and increase demand for wood energy, the project seeks to develop and integrate a value chain for wood energy into the national energy policy by promoting the production and utilization of renewable energy while ensuring a sustainable management of forest resources and environmental protection	GIZ/ProFSFE Maroua	GIZ	GIZ (Deutsche Gesellschaft für Internationale and CIDA (Canadian International Development Agency)	MINFOF, MINEPDED, MINEE

(continued)

Table III.

Table III.

Project name	Project goal/objective (or brief description)	Implementing agency	Project initiator	Funder	Partners
Carbon Sequestration	Increase existing carbon stocks through reforestation	National Water and Forestry School	National Water and Forestry School	AFD (the French Development Agency)	-
Rehabilitation and sustainable management of mangroves ecosystems	Faced with high degradation of the mangrove ecosystems, the project aims at proposing a strategy that will enable the Government of Cameroon to develop and implement a national strategy and policies for mangroves that will enable the sustainability of this resources while improving the living conditions of the local population	Cameroon Ecology	CAMECO/ REFACOF Platform	ITTO (International Tropical Timber Organization) and FAO	Municipal councils
Governance of forest initiatives		Cameroon Ecology	CAMECO/ REFACOF Platform	WRI (World Resource Institute)	-
Capacity building of communities		Cameroon Ecology	CAMECO/ REFACOF Platform	CIDA (Canadian International Development Agency) German Government	-
Support to coastal region in their effort on climate change adaptation conservation and sustainable utilization of forest resources		MINFOF	MINRESI	World Bank Global Financing Facility Funds Germany	MINEPDED
Capacity building on climate change			MINRESI	Germany	-
Integrated fight against climate change			MINRESI	Germany	-
Second National Communication on climate change		UNEP (United Nations Environment Programme)	MINEPDED	World Bank Global Financing Facility Funds	Government ministries

institutions in providing technical backing. With the exception of MINFOF and MINEPDED funding synergy activities, capacity building, researching, facilitation (of participation in climate change dialogue platforms/conferences) and implementation of projects geared toward synergy were cited by the respondents as synergy activities of their institutions.

4.1.3 Institutional arrangements. Respondents pointed out that besides a national REDD steering committee (co-chaired by MINEPDED and MINFOF) which exists, currently, no national committee/institution in charge of climate change exists in Cameroon. The responsibility of climate change is therefore embedded within MINEPDED with limited coordination and support from other relevant ministries to mainstream climate change across sector programs. Thus, most knowledge and capacity on climate change is restricted to a small number of people/staff within MINEPDED and to a lesser extent MINFOF and will therefore take time for other sectorial ministries to incorporate climate change into their strategies and development plans.

Nevertheless, the design and implementation of climate change projects, environmental planning and reporting, national communications on climate change, implementation of guidelines for the IPCC, advice and monitoring of documents linked to REDD+ and climate change were all cited as roles institutions (such as MINFOF and MINEPDED) play in general in addressing climate change in Cameroon. In addition, capacity building and elaboration of projects, monitoring and measuring carbon fluxes and addressing issues linked to climate change were equally mentioned. Other key institutional mandates highlighted by respondents included facilitating participation of communities in activities linked to climate change and defining forest policies with greater incidence on climate change mitigation and adaptation.

However, although most respondents stated that their institutional mandate was focused on both mitigation and adaptation with no bias for either strategy, awareness of climate change, both inside and outside of government as of now, is largely limited to an understanding of environmental and climate related impacts at the local levels.

4.2 Actor participation for synergy

Several respondents stated that they participate at the national level to address climate change. Some examples of their roles at the national level included the provision of technical support, acting as the focal point on issues related to climate change, serving as the president or chairperson on climate change issues, crafting the REDD+ plan of action and strategic coordination. That said, it is important to note that although communication within members of the national-level committees addressing climate change is done on a monthly basis, climate change response is facing weak information dissemination and support between actors especially, state actors, and weak institutional links between state actors and non-state actors. This is shown in the frequency of interaction between relevant national-level actors, as presented in [Table IV](#).

