FOREST POLICY AND INSTITUTIONAL DIMENSIONS OF REDD^{+} IN CAMEROON

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Forest policy and institutional dimensions of REDD^{+} in Cameroon

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Front cover photographs from southern Cameroon by Serge Ngendakumana

Illustration on the cover: *above, a humid forest under logging; below, from left to right (below left) Grassroots management committee discussing community forests tenure rights; (below middle) secondary forest as part of humid forests with an average potential to stock GHG, and (below right) a degraded forest as part of humid forests under slash and burn agriculture.*

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DEDICATION

To the Eternal God, Sole Creator of the whole visible and invisible universe and to Jesus-Christ, our Redeemer, who gives us victory and perseverance over all challenges.

To my Beloved Wife and the entire Ngendakumana clan (Rufine Rose, Déo Parfait, Aimé Constant, Sion Céleste and Sergine Eden), for their long suffering and sleepless nights due to my repeated absences when they needed me most; yet, you are engraved in my heart!

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The present thesis is the result of doctoral research in Applied Biological Sciences jointly initiated under the ASB partnership of the World Agroforestry Centre and Ghent University, Belgium. It focuses on forestry ecosystems in tropical areas in general, and particularly on the stakes and challenges of local communities' rights in the context of developing financial mechanisms to mitigate the effects of climate change. In fact, ecosystem conservation, mitigation of climate change, climate adaptation strategies and improvement of local communities' livelihoods are still major points of concern to proponents of sustainable development in tropical countries. Moreover, the search for mechanisms combining communities' welfare and effective carbon emissions reduction is still a challenge to stakeholders in general and policy makers in particular.

The thesis entitled *"Forest policy and institutional dimensions of REDD$^+$ in Cameroon"* falls under this framework. It is a qualitative research aiming at providing policy arguments and evidence that can help manage trade-offs among the different actors intervening in the political processes involved in the mitigation of and adaptation to climate change. The thesis concentrates on principles of forest governance such as: participation, access to information and transparency in the process of compensatory payment for Reducing Emissions caused by Deforestation and Degradation of tropical forests (REDD$^+$). This research endeavour explores and describes factors relating poverty to deforestation, as well as policy instruments and their current limitations and implications. Thereafter, it seeks to identify applicable models at the local level to ensure the effective implementation of REDD$^+$ initiatives.

As iron sharpens iron, so a person sharpens another. The present scientific work is a result of the combined efforts of many people to whom I hereby wish to express my sincere gratitude.

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Serge Ngendakumana

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LIST OF ACRONYMS

AAss	Articles of Association
A/R	Afforestation, Reforestation
AfDB	African Development Bank
ANAFOR	Agence Nationale pour la Foresterie
ASB	Alternative for Slash and Burn partnership in the forest tropic margins
BAU	Business As Usual
BET	Bureau d'Etudes Techniques
CAB	CABinet
CAFER	Centre d'Appui aux Femmes Et aux Ruraux
Cam Ecology	Cameroon Ecology
CARPE	Central Africa Regional Program for Environment
CBFF	Congo Basin Forest Fund
CBO	Community-Based Organization
CDC	Corporate Development Company
CDM	Clean Development Mechanism
CED	Centre pour l'Environnement et le Développement
CER	Certified Emission Reductions
CEW	Center for Education of Women
CF	Community Forest
CIFOR	Centre for International Forestry Research
CIFORD	Centre d'Information, de Formation et de Recherche pour le Développement
CIG	Common Initiative Group
COMIFAC	Commission des Forets d'Afrique Centrale
COP	Conference Of Parties
COS	Compensation for Opportunities Skipped.
CSO	Civil Society Organization
CTFC	Centre Technique pour la Foresterie Communale
CWCS	Cameroon Wildlife Conservation Society
DFID	Department For International Development (UK)
DFMI	Delegate of Forest Management Institution

DRC	Democratic Republic of Congo
ES	Environmental Service or Ecosystem Service
EU	European Union
FAO	United Nations Food and Agriculture Organization
FCFA	Franc de la Coopération Financière pour l'Afrique
FCPF	Forest Carbon Partnership Facility
FFP	Forest For People
FLEG	Forest Law Enforcement and Governance
FMO	Forest Management Officer
FPIC	Free and Prior Informed Consent
GAF	Gesellschaft für Angewandte Fernerkundung (Applied Remote Sensing Company)
GDP	Gross Domestic Product
GHG	Green House Gas
GIZ	German International Cooperation agency
GNB	Good News Bible
GoC	Government of Cameroon
GoUK	Government of United Kingdom
HEVECAM	HEVEa CAMeroon
ICDP	Integrated Conservation Development Project
ICRAF	International Centre for Research in AgroForestry (World Agroforestry Centre)
IFAD	International Fund for Agricultural Development
IPCC	Intergovernmental Panel on Climate Change
IRAD	Institut de Recherche Agricole pour le Développement
ISD	Institute for Sustainable Development
ITTO	International Tropical Timber Organization
IUCN	International Union for Conservation of Nature
LAGA	LAst Great Ape organization
LAMA	Locally Appropriate Mitigation Actions
LEK	Local Ecological Knowledge
LUS	Land Use System
MDG	Millennium Development Goal
MEA	Millennium Ecosystem Assessment
MINADER	MINistère de l'Agriculture et du DEveloppement Rural

MINEF	MINistère de l'Environnement et des Forets
MINEP	MINistère de l'Environnement, de la Protection de la nature
MINEPAT	MINistère de l'Economie, Planification et Administration du Territoire
MINEPDED	MINistère de l'Environnement, de la Protection de la nature et du DEveloppement Durable
MINEPIA	MINistère de l'Elevage des Pèches Industrielle et Alieutique
MINFOF	MINistère des FOrêts et de la Faune
MINRESI	MINistère de la Recherche ScIentifique
MRV	Monitoring, Reporting and Verification
NAMA	Nationally Appropriate Mitigation Actions
NESDA-Ca	Network for Environment and Sustainable Development in Africa, Cameroon Office
NGO	Non-Governmental Organization
NORAD	NORwegian Agency for Development
NRM	Natural Resource Management
NTFP	Non-Timber Forest Product
ONF	Office National des Forêts de France
ONG	Organisation Non Gouvernementale
PES	Payment for Environmental Services
PM	Prime Minister
PNDP	Programme National de Développement Participatif
PNUD	Programme des Nations Unies pour le Développement
PRESA	Pro-poor Rewards for Environmental Services in Africa
R4D	Research for Development
REALU	Reducing Emissions from All Land Uses
REDD	Reducing Emissions from Deforestation and forest Degradation
REDD^{+}	Reducing Emissions from Deforestation and forest Degradation plus sustainable forest management, biodiversity conservation and carbon stocks
RES	Rewards for Ecosystem Services
RFUK	Rainforest Foundation - United Kingdom
R-PIN	REDD Readiness Plan Idea Note
RPP	REDD Readiness Preparation Proposal
RRI	Rights and Resources Initiatives
SBSTA	Subsidiary Body for Scientific and Technological Advice

SMP	Simple Management Plan (“Plan Simple de Gestion”)
SNV	The Netherlands Development Organisation
SOCAPALM	SOciété CAmerounaise de PALMier à huile
UFA	Unité Forestière d’Aménagement
UNDP	United Nations Development Program
UNEP	United Nations Environmental Program
UNFCC	United Nations Framework Convention for Climate change
UNREDD	United Nations agency for Reducing Emissions from Deforestation and forest Degradation
USAID	United States Agency for International Development
USD	United States Dollar
USFS	United States Forest Service
WCS	Wildlife Conservation Society
WRI	World Resources Institute
WTA	Willingness To Accept
WTI	Willingness To get Involved
WTP	Willingness To Pay
WWF	World Wide Fund for nature

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SUMMARY

The development and implementation of community-based forest management systems is considered a promising approach to increase forest sustainability. Furthermore, offering economic incentives is essential to halt CO_2 emissions due to land-use changes and deforestation in developing countries. A number of mechanisms have recently emerged which support policies to reduce emissions from forest-use changes. These include Payment for Environmental Services (PES) and REDD$^+$ (Reducing Emissions from Deforestation and Degradation and the enhancement of carbon stocks). REDD$^+$ is a voluntary instrument proposed as the least expensive way to reduce global greenhouse gas emissions in the forestry sector. Nevertheless, there is increasing uncertainty as to whether sufficient institutional capacity exists to implement these mechanisms, as well as a lack of clarity concerning the optimal implementation mechanism for REDD$^+$. This uncertainty suggests the need to come up with appropriate implementation models to ensure the site-level effectiveness of REDD$^+$ in developing countries. Without action, the expected outcomes from this voluntary instrument could be undermined by inappropriate institutional arrangements and the challenges of poverty in tropical countries. It is also feared that local populations may lose out in these promising incentive schemes for forest protection. This is because the value of the natural resources and their commoditization will likely increase following the implementation of such mechanisms, while the interests of more powerful stakeholders may predominate if social safeguards are not clearly defined. Nevertheless, successful REDD$^+$ could also become an important instrument for policy makers in defining strategies for poverty reduction and biodiversity conservation.

Several countries in Africa have developed their REDD$^+$ readiness portfolios in order to fulfil at least one of the conditions necessary to benefit from international funding. This is the case for Ghana, Tanzania, D.R.Congo, Madagascar, Ethiopia and many others. Cameroon had initially lagged behind, but the government and a number of involved stakeholders have been working hard since then to meet the requirements. However, the approach used in international negotiations to develop mechanisms such as CDM, REDD and REDD$^+$ was top-down with little or no contribution from stakeholders, especially those at the local level where deforestation drivers are actually rooted. This clearly questions the sustainability of the ongoing REDD$^+$ schemes in the tropics. It may also create doubts about the overall level of engagement, in terms

of transparency and effective participation, along the whole REDD$^+$ value chain. In the absence of the latter, the overall emissions reductions achieved, as well as the effectiveness of the policy reforms yet to be enacted by African countries to support REDD$^+$ and other incentives, will be negatively affected.

Thus, the present research argues that REDD$^+$ may suffer from a lack of local acceptance, if the already agreed interventions do not build on the lessons learnt from previous management experiences and local community perceptions. Furthermore, the exact nature of the socio-economic factors that determine farmers' decisions to choose a certain type of land use over another in Cameroon are yet to be determined. An integrated understanding of the above is most likely to deliver a positive interplay between REDD$^+$ stakeholders and the health of forested landscapes, at the same time generating policy instruments consistent with good governance principles across scales.

As it is, this doctoral work contributes to the ongoing climate change debates for better policy actions and clearer implementation options of the REDD$^+$ mechanism in Cameroon. The thesis presents the factors and social safeguards which could be used to restructure the current incentive and forest governance schemes, with the overall aim of effectively reducing carbon emissions, while at the same time improving community livelihoods in the tropical forests of Cameroon and beyond.

The study addresses these issues firstly by exploring current knowledge of REDD$^+$ and REDD$^+$-related regulations at country level. The latter may underpin local-level actions and govern effectiveness in emissions reduction and the functioning of carbon-stock schemes. Secondly, field data was collected through structured and semi-structured questionnaires, using qualitative approaches such as the Local Ecological Knowledge (LEK) methodology. Data was then modeled using a binomial logistic regression. The third step was to map the institutional landscape for REDD$^+$ using a qualitative approach called "the grounded theory". The perceived capacity potentials and gaps with regard to identified functions across the national REDD$^+$ implementation process were rated through a pre-designed institutional learning process. Finally, an assessment was conducted on community perceptions of REDD$^+$ incentive options using a payment card. We then gathered perceptions on social and environmental safeguards emerging

from previous UNFCCC decisions and IPCC guidelines. This aimed to ensure equity and mitigate conflict following the lessons learnt from current forest policy instruments in the country.

Our results evidence four important findings which show the need for a cross-sectoral transformational change. The findings also indicate the need for proper guidelines on how to tackle uncertainties and risks that may undermine stakeholders' involvement in REDD$^+$ at both local and national levels.

First, the binary logit regression model (chapter four) helped us to understand to what extent socio-economic factors impact on changes in forest cover at a local level. The model outcomes showed three specific factors guiding farmers' decisions to keep land either as farmland or fallow: a) the proportion of non-farm income to total income; b) the economically active age of the farmer; and c) field ownership alongside compensation options. From our findings, we concluded that REDD$^+$ design and implementation should be based on high community willingness to get involved. Further, forest policies would gain by factoring in REDD$^+$ as an instrument for poverty reduction within a broader sustainable development approach.

Second, a schematic model for the governance of carbon emission reductions was developed, comprising five functions. Model robustness analysis indicated that if implemented, it could be a game changer by introducing new management bodies and new ideas into the REDD$^+$ process. Being a recent policy instrument, REDD$^+$ is nested within global forest governance and institutional frameworks. In terms of forest management, solutions should be identified to overcome past failures associated with continuous forest-cover destruction alongside local population disinterest in conservation. For the model to deliver on its expected performance, a cross-sectoral, practical implementation framework is suggested. This involves redesigning incentives, actors, information and power relations. This would allow the incorporation of all stakeholders' viewpoints, but would remain flexible to the experimental nature of the REDD$^+$ road ahead. Our findings in chapters five and six arguably raise the issue of how an effective governance structure could become an enabling mechanism for a performance-based REDD$^+$ implementation process in the ongoing multi-actor and multi-scale arena. As there is no clear policy framework for REDD$^+$ initiatives across scales in Cameroon, the latter implies that their

implementation may not meet international requirements. This, in turn, could lead to failures to meet standards set by certified donors who have, so far, pledged no less than USD 4.5 billion dollars to REDD$^+$ in around 50 developing countries. In line with current recommendations, our findings suggest that cross-sectoral REDD$^+$ policy measures need to be enacted. These could be developed without the need to change existing laws and codes.

Third, another part of the research dealt with disparities detected with regard to the governance structure prevailing in Cameroon's forest sector. These are exacerbated by confusion about the roles and responsibilities of all the stakeholders involved, as well as the pseudo-devolution noted in forest resource management. Current stakeholder involvement does not meet the requirements of the numerous legal instruments that have been enacted in the country. Therefore, all stakeholders need to learn from both past and present initiatives to develop workable action plans for reducing greenhouse gas emissions from different types of land use. In the meantime, these initiatives could enhance carbon stocks in target landscapes. For instance, law enforcement based greenhouse gas emission initiatives seem to have been a failure, because most of the regulatory texts and laws promulgated in the Cameroonian forest sector were developed using a purely top-down approach, and were consequently implemented in a dictatorial style. As detailed in chapter five, this resulted in community rights' distortion in and around forest massifs, thus increasing forest destruction because, through destructive land-use practices, local people claimed to struggle for their survival based on the traditional beliefs about "unlimited forests" and the discourse of "ancestors' lands".

Finally, uncertainties about institutional arrangements, participation level, forest tenure and carbon rights issues were found to be detrimental to the successful implementation of REDD$^+$ schemes. As such, local communities may not benefit from REDD$^+$ funds, as they are often misdirected by those with political and economic powers who have interests beyond environmental objectives. In this way, drivers of deforestation and forest degradation will be stimulated, escalating tree felling and thereby jeopardizing carbon sequestration and climate-change mitigation efforts. Undertaking forest tenure reforms prior to REDD$^+$ is important to ensure that forest benefits under REDD$^+$ schemes will not only go to facilitators or intermediaries, but also to members of legal entities, including local communities. This requires greater support from international governance and control bodies, who should pay more attention

to the adequate application of agreed principles. This may, therefore, imply moving to a more comprehensive approach to REDD$^+$ implementation that would broaden the benefits to all relevant actors. This entails the exploration of ways to reduce emissions across all land uses with an emphasis on tenure and other best practices.

In conclusion, the above findings represent empirical evidence on how to incorporate social dimensions into the current climate-change debate. Our investigation was part of a series of REDD$^+$ feasibility assessments conducted in the country since 2011. We believe our inquisitive approach during data collection and workshops, held with most REDD$^+$ partners, has positively influenced and started to inform the process nationwide. In 2013, Cameroon had an ambitious plan to develop its national REDD$^+$ strategy in the subsequent 3 years. Models developed and lessons learnt based on tenure-right analysis in southern Cameroon may serve to restructure the ongoing REDD$^+$ process and frame the upcoming policy instruments. The findings also contribute to a better governance flow towards effective and equitable emissions reductions, both locally and globally.

Furthermore, the REDD$^+$ initiative, with its increasing complexity and growing uncertainties, needs to build on lessons learnt from the successes and pitfalls documented by existing forest management systems. More importantly, cross-landscape variations might occur in local perceptions, and also over time, as the REDD$^+$ debates evolve, adding greater complexity to the framework. In order to capture these risks, more accurate assessments encompassing all agro-ecological zones of Cameroon are therefore recommended. This might be important to gain a broader understanding not only of local perceptions but also to obtain more evidence on the opportunity costs of forest conservation, agricultural and afforestation activities to avoid further deforestation and forest degradation.

Key words: humid forest, policy instruments, governance, land use, REDD$^+$ effectiveness, poverty reduction, regression model, agroforestry, incentive options, community participation, carbon rights, forest tenure, power relations, social safeguards, sustainable development, Cameroon.

RESUME

Le développement et l'adoption des systèmes de gestion communautaire a été considérée comme une approche prometteuse pour améliorer la pérennité des forêts. Les incitations économiques sont essentielles pour maitriser les émissions de Gaz à Effet de Serre (GES) dans les pays en voie de développement. Des mécanismes d'application des politiques visant la réduction des émissions émanant des divers changements d'utilisations des forêts tels que les PSE (Payements des Services Ecosystémiques) et la REDD$^+$ (Réduction des Emissions liées à la déforestation et à la dégradation et l'augmentation des stocks de carbone forestier) ont émergé depuis quelques années. Certains acteurs pensent que ces mécanismes constitueraient une opportunité globale pour résorber une grande partie des GES. Cependant, il existe une incertitude quant à la capacité des institutions étatiques pour rendre opérationnel le mécanisme REDD$^+$; ce qui suggère le besoin de développer des modèles pour éclairer sa mise en œuvre en milieu réel dans les pays moins avancées. Ceci signifie donc que les attentes liées à cet instrument volontaire pourraient être contrariées par des arrangements institutionnels inappropriés ainsi que par les défis de pauvreté existants dans les pays tropicaux. En plus, il y a aussi une certaine crainte que les populations locales et autochtones pourraient être les premiers perdants au sein des mécanismes émergents de protection des forêts. Cet état pourrait être expliqué partiellement par le fait que la valeur des ressources naturelles va probablement s'accroître et l'intérêt grandissant des autres acteurs tendancieux pouvant surplomber les droits des communautés si des garde-fous sociaux ne sont pas clairement définis. REDD$^+$ pourrait aussi devenir un instrument politique important pour les décideurs dans leurs stratégies de lutte contre la pauvreté et la conservation de la biodiversité.

Plusieurs pays d'Afrique ont déjà développé leurs documents-cadres d'état de préparation à la REDD$^+$ afin de remplir les conditions d'accès aux fonds internationaux du changement climatique. C'est le cas du Ghana, Tanzanie, RD-Congo, Madagascar, Ethiopie et plusieurs autres. Le Cameroun, après avoir trainé le pas derrière les autres dans le processus REDD$^+$, a initié des consultations des parties prenantes depuis 2009 pour remplir les prérequis. Toutefois, lors des négociations internationales sur les changements climatiques (pour des mécanismes MDP, REDD, REDD$^+$), l'approche utilisée n'a pas été assez participative pour tenir en compte les préoccupations et les droits des parties prenantes au niveau des communautés qui

est la base même des facteurs de déforestations. Ceci pose la question non moins fondamentale de la pérennité des interventions en vue si le mécanisme REDD$^+$ venait à être mis en œuvre. Si l'on y ajoute l'incertitude de transparence, d'engagement authentique et de participation effective des acteurs, alors la REDD$^+$ et sa chaine de valeur pourraient être négativement affectées. Ainsi, notre recherche postule que la REDD$^+$ pourrait courir le risque de non acceptation au niveau local si elle ne tire pas des leçons des expériences et perceptions des populations locales. En somme, une compréhension intégrale des facteurs déterminant les choix des communautés pourrait jouer en faveur de la réussite de la REDD$^+$ pendant que cette dernière génèrerait des instruments politiques consistants vers une bonne gouvernance locale pour une mise en œuvre peu onéreuse.
L'objectif global de cette étude est de contribuer à la compréhension des facteurs socio-économiques et politiques ainsi que les sauvegardes sociales qui pourraient être utilisés dans la restructuration des systèmes de gouvernance forestière et incitative. A la longue, il s'agira de parvenir à réduire effectivement les émissions issues de la déforestation et en même temps améliorer les conditions de vie des communautés dans les forêts tropicales du Cameroun et au-delà.

Cette recherche passe par une approche multidisciplinaire et multi-acteurs pour explorer l'état des connaissances existantes et analyser les instruments politiques en vigueur pour en cerner les lacunes et défis en rapport avec la concrétisation de la REDD$^+$. Les données de terrain ont été collectées à travers une méthodologie qualitative utilisant des questionnaires structurés et semi-structurés. Une partie des données a été ensuite modelée par régression logistique binomiale tandis que l'autre partie a fait l'objet d'analyse par l'approche « grounded theory » pour faire sortir la dimension institutionnelle de la RED$^+$ au niveau national. Finalement, un examen des perceptions des communautés a été fait sur les options REDD$^+$ de motivation et les sauvegardes socio-environnementales selon les décisions de la convention cadre des Nations Unies pour les Changements climatiques (CCNUCC) et le guide de du comité Intergouvernemental sur les changements climatiques (IPCC). Ceci visait à tirer des leçons des instruments politiques existant dans le secteur forestier pour assurer l'équité et l'atténuation des conflits éventuels.

Les analyses indiquent quatre importants résultats qui connotent le besoin d'un changement transformationnel à travers divers secteurs. Les résultats montrent aussi que nous avons besoin des guides adéquats sur comment cerner les incertitudes et risques qui pourraient entraver

l'engagement effectif des parties prenantes dans le processus REDD$^+$ aux niveaux tant national que local.

Primo, le modèle de régression logistique binaire a été établi et nous laisse comprendre à quel point la pauvreté influe sur le changement du couvert forestier au niveau local. Ce modèle a permis d'identifier trois facteurs spécifiquement en relation avec le système de décision paysanne pour garder les terres soit en jachères ou en cultures. Il s'agit: a) la part des revenus non-agricoles dans le revenu total du ménage; b) l'âge économiquement actif du paysan; et c) le droit de propriété des terres appliqué aux options de compensation. Ce qui implique que le développement en cours du mécanisme REDD$^+$ devrait prendre en compte la volonté et le consentement des communautés d'être engagé dans le processus. De plus, les politiques forestières gagneraient de prendre en compte REDD$^+$ comme un instrument de lutte contre la pauvreté dans un cadre plus étendu de développement durable.

Secundo, un modèle schématique de gouvernance à cinq fonctions pour la réduction des émissions a été développé. L'analyse de sa robustesse montre que, si mise en œuvre, il pourrait être un catalyseur de changement en intégrant de nouvelles institutions et de nouvelles idées dans le processus REDD$^+$. Par effet induit, un cadre institutionnel de gouvernance des forêts est suggéré pour assurer l'atteinte des performances attendues. Il consiste en des apports de nouveaux jeux de pouvoirs, d'information, d'acteurs et d'incitations. Ceci permettra l'incorporation des points de vue de toutes les parties prenantes tout en restant toujours flexible eu égard à la nature encore expérimentale de la REDD$^+$. Nos résultats soulève l'inquiétude quant à comment une structure de gouvernance effective pourrait être un mécanisme adéquat de mise en œuvre du processus REDD$^+$ basé sur les performances certifiées dans un contexte multi-acteurs et multi-échelles. Comme au Cameroun il n'existe pas encore de cadre politique de gestion des initiatives REDD$^+$, ceci implique que l'exécution de ce genre de processus pourrait ne pas satisfaire les exigences internationales. En retour, ce fait ferait perdre au pays plus de 4,5 milliards de dollars promis par les bailleurs à quelques 50 pays en voie de développement pour faire décoller le processus REDD$^+$.

Tercio, un autre point important concerne les disparités détectées dans la structure de gouvernance du secteur forestier au Cameroun. Ces disparités sont exacerbées par une confusion

dans les rôles et responsabilités des parties prenantes impliquées ainsi que la pseudo-dévolution dans la gestion des ressources forestières. Cette situation est en contradiction réelle avec les nombreux instruments légaux promulgués dans le pays. Les parties prenantes ont donc besoin de tirer les leçons des initiatives passées et présentes afin de développer des plans d'action plausibles pour réduire les émissions de GES liés aux différents types d'utilisation des terres.

Finalement, les incertitudes quant à l'arrangement institutionnel, le niveau de participation, la tenure forestière et le droit au carbone forestier sont autant d'aspects trouvés très critiques pour réussir la mise en œuvre du mécanisme REDD$^+$ au Cameroun. Conséquemment, les communautés locales pourraient ne pas bénéficier des fonds REDD$^+$ du fait qu'elles sont souvent malmenées par les acteurs qui disposent des pouvoirs politiques et économiques pour des intérêts quelquefois au-delà des standards environnementaux. Se faisant, les facteurs de déforestation et de dégradation des forêts vont être stimulés de plus bel pour finalement hypothéquer le plan de séquestration de carbone et les efforts d'atténuation des effets dûs aux changements climatiques.

Par ailleurs, entreprendre les réformes en matière de tenure forestière en prélude à la REDD$^+$ serait important pour garantir que les retombées des forêts provenant des fonds REDD$^+$ ne soient partagées seulement entre les facilitateurs et intermédiaires véreux mais doivent arriver au niveau de toutes les parties légales y compris les communautés locales. Ceci requiert une injonction du système international et un control éclairé qui ferait attention à l'application des principes clés de bonne gouvernance surtout l'équité, la participation et la transparence. Ceci impliquerait donc un changement de paradigme vers une approche REDD$^+$ compréhensible qui, ensuite aiderait à étendre les divers bénéfices aux ayant-droits. Compréhensible signifierait l'exploration des voies de réduction des émissions avec une emphase sur la tenure afin de Réduire les Emission liés à Tous les Types d'Utilisation des Terres (En Anglais: REALU "Reducing Emissions from All Land Uses").

En conclusion, notre recherche présente une évidence empirique robuste sur la manière d'incorporer la dimension sociale et institutionnelle dans les débats actuels sur les changements climatiques. Cette investigation faisait partie d'une série d'études de faisabilité sur la REDD$^+$ conduites au Cameroun depuis 2010. Nous croyons que notre approche inquisitive pendant la collecte des données et les ateliers organisés avec multiples partenaires impliqués dans la REDD$^+$

ont servi de tremplin pour la matérialisation du processus dans le pays. Le Cameroun a un plan ambitieux de développer sa stratégie nationale REDD^{+} à commencer par Janvier 2014. Les modèles développés et les leçons documentées à base des analyses sur les droits forestiers dans le Cameroun septentrional pourrait guider la restructuration de la conception du processus REDD^{+} et le développement des cadres et instruments politiques à venir. Nos résultats contribuent aussi à assoir un bon courant de gouvernance des ressources vers un mécanisme plus équitable et effectif de réduction des émissions au niveau tant local que global.

Mots clés: Forets humides, instruments politiques, REDD^{+}, gouvernance, utilisation des terres, pauvreté, modèles de régression, options de motivation, communautés locales, participation, sauvegarde sociale, tenure forestière, droits au carbone, développement durable, Cameroun.

SAMENVATTING

De toepassing van een bottom-up bosbeheerssysteem is veelbelovend om de duurzaamheid van een bos te verhogen. Economische benaderingen behoren tot de belangrijkste initiatieven om broeikasgasemissies ten gevolge van veranderingen in landgebruik in ontwikkelingslanden terug te dringen. Mechanismen die het beleid steunen om emissies te verminderen bij verandering van bosgebruik, zoals betaling voor ecosysteemdiensten (ESD) en REDD$^+$ (reductie van broeikasgasemissies ten gevolge van ontbossing en bosdegradatie in ontwikkelingslanden) zijn onder andere recent toegenomen. REDD$^+$ wordt voorgesteld als een vrij in te stappen instrument om globaal zo goedkoop mogelijk de broeikasgasemissies te verminderen in de bossector. Niettegenstaande is er een groeiende onzekerheid of er voldoende institutionele capaciteit aanwezig is om deze mechanismen te implementeren, alsook onduidelijkheden over de optimale implementatie van deze mechanismen voor REDD$^+$. Deze onzekerheid geeft aan dat modellen nodig zijn om de doeltreffendheid van REDD$^+$ in ontwikkelingslanden te garanderen. Zonder enige actie kunnen de verwachtingen van dit instrument ondermijnd worden door ongeschikte institutionele maatregelen en door de uitdagingen in de armoedebestrijding in vele tropische landen. Bovendien vreest men dat de lokale bevolking aan het kortste eind zal trekken in deze veelbelovende bosbeschermings-initiatieven. Dit kan gedeeltelijk verklaard worden door het feit dat de waarde van natuurlijke bronnen en hun vermarkting waarschijnlijk zal toenemen door het invoeren van deze mechanismen, waarbij andermans belangen zullen overheersen als de sociale waarborgen niet duidelijk worden gedefinieerd. Hoe dan ook kan een succesvol REDD$^+$ een belangrijk instrument worden voor beleidsmakers in hun strategieën om armoede te verminderen en in het behoud van de biodiversiteit.

Verscheidene landen in Afrika hebben REDD$^+$ portfolio's ontwikkeld om ten minste aan één van de voorwaarden te voldoen om te kunnen genieten van internationale financiering. Dit is het geval voor Ghana, Tanzania, de Democratische Republiek Kongo, Madagaskar, Ethiopië en vele anderen. Kameroen lag oorspronkelijk achterop, maar de overheid en een aantal betrokken belanghebbenden hebben hard gewerkt om aan de voorwaarden te voldoen. Hoewel de aanpak in internationale onderhandelingen om mechanismen zoals CDM, REDD en REDD$^+$ tot stand te brengen top-down was, was er weinig tot geen bijdrage van de verschillende belanghebbende actoren, vooral op lokaal niveau waar de oorzaken van ontbossing eigenlijk geworteld zitten. Dit alles stelt de duurzaamheid van de aanwezige REDD$^+$ schema's in de tropen in vraag. Hierdoor worden er twijfels gecreëerd aan het algehele niveau van de betrokkenheid die juist transparantie en effectieve participatie moet beogen over de gehele REDD$^+$ waardeketen. In afwezigheid van dat laatste, zal zowel de algemene emissievermindering als de doeltreffendheid van de

beleidshervormingen die nog dienen uitgevoerd te worden door Afrikaanse landen om REDD$^+$ te steunen, negatief beïnvloed worden. Dit onderzoek oordeelt dat REDD$^+$ zal komen te lijden aan een gebrek aan lokale aanvaarding, als de reeds aanvaarde interventies geen rekening houden met hun belangen en ervaringen. Verder moeten de socio-economische factoren op gemeenschapsniveau bepaald worden, die het gedachteproces van de boeren bepalen om te kiezen voor een zeker landgebruik in plaats van een ander. Kennis van bovenstaande zal waarschijnlijk een positieve wisselwerking tussen de REDD$^+$ belanghebbenden en de toestand van de boslandschappen opleveren en tegelijkertijd beleidsinstrumenten genereren die consistent zijn met de beginselen van goed bestuur op alle niveaus.

Deze thesis is een studie van de factoren en sociale hefbomen die kunnen gebruikt worden voor de herstructurering van de huidige benaderingen in bosbeheer met de algemene doelstelling om de CO_2-emissies te reduceren en tegelijkertijd de levenswijze van de gemeenschappen in de tropische bossen van Kameroen en verder te verbeteren.

Deze studie heeft als eerste doel de REDD$^+$ en REDD$^+$-gerelateerde regulaties op landsniveau te doorlichten. Deze laatste kunnen acties op lokaal niveau ondersteunen en kunnen effectief de emissiereductie en koolstofopslag-scenarios regelen. Velddata werd verzameld door gebruik te maken van kwalitatieve benaderingen zoals de Lokale Ecologische Kennis (LEK) methodologie, daarbij gebruik makende van gestructureerde en semi-gestructureerde interviews. Data werd dan gemodelleerd via een binominaal logistische regressie. De laatste stap was om het institutionele landschap van REDD$^+$ in kaart te brengen door de kwalitatieve '*grounded theory*' te gebruiken. De waargenomen capaciteitspotentiëlen en lacunes met betrekking tot de geïdentificeerde functies doorheen het nationaal REDD$^+$-implementatieproces werden beoordeeld door een vooraf ontworpen institutioneel leerproces. Uiteindelijk werd een beoordeelt hoe de lokale gemeenschappen de verschillende REDD+ initiatieven benaderen. Daarna probeerden we om sociale en economische waarborgen te verkrijgen zoals die bekomen werden uit vroegere UNFCCC-maatregelen en IPCC-richtlijnen. Dit had tot doelstelling gelijkheid en conflict-ontwijkend gedrag te garanderen.

De resultaten omvatten vier belangrijke ontdekkingen die de noodzaak tot een transformatie aantonen. Onze bevindingen wijzen ook naar de nood aan degelijke richtlijnen ivm. hoe onzekerheden en risico's aan te pakken die belanghebbenden hun aandeel in REDD$^+$ kunnen ondermijnen.

Ten eerste bevorderde het *'binary logic regression* model' ons begrip omtrent de manier waarop armoede lokaal het bosbestand veranderd. Het model vond drie specifieke factoren gelinkt aan het beslissingsproces van boeren om land in productie te houden of niet (braakland): a) het inkomensaandeel

van niet-landbouwgerelateerde activiteiten; b) de economisch actieve leeftijd; en c) eigendomsrecht tezamen met compensatie alternatieven. We besloten dat REDD$^+$ ontwerp en implementatie - althans vanuit een lokaal perspectief - gebaseerd moet zijn op de toenemende bereidheid van de gemeenschappen om betrokken te zijn. Het bosbeleid zou er wel bij varen mocht REDD$^+$ als een instrument om armoede te bestrijden gezien worden, als deel van een breder duurzaam ontwikkelingskader.

Ten tweede werd een koolstofemissie-reductie-model ontwikkeld bestaande uit 5 functies en 3 lineaire fasen. Indien dit model wordt geïmplementeerd zou dat wel eens een doorbraak kunnen betekenen in het REDD$^+$proces doordat nieuwe ideeën en spelers geïntroduceerd worden. Een nieuw beleidsinstrument zijnde, zit REDD$^+$ geweven in het globaal bosbeleid en typische institutionele werkingskaders. Oplossingen zouden moeten worden gevonden om mislukkingen omtrent het bosbeheer te vermijden, zoals eerder wel het geval is geweest. Opdat het model de verwachtingen zou inlossen, werd een praktisch implementatiekader voorgesteld dat verschillende sectoren overschrijdt, waarbij verschuivingen nodig zijn op het niveau van actoren, informatie, stimulansen en machtsrelaties. Hierdoor kan rekening gehouden worden met de verzuchtingen van alle actoren zonder het experimentele karakter van het REDD$^+$ proces te ondermijnen. Uit hoofdstukken 5 en 6 blijkt dat de verwezenlijking van een resultaatgericht REDD$^+$-proces afhangt van de effectiviteit van beheersstructuren in een setting die momenteel vele actoren en schaalniveau's omvat. Daar er geen duidelijk kader bestaat voor REDD$^+$ initiatieven in Kameroen is het mogelijk dat de implementatie ervan niet aan internationale standaarden voldoet. Dit zou dan een weerslag kunnen hebben op het voorziene budget van niet minder dan 4.5 biljoen dollar in 50 ontwikkelingslanden. Dringende maatregelen zijn nodig die naast de bestaande regels en codes kunnen ontwikkeld worden.

Een volgend item zijn de onregelmatigheden waargenomen in het bosbeheer in Kameroen. dit komt ondermeer tot uiting in de verwarring rond de rol en verantwoordelijkheid van alle belanghebbenden alsook in de vermeende pseudo-devolutie opgemerkt in het beheer van de natuurlijke hulpbronnen geassocieerd met bossen. De situatie is niet consistent met de nochtans vele instrumenten die ter beschikking staan in het land. Iedereen dient lessen te trekken uit verleden en huidige initiatieven om zodoende een werkbaar strijdplan te ontwikkelen tegen broeikasgas-emissies ten gevolge van verschillende vormen van landgebruik. Ondertussen kunnen bestaande koolstof-stocks aangevuld worden. De wetten bekrachtigen lijkt te mislukken daar de meeste teksten en wetten in de Kameroense bossector via een eenzijdig 'top-down' - denken zijn ontstaan. Door geen rekening te houden met traditionele, vaak eeuwenoude vormen van landbezit en overerving aanwezig binnen de lokale gemeenschappen werd vaak het omgekeerde effect bekomen, zoals beschreven in hoofdstuk 5.

De succesvolle implementatie van REDD$^+$ is in zekere mate afhankelijk van het wegwerken van onzekerheden rond institutionele bepalingen, niveau in participatie, bosbeheersplannen, koolstofrechten, etc. De lokale gemeenschappen dreigen naast de boot te vallen door toedoen van politieke en economische actoren die niet verder kijken dan hun eigen egoïstische belangen. Verdere ontbossing en bosdegradatie kan hiervan een gevolg zijn. het is dus noodzakelijk om eerst de wetgeving rond landgebruik en die omtrent bossen in het bijzonder te hervormen/moderniseren alvorens met REDD$^+$ initiatieven van start te gaan, zodoende de voordelen eerlijk te verdelen onder alle belanghebbenden. Hiertoe is meer steun van de internationale gemeenschap nodig. Niet in het minst die van bepaalde controle-uitoefenende organen die er op kunnen toezien dat de principes correct worden nageleefd. de algehele REDD$^+$ aanpak moet eventueel uitgebreid worden naar een REALU-aanpak: '*Reduced Emission from All Land Uses'*.

Ter afsluiting presenteert deze studie robuuste aanwijzingen hoe sociale parameters in het huidige klimaatdebat in te brengen. Ons onderzoek maakte deel uit van een serie haalbaarheidsstudies volbracht in Kameroen sinds 2011. Wij geloven dat onze werkwijze tijdens de dataverzameling en tijdens de workshops met alle REDD$^+$ partners inspirationeel is geweest voor het gehele REDD$^+$ proces in Kameroen, dat zich voorgenomen had een duidelijke strategie uit te werken binnen de drie jaar. Onze ontwikkelde modellen en onze algemene bevindingen kunnen een belangrijke bijdrage leveren. De algehele complexiteit neemt nog eens toe, daar er verschillen kunnen zijn afhankelijk van de regio of het tijdsbestek waarin het REDD$^+$ debat zich voordoet. We pleiten er dan ook voor om alle agro-ecologische zones in Kameroen grondig te bestuderen in het kader van REDD$^+$, hierbij rekening houdend met de opportuniteitskosten van de verschillende vormen van inwisselbaar landgebruik.

Part I: GENERAL RESEARCH BACKGROUND AND REVIEW OF EXISTING KNOWLEDGE

"Trust in the Lord with all your heart. Never rely on what you think you know. Remember the Lord in everything you do, and he will show you the right way" (King Solomon in Proverbs 3: 5-6, GNB).

CHAPTER

1. GENERAL INTRODUCTION

This chapter lays the foundation for the thesis research, encompassing the general background, the context and the research problem. Research questions and objectives are identified. It also discusses the challenges to achieving effective emissions reduction from global to local levels and concludes with the general thesis outline.

1.1. Background and definition of concepts

Implementation of community-based forest management is considered a promising approach towards increasing forest sustainability. Simultaneously, since the 1980s, deforestation has been recognized as a serious problem threatening life resilience. At the same time, several authors have stated that economic incentives are essential to halt emissions of greenhouse gases caused by deforestation in developing countries (van der Werf et al., 2009; Palmer and Engel, 2009; Corbera and Schroeder, 2011; Cerbu et al., 2011; Negra and Wollenberg, 2012). As a consequence, smallholder-based innovative mechanisms to guarantee environmental protection have recently emerged, such as Payments for Environmental Services (PES) and Reducing Emissions from Deforestation and forest Degradation (REDD) schemes.

"REDD" is an international financial mechanism established under the United Nations Framework for Climate Change (UNFCCC, 2010). This idea was first proposed by a group of developing countries led by Papua New Guinea and Costa Rica (Bali Decision 2/CP13; Brockhaus et al., 2014). REDD's primary aim is to enhance national and international action on climate-change mitigation, because climate change is considered a global problem requiring common international efforts to address the causes and to build resilience (Van Noordwijk et al., 2012). Following Angelsen et al. (2008) and Lyster (2013), REDD is commonly defined as an incentive-based scheme. It builds on the same principles as the PES initiatives. REDD evolved from the discussions held during the 11th Conference of Parties (COP) in Montreal, Canada, in 2005. Through this instrument, countries that choose to reduce their national levels of deforestation and loss of carbon stock below an agreed baseline would receive performance-based payments (Minang and Van Noordwijk, 2012; Brown, 2013). It is from here that forests were included in the UNFCCC itself. Subsequently, the scheme went through a series of developments at the Conferences of Parties in Bali in (2007), Cancun (2010), Warsaw (2013) and most recently Lima in 2014 and Paris in 2015.

Conclusively negotiations from Cancun to Paris have achieved two main milestones: 1) in Warsaw a clearer framework which particularly provided an explicit roadmap for REDD^{+} implementation bringing together technical and institutional implementation guidelines (Atela et

al., 2016); 2) in 2015, COPs have agreed on a common basket fund called "Green Climate Fund"within the UNFCCC framework. This was established under Decision 1/16 as part of the Paris agreement (UNFCCC, 2015). The agreement aims to help the world to move towards a low-carbon-climate resilient future. About 10 billion USD have been committed to the Green Climate Fund with nearly half coming from the EU member states. Prior to Paris, more than 170 countries submitted their Intended Nationally Determined Contributions (INDCs) covering more than 95% of global emissions. Some countries still need to take position on the binding nature of reducing emissions quickly enough to keep the global average temperature rise below 2^{o} (Hamrick and Goldstein 2016). So far, full common stand is not yet reached at and $REDD^{+}$ is part of this evolving process.

As negotiations progressed on the financing mechanisms to compensate developing countries for the recovery or maintenance of forest carbon stocks, three interrelated concepts emerged, although they are still under negotiation between COP parties, namely REDD, $REDD^{+}$ and $REDD^{++}$. The difference between these mechanisms is mainly based on what each should cover (Larson et al., 2009; Angelsen et al., 2009; Tacconi et al., 2010; Skutsch and McCall, 2012; Minang and van Noordwijk 2012). The acronym REDD is used when consideration is only given to reducing emissions from deforestation and forest degradation in developing countries. When conservation, sustainable management of forests and carbon-stock enhancement are added to this, the term $REDD^{+}$ is used. More recently, in scientific debates there has been a call to expand the scope of $REDD^{+}$ to integrate all land-use-related carbon emissions, and the idea is gaining momentum. This would add both agricultural and agroforestry sectors to the scheme. This approach is called $REDD^{++}$ or Reducing Emission from All Land Uses (REALU) (Bernard et al., 2013).

In this thesis, we will focus on $REDD^{+}$. The justification for choosing $REDD^{+}$ is that this is the only truly operational policy mechanism that exists in the field. Unlike REALU, which is still under scientific development by the ASB partnership (Bernard et al., 2013), discussions on $REDD^{+}$ have been underway by UNFCCC parties since 2009. Since then, it has become clear that a $REDD^{+}$ mechanism can deliver multiple benefits. In addition to mitigating climate change, $REDD^{+}$ can support the livelihoods of local communities, maintain vital ecosystem services and preserve globally significant biodiversity (Brown, 2013; Brockhaus et al., 2014).

However, the development of REDD$^+$, as a proposed solution to mitigate climate change by halting forest cover decrease, faces several uncertainties, particularly with regard to social safeguards and forest governance principles (Brown, 2013, Lyster et al., 2013). The REDD$^+$ mechanism supports the voluntary efforts of developing countries, which are Parties to the Kyoto Protocol, to mitigate climate change effects (UNFCCC, 2008). To qualify for financial compensation under the UNFCCC, countries have to formulate (and implement) national REDD$^+$ strategies. These strategies should include information on technical aspects, such as national-forest reference emissions levels, and should describe a robust MRV (Monitoring, Reporting and Verification) approach along with desired implementation arrangements and funding prospects. At COP 16 and 17, REDD$^+$ countries were also requested to address drivers of deforestation and forest degradation, land tenure, social safeguards and participation by relevant stakeholders (Lyster, 2013; Brockhaus et al., 2014).

The concept of deforestation refers to the complete removal of forest cover for whatever reason, such as conversion to smallholder agriculture or oil extraction (Sierra, 2000). Meanwhile, van der Werf et al. (2009) defined this process as the long-term reduction in tree-canopy cover to below 10-30%. In practice, the Food and Agriculture Organisation (FAO, 2006) defines deforestation as the process of conversion of forest to non-forest land use such as cropland, pasture or human settlements. Forest degradation typically relates to partial deforestation, with more than 10-30% of forest cover remaining (for example through selective logging). Deforestation has received a lot of attention in scientific publications since the Rio summit and this has increased in the context of the REDD initiative. In this regard, the works of Sunderlin (1996), Geist and Lambin (2001), de Wasseige et al. (2009), Angelsen et al. 2009, Palmer and Engel (2009), Angelsen et al. (2012), Ernst et al.(2012), Malhi and Marthews (2013), and Lyster et al. (2013) are important in identifying substantive trends for the phenomenon in the tropics.

One of the reasons why many scholars are interested in studying deforestation is the importance of forest resources to national economies. Forested areas represent about 33% of the earth's land surface and constitute an important asset for climate regulation. This has favoured substantial investments in forestry management and conservation (Brown, 2013). The second reason is that deforestation and forest degradation account for about 12% of global greenhouse gas emissions (van de Werf et al., 2009) and constitute the bulk of emissions from developing countries (Ernst

et al., 2012). Globally, deforestation is the second largest anthropogenic source of carbon dioxide in the atmosphere, after fossil-fuel combustion (Le Quéré et al., 2009; van de Werf et al., 2009). Sohngen (2009) indicates that, basically, increasing forest stocks constitutes a safer reduction mechanism for carbon in the atmosphere. It is also widely accepted that avoiding deforestation can contribute significantly to reducing CO_2 emissions (Tomich et al., 2005; IPCC, 2008; van de Werf et al., 2009). The newly developed $REDD^+$ instrument provides incentives for avoiding deforestation, but, how $REDD^+$ will be operationalised at the local level remains unclear and details as to how it will successfully work in practice are yet to be agreed by all stakeholders.

Much of the literature views $REDD^+$ as an instrument directed towards communities and other small-scale forest owners and managers, much like the concept of Payments for Environmental Services (Larson et al., 2009; Skutsch and McCall, 2012; Awono et al., 2014). A PES system is designed to provide payments to those who contribute to the provision of environmental services. Some researchers believe that PES experiences have the potential to influence the design of $REDD^+$ activities (Engel et al., 2009; Tacconi et al., 2010; Soriaga and Annawi, 2010). The idea is to translate the natural values of a given environment that is under threat from deforestation into real financial incentives at the local level (Engel et al., 2009). These authors find that it is possible to link PES to policies geared at reducing emissions from deforestation and forest degradation, because the main ES to consider in both cases would be carbon storage.

The extent to which the above assumption is reasonable and compelling depends on a number of factors, such as stakeholder participation, rights to ressources, institutional arrangements and incentive levels (Brown, 2013). Reeds (2008) defined participation as a process in which individuals, groups and organizations choose to take an active role in making decisions that affect them. Some proponents agree that stakeholder participation increases the likelihood that environmental decisions are perceived to be fair and promote social learning (Palmer and Engel, 2010; Brown, 2013; Awono et al., 2014). However, little is known about the effect of stakeholder participation on the eventual effectiveness of $REDD^+$ when participation starts right from the design stage. Emphasis needs to be placed on involving local stakeholders in communities where deforestation takes place, because it is these smallholder farmers who will eventually implement the designed $REDD^+$ process on the ground.

Furthermore, there is increasing uncertainty concerning the implementation process starting from demonstration/piloting to performance based actions (Minang et al., 2014). This uncertainty relates to the institutional capacity of governments in developing countries to implement the $REDD^+$ mechanism, as well as doubts about the institutional arrangement itself, since many drivers of deforestation are cross-sectoral and are rooted in a wider socio-economic and political context (Robiglio et al., 2010; Skutsch and McCall, 2012). These doubts suggest the need to come up with arrangements that will facilitate on-site implementation in developing countries. If action is not undertaken, expectations regarding this voluntary instrument could be undermined by inappropriate institutional arrangements, challenges resulting from poverty and increasing social conflicts (Clements, 2010). Transformational change is therefore needed during the full implementation phase, whereas $REDD^+$ effectiveness would require substantial on-the-ground policy actions, as well as governance reforms at national level.

From the above, it can be understood that this study focuses on $REDD^+$ implementation challenges, as well as on the validity of forestry policy, with an emphasis on social and institutional dimensions at the community level where deforestation is to be mitigated. Since forest degradation is part of deforestation, and as $REDD^+$ is a mechanism in progress that has yet to be formalized, the chapters developed here will mostly talk about $REDD^+$ policy with an emphasis on avoiding deforestation as a pathway to reduce CO_2 emissions.
Some literature may use REDD and $REDD^+$ interchangeably, but throughout this thesis, we focus on $REDD^+$, as the latter allows consideration of the additional implications for agroforestry, carbon stocks and other co-benefits that this new version of the original REDD instrument showcases. Environmental services (ES) and ecosystem services are practically the same within the literature. Where found, the two will have the same meaning and implications in this piece of work. The REALU mechanism is not included in our study.

1.2. Problem statement

Rural poverty and climate change have an increasing influence on the livelihoods of forest-edge communities. In the current environmental degradation context, smallholder farmers' livelihood challenges have led to more anthropogenic activities, such as land-use change, agriculture,

biomass burning and livestock pasturing. These activities imply increased carbon emissions resulting from the associated deforestation (Tomich et al., 2005; WB, 2008; Springate-Baginski and Wollenberg, 2010; Bernard et al., 2013).

Many scholars have shown that the increase in atmospheric CO_2 is the likely cause of climate change even though several other GHGs such as methane (CH_4), nitrous oxide (N_2O) or tropospheric ozone (O_3) are concurrent factors (IPCC, 2007; van der Werf et al., 2009; Le Quéré et al., 2009). To counter climate change by harnessing C-stocks gained over time is the purpose for which REDD$^+$ was developed. Based on REDD$^+$, the international community wants to see forests preserved and would like to pay for the carbon they store, for the wealth of biological diversity they harbour, and for the many other environmental services they provide globally (Tomich et al., 2005; UNFCCC, 2007).

Against the long-established fact that forests act both as sinks and sources of emissions (Sunderlin et al., 2009; Angelsen et al., 2009), developing countries are expected to implement REDD$^+$ as an instrument to mitigate climate change. A substantive body of research on mitigation agrees that REDD$^+$ could be a vehicle for reducing pressure on forests in the tropics, which in turn could lead to CO_2 emission reduction (Palmer and Engel, 2009; Rametsteiner et al., 2009; Hajek et al., 2011; Kanowski et al., 2011; Minang and Van Noordwijk, 2012; Angelsen et al., 2012; Malhi and Marthews, 2013).

However, since 2011, criticism and controversies have challenged the innovativeness and sustainable viability of REDD$^+$ as a policy instrument. This seems to be mainly because the social and institutional dimensions continue to be overlooked (Brown, 2013; Lyster et al., 2013). Brown (2013), in his thinking, contends that some issues, if not adequately addressed during the framing phase, could break REDD$^+$ to the disappointment of several proponents, including national policy makers, international bodies and other REDD-impacting agencies. These critical issues mostly relate to social feasibility and they include the *interests of local stakeholders*, *who are participating* and *what forms of object are to be governed* as well as *social safeguards*. Atela et al. (2016) report on REDD$^+$ implementation in Kenya but still, concrete cases on the ground are scace in Africa. The Kenyan case study has evidenced that REDD$^+$ draws useful insights from the forestry sector but needs institutional reforms to guide further stakeholders's engagement.