4.3 Actor to actor networks for synergy

Most respondents cited the government (especially MINEPDED) as the most influential actor in integrated climate change policy implementation. Furthermore, they cited influencing political debates, support for programs and projects relating to climate change, lobbying, mobilization of funds, knowledge and mastery of the climate change, institutional mandate and expertise and official authority responsible for REDD+ implementation as criteria that were used for this selection. Although MINEPDED is the major institution defining and implementing all climate response policies and actions within the national and international arenas, with forest taking central stage in the present and future climate

Table IV.
Interaction between
climate change
actors in Cameroon

Actors	Private company	MINEPDED	MINEPIA	NGO	MINFOF	MINRESI	MINADER
Ministry of Environment Nature Protection and Sustainable Development (MINEPDED)	Often	–	Always*	Always	Always	–	Often
Ministry of Energy and Water Resources (MINEE)	–	Often	Rarely	Sometimes	Sometimes	Sometimes	–
Ministry of Forests and Fauna (MINFOF)	Sometimes	Always	Sometimes*	Always	–	Rarely*	Always*
Ministry of Agriculture and Rural Development (MINADER)	Rarely	Often	Often	Sometimes	Rarely*	Sometimes	–
Ministry of Finance (MINFI)	–	Often	Never	Rarely	Rarely	Rarely	–
Ministry of Livestock, Fishery and Animal Industry (MINEPIA)	–	Often*	–	Sometimes	Rarely*	Sometimes	–
Ministry of Scientific Research and Innovation (MINRESI)	Rarely	Often	Sometimes	Rarely	Sometimes*	–	Sometimes
Ministry of Higher Education (MINESUP)	Rarely	Often	Never	Rarely	Sometimes	Sometimes	–
Technical Secretariat of the REDD+ Steering Committee (STR)	Always	Often	Always	Always	Sometimes	Sometimes	Often
IPCC Focal point	Always	Often	sometimes	Always	Rarely	Always	–
National Secretariat for CDM	–	Often	Never	–	Rarely	–	–
UNFCCC Focal Point	Always	Often	Sometimes	Always	Sometimes	–	–

Note: *Frequency varies with respondent's opinion

change regime, MINFOF has become a relevant actor. However, how the two ministries and other sectorial ministries operate to guarantee better climate response relating to mitigation and adaptation in the forest sector still remains a big challenge. International organizations such as the UN and the World Bank were also rated as the most influential organizations currently promoting National Appropriate Mitigation Action, NAPA, REDD+ and national climate change policy.

4.4 Motivations and drawbacks to synergy

Almost all the respondents asserted that the synergy approach to climate change is more appropriate than the segregated approaches to mitigation and adaptation. One of the main reasons underpinning this assertion included the fact that climate change was a reality, and thus, there was a need to mitigate and adapt to its impact simultaneously. Other reasons included the fact that there are certain adaptation actions such as agroforestry that favor mitigation and adaptation. Moreover, apart from the fact that better results are obtained, it is more coherent and suitable to adopt a synergistic approach to climate change to avoid duplication of activities, the waste of financial, technical and material resources and also create the chance of mainstreaming climate change into other development endeavors.

As both mitigation and adaptation have a cost associated to it, most respondents stated that financial incentives are necessary to move toward an integrated approach to climate change. Inadequate financial resources or funding was cited as one of the most important challenges stakeholders are (and would continue) facing as a result of adopting integrated approaches to climate change. Other challenges as posited by the respondents included inadequate coordination, insufficient sensitization and capacity building, ineffective implementation, inadequate compliance, lack of proper transparency and inadequate public participation. Overall, respondents were of the view that sensitization, education and training, promotion and financing of relevant pilot projects, knowledge generation, effective implementation of relevant laws and policies, data sharing, collaborative action between sectorial administration and stakeholders and financial support to the private sector constitute effort that should be undertaken to address climate change issues effectively, especially in the developing countries land use sector.

5. Discussion

While it seems that climate change is just coming to the forefront as a priority in Cameroon, the government is largely focused on mitigation as per its laws, policies and strategies, as well as its submission of the NC1 and development of its national REDD+ strategy (after the validation of its REDD R-PP 2012). Although the government is also preparing its first NAPA, which is expected to increase understanding around adaptation needs, Cameroon is yet to design a formal institutional framework for climate change adaptation (Davies, 2011; Chia *et al.*, 2016). Although the government is well aware of the eventual impacts of climate change on various sectors, study results revealed that there is currently no specific program on climate change adaptation in Cameroon.

Study results further revealed that the institutional mandate of most respondents was focused on both mitigation and/or adaptation with no bias for either strategy. This observation reflects the fact that harnessing synergies provide the necessary capacity and opportunity to effectively adapt and mitigate (Smith and Olesen, 2010; Ravindranath, 2007; Bizikova *et al.*, 2007). As Illman *et al.* (2013) explain, concerted efforts aimed at harnessing adaptation and mitigation strategies have great potential in building the necessary knowledge base, institutional capacity and sectoral collaboration to simultaneously guide economies toward low/zero-emission pathways and accelerate adaptation and required

resilience building. Thus, the potential and need for integrating adaptation strategies and practices in mitigation projects, as well as establishing a bridge between science, policy-making and development cooperation, cannot be understated (Ravindranath, 2007; Bizikova *et al.*, 2007).

Additional insights were gained by investigating stakeholders' participation in harnessing synergy. Interestingly, although cross-sectorial interaction is weak, several respondents stated that they have participated in national-level committees and workshops to address climate change. This appears to support Tompkins and Adger's (2004) assertion of collective stakeholder action to inform understanding of climate response capacity. Thus, harnessing the strengths of private, public and nonprofit partners through multi-stakeholder partnership is critical in addressing existing regulatory, participation, resource and learning gaps (Kehbila *et al.*, 2014; Pinksea and Kolka, 2012). Strengthening partnerships between government, the private sector and civil societies is therefore crucial in successfully harnessing synergy between mitigation and adaptation measures (Huong and Dhakal, 2013). Such partnerships promote better decision-making by ensuring that the perspectives of the main actors concerned with regards to a particular decision are heard and incorporated at all stages through dialogue and consensus building.

With regard to stakeholder power, most respondents cited government (especially MINEPDED), as well as the UN and the World Bank, as the most influential actor in promoting national mitigation actions and integrated climate change policy implementation. As Pocklington (2015) puts it, governments have the legal obligations to protect their citizens from the deleterious impacts of climate change. With regards to the UN mandate, member states have veto powers in any climate negotiations based on the principle of consensus building (Dimitrov, 2010). That said, the contribution of science is a key component in the climate negotiation process, although a number of politicians appear to be disinterested and even uninterested in the science of climate change. From that premise, the creation of a national technical committee to oversee and provide scientific guidance to the government on the synergies between adaptation and mitigation is vital.

With regard to the constraints on synergy, the study results revealed that a majority of institutions rated inadequate financial resource or funding as the most important challenge in implementing integrated approaches to climate change. This view is supported by Illman *et al.* (2013), Xiang *et al.* (2001) and Bowen (2011), who pointed to the role of private and public finance as crucial in building enabling environments and capacities to harness mitigation and adaptation strategies. Despite this, financial constraints have stalled the development and implementation of mitigation and adaptation projects in most African countries (Thomas *et al.*, 2010; Grubba, 2011), particularly with the advent of the credit crunch (Grubba, 2011). Thus, promoting private sector investment and sponsorship, as well as committing funding for joint mitigation and adaptation projects from relevant ministries and international organizations, is considered vital. Also, Cameroon not being a member of the LDCs initiatives, still has financial opportunities to explore through the UNFCCC by accelerating the slow process of preparing its national adaptation program on the one hand and developing policy options that fit into the operational guidelines of the different mitigation financial mechanisms (e.g. Norway's International Climate and Forests Initiative) on the other hand (Chia *et al.*, 2015).