The case also indicates that the institutional failures exacerbate underlaying drivers of deforestation that conflit with REDD$^+$ rules. Worldwide, undocumented cases may be found in Brazil, Tanzania, Peru, Indonesia and Papua New Guinea. Howerver, several projects under REDD$^+$ piloting phase exist in about 17 countries (UN-REDD 2015) but only the above case in Kenya is reported. Redisign could be envisaged after learning from the on-the-ground cases by scientists.

Angelsen et al. (2012) and Brown (2013) recognised that current REDD$^+$ efforts have been geared towards more technical aspects, such as how to assess and monitor land-use change, and have consequently neglected the socio-economic dimensions. Some other proponents recently claimed that very little effort has been made to integrate social and institutional challenges, such as lack of stakeholder participation, limited consideration of socio-economic household characteristics, top-down approach and no proper mainstreaming of communities rights within the instrument design process (Taconni et al., 2010; Brown, 2013; Bernard et al., 2013; Sunderlin et al., 2014). Nevertheless, these aspects are considered pivotal to guarantee the on-the-ground effectiveness of REDD$^+$ (Tacconi et al., 2010; Bernard et al., 2013; Lyster 2013; Brown, 2013; Awono et al., 2014). The risk is that local communities may not agree to take part in the implementation as they have not been fully involved in the initial discussions during the design phase. At the end of the day, these social and institutional flaws can constitute a disincentive for communities to engage in activities to help avoid or reduce deforestation.

Many studies have warned that in the course of REDD$^+$ implementation at local and sub-national levels, there is a danger that new social conflicts may arise (Colfer et al., 2005; Angelsen et al., 2009; Cotula and Meyers, 2009; Lawlor et al. 2010; Hajek et al., 2011; Brown, 2013; Awono et al., 2014, Sunderlin et al., 2014, Atela et al., 2016). Under the emerging international climate debates, these conflicts could even increase further. For instance, with current ownership tenure under the Forestry Act of Cameroon, there is a danger of increased conflict and dilemmas between efforts to develop tree plantations and keep natural forests intact. The irony is that, according to the law enforcement in Cameroon, all trees belong to the state, not to those planting or conserving them. This legal disposition creates insecure forest tenure by transferring de jure use rights from smallholders to the state. This might act as a negative incentive for communities to engage in REDD$^+$.

Following Brockhaus et al. (2012), REDD$^+$ governance is understood as a system in which involved actors try to influence policy actions and outcomes through the instrument's regulatory processes, mechanisms and organizations. Applying institutional arrangements is part of governance and refers to the operational rules governing the ways in which actors (individuals or organizations) interact within a given arena. In the light of this definition, existing governance principles in Cameroon may constitute a challenge for the implementation of carbon emission reduction schemes (Bellassen and Gitz, 2008). The reason is that, although there is room for policy reforms, actors' involvement in shaping forestry regulations is very limited and many established implementation norms including local community and civil society participation remain superficial across public administrations in Cameroon. This calls for additional investigation into the kind of governance that addresses stakeholders' views across institutions within the forestry sector (Saunders and Reeve, 2010; De Pinto et al., 2012) in the transition from the REDD$^+$ pilot phase to the quick-start phase of real project interventions in Cameroon.

Thus, this research argues that REDD$^+$ may suffer from local communities' disapproval of the already-agreed interventions, which are unlikely to draw from either local or other experiences. In the same vein, the socio-economic factors which determine farmers' preferences for a certain type of land use over another, at community level, are yet to be clarified. Furthermore, an integrated understanding of these socio-economic dimensions is required to create a positive interplay between REDD$^+$ stakeholders and the health of forested landscapes.

With regard to emissions reduction, Rametsteiner et al. (2009) established that the international development agencies currently involved in REDD$^+$ could fund bundles of national measures to address the local and regional drivers of deforestation. In this way, some financial investment could save millions of hectares from deforestation.

Whereas some uncertainties remain as to the most appropriate operational mechanism at global governance level (Lawlor et al., 2010; Hajek et al., 2011; Kanowski et al., 2011; Minang and Van Noordwijk, 2012; Bernard et al., 2013), the strategic positioning of various REDD$^+$ actors will need to be guided by local evidence and models nested in relevant policy frameworks and institutional arrangements (Somorin et al., 2014). It is also highlighted that practical REDD$^+$ design needs to be guided by specific evidence from the viewpoints of multi-level actors in order

to incorporate their ideas and gain their consent (Brown, 2013; Sunderlin et al., 2014). With reference to the existing land-use policy in Cameroon, stakeholder involvement and other policy issues need to be well-documented in order to guide future pathways for REDD$^+$.

Despite the few pilot initiatives that are underway in some countries (Bernard et al., 2013; Sunderlin et al., 2014) uncertainty remains as to which operational mechanism should be used for the actual implementation of REDD$^+$ (Pesket et al., 2008; Lawlar et al., 2010; Angelsen et al., 2012). For example, agreements reached on REDD$^+$ so far have not spelled out details as to whether the mechanism will take the form of total access restrictions for target forests, as in the establishment of protected areas, or whether it will result in a form of regulated access based on agreements with local people, as in sustainable forest management and co-management schemes. Failing to generate data and knowledge to remedy the highlighted uncertainties may imply planning before hand the failure of the most expected REDD$^+$ implementation. Such knowledge is crucial for policy makers and shapers to design strategies that reduce carbon emissions, as well as to sustain other co-benefits, such as biodiversity conservation or watershed services derived from forests.

1.3. Scope of the study and hypotheses

The study builds on outcomes from experiences of the Alternative for Slash-and-Burn platform (ASB) in the tropics (http://www.asb.cgiar.org) particularly in Cameroon and Indonesia. It capitalises on the lessons learnt from a number of past and ongoing projects, such as the "Reducing Emissions from All Land uses" (REALU) funded by NORAD, and "Forest Tenure rights in central Africa" a Cameroon collaborative work between the Rights and Resources Initiative" (RRI) and ICRAF. The lessons learnt from project initiatives to safeguard biodiversity in diverse target landscapes are incorporated, with reference to experience drawn from Payment for Environmental Services in Africa (PRESA) and RUPES (Rewarding Upland Poor for Environmental Services) in South Asia (http://rupes.worldagroforestry.org ; http://presa.worldagroforestry.org).

Since 2011, six countries in the Congo basin have launched the implementation of a global REDD$^+$ project funded by the World Bank. In the light of this, local-level determinants of

deforestation and forest degradation, and community priorities should be identified for the pilot sites in Cameroon and across the participating central African countries. The developing REDD$^+$ scheme underlines the need for each country to build its own knowledge base to understand local drivers across actors and scales. Such knowledge will be used to strengthen national institutions involved in forestry and other land uses in addressing emission reduction issues. It confirms that research initiatives, such as this PhD, are relevant in the context of early institutional learning about the REDD$^+$ implementation process in the sub-region.

Within a climate-change policy perspective, the research attempts to capture farmers' perceptions on deforestation and actors'participation in REDD$^+$, institutional arrangements and forest tenure rights in a participatory manner. This thesis adds an institutional dimension and a social momentum across the current climate-change policy debates. The evidence provided can guide decision makers to improve the likelihood of REDD$^+$ success within a new, sustainable development agenda.

Therefore, the following major research hypothesis is developed: Incentive-based forestry policy instruments such as REDD$^+$ can be designed to become socially attractive and institutionally feasible through locally defined governance principles and policy reforms.

Additionally, the following secondary hypotheses were developed, based on local ecological knowledge and tested in the Southern region of Cameroon:

H1. Current forestry policies and regulatory frameworks in Cameroon are not clear enough to govern REDD$^+$ and science-informed reforms and incentives need to be developed, learning from socio-economic challenges such as national and local factors that change the behaviour of local communities towards deforestation.

H2. The long-term success or failure of the REDD$^+$ mechanism is conditional on the specific design of the institutional framework and the mainstreaming of key social safeguards, such as tenure rights, compensation options and the level of stakeholder involvement during the planning and implementation phases.

1.4. Aim of the thesis and research questions

Within the framework of the above described context and hypotheses, the main objective of this doctoral work was to contribute to the ongoing climate change debates for better policy actions and clearer implementation options of the REDD$^+$ mechanism in Cameroon. The PhD seeks therefore to analyse forestry policy instruments and arrangements to understand social and institutional issues which can affect REDD$^+$ processes. Targeting the forested landscape of Efoulan in South Cameroon as a case study area, the emphasis is placed on the potential of the suggested structures (economic and other interest-based incentives) to bridge community perceptions and REDD$^+$ implementation in the context of local and national forest management policies. The thesis poses four main research questions:

1. What are the current policy conditions in the forestry sector and how can existing gaps and constraints be addressed to ensure the effectiveness of REDD$^+$ at local level?
2. What micro-level factors drive land-use changes initiated by local stakeholders and in what way should these factors influence REDD$^+$ design?
3. What institutional structure and policy solutions could act as a governance framework for local communities and other stakeholders to effectively implement REDD$^+$ as a climate-change mitigation intervention?
4. How are forest rights and other safeguard claims by local communities viewed by villagers in the current climate-change context with regard to the design and implementation of REDD$^+$?

Research question 1 is addressed in chapter 2 through a thorough desktop review of scientific publications and key policy documents relating to forest management in Cameroon. The second research question is covered in the fourth chapter and is answered on the basis of field data collected using structured and semi-structured questionnaires complemented by data from focus group discussions and transect walk observations. Question 3 is addressed in chapter 5 using an institutional mapping perspective with the objective of understanding local and sub-national implications of some forest governance principles on emissions reduction. Finally, research question 4 resulted in chapter 6, using insights from three secondary site datasets assessing intercultural rights and claims emerging from forest management systems with implications for

REDD$^+$ schemes potentially being established in Cameroon. The logical flow and the interconnections between the various empirical chapters are illustrated in the next sections (for more details see also figure 3.7 and table 3.4. in chapter 3).

1.5. PhD thesis outline

This thesis is divided into two major parts: Part I: General research background and review of existing knowledge, and Part II: Findings, applications and implications. Figure 1.1 shows the full interconnections existing between the empirical chapters of the thesis. During the investigation process, emphasis was placed on the following research actions:

- analysing the uptake framework for policies and institutional structures, including the social and structural arrangements in the context of local communities, to gain insight into the challenges and opportunities for implementing the REDD$^+$ mechanism at grassroots level;
- mapping and modelling individual deforestation decisions which affect the proposed REDD$^+$ frame. The focus was on socio-economic variables influencing dialogue and discourse to bridge interests and perceptions between key participants in forest management;
- cross-checking external and internal policy-related aspects of forest management, including tenure regime and community rights issues as vectors affecting conservation processes in NRM. Taking the deforestation context of Cameroon, the insight is to be used to address challenges for the proposed REDD$^+$ mechanism and to propose policy solutions for its effectiveness across the country.

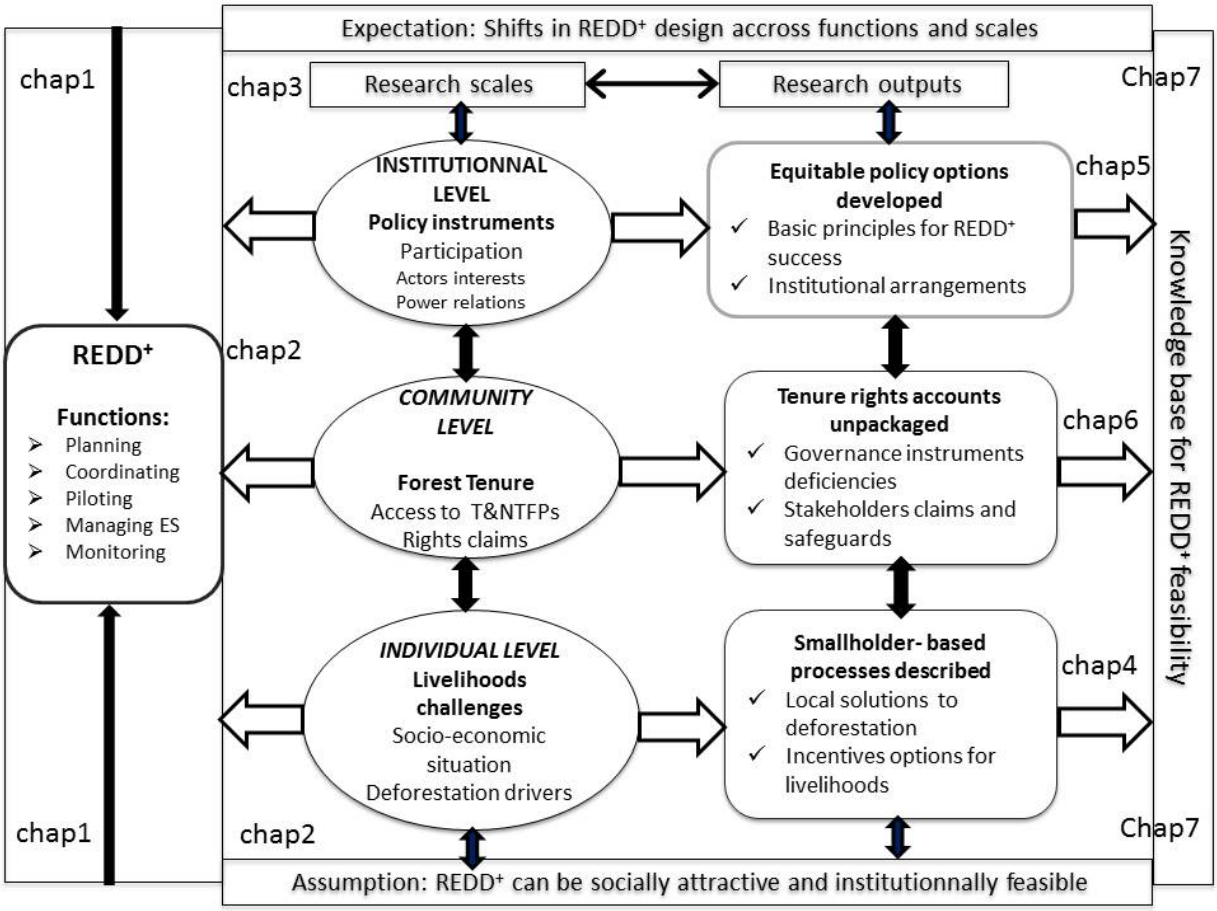

Figure 1.1 Outline of the thesis showing REDD$^+$-influencing factors, stakeholders studied and outputs

The seven chapters of the thesis address the central aspects of humid forest governance in Cameroon and their links to REDD$^+$ through institutional and social learning processes.

Chapter one (Introduction) establishes the background to the study and the context behind the need to reduce greenhouse gas emissions in the tropics. It highlights knowledge gaps in relation to REDD$^+$ and explains the need for the current research. It also discusses where challenges remain for the success of effective emission reductions across scales. Chapter two then reviews documents that concentrate on the state-of-the-art in terms of existing knowledge, policy gaps and challenges. The analysis is based on historical forest-management trends and current debates on climate-change mitigation under REDD and REDD$^+$. The aim is to contribute to the debate about whether existing frameworks would be sufficient to govern REDD$^+$ implementation in

Cameroon. The chapter shows policy gaps and limitations while describing a set of parallel concepts, such as PES, to support ongoing thinking.

Chapter three describes the general methodology used in the study, although a more detailed presentation follows in each empirical chapter. The entire section is therefore organized as follows: a brief description is provided of the country and the study areas, in order to present the socio-economic and bio-physical conditions of the target areas. Thereafter, sampling design, data collection strategy, the regression model applied and other data analysis techniques are described.

For forest communities, if the UNFCCC-negotiated emissions reduction scheme does not properly secure people's rights and the natural resources on which they depend, local stakeholders will not be willing to adopt and implement it. This will increase the risks of forest conversion into farmlands. However, if fair payments are offered, $REDD^+$ could be seen by locals as an opportunity to generate income and to enforce their current informal customary rights to forest resources. Therefore, there is a need to understand the link between socio-economic factors and deforestation. This will influence the potential of existing policies to govern $REDD^+$ across scales. These issues are examined in chapter four. The latter is the starting point for the second part, which is purely empirical. Specifically, the chapter explores the role of farm and socio-economic factors as determinants of deforestation and forest degradation at local level. A regression model was used to establish relations between the variables studied. We end up by identifying significant factors which could be taken into account when using $REDD^+$ as an incentive mechanism to reduce carbon emission levels by local stakeholders in Efoulan and thus Cameroon.

Chapter five revisits the institutions with stakes in climate change, environmental policy and conservation. It looks at their roles and responsibilities in line with $REDD^+$-segregated functions, combined with a framework developed for this analysis. It draws lessons on key governance principles (i.e. participation, power relations, information flows) to be enforced for $REDD^+$ to work efficiently and fairly at local level. This insight assisted in the development of an institutional structure from which the $REDD^+$ processes could be designed, assuming that existing incentives and policies are inadequate as they present the potential for new social conflicts. Chapter six attempts to shed light on land and forest tenure systems as one of the key

REDD$^+$ social safeguard issues in southern Cameroon. Smallholders' perceptions on rights and claims in the current forestry policy arena are assessed and linked with the climate-change debate in Cameroon.

The last chapter (chapter seven) provides a general discussion on policy implications before providing conclusions and key recommendations. It synthesizes our main findings while briefly discussing policy implications for REDD$^+$ to be successful in Cameroon and even beyond. In this way, we want to inform policy makers, policy shapers and local communities interested in climate change mitigation strategies about the potential of REDD$^+$ for sustainable development and how to tackle challenges that may undermine this incentive mechanism at local and national levels.

The outcome will hopefully provide information to avoid planning the failure of the yet-to-materialise REDD$^+$. The chapter ends with practical implications and emerging research perspectives which would be needed for additional knowledge generation. It should be noted that the three empirical chapters are closely interlinked in the following maner: on-the-ground REDD$^+$ effectiveness factors (including institutional arrangements) bridge chapter four to chapter five while the social dimension especially forest tenure and rights creates the link between the latter to the 6th chapter. Both chapters have the ultimate aim to address deforestion and enhace carbon stocks in southern Cameroon and beyond.

CHAPTER

2. EVALUATION OF POLICY INSTRUMENTS AND LOCAL LIVELIHOODS IN THE LIGHT OF REDD$^+$ IN CAMEROON

Abstract

This chapter explores issues on REDD$^+$-related regulations at country level to underpin local-level actions and to govern the effectiveness of REDD$^+$ implementation. The desktop investigation considers Cameroon as a case study and reviews about 85 publications and a portfolio of more than 10 national regulatory instruments to identify policy gaps and limitations. It also discusses a set of parallel tools, such as PES, to inform the existing REDD$^+$ debate. Two specific shortcomings are identified: (1) locally over-constraining and complex approaches used in forest management which could provide cautions for the implementation of REDD$^+$; and (2) limited understanding of local linkages between communities' poverty status and trends in forest-cover loss. These shortcomings, if not considered, may result in the failure of emission reduction programs and the designed REDD$^+$ schemes in Cameroon being socially disconnected. This calls for the design of a fair REDD$^+$ mechanism to motivate the local end users and forest stewards, namely rural communities.

Key Words: Forest conservation, PES schemes, policy gaps, community livelihoods

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"No matter how you divide up the developing world, one thing is not debatable: most people are poor, on the outside of the system looking in and getting angrier every day. If you rebuild the system from the bottom-up, the poor will come, with their enterprise, creativity, and piles of potential capital" (Hernando de Soto, President, Institute of Liberty and Democracy, Peru).

2.1. Introduction

Since the 1980s, a wide spectrum of conservation strategies has been used to improve the sustainable management of tropical forests. The lessons learned from these conservation programmes could help to improve REDD^{+}. Initial efforts took the form of governmental and international conservation agencies' forest projects known as ICDPs (Integrated conservation and Development Programs) to support the management of protected areas (Hasket and Gutman, 2010). By the time of the climate-change debates after Rio, the concept of the ICDP initiatives had changed to reward forgone efforts on avoided deforestation and increased reforestation. This change in scope reflected the outcome of UNFCC agreements to value the goods and services that forests provide; particularly atmospheric carbon sequestration.

Past strategies, however, either favoured the economic dimension of natural-resource management, or else the ecological dimension, and very little attention was paid to social issues for local communities (Colfer, 2005; Oyono et al., 2006; Enchaw, 2009; Minang and Van Noordwijk, 2012). Until very recently, these classic approaches had undermined the social framework and promoted conservation policies that failed to take into account community needs and perceptions with regard to livelihoods and cultural values. This led to a decrease in forest cover and biodiversity status, even in protected areas (Brown, 2013). The existing situation gave local communities the opportunity to blame governments for applying top-down strategies that depleted their indigenous forests. Alternatively, governments could also blame local communities for much of the damage being done to forests. These accusations and counter-accusations have induced the recent quest for adoption of conservation strategies and policies that will (a) enhance local participation, (b) create a sense of tenure security for smallholders and (c) introduce benefit sharing among stakeholders (Tumnde, 2001; Enchaw, 2009; Hoang et al., 2012).

Key laws and regulatory instruments that shape forestry actions in Cameroon include, but are not limited to, (1) The 1994 Forestry and Wildlife law, (2) National Biodiversity Strategy and Action Plan, (3) the law no 2011/008 on Management and sustainable territorial development of Cameroon, and (4) The 1996 Environmental law no 96/12. It is nevertheless hypothesized that

beyond the current situation, gaps and inconsistencies will persist and this may negatively affect yet-to-be-implemented market-based innovative mechanisms such as REDD$^+$.

The Government of Cameroon promulgated a Forestry Law in 1994 which makes provisions for local people to acquire and manage community forests. An increase in participation by local populations in forest management through the community forest mechanism is often compromised by the cost, administrative red tape and the politically sensitive nature of the process. Tumnde (2001) and Asanga (2001) noted that the cost of preparing applications for the establishment of a community forest requires the mobilisation of a great deal of resources and the process is rather lengthy. Foundjem-Tita et al. (2013), when analysing forest law compliance in Cameroon, found that the process for obtaining permits could take about 4 years and could require more than 26,000 USD. Some years earlier, Tumnde (2001) observed that "the cost of preliminary work (which includes a quantitative and qualitative inventory of the resources of the forest with a view to drawing up a simple management plan), is beyond the reach of local communities, as the services of experts that cost between 1,800 USD and 29,000 USD are required". Based on the above, it can be deduced that community forest instruments used in Cameroon are highly normative, whereas it is extremely difficult for them to gain recognition by local communities. Therefore, using the existing instruments without any reform may act more as a policy disincentive when addressing climate change.

In this chapter, the focus is on conservation frameworks and tenure security in Cameroon, with emphasis on the policy constraints, to find out how REDD$^+$ could be better implemented to turn around forest loss and, at the same time, serve as a tool for promoting sustainable development. REDD$^+$ is presented as a new individual country-driven policy instrument which is consistent with the mainstreaming of forest management to promote environmental integrity (Lyster, 2013). The focus on conservation finds its justification in the discussion by Engel et al. (2009) that REDD$^+$ has a particular potential to act as an umbrella service in forest conservation. Nevertheless, it can be claimed that before introducing such a new mechanism for conservation, it is important to learn from the failures and successes of the existing alternative tools.

It is assumed by several scholars that the development of appropriate REDD$^+$ policies and programmes will serve as an incentive to motivate local communities to participate in forest

conservation for climate-change adaptation and mitigation (Torres, 2014; Awono et al., 2014; Dlamini et al., 2015). Therefore, it seems very important to capture insights from the literature and policy documents on what is known about forest regulations at country level. This could then inform and underpin local-level actions which could govern effective emissions reduction and carbon-stock schemes. The desktop study uses Cameroon as a case study to demonstrate the gaps in the current forest governance instruments, while presenting a set of parallel tools, such as PES, that could fill these gaps.

2.2. Unveiling deforestation drivers and the impact of climate change

Deforestation in tropical areas is the second largest source of global carbon dioxide emissions, after emissions from fossil-fuel use (Le Quéré et al. 2009, van de Werf et al., 2009). Increased greenhouse gas concentrations in the atmosphere lead to global warming (Lambin and Geist, 2001; IPCC, 2007; MEA, 2005; Nepstad et al., 2007; Wertz-Kanounnikoff and Kongphan-apirak, 2009). CO_2 emissions are considered to be responsible for about 56% of climate change (Le Quéré et al. 2009). Moreover, deforestation deserves special attention. As Ernst et al. (2012) indicated, despite policy efforts to halt the deforestation process, net deforestation in, for example, the Congo basin has almost doubled from 167,000 ha/year between 1990 and 2000 to 317,000 ha/year between 2000 and 2005.

The link between economic development and deforestation has been extensively investigated. For instance, it was found that countries such as Cameroon and the Central African Republic, which have reached a population density threshold of 20-30 inhabitants/km², could see their deforestation rates double due to increased demands for agricultural land, fuel wood and cash crops such as cocoa and palm trees (Ernst et al., 2012; Megevand et al., 2012).

Several studies have reported on the drivers of deforestation in the tropics. Two categories can be differentiated; namely macro- and micro-economic factors (Lambin et al., 2001; Bhattarai and Hammig, 2001; Scrieciu, 2006; Robiglio et al., 2010; Megevand et al., 2012; Kissinger et al., 2012). Most studies rely on empirical analyses using cross-country (or country-specific) case studies, but to our knowledge none has used site-specific data. Another way of classifying drivers of deforestation under direct and indirect typology is described in the introduction to this thesis.

The most-quoted macro-scale unsustainable factors explaining deforestation are logging, population growth, urbanisation and government policies (Scrieciu, 2006; Megevand et al., 2012). Initial findings seem to confirm that there is a significant causal relationship between these selected macro-economic factors and tropical forest cover decrease. All scholars agree on the complexity of these links. For instance, in an exploratory work written by Scrieciu (2006), it was found that population density was the most important driver of deforestation. Other important socio-economic drivers were access to drinking water, individual wealth and primary education. In 2010, Robiglio et al. (2010) noted that there is rarely a single driver in a deforestation process. Most often, multiple drivers work simultaneously or sequentially in causing forest depletion.

Micro- or socio-economic factors are also worth considering. As global attention increases on addressing poverty, deforestation and CO_2 emissions (Andersen, 1997; MEA, 2005; Neufeldt et al., 2012), it will be necessary to develop technical options backed up by appropriate incentives to achieve proper mitigation and improvements to livelihoods (Wollenberg et al., 2012). It has been established that in West and Central Africa at the local scale, land-use conversion agriculture is a survival strategy for many smallholder farmers (Ngendakumana, 2011; Ngendakumana et al., 2012; Megevand et al., 2012; Awono et al., 2014). This conversion represents a major source of carbon emissions in Africa and tropical countries in general (Wollenberg et al., 2012; Neely and Leeuw, 2012). Additionally, Bhattarai and Hammig (2001) provide strong evidence of a relationship between income and deforestation across the Latin American, African and Asian continents. These authors also argue that, with an increase in income, the structure of the economy and energy demand patterns might shift towards coal- and petroleum-based fuels, thus reducing forest conversion pressures. Yet, such processes are, in turn, hypothesized to depend particularly on country-specific institutional structures. In other words, a reduction in the rate of tropical forest depletion would depend more on strengthening grassroots governing institutions and other underlying institutional factors, and less on the frequently cited factors elaborated above.

In terms of strategies at local level, many scholars found that avoiding deforestation (and thus further increases in CO_2 emissions) and increasing forest biomass (carbon sequestration) have a major climate-change mitigation potential (Kanninen et al., 2007; Nepstad et al., 2007; Palmer and Engel, 2009). However, the success of new mechanisms will also depend on their social

feasibility and on the adaptive capacity of the associated institutional pathways. For example, when developing a forestry policy instrument, local communities always need to be consulted on possible management options to enable them to give their consent through a participatory process. This is because climate change, in itself, is also a key driver of changes in tree-based ecosystems, which may increase risks and vulnerability, and potentially lead to exacerbated poverty in rural areas (Rametsteiner et al., 2009; van Noordwijk et al., 2011; Bernard et al., 2013). In the same vein, it is worth noting that agriculture will be more affected by climate change than any other sector, as a result of changes in humidity and temperature leading to changes (both positive and negative) in agro-ecological zones (FAO, 2014). This vulnerability comes from the fact that agricultural production systems would be hit by land degradation caused by desertification, which would be exacerbated by the tremendous pressures created by ever-increasing population growth and increased demand for food products. These anthropogenic challenges will result in forest-cover decrease. Consequently, carbon emissions relating to land-use changes may be higher than they are today. Fischlin et al. (2010) argued that, together with the existing processes (e.g. deforestation, forest fragmentation, other forms of habitat loss, population growth, income growth, urbanisation), the changes described above may also result in changes in the type and intensity of ecosystem services provided by forests.

At the individual level, forest conversion is the outcome of an economic decision made by a rational agent (the frontier smallholder farmer, the logging industry, or the state agency, as such). The potential effect of economic incentives offered to farmers (or the state) can usually be explained, to a large extent, through simple economic analysis. Therefore, linking mitigation to rural development in a national net emission reduction policy framework will be necessary to coordinate interventions that aim to sustain life and achieve the large-scale ecosystem conservation required to harness climate-change effects (Leimona et al., 2011; van Noordwijk et al., 2011; Wollenberg et al., 2012).

Recent developments in defining strategies to reduce emissions from deforestation and other land uses highlighted their potential to mitigate the emerging negative effects of climate variability, especially if they are community-based and applied after stakeholder capacity building (Hoang et al., 2012; Awono et al., 2014). These strategies may also provide livelihood benefits for local communities living in forest ecosystems (Mustalahti et al., 2012; Hoang et al., 2012). However,

the existing simplistic approaches to tackle climate change, together with the limited local understanding of the links between the socio-economic status of communities and trends in forest-cover loss, might result in the failure of emission reduction options, as well as the social disconnection of the REDD$^+$ schemes in the tropics, as they are designed in the north.

2.3. Evolution of the international debates

In a note released in December 2011, the International Institute for Sustainable Development (IISD) indicated that since the 13th Conference of Parties (COP13), the Subsidiary Body for Scientific and Technological Advice (SBSTA) undertook a program of work on methodological issues relating to a range of policy approaches and positive incentives generally aimed at REDD$^+$. The UNFCCC workshop on methodological issues relating to REDD and held in Tokyo, Japan, in June 2008, came up with a general agreement stating that discussions on policy approaches and incentives could be initiated based on current knowledge. This created the need to refine ongoing instruments in the domain of climate change.

A look at the current literature confirms that payments for environmental services (PES) initiatives and REDD$^+$ have become increasingly popular in forest conservation (Engel et al., 2009; Alix-Garcia et al., 2009; Van Noordwijk and Leimona, 2010; Blom et al., 2011; Leimona et al., 2011; Minang and Van Noordwijk, 2012; Hoang et al., 2012). The 15th Climate Change Conference (UNFCC COP-15) in December 2009 upheld REDD$^+$ as an effective scheme for developing countries to initiate action regarding climate-change mitigation (UNFCC, 2010). Compared to REDD, REDD$^+$ expands the scope of eligible actions. Apart from targeting emission reductions from deforestation and degradation, it includes conservation measures and enhancement of carbon stocks, as well as sustainable management of forests. There was a consensus at COP 16 for REDD$^+$ to be undertaken in three phases: development of national strategies or action plans; implementation of policies and measures; and payment for performance on the basis of quantified forest emissions and carbon removals. Discussion on the different financing options for implementing REDD$^+$ were deferred to COP 17, which took place in Durban, South Africa, in December 2011. Recently, during the Paris COP 19 in 2015, a global

fund known as the climate green fund was identified and agreed upon, although disbursement mechanisms for individual countries, as yet, remain unclear.

Larson et al. (2010) have argued earlier that, under the current understanding, REDD stood as a climate-change strategy but not as a poverty-alleviation strategy. REDD^{+} is presented as an innovative land-use change strategy which could positively impact on livelihoods. Details of the general REDD^{+} principles have been documented by several authors (Minang and van Noordwijk in 2012; Brown, 2013; Lyster et al., 2013). During the 2nd World Congress of Agroforestry held in Nairobi, 2009, Achim Steiner, the then UN Under-Secretary General and Executive Director for the United Nations Environment Program (UNEP) declared: "the future of the global land use is no longer just about land, it is about the future of the atmosphere, of biodiversity and water, fuel and food".

Based on the fact that deforestation is an important source of global carbon emissions, the need arises to combine the REDD^{+} concept with other land-use strategies, such as NAMA (Nationally Appropriate Mitigation Actions) and NAP (National Adaptation Plans) (Bernard et al., 2013). The challenge here is to incorporate the potential of trees for climate-change mitigation and climate-related risk reduction strategies within more appropriate practices to sustain the remaining forests, agricultural lands and other environmental services they provide within the tropical forest margins (Mustalahti et al., 2012; Minang and Van Noordwijk, 2012).

2.4. Past and ongoing forest conservation strategies: lessons for the design of REDD^{+}?

If the impact of local populations on protected areas must be reduced, then zoning of protected areas for conservation should be done using incentive-based approaches in a broad, participatory manner with significant contributions by the local population who depend on these natural resources for their livelihoods. The view of the Executive Director of the International Tropical Timber Organization (ITTO), Emmanuel Ze Meka is in line with this assertion. During a workshop in Yaoundé in 2007 aiming to tackle the root causes of deforestation, he stated that "you cannot combat the rate of deforestation without tackling the root causes, such as poverty". The same idea is at the basis of the integrated conservation-development project approach

(ICDPs). ICDPs represent an innovative management approach that seeks to reduce human impact on protected areas by providing local populations with sustainable, income-generating activities (Minang et al., 2012). Already in 1994, UNEP and UNDP declared that ICDPs can range from community development initiatives in areas bordering parks, to regional land-use initiatives, particularly in areas with shared resources.

2.4.1. Insights from Integrated Conservation-Development Projects (ICDPs)

The impact of local populations on protected areas can be curbed when there are provisions for offering alternative livelihood options and when land surrounding protected areas is well-managed. Asanga (1995) shared this view when elaborating on the changing role of an ICDP in Cameroon. He declared that in order for community forests to benefit future generations, the land surrounding a forest should be sustainably managed for farming and grazing to guarantee local populations' livelihoods. This type of management would address concerns about rural income, well-being, vulnerability, social organization, food security and use of natural resources. Hakizumwami (2000) shared this opinion. He stated that the negative impact of creating protected areas on people's livelihoods can be compensated when people are provided with ICDPs. However, when ICDPs only target some of the affected communities, the rest of the population whose plight has not been addressed will find it difficult to sustain a living on the limited resources remaining. These people will then violate conservation norms, as observed in the Cameroon community forestry sector by Enchaw (2009) during his investigations.

In this regard, the lessons learnt from the success and failure of past ICDP initiatives, along with those from the early REDD pilot projects across Cameroon and the tropics, may be crucial for guiding the ongoing REDD^{+} implementation processes. Cameroon has experienced several ICDPs in recent years. However, results within target rural communities seem to be mixed. Besong et al. (1995), in a review of Mounts Kilum, Ijim and Kupe Mountain Projects, were categorical and stated that community management of forests in general, and of conservation in particular, is new to Cameroon and should not be a short-term operation. These authors held that the artificial short time horizon imposed by the duration of these projects, in combination with the limited commitment of donors to longer-term funding, had the perverse effect of putting project teams in the position of 'dominant leader' rather than 'process facilitator'. The authors

further raised the fear that the short time horizon was likely to compromise the projects' own understanding of local political, social and resource-use systems. Some years later, this precarious situation was investigated by Enchaw (2009) who found that, in Cameroon, the haste used in predefined, top-down projects led to non-attainment of project goals in terms of 'handover of forest' to community management. Furthermore, the stakeholders involved could not explore different options in the search for sustainable natural-resource management (NRM). Of course, the underlying search for best practice in NRM would be time-consuming, but would also eventually yield a sound impact on the level of both forest health and community livelihoods (Enchaw, 2011).

According to Minang and van Noordwijk (2012), strong conceptual links can be found between ICDP and REDD$^+$. They highlighted four main dimensions of the potential linkages between the two mechanisms, namely: (1) the use of vast protected domains and ICDPs as part of REDD$^+$ strategies; (2) use of REDD$^+$ as source of finance for forest conservation and thus incorporation of carbon emission reductions into current ICDPs; (3) operational modalities, as current REDD$^+$ projects are burdened with key ICDP features; and (4) use of local knowledge and capacity building developed through ICDP initiatives for S&MRV (Surveillance and Monitoring, Reporting and Verification).

2.4.2. Payment and rewards for environmental services for REDD$^+$

The importance of Environmental Services (ES) has been clearly highlighted in the Millennium Ecosystem Assessment carried out between 2003 and 2005 (MEA, 2005). Thereafter, they gained interest around the world through several recent studies (Wunder, 2005; Pagiola et al., 2007; Swallow et al., 2009; Leimona et al., 2009 and 2010; Haskett and Gutman, 2010; Tacconi et al., 2010) as well as in Africa with case studies from Uganda, Mozambique and Malawi (German et al., 2010; Jindal, 2010; Ajayi et al., 2011). The MEA report (2005) mapped out the services that sustain specific functions and regulate life on earth. The same report goes on to define environmental services as the benefits people obtain from ecosystems, among which it is possible to distinguish supporting, provisioning, regulating and cultural services. In order to give more details, Haskett and Gutman (2010) highlighted some key services, such as carbon stocks,

biodiversity, scenic beauty and water supplies for domestic, industrial and agricultural use. As for ES sustainability, anthropogenic activities have been identified as shapers of ecosystem status across landscapes (FAO, 2011; Masinga, 2011; Ngendakumana and Namirembe, 2012). Ecosystem status modification is mostly due to agricultural intensification, which often leads to biodiversity loss and erosion of ecological functions (Ajonina, 2011; van de Sand 2012).

Around the year 2000, it was stated that an incentive mechanism to maintain ecosystem services could be an interesting approach. This idea led to the development of PES schemes. Wunder (2005) defined Payments for Ecosystem Services (PES) as (a) a voluntary transaction where; (b) a well-defined ecosystem service (ES) or a land use likely to secure that service; (c) is 'bought' by a (minimum of one) service buyer; (d) from a (minimum of one) service provider; (e) if, and only if, the service provider secures service provision (conditionality).

A payment-based approach seeks to reach a negotiated agreement by stipulating some form of reward to incentivize 'downstream' beneficiaries in recognition of the extra responsibility (burden) borne by 'upstream' communities in restoring or maintaining a healthy ecosystem. Many scholars have recently assessed the role of PES in forest management in tropical countries (Masinga, 2011; Leimona et al., 2011; Ajayi et al., 2011). All agreed that supporting PES in Africa may reverse forest-loss trends and enhance ecosystem functions in cultivated landscapes. In practice, PES deals are emerging through negotiation wherever businesses, public-sector agencies and non-profit organizations have taken an active interest in addressing particular environmental issues. These schemes provide an alternative source of income for landholders, whereby benefits can be extended to communities as a whole (Ajayi et al., 2011; Leimona et al., 2011).

In Africa, experience with PES is very recent. Pioneer initiatives were piloted by the Pro-poor Rewards for Environmental Services in Africa project (PRESA Project). This project has the potential for expansion to other countries. The project is a multi-donor partnership (EU, IFAD, UNDP, ICRAF, some Governments) and covers several sites in Kenya, Uganda, Tanzania (East Africa) and Guinea in West Africa. Preliminary observations and lessons learnt show that classic policy regulations tend to limit the flexibility of options that can be exercised by the

groups/companies with the potential to create negative ES impacts, especially to 'upstream' communities (Ngendakumana and Namirembe, 2012).

Many investigations have contributed to a typology of environmental services (Van Noordwijk et al., 2004; Tomich et al., 2004; MEA, 2005; Leimona, 2009; Tacconi et al., 2010; Haskett and Gutman, 2010; Ajonina, 2011). Hence, there is now a detailed picture of ES across the world. A review of current literature indicates five broad types of services which could be addressed by PES schemes.

- *Watershed protection*. This includes water purification, enhancing/ensuring water quantity, flood and erosion control, amongst others. In general, downstream beneficiaries pay upstream land owners either for adopting particular land uses or for maintaining current land uses. Payments for water services have the advantage that both the providers and the users of these services are relatively easy to identify. Users are generally discrete private operations, such as hydro-electric facilities and industrial users, or institutions that represent groups of users, such as municipal water authorities, water-bottling companies, or irrigation farmers (Landell-Mills and Porras, 2002).
- *Carbon sequestration*. This service involves large emitters of carbon dioxide (i.e. agro-industries, airline companies) in a country that regulates greenhouse gas emissions paying land owners to plant additional trees. In exchange for the additional carbon now sequestered, emitters obtain credits that are used to offset their own greenhouse gas emissions. At the company/emitter's level, the incentive to adhere to the scheme may be reduced taxation and other policy advantages such as further investment opportunities under government regulations. Through coordinated payment bonds, the system can operate at the regional, national or global scale.
- *Biodiversity conservation*. While there are isolated examples of species habitat banks, biodiversity payments can take a wide range of forms, including purchase of conservation credits, payment for bio-prospecting rights or research permits, hunting and fishing licenses, and management contracts to conserve and restore habitats. Developers, such as mining or road construction companies, may offset unavoidable biodiversity damage caused by their actions by developing such agreements with entities to contribute to the cost of wildlife

management. Most of these payments operate at the local or perhaps regional level via a recognized body to guarantee access and transparency of the established scheme.

- *Landscape beauty*. The most obvious example of this ES is eco-tourism, where tourism operators pay a local land owner or community not to hunt in certain areas, or to engage in particular land-management activities. This approach has run into criticism, because few meaningful payments from eco-tourism actually end up in the hands of the locals who actually perform the landscape preservation function.
- *Soil resource conservation*: this ES involves nutrient cycling, decomposition and mineralization, erosion control and sediment retention during natural or induced processes of soil transfer and land movement.

Lessons from Asia and Africa show that, in the specific case of forests, external pressures and high threats to environmental services can create conditions whereby the local community cannot provide for both external and internal benefits without any positive incentives (Jindal, 2010; German et al., 2010; Leimona et al., 2011). In order to expand such systems, governments and national institutions have to guarantee the basic rules of the game to maintain the services under the form of a contract. REDD^{+}, in this sense, is viewed as a form of global PES mechanism to reduce emissions from deforestation and forest degradation. However, the challenge here is to design schemes that can meet people's needs and expectations (Leimona, 2011; Hoang et al., 2012; Minang and van Noordwijk, 2012). In relation to lessons from PES which may inform REDD^{+} design, three significant issues should be kept in mind. These are:

1) stakeholder-negotiated contracts indicating terms and conditions and clarifying payment forms;

2) involvement of all actors with stakes in deforestation, such as those intervening in agricultural sector development and timber exploitation; and

3) opportunity portrayed by current policies and laws to integrate reforms (Leimona et al., 2011).

Many mechanisms of Compensation and Rewards for Environmental services (CRES), are being developed worldwide (WWF, 2006; Van Noordwijk et al., 2007; Swallow et al., 2007; Swallow et al.,2009). Tomich and Van Noordwijk (2004) have highlighted that environmental rewards could take various forms, such as direct payments, policy incentives, or in-kind compensation.

On this basis, emerging mechanisms could take any of these forms depending on the specific contexts and actors involved.
Considering the growing global interest in CRES in Asia and Africa, particularly through conditional contracts that reward provision of conservation services, different non-cash incentive models have been developed and could be applied parallel to, or in combination with, $REDD^{+}$ initiatives.

It has been documented that most PES schemes are built on a voluntary basis through dialogue and negotiation between stakeholders (Swallow et al., 2007). The stakeholders' experience could then be instrumental in developing further policy tools. Concrete case studies of CRES payments are found since 2008 in Uganda, Tanzania, Malawi and Kenya. Famers are paid through voluntary market-based contract either for long-term tree planting and conservation, tonnage estimates of carbon stocks, watershed protection or avoided deforestation in protected areas (Namirembe et al., 2014; Atela et al., 2016). Currently, in Cameroon, there is no clear framework for organizing compensation in the forest conservation arena, despite its potential role in managing carbon stocks to mitigate climate variability at national, sub-regional and global levels (Ajonina, 2011; Dkamela, 2011; Ngendakumana et al., 2012). However, land tenure, forestry and other environmental laws contain provisions that relate to PES. They therefore offer an opportunity, albeit not in an extensive way, to roll out PES schemes, such as $REDD^{+}$, that may tackle conservation, preservation and the sustainable use of natural resources.

In addition, there is a high commitment by stakeholders to influence policies towards payments by forest-dependent users. These might include large forestry and/or water companies, and biodiversity conservation institutions, which obviously have a stake in environmental protection. From current literature (Pagiola et al., 2007; Swallow et al., 2009; Leimona et al., 2009; Ngendakumana, 2012), one can argue that investments in institutionalizing payments for ES are likely to reduce the vulnerability of rural livelihoods. Nevertheless, this will depend on the way agriculture and food systems are considered in the ongoing climate-change mitigation debates. There is an even more limited understanding of linkages between community poverty determinants and trends in forest-cover loss at local level. These shortcomings may continue to affect the expected results from emission reduction policy initiatives as well as contributing to the social disconnection of $REDD^{+}$ schemes in developing countries. This implies the need for a

rethink to develop a fair financial mechanism to attract local end users and forest stewards, mainly rural communities.

2.5. Management policy arena and conflicts in the Cameroon forestry sector

The forestry management sector and policies in Cameroon are still bogged down by historical inadequacies that originated in the colonial era. Abuses, gaps and conflicting legal provisions in the 1994 Forestry Law and its Decree of Application have created avenues for several conflicts in the forestry sector (Enchaw, 2011; Ngendakumana et al., 2013). Several scholars have argued that legal provisions, as prescribed by the 1994 Forestry Law and its associated policy instruments, are also a source of conflict in the community forestry domain (Bigome and Bikie, 1998; Oyono et al., 2008; Nguiffo and Djeukam, 2008; Enchaw, 2009). For example, Article 28 stipulates that the head of a legal institution at site level is the forest management officer (FMO) and that he or she is the custodian of the simplified management plan (SMP). He or she enters into a contract with the Forestry Administration on behalf of the authorized institution. Following the Articles of Association, the head of an association is the delegate. In sites studied by Enchaw (2009), each forest management institution has a simplified management plan and its articles of association.

Applying the two legal instruments within the same FMI created conflicts of authority and interest at the helm of the institution, since each FMI has two legitimate managers who have different interests and responsibilities (the forester and the community delegate). Such conflicts were investigated and confirmed by fieldwork carried out in Cameroon. Analysing the outcome of a project called the Killum Ijim Forest Project (KIFP), the same author worked on an assessment of the conservation strategies in the project area. Based on the Cameroonian experience, Birdlife International and MINEF (2002) stated that conflicts between the legal community body and the forestry administration, the judiciary and municipal authority, are rife in the domain of community forestry.

Following Article 27(4) of the 1994 Forestry Law, “a community forest is a delimited part of non-permanent forest that should not exceed 5,000 hectares” (MINEF 1998:10). When the boundary of a community forest is instituted, irrespective of the stakeholder, some individuals in

the community are likely to lose access to their land and resources in the interests of establishing a community forest. In a situation where land and resources belong to the local people and are perceived to be more valuable than forest conservation, it stands to reason that if one wants to keep the specific area for other uses, the population would interpret this action in terms of land rent leading to greater benefits from the existing resource. If they are therefore not compensated first and/or other land is not allocated to them before collectively sharing the benefits accruing from the community forest, such an action will likely encounter resistance (Enchaw, 2009). Resistance may not necessarily come from all local people, but at least from those individuals directly affected.

Following the provisions of Article 28(3) of the decree of implementation of the forestry regulations, the Government of Cameroon requires legally established forest management institutions (such as an association, co-operative, common initiative group and/or economic interest group) to manage community forests. Some proponents in the domain of social forestry noted that in Cameroon, the creation of these legal institutions for forest management is usually based on stakeholders' powers or influence rather than on tenure rights (Besong et al., 1995; Oyono et al., 2008; Nguiffo and Djeukam, 2008; Awono et al., 2014). Solving such influence-based conflicts requires signficant mobilisation of financial and human resources and these are often limited.

FAO (1999) elucidated that while specific disputes can be resolved, many natural-resource management and rural development situations are characterised by a complex interaction between social, political, cultural, economic and scientific aspects that defy either quick or enduring resolutions. The complexity in this arena is such that the conflict may never be resolved. It is recommended that the more appropriate task from a governance perspective is to manage conflict situations, rather than to attempt to resolve them. It is not surprising therefore, that conflicts, such as those observed within Forest Management Institutions on the one hand, and traditional landlords, cattle owners and farmers, on the other, have proven very difficult to resolve (Enchaw, 2009).

Chambers (1983) stressed that when local communities that dwell in and around forest locations are alienated from the management regime, such forest lands fall into an 'open access' regime

and, consequently, suffer the fate of the 'tragedy of the commons'; meaning the depletion of common forests which may happen as a result of individual users'own self-interests. Cernea (1994) argued that although this situation has been referred to as the tragedy of the commons, it is actually the tragedy of open access, which originates from the dissolution of local-level institutional arrangements. The dissolution led to the disintegration of traditional tenure rights systems and the rise of modern tenure rights. Many scholars (Oyono et al., 2008; Nguiffo and Djeukam, 2008; RRI, 2009; Enchaw, 2011; Foundjem-Tita, 2013; Awono et al., 2014) observed that these two legal systems prevail in co-existence across Cameroon and other countries in Africa. However, existing literature does not dwell much on how the precedence of modern tenure rights over traditional rights affects the definition and implementation of conservation strategies in forest areas. Moreover, it is increasingly acknowledged by the international community and governments that the degradation of forests is partly caused by a lack of involvement of the rightful institutions and stakeholders in the conservation process (McNeely et al., 1990; Fobissie et al., 2012; Awono et al., 2014; Atela et al., 2016).

2.6. Tension between resource conservation and rights of local communities

The use of modern legal frameworks for the conservation of biodiversity often imposes social change on local communities. They are often deterred from participating in the management of these protected areas. However, as noted earlier by Ngbo-Ngbangbo et al. (2010) based on a global literature review, the notion of protected areas has deep historical roots. They have existed in varying forms in diverse ancient cultures, dating back to early pre-agrarian societies in Asia and the Near East (Allin (1990) and Runte (1997) cited by Ngbo-Ngbangbo et al., 2010). In the same vein, it was found that Chinese and South American civilisations initiated several decrees setting aside lands for plant and animal protection more than 3,000 years before the present era. Sacred forest groves, in which all forms of extractive use were prohibited, represent an early manifestation of the notion of protected areas (Chandrashekara et al., 1998 cited by Pandey, 2002).

Conflicts between local communities and management authorities have been reported by many studies across tropical ecosystems (India, Cameroon and Brazil). They often surface when preparing large-scale conservation projects (Pandey, 2002; Oyono et al., 2008; Cotula and

Mayers, 2009). Emerging international governance approaches therefore opened the eyes of social scientists to consider additional safeguards to reduce the risks of conflict over forest resources as negotiated mechanisms were put in place in the context of climate-change mitigation (Oyono et al., 2008; Angelsen and Wertz-Kanounnikoff 2008; Larson et al., 2010; Galudra et al., 2011). This poses the challenge of mainstreaming various forms of key social safeguards, such as community rights and equity in benefit sharing to enhance other forest-related co-benefits (watersheds, health, local climate regulation, biodiversity).

The business dictionary defines ownership as "the ultimate and exclusive right conferred by a lawful claim or title and subject to certain restrictions to enjoy, occupy, possess, rent or sell, use, give away or even destroy an item of property" (http://www.businessdictionary.com). In the light of this definition, there is definitely room for real concern about how the interests of forest people can be protected under REDD$^+$. Forest tenure and resource ownership tend to be insecure for communities living in forested areas in many countries where REDD$^+$ is being implemented. This can be explained by the fact that the communities adhere to customary rights, which are often not formalized under statutory rights (Brown, 2013). In the largest forested countries of the world, such as Indonesia, Congo DR, Venezuela and even Cameroon, the state owns most forestland. Forests where local communities have statutory access or ownership rights tend to be small or non-existent (Tacconi et al., 2010; Sunderlin et al., 2014; Awono et al., 2014). This observation highlights the risk of social conflict under the upcoming REDD$^+$ schemes and stresses the need to partly shift forest resource ownership towards local people for them to positively contribute to reducing emissions from deforestation. REDD$^+$ is an opportunity to engage reforms in a way that would be equitable for local stakeholders.