Other challenges as posited by the respondents included inadequate coordination, insufficient sensitization and capacity building, ineffective implementation, inadequate compliance, lack of proper transparency and inadequate public participation. These findings are not different from those indicated in previous studies by Alemagi *et al.* (2014), Fünfgeld (2010), Thomas *et al.* (2010), Smith and Olesen (2010) and Biesbroek *et al.* (2011), who pointed

to structural, educational and institutional challenges, as well as administrative and governance issues, such as the lack of capacity and coordination, ambiguity of the legal system, conflicting timescales, fragmentation, lack of awareness and communication, corruption and the lack of motives and willingness to act, as the main constraints to implementing integrated approaches to climate change. In this vein, developing effective and creative community awareness and enforcement programs and integrating mass media coverage to communicate the right message, as well as involving stakeholders in joint decision-making at all stages and various aspects of mitigation and adaptation projects, are critical.

6. Conclusions and recommendations

The analyses presented in this paper highlight efforts made by the Government of Cameroon and other relevant institutions to promote synergies between climate change mitigation and adaptation. The results revealed that although policies, laws, strategies and institutional arrangements relevant for promoting an integrated approach to climate change are insufficient in Cameroon, some promising projects and activities that harness great potential for synergies exist. Furthermore, results also showed that interaction between the government ministries and NGOs was poor, and inadequate financial resources or funding was the major challenge stakeholders are and would continue to face as a result of adopting integrated approaches to climate change. Other challenges that may impede the adoption of integrated approaches to climate change included inadequate coordination, insufficient sensitization and capacity building, ineffective implementation, inadequate compliance, lack of proper transparency and inadequate public participation.

With all that has been said, specific recommendations for overcoming these constraints/challenges and promoting synergy between climate change mitigation and adaptation in Cameroon have been identified in this paper:

- A national technical committee must be created to oversee and provide scientific guidance to the government on the synergies between climate change adaptation and mitigation. This is indeed fundamental, as this will go a long way to inform relevant governmental bodies about relevant scientific information that they are not aware of.
- Private sector investment and sponsorship must be promoted, as well as committing funding for joint mitigation and adaptation projects from relevant ministries and international organizations. The involvement of the private sector is indeed important as they are quite keen in investment in a sector that will benefit them in a long run.
- Effective and creative community awareness and enforcement programs must be developed and mass media coverage must be integrated to communicate the right message on climate change adaptation and mitigation.
- Stakeholders must be involved in joint decision-making at all stages and various aspects of mitigation and adaptation projects. As [Rosenbaum \(2000\)](#) explains, the merit of involving all stakeholder's in climate change-related issues is that it paves the way for faster and cost-effective results.
- Networks and partnerships must be created and knowledge must be shared with countries having initial experience in the design and implementation of integrated strategies to climate change. Implementation of these key aforementioned recommendations will help in promoting synergies between climate mitigation and adaptation practices in Cameroon.