Although, at the moment, some steps have been made to move from the REDD$^+$ pilot phase to a fast-track implementation in the Congo basin countries, some questions still need to be clarified: (1) to what extent does REDD$^+$ have to mainstream governance principles such as participation, responsibilities and rules if it is to deal effectively with the drivers of deforestation? and (2) what lessons learnt from the current forestry policy framework could help to make REDD$^+$ successful in Cameroon?

2.7. Policy perspective for community involvement in REDD$^+$

It is recognised by many contemporary researchers that REDD$^+$ policies and programs will not succeed if adequate tenure incentives for indigenous people, local communities and women are not included. Enchaw (2011) has worked on how tenure security for indigenous people, in his case the Baka, provides an incentive for their participation in forest conservation within the framework of REDD$^+$ policies and programs. He indicated that one of the greatest bottlenecks undermining the participation of indigenous people in sustainable forest management in Cameroon is the uncertainty of the tenure systems in practice. The latter author claimed that despite the existence of several forest-management laws in the country, quantitative and qualitative depletion of forests is being aggravated by mistaken or unclear policies. The modern tenure system (*de jure* tenure system), with public utility status upheld by the State and non-governmental organizations (NGOs) in the country, has not only eschewed the traditional tenure system, but has also failed to recognise the land and forest resource rights of indigenous people, local communities and women. Moreover, Enchaw (2011) noted that positive aspects of the traditional tenure system and traditional conservation strategies were not integrated in any of the previous conservation frames. A sense of belonging is a normal human phenomenon. Therefore, no one will be indifferent to the fact that the non-integration of indigenous people, local communities and women in the process of conservation has dissuaded them from participating.

The State, NGOs, funding bodies and multilateral organizations still perceive climate change and forest conservation as issues requiring only technical and regulatory solutions that are beyond indigenous peoples, yet the latter are the ones who pay the price for conservation (Sunderlin et al., 2014). Very often, the solutions and opportunities offered to indigenous peoples through REDD$^+$ policies and programs do not take their priorities and preferences into consideration. Even worse, such solutions require radical and fundamental changes in socio-political structures, technological and economic systems, organizational forms, and modes of regulation that do not match the social life and organization of indigenous peoples (Brown, 2013). They could be in terms of imposed new leadership set up, newly introduced planting materials, exposure to modern exchanges and exotic feeding habits, top down policy measures and rules, etc. These changes are prone to distort those cultural, socio-economic and spiritual values that have effectively established a harmonious relationship between indigenous peoples and their forest lands and

territories for generations. As it is, this relationship has enabled them to conserve the remaining forest massifs and often to maintain carbon stocks at sustainable levels long before REDD^{+} policies and programs were proposed (Brown, 2013).

The 1994 Forestry Law in Cameroon was developed under the auspices of the World Bank. It allowed local people to acquire some community forests in non-permanent forest areas (MINEF, 1995). A multiplicity of factors, however, that, in practice, render ineffective the community forest concept have been identified by a number of scholars (Oyono et al., 2006; Enchaw, 2009). The factors are: (1) limited political will of the State towards management devolution; (2) vertical policy instrument development without the prior consent of the local communities; (3) efforts by conservationists to take advantage of legal flaws to victimise indigenous people in order to justify demands for conservation funds and alleviate the poverty situation for forestry staff; (4) orientation of most forestry processes towards experts to the detriment of local knowledge, whereby the required time and implementation costs constitute a major constraint.

The legal classification of land and forest, coupled with the statutory exigency for obtaining land titles and registering private lands, has rather restricted access rights to these domains for indigenous people and local communities, although they depend directly on the land and forest for their livelihoods (RRI, 2009; Sunderlin et al., 2014). One fundamental policy issue is the non-application of some of the legal provisions that were clearly promulgated and which should devolve access and ownership rights to local communities (Springate-Baginski and Wollenberg 2010). The complex nature of the 1994 Forestry Law of Cameroon has rendered its implementation difficult. A 2009 report by REPAR (Parliamentary Network) pointed out that despite the gaps, omissions and contradictions in the law, there are many provisions that are basically good, but which are inadequately enforced. Sunderlin et al. (2014) found that in many developing countries, including Cameroon, issues of compensation and benefit sharing are inadequately managed. Even though the government may have the political will to act, external influence would probably frustrate its ambitions.

Crucially, there is a lot of incoherence between the 1994 Forestry Law and other Forestry policy instruments in Cameroon that have been promulgated since 1995, after the law had been formulated (Enchaw, 2009; Foundjem-Tita, 2013). For instance, efforts by the government to

mitigate the situation by adopting the Environment Code in 1996 could not be brought to fruition as the conditions imposed by the World Bank put the country under pressure to understate community priority needs and rights. Under such conditions, the government was forced to adopt a legal instrument which contains some gaps, confusing clauses and contradictions vis-à-vis local interests and aspirations.

The REDD$^+$ process in Cameroon started in 2008 with the validation of the Readiness Preparation Idea Note. This was followed by two years of awereness-creation meetings at all levels. In 2010, preliminary assessments on existing REDD$^+$ initiatives were carried out. This process led to the creation of the REDD$^+$ steering committee. The latter was responsible for spearheading the development of the REDD$^+$ Readiness Preparation Proposal (RPP), as well as the future implementation plan for the mechanism in the field. The Cameroon RPP was a three-year project with ambitious and challenging perspectives on how to integrate REDD$^+$ into the national forestry policies, and on how to improve governance principles as requirements for a successful implementation phase. Learning from the current legal context, REDD$^+$ may need to pay attention to social fairness, while anticipating a conflict-solving arrangement throughout the implementation cycle.

2.8. Conclusions and research perspectives

This desktop analysis sought to deepen existing knowledge in the area of forest governance to underpin the REDD$^+$ implementation process after the fast-track and pilot phase in Cameroon. Instruments and approaches such as ICDPs and PES were found to have strong linkages with REDD$^+$. A more thorough understanding of the initiatives that have previously been implemented in Cameroon and elsewhere is believed to improve REDD$^+$ effectiveness and reduce implementation costs in the current context of limited funding flows from donors. Lessons learnt from the current regulatory frameworks and past and ongoing conservation initiatives are mostly modalities to consider in implementing REDD$^+$. These comprise the need for better targeting, participation or stakeholder involvement, integrating positive aspects of traditional land tenure and opportunity within current policies and laws to integrate reforms. Forest tenure conflicts need to be resolved through adequate policy reforms and related instruments clarified and agreed upon before REDD$^+$ is implemented.

Furthermore, from a reduced deforestation perspective, several specific gaps or deficiencies in the conservation approaches and policy formulations were discovered: (1) incoherence between existing forestry policy instruments with regard to community forest concept, (2) overnormative and complex approaches used in forest management which would constrain the flow of $REDD^+$ implementation, (3) the reliance on top-down, instead of bottom-up, approaches which intentionally cast aside community rights and small farmers' interests; and (4) limited understanding of linkages between local communities' poverty determinants and trends in forest-cover loss. Undoubtedly, this inadequate knowledge on local drivers of deforestation, the link with the socio-economic situation and conflicts over forest resources need to be addressed as they constitute stumbling blocks to $REDD^+$ activities. These suggest that the process would need to take into consideration both sustainable natural-resource management (NRM) and improved livelihoods for the rural poor living in and around permanent forest domains, so that the predicted benefits can match community needs and expectations.

The whole set of paradigms implies rethinking a fair and socially sound $REDD^+$ mechanism in order to attract local end users and forest stewards, mainly rural communities. Research perspectives should therefore tackle the identified gaps and further explore links between household characteristics and deforestation, hence $REDD^+$, to assess key factors of success. From the findings, adequate incentive structures could be developed based on the community-forest concept, in the light of local smallholder farmers' priorities and interests. Ideally, this would then inform the development of an appropriate regulatory framework to halt deforestation in Cameroon through foregone efforts-based reward instruments such as $REDD^+$ and/or any other carbon market scheme.

CHAPTER 3

"You can improve on something, but you can't improve on nothing"

(Dr Haggai J. Edmund)

3. STUDY AREA PROFILE AND GENERAL RESEARCH METHODOLOGY

Chapter 3 describes the country under study and the specificities of the study sites across scales, as well as the methodology used. A detailed presentation of the specific methods used is provided in each empirical chapter. During this research, a multi-layer dataset approach was adopted in order to obtain a broader view and to capture and record the relevant data at different scales. The first dataset considers the local level and contains farm and socio-economic information collected through a household survey, transect walks and focus group discussions. The second dataset covers multiple sites to assess the implications of social safeguards. Finally, the third layer consists of information at the national level to map the institutions with stakes in $REDD^{+}$.

3.1. Description of the study area

3.1.1. Geographic and socio-economic context of Cameroon

Cameroon is one of 10 countries which form the Congo basin in the central part of the African continent. The Republic of Cameroon borders Nigeria to the west, Chad to the northeast, the Central Africa Republic to the east, Equatorial Guinea, Gabon and the Republic of the Congo to the south (Fig3.1). The country extends to the west-central coast of Africa and occupies an area of 466,326 km^2 (de Wasseige, 2009) between latitudes 2° and 13°N (about 1200 km), and longitudes 8° 30′ and 16°10′ E (CIA, 2013). Most of the land territory is situated between 200 and 800 m above sea level. Cameroon has been described as "all of Africa in one triangle" because the country hosts such a wide range of climates and ecosystems.

The North of the country, extending up to Lake Chad, is covered by Sahel savannah. The central part contains moist savannah, whereas the South is covered by dense tropical rainforests (MINEPDED, 2012). The climate of Cameroon varies with the terrain, from tropical along the coast to semi-arid and hot in the north. The coastal belt is extremely hot and humid and includes some of the wettest places on earth (Letouzey, 1985).

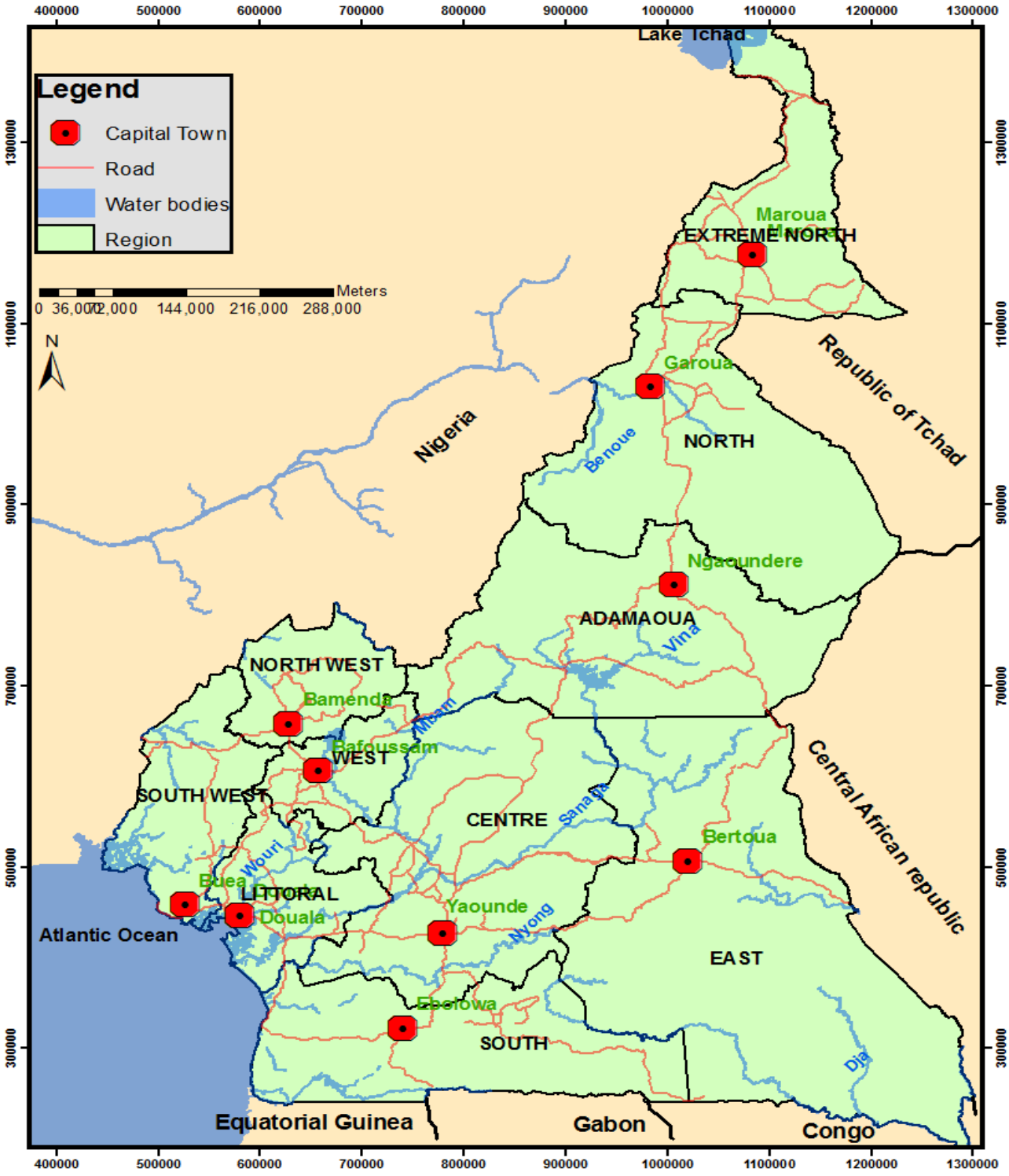


Figure 3.1. Political map of Cameroon showing waterways and road networks.

(source: Adapted from the Atlas of Cameroon by Precilia Ngaunkam Shokoleu, 2012)

Compared to other African countries, Cameroon has generally enjoyed stability, which has permitted the development of agriculture, road infrastructure and timber industries (CIA, 2013). Nevertheless, large numbers of Cameroonians live in poverty as subsistence, smallholder farmers. According to a recent UNDP report, Cameroon ranks 152 out of 187 on the 2014 Human Development Index, with 48.2% of the country's 20 million people identifed as multidimensionnally poor (UNDP, 2014).

With an annual growth rate of 2.08% in the rural areas, alongside an urbanisation rate of 3.5%, it is estimated that the population will increase to around 25 million in 2020 (USAID, 2011). In Cameroon, the urban population was estimated to be 54% of the total in 2007 (INS, 2007). Population densities vary according to zones. For example, the humid forest in the Eastern Forest region has a population density of just 7.5 per km^2; the South has 12.5 per km^2, whereas the savannah zone has 12.6 per km^2. These are less-populated areas compared to the western highlands (151.7 per km^2), the lowland coast (105 per km^2) and the North with 85.5 per km^2.

Cameroon has a vast forest cover, with around 42% of the total land area covered with forests (equivalent to 20 million ha), 75% of which is dense forest (FAO, 2010; UNREDD, 2011). According to Rainforest Alliance data (2012), the country ranks among the top six African countries for its varied species of mammals, birds and flora. Cameroon is estimated to host over half of the continent's bird and mammal species and at least 8,000 plant species.

The forests of Cameroon constitute a significant portion of the Congo Basin. It accounts for about 80% of the remaining moist forests in Africa but estimates of its annual deforestation rates are respectively 0.05% (GAF-AG et al., 2011) and 0.06% (Ernst et al., 2012). While smallholder slash-and-burn agriculture and fuelwood collection are widely believed to be responsible for about 90% of deforestation, these drivers are often the secondary effects of tropical timber harvesting, which degrades forest cover and contributes to associated declines in biodiversity (Dkamela, 2010, Minang et al., 2012). A distinction can be made between direct and indirect drivers of deforestation (Ernst et al., 2012; Megevand et al., 2012; Kissinger et al., 2012). In the case of Cameroon, the most important direct drivers cited are agricultural expansion, infrastructure development, timber extraction and fuelwood harvesting. Indirect drivers

commonly mentioned are demographic pressure, the economic context and governance practices (Robiglio et al., 2010; Ernst et al., 2012).

Recently, deforestation in Cameroon became a major source of debate (UNREDD, 2011). For instance, it was estimated that the country loses about 200,000 ha of its forest cover each year, representing an annual deforestation rate of 0.90% (FAO, 2008; MINEPDED, 2012). This loss rate has become alarming, especially when compared to the 4.0 million hectares cleared annually in Africa (Butler, 2005 cited by Asaah, 2012; see also details in section 4.1). Drivers of deforestation differ across the various zones, in relation to population density and distribution, infrastructure development and market integration. The different agro-ecolgical zones are presented in table 3.1 hereafter.

Table 3.1. Agro-ecological zones and suitability for cropping

Agro-ecological zone type	**Crops suitability**
Sudano-sahel	Cotton, millet, sorghum, cowpea, onion and sesame
Savanna zone	Maize, millet, sorghum, yam, potato
Western highlands	Cocoa, coffee, maize, potato, poultry, vegetables
Mono-modal humid forest zone	Cocoa, banana, plantain, cassava, coffee, palm oil, poultry, rubber, ginger, pepper
Bimodal humid forest zone	Cocoa, plantain, cassava, coffee, palm oil, pineapple

(Source, World Bank 2008)

It can be observed that the cropping potential differs between the zones. The characteristics of each zone have also shaped the forest changes observed over the past few decades (WB, 2008; Robiglio et al., 2010).

In the present study, particular focus is given to the rainforest zone because, as part of the Congo Basin forest, it is the main target area for the REDD^{+} projects under the COMIFAC partnership. The rainforest zone includes the South and Coastal zones, roughly between 2°and 6° N and for the most part below an altitude of 800 m (PNDP, 2011). In the coastal zone, there is a single dry season and rainfall decreases from 4,000 mm/year at the coast to 2,500 mm/year inland (Tchouto, 2004). In the South, there is a four-season climate and annual rainfall is over 1,500 mm with a maximum of two dry months. This is a region of dense forests, where evergreen or semi-deciduous rainforest forms an unbroken tract in the south and splits into islands north of 5°N

(PNDP, 2011). It corresponds to the "humid" and "low-and medium-altitude sub-humid and very humid" eco-floristic zones, while the coastal and southern zones make up the Atlantic coastal forest (see map on Fig. 3.2).

According to Robiglio et al. (2010), the sectors that are most directly responsible for forest loss and degradation in Cameroon are the timber industry (timber exploitation is the prominent land-use system in the forest zone), agribusiness and to an extend smallholder farmers.

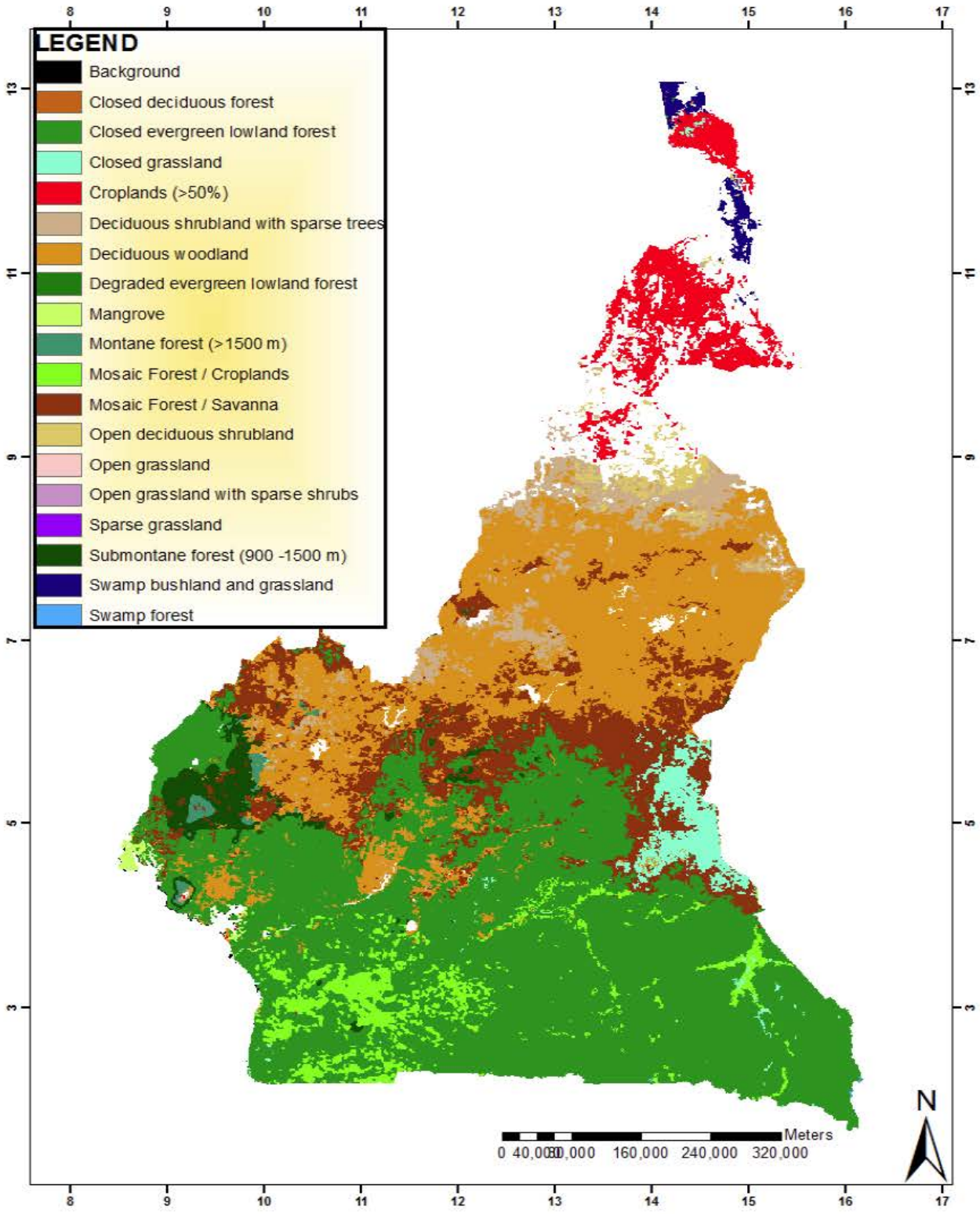


Figure 3.2. Land cover map of Cameroon (source: drawn by Precilia Ngaunkam Shokoleu, 2013)

3.1.2. Cameroon timber industry trends

Cameroon's forest management system has been developed with the support of the World Bank in 1994 following the national zoning plan concepts, which allocate logging areas according to the forest policy (de Wasseige, 2009). The legal framework distinguishes permanent forest domains, classified as such for strict conservation, and the non-permanent forest domains comprising other areas covered with tree canopies. Forest-related income in Cameroon is of considerable economic importance, as the timber industry is the second largest source of export revenues for the country after the oil industry (CIA, 2013). It represents 6% of the country's Gross National Product. For example, the formal timber sector generated a fiscal income of around 62,000,000 Euros in 2005 and employed about 163,000 people in 2006, 13,000 of whom were employed in the industrial sector (Cerutti and Taconni, 2008). In 2006, formal national timber production was estimated at 2,296,254 m^3 (de Wasseige, 2009). Income from the annual forestry fees was estimated at 30 million US dollars in 2008, which represents 11.5% of the total export earnings, coming second only to the oil industry (Kengoum and Tiani, 2013).

Logging in Cameroon, as practiced in forest management units (FMU) is highly selective, focusing on a few species of interest. These species include Ayous (*Triplochiton scleroxylon*), Sapelli (*Entandrophragma cylindricum*), Azobe (*Lophira alata*), Iroko (*Milicia excelsa*), Sipo (*Entandrophragma utile*), Fraké (*Terminalia superba*) and Tali (*Erythrophleum ivorensis*) (Eba'a-Atyi, 2009). Clearcutting is not practiced unless authorised for wood recovery, where timber logging is associated with the development of agricultural projects or infrastructure development (Dkamela, 2010).

A study on the domestic timber sector has quantified the scale of the informal timber market in Cameroon, with harvested volumes estimated at about 2 million m^3 of timber per year. This is almost equivalent to the quantities found in the formal timber export industry (Cerutti and Taconni, 2008). The domestic sector, however, has grown up in contravention of the legal enforcement system. Thus, it is evolving without either logging entitlements or taxation. This illegal deforestation is likely to negatively affect the implementation outcomes of $REDD^+$ because the sector is characterised by inefficiency, corruption and a lack of transparency (Lescuyer et al.2009).

3.1.3. Agricultural sector

In Cameroon, agriculture contributes about 20.8% to GDP (CIA, 2013). It is a sector experiencing continuous growth, although with fluctuating prices. The products with a relevant positive volume growth for export are: cocoa (4.7 %), coffee (1%), rubber (6.9%), and palm oil (8.3%). Furthermore, agriculture is the predominant activity for about 70% of rural households (CIA, 2013). The evolution of the rural sector is critical for the national economy in terms of job creation, income diversification, poverty reduction and overall growth and exports. After the hardship registered in early 2008 in the country, due to the increase in international cereal grain prices, Cameroon has established a strategy to enhance long-term food supply (Cerutti and Taconni, 2008). The strategy is based on facilitating access to and use of inputs and high-yielding plant material with a view to reducing production costs for small-scale farmers (WB, 2008). Because of its competitiveness in cassava, maize and plantain production, and thanks to improvements in the transport infrastructure, Cameroon is also becoming a major food supplier within Central Africa (Tabuna et al., 2009). This has yielded a relevant impact on the opportunities created for smallholder farmers in the humid forest zone, in particular in the Southern Region. In this area, the majority of people living near the forests rely on small-scale, traditional, agriculture-based, shifting cultivation practices to produce food crops, as well as cocoa and oil palm. According to Yemefack et al. (2013), the most important farming systems in Efoulan are subsistence food crop production and cocoa agroforestry plantations.

3.1.4 Profile of the local scale study site (main site)

The main study site for this work is the Efoulan. Efoulan is a landscape that belongs to a municipality with the same name (Fig. 3.3). It is located in the southern Region of Cameroon, in Mvila Division. Efoulan is one of the sites previously selected as part of the intervention area for the ASB-REALU project. The latter project is an initiative implemented by the World Agroforestry Center and has partners in 4 countries in the tropics. Under NORAD funding, REALU aimed to provide quick-start data and policy evidence to inform $REDD^{+}$ processes globally.

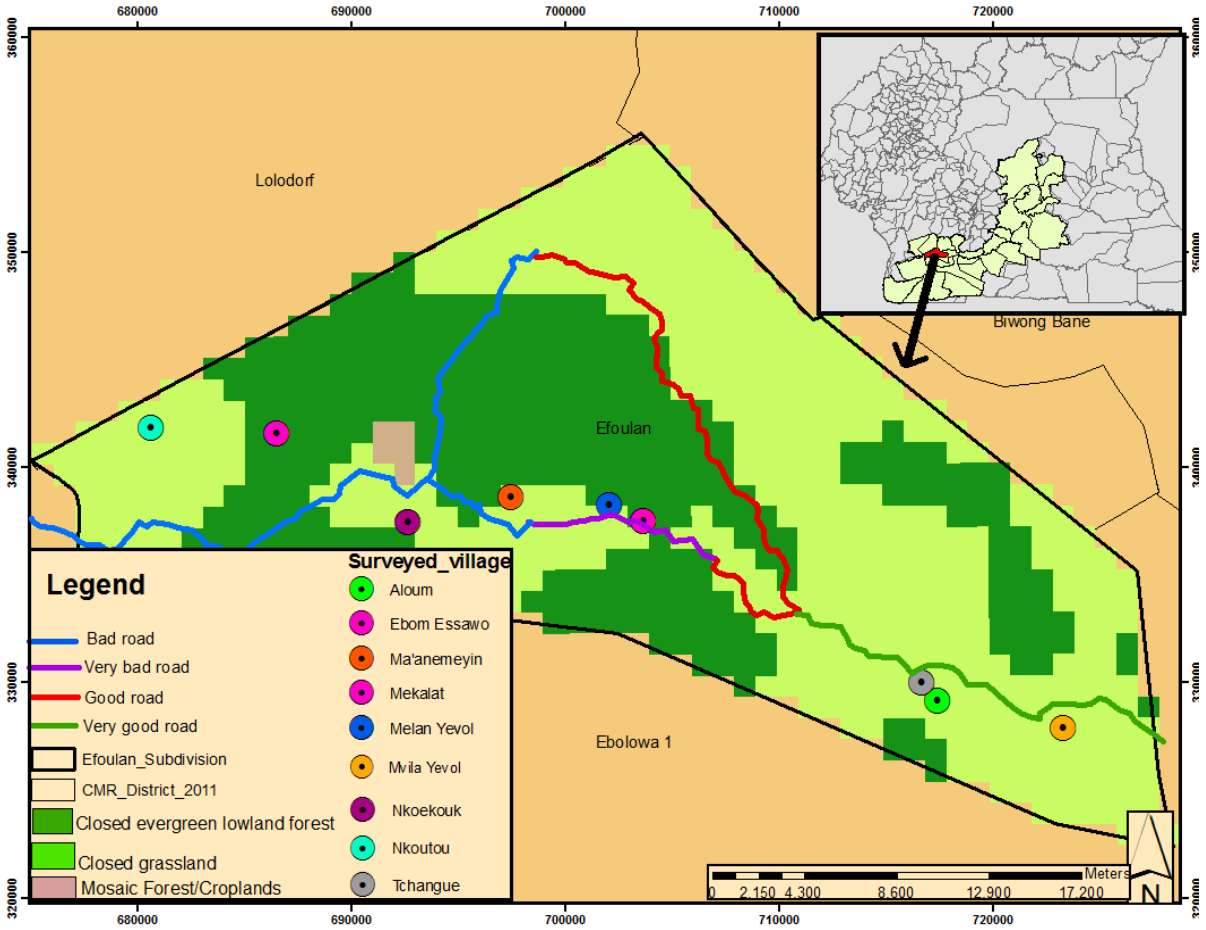


Figure 3.3. Map of Efoulan landscape showing the study villages (Source: Ngaunkam P. and author)

Efoulan was selected for this research because it met the following criteria: 1) availability of satellite images; 2) presence of humid forest cover; 3) presence of natural-resource management bodies; 4) presence of agri-business and logging companies; 5) all-weather road infrastructure; 6) local authorities open to, or having a clear vision on, natural-resource management; and 7) local administrations already in the process of building a local development plan. The logic of using a municipality focus is inspired by the future implications of decentralisation laws on natural resources (PNDP, 2011) at landscape level. It is assumed that, after the completion of the ongoing decentralisation process, local administrative authorities would be key facilitators in the CO_2 emission reduction schemes. Moreover, Cameroon's southern region is part of the potential areas for $REDD^+$ within the Congo basin initiatives.

The population of Efoulan is estimated at 28,000 inhabitants, distributed over 37 villages (PNDP, 2011). The livelihood of these communities depends on smallholder agriculture, based on shifting cultivation and cocoa plantations and oil palm (Table 3.2) as well as the collection of NTFPs.

Table 3.2. Overview of main crops cultivated in Efoulan

Crop typology	**Common name**	**Local Name**	**Scientific Name***	**IPNI Family names**
Perennial /cash	Cocoa	*keka*	*Theobroma cacao* L.	Malvaceae
	Palm oil	*Alene*	*Elaeis guineensis* Jacq.	Arecaceae
	Pineapple	*Zeuk*	*Ananas comosus (*L) Merr.	Bromeliaceae
	Sugar cane	*Nkok*	*Saccharum officinarum* L.	Poaceae
Annual crops	Groundnut	*Owondo*	*Arachis hypogaea* L.	Fabaceae
	Cucumber (Egousi)	*Ngon*	*Cucumis sativus* L.	Cucurbitaceae
	Cocoyam	*Ekabé*	*Xanthosoma sagittifolium* (L.) Schott	Araceae
	Maize	*Fon*	*Zea mays L.*	Poaceae
	Cassava	*Mbong*	*Manihot esculenta* Crantz	Euphorbiaceae
	Banana	*Adjoué*	*Musa sapientum* L.	Musaceae
	Plantains	*Ekon*	*Musa paradisiaca* L.	Musaceae
Agroforestry trees	Mango	*Ando'o nta'an*	*Mangifera indica* Wall.	Anacardiaceae
	Paw paw	*Fofo*	*Carica papaya* L.	Caricaceae
	African mango	*Ndo'o*	*Irvingia gabonensis Baill.* Ex Lanen.	Irvingiaceae

Source: Ngendakumana et al., 2011.
**Scientific names checked using IPNI, 2005 (International Plant Name Index) and NRCS (USDA Natural Resource Conservation Service) and MOBOT Plant List* (www.theplantlist.org)

According to the Köppen climate classification system (Pidwirny, 2011), the climate regime in Efoulan is tropical monsoonal with a long wet season and a short dry season. Mean annual rainfall in the study area has been estimated at 1532.2 mm. The average annual temperature is around 24.6°C, while the average annual humidity rate is 80% (Mbosso, 2011). The period from December to February is the driest of the year. However, irregularities are observed in local climate conditions in Efoulan and its surroundings (Ebolowa, Lolodolf and Campo).

In terms of geomorphology and geology, Efoulan belongs to the continental plateau of southern Cameroon, a tertiary eroded surface with undulating to rolling hills. Soils are generally fertile enough for agriculture, but lose their fertility rapidly under severe and cumulative intensification. This fact seems to push farmers to practice shifting cultivation and slash-and-burn, a practice which increases the conversion of forests into agricultural lands (Robiglio et al., 2010; Ngendakumana et al., 2011).

With regard to forest resources, Efoulan has four small forest units. The first is a council forest covering about 5,600 ha over a total surface area of 1,500 km^2. The other three forests found in the municipality are community forests currently managed by Common Initiative Groups. Van Gemerden and Hazeu (1999) conducted a detailed vegetation study in the Efoulan landscape and reported some 490 tree species belonging to 76 families. The most prominent families include the Euphorbiaceae (47 species), Caesalpiniaceae (43 species), Rubiaceae (29 species) and Annonaceae (18 species). The forest in Efoulan is part of the Campo-Ma'an rainforest which has around 114 endemic plant species, 29 of which are restricted to the study area, with species such as *Afrotrewia kamerinica, Bulbophyllum alinae, Ledermanniella batangensis and Psychotria batangana* (Tchouto, 2004).

Vegetation appears as a degraded forest with a dense understory and few epiphytes. In the same arena, wetland forests are observed with *Rhizophora racemosa* and *Pandanus satabiei,* alongside bamboo species (such as *Phyllostachys* spp.*)* and raphia palms (*Raphia* sp.). Also, important patches of primary forest are found in this area. In terms of the composition of vegetative cover, three vegetative cover layers can be distinguished as shown by table 3.3 below: a tree layer composed of trees whose height reaches at least 8 m; a shrub layer composed of shrubs and bushes; and an herbaceous layer.

Table 3.3. Dominant tree species per land-use system in the tree strata of Efoulan (%)

Rank	Dominant species in arboreous strata	Land Use System (LUS)			
		Mixed perennial tree-crops	Tree crops fallow system	Food crop-tree crop system	Secondary forest
1	*Elaeis guineensis*			62.50	12.50
2	*Funtumia elastica*		37.50		37.50
3	*Irvingia gabonensis*	12.50	25.00	37.50	
4	*Albizia spp.*		12.50		12.50
5	*Funtumia africana*	12.50			12.50
6	*Macaranga spp.*	12.50	12.50		
7	*Musanga cecropioides*				25.00
8	*Ricinodendron heudelotii*	25.00			
9	*Artocarpus heterophyllus*				12.50
10	*Ceiba pentandra*	12.50			

(Source: After ICRAFF/ASB Cameroon data base)

According to a quick forestry inventory carried out under the ASB initiative in Efoulan (Ngendakumana et al., 2011), it was observed that in the "food crop-tree crop system", 62.5% of the trees are *Elaeis guineensis*. In the tree-crop fallow and secondary forest land-use systems *Funtumia elastica* is predominant (37.50%). Finally, the same assessment indicated that in the mixed perennial tree crop systems, *Ricinodendron heudelotii* is the dominant species (25%).

3.1.5 Description of the sub- study sites

The second dataset contains data on three sub-sites (Ngoyla, Edea and Tinto, see Fig.3.4). These sites were chosen in three regions of Cameroon based on prior information obtained from local partners based on criteria such as (a) cultural diversity, (b) occurrence of customary rights claims to forest resources, (c) overlaps between modern and customary tenure regimes, and (d) the existence, at least, of a forest management unit under threat. As suggested by Ritchie and Lewis (2010), it was decided to include sub-sites in the investigation to enable assessment of the implications of the tenure system on deforestation in the current $REDD^{+}$ context. One sub-site is located in the English-speaking part of Cameroon (Tinto in the South West Region) with the two others in the French-speaking part of the country (Ngoyla in the East Region, and Edea in UFA 07002 of the Coastal Region) (UFA= "*Unité Forestière d'Aménagement*" or Forest Management Unit). The three study sites are all located in the southern forest region of Cameroon.

The first study site, Ngoyla, is a sub-division found in the Upper Nyong Division, which is located in the south eastern part of the East Region of Cameroon. Ngoyla Sub-division is located approximately between longitudes 12°40' and 14°18' east of the Greenwich Meridian and between latitudes 2°5'and 3°46'north of the Equator. The local population is made up of Bantu, Baka Pygmies and a few immigrants. Their dominant livelihood activities are cocoa cultivation, hunting and gathering. Access to land and forest resources is under the influence of the Nki National Park. Here the forest management systems are characterised by repeated park boundary extensions due to imposed changes in zoning resulting in community farmland-based claims.

The UFA 07002 Edea study site is found in the south western coastal part of the Sanaga Maritime Division in the Coastal Region of Cameroon. It is made up of Ngonga and Kopongo localities within the target UFA and BOPO (Boomabong and Pouth-Ndjock) located adjacent to the same UFA. The local population is made up of Bassa and migrants. Their dominant livelihood

activities are cassava, plantain and oil palm cultivation, and hunting and gathering. Ngonga and Kopongo are two communities each with a proposed Community Forest (CF). These two proposed CFs are within UFA 07002, a forest area under the control of a state-owned corporation called “Edea Technopole”.

The third site, Tinto, is in Manyu Division of the South West Region of Cameroon. It is approximately located between longitudes 9°34’ and 9°38’E and between latitudes 5°32’and 5°37’N. The local population is made up of the Bayang and migrants. Their dominant livelihood activities are cocoa and food crop cultivation, hunting, gathering and fishing.

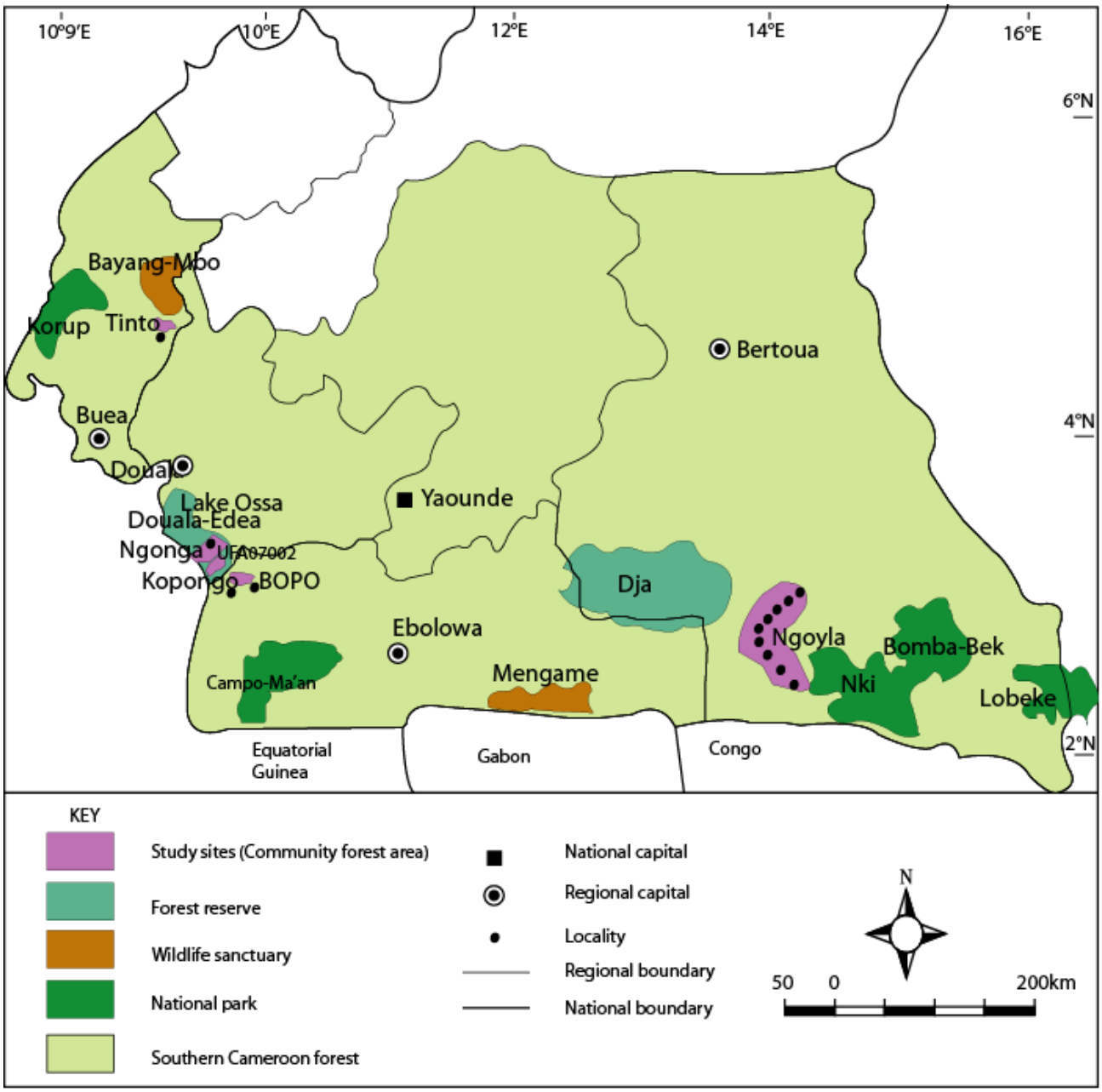


Figure 3.4: Location of the three study sub-sites in the southern Cameroon forest region (source: adapted from MINFOF, 2008)

3.2. Methods

To achieve envisaged objectives, this study used the methodological approach described below.

3.2.1. Data collection across scales

In an attempt to constitute cogent analytic building blocks during the whole research period (Ritchie et al., 2003), information was consolidated using a three-level dataset (local, sub-national or landscape and national). This type of multi-layer dataset approach was adopted in order to obtain a broader view by capturing and recording key observations at all levels (Table 3.4). The first dataset comes from the local level and concerns farm and socio-economic information generated through household surveys, transect walks and focus group discussions in the study area. The second dataset goes beyond the study area "Efoulan" to assess forest tenure and policy challenges at community (sub-national) level. The third layer consists of national-level information to map institutions with stakes in $REDD^{+}$. In addition, secondary data was obtained from a desk review of government policies and research documents available online and/or in various libraries.

In practice, a review of the literature in the domain of $REDD^{+}$ and climate change was undertaken to establish the state of the art and the knowledge gaps in the Cameroon forest sector. A search for the review material was undertaken between April 2011 and September 2014, using several databases, i.e. Google scholar, ISI web of knowledge and Science Direct.

As indicated earlier, the study relies on data collected at different scales. The sources of information are presented in table 3.4. The entire series of assessments consisted of nine sites, encompassing 534 informants of different types from 2010 to 2011. To answer the first two research questions, data collection primarily used a household survey (see details in annex). Operationally, the questionnaire was completed by face-to-face interviews in nine villages of Efoulan (Fig. 3.3). The risk of bias with the survey method was reduced because the enumerators knew the area and the local issues. The enumerators were trained only to guide the respondents and to avoid interference by proffering their own opinions which could influence the answers. During the research, a mixed method approach was used (Richie and Lewis, 2003) to gather accurate and detailed information. Additional tools and methods were utilised, ranging from

literature review, content analysis applied to policy instruments and institutional mapping (Biermann et al., 2009; Angelsen et al., 2012). Focus and large group discussions were used to complement qualitative data in order to understand avenues of community empowerment towards efficient REDD$^+$ implementation.

Table 3.4. Summary of sample frame showing data level, sites and number of agents sampled

Assessment Level	Research questions	Selected sample unit/ Region	Target sampled sites	Type of data collected/Research questions covered	Number of respondents /sample unit
Local	Research question 1 to 2 on policy, incentive options for REDD$^+$ and relationship between household characteristics and deforestation.	Efoulan (South)	Efoulan Council forest	Socio-economic HH characteristics. Perceptions of farming practices, knowledge of law and awareness on CC. Conditional willingness to conserve forest carbon stocks.	48
			CIG MINVAN Community forest		38
			CIG DIMEJ 1&2 Community forest		34
Subnational	Research question 4 on including social safeguards in REDD$^+$ policy	Ngoyla (East)	Nguti Reserve	Relationship "Forest tenure, community rights and land claims. Knowledge on policies and the 1994 forestry law. Potential challenges for REDD$^+$ implementation.	(137) [a]
			Nki National Park		
		Edea (Littoral)	Covilam Reserve		(102)
			Edea Reserve		
		Tinto (South West)	Bayang Mbo Sanctuary		(101)
			Codem Reserve		
National	Research question 3 on policy solutions and institutional of REDD$^+$ dimensions	Countrywide	REDD$^+$ stakeholders	Information on REDD$^+$ actors and institutions. State of REDD$^+$ pilot phase.	18
Sub total					138
[a]$_{LGDM}$					330
FGD					66
Total	**4**	**4**	**10**	**5**	**534**

Key: [a]$_{LGDM}$=Large Group Discussion Meetings, involving community-based organizations (figures in brackets), FGD = Focus Group Discussions.

A nested approach was used, as presented by Pedroni et al. (2010) and echoed in Minang and Van Noordwijk (2012). The quantitative data used in chapter 4 was generated through household surveys as described earlier, and the information obtained was complemented by focus group discussions conducted in Efoulan municipality, as similarly applied by van Noordwijk et al. (2010). In this study, a binary logit regression model is used to assess individual determinants of forest-cover change at local level. The results from the model would ascertain the outcome of farmers' perceptions recorded during the field investigation. Additional assessments were made (at the end of the HHS questionnaire) using Rapid Tenure Assessment (RaTa) tools to gain insights into land-use history and tree-based rights at the local scale (Galudra, 2010).

The second layer consists of a stakeholder analysis and helps to present part of chapters 4 and 6. A policy analysis framework (fig.3.5) was used to map and understand the perceptions of the actors involved, the existing policies and laws as well as conflicts which may influence $REDD^{+}$ in the forest-zone context of Cameroon.

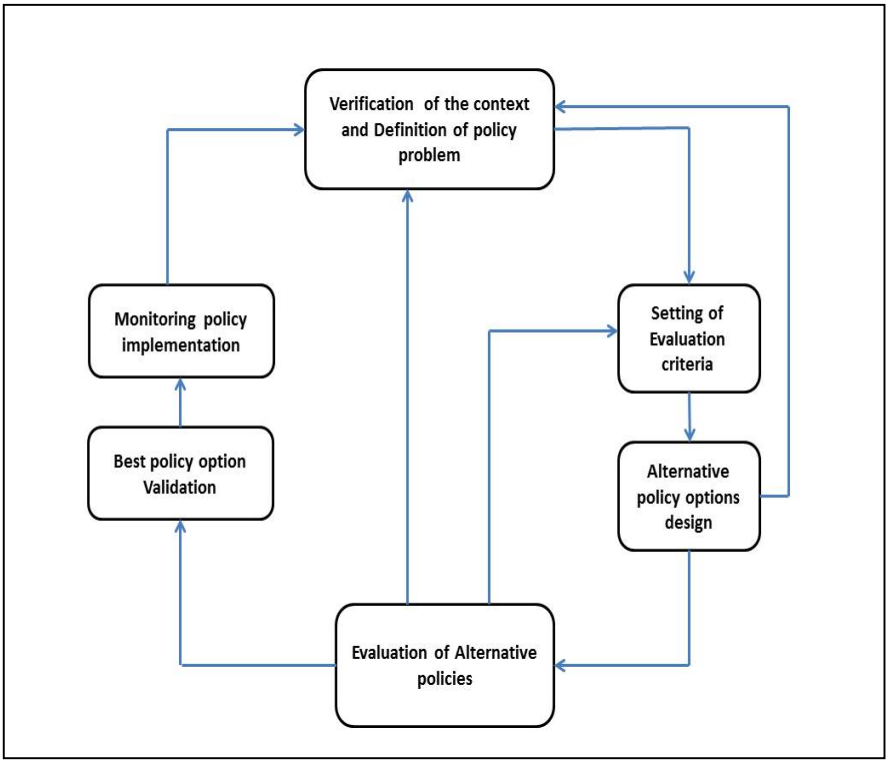


Figure 3.5. Policy analysis framework used in the thesis (adapted from Patton and Sawicki, 1993)

The concept of policy analysis refers to the analytical activity to determine which of various alternative policies will most achieve a given set of goals in the light of the relationships between the policies and goals (Morgan and Henrion, 1990). More accurately, the notion is defined as an applied social science producing information for addressing problems to determine alternative policy options that achieve a prior set purpose (Patton and Sawicki, 1993). The latter authors explain that policy analysis follows six steps, as shown in figure 3.5 above. As per Morgan and Henrion (1990), this investigation followed the adapted framework in chapters 4, 5 and 6 because, with careful thought and synthesis, it was expected to evaluate and structure existing incomplete knowledge. The insights generated would support informed decision making based on a better understanding of current risks and future policy perspectives within the domain of climate change.

Moreover, the willingness and conditions to pay and participate in the REDD$^+$ process were analysed using the choice experiment approach. The last layer explained the current status of one key governance principle "prior informed and free consent" for local institutions. Related simplified questions were embedded in a study across three sites (Ngoyla, Edea and Tinto) in Cameroon's forest area, targeting 12 villages chosen according to criteria such as (1) remoteness; (2) group dynamics; and (3) proximity to a potential REDD$^+$ site. Answers from 330 smallholder farmers were recorded.

After data collection, key elements of the datasets were identified, categorised and classified for separate or cross-sectional analysis. The next step involved labeling and tagging data by theme (Ritchie et al., 2003). Questionnaires returned from the REDD$^+$ institutional assessment were treated and analysed following the coding approach developed by Corbin and Strauss (1990). Generally, throughout the research, information was categorised according to similarities in the answers obtained from investigation tools, which were, in turn, coded to allow further analysis using LIMPED software. Finally, Excel tabulations were built from the database generated in Access to allow comparisons and to cross-check the perceptions, challenges and needs of the target population in the anticipated REDD$^+$ process in the country. In all, the three-level dataset was compiled based on answers from 534 individuals, comprising 70 key informants from 18 institutions, including community-based organizations and 464 individual smallholder farmers from the multi-strata study area (see table 3.4).

3.2.2. Some challenges during the investigation

During the survey, some limitations to the level of data acquisition were noted. Therefore, specific measures to overcome these challenges were adopted. It is important to note that, although working with a team of three research assistants, it took us a period of six months to receive the completed data sheets for the national-level survey and one month to complete data coding, before completing the first data quality cross-check. Moreover, out of 35 proponents (selected institutions) who were chased up to complete the designed tool, only 18 could effectively complete the questionnaire despite several reminder emails and approaches in person by the research team. This struggle confirms that various institutional establishments may not have the required information in the domain of the forestry sector, especially data relating to the REDD$^+$ process, and sometimes they do not have the time or the inclination to cooperate, as reported in the literature (Bellassen and Gitz, 2008; Angelsen, 2010; Angelsen et al., 2012). Details on limitations and measures taken during the entire investigation process are reported in chapter 7.

3.3. Conceptual research framework

Forest resources management, land-use changes, policies and community rights are considered key building blocks for developing REDD$^+$ interventions (Bernard et al., 2013). The basic purpose of REDD$^+$ is to fund conservation through carbon payments based on carbon stock increase or conservation over a defined time period (Angelsen et al., 2012; Vetel et al., 2013). REDD$^+$ payments depend on the learning ability of individuals, communities and countries to effectively reduce carbon emissions through forest cover management (Chia et al., 2013) and subsequent tree planting.

Building on the work of some scholars (Biermann, 2010; Corbera and Schroeder, 2011), we defined REDD$^+$ governance as the "process of developing specific rules and rule-making mechanisms within a set of institutions and organizations to coordinate local and national responses to climate change". Taking a scientific perspective, the outstanding concern can be formulated as follows: "As much as full carbon accounting is needed, it is important to avoid that some activities and actors not included in REDD$^+$ are left unconsidered under the upcoming

finance mechanism design". This implies that learning processes, both institutional and social, fostering local forest governance need to be reshaped to involve all stakeholders with a clear strategy towards fairness in terms of local community priorities and social safeguards.

The institutional structure for REDD$^+$ can take the form of hierarchies, coalitions or networks (Angelsen et al., 2012). These refer to the relationships between agents involved in arrangements for REDD$^+$. In the same way, attention should be paid to the different roles of the actors involved. In order to deepen this differentiation in roles, some argue that the international and national architectural foundation of REDD$^+$ should be built on the principles of good governance, because this will positively affect the implementation process (Hyden et al., 2008; Brown, 2013). However, these principles are not sufficient to ensure the effectiveness of REDD$^+$, especially in a context driven by external processes (Corbera and Schroeder, 2011). This is the case in Cameroon, where deforestation and degradation are driven by factors beyond the forest sector, such as poverty level, the global financial crisis, agricultural commodity value chain implications, and more importantly, public infrastructure and urbanisation trends (Ndoye and Tieguhong, 2004; Robiglio et al., 2010; Sayer et al., 2012; Ngendakumana et al., 2012; Tieguhong et al., 2012; Samndong and Vatn, 2012).

In order to give legitimacy to the REDD$^+$ process, it was relevant to understand the basic architecture of REDD$^+$ to elucidate specific aspects and segregate their implementation into five functions against three research levels from a multi-actor decision-making perspective: global, national and local. These functions include (see Fig.3.6):

(a) *Planning* which focuses on policy reformulation (on rights, tenure, climate change) and other regulations, such as strategies to mainstream stakeholder participation (Minang and Von Noordwijk, 2012). We also look at the planning function in terms of institutional capacity and empowerment, practices/experience, learning processes and learning facilities available, as well as training needs. Theoretically, this function is fully characterised by the approval of all required national documents and strategies, such as RPIN, RP and National REDD$^+$ policy.

(b) *Coordination*: this means synchronising actors' roles, responsibilities, ideas and schedules to align with procedures and enforcement. We also look at this function in the light of the operational management capacity in a multi-partnership context to achieve the timely allocation

of resources and the willingness to equitably distribute benefits thereafter. At this function's scale, pointers are clarification of participation rules, effective norms and rights tenures, as well as other social safeguards according to actors' perceptions.

(c) *Demonstration and piloting*: this function implies the operationalisation of the early action phase of $REDD^+$ to test strategies in the areas of capacity building, project portfolio streamlining, validation of surveillance and verification tools and models (McCall, 2011). The green light for this function should be the final testing of newly developed policy instruments with documented outcomes in terms of livelihoods, safeguards and co-benefits.

(d) *Management of incentive schemes*: this function is considered in terms of the full implementation load of negotiated activities under flexible bi- or multi-lateral agreements, based on sets of standards to effectively achieve CER and C-stock increase at national and sub-national scales (Minang et al., 2007). Here, the pointer would be the availability of tools to implement incentive packages, such as financial services that socially and economically empower clients and other stakeholders (Neely and De Leeuw, 2012).

(e) *Surveillance and MRV:* the last, but most crucial, function includes national and international audit processes for quality control using scientific tools and methods. Based on different scenarios, this function would go beyond business-as-usual to carry out regular patrols and collect data at local level to measure forest cover changes, biodiversity, carbon stocks and transformational land-use changes to ensure long-term emissions reduction, and removal, as well as other co-benefits. Payments would then be made according to reported and certified performance. The challenges faced at this level are whether the monitoring/control teams have sufficient technical capacity to follow up on the new momentum for community forest monitoring (Skutsch and Solis, 2011; Verplanke and Zahabu, 2011).

This resulted in the conceptual framework shown in figure 3.6. During the research process, special attention was paid to mapping socio-economic factors and social safeguards i.e. rights in terms of policy output and outcome respectively. Theoretically and learning from existing institutional and social processes, $REDD^+$ implementation can be influenced by national forest conservation policies and safeguards principles simultaneously. The two dimensions are crucial in creating enabling conditions for $REDD^+$ to deliver on community expectations and sustainable

forest protection. These enabling conditions are harnessed by measures to tackle poverty and forest tenure issues as well as an institutional arrangement and an appropriate stakeholder participation mechanism.

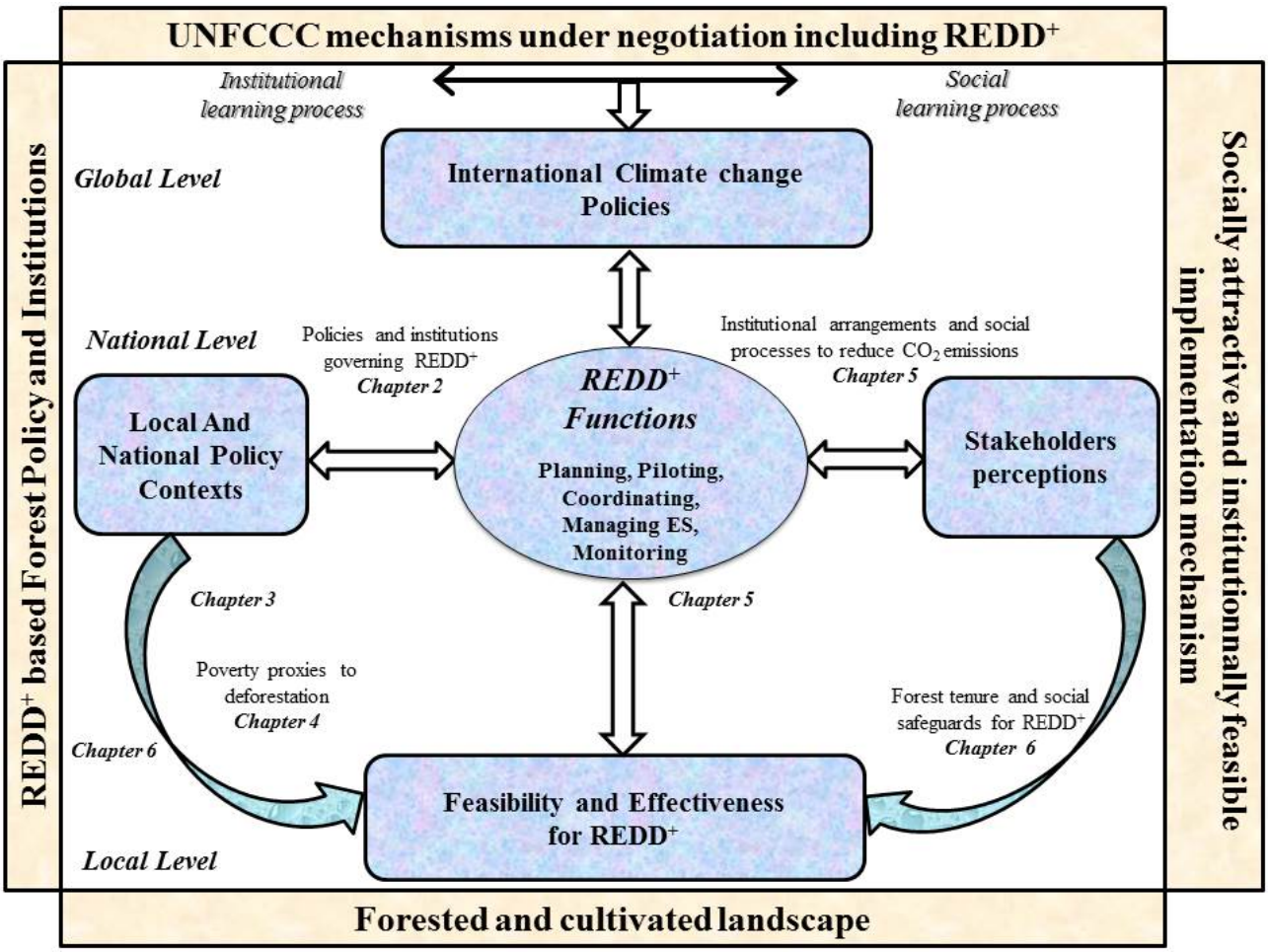


Figure 3.6. Research framework indicating REDD+ functions across scales

Acting across scales, the above interplay has the potential to lead to the desired implementation plan for REDD+ which could be socially attractive and institutionally feasible. The framework alleviates the ambiguities on policy options and the sustainable development actions to be undertaken during the REDD+ cycle. Both institutional and social learning processes are relevant in REDD+ where most stakeholders are having limited implementation capacities especially as rules and norms are instituted from global REDD+ policy desk into national forestry systems to

interact then with existing policies and perceptions. Together, all stakeholders would eventually continue to shape the REDD^{+} trajectory towards transformational change in addressing deforestation, provided that the implementation process chooses to improve quality participation of grassroots communities and other social safeguards.

PART II: FINDINGS, APPLICATIONS AND IMPLICATIONS

One day, Deng Xiaoping decided to take his grandson to visit Mao. “Call me granduncle, Mao offered warmly”. “Oh, I certainly couldn’t do that Chairman Mao”, the awe-struck child replied. “Why don’t you give him an apple”, suggested Deng. No sooner had Mao done so than the boy happily chirped: “Oh, thank you Granduncle”. “You see”, said Deng, “what incentives can achieve!” (Capitalism, 1984, after Kathleen Eisenhardt)

CHAPTER

4. REDUCED DEFORESTATION OPPORTUNITIES AND LIVELIHOOD PRIORITIES: WILL FARM FACTORS MATTER FOR REDD^{+}?

Abstract

Climate change has already produced significant environmental changes in tropical forests and agroforestry zones and will continue to do so. This poses a major challenge for rural communities that depend on the products and services from these land uses. Recent instruments for reducing greenhouse gas emissions, such as REDD^{+}, have great potential at site level, but there is limited understanding of the factors that determine their effectiveness. This study uses a binary logit regression model to understand which personal factors affect forest-cover changes at the local level. Results show that farmers' decisions to clear forests depend on the following factors: the proportion of non-farm income to total income; the economically active age of the farmer; and field ownership, alongside compensation options. Older farmers are less likely to clear a piece of land compared to younger farmers. Meanwhile, farmers with a higher proportion of non-farm income are less likely to clear forest, and the probability of clearing forest land decreases with greater restrictions in access to forest products, meaning implicitly that stricter tenure enforcement could lead to reduced deforestation. Inclusive forestry policies would gain from factoring-in REDD^{+} as a tool for poverty reduction within a broader sustainable development framework.

Key words: Communities, deforestation determinants, poverty, REDD^{+} effectiveness

This chapter is based on:

Ngendakumana S, Speelman S, Gyau A, Feudjio MP, Minang AP, Tchoundjeu Z and Van Damme P. Reduced deforestation opportunities and livelihoods priorities in southern Cameroon: do farm factors matter for REDD^{+}? To be submitted in *Forest policy and Economics*.

4.1. Introduction

Over the past two decades, there has been a growing concern that climate change will continue to have significant effects on community livelihoods and that the resulting land-use changes will lead to massive deforestation in tropical countries. This concern poses a major challenge to the poor rural communities that depend on the products and services from forests and agriculture. Scientists have reached a consensus that tropical deforestation is the second largest source of carbon dioxide emissions after fossil fuel emissions and ahead of natural phenomena such as volcanic eruptions (Lambin et al., 2001; MEA, 2005; IPCC, 2007; Le Quéré et al., 2009; EU-DGE, 2010). These emissions contribute to the observed increases in greenhouse gas concentrations in the atmosphere that lead to global warming (IPCC, 2007). Carbon dioxide emission is estimated to account for approximately 56% of climate change. However, despite some policy efforts to halt this trend, more than 13 million hectares of forests continue to be lost every year on a global scale (FAO, 2007). More specifically, it is estimated that about 7.3 million ha of tropical forest are currently lost annually in developing countries, releasing an estimated 5.8 gigatons of carbon dioxide (Minang et al., 2012). Moreover, agricultural practices on the cleared soils often have a negative impact on ecosystem functions, mainly in terms of the reduced value of economic, cultural and environmental returns.

Deforestation is defined by the Food and Agriculture Organization as the process of conversion of forest to non-forest land use and/or forest degradation (See details, chap.1, page 5). Degradation here refers to a reduction in forest quality or in the capacity of forests to provide ecosystem services, such as carbon storage or timber production. As a continent, Africa accounts for a net loss of about 4.0 million hectares per year (equivalent to 0.3% of the entire African forest cover) and an average annual negative change rate of -0.62% between 2000 to 2005 (FAO, 2006). In Cameroon, FAO data from the Forest Resources Assessment (2007) indicate an increase in the annual deforestation rate from 0.6% for the period 1990 –1995 to 1% for 2000-2005 (FAO, 1997; FAO, 2006). Forest-cover loss was estimated to have increased by 30% over the period from 1990 to 2007 (FAO, 2008). The Congo basin accounts for about 0.16 % of annual loss (Eba'a et al., 2009). The annual forest degradation rate in this area is estimated to

represent 0.09 % of dense forests (Duveiller et al., 2008). Nevertheless, the basin to which Cameroon belongs still retains 15% of all remaining rainforests in the world (Justice et al., 2001).

Rural poverty and climate change have an increasing influence on the livelihoods of forest-edge communities and this influence has led to more anthropogenic activities resulting in increased carbon emissions in tropical landscapes (Springate-Baginski and Wollenberg, 2010). As interest in poverty, deforestation and CO_2 emission reduction has been increasing for the past few years (Andersen, 1997; MEA, 2005; Neufeldt et al., 2012), a number of technical options have been developed, backed up by appropriate incentives that would achieve adequate climate-change mitigation, together with increased food security and improved livelihoods (Wollenberg et al., 2012). From this perspective, a crucial question is "which farm and socio-economic factors determine deforestation and forest degradation?"

During UNFCC/COP16 held in Durban in 2011, it was highlighted that a consensus has been reached in recognising the contribution of forests in meeting the combined and interrelated goals of food security, carbon emission removal and economic development. Van Noordwijk et al. (2011), in attempting to provide supporting arguments on how trees and people can co-adapt to climate change, reported that realising win-win solutions and balancing livelihoods and ecological functions (regulating, supporting, provisioning) will require innovative approaches. The main approaches highlighted by the above authors are "Agroforestry for Improved land uses", "Landscape management for imporved livelihood", "PES based forest conservation" and "Climate smart agriculture". It is believed that those approaches can help to overcome challenges, both at community and household levels, in order to better maintain ecosystem health and improve livelihoods. In the current $REDD^+$ context, this need is supported by the scientific evidence that land-use conversion for agriculture is a survival strategy for many smallholder farmers (Colfer et al., 2005; Ngendakumana, 2011; Ngendakumana et al., 2012), although this land-use change contributes as a major, indirect source of carbon emissions (Wollenberg et al., 2012; Neely and Leeuw, 2012). Although empirical studies on the causes of land-use change have been undertaken in developing countries, particularly in Asia and Latin America (Duraiappah, 1998; Zwane, 2007), the available literature does not seem to provide an integrated framework to jointly address climate-change mitigation and poverty reduction, especially in the context of Cameroon or even the Congo basin.

Nevertheless, linking mitigation initiatives to rural development is critical for successfully coordinating interventions that aim to sustain life and generate a positive impact on reversing climate change within a global net emission reduction policy framework (Leimona et al., 2011; van Noordwijk et al., 2011; Wollenberg et al., 2012). Therefore, understanding the relationships between the socio-economic status of households and land-cover changes in different locations of a given landscape, as well as farmers' perceptions on the attributes of anticipated land-use changes are crucial for designing incentives and governance structures to reduce CO_2 emissions. It is thus hypothesied that an increased understanding of the relationship between household characteristics and deforestation could provide a solid basis for designing governance frameworks aimed at more efficient carbon emission reduction within a given forest landscape.

The aim of this chapter is to explore the socio-economic characteristics influencing deforestation and degradation in the Efoulan landscape in South Cameroon. The specific objectives of this chapter are to: (i) critically analyse exisiting knowledge on poverty determinants in the current context of climate change; (ii) establish relationships between household socio-economic status and land-cover change in different locations in the Efoulan landscape; and (iii) assess the implications of these characteristics on the success or failure of emission reduction strategies such us $REDD^{+}$. For the statistical analysis, a binomial logistic regression model, commonly referred to as the binary logit model was run using LIMDEP.

4.2.Insights on determinants of deforestation and forest degradation

Scientists today agree that agricultural expansion is the most important direct driver of deforestation globally, followed by infrastructure development and wood extraction (EU, 2010). Worldwide bioenergy-focusing policies and demand for wood products also play a role in deforestation. However, deforestation is driven by the interplay of institutional, demographic, economic, technological and cultural variables, rather than by a single factor. For Africa, the following indirect drivers are most often mentioned in deforestation studies (in order of importance): demographic pressure, economic reasons, technological opportunities, governance problems and socio-cultural issues (Geist and Lambin, 2002). Furthermore, worldwide bioenergy policies, such as the EU bioenergy policy and African bioenergy policy, are likely to indirectly

affect deforestation through agricultural expansion, while the global increased demand for wood products continues to play a direct role in the forest depletion process.

Links between economic development and deforestation have been widely investigated. Several reports exist on the drivers of deforestation in the tropics (Lambin et al., 2001; Bhattarai and Hammig 2001; Scrieciu, 2006; Robiglio et al., 2010). Their results, however, are mainly based on empirical analyses using cross-country (or country-specific) case studies. With the exception of Zwane (2007), who investigated the relationship between lagged income and cleared landholdings in Peru, only a few studies have used site-specific data collected on farmers' perceptions on their future land uses. The most frequently examined factors are wood-product prices, population growth, infrastructure, political regime, land tenure and government policies. Many were found to be correlated with deforestation in Latin America, but not in Africa. Findings seem to confirm a significant causal relationship between the selected macro-economic variables and tropical forest depletion, even though all agree on the complexity of the links. For instance, in an exploratory work undertaken in Europe by Scrieciu (2006), it was found that, in this specific context, population density was the most important driver of deforestation. Other important socio-economic drivers were access to drinking water, wealth and primary education. In 2010, the European Union noted that, in a deforestation process, one will rarely find a single direct or indirect driver. More often, multiple processes work together, simultaneously or sequentially, to cause forest cover reduction.

Deforestation has been extensively discussed since the Rio summit in 1992 (UNCED, 2012). Nevertheless, and as explained above, there has been very little understanding of the determinants at local level and, so far, there seem to have been few or no studies which discuss how changes in livelihood and farming systems are driven by climate change. This means that, at this stage, it is useful to assess the relationship between socio-economic factors and deforestation in the context of climate change. The tropical deforestation process is a complex topic and could be site-specific in terms of drivers (Bhattarai and Hammig, 2001). Although plenty of studies focusing on individual decision-making processes (mostly based on the Amazon) can be found in the literature (Geist et al., 2002; Alix-Garcia et al., 2005; Manson et al., 2007; Caldas et al., 2007), Africa, and the Congo basin in particular suffer from a lack of such knowledge, despite its importance for adequate forestry-management planning. Site-level studies in the Congo area need

to deepen and underpin links between local factors and deforestation, because such relationships have not been fully explored, especially from the perspective of smallholder-benefit reality.

In a paper published in 2007, Scrieciu concluded that tropical deforestation might ultimately depend on case-specific factors. He went on to suggest that further research might yield more effective policy suggestions if conducted at a more disaggregated level. In the same vein, the same author argued that local and sub-national case studies provide more significant insights into the causes and drivers of changes in forest-resource patterns than macro-scale investigations. Based on these gaps in the literature, and using a binary logit regression model, we want to understand to what extent local and individual socio-economic factors affect forest-cover change.

4.2.1. Description of the study area

Study site details are reported in chapter 3, section 3.1.2.

4.2.2. Survey sites and experimental design

In 2011, household surveys and focus group discussions (FGD) were undertaken in nine villages grouped around three forest units across the multifunctional landscape of Efoulan. The latter, with its various land-use types, was considered as our study site to finally map out the study population as presented in table 4.1. Household surveys and focus group discussions formed the basis for the investigation. Household data obtained from 104 respondents was used to understand factors and variables influencing individual decisions to cut trees in forested land. Explanatory variables included levels and sources of household income, the household head's level of education, the proportion of non-farm income to total income and changes to this over the last 10 years, access constraints for forest resources, etc. Focus group discussions provided implicit or explicit answers to the following questions:

- What is the average farm size in this village?
- How frequently do farmers clear the forest to expand their farming area?
- What types of permission would you need to clear forest? And from whom?
- What benefits/services do you receive (or get) from the forest landscape surrounding you?
- How do community and/or the communal forest units improve your livelihood conditions?
- At the level of small farmers, how do people generally perceive climate change and environmental degradation mechanisms?

- In the case of agreement to avoid clearing the forest to expand their farming area in community forests, what compensation mechanisms do farmers need? (through the community or individually, cash or payment in kind etc.)
- If you receive compensation or rewards, what type of supporting organization would you prefer to collaborate with?

Proportional stratified random sampling was used, because it has been reported to be the most appropriate method for this type of research work (Galudra, 2010; Hoang et al., 2012). This means that the number of inhabitants per stratum was used to determine the number of households to be interviewed during the survey. This, however, requires a rigorous cross-check of respondent characteristics before analysis to correct any disproportionate representation.

Based on geographic and preliminary information from the field, obtained during ASB climate-change meetings (Ngendakumana et al., 2011), we used a multi-strata sample design.

During the stratification process, important issues referred to were: (i) reported stage of forest degradation; (ii) frequency of vegetation clearing for new farm creation; (iii) proximity of farm-to-market roads; (iv) occurrence of farmers' groups; and (v) community leadership oriented to forest resource management. The next step was to segregate the three sampling groups, which, overlaid on the Efoulan vegetation map, best-represented the targeted forest units. The units are: 1) the council forest; 2) Common Initiative Group (CIG) MINVAN Community forest; and 3) Common Initiative Group DIMEJ I and II community forest.

HHs constituted the experimental units. The sample population was determined based on census data available from the local government services in Ebolowa, and on Wilson and Allan (2003) who have developed a coherent reasoning for proportional and stratified sampling approaches. The number of households to be interviewed was then determined using the following arithmetic formula: $\mathbf{Gi = Si / S_T \times 100}$ (1), where:

Gi: sampling group;

Si: number of households in group Gi;

S_T: total number of households in the sampling groups; and

S_T: calculated using the following formula: $S_T = \sum (S1; S2; S3)$.

Table 4.2.1 Sampling design for studied population and experimental units

Sampling group	Stratified sample (target village)	Number of HHs per village	Number of units or HHs interviewed per stratum	Number of units per village
G_1	Ebom Essawo'o	51	48	10
	Mekalate Essawo'o	140		27
	Nkoutou	57		11
G_2	Melan Essawo'o	29	38	3
	Nkoékouk	262		30
	Ma'anmeyin	40		5
G_3	Mvila Yevol	80	34	9
	Tsangué	143		17
	Aloum	70		8
	9	**872**	**120**	**120**

Legend: sampling group made up of the community surrounding the council forest is referred to as G_1 (1); community forest grouped under CIG MINVAN is G_2; whereas G_3 represents community forest CIG DIMEJ 1&2 (3); HH=HouseHold.

During sampling, each group was viewed as a sample selected from the entire population and a simple random sampling technique was used. After the stratification process, we used an Excel spreadsheet to generate random numbers which were then used to select the potential households for interview. The available listings of villages (PNDP, 2011) were combined with efforts to representatively observe even the smallest subgroup giving as much as possible the *a priori* chances of individuals to being included in the sample. Such an approach has the advantage of enabling statistical analysis with relative control over various sources of sampling error in order to increase data accuracy while minimizing the variability. The drawback of the approach is that recorded answers are hard to standardize and may be less precise because they are obtained from a small sample with individuals who do not keep systematic records. One of the limitations here was that, given the unavailability of some informants, from the 120 households targeted at the start, we were only ultimately able to interview 104.

4.2.3. Data collection

Data collection followed three steps. Step 1 was the gathering of spatial baseline information, such as administrative boundaries and forest units, using existing reports, maps and policy

documents at local and district levels. This early stage was combined with two transect walks of 6 km each from east to west [Mvila Yevol-Melan Yevol] and from south-west to east [Nkoutou-Mekalat] (see fig. 3.3) to characterise the current state of land-use patterns in the Efoulan landscape. During the transect walks and informal discussions with elderly people, it was observed that Efoulan forest is under constant threat due to human influence and anthropogenic activities such as slash-and-burn agriculture. After natural regeneration, these lead to degraded or secondary forests. Furthermore, deforestation and degradation of this forest occurs as a result of illegal harvesting for building poles and fuelwood. Although the population growth rate is gradually increasing, wood has remained the only source of energy for the surrounding communities.

Step 2 was undertaken through organized workshops on climate change and community rights issues under local dialogue meetings on climate change. Local dialogue meetings were carried out using the Free and Prior Informed Consent (FPIC) method to inform community stakeholders about REDD$^+$ mechanisms and to obtain common perspectives on land-use change and rewards for carbon-stock stewardship within the context of international efforts to reduce emissions.

An additional assessment was made using the Rapid Land Tenure Assessment (RaTa) tool to gain insights into land-use history and tree-based rights at the local scale (Galudra, 2010). Through a combination of semi-structured interviews, analysis of existing policies and focus group discussions, the RaTa tool (for details, see Galudra et al., 2010, p.14) was used to understand the relationship between forested land tenure and community land claims (property rights, arrangements for access and control, governing institutions, rules and norms). This allows to (1) explain potential conflicts and (2) understand policy gaps and legal deficiencies with a view to increasing future REDD$^+$ effectiveness.

The last step concerned focus group discussions combined with simplified questionnaires to assess Willingness-To-get-Involved (WTI) (Balana et al., 2011). Along the same lines, farmers' perceptions on compensation options and the degree of acceptance of suggested reward packages was assessed. During the enquiry, a payment card was used to find the compensation amount respondents would accept. Three reward packages were designed and presented to farmers for them to choose, as follows: (i) cash bond payments per agreed period (e.g. 1st, 5th, 10th Year); (ii)

seasonal agricultural input provision, including agroforestry technologies and training; and (iii) a combination of the two.

Using semi-structured questionnaires, focus group discussions were organized as described by Liamputtong (2011) to cross-check the qualitative results of the first two steps. Through focus group discussions, background information on smallholders' perceptions was expected to complement the information obtained through the questionnaires. In each of the three forest units, one focus group meeting was convened with a proper balance between men and women and facilitated in the local Bulu language. In total, three focus group discussions were held, involving 36 participants out of whom 21 were women. The process sought to obtain insight from local stakeholders concerning issues such as forest and fallow management, agricultural practices, institutional support to reduce rural poverty, land use and tenure history, as well as to obtain their insight on climate change and $REDD^{+}$-based compensation structures or forms of compensation.
In our study, there was no direct measure of poverty. Instead, we tried to evidence the socio-economic characteristics of farmers that are often used as a proxy, such as dwelling types and income. Furthermore, education level, proportion of non-farm income to total household income and availability of alternative income sources were also selected for regression against the decision to clear forest. Other factors, such as the age of the household head, membership of a farmers' group and access to timber products were also included as potential factors affecting deforestation. Data was collected by three research assistants who knew the area and spoke the local languages.

The questionnaire used had several sections based on pre-identified variables. Individuals were chosen randomly from the lists of households actively involved in agricultural activities and community forest management efforts, obtained from local administrative authorities and forestry agents. In this way, the choice of respondents guaranteed the quality of the answers. A gender-sensitive sample of respondents among household heads in the target villages was included. Household characteristics were selected in view of their potential to influence forest cover and land-use changes. This process went through the classic cycle of questionnaire development, pre-testing and review to ensure the mastery of the tool by enumerators and adjustments to questions to ensure accurate answers during the survey.

4.2.4. Logistic regression models

The main statistical tool used in our analysis was the binomial logistic regression model, also known as the binary logit model (Chan, 2005). This type of model is appropriate for establishing the determinants of deforestation and deforestation decisions at local level (Angelsen and Kaimowitz, 1999). The method was selected because, in this study, the dependent variable is a binary variable capturing the farmer's decision whether or not to increase the cultivated area by clearing forest. Nisel (2001) argued that ordinary least squares regression is not suited to models with binary variables. In addition, since the dependent variable here represents the probability of the respondents opting for one of two possible actions, it must range between 0 and 1. However, using the ordinary least squares regression method, the predicted values cannot be interpreted as probabilities; hence the justification for the use of logistic regression is found to be robust.

In terms of econometric analysis, the dependent variable in the binary logit model describes whether the household cleared a piece of forest during the past year.

The logit model is given as:

$$log\frac{p_i}{1-p_i} = Z_i = \alpha + \beta X_i + \varepsilon_i \quad \text{..... (1)}$$

where $log\frac{p_i}{1-p_i}$ is the logarithm of the odds that a farmer will indeed clear a piece of land, X_i is a vector of the farmer or household characteristics; α and β are vectors of the parameters to be estimated; and ε_i is the residual error term, with a mean of zero and a constant variance.

The logit model is suitable when modeling problems with two alternative outcomes, such as whether or not forest was cleared. In the model it is assumed that each alternative decision offers the farmer some level of utility at the time the decision is made, and that an individual farmer would choose the alternative which yields the highest utility (Lattin et al., 2003). Our deforestation model is specified as:

$$P_i = \frac{1}{1+e^{-Z_i}} = \frac{1}{1+e^{-(\alpha+\beta_1 X_1+\beta_2 X_2+\ldots+\beta_n X_n)}} \quad \text{.....(2),}$$

where *Pt*= the probability that a farmer has cleared a piece of forest, *Zt*= a weighted sum of vectors of farm (x_i=x_1, x_2, x_3, ...), farmer and household characteristics for which the impact on the decision to clear forest land is assessed. .

The model was used to test whether the resources at a household's disposal and socio-economic factors influence a household's decisions whether or not to clear forest. Household factors used in this model were membership of a farmer group, dwelling type, presence of alternative income-earning activities besides agriculture, level of non-farm income and proportion of non-farm income. Some personal characteristics used were age, gender and access to timber products. Table 4.2 gives an overview of these factors. The model was estimated using LIMDEP 9.

4.2.5. Determining alternative farmer compensation structures and the concomitant realistic funding level

Within the same household survey from Efoulan, another analysis was undertaken to determine the degree of acceptance by farmers of suggested compensation options to get involved in forest carbon stock conservation. The answers obtained in the three types of forest units were compared and a quick economic estimate was made to determine the amounts acceptable as incentives across the site studied, in relation to carbon stock data available within the ASB and GAF databases respectively (GAF, 2005; Yemefack et al., 2013). In so doing, a number of payment package scenarios were designed. Finally, in order to guide future investment in $REDD^+$, a carbon stock-based realistic annual funding level was extrapolated from the collected information.

Table 4.2.2. Descriptions of variables used in the binary deforestation model

Dummy variables	**Measure per modality 0**	**Measure per modality 1**		
Deforestation (1 if forest cut in past year)	31	69		
Gender (1 if female)	84	16		
Dwelling type (1 if brick house)	58	42		
Access to timber products (1 if easy access)	89	11		
Membership to a farmer group (1 if belong to)	49	51		
Alternative income earning opportunities (1 if alternatives exist)	38	62		
Continuous variables	**mean**	**St. er.**	**min**	**max**
Non-farm income *(CFAF)*	256,425	741,881	0	6,383,500
Proportion of non-farm income to total income *(%)*	0.48	0.37	0	1
Age of the HH head *(Years)*	52.78	14.29	25	91

Notes: 1) Figures on dummy variables in the table represent answers per variable. 2) Non-farm income was measured by summing up income portion of surveyed HH derived from other activities such as small trading, tailoring, waged work, etc.

4.3. Results

4.3.1. Measuring deforestation drivers from a local perspective

Figure 4.3.1 indicates 10 key causes of deforestation and forest degradation among which 5 are associated to smallholder farmer's livelihood activities. The major ones are slash and burn, cash crop plantations and domestic energy needs representing 43% of all drivers'weight. The first two explain why farmers decide to convert forest into farmland which would result in increasing deforestation in Efoulan. During focus group discussions, it was made clear that new cocoa plantations are the key driver for forest clearance in Efoulan; followed by the need for more fertile lands for agricultural activities, such as cucumber growing and market gardening, to cover basic family needs.

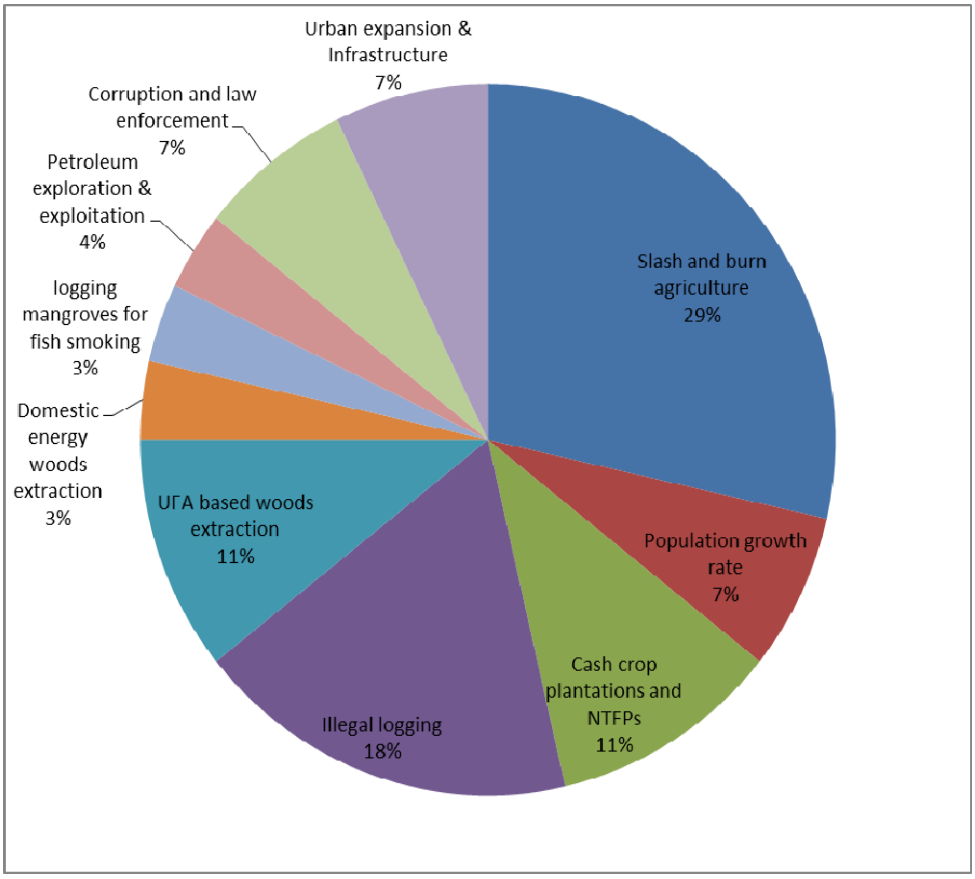


Figure 4.3.1 Diagram of perceived drivers of deforestation based of indigenous knowledge in Efoulan

As per the results in the table 4.3.1 below, a large majority of respondents (78%) held that the rate of deforestation will either remain at the current level or increase in forthcoming years. No significant difference was found in farmers' perceptions of deforestation trends across forest clusters.

Table 4.3.1. Farmers' perceptions on the current deforestation trend across forests clusters

Answer category		Nearest forest			Total (n = 93)
		Council forest (n =36)	Community forest CIG MINVAN (n =33)	Community forest CIG DIMEJ 1&2 (n= 24)	
Forest clearing frequency in the coming years	Frequency will remain the same as now	36%	55%	36%	43%
	Frequency will increase	36%	36%	32%	35%
	Frequency will decrease	28%	9%	32%	22%

The distribution of income sources is shown in table 4.3.2 below. As expected, in postulating that deforestation is a farmer's survival strategy and a livelihood source, the ranking demonstrates that agriculture is crucial to livelihoods, seconded by NTFP extraction. The latter results also show that in Efoulan, NTPF is the main source of income after agricultural products, suggesting that any local intervention should target NTPFs and agriculture-based strategies as a priority.

Table 4.3.2. Income level estimate (in CFA F) from the main drivers of deforestation for each village sampled

Forest Cluster	Village	Income from agricultural products	Income from NTF products	Income from animal products	Total household revenue in 2010
Council forest	Ebom Essaw	99 6461	223 636	108 685	132 8783
	Mekalate	311 926	93 321	42 250	447 498
	Nkoutou	2 072 175	105 156	118 167	2 295 498
Community forest CIG MINVAN	Melan Yevol	709 928	89 688	33 062.5	832 679
	Ma'anmeyin	916 604	52 500	295 000	1 264 104
	Nkoekouk	1 003 044	77 156	89 625	1 169 825
Community forest CIG DIMEJ 1&2	Mvila Yevol	1 739 875	13 000	14 375	1 767 250
	Aloum Yemv	118 050	103 750	0	221 800
	Tsangue	369 475	64 917	37 875	472 267
	Total income	**8 237 540**	**823 125**	**739 039**	**9 799 705**
	Contribution level (%)	**84**	**8.5**	**7.5**	

4.3.2. Modeling farm and socio-economic factors affecting deforestation

The results of the deforestation model are presented in table 4.3.3. Based on the pseudo R2 value of 0.182, combined with the predictive power of 78%, our model is highly significant. Four out of the eight independent variables (age of the HH head; membership of a farmers' group; proportion of non-farm income to total household income; restricted access to timber products) are significant predictors of the decision to clear a piece of forest.

Table 4.3.3. Binary logit model for binary choice with deforestation as dependent variable

Variables	**Coefficient (log-odds)**	**St. Er.**	**Odds ratio (b/St.Er.)**	**P[|Z|>z]**
Constant	4.668	1.362	3.427	0.000
Non-farm income	-0.350D-06	0.317 D-06	-1.102	0.270
Proportion non-farm income to total income	-1.375	0.741	-1.855	0.063*
Dwelling type dummy (1 if brick house)	0.153	0.520	0.295	0.767
Gender (1 if female)	0.854	0.745	1.147	0.251
Restricted access to forest products (1 if easy access)	-1.242	0.702	-1.770	0.076*
Alternative income opportunities (1 if alternatives exist)	-0.089	0.072	-1.237	0.215
Age (years)	-0.063	0.021	-3.015	0.002***
Membership of a farmers' group	1.016	0.516	1.966	0.049**
Fit measures				
McFadden Pseudo R^2	0.182			
Chi squared X^2	22.594**			
Sample size	104			
Percentage of correct prediction	78			

P[[|Z|>z]] represents the level of significance:*Significant at 10%; **significant at 5%; *** very significant at 1% .
Note: The pseudo R^2 of 0.182 is acceptable threshold in likelihood models like this.

The first significant variable is the age of the HH head, irrespective of sex (as gender is not significant in the model). Older farmers are less likely to clear a piece of land compared to younger farmers ($p < 0.001$). The results generated from our model on smallholders'perceptions are in line with group discussion information collected, indicating that older people would like to retain preserved forests across generations. The possible explanation is that older farmers are

better placed to compare forest-cover changes over time, and can understand the link between forest preservation and maintaining environmental benefits such as rains, provision of bush meats and medicinal herbs.

Second, the results show that the likelihood of a positive attitude towards felling trees was positively and significantly linked to farmer group membership. The probability of a farmer who belongs to an association having a positive attitude towards felling trees is twice (1.96) that of farmers who do not belong to groups. This likelihood means that farmers' groups have empowered members to maximize the net present value of farming rather than retaining the forest, without an alternative incentive. In this case, some forms of payment could be made available for farmers' associations, especially under contractual obligations to adopt sustainable forest management practices. The model also shows that the proportion of non-farm income to total household income and restricted access to timber products have significant negative effects on farmers' decisions to clear forest for farmland ($p<0.10$).

This finding indicated that farmers with a higher proportion of non-farm income are less likely to clear forest, whereas the probability of clearing forest land decreased with increasing restrictions in accessing forest products, meaning implicitly that stricter tenure enforcement could lead to reduced deforestation. This suggests that it would be more efficient to combine negotiated governance systems for adaptive access and financial incentives to support grassroots, on-farm income-generating activities in order to successfully halt deforestation, as prescriptive practices may not work for the rural smallholder farmers.

Housing type was included in the model as a proxy for the wealth status of the household. It was, however, found to be insignificant. Also, gender and the total level of non-farm income did not influence deforestation decisions, nor did the availability of alternative income opportunities. Forest types were clustered into two groups, but dummies turned out to be highly insignificant and negatively influenced the predictive power of the model. This justifies why, in the end, they could not be retained among the selected factors.

4.3.3. Compensation options for forest conservation

Considering that willingness to accept possible payments for forest conservation is an important aspect of local community involvement in climate-change mitigation and the fight against poverty, it was necessary to assess the degree of acceptance of different forms of suggested rewards to assess the operational feasibility of the policy.

Table 4.3.4 shows that 28% of respondents in the study area would be ready to accept compensation in the form of a combination of cash + non-cash.

Table 4.3.4. Degree of acceptance of suggested rewards under different payment scenarios across forest units

Acceptance estimated in %		**Nearest forest**			**Total (n=91)**
		Council forest (n=40)	**Community forest CIG MINVAN (n=35)**	**Community forest CIG DIMEJ 1&2 (n=26)**	
Compensation form	Cash only	32	34	22	**34**
	Non-cash only	50	37	45	**48**
	Cash & non-cash	18	29	33	**28**
Total		**100**	**100**	**100**	**100**

Source : field data, September 2011.

Of the 91 respondents, 48% would like to receive incentives through a non-cash package; that is to say, these farmers would prefer a compensation package consisting of extension and distribution of new agricultural and agroforestry technologies, such as improved seeds, tree seedlings and modern working tools. On the contrary, 34% would prefer compensation in cash. With regard to the required amounts for the desired financial incentive, table 4.3.5 provides range estimates of minimums and maximums.

On the other hand, the variables that had a statistically significant relationship in the first logistic regression equation were: age, group membership, proportion of non-farm income and restricted access to forest products. The latter factors except “age of the HH head” are amongst the key principles of Compensation for Environmental Services (CES) schemes currently under

development in pilot countries. CES stands for a forest management approach that would compensate smallholders for developing options to increase the proportion of non-farm income. This would lead to a double benefit with less deforestation and reduced carbon emissions. Compensation would also enhance the sense of tenure security in the forest areas, alongside the individual and collective responsibility to preserve existing forests.

In terms of option packages to be developed, this study finds that in term of choices, farmers preferred the non-cash compensation, meaning a payment in-kind rather than cash. In $REDD^{+}$ interventions, individuals will almost double their chances of retaining forest, instead of converting it into farmland, if they are given a payment in-kind. This preference may be due to the importance attached to agricultural inputs and extension services to improve livelihoods rather than cash. During group discussions, some farmers expressed the view that cash can sometimes be spent on non-essential items and may not be used to promote long-term family benefits.

The results in table 4.3.5 show that for a piece of forested land of 100 m^2 to be protected (avoided deforestation) for carbon sequestration in Efoulan, the preferred amounts by farmers varied from one position to another with a median price ranging from 25,000 to 50,000 CFA F *(CFA F used here is the local currency in Cameroon and the exchange rate is as follows: 1Euro= 650 CFA F)*.

Table 4.3.5. Estimate of amounts that would be acceptable as cash compensation for 100m^2 land under avoided deforestation (in CFA F)

Nearest forest	N Respo	Median	Minimum	Maximum	Std. Error of Mean
Council forest	22	25,000	5,000	300,000	17683.923
Community forest CIG MINVAN	24	21,250	500	500,000	33073.480
Community forest CIG DIMEJ 1&2	19	50,000	5,000	500,000	34321.20
Total	**65**	**25,000**	**500**	**500,000**	**16838.12**

Source : field data, September, 2011.

4.4. Discussion

4.4.1. Farmers' behavioural change towards deforestation and forest degradation

Our data shows that it is possible to establish a relationship between the socio-economic

characteristics of smallholder farmers and the intensity of deforestation. Our model found four parameters stimulating forest degradation and hence increasing CO_2 emissions. They are: a) age of the household head; b) proportion of non-farm income to total HH income; c) group membership; and d) restricted access to forest products.

The first factor found to decrease deforestation is the proportion of non-farm income to total income. The higher the non-farm income, the less likely farmers are to cut forests. Focus group discussions revealed that farmers' non-farm income in this locality derived generally from NTFP-based activities, such as hunting and the collection of bush mango, honey and termites which have a high livelihood value. This can be explained in the following way. Communities in the forest zones of Cameroon undertake forest clearance to start farms and other income-generating activities. This is done with the aim of securing food and selling the surplus in local markets to meet other needs, such as children's school fees, clothing, cultural events and others.

Farmers depending more on NTFP are less likely to clear the forest because they obtain more benefits from it. Often they perceive the benefits from NTFP collection to be higher than those gained from agriculture after clearing the forest. Of course, if they do not rely on NTFPs, they lose nothing by clearing the forest and, instead, gain additional agricultural income.

However, our investigation using group discussion found that farmers with better incomes have the capacity to purchase logging equipment, such as chainsaws, used for timber-based business which is often organized from Efoulan village to the city capital (Yaoundé) and Ebolowa. This is in line with the conclusions of Bhattarai and Hammig (2001) that there is a strong relationship between farmers' income and deforestation. Using the Environmental Kuznets Curve, known as the EKC analytical framework, these authors provided strong evidence of the relationship between income and deforestation in 65 countries across the Latin American, African and Asian continents.

Our model's findings go beyond the known case of logging industries to confirm this, because the model is also applied to the case of local communities that have established a locally driven deforestation system with a serious impact on the forest cover. As incentives are an additional opportunity for forest communities to generate income beyond traditional forest values and benefits, the way to halt the farmers' deforestation attitude would be to take into account their perceptions when developing incentive options and payment levels under $REDD^+$. Cash

Opportunity Skipped, known as the COS package developed by Leimona et al. (2011), could be a better option to achieve equitable carbon emissions reduction. The mechanism could be operationalised through shorter, but renewable, contracts based on conditions and benefits to harness specific landscape forest cover in which gradual emissions reductions, in terms of tons of carbon, is the end target.

Another significant factor identified by our model was smallholder age. Economically active farmers (50-65 years) are likely to preserve forests and fallow land instead of clearing them for farming. This may be due to the high interest and cultural value older people attach to the forest. This is in line with the findings of Colfer et al. (2005) and Oyono et al. (2006) who concluded that forest people consider their subsistence to be strongly linked to the surrounding forest, as the latter provides several ecosystem services, such as food, medicine, leisure and protection. This fits with the relationship observed between the dependent variable and the proportion of non-farm income to total household income. In tropical forests, it was observed that forest-adjacent households depend on non-timber forest products (NTFP) to obtain cash (Sunderlin et al., 2005, van Noordwijk et al., 2011; Tieguhong et al., 2012). The model suggests that facilitating access to NTFPs could act as an incentive for the communities to increase their income and, therefore, their willingness to retain forests. This change could involve smallholder farmers in carbon emissions reduction strategies at local and national levels.

From the positive correlation found between group membership and deforestation, it can be deducted that farmers association might be a good channel to convince smallholders of the benefits of protecting forests. Through well tailored meetings in the community, members would gain a broader understanding of the value of forest resources and the incentives needed to conserve forested areas. This means that farmer' groups can play a crucial role in supporting $REDD^{+}$ awareness campaigns at a relatively low cost and can also act as a vehicle for effective participation in $REDD^{+}$ scheme implementation.

Theoretically, restricted access to forest resources refers to tenure inadequacy, which is currently gaining attention under $REDD^{+}$ at various institutional levels. Tenure inadequacy and insecurity remain a political priority on paper, but, in many African countries, little action is taken on the ground (Hansen et al., 2009). This means that several African countries have elaborated good policies on tenure, but their implemention to the benefit of communities is lacking. Our

deforestation model indicated that the probability of clearing forest land decreased with increasing restrictions in access to forest products, meaning that significant law enforcement leads to reduced deforestation. Conversely, smallholder farmers living in Efoulan, and whose livelihood depends on the forest, believe that law enforcement means tenure insecurity, which is a negative incentive to forest conservation (RRI and ITTO, 2011; Sunderlin et al., 2014; Pfaff et al., 2014). Administrative proponents, however, view the law as a way to enhance the protection function of forests.

On the other hand, the model shows that traditional tenure systems can be conducive to nature protection because older people always have in mind that the collective benefit is more important than individual gains. This raises the issue of protecting both forests and people's livelihoods and, as indicated by Sunderlin et al (2014), REDD$^+$ could have such a dual potential if tenure challenges are addressed. We argue that there is a need to develop alternative policy incentives and more adaptive mechanisms for access to forest resources in order to successfully halt deforestation. This confirms observations by Pfaff et al. (2014) that greater restriction on forest resource access will increase the risk of deforestation and thereby increase the erosion of carbon stocks. It implies that government and forest management partners should come together to solve the problem of restricted access to resources, in accordance with farmers' livelihoods. if deforestation is to be reduced effectively.

Conversely, discussions with proponents and government officials in Cameroon indicated that additional land tenure security would lead to reduced adoption of the proposed interventions to conserve trees, thereby leading to increased carbon emissions through the continuous disappearance of sinks at landscape level. This suggests that it is necessary to establish clearly defined goals in community-negotiated environmental contracts, which would have to specify the baseline for given land uses at the outset (Pfaff et al., 2014) as well as the conditions under which incentives should be disbursed (Leimona et al., 2011).

Improving land tenure security would provide local stakeholders with greater negotiating power in the ongoing REDD$^+$ schemes in developing countries. More explicitly, improving tenure security, for example, means increasing access and ownership status over the resource which, in the long term, becomes an important asset for communities, and even individuals, in the current context of contractual markets**.**

Additionally, the findings demonstrate the low willingness of young farmers to adopt sustainable practices which could gradually lead to carbon emissions reduction. During focus group discussions, the young demonstrated that they are more interested in direct income earned from the forest than in conserving it. This suggests that well-tailored awareness-raising efforts towards young people in the forest zone, on the importance of forest in the context of climate change, could have a significant effect on halting forest depletion.

The relationships based on family size were not significant, suggesting that in our forest zone, gender and family size are not segregating factors and might not be a major concern in REDD$^+$ implementation at local level. However, focus group discussions had previously indicated complaints by young people and women about not being fully involved in the ongoing REDD$^+$, especially on aspects of decision making and policy formulation. This area may need further investigation.

4.4.2. Incentive options to boost farmers' interest in carbon emission reduction scenarios

In this chapter, the results of our analysis concerning compensation options confirmed the qualitative data regarding farmers' perceptions obtained through the questionnaires and the focus group discussions in the nine villages sampled in Efoulan. It has been established that, in certain cases, introducing financial incentives at least doubles the probability that a farmer will preserve fallow fields with trees rather than cultivating them. Farmers' preferences rated in the analysis proved that their willingness to get involved is very high. Among the many alternatives theoretically designed for the assessment, the incentive option suggested as a top priority by most farmers is a combination of cash and non-cash compensation. This would encourage most people to keep both fallow and forest instead of converting the latter to farmland. Insights from the focus groups indicated that non-cash options proposed by farmers in Efoulan mainly consisted of tree-seedling provision, improved agricultural seed for intensification and training in nursery and on-farm tree-management techniques. Similar results have been found by Nyhus and Tilson (2004) in biodiversity flagship species conservation initiatives using an agroforestry approach.

Therefore, in order to achieve proper emissions reduction, the REDD$^+$ design should, from a local perspective, be based on a rigorous assessment of community willingness to get involved in forest emissions reduction schemes and an analysis of the thresholds in terms of planned

payments to match farmers' expectations and priorities. The design could follow the auction approach developed by Ajayi et al. (2011). The proponents described the process to improve the environmental impacts of smallholding land-use decisions. For instance, during our fieldwork, it was noted in order to compensate for an area of 10 m x 10 m, the people living in the communal forest anticipated that they would accept a yearly minimum of 25,000 CFAF and a maximum amount of 50,000CFAF (equivalent to 600US$). For those in the community forest ICG Dimej 1 & 2, the maximum amount expected is estimated at 500,000CFAF (equivalent to 1000US$).