References

- Alemagi, D., Minang, P.A., Feudjio, M. and Duguma, L.A. (2014), "REDD+ readiness process in Cameroon: an analysis of multi-stakeholder perspectives", *Climate Policy*, Vol. 14 No. 6, pp. 709-733, doi: [10.1080/14693062.2014.905439](https://doi.org/10.1080/14693062.2014.905439).
- Awono, A., Somorin, O.A., Eba'aAtyi, R. and Levang, P. (2013), "Tenure and participation in local REDD+ projects: insights from Southern Cameroon", *Environmental Science and Policy*, doi: [org/10.1016/j.envsci.2013.01.017](https://doi.org/10.1016/j.envsci.2013.01.017).
- Bele, M.Y., Somorin, O., Sonwa, D.J., Nkem, N.K. and Locatelli, B. (2011), "Forests and climate change adaptation policies in Cameroon", *Mitigation and Adaptation Strategies for Global Change*, Vol. 16 No. 3, pp. 369-385, doi: [10.1007/s11027-010-9264-8](https://doi.org/10.1007/s11027-010-9264-8).
- Biesbroek, G.R., Termeer, C.J., Klostermann, J.E.M. and Kabat, P. (2011), "Barriers to climate change adaptation in The Netherlands", *Climate Law*, Vol. 2, pp. 181-199.
- Bizikova, L., Robinson, J. and Cohen, S. (2007), "Linking climate change and sustainable development at the local level", *Climate Policy*, Vol. 7 No. 4, pp. 271-277, doi: [10.1080/14693062.2007.9685655](https://doi.org/10.1080/14693062.2007.9685655).
- Bowen, A. (2011), "Raising climate finance to support developing country action: some economic considerations", *Climate Policy*, Vol. 11 No. 3, pp. 1020-1036, doi: [10.1080/14693062.2011.582388](https://doi.org/10.1080/14693062.2011.582388).
- Brown, H.C.P., Smith, B., Somorin, O., Sonwa, D.J. and Nkem, J.N. (2011), "Institutional perceptions of opportunities and challenges of REDD+ in Congo Basin", *Journal of Environment and Development*, Vol. 20 No. 4, pp. 381-404, doi: [10.1177/1070496511426480](https://doi.org/10.1177/1070496511426480).
- Chia, E., Fobissie, K. and Kanninen, M. (2016), "Exploring opportunities for promoting synergies between climate change adaptation and mitigation in Forest carbon initiatives", *Forests*, Vol. 7 No. 12, doi: [10.3390/f7010024](https://doi.org/10.3390/f7010024).
- Chia, E.L., Somorin, O.A., Sonwa, D.J., Bele, M.Y. and Tiani, M.A. (2015), "Forest-climate nexus: linking adaptation and mitigation in Cameroon's climate policy process", *Climate and Development*, Vol. 7 No. 1, pp. 85-96, doi: [10.1080/17565529.2014.918867](https://doi.org/10.1080/17565529.2014.918867).
- Dang, H.H., Michaelowa, A. and Tuan, D.D. (2003), "Synergy of adaptation and mitigation strategies in the context of sustainable development: the case of Vietnam", *Climate Policy*, Vol. 3 No. S1, pp. S81-S96, doi: [10.1016/j.clipol.2003.10.006](https://doi.org/10.1016/j.clipol.2003.10.006).
- Davies, G.N. (2011), *Climate Change Financing and Aid Effectiveness*, Cameroon Case Study Report, African Development Bank.
- Dimitrov, R.S. (2010), "Inside UN climate change negotiations: the Copenhagen conference", *Review of Policy Research*, Vol. 27 No. 6, pp. 795-821, doi: [10.1111/j.1541-1338.2010.00472.x](https://doi.org/10.1111/j.1541-1338.2010.00472.x).
- Duguma, L.A., Minang, P.A. and van Noordwijk, M. (2014a), "Climate change mitigation and adaptation in the land use sector: from complementarity to synergy", *Environmental Management*, Vol. 54 No. 3, pp. 420-432, doi: [10.1007/s00267-014-0331-x](https://doi.org/10.1007/s00267-014-0331-x).
- Duguma, L.A., Wambugu, S.W., Minang, P.A. and van Noordwijk, M. (2014b), "A systematic analysis of enabling conditions for synergy between climate change mitigation and adaptation measures in developing countries", *Environmental Science & Policy*, Vol. 42, pp. 138-148, doi: [10.1016/j.envsci.2014.06.003](https://doi.org/10.1016/j.envsci.2014.06.003).
- Fünfgeld, H. (2010), "Institutional challenges to climate risk management in cities", *Current Opinion in Environmental Sustainability*, Vol. 2 No. 3, pp. 156-160, doi: [10.1016/j.cosust.2010.07.001](https://doi.org/10.1016/j.cosust.2010.07.001).
- Grubba, M. (2011), "International climate finance from border carbon cost leveling", *Climate Policy*, Vol. 11 No. 3, pp. 1050-1057, doi: [10.1080/14693062.2011.582285](https://doi.org/10.1080/14693062.2011.582285).
- Huong, H. and Dhakal, T.N. (2013), *Governance Approaches to Mitigation of and Adaptation to Climate Change in Asia*, Palgrave Macmillan, Basingstoke.
- Illman, J., Halonen, M., Rinne, P., Huq, S. and Tveitdal, S. (2013), *Scoping Study on Financing Adaptation-Mitigation Synergy Activities*, The Nordic Council of Ministers, Copenhagen.