However, for village communities around the community forest Minvan ICG, the amount varies between 1US$ and 1000 US$. This suggests that respondents may not be ready to accept the low carbon prices practiced at international market level of between 6$ and 14$ /t CO_2 as compensation or offset price. The implication may be a continuing increase in forest conversion into farmlands, because lower compensation levels would fail as an incentive, acting as a disincentive to retain trees across diverse land-use systems. Indeed, several research results (Borner and Wunder 2012; Minang et al., 2012; Gockowski and Van Asten, 2012) suggested that incentives need to be more competitive with benefits obtained from other land uses, so that they would create positive environmental impacts through both forest conservation and private smallholders land use decision making. In practice, generated changes from incentives (avoided deforestation and additional income) would be mainstreamed through forest management plans or family yearly plans.

Importantly, recent data show that Efoulan humid forest can store up to approximately 2.6 Megatons of Carbon equivalent. This figure is obtained from the average quantity of 311 TC/Ha estimated in Yemefack et al. (2013) times the Efoulan humid forest cover equivalent of 8300Ha in total. Further, let the minimum carbon market price be considered as 2.5USD/t (the price fluctuates and is mostly kept secret [Dr Rene Siwe, German international carbon expert, personal communication on the 26 May 2014; See also Hamrick and Goldstein (2016)]. A carbon stocks conservation scheme such as $REDD^+$ would then cost a minimum of 2.5US$/t*311tC/ha*8300ha, giving an estimated budget of 6.453.250 US$/year. The estimated annual budget identified suggests that there is a need to invest significant effort to mobilise funding for $REDD^+$ activities if carbon stock conservation is to be realistic, both economically and socially (Brown, 2013). However, the critical issue stands as to whether the country is able to raise the required funding

for REDD$^+$ under the current circumstances. Cameroon has been characterised by a limited capacity to attract funding for sustainable forest and other land-use management (Cameroon RPP, 2012). Scholars have identified diverse reasons for this. Some showcased rampant corruption and limited law enforcement in the forest sector, which slowed down donors' trust in the long-term policies of developing countries (Bellasen and Gitz, 2008; Samndong and Vatn, 2012). We argue that it might be the case for the bilateral cooperation programs of the Netherlands, United Kingdom and recently Canada, which, due to poor governance, took the decision to stop their traditional support. Others claimed that the current worldwide financial crisis has definitely had an effect, resulting in reduced investment in livelihood activities. In poor countries, this leads to greater deforestation because of an expansion in the smallholding agricultural sector (Sayer et al., 2012). In some areas, it will resurrect the dormant critical issues of tenure rights (indigenous forest communities) and power relations among stakeholders, whereas livelihood standards would continue to decline if REDD$^+$ was not operationalised with appropriate funding.

4.4.3. What policy outcomes stimulate effectiveness in emission reductions?

Understanding the links between farm-level socio-economic factors and forest depletion is essential to formulate robust policy instruments and even more so, to get to know how much, what, where and when in terms of the interventions to be targeted. This may affect the future success or failure of incentive mechanisms for any environmental issue cycle including REDD$^+$. Therefore, taking a governance perspective, and based on the above analyses, the following key areas need special consideration to obtain optimal emission reduction:

1. *Underpinning the legitimacy of smallholders' efforts and participation*: our model found four factors that link socio-economic characteristics to deforestation and forest degradation and would hence increase CO_2 emission. They are: (a) age of the household head, b) proportion of non-farm income to total HH income, c) group membership, and d) restricted access to forest products. The above factors indicate that policy reforms should be tailored to integrate these determinants in order to underpin the legitimacy of smallholders' perceptions in the developing REDD$^+$ process. This would render the establishment of these policy mechanisms efficient and credible at country as well as at local levels. It is clear that classic conservation-inspired regulations using the well-known

forestry policing approach will only continue to limit timber extraction (Oyono et al., 2008; Pulhin et al., 2010) but not smallholders' survival activities (clearing of land for new farms, NTFP harvest, bush-meat trading) in the context of increasing poverty.

2. *Recognising the role of smallholder farmers in carbon emission reduction-based institutions is crucial*. This study has demonstrated that farmers, through their perceptions, possess substantial and valid knowledge which, to some extent, is as robust as the regression-model outcomes. This indicates that local stakeholders are knowledgeable to play a central role in any initiative, such as REDD$^+$, that aims to halt deforestation. This could be materialised via multi-stakeholder-signed agreements which define, in advance, the rules of the game, complemented by emission reduction mechanisms and efforts/performance-based benefit sharing. Similar to the highlights identified by Larson et al. (2010) in their concluding reflections, the success of such reforms needs transparent and credible institutions at local, regional and national levels. A subsequent implication to this would be to value the participation of such stakeholders as much as possible in order to adequately implement REDD$^+$. The suggestion to mainstream participation is in line with findings by Hoang et al. (2011) who talked about REDD$^+$ benefit distribution in Vietnam, as well as those of Hansen et al. (2009) who assessed the prospects for REDD$^+$ implementation in Ghana. Otherwise, it is becoming clear, as observed by Mbosso (2011) in her study in Efoulan, that forest conversion into other land uses may continue to occur to the detriment of community livelihood survival efforts, if collective carbon-stock governance institutions are not put in place before attempting to implement the suggested CER schemes.

3. *Acting effectively on community livelihoods as per people's perceptions*: according to the Durban outcomes in 2011 and donors' commitments thereafter, REDD$^+$ payments may likely perform below farmers' expectations in terms of cash income. It is anticipated that any top-down designed scheme would fail to compensate up to the level of the foregone community efforts in forest stewardship carried out over centuries. This is because the REDD$^+$ process may eventually undermine livelihoods challenges to the detriment of carbon-protective strategies in Efoulan and elsewhere in southern Cameroon. Our model has established a strong relationship between four farm and socio-economic factors and

deforestation, hence emissions reduction. Community perceptions indicated that acceptable levels of annual payment per surface area should be in the range of 34US$/100 m^2 of forest in the Efoulan landscape. Meanwhile, previous assessments based on average carbon sequestration and current carbon market prices, indicated figures far below the above suggested levels, which are estimated at less than 5 US$ return per ton CO_2-eq (Ngendakumana et al., 2011). As already anticipated, the economic gap is due to the overall low profitability of the $REDD^+$ system, which seems to be neither fair nor efficient to serve as an alternative compensation opportunity compared to income that could be obtained from other land uses. Here, international stakeholders, mostly donor agencies running carbon funds, such as the World Bank will benefit from rethinking funding levels in order to meet forest stewardship efforts through financial processes under $REDD^+$.

4.5.Conclusions

The above findings demonstrate that it is possible to determine socio-economic farm-level factors relating to deforestation and forest degradation. They imply that further steps to implement $REDD^+$ mechanisms in the forest area should take facilitating access to NTFPs as an entry point - this being one of the critical forest tenure issues in Cameroon - as well as integrating realistic and efficient economic incentive options into current forest conservation.

Finally, as this chapter attempts to understand to what extent socio-economic characteristics have an impact on forest-cover change, alongside changes in emissions, it has stressed that $REDD^+$ design should, from a local perspective, be based on rigorous assessments of community willingness to get involved and the analysis of compensation thresholds. The latter should be considered in terms of planned payments to match farmers' expectations and priorities, in order to achieve proper emissions reduction. For all stakeholders, especially eligible governments and international implementing agencies, more attention should be given to participation as a governance principle and to inclusive forestry policy review processes towards appropriate tenure reforms. The latter could factor in $REDD^+$ financial mechanisms and carbon rights as a joint tool for poverty reduction to be included within a broader, more sustainable development policy framework.

CHAPTER 5

"In many contexts, and in developing countries in particular, going for the obvious is bad policy. […] Often, a clever mixture of formal and informal elements has two main advantages: harnessing new resources for corporate governance, and making the firm more responsive to its environment".

(Christoph Engel)

5. INSTITUTIONAL DIMENSIONS OF THE DEVELOPING REDD$^+$ PROCESS

Abstract

The Reduced Emissions from Deforestation and forest Degradation REDD, now REDD$^+$ incorporating carbon-stock enhancement and biodiversity conservation, has emerged in recent years as a mechanism to simultaneously address climate change and poverty-reduction challenges at the margins of tropical forests. Congo basin countries, including Cameroon, have embraced the opportunities that REDD$^+$ provides with high expectations. Yet, it is unclear whether the enabling institutional environment, required for implementing REDD$^+$ is present. Understanding is still limited on how to build adequate and strong institutional relationships which could shape the reforms and establish efficient emission reduction schemes. Furthermore, uncertainty remains on the operational mechanisms of REDD$^+$, suggesting that to guarantee effectiveness, there is a need to come up with a governance model nested in relevant policy frameworks. This study builds on a modified "4 Is" framework (Institutions, Interests, Ideas and Information) to analyse REDD$^+$ and explores stakeholders' perceptions on the existing potential for local forest governance. A structural implementation model to optimise the effectiveness of REDD$^+$ is developed. Findings suggest that governments need to review existing policies to factor in participation, local people's rights and access to information as a way to stimulate actors' willingness to contribute to emission reductions and carbon-stock increases under REDD$^+$ regimes.

Key words: policy instruments, REDD$^+$, rights, forest governance, Cameroon

The chapter is based on the following publication: Ngendakumana, S., Minang P.A., Speelman S., Feudjio P.M., Van Damme P. and Tchoundjeu Z. (2014). Institutional dimensions of the developing REDD$^+$ process in Cameroon. *Climate Policy,* Vol. 14, No. 6, 769–787, http://dx.doi.org/10.1080/14693062.2014.877221

5.1. Introduction

The REDD$^+$ initiative has emerged in recent years as a mechanism to simultaneously address issues of climate change, biodiversity loss and poverty reduction in the tropical forest margins (UNFCC, 2010; Kanowski et al., 2011; Minang and van Noordwijk, 2012). Deforestation and forest degradation are responsible for 12–17% of the world's greenhouse gas emissions (Pfaff et al., 2011), and for about 65% of carbon emissions in developing countries (UN-DESA, 2009). This demonstrates the potential significance of the REDD$^+$ initiative in the fight against global warming. The mechanism is designed to provide incentives to protect forests, and has gained widespread acceptance in the international policy arena since the Bali conference in 2007 (Clements, 2010; Hiraldo and Tanner, 2010). REDD$^+$ is very popular amongst policy makers and shapers because it is a type of Payment for Environmental Services (PES) scheme, which would entail a flow of money at national levels. This makes it more attractive to the governments of most developing countries with a view to enhancing existing conservation instruments.

While Clements (2010) argues that the initiative can lead to long-term conservation outcomes, especially in the tropics, many uncertainties remain as to how REDD$^+$ will be operationalised at the global level (Hajek et al., 2011; Kanowski et al., 2011). At the same time, it is clear that local evidence and models nested in relevant policy frameworks should guide the strategic positioning of local actors (Minang and Van Noordwijk, 2012). Hiraldo and Tanner (2011) highlight that the trend towards decentralisation has shown that local communities can also fail to make effective decisions about the management of their forests. Moreover, REDD$^+$ decision-making processes are likely to be complex as they require the convergence of diverse interests, narratives and actors (Hiraldo and Tanner, 2011).

The Congo basin countries, including Cameroon, have shown great interest in the opportunities that REDD$^+$ provides (for details on the REDD+ development process in Cameroon, see chapter 2, paragraph 2.7). In this region, forest-cover erosion is speeding up and this contributes significantly to rising greenhouse gas emissions (Skutch, 2011). Policy implementation experience suggests that a substantial foundation exists for achieving reduced emissions from deforestation. However, in some of the poorest countries, this could be undermined by inappropriate institutional arrangements and poverty challenges (May et al., 2010; Lawlor et al.,

2010). Therefore, greater effort towards understanding the governance processes of mitigation and adaptation are needed (Adger, 2001; Biermann, 2010; Lawlor et al., 2010; Hiraldo and Tanner, 2010).

Since its inception in Cameroon, several debates concerning REDD$^+$ are still ongoing. Viewed from a social and environmental perspective, the challenge lies in finding trade-offs between livelihoods and climate-change mitigation strategies through articulated coordination paired with credible stakeholder participation. A good number of actors have been consulted in the REDD$^+$ process at country level, but several experts noted that it did not necessarily revolve around the right actors (Dkamela, 2011; Freudenthal et al., 2011). The national REDD$^+$ setting hence indicates a poor stakeholder engagement fuelled institutional failures such as lack of clarity on who should take the lead, what the responsibilities are and how the process should be governed.

Thus, there is a need to rethink the existing systems of coordination, collaboration and partnerships. According to Suding and Limpp (2007), agents should pool their skills and other resources in partnership to achieve their shared goals. The institutional arrangement suggested in the Readiness Preparation Proposal (RPP) appears to be too simplistic, with only weak potential to ensure efficiency along the REDD$^+$ value chain. There is still little understanding on how to build strong institutional relationships which could shape reforms towards efficient emission reduction schemes.
Suding and Limpp (2007) therefore agree with Saunders and Reeve (2010) that for the REDD$^+$ process to realise positive impacts in Cameroon, an additional situational analysis is necessary to address governance gaps in the current emission reduction schemes.

The aim of this investigation is to shed more light on the uncertain and ambiguous operational mechanism of REDD$^+$, based on the current institutional arrangement and the power relations among stakeholders in Cameroon. The overarching question of this chapter therefore is: what are the institutional requirements for successful implementation of REDD$^+$ and which specific gaps need to be addressed?

5.2.Theories and methods

5.2.1. Conceptual framework

As indicated in the 3rd Chapter, institutional structures to ensure the implementation of REDD+ can take the form of hierarchies, coalitions or networks (Angelsen et al. 2012) as they refer to relationships between agents involved in existing institutional arrangements for REDD+. The role of each actor can also be differentiated. In order to deepen the differentiation of roles, some argue that it suffices that the analysis is built on good governance principles (Hyden et al., 2008). To add greater meaning to the ongoing REDD+ debate, we looked into the architecture of REDD+, assuming that this emerging policy instrument is characterised by a multitude of actors operating across various decision-making levels: local, sub-national, national and global.

Brockhaus and Angelsen (2012) proposed a useful framework for understanding the REDD+ policy arena. They identified four "I"s as key elements: Institutions, Interests, Ideas and Information. *Institutions* refer to the set of rules of the game within which all actors operate in the REDD+ policy domain. Institutions shape the way in which humans relate to their environment and guide interactions between actors in a given arena (Corbera and Brown, 2008). Climate change institutions are assigned different roles to meet the targets of the REDD+ design process at country level, and institutional linkages are formed towards its implementation. Norms, regulations and desired arrangements are shaped by a historical trajectory which is somehow rooted in drivers of forest-cover change. Those drivers are influenced by the *interests* of the actors, for example in a country such as Cameroon, forests are considered as a source of formal or informal income leading to diverse beliefs on how to manage those forests (Oyono et al., 2008). Often, power is concentrated with the State as the manager of all forest resources, ignoring the actors who are directly involved. Over recent decades, the latter have fought in vain via lobbying and advocacy for some structural changes. Different actors also have different *ideas* and perceptions on how forest management should be organized in the REDD+ policy arena (Hiraldo and Tanner, 2011). Actors often use discursive practices and ideologies to legitimate their

positions, which often conflict with the government's priority to ensure that REDD$^+$ leads to socially and environmentally optimal results.

In this type of loose governance system, actors also use legitimate practices to seek and pursue interests according to normative rights (Oyono et al., 2008; Larson et al., 2008). This brings together diverse flows of *information* which constitute the basis for lobbying and negotiation during the different phases of the REDD$^+$ cycle. REDD$^+$-related information requires knowledge and capacity to ensure in-situ action planning, the effective coordination of actors as well as the skills to monitor, report and verify that targets have been met and additional carbon stocks and removals achieved. This means going beyond business as usual (BAU) to collect data at local level to measure forest-cover changes, carbon stocks and transformational land-use changes. The challenges at this level are whether existing institutions have sufficient technical capacity to coordinate the multiple emerging REDD$^+$ agencies across key functions (planning, demonstration, management of incentives) and to incorporate the new momentum of community forest monitoring (Skutsch and Solis, 2011; Verplanke and Zahabu, 2011). This is presented in the analytical framework (see figure 5.1).

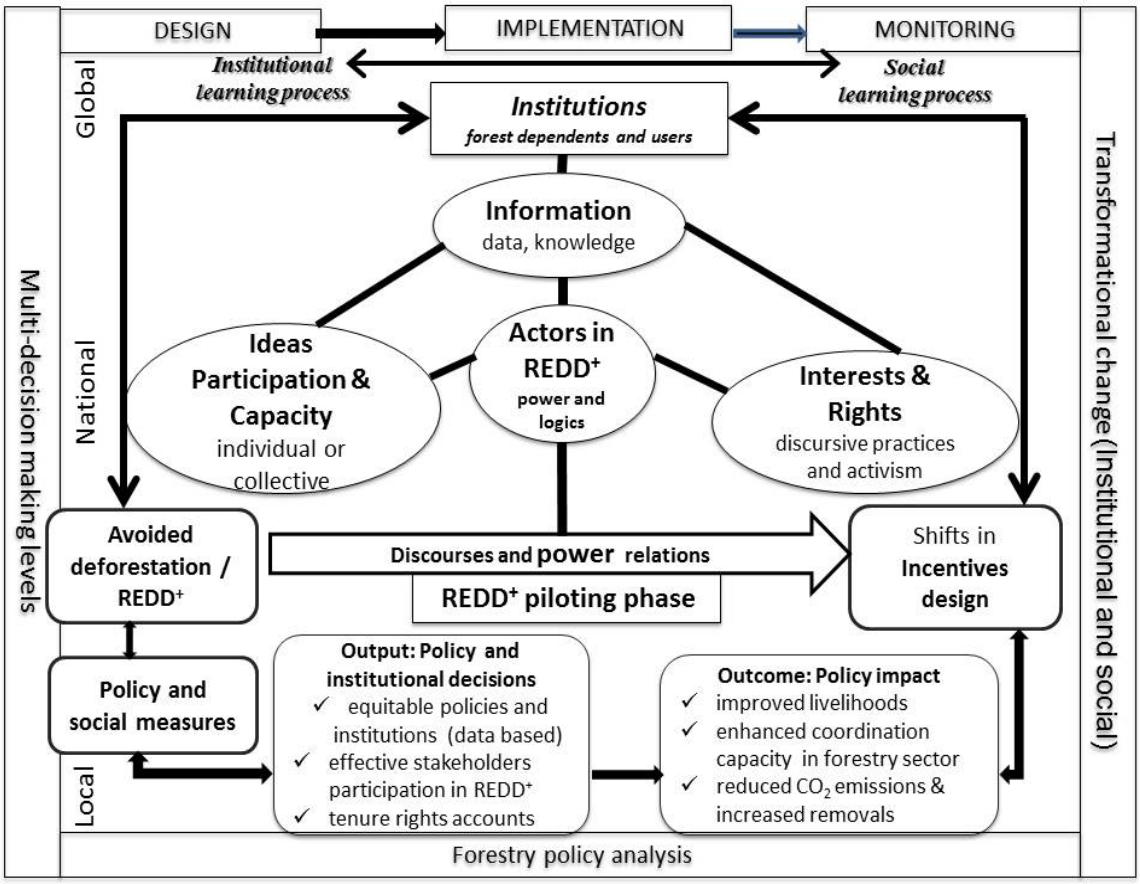


Figure 5.1. Nested REDD+ policy structure based on levels of decision making with social safeguards (modified from Brockhaus and Angelsen, 2012).

Although the structure may look complex at first glance, this modified framework actually portrays the simplicity of the REDD+ idea. It indicates the various links to be established to render this performance - based mechanism successful in the policy context of Cameroon. The framework alleviates the ambiguities on policy options and sustainable development actions to be undertaken during the REDD+ cycle. It is clear that using this analytical tool may build strong interplays for actors' flexibility in discourses and mutual trust within CO_2 emissions reduction schemes. Using the mechanism developed, all actors and institutions would ultimately continue to shape the REDD+ trajectory towards transformational change in land use. Consequently, local stakeholders need adequate technical and financial support to reduce carbon emissions during the REDD+ implementation process. Furthermore, Cameroon needs to enact specific social safeguard

policies and measures to support REDD$^+$. According to Lawlor et al. (2010), this goes beyond benefit sharing, as framed by many scholars (Larson et al., 2010; Galudra et al., 2011; Hoang et al., 2012), to avoid negative impacts on rural communities, and thus promotes their positive commitment to the overall effectiveness of REDD$^+$ program.

5.2.2. Grounded theory and data collection approach

In an attempt to understand key dynamics relating to the implementation of REDD$^+$ in Cameroon, a survey was first designed to investigate who (among the international and national organizations or projects) is doing what in relation to REDD$^+$. In this way, the aim was to identify the extent to which they are effective, efficient and equitable. Secondly, problems relating to the design and implementation of REDD$^+$ and the roles of the different stakeholders were identified, as well as the institutional requirements for adequate implementation of REDD$^+$.

This qualitative approach should offer detailed insights into all the implementation phases of REDD$^+$. In line with some proponents, social sciences have widely used the "grounded theory" approach developed by Glaser and Strauss in 1967 (Corbin and Strauss, 1990; Kerselaers et al., 2012), particularly when actors make choices according to their perceptions about options, opinions and changing conditions. The theory derives its robustness from the concepts of pragmatism and symbolic interactionism. It embodies the following principles: change and determinism.

Through the practical application of theories, a new theory can emerge from collected data, unlike when reasoning builds on an *a priori* outlined hypothesis (Kerselaers et al., 2013). This aligns with the objective of our study, which seeks to elucidate actors' viewpoints on REDD$^+$ in Cameroon. We try to gain a picture of the institutions that are effectively, or potentially, engaged in REDD$^+$, identifying their stakes and logics. We also capture their perceptions on levels of participation as a way to advance climate-change policy reforms, and rectify social imbalances in the process. Some of the questions included in the survey were: (1) to what extent has your organization been involved in the Cameroon REDD$^+$ readiness process? (2) At which level of the process have you been involved? (3) What prevents you from fully participating in the REDD$^+$ process?

5.2.3. Data collection

Based on the theoretical approach described above, this chapter draws on information collected within the institutional set-up for REDD$^+$, covering three levels of the process in Cameroon (national, sub-regional and local). Information was collected throughout the 2011 REDD$^+$ readiness process and was analysed gradually. Data sources comprise several layers. Stakeholders interviewed included forest services, staff from other ministries, staff from international and national non-governmental organizations and community-based associations. Furthermore, available scientific and policy literature was consulted, including the high-level UNFCCC meeting reports and the policy documents from the environmental and forestry departments of Cameroon. These were used to understand the concepts and dynamics relating to REDD$^+$, as well as their implications for forest management systems in the country. In order to assess the institutions and their concerns regarding the ongoing REDD$^+$ process, preliminary data was collected through open questionnaires, as described by Minang et al. (2012).

The first set of respondents was from 35 stakeholder organizations selected from 78 institutions identified. They included state services (15%), international organizations (20%) and national NGOs (65%). They were identified using key criteria such as: (a) being involved in REDD$^+$ and climate-change debates; (b) having ongoing REDD$^+$ pilot activities in the field; (c) being based in Cameroon during the period of the study; and (d) willingness to take part in the survey. At the preliminary stage of the assessment, we defined stakeholder classes. The classes were segregated through expert focus group discussions using criteria such as: (i) current interest in REDD$^+$; (ii) their power level in the process; (iii) the amount of information they received in advance; and (iv) their knowledge of REDD$^+$ implementation. Finally, only 18 organizations responded to our research questionnaire (table 5.1).

Table 5.1. Classification of respondents according to interest and power in the ongoing REDD+ process at country level

Institutions	Number of respondents / class	Current Interest	Power level	Prior information	Knowledge of REDD+ implementation
National forest NGOs	9	+++	+	++	+
Forest and environmental state services	2	+++	+++	+	++
Research institutions	5	++	+	+++	++
Other state services	1	+	+	-	-
Other NGOs	0	+	+	-	-
Private sector agents	0	-	-	+	-
Average trend estimation		++	NA	+	+

Key: +: weak: ++: strong; +++: very strong

Apart from the above respondents, we also interviewed specific actors based on the capacity of each institution to answer the technical questions used in the in-depth REDD+ discussions. Eight among the 18 institutions were interviewed separately to provide greater insight into their perceptions of the REDD+ process in Cameroon. Furthermore, key informants were asked to assess evidence concerning REDD+ readiness in terms of methods, capacities and coordination facilities at national and regional levels. The two data collection steps were complemented by expert focus group discussions, as side events during several formal meetings organized in 2010 and 2011, under the REDD+ stakeholder dialogue/round tables on climate change policy and emission reduction strategies. In order to triangulate and validate the answers obtained, the same process was repeated alongside discussions during the regular meetings of the national climate group held in Yaoundé in preparation for the "Readiness Preparation Proposal" (RPP) launching event.

As a matter of institutional right, Free, Prior and Informed consent in REDD+ was assessed with regards to 3 local communities organized in east, littoral and south west regions. In total, 330 farmers from 12 villages were covered using the focus group discussion with guiding questions

as follow: 1) Are you aware of climate change and the strategy to cope with it which called REDD$^+$?; 2) Has any actor come to ask you for your willingness to get involved in REDD$^+$ or has your consent been sought sufficiently in advance for the same effect under your customary institution?

At the end, data was treated and analysed following the coding approach developed by Corbin and Strauss (1990). Datasheet content allowed the use of open and selective coding respectively, during the analysis. Information was categorised according to similarities in answers obtained for each of the 72 questions, which were, in turn, coded to allow further analysis using Excel. Quantitative descriptive analysis was also used to obtain graphical representations of the results in order to make relative judgements with precision. Finally, the latter step enabled the design of a schematic governance model for REDD$^+$ in Cameroon.

5.3.Results and discussions

5.3.1. REDD$^+$ governance profile and forest policies in Cameroon

Early REDD$^+$ projects have emerged in Cameroon since 2008, in parallel with several CDM initiatives under the coordination of the government with the support of international organizations such as GIZ, WWF, IUCN and the World Bank. Together with evolving actions that fostered forest management and biodiversity conservation, there has also been a proliferation of multilateral funds provided by NORAD, CARPE-USA and DFID to support demonstration activities through different arrangements (see Table 5.3). The latter resulted in functional partnerships with local, national and international organizations from which REDD$^+$ could learn lessons. Some PES projects were also identified in localised areas, but without adequate capacity to develop tools and rules to govern concrete payments at community level.

Our assessment confirmed the absence of a countrywide REDD$^+$ strategy. Such a policy instrument should first define the climate-change-related “rules of the game” (e.g. clarification on who holds rights to trade carbon credits and other environmental services). Second, the policy should provide guidance on how different stakeholder rights will be protected, whereby the latter rights should include rights to share in the financial benefits of REDD$^+$, rights to participate in the decision-making processes, cultural rights (Lyster, 2011), property rights to indigenous

knowledge, and know-how about forestry resources. Third, this strategy should then reorient REDD$^+$ targets, taking into account current trends in deforestation and land-use plans.

During this investigation, it was noted that, so far, all institutions involved in the demonstration and pilot activities used a purely top-down approach. This is also true for organizations claiming to speak on behalf of local communities, such as NGOs and Community-Based Organizations (CBOs). In the context of a performance-based evolution mechanism, we argue that the processes put in place would rather gain by anticipating institutional learning for a transformational change towards a more "bottom-up" approach, as per current experiences reported in Peru (Hajek et al., 2011), to ensure the likelihood of REDD$^+$ success. This implies that forest governance systems need to transcend the common practice of pseudo-transparence and dictatorship within the overall institutional establishment. Otherwise, the overall legitimacy of REDD$^+$ will remain questionable, with tenure insecurity at all user levels the potential consequence.

In Cameroon, there is serious concern as to whether existing policy frameworks will be sufficient to effectively govern REDD$^+$ (Robiglio et al., 2010; Dkamela, 2011, IUCN, 2011, Ngendakumana et al., 2012). A large number of proponents agree on the fact that Cameroon has successfully enacted several legal and regulatory instruments in forestry, environment, decentralisation and land tenure. However, up until now, these laws have been unable to achieve the hoped-for results.

Our study examined some 15 instruments with regards to REDD$^+$ policy readiness. They are:

(1) The constitution of the Republic of Cameroon;
(2) National Biodiversity Strategy and Action Plan;
(3) The Forestry and Wildlife Law (Law No. 94-01 of 20 January 1994);
(4) The National Environmental Management Plan (1996); and
(5) The Community-Based Natural Resources Management Act of 1992.

These documents provide the framework for community participation in natural-resource management and use through the formation of viable, tax-free common initiative groups. Of particular relevance are procedures that guarantee ownership of community forests. Other decrees and ordinances analysed were:

(6) The recently promulgated Law N° 2011/008 of 6 May 2011 on the orientation of management and sustainable territorial development of Cameroon;
(7) The Land use and Land Tenure Act of 1974 (Law N°. 74-1);
(8) The Environmental Management Law N°. 96/12 of 1996; (9) Law N°. 90/053 of 19/12/1990 on associations; (10) Decree N°92/455/PM of 23/11/1992 that provides for AAss; and
(11) Decree n°2009/410 of 10-12-2009 (National observatory for Climate change in Cameroon.
Finally, some newly developed policy documents reviewed include but are not limited to:
(12) The Cameroon Readiness Project Idea Note;
(13) The Cameroon Readiness Project Proposal finalised and submitted in September 2012;
(14) The Prime Minister decree N°103/CAB/PM of 13/06/2012 creating the Cameroon REDD$^+$ Steering Committee and regulating how it functions; and finally
(15) The Sectorial Program for Forestry and Environment (PSFE) which seeks to address issues relating to environment, participatory forest management, biodiversity and capacity strengthening.

With regard to the connection between country policy and the international governance system, organizations such as Cameroon's Ecology and Wildlife Conservation Society noted in their responses that cautious efforts have been made by the government in signing the different international instruments, followed by the elaboration of different national action plans. The latter include a national biodiversity action plan and proposals to revise various laws and codes. NGOs have also been at the forefront of forest conservation and community-based forestry and biodiversity projects. As a result of the NGOs' engagement in the implementation of international conventions at country level, improvements have been observed in recent reports, compared to the local forest governance situation in previous years which had been described as very alarming by Oyono et al. (2006) among others.

On the other hand, it is clear that Cameroon has recently made progress on actor participation and forest sector decentralisation. As forefront strategies to improve governance, the country also slightly improved on its fight against corruption. Nonetheless, vagueness and ambiguities remain in its policy instruments which may significantly hamper the implementation of upcoming REDD$^+$ processes (Fobissie et al., 2012). While it is as yet unclear whether decentralisation

would have a positive or negative impact on deforestation, existing policy instruments inexplicably continue to have many uncertainties, especially in the area of land and forest tenure. Despite the fact that these issues have been raised by several civil society forums (Oyono et al., 2008 and 2009; Ngendakumana et al., 2010; IUCN, 2011), Cameroon has not moved much further forward with the legal and policy frames that are needed to demonstrate the international climate change directives expected to be observed by each country that is a "Party of the UNFCCC-COP". Instead, policy enactment in the country is reputed to be very slow (Oyono, 2004). For instance, a decree creating the REDD$^+$ national committee stood for around two years before the official signature by the relevant government authority. Another example in the same vein is the review of the 1994 Forestry and Wildlife Act that started some four years ago, but, to date, the process has not yet come to a complete end.

Many scholars had earlier viewed the revision process for this instrument as a golden opportunity to incorporate emerging concepts (REDD$^+$, PES, CDM) as well as local people's concerns about improving forest governance and rural livelihoods (Dkamela, 2011; IUCN, 2011; Ngendakumana et al., 2011). Unfortunately, the 1994 Forestry Law review process seems to take one step forward and two steps back. There could be two reasons for this lethargy. Firstly, there may be a lack of appropriate policy conditions and adequate budgetary allocations to complete the process, as it involves lengthy consultations, dialogue and inclusivity.

Secondly, institutional instability may be detrimental to the review process, because frequent staff changes often disrupt the flow whenever some progress has been made in any working domain. This finding aligns with earlier observations by Oyono (2004) in his analysis of forest management decentralisation. This author reported that a similar review process launched in 1991 stagnated until 1997 and ended up by reverting to "re-centralisation" of the forest management systems.

However, during expert meetings occurring between 2010 and 2012, enthusiasm could be noted from all stakeholders (donors, NGOs, CBOs) for raising the standards for conserving the Congo basin. Moreover, in Cameroon, one can clearly observe a political will from the national REDD$^+$ team to transform climate-change mitigation into an opportunity for poverty alleviation. It is becoming more evident that existing policy frameworks may not work under current scenarios in

developing countries. This observation is in line with Pedroni et al. (2008) who looked at some governance indicators in 8 countries to come to the conclusion that gouvernments in theses countries are unable to provide and enforce robust policies in their territories. Likewise, Kanowski et al. (2011) while studing policies in a number of developing countries found that the enforcement of existing policies is often lacking. For this reason, we strongly argue that the ongoing REDD$^+$ implementation process in the country could serve as a catalyst to accelerate reforms to satisfy international requirements so as not to miss anticipated forest funding flows.

5.3.2. Free and prior informed consent as a REDD$^+$ governance principle at local level

Whether one views REDD$^+$ as a policy instrument or an international aid opportunity, the social safeguards issue comes to the forefront, together with some other issues such as governance principles, benefit distribution, and forest surveillance and monitoring. This will characterise REDD$^+$'s future regime in practice. Findings from focus group discussions indicated that the right to information by stakeholders, and more importantly local communities, is becoming crucial as UNFCCC recommends that they should be invited to give their full consent before any REDD$^+$ initiative becomes operational (Cancun agreements Decision 1/CP.16). The consequence is that parties are expected to promote and support principles and conditions that respect human rights, and address land tenure issues, forest governance and benefit sharing.

The same applies to the engagement of stakeholders with the effective and full participation of women and local people. Field findings revealed that local communities around our study sites in Cameroon (see Figure 3.5, chapter 3, section 3.1.3) were ignorant about ongoing international debates on climate change. It was also noted that due to their limited knowledge of the Forestry and Wildlife Law, they were rather vindictive, displaying very low concern about forestry conservation initiatives. Only 33% of respondents indicated awareness of the content of climate-related debates, mostly gained through each year's radio broadcasts, which often focus on COP meetings during the December period. Based on these responses, it was observed that only a few members (10% of the sampled group) have been consulted in REDD$^+$-related discussions (Table 5.2).

Table 5.2. Local population awareness of climate change debates and consent on REDD^{+} prospects

Region	Study site	Village community	Number of respondents	Are you aware of CC and the strategy to cope with it which is called REDD^{+}?		Has any actor come to ask for your willingness to get involved in said strategy?			
				Yes	No	Yes	%	No	%
East	Ngoyla	Menkouom	14	0	14	3	21.4	11	78.6
	Ngoyla	Messok-Messok	16	0	16	1	6.3	15	93.7
	Ngoyla	Ba'aBa (Zoulabot)	14	0	14	2	14.3	12	85.7
	Ngoyla	Etekessang	19	0	19	3	15.8	16	84.2
	Ngoyla	Lelene	14	0	14	2	14.3	12	85.7
	Ngoyla	Doumzock	12	0	12	3	25	9	75
	Ngoyla	Ngoyla Village	25	0	25	2	8	23	92
	Ngoyla	Lamson	13	0	13	1	7.7	12	92.3
Littoral	UFA 07002 Edea	Ngonga	39	0	39	3	7.7	36	92.3
	UFA 07002 Edea	Kopongo	50	0	50	5	10	45	90
	UFA 07002 Edea	BOPO	13	0	13	2	15.4	11	84.6
South West	Tinto	Tinto	101	0	101	6	5.9	95	94.1
Total	12	12	330	0	330	33	10	297	90
%	100	100	100	0	100	10	10	90	90

Source: Fieldwork 2010

Most local people interviewed during our research acknowledged that they had not been consulted about either future implementation of REDD^{+} or details on how related financial benefits would be channelled to their community's institutions. In the focus group discussions, communities were very concerned about the slow or absent involvement by the government in policy development on forest resource issues. Most of the time, they are called upon to collaborate during project implementation phases without prior consultation or consent during their design. In all study sites, local populations were unanimous that their consent was not sought when carving out the boundaries of permanent and non-permanent forests. Instead, they had simply been informed of the existence of such forest compartments, such as Nki National Park, UFA 07002 and Bayang Mbo Wildlife Sanctuary. Local communities have to compete for Community Forests (CF) with safari hunters in non-permanent forest domains. The imposition of these protected forest regimes on local communities ties in with the provisions of the Land Tenure Code of 1963 where all land belongs to the State. This amplifies conflicts relating to loss of access to land and resources, as local people can neither own a Community Forest free of an

imposed Simplified Management Plan (SMP) nor exploit fauna or timber resources in forest land that has become a State prerogative.

The situation described thus raises the burning need to shed more light on the question: "To whom will carbon credits be attributed?" which is under consideration by many scholars investigating REDD$^+$ worldwide (Van Noordwijk et al., 2011; Galudra et al., 2011; Corbera and Schroeder, 2011; Angelsen et al., 2012).

5.3.3. Institutions: REDD$^+$ demonstration activities, stakes, logics and beyond

This study identified approximately 29 REDD$^+$ demonstration and pilot projects involving 39 organizations, mostly in the southern forest part of Cameroon. The checklist had indicated that about 78 actors were potentially involved in forestry and agricultural projects, which could possibly be linked with the REDD$^+$ mechanism. Stakes encompass many initiatives geared towards emission reductions through land-use changes, conservation and sustainable management of forests, and enhancement of forest carbon stocks (Fig.5.2). This can be achieved through agroforestry and reforestation interventions, as well as surveillance and monitoring during natural regeneration processes. Both donors and implementing agents at local, sub-regional, national and international level were considered.

Table 5.3 summarises the categories of institutions actively involved in the REDD$^+$ consultation process at country level. Figures 5.2 and 5.3 show how different actors perceived the involvement and capacities of different structures to implement REDD$^+$-related activities in Cameroon. From these results, it should be noted a kind of balance in terms of engagement scope between national and international organizations with a minor trends of international agencies being involved in a wider portfolio of functions than local organizations.

Table 5.3. List of organizations included in the mapping count sequence indicated to affect REDD+ activities

Organization category (2)	**Organization**	**Score (appearance sequence mentioned by respondents during the survey)**	**Donors**
International organization	WWF	6	NOVIB, DIFID, SVN
	CIFOR	3	NORAD, CBFF
	ONF International	1	NS
	IUCN	6	CBFF/AfDB
	GIZ	2	Germany
	ICRAF	3	NORAD, RRI
	CARPE	1	USAID
	COMIFAC	1	AfDB,
	PNUD	1	World Bank
	FFP	1	RRI
	WCS	1	NS
	FERN	1	NS
	CIFORD, climate change project	1	ALGore
Total count		27	
National institution			
National NGO	CWCS	1	NOVIB, RRI
	NESDA-Ca	1	CARPE
	Living Earth Fundation	1	NS
	CAFER	2	NS
	OPED	1	CARPE
	CED	1	GoC
	RFUK	1	NS
	CEW	1	NS
	Cam Ecology	1	CBFF, RRI
Goverment (GoC)	MINEF, MINFOF, MINEPIA	1	World Bank, IUCN, UK
Academia	Yaoundé and Dschang	2	NS
Total count		13	

NS=Not specified

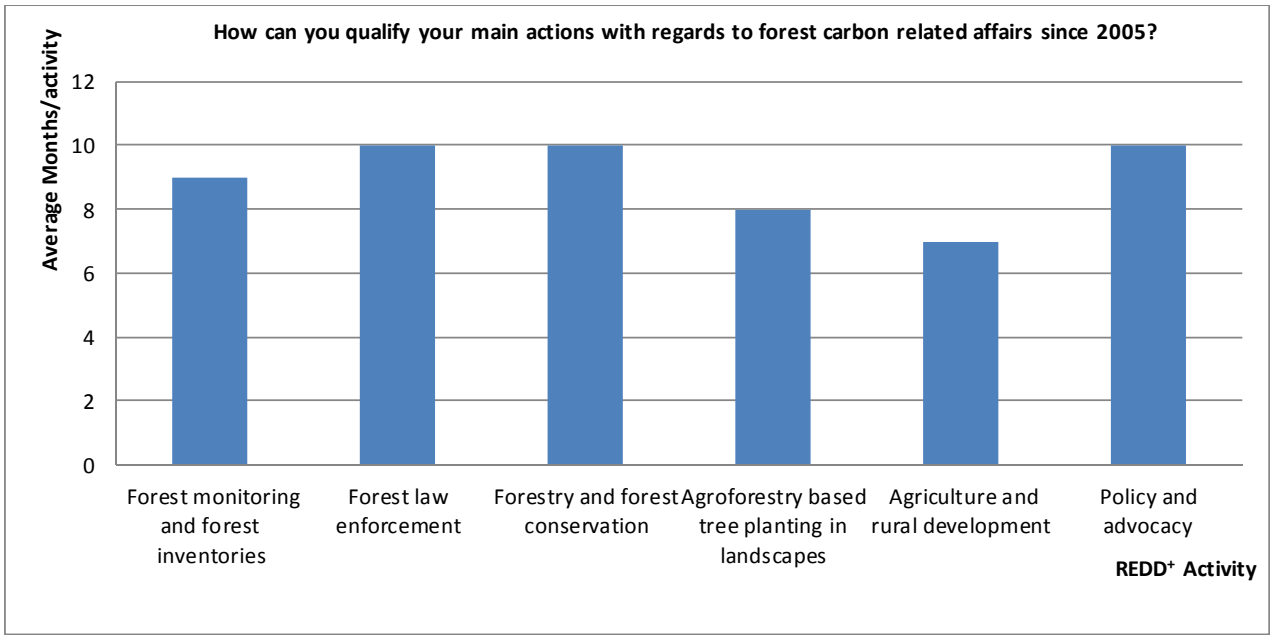


Figure 5.2. Self reported involvement (in terms of months per year) of institutions in carbon-related forest actions under REDD+ piloting phase

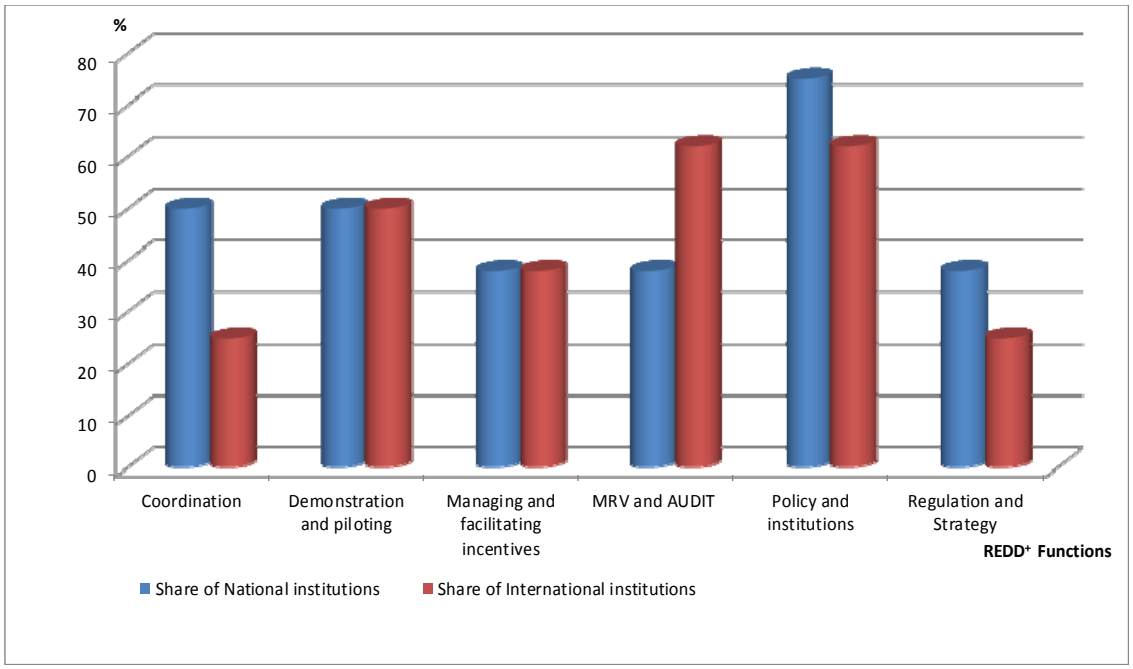


Figure 5.3. Perception of investigated institutions on REDD+ implementation capacity segregated across identified functions

[Key: The Y axis is the perceived capacity of institutions with regards to several REDD+ related functions, measured on a scale of over 100]. MRV=Monitoring, Reporting and Verification.

The same finding demonstrates a rich cross-section of actors, including donors in Cameroon, especially when it comes to participating in emission reduction and forest conservation initiatives. However, there seems to be an indication of the preponderant role played by external organizations in the implementation of REDD$^+$ demonstration activities. As a consequence, our findings show a high level of ambiguity in the early phases of REDD$^+$ in Cameroon, especially for institutionalised patterns of actions, as also reported in a number of other recent assessments (Robiglio et al., 2010; Dkamela, 2011; UNREDD, 2011).

The same ambiguity became apparent during sub-regional and national workshops on climate change in the country. For instance, during these events, held since 2010, one could clearly observe a form of dependence by state actors on international consulting agents and international development organizations, especially in relation to norm setting but also with regard to leadership of the debate. This was also reported for the REDD$^+$ case in Peru and for carbon financing in the forest sector in Uganda (Hajek et al., 2011; Peskett et al., 2011). It is argued that this recurrent situation illustrates the exact nature of UNFCCC-COP debates since the inception of REDD/REDD$^+$ which ultimately do not fully incorporate developing countries' viewpoints during various deliberation sessions. Therefore, based on our findings, we advocate for fairer and more open-minded debates during future events.

Otherwise, these types of initiative do not seem to be at all consistent with the principles of Agenda 21. As it is, Agenda 21, deriving from the Rio 92 summit, advocates for all countries to become sovereign owners of, and responsible for tackling development and environmental problems (Oyono et al., 2006; Lyster, 2011). Collaboration with international bodies is, of course, the way to go in designing and implementing REDD$^+$, especially in the search for adequate policy frameworks and technical Monitoring, Reporting and Verification (MRV) capacities. However, to ensure its sustainability, national actors working in the forestry and climate-change sector need to establish clear and transparent country-specific norms and rules. These regulations can make this highly attractive and innovative process more successful.

5.3.4. Power relations and participation principles

The REDD$^+$ arena in Cameroon has a very young institutional structure to spearhead climate change negotiations and lead project development initiatives within the available funding mechanisms. The analysis presented here is rooted in stakeholder perceptions of forest governance at national and local level, particularly concerning power relations, participation and prior information. Figure 5.3 below summarises the results of stakeholder scoring for actors involved in implementing REDD$^+$ projects on different REDD$^+$-segregated governance variables. In order to move from a business-as-usual analysis to a more equitable incentive scheme, it was judged important to consider the following four key variables for each category of actor: current interest in REDD$^+$, power level, prior information and technical knowledge to implement REDD$^+$ initiatives.

We observed a very high level of power (5/5 on the score rate) for forest and environmental state services, but a very low score for other state services. National forest NGOs and research institutions scored high in technical knowledge and provision of prior information. These results indicate that the availability of technical knowledge and access to information are the only variables reducing the strong influence of the government in the REDD$^+$ decision-making process which scored high on current interest and power. Clearly, the private sector, other state services and NGOs have very little interest in REDD$^+$. The findings indicate a need to expand the climate-change debate substantially by including non-forest actors such as the private sector and non-forest state services, especially agriculture, planning and finance ministries in the REDD$^+$ process at country and local levels.

In figure 5.4., stakeholders' opinions and perceptions on the responsibility for the four main governance issues with regard to emissions reduction and carbon-stock enhancement are quite diverse. The latter figure indicates that there are several institutions with a stake in forest-related activities, but with significant disparities. The Ministry of Forestry and Wildlife is clearly identified as a dominant actor. This is the case for all the issues herein investigated which are mainly decisions making (power), participation, access to information and implementation capacity. Observations and interactions at landscape level during our field investigations confirm

this for all the study sites. However, in contrast, the mandate for REDD$^+$ activities on the ground has been given to the Ministry of Environment and Nature Protection (MINEP). This is enforced by the presidential decree organizing the government, and is operationalised by "*Arrêté*" n^o 105 CAB PM signed on 15/06/2012 by the Head of government.

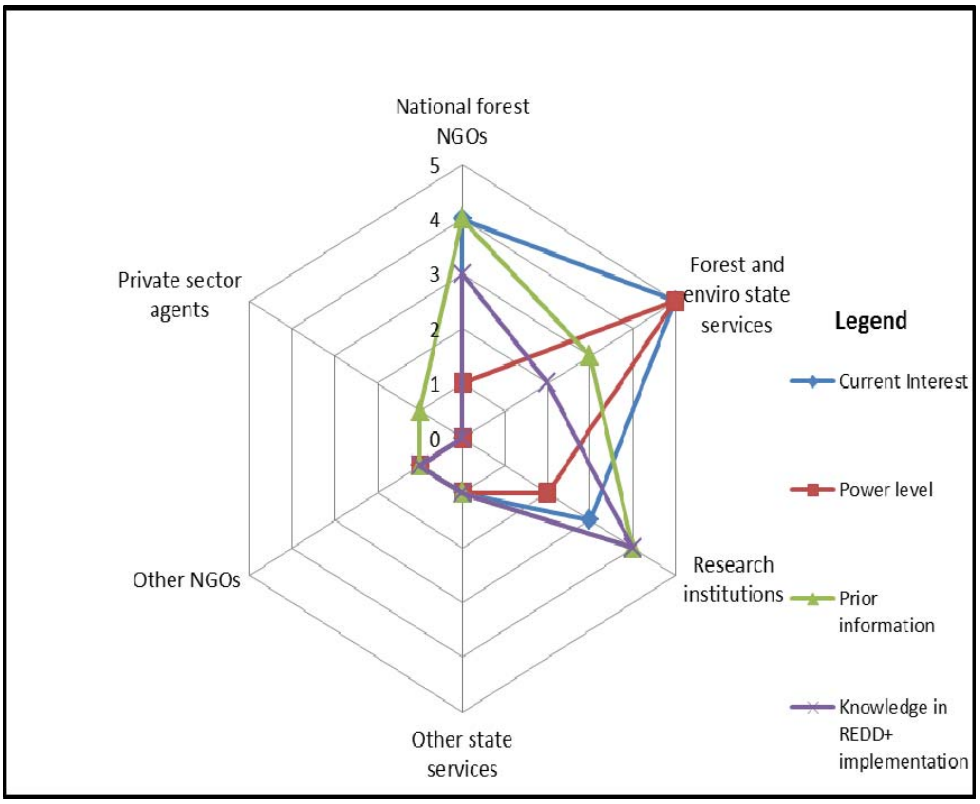


Figure 5.4. Stakeholders radial ranking based on REDD$^+$ governance variables

Key: Scores levels: from 0 (very weak) to 5 (very high). The score is based on both self-assessment and assessment by others.

Although it is clear that MINEP is coordinating the overall REDD$^+$ process in Cameroon through its Ecological Monitoring Unit, this assessment raises concern about the contradiction observed in ongoing practice, even among the state services, whereby the Ministry of Forestry and Wildlife seems to be in the driving seat, putting itself in charge. A second interesting finding from this graph is observed when summing up the cumulative responsibilities held by state agents compared to the remaining actors. In summary, the state seems to have continued its traditional mode of governing the REDD$^+$-related debates. As a result, there is a risk that the same approach

will be followed when implementing REDD^{+} projects, leading to greater frustration among forest communities, when incentives and benefits become operational.

It is clear that state institutions alone have exclusively been mandated to implement most initiatives on forest matters (Fig. 5.5). This results in a concentration of state power over forest management matters. During our research, only a limited number of local stakeholders were observed to be engaged in the REDD^{+} process.