- INDC (2015), *Intended Nationally Determined Contributions of Cameroon*, Government of Cameroon, Yaoundé.
- Kehbila, A.G., Alemagi, D. and Minang, P.A. (2014), “Comparative multi-criteria assessment of climate policies and sustainable development strategies in Cameroon: towards a GIS decision-support tool for the design of an optimal REDD+ strategy”, *Sustainability*, Vol. 6 No. 9, pp. 6125-6140.
- Klein, R.J.T., Schipper, E.L.F. and Dessai, S. (2005), “Integrating mitigation and adaptation into climate and development policy: three research questions”, *Environmental Science and Policy*, Vol. 8 No. 6, pp. 579-588, doi: [10.1016/j.envsci.2005.06.010](https://doi.org/10.1016/j.envsci.2005.06.010).
- Klein, R.J.T., Huq, S., Denton, F., Downing, T.E., Richels, R.G., Robinson, J.B. and Toth, F.L. (2007), “Inter-relationships between adaptation and mitigation”, in Parry, M.L., Canziani, O.F., Palutikof, J.P., van der Linden, P.J. and Hanson, C.E. (Eds), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge, pp. 745-777.
- Locatelli, B., Evans, V., Wardell, W., Andrade, A. and Vignola, R. (2011), “Forests and climate change in Latin America: linking adaptation and mitigation”, *Forests*, Vol. 2 No. 1, pp. 431-450, doi: [10.3390/f2010431](https://doi.org/10.3390/f2010431).
- MINEPDED (2015), *Cameroon's Second National Communication to the UNFCCC*, Government of Cameroon, Yaoundé.
- Nkem, J.N., Kalame, F.B., Idinoba, M., Somorin, O., Ndoye, O. and Awono, A. (2010), “Shaping Forest safety nets with markets: adaptation to climate change under changing roles of tropical forests in Congo basin”, *Environmental Science and Policy*, Vol. 13 No. 6, pp. 498-508, doi: [10.1016/j.envsci.2010.06.004](https://doi.org/10.1016/j.envsci.2010.06.004).
- Pinksea, J. and Kolka, A. (2012), “Addressing the climate change–sustainable development nexus: the role of multi-stakeholder partnerships”, *Business and Society*, Vol. 51 No. 1, pp. 176-210, doi: [10.1177/0007650311427426](https://doi.org/10.1177/0007650311427426).
- Pocklington, D. (2015), *Climate Change and Human Rights – the Urgenda Case in Law & Religion*, London.
- Ravindranath, N.H. (2007), “Mitigation and adaptation synergy in Forest sector. Mitigation and adaptation”, *Mitigation and Adaptation Strategies for Global Change*, Vol. 12 No. 5, pp. 843-853, doi: [10.1007/s11027-007-9102-9](https://doi.org/10.1007/s11027-007-9102-9).
- Rosenbaum, W.W. (2000), “Escaping the battered agency syndrome: EPA's gamble with regulatory reinvention”, in Vig, N.J. and Kraft, M.E. (Eds), *Environmental Policy*, 4th ed., CQ Press, Washington, DC, pp. 165-189.
- Rosenzweig, C. and Tubiello, F.N. (2007), “Adaptation and mitigation strategies in agriculture: an analysis of potential synergies”, *Mitigation and Adaptation Strategies for Global Change*, Vol. 12, pp. 855-873, doi: [10.1007/s11027-007-9103-8](https://doi.org/10.1007/s11027-007-9103-8).
- Smith, P. and Olesen, J.E. (2010), “Synergies between the mitigation of and adaptation to, climate change in agriculture”, *The Journal of Agricultural Science*, Vol. 148 No. 5, pp. 543-552, doi: <http://dx.doi.org/10.1017/S0021859610000341>
- Somorin, A.S., Visseren-Hamakers, I.J., Arts, B., Sonwa, D.J. and Tiani, A. (2014), “REDD+ policy strategy in Cameroon: actors, institutions and governance”, *Environmental Science and Policy*, doi: [org/10.1016/j.envsci.2013.02.004](https://doi.org/10.1016/j.envsci.2013.02.004).
- Sonwa, D.J., Somorin, O., Jum, C., Bele, M.Y. and Nkem, J.N. (2012), “Vulnerability, Forest-related sectors and climate change adaptation: the case of Cameroon”, *Forest Policy and Economics*, Vol. 23, pp. 1-9, doi: [10.1016/j.forpol.2012.06.009](https://doi.org/10.1016/j.forpol.2012.06.009).
- The Intergovernmental Panel on Climate Change (IPCC) (2007), *Impacts, Adaptation and Vulnerability; A Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge.

- Thomas, S., Dargusch, P., Harrison, S. and Herbohn, J. (2010), "Why are there so few afforestation and deforestation clean development mechanism projects?", *Land Use Policy*, Vol. 27 No. 3, pp. 880-887, doi: [10.1016/j.landusepol.2009.12.002](https://doi.org/10.1016/j.landusepol.2009.12.002).
- Tompkins, E.L. and Adger, W.N. (2004), "Does adaptive management of natural resources enhance resilience to climate change?", *Ecology and Society*, Vol. 9 No. 2, p. 10.
- Verchot, L.V., van Noordwijk, M., Serigne, K., Tomich, T., Ong, C., Albrecht, A., Mackensen, J., Bantilan, C., Anupama, K.V. and Palm, C. (2007), "Climate change: linking adaptation and mitigation through agroforestry", *Mitigation and Adaptation Strategies for Global Change*, Vol. 12 No. 5, pp. 901-918, doi: [10.1007/s11027-007-9105-6](https://doi.org/10.1007/s11027-007-9105-6).
- Wilbanks, T.J., Kane, S.M., Leiby, P.N., Perlack, R.D., Settle, C., Shogren, J.F. and Smith, J.B. (2003), "Possible responses to global climate change: integrating mitigation and adaptation", *Environmental Science and Policy for Sustainable Development*, Vol. 45 No. 5, pp. 28-38, doi: [10.1080/00139150309604547](https://doi.org/10.1080/00139150309604547).
- Wilbanks, T.J., Leiby, P., Perlack, R., Ensminger, J.T. and Wright, S.B. (2007), "Towards an intergrated analysis of mitigation and adaptation: some preliminary findings", *Mitigation and Adaptation Strategies for Global Change*, Vol. 12 No. 5, pp. 713-725, doi: [10.1007/s11027-007-9095-4](https://doi.org/10.1007/s11027-007-9095-4).
- Xiang, Z., Zhanga, B. and Maruyamac, A. (2001), "Towards a private-public synergy in financing climate change mitigation projects", *Energy Policy*, Vol. 29 No. 15, pp. 1363-1378, doi: [10.1016/S0301-4215\(01\)00038-6](https://doi.org/10.1016/S0301-4215(01)00038-6).

Further reading

- FAO (2000), "Cameroon: climate", *Global Information and Early Warning System*, FAO, Rome.
- Molua, E.L. (2002), "Climate variability, vulnerability and effectiveness of farm-level adoption options: the challenges and implications of food security in South-Western Cameroon", *Environment and Development Economics*, Vol. 7 No. 3, pp. 529-545.

Corresponding author

Dieudonne Alemagi can be contacted at: dalemagi@yahoo.co.uk