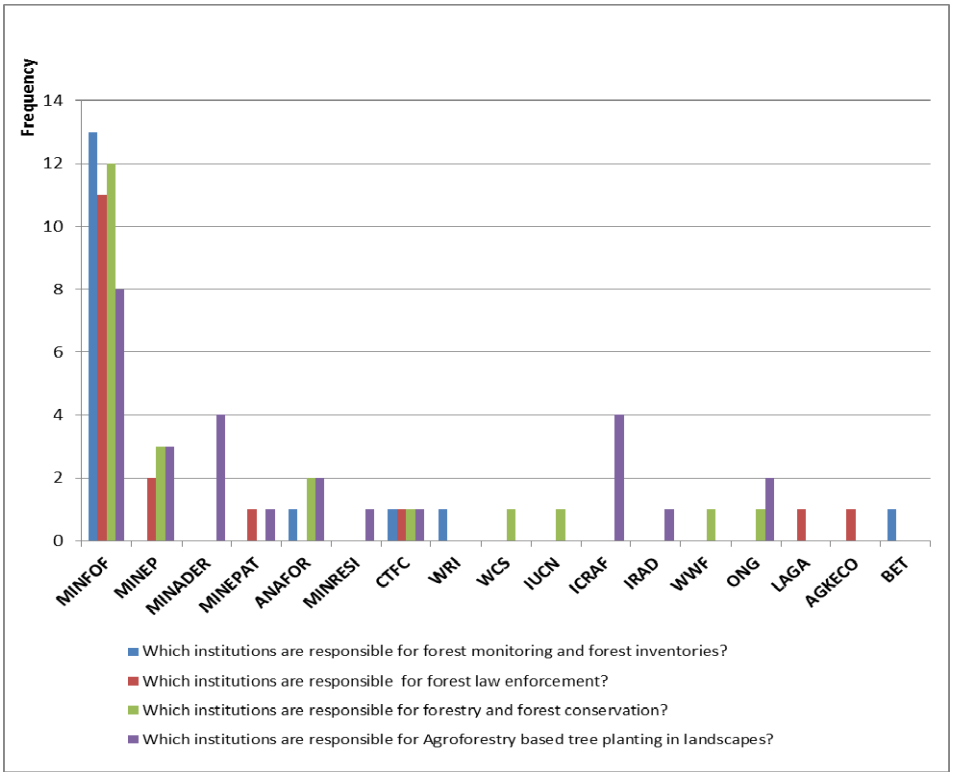


Figure 5.5. R**esponsibilities with respect to REDD^{+} attributed to institutional actors by the sampled institutions (n= 17)**[1]

[1]***Key for abreviations.*** MINFOF: Ministère des Forêts et de la Faune, MINEP: Ministère de l'Environnement et de la Protection de la nature ; MINADER: Ministère de l'Agriculture et du Développement Rural ; MINEPAT : Ministère de l'Economie, Planification et Administration du Territoire ; ANAFOR : Agence Nationale pour la Foresterie ; MINRESI : Ministère de la Recherche Scientifique ; CTFC : Centre Technique pour la Foresterie Communale ; WRI : World Resource Institute; WCS : Wildlife Conservation Society; IUCN: International Union for Conservation of Nature ; ICRAF: International Centre for Research in Agroforestry; IRAD: Institut de Recherche Agricole pour le Développement ; WWF : World Wide Fund for nature; ONG: Organisation Non Gouvernementale ; LAGA: Last Great Ape organisation ; BET : Bureau d'Etudes Techniques. *[Note: Y axis represents the frequency of citations as per REDD^{+} actor at country level]*

This is in line with the findings of an UNREDD report which earlier stated that only a few Cameroonian civil society organizations are involved in REDD$^+$ (UNREDD, 2011). This situation contradicts the theoretical governance and policy frameworks enacted by several texts in Cameroon. Our findings confirm what several scholars qualified as "pseudo-devolution" instead of co-management (Oyono et al., 2006; Dkamela, 2010; Robiglio et al., 2010; Ajonina, 2011; Ngendakumana et al., 2012).

Ultimately, the observed power concentration shows that state institutions will be both regulators and managers of forest carbon mitigation, therefore leading to further concerns about the effectiveness of the REDD$^+$ process at country level. At the same time, Cameroon, like many other developing countries, has underfinanced state institutions with a poor governance record in the forestry sector as a result. According to Lawlor et al. (2010), the forest sector in Cameroon is characterised by corruption, sluggish policy reform, and by weakly defined property rights for forest communities. Although forests in Cameroon are public properties (Oyono et al., 2006), reliance on these powerful state institutions may demotivate other important actors, such as local people and external bodies, to get involved in forest management activities. Moreover, if no policy change takes place, there is a risk that the distribution of national funding for REDD$^+$ will be ineffective. The latter unequal distribution would then be viewed by some stakeholders to be mandatory or voluntary (Huettner, 2012). As REDD$^+$ takes effect, we anticipate that state agents will base their discourse on existing policy instruments which give the government full rights to rule over all forestry initiatives and they will willingly exclude other stakeholders on carbon rights as is the case with timber. Effectiveness here means time-bound equity to channel funds to the institutions involved. This would explain why most site-level actors, especially communities in our study areas, expressed their preference for channelling incentives directly to projects, rather than through governmental systems (Ngendakumana et al., 2012; Huettner, 2012).

During this study, it was found that institutional frameworks for REDD$^+$ are being put in place, but without sufficient clarity on the scale of participation by stakeholders other than State agents. It is understood by current scholars (Bellassen and Gitz, 2008; Clements, 2010; Awono et al., 2014) that REDD$^+$ seeks to address the fundamental causes of deforestation and forest degradation through carbon credits versus compensation for less agricultural and logging activities. From these findings, Cameroon offers a very good case for understanding how REDD$^+$

processes work (or otherwise). Fortunately REDD$^+$, as a commitment and performance-based mechanism, seems to provide a strong rationale to reform and strengthen forest governance, including catalysing the interests and capacity of local institutions to deliver forest conservation (Clements, 2010). However, we conclude that unless a deep transformational change takes place, the policy frameworks, which are still nested in the state-dominated institutional arena, cannot govern REDD$^+$ effectively.

In terms of inclusivity, REDD$^+$ process in Cameroon appears to have ignored an important category of actors in forest management (MINEPDED, 2012; Fobissie et al., 2012). Indeed, our results indicate an absence of logging companies, mining companies and agro-industries in the REDD$^+$ meetings organized at both national and local levels. It is unclear whether these actors were overlooked by the leading body for the process or whether these private organizations were unwilling to get involved in emission reduction initiatives, as this might have a counter-effect on their business agendas.

This observation brings back the issue of how open and participatory such processes can be in developing countries such as Cameroon. The situation contrasts with that in Peru which offered a good example of technical and organizational innovation (Corbera and Schroeder, 2011). The same authors reported that, in the case of Peru, a diversity of local and international for-profit and not-for-profit actors came together to design and implement emission reduction schemes. We observe that legislation in Cameroon gives full forest ownership to the state as public property, and some informants used the prevailing policy instruments to support the fact that all stakeholders are free to take part in the REDD$^+$ process. The government attributes the unwillingness of private actors to participate in the large REDD$^+$ consultations to their busy schedules. We argue, however, that the issue is not that private institutions are unwilling to be part of the new forest carbon regimes. Rather, when REDD$^+$ is in place, payments through designed benefit-sharing mechanisms may reinforce policy instruments to conserve forests, and this would negatively affect them. Additional policies will create conditions that will commodify forest carbon towards reducing forest clearance and logging (Clements, 2010), and will allow local communities to participate in forest management-related decisions towards greater fairness.

Furthermore, those boundary institutions involved in logging and agribusiness are widely believed to constitute both threats and opportunities for REDD$^+$ initiatives in tropical-forest management systems (Bellassen and Gitz, 2008; Blom et al., 2010). They are threats insofar as externality-based emissions risks are concerned, but opportunities if the potential to design certification systems to prevent illegal logging, uncontrolled mining and less environmentally-friendly agricultural production systems is considered. The latter are components of best practice with an empirical potential to reduce deforestation. In addition, several agro-industries operating in Cameroon could be funding sources through PES schemes to complement REDD$^+$ mechanisms during the operational stages. Other REDD$^+$ activities which could reinforce the process are biodiversity monitoring, tree planting on degraded areas and promotion of tree-crop farming as alternative options to local forestry users. Finally, the critical need here is a concept to guide the involvement of all actors and allow the management of interrelationships from design to implementation in REDD$^+$ regimes.

5.4.Policy solutions to achieve carbon emission reduction in the forest zone of Cameroon

Our study showed that a prerequisite for the success of REDD$^+$ is that governance structures for carbon emission reduction can be designed and efficiently applied in multi-functional landscapes. We argue, at this stage, that appropriate structures and forms of partnership should be developed to provide optimal benefits in terms of improved governance, sufficient REDD$^+$ funding leverage and the sustainable well-being of communities and ecosystems. Based on our findings, we suggest the schematic governance model in Figure 5.5. This model provides an operational structure with potential to establish an efficient mechanism using synergies between various institutions (Actions), and policy instruments relevant for monitoring land-use change dynamics (goals). It is a cross-sectoral trade-offs between livelihoods and ecosystems in a win-win prototype which is likely to contribute to emission reduction and reward people for maintaining forest cover in forested landscapes (Leimona et al., 2011; Van Noordwijk et al., 2011, Atela et al., 2016). *[For full operationalization of the suggested policy actions, see chapter 7, Section 7.3, table 7.1]*

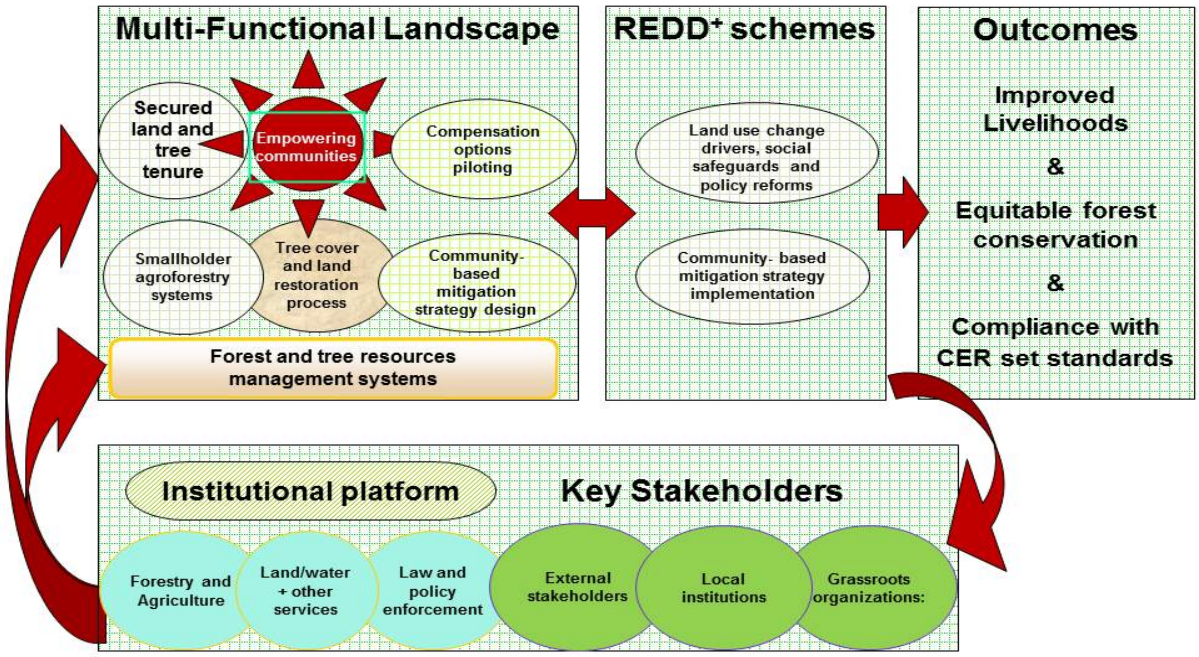


Figure 5.6. Suggested governance structure to achieve landscape-level carbon emissions reduction

The robustness of the model lies in its potential to:

(i) build trust among stakeholders who previously had diverse or competing interests about REDD$^+$ readiness;

(ii) catalyse experience sharing through active discourse and other collective actions, such as training, tree-planting campaigns and policy forums;

(iii) increase the likelihood that decisions, agreements and choices are made together based on the ideas and concerns of all actors;

(iv) enable government and other stakeholders (academia, NGOs, private sector agents, local communities) to legitimate the ongoing REDD$^+$ process, as they are able to initiate inclusive policies towards more participatory decision-making systems.

The implementation of the model presented in figure 5.6 alleviates the gradual decrease in biodiversity and livelihoods, as reported by several authors (Ndoye and Tieguhong, 2004; Sayer et al., 2012; Samndong and Vatn, 2012), and could eventually substantiate the potential to increase carbon stocks through collective tree planting and agroforestry activities. Nonetheless,

for this to happen, there is a need to change the institutional settings and arrangements, taking into account the perspectives and the interests of the different protagonists.

If implemented, the model could be a game changer by introducing new actors and new ideas to the REDD$^+$ process, leading towards greater effectiveness. The ongoing decentralisation process initiated more than a decade ago in Cameroon, constitutes an ideal opportunity to undertake such reform.

There are at least three policy implications that can be derived from this model. First, building capacities of grassroot organizations and local institutions is seen to be an alternative to externally driven processes aimed at the reduction of emissions from deforestation, while at the same time reducing community and tree vulnerability to climate change. It would increase institutional capacity to directly manage monies from the global REDD$^+$ funding, and therefore, help to minimise the risk of ineffective distribution of REDD$^+$ funding by national governments (Huettner, 2012).

Second, to solve the problems concerning the ongoing REDD$^+$ process in Cameroon (weak coordination, limited tenure rights, lack of a national strategy, income and compensation options), choosing the right policy instruments is essential. With the conflicting interests over land and tree-based resources, the policy process is crucial for existing and future institutions to continue playing the role of tree stewardship.

Finally, emissions reduction schemes could have an impact on ecosystem functions if communities were to give free and prior informed consent on financial capital mechanisms, before adhering to the proposed compensation options. This normally occurs after being informed about and exposed to mitigation and adaptation concepts, as well as other climate-change challenges. Among options suggested by van Noordwijk and Leimona (2010) to incentivize smallholder communities towards avoiding deforestation, the Compensation for Opportunity Skipped (COS) may be the most suitable in the case of the southern forest zone in Cameroon. This follows from the fact that the analysis of the tenure system demonstrated that local stakeholders are willing to take up opportunities to reduce carbon emissions pending policy reform in the country.

Our findings are in line with a research need identified by Larson et al. (2010) in the domain of community rights and forest tenure reform. The latter authors proposed that in cases where there are clear interests in alternative land uses, communities themselves need to be part of the decision-making process for compensation to determine the real value of their assets. We recognise, however, that this would increase the complexity of the REDD^{+} process, particularly in terms of coordination, because the REDD^{+} mechanism would need to become more inclusive and participatory across the institutional platform. Its implementation may thus require a broadening from REDD^{+} to REDD^{++} (this second $^{+}$ points to the inclusive dimension for Reducing Emissions from All Land Uses or REALU. For details on REALU, see Bernard et al., 2013). The model would have a snowball effect in subduing the apical dominance of state institutions, and reduce the risks of contradictory mandates leading to competition between line ministries of the same central government.

5.5.Conclusions and recommendations

The focus of REDD^{+} is on reduced emissions and increased removal of greenhouse gases. It concerns a set of policies and actions necessary to govern the attainment of controlled greenhouse gases. REDD^{+} is an incentive-based approach nested in global forest governance and institutional frameworks. This chapter identifies strategies to overcome past failures within the domain of forest management, using new policy instruments and ways to tackle potential risks under REDD^{+} regimes. The findings demonstrated that to achieve the expected performance, a cross-sectoral implementation framework has to emerge to allow for the incorporation of all stakeholders' viewpoints and to remain flexible to the experimental nature of the REDD^{+} road ahead.

Current institutional arrangements and governance structures for the REDD^{+} process do not seem to be effective in a multi-actor and multi-scale arena. As there is no clear policy framework for REDD^{+} initiatives across scales in Cameroon, its implementation may not meet international requirements. This, in turn, may lead to failures as per certified standards agreed by the international community who have so far pledged no less than US$ 4.5 billion dollars to REDD^{+} for some 50 developing countries (Angelsen, 2010) alongside the 10 billion USD "Green Climate fund"committed under the Paris agreement (UNFCCC, 2015). We therefore suggest the

enactment of REDD$^+$ across sectoral policy arenas, which could be developed separately from existing laws and codes. An attempt could be made to mainstream the ideas from the currently reviewed forestry Act. However, we think that a stand-alone instrument would be able to differentiate and clarify specific rules and transaction mechanisms in a transparent manner, and determine compliance and enforcement systems in an equitable manner. Co-benefits and resource tenure issues are also important for consideration by policy makers.

Finally, in terms of gaps, scientific knowledge based on field evidence about deforestation drivers and carbon stocks remains scarce. Little or no attention has been paid to setting up robust experiments to draw lessons from real-life landscapes. In this article, a structural implementation model to optimise the effectiveness of REDD$^+$ was developed. It shows that, to ensure better inclusiveness, actors can go beyond the current simplistic institutional arrangements. It is our hope that this model could serve as a guideline for further emission reduction schemes, especially regarding actor power relations, the responsibilities of organizations across implementation levels and stakeholder logics to operationalise real financial mechanisms. In summary, our findings suggest that governments need to review the existing policies to factor in credible stakeholder participation, local peoples' rights and information access. These aspects are crucial for effective implementation of REDD$^+$ at all levels. Further, it will be critical for the Cameroon government to stimulate coordination between different land-use policies and practices, as well as maintaining actors' willingness to contribute to emission reductions and carbon stock increases under REDD$^+$ regimes.

CHAPTER 6

"Those who cannot change their minds cannot change anything"

(Georges Bernard Shaw)

6. FOREST TENURE RIGHTS: CRUCIAL SOCIAL SAFEGUARDS IN REDD$^+$

Abstract

It is increasingly becoming clear that reforms based on the claims of local forest communities regarding the right to natural resource use will be needed to adequately address issues of sustainable development in Sub-Saharan Africa (SSA). The current institutional and policy frameworks of Cameroon and other SSA countries have bestowed exclusive land tenure rights on the State, while curtailing access by local farmers to forest and forest-based resources on which they depend for a living. It is therefore unlikely that successful forest conservation and implementation of REDD$^+$ can be achieved without recognition and enforcement of customary tenure. This chapter aims at assessing smallholders' perceptions on tenure rights, forest laws and policy compliance with regard to onground feasibility and social acceptability of the designed REDD$^+$ in southern Cameroon. Using a semi-structured questionnaire and focus group discussions, involving seven key informants and 66 community forest users, opinions about current tenure systems and the risks of related conflicts was investigated. Findings from the field provide empirical evidence on the sources of conflict. These include denied rights to forest resources, unfair distribution of benefits from forests and power struggle to control forestry sector. These lessons learnt from community forestry could enrich the ongoing debates on safeguards in REDD$^+$ and serve as guiding milestones towards increasing the effectiveness of this mechanism throughout the country and the continent.

Key words: Community forests, perceptions, conflicts, climate change, Cameroon

This chapter is drawn from the following publication:

Ngendakumana, S., Bachange E. G., Van Damme P., Speelman S., Foundjem-Tita D., Tchoundjeu Z., Kalinganire A. and Bandiaky S.B. (2013). Rethinking rights and interests of local communities in REDD$^+$ designs: Lessons learnt from current forest tenure systems in Cameroon. Paper published in ISRN Forestry, Vol 2013 (2013). 14pages. DOI: http://dx.doi.org/10.1155/2013/830902

6.1.Introduction

Cameroon is a tropical forest country with about 48 % forest cover (De Wasseige et al., 2009). For this reason it is known as a country with a high potential to implement REDD$^+$. As in many other developing countries, there are few reliable statistics on forest-cover loss in Cameroon. However, estimates of annual deforestation range from 0.4 to 1.0 %, the second highest in the Congo basin after DR Congo (De Wasseige et al., 2009; Sunderlin et al., 2009). Deforestation causes are diverse and in Sub-Saharan Africa (SSA), drivers are embedded in inadequate socio-economic relations between the state, the private sector and local people, as well as in poor governance within the forestry sector (Mustalahti et al., 2012). While smallholder-driven slash-and-burn agriculture and increasing fuelwood demand are widely believed to be responsible for about 80% of deforestation (Kissinger et al., 2012), these mechanisms are often the secondary effects of tropical timber harvesting that degrades forest cover and contributes to associated declines in biodiversity.

Since the inception of REDD$^+$, one of the major challenges has been to develop strategies to maintain social safeguards, such as community rights to forest resources and actors' free consent to this land-use mechanism. Nevertheless, Galudra et al. (2011) have indicated that there could be an interaction between carbon-stock-related rights and other property rights. REDD$^+$ regimes hereby create additional complexity, and greater clarity and procedural justice are needed to showcase who owns which resource for what benefit. The same authors explained that carbon rights come as an addition to the already complex layers of unresolved property rights. Risks of conflicts between local communities and managing authorities have been reported in many studies across tropical ecosystems when anticipating large-scale conservation projects. This was the case, for example, in India, Cameroon and Brazil (Pandey, 2002; Oyono et al., 2008; Cotula and Mayers 2009). International governance approaches emerging in the current context of climate-change mitigation have, therefore, opened the eyes of social scientists leading to the consideration of safeguards which could reduce the risks of conflict over forest resources, when the negotiated mechanisms are put in place (Oyono et al., 2008; Angelsen and Wertz-Kanounnikoff 2008; Larson et al., 2010; Galudra et al., 2011). This poses the challenge of mainstreaming community rights as one of the key social safeguards, as well as equity in benefits

distribution to enhance other forest-related co-benefits from REDD$^+$. The success of this financial mechanism could be very significant, not only in contributing to stabilise global warming below a two-degree increase, but also in terms of expected critical additionalities (Bernard et al., 2013; Brown, 2013) such as (1) enhancing biodiversity; (2) enhancing adaptation to climate change; (3) improving livelihoods and forest governance; and (4) protecting peoples' rights and watersheds.

Although, at the current time, some steps have been made to move from the REDD$^+$ pilot phase to a quick-start implementation in the Congo basin countries (FAO-COMIFAC, 2012; Ngendakumana et al., 2012b), there is still limited information concerning the perception of local communities on the links between forest tenure rights, existing policy instruments and the climate change debate (Guariguata et al., 2012). From a research perspective, the following questions still need to be clarified: (1) how are forest rights viewed by smallholder farmers dwelling in forest areas in the light of the upcoming REDD$^+$ process implementation? (2) in terms of social safeguards, what lessons can be learnt from the current forestry policy framework and how could this help to make REDD$^+$ successful in Cameroon?

Many reports on tenure rights have been produced for Cameroon's forestry sector. These show that there is a growing consensus among contemporary scholars that without guaranteeing adequate forest tenure and the resource rights of local populations, conservation of biodiversity and sustainable development will probably not be achieved in Cameroon, or in Africa as a whole (Nguiffo et al., 2009; Posey, 1994; Ngwasiri, 2001; Tumnde, 2001; PAPLRR-West, 2002; PAPLRR-West, 2004; Saruchera, 2004; Mope Simo, 2004a; ACHPR, 2005). However, consideration of the links between REDD$^+$ and social safeguards, such as fairness in forest benefit-sharing at field level, is fairly recent. Moreover, to date, there have been few studies focusing on smallholder perceptions on tenure rights at site-level based on the existing policy environment. In the current context of the international debates on climate change, it is therefore imperative to assess what the population in Cameroon feels about the flaws in the currently applied legal instruments for forest tenure and property rights; how they understand the implementation of these laws and policies; and what the possible areas of conflict are.

It is hypothesised that flaws in current community forestry laws in Cameroon have pervaded their implementation, divested local populations of forest resource access rights and engendered latent

conflicts which could reduce the effectiveness of REDD$^+$. This chapter aims to give an overview of smallholders'perceptions on tenure rights, forest laws and policy compliance with regard to the onground feasibility and social acceptability of the designed REDD$^+$ in Southern Cameroon. It is actually in this part of the country where there is an apparent confusing local situation of property rights dominated by the co-existence of *de facto* tenure rights and *de jure* state property. The investigation draws from the theory of access (Ribot and Peluso, 2003) to understand the current rights of forest communities, using focus group discussions and conflict mapping tools. In this way, we discern smallholders' perceptions on rights and risks in the current forestry policy arena in relation to the climate change debate. Findings from field investigations are thus intended to provide empirical evidence on sources of community forest-related conflicts. The lessons learnt could enrich the social and environmental safeguard framework at local level and serve as guiding milestones towards increased REDD$^+$ effectiveness across the country and the tropics as a whole.

6.2. Community forest management: ownership, tenure and threats

Community forestry refers to the form of state power devolution to local communities to jointly manage forest resources under certain legal dispositions (Oyono, 2004; Minang et al., 2007). The community forest management approach (CFM) had been viewed as a strategy by which, through collective action, local people can move beyond deforestation and degradation, and achieve sustainable management and livelihoods (Minang et al., 2007; Larson et al. 2010, Mustalahti et al., 2012). Taking the case of Latin America, Larson et al. (2010) have found that if lessons are learnt from previous experiences, CMF may be an equitable means to reduce emissions under the REDD$^+$ initiatives. Tropical forests are often sites of conflict and competing claims for land and trees, and insecure forest tenure rights are often believed to be associated with deforestation and degradation (Larson et al 2010, Galudra et al., 2011; Ngendakumana et al., 2012 a).

According to current literature, tenure rights are complex and can be viewed as "bundles of rights". They include the ability to access, withdraw, manage, exclude and alienate a resource. The whole bundle constitutes the property rights which are often governed by policies, laws and regulations (Oyono et al., 2006, Larson et al., 2010, Galudra et al., 2011). The theory of access developed by Ribot and Peluso

(2003) clarifies access as "the ability to benefit from resources and provides the interpretation that the bundle of rights gives effective power, based on mechanisms put in place combined with social relations built". The issue of tenure is so fundamental that the role it plays in promoting sustainable natural-resource management cannot be ignored given the current *status quo* in the country. Tenure rights of rural communities, where recognised by law, have often proven to be a strong incentive for enhancing the conservation of natural resources (Leimona al., 2009). Unfortunately, governments in Africa have often recognised forest tenure and the resource rights of rural communities on paper, but not in practice. As a consequence, the continent lags behind in terms of recognising the tenure and access rights of local communities (Springate-Baginski and Wollenberg, 2010). This is illustrated in figure 6.1 where the % of state devolution in the management of natural resources in various continents is presented.

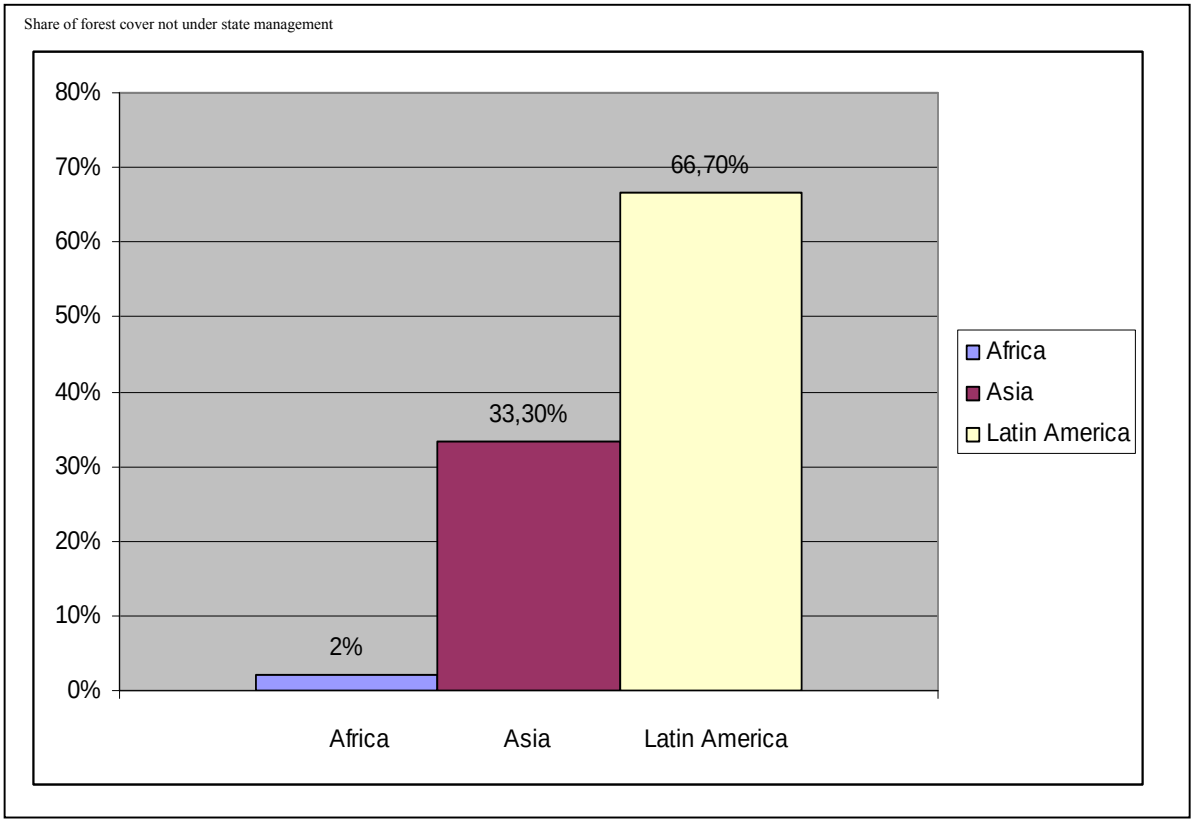


Figure 6.1. Percentage of State devolution in natural-resource management across the tropics

Source: Computed from Springate-Baginski and Wollenberg (2010)

In Africa, the state has effectively withdrawn from only 2% of the forest area (Springate-Baginski and Wollenberg, 2010), and local communities are basically denied ownership of, and resource rights to, forest resources that constitute their principal source of livelihood. In Cameroon, forest ownership is regulated by the Land Tenure Code of 1963 and the Forestry Ordinance of 22 May, 1974 which introduced the concept of 'national lands' and individual land title registration. These legal instruments were inspired by the German colonial Decrees of 15/6/1896 and 11/8/1920 which declared all native land that was effectively occupied as '*terres vacantes et sans maître'* or '*terra nullius*' (Ngwasiri, 2001; Tumnde, 2001; Ngoufo and Tsalefac, 2003). This form of land ownership by the State has negatively impacted on forest tenure and the resource rights of local communities, as continued to influence subsequent legal instruments even after the 1994 forests law, which was intended to increase participation by local communities in the management of forest and forest-based resources. The legal divestment of local populations of access rights to forest and forest-based resources has undermined participatory conservation in favour of competition between local communities and State conservation agencies. The result is that the occurrence of horizontal and vertical conflicts between these forest stakeholders has become widespread. The most frequently observed are conflicts about access to and benefits from forest resources between local communities, and those between local communities and forestry agents.

Creating protected areas within the vicinity of local communities without the consent of these local populations does not only undermine their tenure rights but also leads to scarcity of land on which they rely for their survival. This may cause conflicts. For instance, the creation of the Bayang Mbo Wildlife Sanctuary and the Tinto community forest has caused severe farmland scarcity that instigated the Tinto-Mbu and Tinto-Wire communities to fight over the remaining patches of forest outside the boundaries of these protected areas (Minang et al., 2007).

It is unlikely that forest conservation and the implementation of $REDD^{+}$ can be effective without recognising and respecting customary tenure. Written law, although arguably understood to be adequate in matters outside natural-resource management, is insufficient for, and inconsistent with, emerging equitable forest management approaches advocated by many national and international actors (Singer, 2008; REPAR, 2009). Such approaches encompass the withdrawal of States from natural-resource management and recognition of the customary and collective tenure

rights of local people. The replication of a German Decree of the 19th century in a country that intends to use the forestry sector for poverty alleviation shows that there is a missing link in the country's forestry policy.

Cameroon has hundreds of community forests (Minang et al., 2007) based on the 1994 forestry law and policy regulations elaborated in the Manual of Procedure for the Management of Community Forests (MINEF, 1998). Unfortunately, in the modern legal system, these are considered *de facto* as state property, thereby creating confusion (Tumnde, 2001). Part of, if not the entire, regulatory framework for the conservation of natural resources in developing countries is based on western ideas and concepts that were introduced in their respective territories by colonial masters to ensure state control over natural resources (Ngwasiri, 2001; Linjouom, 2008). This therefore pervades any reforms made in the domain. This legacy has permeated the tenure fabric of African States to the extent that even the most recent laws are still oriented towards encouraging foreign investment in the country's forestry sector (REPAR, 2009).

The same is reported by many authors in Cameroon (Ngoufo and Tsalefac, 2003; Linjouom, 2008; Singer, 2008). State authority also regards communal ownership and property rights as *de facto* rights, whereas no communal land titles are allowed in practice (ACHPR, 2005). As opposed to this, the forestry Ordinance of 22 May, 1973 replicated the provisions of the June 15, 1896 German Decree to proscribe registration of individual land titles and property rights (Posey, 1994; Ngwasiri, 2001; Nguiffo and Djeukam, 2008).

It should be noted that, at the outset, the government of Cameroon perceived the community forests regime as a way to divert part of the income from logging to local development (Asanga, 2002). This perception has become a conservation disincentive, since it dissuaded local communities in areas without timber exploitation from managing community forests for mainly ecological and environmental reasons, such as carbon sequestration.

Land and forest tenure systems have played an important role in shaping access to natural resources in Cameroon. The legal instruments regulating land and forest tenure have often been drafted in ways that alienate the local people for whom the policies were meant. Such alienation, which stems from the non-consideration of customary tenure systems and the conspicuous absence of contributions by local people to legal instruments, have largely been considered as a

major cause of the ineffective implementation of the laws governing forest management and access to resources for poverty alleviation (Oyono et al., 2009, Nguiffo et al., 2009). Conservation policies in Cameroon appear piecemeal and *ad hoc* rather than forming a coherent whole. The creation of separate ministries for forestry, land tenure, agriculture, mining and the environment has led to compartmentalised policies, as each perceives its ministry as its sphere of competence, thereby turning a blind eye to areas of convergence. Furthermore, national and international policies and laws have a common content characteristic which has been associated with the tenure insecurity of local communities, poor management and the divestment of access to forest and forest-based resources (Ngwasiri, 2001; Larson et al., 2010; Cotula and Mayers, 2010). This has caused continual abuse and conflict in the course of their implementation (Posey, 1994; Springate-Baginski & Wollenberg, 2010).

As Minang et al. (2007) explained, most community forests in Cameroon are a mix of primary and secondary forests. It should be clear that both are similarly targeted by $REDD^{+}$ initiatives. Hence, there is a need for a clear understanding of the successes and failures of community forest management, as well as smallholder perceptions on what is viewed as an opportunity for forest-sector actors (Larson et al., 2010; Hoang et al., 2013). Otherwise, the effectiveness of $REDD^{+}$ can be questioned even further in terms of its capacity to offer solutions to rural populations.

6.3.Material and methods

6.3.1. Study sites

Three sites, located in three different regions, were selected for this study. The regions are all situated in the humid forest zones of Cameroon and represent three levels of deforestation. They also differ in culture, political history and types of prevailing forestry activities. The regions are: (1) Tinto in the South West Region; (2) Ngoyla in the East Region; and (3) Ngonga - Kopongo in forest management unit (UFA) n° 07002 Edea in the Littoral Region. They fully reflect the bi-cultural nature of the country. Detailed characteristics of the target study areas, including a map, is provided in chapter 3, section 3.1.3.

6.3.2. Research process, methods of data collection and analysis

Secondary and primary data for this study were collected in two research runs. Secondary data were derived from a review of documents relating to the evolution of the major forestry laws in the country that led to the drafting of the 1994 Forestry and Wildlife Law, the 1994 Law itself and its Decree of application, and recent publications on REDD$^+$ debates. A substantial proportion of the secondary data was assembled from existing literature on forestry laws in the English and French Cameroons. Archives were consulted, particularly those on various community forests and on the NGOs that facilitated their acquisition by local forest communities. Further, an internet search was conducted using key words such as community rights, forestry tenure, REDD$^+$ safeguards, conflicts in natural-resource management, etc. The documents consulted provided invaluable information on statutory and customary land tenure, ownership and property rights, the devolution of the State from management, climate change and REDD$^+$. Maps and satellite images of the study sites served as secondary sources of data.

Primary data was collected firstly through questionnaires. The target population consisted of key informants and members of community-based organizations living near community forests. The latter were selected according to predefined criteria such as (i) proximity to forest reserves; (ii) involvement in community forestry; and (iii) knowledge on community rights issues.

During the research implementation, focus group discussions were held with nine common initiative groups (CIGs) of crop farmers, hunters, fishermen and gatherers of non-timber forest products (NTFPs), together with interviews with seven key informants, three of whom were conservators working with different conservation NGOs identified with the aid of questionnaires, while the other four were farmers. In total, three focus groups were held in each of the three study sites (*in Zoulabot, Lelene and Lamson, in the East, with 6, 8 and 5 participants, respectively; in Ngonga, Kopongo and BOPO in the Littoral with 9, 7 and 6 participants, respectively and in Tinto-Mbu, Tinto-Kerieh and Tinto-Wire in the South West with 8, 7 and 10 participants, respectively*). In total, 66 participants (10 women and 56 men) were involved (table 6.1).

Table 6.1. Focus group design for investigated forest communities organized in Common Initative Groups (CIGs)

Region	**Target village CIGs**	**Number of FGD meetings**	**Number of participants**		
Sites			**Female**	**Male**	**Total**
East Ngoyla	Zoulabot	1	0	5	6
	Lelene	1	2	6	8
	Lamson	1	1	4	5
Littoral Edea	Ngonga	2	2	7	9
	Kopongo	2	2	5	7
	Bopo	2	0	6	6
South West/ Tinto	Tinto-Mbu	1	1	6	8
	Tinto-Kerieh	1	0	7	7
	Tinto-Wire	1	2	8	10
	9	**12**	**10**	**56**	**66**

Before starting, participants were asked to evaluate the content of a number of legal instruments and to identify legal omissions, appealing clauses as well as conflicting provisions. At the end, aspects of the climate-change mitigation were explained to them, along with the role of forests and trees in stocking carbon at the landscape level. The focus group discussions were intended to gain additional insights for the analyses of the information found in the current literature. Qualitative data gathered from the focus group discussions would allow triangulation and validation of complementary information gathered from partner NGOs intervening in the study sites. The tools used in primary data collection were further designed to elicit information on the extent of devolution of government power over forest management. To this effect, legal instruments on forestry were reviewed and information collated as appropriate.

In all, 11 legislation and policy texts that have relevance to tenure rights and climate change were reviewed during the study. They are: (1) the constitution of the Republic of Cameroon; (2) National Biodiversity Strategy and Action Plan; (3) the Forestry, Wildlife and Fisheries Law (Law No. 94-01 of 20 January 1994); (4) the National Environmental Management Plan (1996); (5) the Community Based Natural Resources Management Act of 1992. The latter was targeted as it provides the framework for community participation in natural-resource management through the formation of viable tax-free common initiative groups. Of particular relevance are procedures for ownership of community forests. Many other decrees and ordinances were analysed, amongst

which (6) the recently promulgated Law N° 2011/008 of 6 May 2011 on orientation for the management and sustainable territorial development of Cameroon; (7) the Land use and Land Tenure Act of 1974 (Law N°. 74-1); (8) the Environmental Management Law N°. 96/12 of 1996; (9) Decree N°92/455/PM of 23/11/1992 that provides for AA; (10) the Law N°. 90/053 of 19/12/1990 on associations; and (11) decree N°2009/410 of 10-12-2009 creating a National observatory for Climate change in Cameroon).

During the FGD the awareness of forest-dwelling populations on, and their familiarity with, the 1994 Forestry Law was investigated. They were asked to evaluate whether there was any significant difference between this recent and previous laws and whether local populations had been consulted before drafting the new law, their involvement in the implementation of the law, their opinion on the sizes of their CFs, alternative livelihood activities, benefit sharing from forestry activities, conflicts between the different stakeholders and perceptions on the links between rights and climate change.

Interviews with seven forestry agents intended to identify whether they have copies of the 1994 Forestry Law and how far they understand its content. They were asked to identify flaws in the law and ensuing abuses. The level of discussion between them and local communities was assessed, as well as the difficulties they encounter in the course of implementing the laws and policies regulating land and forest tenure in the country. Finally, they were questioned about the complementary role played by the modern and traditional tenure systems and issues of alternative livelihood and benefit sharing.

On-the-spot observation of conflict sites was carried out. A GPS was used to take 33 waypoints and to track around some conflict areas in the study sites. Photographs were also taken in the field to document current conflicts. The information obtained by the field observations, interviews and focus group discussions enabled us to draw maps of existing conflicts in the study sites. Qualitative data were processed through simple policy content analysis (See figure 3.5. in chapter 3). Maps were designed using Map Info software and diagrams drawn using Microsoft PowerPoint. Preliminary findings were discussed with several relevant stakeholders, including community leaders and traditional rulers on the ground. At the end of our research, comments

from policy makers and shapers were obtained during the findings validation workshop held in the Yaoundé National Assembly House, November 8th 2011.

6.4.Results and discussions

6.4.1. Poor law application and interpretation: flaws and benefit-sharing distortion

The interviews and focus group discussions revealed that, in the three study sites, neither local populations nor officials enforcing the forestry law and its Decree of Application possessed any printed copies of the said legal instrument. During participatory analysis of forest-law content in the three sites, participants of the focus group discussion could instantly identify some inherent flaws: (a) absence of a clear definition of those with rights to own a community forest; (b) non-recognition of customary rights in terms of forest classification; (c) legal marginalisation of indigenous peoples; and (d) conflicting legal provisions in SMPs and Articles of Associations. Furthermore, our investigation found that the creation of the "COVAREF", ("*Comité de Valorisation des Resources Fauniques*", a French acronym for the body managing funds from fauna resources for local development) was effective in only one out of the three study sites, namely Ngoyla in the East Region.

During interviews, as well as during focus group discussions, communities identified, with a high degree of precision and clarity, four legal flaws relating to community-based forests. These are (i) the limited lifespan of the community forest (25 years); (ii) the exclusion of potential stakeholders from the community forest; (iii) the inadequate sizes of community forests; and (iv) the divestment of their rights to sub-soil resources and limitation of use rights to NTFPs. This confirms findings reported by researchers who have previously attempted to understand competing claims and policy contestation in the community forestry sector in Cameroon (Forster, 1996; Tumnde, 2001; MINEF and GTZ 2004; Singer, 2004; Julve et al., 2007; Enchaw, 2009). Nevertheless, our assessments discovered that despite legal flaws, the laws contain some appealing clauses, which are poorly implemented (disrespect for rights of use).

The investigation furthermore revealed three additional legal flaws. These are located more at the national level, beyond the study sites: (1) absence of loyalties for communities in petroleum production areas; (2) 10% annual forestry loyalties only to those communities where logging

activities take place; and (3) non-compulsory reforestation and a three-year period of grace for uncontrolled timber exploitation by logging companies. Respondents cited articles of the 1994 forestry law, which prohibit the individual sale of NTFPs. They also pointed out Article 105 of the same instrument alleging that it provides no direct allocation of safari funds to local development. Respondents equally alleged that both simplified management plans and articles of association create conflicts at the boundaries of a community forest and that crop destruction by protected wildlife causes conflicts. These conflicting legal provisions often instigate conservation NGOs/forest guards to abuse the rights of local populations, indigenous people and women, who may also become marginalised in the process.

Moreover, focus group discussions revealed important positive elements within the 1994 Forestry Law. They showed that: (1) community forests have, to some extent, increased participation by smallholder farmers in village resource management. Here, forest group dynamics brought about issues of membership, adhesion and collective discussions on access and use rights which were simply denied previously; (2) some income-generating activities and agroforestry initiatives were initiated by support organizations, thus contributing to community livelihood improvements; (3) information sharing on CFM strategies and capacity building are regularly ensured through village committees and technical support services; and (4) the legal instruments enacted by the Government raised the hope by the communities that the poor governance might be mitigated via these very instruments. This mostly concerns corruption in the sector, the power struggle over forest resources and the opacity in benefit allocation.

During the study, however, participants and interviewees strongly affirmed the inappropriateness and ineffectiveness of the channels (print, audio-visual and personal discussions) through which conservation NGOs and/or forestry administration personnel had been passing out information to local populations (farmers, hunters, fishermen, custodians of indigenous knowledge and women). In an attempt to evolve from the bequeathed colonial tenure system to that of an independent State, the Government of Cameroon enacted a battery of legal instruments (the Land Tenure Code of 1963; the Decree of 1964 that prohibited native communities from registering their land titles; the Law of 7/7/1966 that abolished prior authentication; the Forestry Ordinance of 22 May 1974 that introduced the land title registration, the Forestry and Wildlife Law N° 94/01 of 1994 that provides for community forest acquisition by local communities; Law N°92/006 of 14/8/92

and Decree N°92/455/PM of 23/11/1992 that provide for AA). These initiatives dilute, rather than stimulate, the endogenous customary tenure.

From the findings, it was noted that, after more than 30 years under the modern law, land tenure insecurity in Cameroon has increased. This confirms a similar conclusion by Ngwasiri in 2001 in his assessment on tenure legacies and legislation in Cameroon. The situation has resulted in growing conflicts, continuous community rights erosion, and galloping deforestation and forest degradation, as also noted by Bellassen and Gitz (2008) and recently by Awono et al. (2014). All these authors argued that deforestation in Cameroon is very high. It is clear that communities kept their normal approaches of shifting cultivation and fuelwood harvesting regardless of the regulations put in place, causing irreversible damage to the forest integrity and biodiversity. This situation calls for further attention on more concerted local partnership arrangements in relation to forest management strategies, especially in the current context of population growth, which is being exacerbated by the impacts of climate change on traditional land-use options in tropical landscapes.

6.4.2. Forest tenure-based conflicts and governance implications

It was found that the legal classification in Cameroon into permanent and non-permanent forests has ignored customary forest regulations. This brought severe tenure threats between local communities and State conservation agencies, as well as to natural ecosystems hosting valuable biodiversity. Three types of conflict were identified during this study (Fig.6.2.):

i) *vertical conflicts* involving local communities and conservators;

ii) *horizontal conflicts* involving CFM leaders versus non-member local users (this type was mostly reported in Tinto CF); and finally

iii) *verti-horizontal conflicts* where there is conflict between humans and wildlife through animal encroachment (reported around the Tinto wildlife sanctuary).

Maps generated based on field data are presented below and provide further details on where current issues are located in study sites.

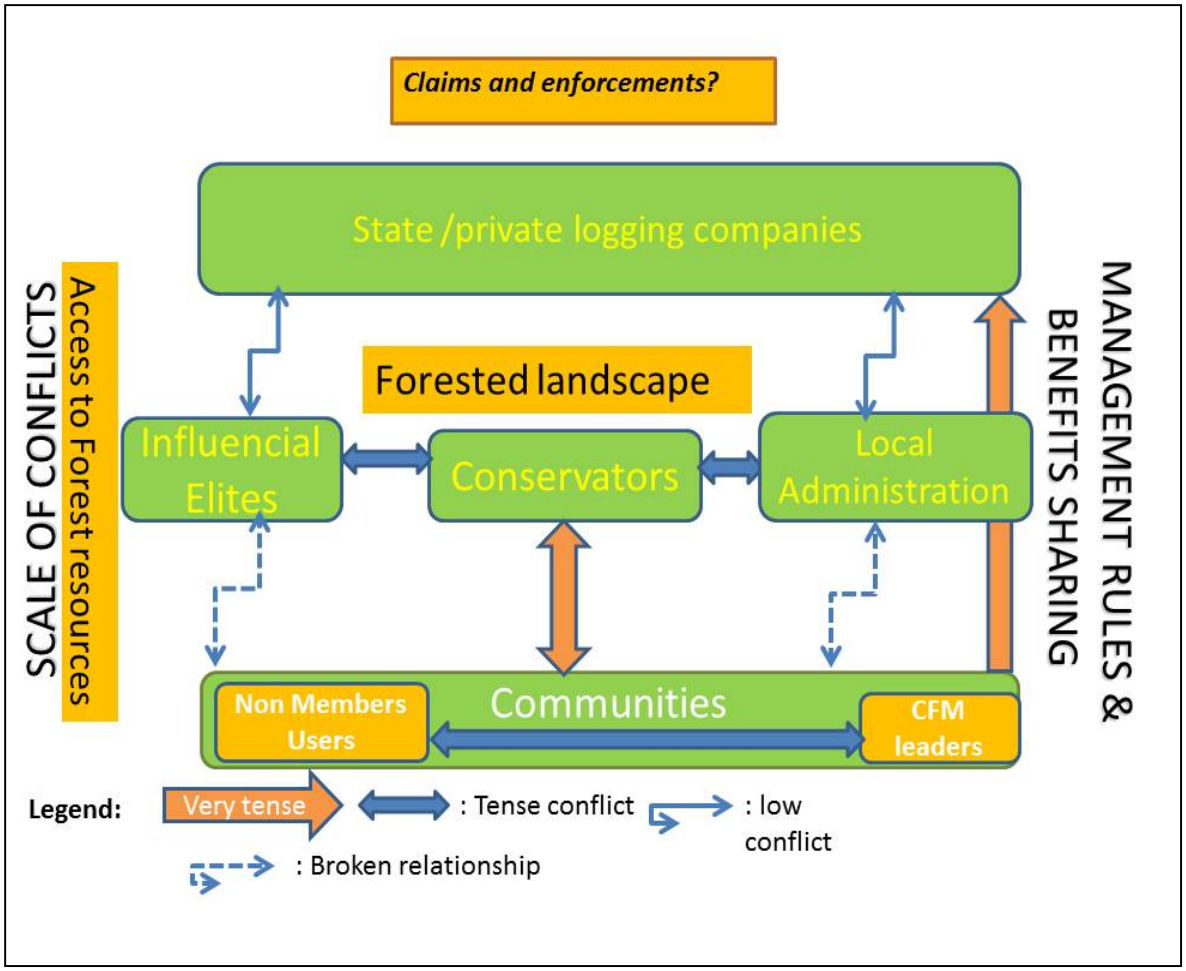


Figure 6.2. Relationships and type of existing conflict as perceived around community forests

Figure 6.3 shows the spatial distribution of the conflicts emanating from five areas in, and adjacent to, Tinto community forest, while Figure 6.4 illustrates the numerous conflict sites between Edea Technopole and the local communities of Ngonga, Kopongo and Poutloloma villages.

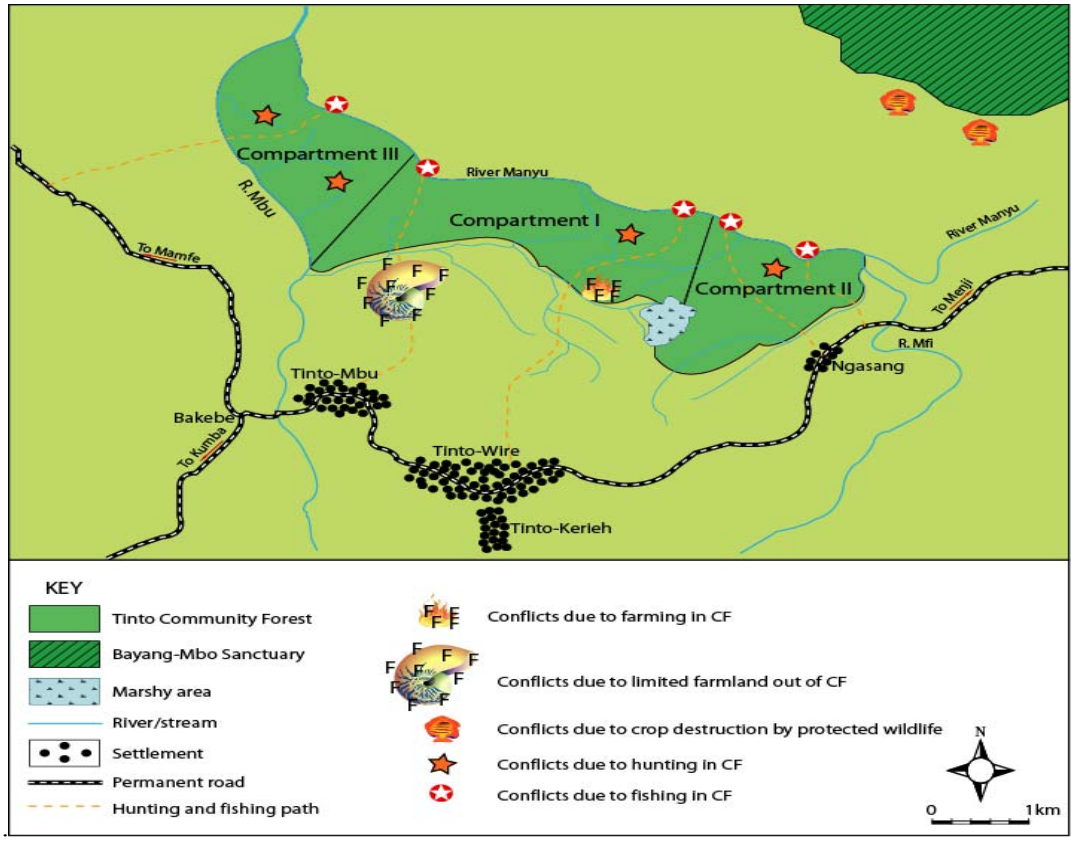
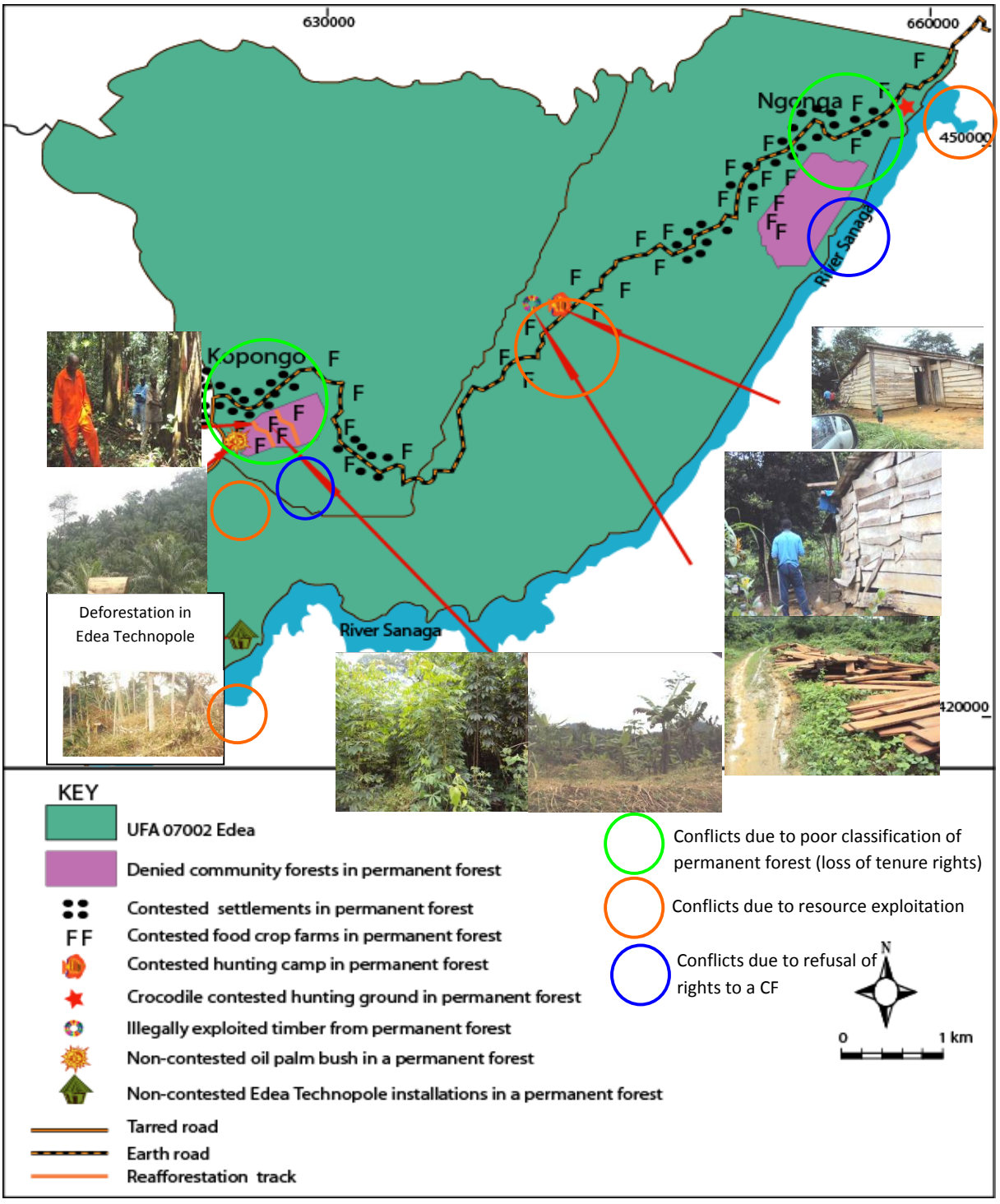


Figure 6.3. Map of Tinto Community Forest showing spatial distribution of conflict areas

Source: Adapted from the Participatory map of Tinto Community Forest, 2009 and fieldwork, 2010.

During fieldwork, the Civil Administrator in Tinto alleged that conflicts erupted between members of Tinto FMI and young people from Tinto-Wire in parts of compartment I, when the latter were summoned to court for farming encroachment even though their revised simplified management plans devolved such use rights. In these plans, it is stated that crop farming, fishing, hunting, NTFP collection and other activities are allowed in the community forests. A visit to the community forests showed that farms were only allowed beyond the community forest's confines and that any form of encroachment was a source of conflict. Local fishermen were denied fishing rights in River Manyu in the northern limit of the community forest. In Ngoyla, on the contrary, it was noted that a large portion of the community forest was under cocoa cultivation, as specified in its simplified management plan. It was, however, observed that the confiscation of game, hunting and fishing equipment resulted in more conflicts than solutions at local level.



Source: Cameroon Ecology (2008) and fieldwork 14-20 October 2010

Figure 6.4. Map of UFA 07002 showing spatial distribution of conflict areas

In the west of the UFA, a powerful political elite member was allowed to develop an oil palm plantation for commercial purposes, while the rest of the local people are denied settlement rights in their ancestral land within the UFA. Communities are instead requested to relocate and resettle elsewhere. The implication was an increase in unhealthy relations between local communities and forest administration. The law exacerbated this tension, as it also prevents smallholder farmers from carrying out livelihood activities in the UFA. In this regard, the Edea Technopole authority refers to current laws to prevent local populations from gathering even dead tree trunks for firewood use. The wood could have solved their fuelwood problems, at least for a time, and would have reduced fuelwood pressure on nearby forests over that period.

The forestry administration argues that, by law, these communities lost access rights to the forest resources and the land of their ancestors simply because the State, with the complicity of some elite members, carved out forest units and put their village communities within a permanent forest. Such an approach to tenure and resource-right issues has led to frustration and thereby forced local communities to violate the regulations. The result of community frustration was reported by informants. It concerns intensive poaching of crocodiles in the northeast of Ngonga and other animals along the Kopongo-Ngonga road axis since the creation of the UFA. Other illegal activities in this UFA include logging along the Kopongo-Ngonga road axis. Notwithstanding this, local people in this area strongly claim that their communities have owned that land and its resources for several centuries. According to our inquiries, local communities could claim that "*as long as we have not been compensated and resettled as Article 26(1) of the 1994 Forest law stipulates, we will continue to live there and carry out our normal livelihood activities*". This is probably the reason why crop farming was common in UFA 07002.

This study highlighted that the local population continues to stay in its current location, and to cultivate in UFA 07002, particularly in parts of the contested community forests and along the Kopongo-Ngonga road axis, against the 1994 Law. The reported situation has the implication that tenure difficulties are becoming increasingly rampant around the UFA and other community forests, as in various other types of protected area in Cameroon. Similar situations of latent claims exist in several officially proclaimed forest units, as reported by several authors (Oyono et al., 2008; Foundjem-Tita, 2013; Awono et al., 2014) and are these also exacerbated by government agents' behaviour. That is, when it comes to prevent communities accessing forest

resources, even for their survival, field foresters have often used physical force and verbal aggression, sometimes based on poor interpretation of the law and policy instruments promulgated in the forestry sector.

It is argued that the implementation of REDD$^+$ may suffer from the current legal systems, as well as foresters' poor behaviour, especially with regards to corruption and local rights extortion. It is therefore necessary to adapt existing policy instruments to local community rights and claims. The adaptation could be done by capturing, within new instruments and regulatory frameworks, documented requests from communities and supporting partners working at grassroots level. Experience has shown that, in order to benefit from opportunities following policy reforms, the breakthrough will require accurate vigilance, effort and support from engaged stakeholders (Larson et al., 2010) to make them work for local people and REDD$^+$ target forests. New opportunities in Cameroon will come from the strong political will to fully achieve the call for decentralisation and the current move on human rights (Oyono et al., 2008). Additionally, there has been a concrete effort from the government, since early 2009, to control powerful actors such as ministers and businessmen in the national fight against corruption, including that in the forestry sector. As noted by Rights and Resources Initiatives (RRI) in 2009, it appears that claims and property rights enforced in favour of both communities and State may reduce tenure insecurity perceptions while at the same time increasing a community sense of co-ownership of REDD$^+$ initiatives.

6.4.3. Stakeholders' perceptions on law enforcement

Our study found that some park conservators, MINFOF field staff and agents from conservation NGOs such as WWF, GTZ and Birdlife International, failed to understand that law enforcement and community participation in conservation are not compatible within the same communities, particularly when applied simultaneously. Attempts to combine law enforcement and community participation in conservation in the three study sites have rather led to severe conflicts between forest dwellers and conservationists. The consequence of unilateral law enforcement has been that local communities perceive conservation as a government affair serving the interests of conservators who mostly do not belong to the community. This perception ties in with the view that conservationists in the study sites, as well as in other parts of the country, utilise

conservation as a means to alleviate personal poverty. This assertion is corroborated by the fact that the individuals who work for projects that provide technical and financial assistance to local communities to allow them to acquire Community Forests (CFs) always tend to be at the centre of coveted arrangements when the projects phase out. As long as these projects are ongoing, these individuals usually earn huge salaries. When the projects phase out, and when they are given the opportunity to run the acquired CFs with funds generated from community forestry, they promote clientelism.

This situation is compounded by the fact that even nature conservation agents do not own copies of the law and its text of application. Information furnished on the contents of the legal instruments is speculative, particularly as these laws are poorly disseminated and contain flaws, conflicting and inapplicable clauses. Law enforcers often lack an enabling environment for effective implementation and first strive to safeguard their personal interests. These limitations explain the suboptimal application of the 1994 FWL, 18 years after its promulgation, as confirmed by numerous abuses suffered by local people, conflicts between stakeholders, increasing poverty among forest dwellers, passive participation of local populations in conservation and a continuous, and even aggravated, depletion of the country's forest ecosystems (REPAR, 2009).

Between 1994 and 2009, more than 40 forest management-related texts have been developed with little change in the basic policy orientation. It is still strongly maintained by the government that the design of a project or its components and the identification of the desired project results and activities should be undertaken following the existing legal framework. Simplified Management Plans require a forest management institution (FMI) to have an elected forest management officer (FMO) who enters into contract with the Forestry Administration to head a community forest, whereas law N°92/006 of 14/8/92 and Decree N°92/455/PM of 23/11/1992 that introduced the notion of delegate of a forest management institution warrants an appointed DFMI to lead the FMO. It may be considered that the issue is at the level of interpreting the legal instruments, since the Simple Management Plan talks of an FMO while the Article of Association talks of a DFMI. However, in practice, the two entities exercise the same functions. Interviewees revealed that FMOs were made to believe that they were mere secretaries, while DFMIs were

rather at the helm of the community forest. This distorted information may be based on an inadequate understanding of the contents of the legal instruments. The argument as to the interpretation of the law may give way to a new situation where state authority would like to maintain firm control over resources, thus confirming pseudo-devolution of the State.

At this juncture, one can conclude that there are divergences in forest tenure perceptions by local communities, government foresters and migrants. The same was found in some other community forests, such as Bimbia Bonadikombo in the South West region of Cameroon (Minang et al., 2007). Native populations think that the existing regulatory framework rather constitutes a kind of disincentive to maintain their active involvement in forest conservation, especially as those who benefit from local resources are outsiders who obtained government permits as forests users. This would indicate that in the forthcoming efforts to reduce deforestation and forest degradation ($REDD^{+}$), actor relationship trends are not very clear when it comes to equitable forest management at local level.

6.4.4. Mitigation efforts and participation challenges

Communities, government and other institutions will need to develop coherent rules and principles on how to design and implement Locally Adapted Mitigation Actions "LAMA" (Van Noordwijk et al., 2010). LAMA stands as a better governance option in order to achieve fewer emissions from land-use changes and increased carbon stocks, while at the same time continuing to ensure community livelihoods and biodiversity conservation. Additionally, decision making and participation should be carefully tailored during $REDD^{+}$ implementation, implying that it will be necessary to always factor in community needs and priorities. In the current multi-stakeholder arena which recognises the importance of trees and sustainable forest management in climate-change mitigation mechanisms, concerns are emerging as to the need to rethink the rights and interests of local communities in the design of $REDD^{+}$ (Angelsen and Wertz-Kanounnikoff, 2008, Galudra et al., 2011; Awono et).

Moreover, actors will need to deal with uncertainties about conflicts over resources in forest areas. It is anticipated that $REDD^{+}$ schemes would upgrade natural capital value through inflow payments as rewards and compensation to local forest users. Natural regeneration through fallow

and agroforestry systems is likely to increase carbon stocks at landscape level across all pools (below- and above-ground biomass and litter). As indicated by Larson et al. (2010), at global level, the question of who has ownership over various carbon pools will soon become redundant because in Cameroon the state has retained most of the decision-making powers over land allocation and other resource uses.

Opportunities exist to integrate smallholder priorities with national and international perspectives. For instance, ideas could derive from the recommendations by various COP syntheses in the form of declarations, such as those of Cancun, Durban, and Doha in 2012 Warsaw in 2013 (UNFCCC, 2011; Fobissie et al., 2012; Awono et al., 2014). Another feasible linkage could be found in the acceptance of peoples' rights to participation in environmental issues as a human right in the 1998 Aarhus Convention of the United Nations Economic Commission for Europe (UNECE) signed in Denmark (http://www.unece.org/env/pp/documents/cep43e.pdf). At national policy level, community rights could connect to the newly developed country policy documents such as the R-PP document (Readiness Preparation Proposal). The latter is, in turn, linked to the existing regulatory framework in the forestry sector and the Forest and Environmental Sector Plan (PSFE). More importantly, Cameroon's forest sector strategy gives priority to poverty reduction as formulated in the Poverty Reduction Strategy paper, which, in turn, is linked to the Millennium Development Goals (Tieguhong et al., 2012).

6.5.Policy perspectives and implications

Pseudo-devolution of the State in the area of forest management, and poor implementation of conservation laws in SSA, has led to a myriad of claims to forest and land resource access by local populations. In the three sites investigated, local populations' perceptions evidenced legal abuses from the forest administration as well as conflicting provisions in current policy instruments. The government should take into account these profound desiderata if sustainable forest management in the REDD^{+} context is to be achieved. The suggested change from community claims would only be possible if there is the political will to promulgate adapted tenure and resource-right laws in the country. In this light, guidance on effective co-management approaches would be needed to guarantee participatory rural livelihoods and environmental

resilience. In order to gain long-lasting local support for REDD$^+$, "participatory management" would mean that initiatives should be developed and implemented in a cooperative manner by all relevant stakeholders, rather than restricting participation to hearings and subsequent information campaigns on potential project consequences and expected benefits (Pistorius, 2009).

Notwithstanding the claims of the local populations, the most-devolved statutory tenure may not serve any purpose if the latter is not enforced. Cases of non-enforcement of clear and devolved statutory tenure to local communities through access or ownership rights are rife in Cameroon and most of Africa. It should, however, be underscored here that strong tenure at community level has been presumed to impact positively on the socio-political and economic well-being of local communities and environmental resilience (Springate-Baginski, 2010). In our study areas, a similar positive impact could be recorded if their claims are taken into consideration in terms of:

i) more viable community forest enterprises. For example, Mexico and some other countries such as Argentina, Tanzania, Nepal and Ethiopia refer to CF lessons. These countries have been making giant strides in this domain (Benneker and McCall, 2009; Skutsch and McCall, 2012) and they are examples to emulate. As Community Forest activities increased, local communities have learnt to run forest-related business collectively for the benefit of individual members. Forest communities are becoming wise in developing fair sharing mechanisms which would be largely beneficial to REDD$^+$ in the case of carbon stock growth at community level.

ii) improved livelihoods, well-being and poverty alleviation in practice (Pistorius, 2009). Under such conditions, there will be improved forest management and conservation because claims will be reduced as much as possible. With investment incentives, conflicts will diminish.

iii) effective and efficient REDD$^+$ schemes for carbon sequestration and biodiversity conservation alongside other co-benefits, such as water, suitable lands for sustainable agriculture and climate regulation (Pistorius, 2009).

iv) enhancement of the effective functioning of community forests not only on paper but also on the ground across the rest of the country (Larson et al., 2010).

v) Stable forest sector investment and economic growth at regional level.

6.6. Conclusion

Overall, findings from this investigation show that negative and positive elements from the current legal frameworks can be mapped based on existing forestry management instruments to provide lessons to future REDD$^+$ implementation initiatives. Unless social safeguards, such as community tenure rights and benefit sharing between all actors are integrated within the mechanism, efforts to reduce carbon emissions from land uses may result in similar failures to those currently observed in the community forestry sector in Cameroon. Communities conserving their forest lands may still not receive forestry royalties, while those in areas where drivers of deforestation and forest degradation are perpetuated might just as well continue to receive forestry royalties.

In many case studies, forest tenure rights were shown to be a strong incentive for enhancing the conservation of natural resources (Larson et al., 2010; Angelsen et al., 2011). Unfortunately, based on inadequate legal and policy instruments, after independency, governments in Africa have tended to promulgate tenure and resource-right laws that institutionalise State monopoly in natural-resource management while relegating local communities to the background. The implication is that perverse incentives may be given under these institutional arrangements. Local communities may not benefit from REDD$^+$ funds as they will be misdirected by those with political and economic powers. In this way, drivers of deforestation and forest degradation will be maintained and enforced, thereby jeopardizing carbon sequestration and climate-change mitigation efforts.

Undertaking forest tenure reforms prior to REDD$^+$ is important to ensure that forest benefits under REDD$^+$ schemes will not only go to facilitators or intermediaries and members of legal entities. This needs greater support from international governance bodies, who should pay more attention to the adequate application of principles, and may imply moving to a more comprehensive approach which could help to extend the multiple benefits to all relevant actors. Comprehensive includes exploring ways to Reduce Emissions across All Land Uses with tenure emphasis “REALU” (Van Noordwijk and Minang, 2009). More details on the REALU approach

are found in Bernard et al., 2013. To this end, a benefit distribution system needs to be developed in Cameroon, while the link between REDD$^+$ and community rights needs greater visibility and clarity in the national policy documents currently under review. REDD$^+$ could significantly benefit from instruments developed for community management and it could be even more effective when national programmes stimulate participation and strikingly clarify how payment flows would operate during the implementation of this national and results-based policy.

CHAPTER 7

"In view of all this, what can we say? If God is for us, who can be against us" (Romans 8:31, GNB).

7. GENERAL DISCUSSION, CONCLUSIONS AND RESEARCH PERSPECTIVES

7.1. General discussion

Within the framework of climate change policies and focus on community livelihoods, forest management issues have gained increasing importance worldwide. An analysis of forestry policies and institutions governing the developing REDD$^+$ mechanism is vital to obtain insights into the gaps and deficiencies in conservation approaches and regulatory instruments currently used across actors and scales alongside local livelihoods challenges.

There is a consensus among contemporary social scientists that implementation of REDD$^+$ requires robust national policies which can effectively drive change in current land- and forest-use decision-making processes at various scales (Blom et al., 2010; Skutsch and McCall, 2012; Hoang et al., 2013; Bernard et al., 2013, Somorin et al., 2014). For REDD$^+$ to deliver on its promises, there is a need for concerted institutional arrangements, as well as for appropriate incentives at smallholder and community levels, to ensure that equity and cost effectiveness can be met. The prevailing forest context shows that it is crucial to look at smallholders' socio-economic priorities and at deforestation drivers in order to determine feasible incentive packages, with improved governance principles, to achieve carbon emission reductions. We hold the premise that incentive-based forestry policy instruments, such as REDD$^+$, can be designed in such a way that they are socially attractive and institutionally feasible through locally defined governance principles and policy reforms.

The study was divided into 2 parts. Part one comprises chapters 1 to 3 providing background knowledge the problem statement, general literature and the methodological approach. Part two is made up of three empirical chapters (chapters 4, 5 and 6) ending with a brief general discussion, a conclusion and research perspectives. As for policy implications and stakeholders' expectations for which solutions could not be found in the current literature, four specific research questions were posed:

1. What are the policy conditions and how can existing gaps and constraints be addressed to ensure the effectiveness of REDD$^+$ at local level?
2. What micro-level factors drive land-use change and how do these factors influence REDD$^+$ design and implementation?
3. Which institutional structure and policy solutions could act as a governance framework for local communities and other stakeholders to effectively implement REDD$^+$ as a climate-change mitigation intervention?
4. How are forest rights and the claims of local communities viewed by villagers, and how will the precedence of modern tenure rights over traditional rights affect the design and implementation of REDD$^+$?

The research was conducted through surveys and focus group discussions with smallholder farmers, the community associations and proponents' institutions. Two survey forms were used (i) one at household level for information on the socio-economic situation and local responses to deforestation drivers and (ii) the other for the appraisal of institutions on REDD$^+$ functions, pilot activities underway and participation. The findings and discussion are presented in the empirical chapters, but hereafter follows an overall discussion, considering each research question separately.

- *What are the policy conditions and how can existing gaps and constraints be addressed to ensure the effectiveness of REDD$^+$ at local level?*

A detailed policy analysis is presented in chapter 2. The aim was to understand existing knowledge on conservation approaches and to identify policy deficiencies with regards to REDD$^+$ implementation. The results of the review revealed several gaps and constraints within the Cameroon forestry sector, as follows: (1) inadequate decision-support tools in the community forest concept, (2) overnormative and complex approaches used in current forest management which would constraint the flow in REDD$^+$ implementation, (3) more top-down, instead of bottom-up, approaches which intentionally cast aside community rights and smallholder farmers' interests ; and (4) limited understanding of linkages between local community poverty determinants and trends in forest-cover loss.

Lessons learnt from current regulatory frameworks and national conservation strategies are mostly modalities to consider in designing REDD$^+$. They are namely targeting, participation or stakeholder involvement, integrating the positive aspects of traditional land tenure and the opportunity within current policies and laws to integrate reforms. In the same vein, forest tenure conflicts need to be resolved through adequate policy reforms and the payments, or the forms of compensation, needs to be clarified and agreed upon before REDD$^+$ is implemented.

Cameroon has been engaged in international negotiations on climate change since 2005. In 2008, it signed the Voluntary Partnership Agreement (VPA) with the European Union which was expected to come into force within two years. Although the RPP had been approved in early 2013, up to now the country is still expected to clarify the structure of the REDD$^+$ process, both among ministries and with other stakeholders (i.e. donors, civil society and the private sector). Between 2011 and 2012, there were around 29 REDD$^+$ and REDD$^+$-like activities identified at various stages of implementation in Cameroon (IUCN, 2011). These activities were found to have varying objectives, ranging from biodiversity conservation (and poverty alleviation) to the development of a national carbon accounting mechanism. Therefore, finding an optimum scenario to put REDD$^+$ into practice at the local level has remained a challenge in the current climate change debate in Cameroon.

Within the complex REDD$^+$ system (Blom et al., 2010), it is clear that there is a need for climate policies to integrate the concerns of local communities and other actors, as well as attempting to mainstream conservation law enforcement in classified forest units. Sound policies would also provide the basis for technical issues to help monitor emissions reduction progress at local and sub-national level during REDD$^+$ project implementation. Therefore, a better REDD$^+$ structure has to diligently combine a soft regime of agreed regulatory enforcement and should be oriented towards actors' priorities and flexibility. This would help to create an enabling environment to attract funding to meet key social and technical REDD$^+$ requirements, such as design and implementation costs. With the rapid development of climate change debates in Cameroon, it is not irrational to think that public action will follow the international move to enact more policies and laws in line with available scientific knowledge and, more importantly, under the contingency of external aid.

- *What micro-level factors drive land-use change and how could these factors influence REDD$^+$ design and implementation?*

Local smallholder farmers' perceptions, analysed in chapter four, showed that almost half of the farmers interviewed (48%) considered that the first driver for forest clearance is the creation of new cocoa plantations, followed by the need for more fertile lands for agricultural activities, such as cucumber growing and market gardening to cover basic needs. In the same chapter it is found that a large majority (72%) believed that the rate of deforestation will either remain as high as it currently is or will increase in forthcoming years. A logistic regression model revealed four significant variables influencing farmers' decisions to clear forests. They are: age of HH head, membership of a farmers' group, the proportion of non-farm income to total household income and restricted access to timber products. At the household level, these variables can be considered as predictors in the decision-making process to clear a forest.

These findings are in line with information collected during the focus group discussions with key respondents in the target sites of Efoulan Municipality. It was demonstrated that, compared to young people, older people have a sound consideration for the environment and the services delivered by it, such as water/medicine provision and carbon sequestration. Increasing access to NTFPs in the natural forests, which are targeted by REDD$^+$, could potentially guarantee an income source for the poor and marginalised people in forest areas. This conforms to the findings of Tieguhong et al. (2012) who observed that non-wood forest products are of great importance in terms of economic opportunities for the local population in Central Africa. Similar conclusions were found in Cameroon, Burkina Faso and some southern African countries (Ndoye and Tieguhong, 2004; Tiveau, 2008; Akinnifesi et al., 2008; Gyau et al., 2012). The challenge is that poor farmers generally lack the resources to invest in NTFP transformation to increase added value. This could be overcome by collective action through strong community-based organizations. We argue that such institutional set-ups may not only serve in marketing non-wood forest products, but could also offer significant support in the implementation of REDD$^+$ at local level.

This arrangement would certainly work under a scenario of direct funding to forest communities, as is believed to be the case by some prominent scholars in developing countries (Dam and

Trines, 2011; Singh et al., 2011; Parasai, 2011; Zahabu and Malimbwi, 2011). In line with observations highlighted earlier in the case of incentive packages in Kenya (Lager and Nyberg, 2012; Neely and De Leeuw, 2012), our findings suggest that working directly with farmers is absolutely necessary. An *a priori* empowerment process for the local community is very important in the domain of group dynamics before, or alongside, the commencement of concrete $REDD^+$ actions at country level. From the present discussion, we can derive that the socio-economic-based empirical model described in this study has great potential to align poverty alleviation and climate-change mitigation, because it provides a clearer understanding on how deforestation could be at least slowed down. Compensation or payment options for $REDD^+$ have been identified as critical in this study (chapter 2 and chapter 4) in order to design better structures for $REDD^+$ schemes. Our investigation showed that forest communities would prefer a combination of cash payments and non-cash returns in terms of capacity-building and agroforestry innovations. This is consistent with the conclusions of Neely and De Leeuw (2012) who remarked that under $REDD^+$, given their current low value, carbon credits would serve only as "icing on the cake". In the same vein, many authors have argued that increased productivity can be a prominent incentive, together with appropriate capacity development and livelihood services (ICRAF, 2010; Gockowski and Van Asten, 2012; Neely and De Leeuw, 2012). This highlights another important need to develop an institutional framework at national level to fund and implement sustainable strategies for the intensification of mitigation, as also noted by Gockowski and Van Asten (2012).

Of course, when discussing intensification, agroforestry as an integrative land use should be highlighted, as proven by several international institutions, such as the World Agroforestry Centre (ICRAF), the Center for International Forest Research (CIFOR) and IITA (International Institute for Tropical Agriculture). To this end, Semroc et al. (2012) asserted that successful smallholder agroforestry carbon projects require a sound understanding of the local, social, economic and political context to ensure that constraints from land tenure, institutional weaknesses, incentive mechanisms and lack of technical capacity can be resolved over time. The payment options identified confirm the need to establish a multi-dimensional instrument built on PES schemes to stimulate forest stewards to comply with CER goals. As reported from Indonesia (Leimona, 2010), Latin America (Larson et al., 2010), and recently echoed by Bernard et

al.(2013), conditional tenure and agroforestry technologies stand as opportunities to be included within policy packages in order to complement approaches already underway in Cameroon to promote carbon-stock conservation.

These findings contrast with the reality of the carbon emissions reduction schemes that are built solely on fluid cash flows in a poor forest context (Havemann, 2012). Other cases have recently reported that REDD^{+} pilot projects in Peru, Uganda, Vietnam, Indonesia and Malawi paid cash to local stakeholders through carbon credit bonds using conditional contracts (Peskett et al., 2011; Hajek et al., 2011; Hoang et al., 2012; Ajayi et al., 2012). Within this optional structure, there may be, at a given time, an additional risk associated with contract agreements and performance monitoring. For example, in committing to sequestrate or to stock a certain carbon tonnage, communities may divert their upgraded income to other "less important" expenditures. At the start, such agents would become more vulnerable to household food insecurity. Subsequently, they may break contract agreements at some point because of a lack of alternative livelihood options.

Furthermore, another risk lies in the fact that the value of carbon credits may continue to decrease due to the ongoing global economic crisis that has also hit less-developed countries, in such a way that they may not be able to pursue the attainment of newly agreed Sustainable Development Goals (SGD). Scholars have observed that a change in both livelihoods and natural values at landscape level is linked more to external economic drivers than to small-scale interventions (Zahabu and Malimbwi, 2011; Sayer et al. 2012). This illustrates the potential risk, as alluded to above.

For REDD^{+} to be effective, it may be very important to ascertain whether there is any potential conflict between economic incentives and carbon stock conservation. There are assumptions that economic incentives may lead to increased deforestation and hence carbon stock erosion (Neely and De Leeuw, 2012). Meanwhile, focusing on CER within a given landscape can decrease the level of incentives from which local stakeholders can benefit. In a multiplicity of land uses, we argue that management options and choices should be efficiently tailored to strike a balance between economic incentives and carbon stocks. Otherwise, the risk would be to promote greater division, which would lead to increased carbon emissions instead. In an attempt to assess

challenges facing agricultural access to carbon markets, De Pinto et al. (2012) noted that financial incentives might have to compensate for the risks associated with the adoption of mitigation practices. As such, the contracts must reflect the scale of various risks on the possibility for defaulting on contractual obligations.

Thus, one of the few avenues to minimise the above risks would be to promote pro-poor livelihood options, such as quick-yielding innovations within an intensified agroforestry framework. The latter would serve as a shock-absorber in the case of lower income for the rural poor in the context of strict carbon emissions reduction. This gives the combined incentive option suggested by our study an edge over the classic incentive options (cash or non-cash), although its results may vary from landscape to landscape depending on the poverty levels of households and the institutional layouts.

- *What institutional structure and policy solutions could act as a governance framework for local communities and other stakeholders to effectively implement REDD$^+$ as a climate-change mitigation intervention?*

As highlighted in chapter 5, key governance factors directly pertinent to REDD$^+$ implementation in the country have been identified. They deal with participation, power relations, synergy among actors, access to strategic information and coordination capacity. The analysis of REDD$^+$-related activities showed that there has been a remarkable progress in stakeholders' involvement in the implementation process (IUCN, 2011; MINEPDED, 2012; Fobissie et al., 2012; Awono et al., 2013). However, the scale concept of the reported involvement may remain crucial at this mid-stage of REDD$^+$ piloting. This is because current understanding of future prospects for institutional synergies is limited as unprecedented political turbulence may occur at any time.

During our research, it was observed that ongoing interventions in the landscape mostly use sectoral approaches. The governance model developed provides a room towards transformational changes within the designed institutional arrangement to implement REDD$^+$. Opportunities for such institutional and behavioural change exist in Cameroon. REDD$^+$ may actually benefit from ongoing multi-sectoral programs, such as the Forest and Environment Sector Program (PSFE), the Heavily Indebted Poor Countries Initiative (HIPC) and the new PRSP "Poverty Reduction

Strategy Paper" for Cameroon. These are viewed as the main vehicles to implement a comprehensive sustainable development framework nationwide. They are the long-term strategies of Cameroon's development agenda, involving all ministerial departments under the leadership of the central government with the aim of tackling poverty and inequality in the country.

In terms of inclusivness, the ongoing REDD$^+$ process in Cameroon, while still incomplete, appears not to have identified a particular actor category as of high importance in forest management. Indeed, our findings indicated an absence of logging companies, mining companies and agro-industries. The findings are in line with those of several scholars who previously analysed forestry governance systems under REDD$^+$ processes (Angelsen, 2008; Oyono et al., 2008; Galudra et al., 2011; Guariguata et al., 2012; Hoang et al., 2012; Purnomo et al., 2012; Awono et al., 2013; Bernard et al., 2013). The above authors asserted that the forestry governance systems in tropical forest countries had been characterised mostly by poor coordination and limited inclusivness. Previously, some reports highlighted that there are alarming gaps in the local forestry systems of Cameroon, which under REDD$^+$, need particular attention (IUCN, 2011; Ngendakumana et al., 2011; MINEPDED, 2012).

We wondered what could be the reason behind the situation in Cameroon. Meanwhile, these boundary actors, which are currently not included in the process, are widely believed to constitute both threats and opportunities for fostering REDD$^+$ initiatives in forest management systems (Bellasen and Gitz, 2008; Blom et al., 2010). They are threats in terms of externality-based emission risks and opportunities when one considers the possible establishment of certification systems to halt illegal logging, uncontrolled mining and less environmentally-friendly agricultural production systems. These form part of best practice, with an empirical potential to reduce deforestation. Additionally, several agro-industries operating in Cameroon, such as HEVECAM, SOCAPALM, or CDC-Demonte to name but a few, could be sources of funding through PES schemes to complement the REDD$^+$ mechanism during its operational stages. Engaging them could be operationalized through "business case meetings" combined with policy measures based on the "corporate social responsibility" concept. Finally, the most important challenge in this case is the development of a concept that guides all actors' involvement and

allows inter-relationship management from the design to the implementation phase of the REDD$^+$ cycle.

We recommend and reaffirm the need to attentively build strong partnerships with structured community-based organizations within the current REDD$^+$ process at country level. This locally based synergy would be one of only a few effective approaches to increase the likelihood of success of REDD$^+$ in Cameroon. A concern from this perspective for the country is the low interest of the non-forest sector in climate change debates, despite the fact that it has been proven that in the long term, their activities, strategies and plans will be influenced by climate variability. The latter is being exacerbated by these sector groups' actions and practices, such as illegal logging, mining and agricultural plantations within forest blocks (Ngendakumana et al., 2011). This calls for an inclusive intervention model, the development of which was one of the objectives addressed in chapter 5 of this thesis. Our empirical model did not find a significant relationship between deforestation and "gender" and could not deal with the issues of benefit-sharing linked to gender. However, we strongly suggest an in-depth study which would consider the gender attribute from the perspective of REDD$^+$, with a particular focus on benefit distribution mechanisms. A similar approach has been taken in countries such as Vietnam and Indonesia (Hoang et al., 2012).

- *How are forest related community rights and claims viewed by villagers and how will the precedence of modern tenure rights over traditional rights affect the design and implementation of REDD$^+$?*

Tenure rights are complex and when considering forest communities, they can be viewed as "bundles of rights". They include the ability to access, withdraw, manage, exclude and alienate a resource. It was found in this study (chapter 6) that the legal classification in Cameroon into permanent and non-permanent forests has ignored customary forest regulations. This has led to severe threats between local communities and State conservation agencies, as well as to natural ecosystems hosting valuable biodiversity. During participatory analysis of the content of the Cameroon Forestry and Wildlife law in the three sites, participants in large group discussions identified some inherent flaws in the laws as follows: (a) absence of a clear definition of those with rights to own a CF; (b) non-recognition of customary rights in terms of forest classification;

(c) legal marginalisation of indigenous peoples; and (d) conflicting legal provisions in SMPs and Articles of Associations (AA). Furthermore, our investigation found that the creation of the "COVAREF", ("*Comité de Valorisation des Resources Fauniques*", a French acronym for the body managing funds for local development from fauna resources) was only effective in one out of the three study sites, namely Ngoyla in the East Region.

During interviews, as well as during focus group discussions, informants and communities identified four community forest-based legal flaws with a high degree of precision and clarity. These are (i) the limited lifespan of the community forests (25 years); (ii) the exclusion of potential stakeholders from community forest management; (iii) the inadequate sizes of CFs; and (iv) the divestment of stakeholder rights to sub-soil resources and limitations on rights of use for NTFPs. This confirms findings reported by researchers who previously attempted to understand competing claims and policy contestation within the community forestry sector in Cameroon (Forster, 1996; Tumnde, 2001; MINEF and GTZ 2004; Singer, 2004; Julve et al., 2007; Enchaw, 2009). Nevertheless, our assessments discovered that, despite legal flaws, the laws contain some appealing clauses, which were poorly implemented (disrespect of use rights).

From the rural development perspective, the dominant debate is more about poverty and tenure rights than themes such as $REDD^{+}$ or climate change, especially in our study sites which are remote forest areas. Some smallholder farmers have even voiced the fear of having $REDD^{+}$ as an additional internationally disguised way to reinforce the secular dominion over natural resources in the country. The reason may be the fact that, although massive in scale, public consultations were too evasive, broad and, to some extent, placed under sole government control. Therefore, we strongly suggest that the central government should foster fair active partnership, instead of the "dominance" type of leadership style currently observed in state agent services. The first step would to enact national policies and measures that can convincingly have a positive impact on forest change and tenure at low cost. Such policy instruments may include, but should not be limited to, supporting effective community forestry, workable devolution systems to local communities, funding agroforestry for rural livelihoods and reforestation of degraded areas and engaging a public budget to promote intensification of smallholding agriculture.

According to the UNFCCC conference of parties in 2010 (Decision 1/16) a list of international standards is set for special safeguards in any REDD$^+$ implementation activity. Hence, parties are expected to promote and support principles and conditions that respect human rights, address land tenure issues, forest governance and benefit sharing. The same applies to the engagement of stakeholders, with effective participation of local communities. As reported by Fobissie et al. (2012), Cameroon is also required to meet most of the above conditions, which are linked to the creation of an enabling policy environment for timely emission reduction deliverables.

It is crucial to safeguard forestry rights and the active participation of local communities throughout the appropriate design and implementation of REDD$^+$ projects in southern Cameroon. Informants' perceptions and large focus group discussions during our assessment (chapter 6) indicated that there had been only a limited number of consultations since the REDD$^+$ inception. This may be partially explained by the limited financial means, as the government was solely funding the process with little or no external support. Through observations and interactions with key actors, we found that, at site level, the legitimacy of "stakeholder representation" was questionable, whereas the choice of a representative to speak on behalf of vulnerable communities in the REDD$^+$ forums was uncertain. Engaging local stakeholders at an early stage in developing conditional carbon stock schemes, such as REDD$^+$, may increase the likelihood of success.

Both Skutsch et al. (2011) and Corbera and Schroeder (2011) came to the same conclusions with regard to the role of community forest management in REDD$^+$. These authors respectively advocate the need to involve forest communities in the whole REDD$^+$ process, including the issue of carbon credit ownership, tenure rights and MRV, irrespective of the prevailing skepticism about local agents' capacity. This suggests that the implementation of REDD$^+$ should, from a local perspective, be based on increased community willingness to get involved. This is in line with the findings of some scholars who echoed that the design of REDD$^+$ should be flexible and provide information on basic details about how it works at local levels, the expected benefits and possible implications (Pesket et al., 2008; Blom et al., 2010; Skutsch and McCall, 2012; Awono et al., 2013). By so doing, this could help to improve community involvement in the entire REDD$^+$ process at the same time minimising risks of forest cover loss through diverse athropogenic activities.

Additionally, during this study, discussions held with key technical and expert proponents led us to understand that it may be far from trivial for policy makers and leading government agents to make REDD$^+$ work successfully across scales and actors' interests. Hence, we anticipate the challenge on three scales:

First, the challenge for local communities is to keep pace with the evolving dynamics of financial mechanisms that are being designed to slow down deforestation, most of the time without their consent. Nonetheless, community support services ought to be able to transform the suggested schemes into opportunities to improve livelihoods in a sustainable environment. By so doing, other co-benefits such as clean water, NTFPs and fertile croplands would remain accessible for future generations. The next challenge in this regard is to be addressed by scientists and international support services in the REDD$^+$ process. They actually have to develop workable and inclusive approaches that are cost-effective, with the potential to reinforce social safeguards and ensure forest resource management from a long-term perspective. Finally, the REDD$^+$-related challenge for policy makers and grassroots initiative managers is to identify and explore cases where synergies can exist between local communities and conservationists to set guiding standards. In addition to this, they need to be sensitive and cautious about the needs and interests of engaged actors and then focus policy efforts on institutional and behavioural changes towards improved governance and significant socio-economic benefits for local communities.

Although not a panacea, at this early stage of learning and redesigning, it is clear that a step-by-step application of the suggested institutional framework, combined with the empirical socio-economic design model, could lead to the following governance solutions to mitigate threats and suspicions relating to REDD$^+$:

- greater cohesion among forested landscape users and managers as linkages could bridge their multiple perspectives;
- possible compromise on rules and laws to govern and shape carbon emission reduction and carbon stock conservation schemes from the local perspective upwards;

- negotiated and agreed land-use changes derived from new collaborative work, whereby these changes could be incorporated into local and national mitigation and adaptation plans;
- continuous and strong trust built via open discussion and a gradual common understanding of the environmental benefits of $REDD^+$ across scales;
- effective intra- and cross-sectoral institutional arrangements which regularly address key stakes at community level in accordance with set rules and responsibilities for all actors. This stands as an answer to the top-down approach which is highlighted in international and national $REDD^+$ debates;
- socially and environmentally desirable land-use decisions in line with the required performance of $REDD^+$; and
- forest cover increase in order to finally reverse deforestation, biodiversity loss and carbon stock erosion.

Landscape attribute variations across regions may be a distinctive issue in materialising the above solutions, depending on poverty levels, other economic opportunities, the sensitivity of local communities to climate change issues, disposition of rights claims and other factors. The rationale for having such incentives and governance structures, as designed in this study, is that the financial mechanism of $REDD^+$ may help to establish feasible options, including a direct funding scenario to forest stewards. This conforms with the current thinking that $REDD^+$ has the potential to provide a new way forward for tropical forest conservation and management (Blom et al., 2010; Angelsen et al., 2012; Minang and van Noordwijk, 2012). However, some environmental activists have concerns about intermediate agencies' interests which could undermine local actors' perceptions and forest value. Emphasis is being placed on ensuring that $REDD^+$ is more pro-poor, with support systems for local institutions and the use of "soft enforcement" alongside measures to improve equity and reduce the risks of the perverse effects of $REDD^+$ on rural livelihoods (Angelsen et al., 2012). Although the design of $REDD^+$ has been complicated by the complexity of the previous REDD architecture, our findings have hopefully

laid a strong baseline for actual REDD+ implementation in relation to the role of local communities, institutional logics and actor relationships.

7.2. Validity and robustness of research findings with link to posed hypothesis

This research has focused on relatively poor communities with few economic opportunities in the southern forest zone of Cameroon. The findings derived from such a large sample, combined with analysis beyond target sites, portray significant levels of salience, credibility and legitimacy to improve the building blocks of REDD+. One might expect to find similar results in most of the other forest landscapes of Cameroon. The conclusion could therefore easily be extrapolated to the rest of the forest regions in the country, as well as other tropical areas with similar forest-management systems. The study builds mostly on qualitative practices, taking a social science perspective, but gives empirical evidence on how to incorporate social dimensions into the current climate change debate. The investigation process was part of the REDD+ feasibility assessments conducted in the country since 2010. We believe that our inquisitive approach during data collection, and workshops held with almost all REDD+ partners, has influenced and already started to feed into the process nationwide. Cameroon has an ambitious future plan to develop its national REDD+ strategy. Models developed and the tenure rights-based lessons learnt in southern Cameroon may serve to restructure the ongoing REDD+ process design and frame the forthcoming policy instruments. The findings also contribute to a better governance flow towards effective and equitable emissions reduction both locally and globally.

These results are valid and consistent with the context and period that data was collected from 2010 to 2011. Presently, the country has witnessed significant progress across described REDD+ functions and the target population perceptions identified. Conclusions under the present research accurately reflect available information in the Cameroon forestry arena over that period of time. Recent developments in the sub-region in the domain of the emission reduction business showcase rather more credibility for our formulated hypothesis and findings (see http://www.redd-monitor.org/2015/10/09/cameroons-redd-plans-critiqued-by-ngos-ahead-of-world-bank-meeting/). We strongly believe that this research has brought about an accelerative thinking towards actions and transformational change for the recipient institutions. It constitutes a

partial confirmation of Hypothesis H2 of our thesis, which postulated that "the long-term success or failure of incentive mechanisms is conditional on the specific design of the institutional framework. Tenure rights, compensation options and the level of stakeholders' involvement during the implementation processes should be taken critically into account". Part of the validating findings is found in chapters 5 and 6. Hypothesis H1, in its part, stipulated that "current forestry policies and regulatory frameworks in Cameroon are not clear enough to govern $REDD^{+}$; reforms and incentives are needed, learning from socio-economic challenges at local and national levels to change the behaviour of local communities towards deforestation". This was fully confirmed by the results presented in chapters 4 and 5.

7.3. Emerging policy actions from the study

The overall purpose of this thesis was to determine local factors, as well as to describe institutional arrangements and social safeguards which could be used to restructure the current incentive and governance schemes aiming to effectively reduce carbon emissions in Efoulan and beyond. The findings presented here offer evidence and lessons for the growing $REDD^{+}$ activity portfolios which are in the pilot phase and still need to be implemented. We offer a structural implementation model and a socio-economic model to optimise $REDD^{+}$ effectiveness at local level. Discursive comparison revealed the potential of the models developed as guidelines for conservation and the climate-change policy reforms needed to improve the technical content of the ongoing debates in Cameroon and the Congo basin. The results demonstrated that during the $REDD^{+}$ process, it is necessary to develop inter-sectoral approaches that link forest management and other land uses, such as agriculture, agroforestry, and community forestry, at a scale which allows a learning process for policy makers and shapers.

As indicated in this study, risks and challenges exist with regard to this financial mechanism, such as ignoring tenure issues, inadequate local stakeholder participation, power struggles between governing agents and dominance by international organizations and past conservation approaches. We argue that, if not wisely tackled, they may lead to some social and biodiversity tragedies, just as in the case of the commons described earlier by Ostrom et al. (1999). This would therefore result in unsustainable forest resource use in the long run, leading to detrimental

carbon stock erosion, as such contrasting with the expected emission reduction performance through the originally designed REDD$^+$ mechanism. From a scholarly perspective, expectations drawn from actors' perceptions indicate that coping with REDD$^+$ acceptability across scales will require four keys points (Table 7.1).

Table 7.1. Operationalization roadmap of key emerging policy issues from the doctoral work across all chapters

Fundamental Policy issues	**Expected output**	**Target action**	**Accountable stakeholders**
i)Dealing with actors' diverse interests and benefits	Improved community rights and forest management for increased carbon stocks	-Empower actors and strengthen coordination -Adopt FPIC principles and bottom up approach (in line with UNFCCC's decisions) -Secure community rights to forest carbon	Government CBOs and CSOs Private sector
	Better stakeholder engagement in REDD$^+$ process	-Increase sensitization for actors active participation -Organise business case meetings -Develop information management system	
ii)Cultivating the monitoring and reporting culture	Improved performance based payment for C-stocks and credible REDD$^+$ financing mechanisms	-Accelerate knowledge based forest management for C-Stocks -Promote farmer based REDD$^+$ implementation schemes -Create carbon credit registry services	Government Research services CBOS and CSOs Private sector
iii)Developing equitable and sustainable policies	Strong forest governance rules and institutions for REDD$^+$	-Invest in and accelerate the forest policies reforms -Promote the application of rules towards an enabling environment for REDD$^+$ -Develop strong forest research and conservation institutions	Government Research services CBOS and CSOs
iv)Setting up low-cost conflict management systems	Improved legitimacy and fair benefit sharing options	-Anticipate governance gaps and policy incoherencies -Develop fair benefit sharing options -Operationalize equitable compensation options	Government Research services Private sector

(i) *dealing with actors' diverse interests and benefits*. Here, the empirical and structural models designed in chapters 4 and 5 indicate socio-economic factors such as level of income, tenure security/land ownership, age and feeling included (participation) would definitely influence $REDD^+$ effectiveness. As noted in our findings throughout the thesis (chapters 2, 4 and 5), $REDD^+$ is a multi-stakeholder policy issue and therefore the coordination function will play a vital role, as also found in carbon projects in Uganda (Peskett et al., 2011). This could be done by promoting more landscape-based planning, alongside an appropriate information management system to maintain trust and cohesion throughout this complex mechanism. Furthermore, another way to tackle the diversity of $REDD^+$ actors could be to establish a code of conduct and practice to guarantee quality delivery ahead of the MRV process.

(ii) *cultivating the monitoring and reporting culture*. From the conceptual framework in chapter 3, MRV activity can be undertaken through collective intelligence and joint capacity building of actors along the $REDD^+$ value chain. The community of practice now exists (though with some need to refine some tools) to guide data collection, including local knowledge on forest management and livelihoods. As discussed in chapters 4, 5 and 6, local participation is viewed as an essential element for communities to be able to credit and register sequestered carbon in their natural terrain. This also has the advantage of reducing operational costs (Skutch et al., 2011).

(iii) d*eveloping equitable and sustainable climate change policies* to adequately address the realities of land-use change with regard to local population concerns and expected emission reduction performance. This would need to catalyse strong partnerships across landscape complexities to deal with externalities, such as emission leakage, and also to push for increased funding from donors. Indeed, here we argue that improved policies and strong partnerships constitute additional arguments to channel conservation funding to complement $REDD^+$ allocations for a country.

(iv) s*etting up low-cost conflict management systems*. In this case, several risks of conflict are reported, for which there are several reasons, such as unclear rights, diverse interests in the distribution of potential benefits and control in the forest sector. The communities surveyed have legitimately proven to be very expressive and sensitive about the forest tenure rights issues.

Additionally, concerns may arise with regard to funding allocations to support actors during the implementation process for the designed REDD$^+$ projects. Critical conflicts may occur as a result of the power struggle to control more of the project finances or illegitimately expropriate some rights during REDD$^+$ value chain implementation. In line with Ostrom's theory on management of common pool resources (Ostrom, 1990), we suggest the development of a REDD$^+$ management system which will be organized and governed by forest resource-dependent users. In fact, we believe this may have a significant implication for the effectiveness of REDD$^+$ governance. The point is clear: engaging responsible community leadership as the legitimate and secular forest stewards in the emissions reduction regime would be the antidote to REDD$^+$ failure.

In this research, we developed a schematic model to shape relations between institutions, ideas and information use around two main building blocks, namely local livelihoods and land-use planning aspects across forest and non-forest sectors. Although this structure has slight similarities with the national framework found in the RPP of Cameroon, its uniqueness resides in the fact that it anticipates addressing the governance gaps identified by several reports in the local forestry administration of Cameroon. Forestry governance systems have been assessed by many scholars, who asserted that these systems are often characterised by poor coordination and limited inclusivity (Biermann, 2010; Hiraldo and Tanner, 2011; Angelsen et al., 2012; Megevand et al., 2013; Somorin et al., 2014). The effect of top-down approaches and excessive power within current forestry regulation activities, such as agriculture and Non Timber Forest Products (NTFP), are more attractive, but provide incentives or disincentives for forest conversion irrespective of the law.

We arguably believe that applying the models developed from this thesis to the REDD$^+$ implementation process may ascertain healthy relationships and discussions between local and sub-national level actors. Additionally, the models could lead to increased effectiveness in emission reduction and attainment of carbon stock goals, while accelerating the achievement of other co-benefits aimed at sustaining livelihoods and landscapes. However, for this to happen, the mechanism first requires more funding from international bodies and national gouvernments, as mainstreaming joint efforts and cross-cutting ideas bring additional costs (Minang and van Noordwijk, 2012). Secondly, some changes need to be made by policy makers to the "business as

usual" local governance system, in terms of compliance with principles such as enforcement of participation and transparent information flow through a consent-based approach, namely FPIC. Within this context, and as also noted in Peru (Hajek et al., 2011), the challenge lies in the fact that REDD$^+$ is viewed by conservation elites as a means to protect nature, as opposed to other state agents and civil society elites who consider it an opportunity for Cameroon to benefit from new investment to alleviate poverty.

7.4. Key scientific advancements made through the present research

As anticipated in the first chapter of this thesis, our research generates new knowledge on farm and socio-economic factors driving the deforestation process at a local scale, as well as insights into the institutions and policy arena from which REDD$^+$ could be grafted. It consequently formulates alternative policy options for the effectiveness of the REDD$^+$ mechanism in Cameroon. Based on the main empirical findings, this research showcased at least four important scientific advancements.

- ✓ It has identified, in chapter 2, many policy gaps and deficiencies in the current regulatory instruments governing the forestry sector, which need to be addressed in order to enhance the social feasibility of REDD$^+$ and its effectiveness on the ground.

- ✓ From this study, an innovative way forward emerged which is sufficiently robust to assess micro-level factors affecting deforestation and forest degradation processes. Through the Efoulan case study, a type of experimental combination of smallholders' perceptions and regression modelling against the decision to clear forests the previous year came up with some significant variables which need special attention in redesigning REDD$^+$implementation. These include the proportion of non-farm income level, membership of a farmer group, age of the household head and restricted access to forest resources. Furthermore, the method demonstrates that smallholder farmers and community perceptions can be as valid as the binary regression model in terms of outcomes (see results 1 and 3, chapter 4). This level of precision could motivate policy action and donor positions towards a brighter future for fund raising for REDD$^+$.

- ✓ It was established throughout this investigation that communities and local-level technocrats involved in forest management are, in the same way, able to understand legal aspects and law enforcement perspectives with their direct implications on tenure and livelihood issues. This new finding indicates that communities and local-level technocrats can jointly take the central role in REDD$^+$, although capacity-building must be tailored accordingly. The study also added some scientific insight by confirming that stakeholder participation (whether at a local or national level) and forest tenure are critical for REDD$^+$ implementation and governance. A new dimension of the knowledge generated here has been the development of the compensation and funding thresholds for REDD$^+$ success in an Efoulan-like forested area.

- ✓ The structural model developed from the new research framework designed by the author can function effectively within the REDD$^+$ operational phase. The model brings key actors and institutions together and indicates the importance of collective action across the suggested functions through coordinated efforts between government and other stakeholders. This could have strong implications in reducing REDD$^+$ implementation costs through economies of scale at project-site level, especially in the current situation of a global funding crisis in the forestry sector. However, although the results portray a new understanding of cumulative thresholds, the extent to which costs (transaction and direct benefits) could be reduced fairly and realistically to keep REDD$^+$ on the right track is still to be determined.

7.5. Limitations of the study and future research activities

The REDD$^+$ initiative, with its increasing complexity and growing uncertainties, needs to continuously learn lessons from the success and pitfalls of existing forest management systems. It is against this background that this thesis was developed to provide additional insights on local-level evidence to underpin REDD$^+$ processes, learning from policy gaps and stakeholder perceptions in relation to segregated functions. Methods used and the circumstances which prevailed during the series of assessments demonstrated some pitfalls and shortcomings which need particular attention in future.

The first limitation of this study is that it relied mostly on qualitative data based on the perceptions of farmers and other stakeholders who often do not have written records of their land-use change processes or keep accounts of farm operations. This means that, at times, answers to the questions demand deep thinking about the past. Some errors might naturally occur due to the oral aspect of traditional African communication. A multi-dimenensional study is therefore needed in the same context, whereas further similar research may be useful in some different areas to validate the present findings.

The second limitation could be viewed in terms of the experience and scope encompassed. Indeed, the socio-economic context and forest governance principles at local level are important in determining the ultimate success of REDD$^+$ projects in Cameroon. However, this is not enough to guarantee effectiveness and equity, due to the fact that, at this stage, our understanding of future prospects for institutional synergies is limited dues to small sample used. Furthermore, as indicated above, there might be cross-cultural variations in local perceptions, and also over time, as REDD$^+$ debates evolve very quickly, adding greater complexity to the current framework. In order to capture the risks of this variability, more assessments encompassing all agro-ecological zones are therefore recommended. This is important to understand the local perceptions and to collect evidence on the opportunity costs of forest conservation, agricultural and afforestation activities to avoid deforestation and forest degradation.

In chapter 4, only four variables, out of more than 20 factors considered during the survey design, were significant. Furthermore, the model draws on information collected in only 104 households in nine villages. This was due to funding limitations. Consequently, there is room to think that analysis based on a bigger sample size across several regions and gradients may demonstrate more micro-factors linked to deforestation and forest degradation with potentially a higher predictive power.

Synthesized results of this thesis led to crucial findings contributing to govern the REDD$^+$ process locally. Thus, future research should focus on the following seven perspectives:

- Investigate the risks of potential conflict between incentives and carbon stock conservation.

- Explore patterns of inclusive multi-actor governance logics across scales.
- Study the relationship between $REDD^+$ boundary organizations, gender and benefit distribution under public-private sector partnerships in the Congo basin.
- Determine policy choices and trends under current $REDD^+$ using FPIC and grounded theory.
- Assess the quantity and quality impacts of national policies on forest ecosystem services.
- Examine key factors to domesticate international climate change policies at country level.
- Monitor forest cover change using biophysical methods under different emission reduction scenarios in southern Cameroon and in the Congo basin.

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Serge Ngendakumana, was born July 21, 1970 in Mubanga, a big village which gave the name to the zone in Ruhororo Commune, Ngozi Province in Burundi. He attended secondary schools respectively in Petit Séminaire MUREKE and Lycée KIBIMBA up to 1990. In 1992, he obtained the "Diplome de Candidature" in Agro-Bio-Pharmacy and engaged with Agronomic studies in the Faculty of Agronomy of the University of Burundi till the political unrest broke out in 1995. He left the home country and enrolled the following year in the University of Dschang – Cameroon and was awarded a Bio-engineering Diploma in Agronomy and agricultural sciences (Eq. MSC), with major in Crop Production in 1999.

In 2001, he was recruited as Senior Desk Officer in a Suiss ONG- SAILD International- and then after in 2005, he joined the World Agroforestry Centre (ICRAF) in West and Centre Africa Region as International Scaling up Expert where he developed an interest in innovations sociology and NRM under the ICRAF /USAID Project (LAMIL) in Mali, Guinea and Sierra Leone.

In 2009, this Burundian national enrolled at the University of Conakry (Guinea) in a Msc Programme jointly piloted with the University of Quebec at Montreal. He was awarded a Msc for Research in Environmental Sciences in 2011. In the same year the socio-agronomist and environmentalist was upgraded to Research Associate still with the World Agroforestry Centre, to work on Environmental policy analysis and Climate change mitigation mechanism. With two Msc degrees respectively in Agronomy and Environmental science, his main research domains of interest are Agroforestry, Environmental science, Climate change Policy, Landscape based-incentives and rewards mechanisms, Forestry governance and Social Forestry. Over the past 12 years, he has supervised about 15 Dissertations for "Ingenieur Agronome et Eaux et Forets" and gender studies.

From 2009 to 2012, he extensively conducted field research for his PhD in Cameroon forest zone with several connections to West and Central Africa countries. On the 26th October, 2016, he successfully completed the PhD Training cycle at the Faculty of Bio-science and Bio-

engineering, Ghent University. He has worked in partnership with National Research and Extension Institutes, Universities, NGOs, Community Based and civil society Organizations across Africa and Asia. Due to his tangible experience in Agroforestry systems, ecosystem management and international policy works, he has been recently appointed Senior Advisor in charge of Policy Analysis, Prospective and Strategic studies in the Office of the President of Burundi. Serge is member to several forestry fora like Commonwealth Forestry Association and has participated in many international policy and scientific conferences with several contributions. His research has led to many policy reports and scientific publications that he authored or co-authored.

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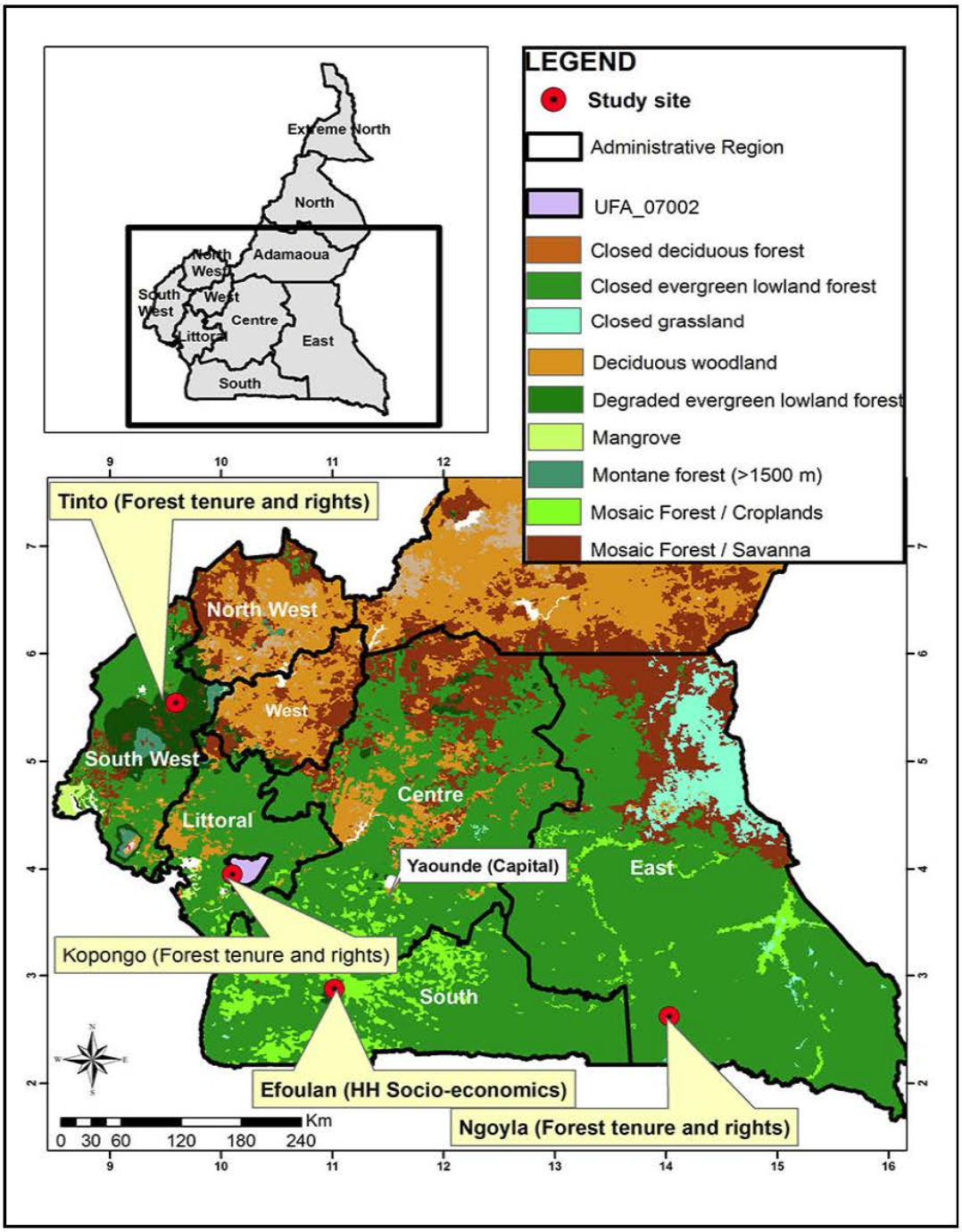
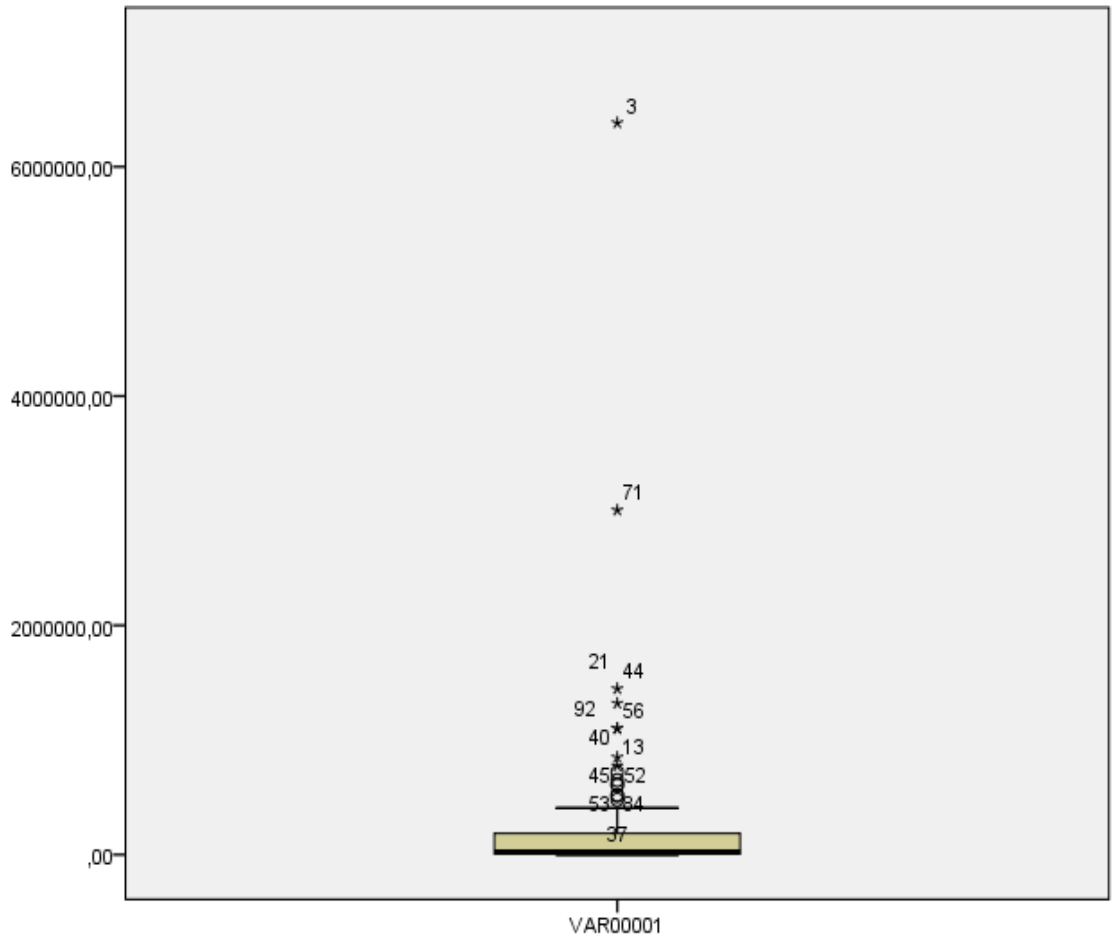
APPENDIX A: LOCATION OF THE FOUR STUDY SITES IN SOUTHERN CAMEROON LAID ON THE VEGETATION MAP OF THE AREA

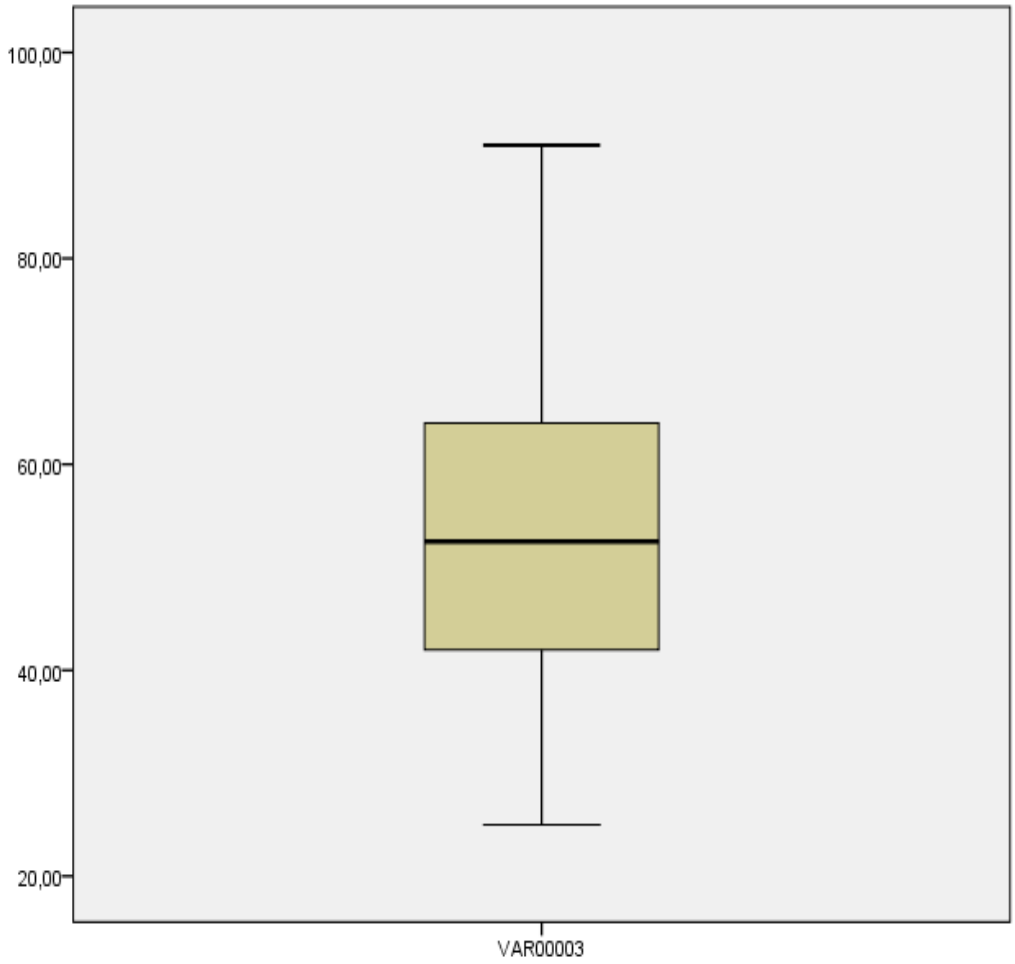


APPENDIX B: BOX PLOTS REPRESENTING DISTRIBUTION RANGES OF THE THREE MAIN VARIABLES RECORDED IN EFOULAN FOREST BLOCKS FOR THE YEAR 2010

Non farm income



Age



Share of farm income in total

Correlation between Non farm income and share of income by farming

Correlations

		VAR00001	VAR00002
VAR00001	Pearson Correlation	1	-,408**
	Sig. (2-tailed)		,000
	N	100	100
VAR00002	Pearson Correlation	-,408**	1
	Sig. (2-tailed)	,000	
	N	100	100

**. Correlation is significant at the 0.01 level (2-tailed). So, ideed there is a significant negative correlation between both, but not of an excessive magnitude which could create problems in the model.

APPENDIX C: HOUSEHOLD SURVEY QUESTIONNAIRE USED IN EFOULAN MUNICIPALITY

Reducing Emissions from All Land Uses /REDD^{+}

Reducing Emissions from all Land uses in the Rainforests of the Tropics: In-depth Assessment in Efoulan Municipality

RESOURCE AND LAND MANAGEMENT HOUSEHOLD SURVEY CAMEROON

French Version

Preambule

Le projet Alternatives to Slash and Burn Agriculture (ASB) « Alternatives à l'agriculture itinérante » est une plate-forme qui conduit des activités dans les domaines biophysiques et socio-économiques en partenariat avec des instituts de recherche nationaux et internationaux comme IRAD, IITA, ICRAF. La préoccupation actuelle est de développer des stratégies et mécanismes pour l'adaptation aux changements climatiques observés de nos jours sur le globe terrestre.
Les informations collectées dans le cadre des initiatives REDD^{+} au cours de cette enquête sont strictement confidentielles au terme de la loi N° 91/023 du 16 décembre 1991 sur les Recensements et Enquêtes Statistiques qui stipule en son article 5 que "les renseignements individuels d'ordre économique ou financier figurant sur tout questionnaire d'enquête statistique ne peuvent en aucun cas être utilisés à des fins de contrôle ou de répression économique".

Définition de l'unité d'observation (Le ménage): un ménage est constitué par un homme et/ou une femme marié(e) ou veuf (ve) + les enfants non mariée, et d'autres personnes de la famille économiquement dépendante, vivant dans un même habitat (maison + cuisines des femmes)

Septembre 2011

Numéro du questionnaire |__||__||__||__||__|

PARTIE 1: INFORMATIONS GENERALES

P1Q1	**Heure de début de l'entretien : _____**	**Partie réservée** **Ne pas remplir**
P1Q2	Date de l'enquête	_|_| _|_| |**2**||**0**||**1**||**0**|
P1Q3	Nom de l'enquêteur	
P1Q4	Village	_|_|
P1Q5	Arrondissement	_|_|
P1Q6	Département	_|_|
P1Q7	Région.....	_|_|
P1Q8	Localisation du ménage : Latitude..... Longitude …….	_|_|_|_|_|

PARTIE 2: IDENTIFICATION DU CHEF DE MENAGE

P2Q1	**Nom / Prénom du Chef de ménage**……..	_|_|
P2Q2	**Sexe** : *(1=Masculin …….. ; 2=Féminin*.....)	_|
P2Q3	**Age**.....	_|_|
P2Q4	**Contact téléphonique**.....	_|_|_|_|_|_|_|_|_|
P2Q5	**Statut matrimonial** : 1= *Marié**….. 2= célibataire….* *3=veuf (ve)…….*	_|
P2Q6	**Niveau d'instruction générale** : 1=pas été à l'école ……. ; 2=école primaire …… ; *3=Secondaire ……..*	_|

	4= enseignement sup.…..…..…	
P2Q7	**Religion :**1=*chrétienne ;*..... 2=*musulman ;*..... 3=*autre ;*.....	⎵
P2Q8	**Ethnie** : …… …….....	⎵⎵
P2Q9	**Clan (***Ayong***)/ Famille (***Mvog* **ou** *Nda bot***):** ……/	
P2Q10	**Les trois principales activités: Les ranger par ordre d'importance** 1=…….. 2=…… ……. ..... ……	⎵

** Mariage = une vie conjugale qui est assurée soit par la dot, soit par un acte de mariage ou encore un durée de plusieurs années (5 ans et plus)*

PARTIE 3: CARACTERISATION GENERALE DU MENAGE

A. COMPOSITION DU MENAGE ET FORCE DE TRAVAIL

P3QA1 : Quelle est la composition de votre ménage et sa force de travail

Groupe d'âge		**Masculin**		**Féminin**	
	Nombre total (A+B)	**Nombre total (A)**	**Nombre d'actifs agricoles**	**Nombre total (B)**	**Nombre d'actifs agricoles**
Enfants mineurs (0 - 14ans)	*P3QAM*	*P3QA1*	*P3QA2*	*P3QA3*	*P3QA4*
Enfants majeurs	*P3QAE*	*P3QA5*	*P3QA6*	*P3QA7*	*P3QA8*

(15 - 20 ans)					
Adultes **(21 - 60ans)**	*P3QAA*	*P3QA9*	*P3QA10*	*P3QA11*	*P3QA12*
Vieillards **> 60ans**	*P3QAV*	*P3QA13*	*P3QA14*	*P3QA15*	*P3QA16*
Total	*P3QAT*	*P3QA17*	*P3QA18*	*P3QA19*	*P3QA20*

P3QA2	**Le nombre de personnes dans votre ménage a-t- il augmenté ou diminué depuis l'an 2000** ? *1=……..oui;* *2=……non*	⌊_⌋
P3QA3	**Expliquez votre réponse** : *1=naissances, 2= mortalité, 3=exode rural,* *4= autres* (préciser : …….)	⌊_⌋ ⌊_⌋⌊_⌋

B. INVENTAIRE DES BIENS DU MENAGE

P3QB0 : Pouvez-vous nous dire les quantités de biens et équipements que vous possédez dans le ménage ?(Cocher et inscrire le nombre)

	Biens / équipement	Nombre
	<u>Agriculture et élevage</u>	
P3QB1	Chèvres	
P3QB2	Montons	
P3QB3	Poulets	
P3QB4	Canards	
P3QB5	Chiens	
P3QB6	Chats	
P3QB7	Porcs	

	Machines et équipement	
P3QB8	Motopompe	
P3QB9	Tronçonneuse	
P3QB10	Pulvérisateur	
P3QB11	Bicyclette	
P3QB12	Motocyclette (marque : …….)	
P3QB13	Groupe électrogène	
P3QB14	Téléviseur	
P3QB15	Radio	
P3QB16	Arme à feu (pour la chasse)	
P3QB17	Pousse-pousse	
P3QB18	Électricité	
P3QB19	Brouette	
P3QB20	Autres biens (préciser)	

P3QB21	**Caractérisation de l'habitat** 1= ……..Maison principale séparée de la cuisine ; 2= …….. Maison principale mélangée avec la cuisine			⌊_⌋
P3QB22	**Maison principale** **P3QB23a** *1=…..…..en dur;* *2=…..…..en semi-dur (briques de terre)* *3=. ….....en terre battue ; 4=…..…..en planches* *5= ……autres*	**Cuisine** **P3QB23b** *1=…..…..en dur;* *2=…..…..en semi-dur (briques de terre)* *3=. ….....en terre battue ; 4=…..…..en planches* *5= ……autres*	**Maison et cuisine mélangésP3QB23c** *1=…..…..en dur;* *2=…..…..en semi-dur (briques de terre)* *3=. ….....en terre battue ;* *4=…..…..en planches* *5= ……autres (préciser)* *…….…..…..…..…..*	⌊_⌋ ⌊_⌋

	(préciser) ……….…………	*(préciser)* ……….…………		|__|

C. LES SOURCES D'ENERGIE DU MENAGE

P3QC0	**Quelles sont vos principales sources d'énergie ?**		
Source d'énergie	**Mode d'acquisition**	**Quantité consommée /mois**	**Utilisation**
Bois de chauffe	*P3QC1*	*P3QC2(……….)*	*P3QC3*
Charbon	*P3QC4*	*P3QC5(sacs)*	*P3QC6*
Gaz	*P3QC7*	*P3QC8(bouteilles)*	*P3QC9*
Autres *(préciser)*	*P3QC10*	*P3QC11 (……….)*	*P3QC12*

P3QC12	**Pourquoi n'utilisez-vous pas d'autres sources en dehors de celles que vous avez citées ? ………………………………………………………………………**		|__| |__||__|
P3QC14	**Si on utilise le bois pour le chauffage ou le charbon, dites les lieux de prélèvement et la pratique :**		
	Lieu (par ordre de fréquence de prélèvement) *1=jachère ; 2=cacaoyère ; 3=foret secondaire/très vielle jachère ,4=forêt primaire ; 5=champs vivriers*	**Pratique :** *1=Ramassage* *2=récupération* *3=coupe*	*Observations sur les espèces (prélèvement sélectif ou non, espèces préférées, espèces exclues)*
Bois de chauffage	*P3QC14a*	*P3QC14a1*	
	P3QC14b	*P3QC14b1*	
	P3QC14c	*P3QC14 c1*	
	P3QC14d	*P3QC14 d1*	
	P3QC14e	*P3QC14 e1*	
Bois de charbon	*P3QC14f*	*P3QC14f1*	
	P3QC14g	*P3QC14g1*	

	P3QC14 h	*P3QC14 h1*	
	P3QC14 i	*P3QC14 i1*	
	P3QC14j	*P3QC14j1*	

D. ACCES A LA RESSOURCE TERRE

Classification des jachères

P3QD1	**A quel âge considérez-vous qu'une jachère est encore jeune** (……..) ans, Donnez le nom en langue locale ……	⌊_⌋⌊_⌋
P3QD2	**Combien de jeunes jachères de ce type avez-vous ?** ……..	⌊_⌋⌊_⌋
P3QD3	**A partir de quel âge considérez-vous qu'une jachère est d'âge moyen ?** (……..) ans Donnez le nom en langue locale ……	⌊_⌋⌊_⌋
P3QD4	**Combien de jachères de ce type avez-vous ?** ……..	⌊_⌋⌊_⌋
P3QD5	**A partir de quel âge considérez-vous qu'une jachère est vieille ?** (……..)ans Donnez le nom en langue locale ……	⌊_⌋⌊_⌋
P3QD6	**Combien de vieilles jachères avez-vous ?** ……..	⌊_⌋⌊_⌋
P3QD7	**A partir de quel âge considérez-vous qu'une jachère est très vieille ?** (……..)ans Donnez le nom en langue locale ……	⌊_⌋⌊_⌋
P3QD8	**Combien de très vieilles jachères avez-vous ?** ……..	⌊_⌋⌊_⌋
P3QD9	**Comparez la taille de vos terres cultivables à celles des autres ménages du village. Est-ce qu'elle est ?** *1= …..…..Petite taille ; 2= …..… Même taille ; 3= …..… Plus grande*	⌊_⌋
P3QD10	**Ces terres sont-elles familiales (clan ou** *Mvog - Nda bot***), ou bien exclusivement pour votre ménage ?** *1= …..….. Les terres appartiennent exclusivement au ménage ;*	⌊_⌋

	2= ……. Les terres sont pour toute la grande famille *3= …..…..une partie est pour notre ménage et l'autre pour la famille.*	
P3QD11	**Dans le cas où les terres appartiennent à la famille (ou** *Mvog - Nda bot***) est-ce qu'il vous faut l'accord de quelqu'un pour les cultiver** ? *1=……..…..oui;* *2=……..…non*	⌊_⌋
P3QD12	**Si oui, qui donne cet accord**? ……..	⌊_⌋
P3QD13	**Dans le cas où vous souhaitez <u>augmenter</u> le nombre de parcelles cultivées, auriez-vous assez de terres disponibles** ? *1=……..…..oui* *2=……..…non*	⌊_⌋
P3QD14	**Sur quels types de formation végétale** ? *1)……..jeune jachère, 2)……..… jachère moyennement jeune,* *3)…….. vieille jachère* *4)……..… très vieilles jachères,* *5) ……. Toutes ces formes*	⌊_⌋

P3QD15	**Quel type d'activités les membres de votre ménage ont le droit d'exercer dans les différentes forêts du village?**(Cocher dans les cases correspondantes)						
Type de forêts	**Mise en place des cultures vivrières**	**Mise en place de cultures pérennes**	**Cueillette / ramassage des PFNL**	**Coupe des arbres**	**Chasse au fusil**	**Chasse par pièges**	**Pêche**
Forêt primaire	*P3QD15a*	*P3QD15b*	*P3QD15c*	*P3QD15d*	*P3QD15e*	*P3QD15f*	
Très vieilles jachères	*P3QD15g*	*P3QD15h*	*P3QD15i*	*P3QD15j*	*P3QD15k*	*P3QD15l*	
Vieilles jachères	*P3QD15m*	*P3QD15n*	*P3QD15o*	*P3QD15p*	*P3QD15q*	*P3QD15r*	
Jeunes							

jachères							
Rivières							*P3QD15s*
Fleuves							*P3QD15t*

P3QD16	**Y-a-t'il des terres que vous avez donnés à quelqu'un du village ou de l'extérieur pour travailler ?***1=……oui;* *2=……non*	⌊_⌋
P3QD17	**Si oui, pour cultiver quoi** ? ……	⌊_⌋⌊_⌋⌊_⌋
P3QD18	**Quelle était la forme de négociation** ? *1=……location ;* *2=…… prêt ; 3=……achat/vente ;* *4=……don*	⌊_⌋
P3QD19	**Avez-vous des terrains bornés ?***1=……oui;* *2=……non*	⌊_⌋
P3QD20	**Si oui, donner la superficie et l'utilisation?** *P3QD20A***.** Superficie du terrain *1* ……. ; *UT1.Utilisation* …… *P3QD20B.* Superficie du terrain *2* ……. ; *UT2.Utilisation* …… *P3QD20C.* Superficie du terrain *3* ……. ; *UT3.Utilisation* ……	⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋ ⌊_⌋⌊_⌋

P3QD21	**Quels sont les types de champs que vous avez cultivés en 2010 ?**		
Type de champ	**Nombre**	**Formation végétale d'origine**	**Cultures dans chaque champ**
1. Champ de forêt (Essep)	*P3QD21a*	*P3QD21a1*	*CULT1.*
2. Champ mixte vivrier	*P3QD21b*	*P3QD21b2*	*CULT2.*
3. Champ de marécage	*P3QD21c*	*P3QD213c*	*CULT3.*
4. Champ	*P3QD21d*	*P3QD21d4*	*CULT4.*

maraîcher			
5. Champ d'ananas	*P3QD21e*	*P3QD21e5*	*CULT5.*
Autres :			*CULT6.*
6.	*P3QD21f*	*P3QD21f6*	*CULT7.*
7.	*P3QD21g*	*P3QD21g7*	*CULT8.*

P3QD22	**Combien de plantations de cultures pérennes (cacaoyères, palmeraies, caféières, et autres) appartiennent à votre ménage, et quel est leur âge, la formation végétale d'origine ?** **Sont-elles en expansion récente?**				
	Nombre	**Age** *(Ans)*	**Formation végétale d'origine**	**Expansion récente ?** *1= ….oui 2=……non*	**Observations**
Cacaoyères traditionnelles	*P3QD22a*	*P3QD22b* *1……..* *2……..* *3……..* *4……..* *5……..*	*P3QD22c* *1……..* *2……..* *3……..* *4……..* *5……..*	*P3QD22d* *1……..* *2……..* *3……..* *4……..* *5……..*	
Cacaoyères avec variété hybride	*P3QD22e*	*P3QD22f* *1……..* *2……..* *3……..* *4……..* *5……..*	*P3QD22g* *1……..* *2……..* *3……..* *4……..* *5……..*	*P3QD22h* *1……..* *2……..* *3……..* *4……..* *5……..*	
Palmeraies	*P3QD22i*	*P3QD22j*	*P3QD22k*	*P3QD22l*	

		1…………. 2………… 3………….. 4………… 5………..	1…………. 2………… 3………….. 4………… 5………..	1…………. 2………… 3………….. 4………… 5………..	
Caféières	*P3QD22m*	*P3QD22n* 1…………. 2………… 3………….. 4………… 5………..	*P3QD22o* 1…………. 2………… 3………….. 4………… 5………..	*P3QD22p* 1…………. 2………… 3………….. 4………… 5………..	

Diversification des cultures

P3QD23	**Est-ce que vous avez introduit de nouveaux systèmes de culture (types de champs) dans vos exploitations au cours des 10 dernières années ?** *(1= ….oui 2=……non)*	
P3QD24	**Si oui, lesquels ?** 1……………………………………………………………………………. 2…………………………………………………………………………… 3……….. 4………………………………………………………………………….. 5…………………………………………………………………………..	

Surface cultivée et changement au cours des 10 dernières années

P3QD25	**Est-ce que le <u>nombre</u> de champs que selon les types cités a augmenté au cours des 10 dernières années? (***considérer le total pour les deux saisons annuelles***)** *(1= ….oui 2=……non)*

Changement	**Diminution ……..** *(P3QD25A)*	**Augmentation ……..** *(P3QD25B)*
	Quel type de champ a diminué	*Quel type de champ a augmenté?*
	(P3QD25C) *5= ……. Pas de changement*	
P3QD26	**Est-ce que la taille de vos champs a augmenté ou diminué au cours des 10 dernières années? (***considérer le total pour les deux saisons annuelles***)** *(1= ….oui 2=……non)*	
P3QD27	**Pouvez-vous dire pourquoi ce changement**? *1= ……..technologie disponible, (préciser : ……..)* *2= ……..plus d'argent,* *3= ……..indisponibilité de la main d'œuvre* *4= ……..disponibilité de la main d'œuvre* *5= ……..Autres (préciser : ……..)*	

E. ESTIMATION DU REVENU ANNUEL DU MENAGE

P3QE_				
Sources de revenus	Production (année en 2010) Qté (*UML*)**	Proportion consommée et partagée (%)*	Proportion vendue (%)*	Prix de vente F CFA
<u>Vente des produits agricoles</u>*(P3QE1)* *(cocher d'abord*	*(P3QE11)*	*(P3QE12)*	*(P3QE13)*	*(P3QE14)*

les produits puis estimer les proportions)				
1. Plantain				
2. Manioc				
3. arachide				
4. Concombre (Ngon)				
5. Macabo				
6. Ignames				
7. Patate douce				
8. Cacao				
9. Café				
10. Maïs				
11. Maraîchers (tomate, piment, gombo etc)				
12. Huile de palme				
13. Safou				
14. Mangues				
15. Agrumes				
16. Ananas				
17. Autres (……)				
Vente de produits forestiers non ligneux *(P3QE2)* *(Enregistrer d'abord les produits puis estimer la proportion générale)*	*(P3QE21)*	*(P3QE22)*	*(P3QE23)*	*(P3QE24)*

1. Mangue sauvage (Irvingia « ndo'o »)				
2. Djansang				
3. Okok				
4. Bita cola				
5. Vin de palme				
6. Rotin				
7.				
8.				
9.				
10.				
<u>Vente des produits de chasse et élevage traditionnel</u> *(P3QE3)* (Enregistrer d'abord les produits puis estimer la proportion générale)	*(P3QE31)*	*(P3QE32)*	*(P3QE35)*	*(P3QE34)*
1.				
2.				
3.				
4.				
5.				
6.				
<u>Vente des produits de pêche et pisciculture</u>	*(P3QE41)*	*(P3QE42)*	*(P3QE43)*	*(P3QE44)*

(P3QE4) *(Enregistrer d'abord les produits puis estimer la proportion générale)*				
1.				
2.				
3.				
			Revenu total	

NB : * Proportion : 0% 25% 50% 75% 100% ; **UML=Unité de mesure locale

P3QE5	**Vente de bois au cours de l'année 2010**				
	Nombre d'arbres coupés	**Lieu de coupe**	**Forme du bois vendu**	**Prix de vente (spécifier unité)**	**Total**
1. Vente de bois de feu	*P3QE5a*	*P3QE5b*	*P3QE5c*	*P3QE5d*	*P3QE5e*
2. Vente de bois scié	*P3QE5f*	*P3QE5g*	*P3QE5h*	*P3QE5i*	*P3QE5j*
3. Vente d'arbres sur pied	*P3QE5k*	*P3QE5l*	*P3QE5m*	*P3QE5n*	*P3QE5o*
4. Autres (……)	*P3QE5p*	*P3QE5q*	*P3QE5r*	*P3QE5s*	*P3QE5t*

P3QE6	**Quels sont vos revenus des activités extra- agricoles pour l'année 2010**		
(*Enregistrer d'abord les produits puis estimer les proportions*)	**Quantité**	**Prix unitaire**	**Prix total**
1. Petit commerce (biens vendus :……)			*P3QE61*
2. Pension de retraite, salaire, envois des enfants qui vivent en ville, etc.	*P3QE6 (12 mois)*	*P3QE6 (Mensuelle)*	*P3QE62*
3. Moto taxi	*P3QE6 (12 mois)*	*P3QE6 (Mensuel)*	*P3QE63*
4. Autres (préciser : ……..)			*P3QE64*

F. ESTIMATION DES DEPENSES

P3QF0 : Dépenses annuelles du ménage (2010)

a. Dépenses en agriculture	**Quantité (préciser l'unité)**	**Prix unitaire (F CFA)**	**Coût total (F CFA)**
Achat des intrants agricoles (*semences, engrais, pesticides, produits vétérinaires*)			*(P3QF1)*
Achat de matériel agricole (*machette, lime, houe, pulvérisateur, essence, gasoil, etc.)*			*(P3QF2)*

Location de matériel agricole			*(P3QF3)*
Transport des denrées récoltées			*(P3QF4)*
			(P3QF5)
			(P3QF6)
		Total	
b. <u>Dépenses de survie du ménage</u>	**Quantité (préciser l'unité)**	**Prix unitaire (F CFA)**	**Coût total (F CFA)**
1. Achat de nourriture pour la famille			*(P3QF7)*
2. Écolage des enfants			*(P3QF8)*
3. Soins de santé			*(P3QF9)*
4. Mariage			*(P3QF10)*
5. Décès d'un membre de la famille			*(P3QF11)*
Autres types de dépenses **(spécifier)**			*(P3QF12)*
6.			
7.			
		Total	

c. Dépenses de main d'œuvre

P3QFC1	**Dans quel type de champ et pour quel type d'activité utilisez-vous la main d'œuvre payante ?** *1=Défrichage ; 2=Semis ; 3=Désherbage ; 4=Lutte phytosanitaire ;* *5=Récolte ; 6=Transport des denrées au champ ; 7=Transport pour le marché ; 8=Transformation ; 9=Autres (préciser)……*	
Type de Champ	**Description de l'activité**	**Coût de la main d'œuvre (en F CFA) et unité de travail**
1.	Défrichage	*FCMOa*
	Semis	*FCMOb*
	Désherbage	*FCMOc*
	Lutte phytosanitaire	*FCMOd*
	Récolte	*FCMOe*
	Transport des denrées au champ	*FCMOf*
	Transport pour le marché	*FCMOg*
	Transformation	*FCMOh*
2.	Défrichage	*FCMOi*
	Semis	*FCMOj*
	Désherbage	*FCMOk*
	Lutte phytosanitaire	*FCMOl*
	Récolte	*FCMOm*
	Transport des denrées au champ	*FCMOn*
	Transport pour le marché	*FCMOo*
	Transformation	*FCMOp*

d. Sécurité alimentaire

P3QFD1	**Quelles sont les denrées achetées, veuillez les ranger par ordre d'importance (**de la plus achetée à la moins achetée**)?** **Denrée** **Rang** 1= …… …… 2= …… …… 3= …… …… 4= …… …… 5= …… …… 6= …… …… 7= …… ……	 ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵ ⎵⎵
P3QFD2	**Comparez les quantités de nourriture achetées à celles produites dans le ménage.** *1=…..…..les quantités produites sont plus grandes ;* *2=…..…..les quantités achetées sont plus grandes ;* *3=…..…..les quantités produites et celles achetées sont les mêmes.*	⎵

PARTIE 4.PRISE DE DECISION ET RESPONSABILITE

P4Q0	**Qui prend la décision pour les activités dans chaque type de champ et qui en est responsable du champ ?** (*1=l'homme seul ; 2=la femme seule ; 3=les deux H+F) ; 4=les enfants, 5=tout le monde*)												
Type de champ	Choix du terrain (Choix)	Préparation du terrain (décision/ gestion)		Semis (décision/ gestion)		Entretien (décision/ gestion)		Récolte (décision/ gestion)		Transport après récoltes (décision/ gestion)		Vente (décision/ gestion)	
a. Champ mixte vivrier***(P4Qa)***													
b. Champ de forêt (Essep) ***(P4Qb)***													
c. Cacaoyère***(P4Qc)***													
d. Caféière***(P4Qd)***													
e. Palmeraie***(P4Qe)***													
f. Champ maraîchers***(P4Qf)***													
g. Autres type de champs (à spécifier ***(P4Qg)***													
	Activités extra-agricoles												
h. Cueillette et ramassage des PFNL ***(P4Qh)***													
i. Chasse***(P4Qi)***													
j. Pêche***(P4Qj)***													
k. Coupe d'arbres pour la													

vente***(P4Qk)***	
l. Autres :	

PARTIE 5. VIE ASSOCIATIVE POUR LE DEVELOPPEMENT AGRICOLE

P5Q1. Êtes-vous membre d'une association agricole ou de gestion forestière?*1=…….oui; 2=……non*

P5Q2. Si oui, la (les) quelle (s) ?

Association	**Quels sont les objectifs ?**	**Quelle place occupez-vous**?	**Quels sont les avantages que le ménage tire de l'association**? *1=revenus financiers, 2=Formation, 3= Matériel, 4=Autre …….*
P5QA	*P5QA1*	*P5QA2*	*P5QA3*
P5QB	*P5QB1*	*P5QB2*	*P5QB3*
P5QC	*P5QC1*	*P5QC2*	*P5QC3*

PARTIE 6. LES FACTEURS DE DÉFORESTATION

P6Q1	**Est que vous avez défriché la forêt /ou de très vielles jachères l'année dernière pour faire l'essep, cacaoyère, ou palmeraie ?** *1=…….oui; 2=……non*	
P6Q2	**Qu'est-ce qui vous motive à continuer de défricher les forêts ou vieilles jachères?** …… ……	__| __|
P7Q3	**Est-ce que vous pensez que vous allez continuer à défricher les forêts au même rythme que maintenant ou encore vous aller augmenter ou diminuer le rythme/la surface?** *1= …….même rythme que maintenant* *2= ……augmenter le rythme* *3=…… diminuer le rythme*	__|

PARTIE 7. ANALYSE DES PERCEPTIONS ET ATTITUDES

P7Q1	**Pensez-vous que les ménages du village peuvent réduire la quantité des terres cultivées dans les très vieilles jachères et forêts ?** …….. ……	__| __|
P7Q2	**Selon vous quelles seraient les conséquences d'une telle réduction pour votre ménage ?** (réduction de la production, augmentation des dépenses pour les intrants agricoles, réduction de la durée de la jachère, etc.) ……	
P7Q3	**Si l'État vous demandait alors de réduire la quantité des terres cultivées dans les très vieilles jachères et forêts, quelles conditions proposeriez-vous? *Cochez tout ce qui***	

	s'applique parmi les propositions suivantes *1= …….Compensation monétaire payée directement au ménage (si possible demander une estimation des attentes)* *2= …… Subventions des engrais/et matériel agricole pour intensifier les rotations sur les terrains déjà cultivés* *3= …….développement infrastructurelle du village (route, hôpital, école…)* *4= …….Allocation de titres fonciers* *5= ……. A aucune condition* *5= …….Autre (préciser : ……)*	|__| |__||__| |__|
P7Q4	**Dans le cas où vous l'acceptez à certaines conditions, est-ce que vous pouvez mener d'autres activités économiquement rentables ici au village?** *1=……..oui; 2=……non* *Expliquer votre réponse : ……*	|__|
P7Q5 **P7Q6**	**Si on vous proposait une compensation après avoir préservé la forêt pendant plusieurs années (par exemple 20 ans), quelle institution selon vous serait mieux placée pour être votre intermédiaire avec les bailleurs de fonds ? Classez par ordre de préférence :** *( )= ……..Chef du village* *( )= ……..ONG (citer un exemple : ……..)* *( )= ……Ministère (en charge des forêts/des finances)* *( )= ……Mairie* *(…Autre (préciser : ……)* **Si de telles compensations étaient effectuées pour préserver la forêt, quelle serait selon vous la régularité suivant laquelle les compensations devraient être versées ?** *1= ……..Tous les 5 ans ; 2= ……..Tous les 10 ans ;* *3= ……..Tous les 20 ans* *4= ……..Autre (préciser : ……..)*	|__||__||__| |__|

PARTIE 8. DOCUMENTATION DES DROITS ET PERCEPTIONS DES COMMUNAUTES DANS LE PROCESSUS REDD-REALU DANS LES SITES ASB

UFA voisine : _____

Aire protégée : _____

P8QA : ACTEURS DE LA REDD ET REALU

P8QA1	**Est-ce que vous avez dejà entendu parler du changement climatique** *1=…….oui; 2=……non*	|__|
P8QA2	**Si oui, depuis quand?***1= …….Moins de 6 moins* *2= ……. il ya 1 an.* *3= …….Depuis 2 ans* *4= …….plus de 2 ans*	|__|
P8QA3	**De qui avez vous reçu l'information**? *1= …….un ami/famille* *2= …….Réunion avec une ONG* *3= …….Services étatiques* *4= …….Forum International* *5= …….Autres sources (spécifier : ……..)*	|__|
P8QA4	**Est-ce que le changement climatique a influencé vos activités agricoles au cours des dernières années ?** *1=…….oui; 2=……non*	
P8QA5	**Si oui, quels aspects du climat les ont influencés ?** *1= …….la chaleur* *2= ……. Le froid* *3= …….le bouleversement des saisons* *4= …….autres (préciser : ……)*	
P8QA6	**Depuis quand constatez-vous ces changements ? ……..**	
P8QA7	**Comment est-ce que ce changement climatique influence vos activités agricoles ? Expliquez.** *1= ……Période de semis : ……* *2= ……la production en baisse : ……* *3= ……le risque de feu de brousse : ……* *4= ……aspects phytosanitaires : ……* *5= ……Autres……*	|__| |__| |__|
P8QA8	**Quelles sont actions entreprises pour lutter contre le changement climatique ?** *1= …….culture de contre saison* *2= ……. Augmentation des surfaces de culture*	

	3= ……diversification des activités agricoles *4= ……. Culture intensives* *5= …… Autres (préciser : ……..)*	
P8QA9	**Êtes-vous au courant des processus de lutte contre le changement climatique au Cameroun ?** *1=……oui; 2=……non*	|__|
P8QA10	**Quelles sont les structures d'appuis au monde rural que vous connaissez parmi les suivantes? (cocher la bonne réponse)** *Recherche (IRAD, IITA, CIFOR, ICRAF, CIRAD, ……)* *Vulgarisation (MINADER, PVNRA, ……)* *ONGs (SAILD, WWF, ……)* *Bailleurs de fonds (USAID, FAO, FIDA, ……)* …… ……	|__| |__| |__| |__| |__|
P8QA11	**Êtes-vous en contact avec ces structures**? *1=……. oui 2=……non*	|__|
P8QA12	**Si oui, lesquelles ?** ……	
P8QA13	**Si oui, quels types de relations /appui existe- t- il entre vous et ces structures?** ……	|__| |__|
P8QA14	**Si non, expliquer depuis quand et pourquoi ?** ……	|__| |__|

P8QB : TENURE FORESTIÈRE ET FONCIÈRE, DROITS AUX RESSOURCES DANS LE PROCESSUS REDD /REALU

P8QB1	**A qui selon vous, appartiennent la forêt et ses ressources dans votre village?** 1) *L'État 2) La communauté 3) Le chef du village 4) les Élites 5) Exploitants forestiers 6) Autres, spécifier……*	|__| |__| |__|

P8QB2	**Avez-vous des contraintes à l'accès et l'usage des produits forestiers ligneux (Arbres)?** *1=…… oui 2=……non*	|__|
P8QB3	**Si oui lesquelles ?** ……	|__| |__| |__|
P8QB4	**Avez-vous des contraintes à l'accès et l'usage des produits forestiers non ligneux (« Irgingia » mangue sauvage, Rotin, Ndjanssang, noisette, etc.)?** *1=…… oui 2=……non*	|__|
P8QB5	**Si oui, sur quel produit et quels types de contraintes ?** 1. *PFNL : …… Contraintes : ……* 2. *PFNL : …… Contraintes : ……* **3.** *PFNL :…… Contraintes :……*	|__| |__| |__| |__| |__| |__|
P8QB6	**Connaissez-vous la Loi forestière au Cameroun** *1=……oui 2=……non*	|__|
P8QB7	**Selon vous, quels sont vos droits que vous aimeriez voir pris en compte dans la gestion des forêts de votre village ?** *1=Propriété des arbres plantés et des forêts communautaires ……* *2=Accès aux ressources forestières ……* *3=Commercialisation des produits forestiers ……* *4=Autres : ……..*	|__|
P8QB8	**Si oui, pouvez-vous formuler quelques propositions utiles à la commission de révision de la loi forestière de 1994 ?** 1. _____ 2. _____ **3.** _____	|__|
P8QB9	**S'il y a une exploitation dans votre voisinage, que pensez-vous des bénéfices pour la communauté ?(les décrire et commenter)** Bénéfice m :……Commentaire : …….	|__|

	1=……Très équitable 2=……Équitable 3=……. Pas Équitable *4=…. Je n'en sais rien* *Commentaire : ……..*	
P8QB10	**Est-ce que vous plantez les arbres de bois d'œuvre?** 1=……oui 2=……non	__ __ __
P8QB11	**Si oui, combien en avez-vous planté au cours des cinq dernières années ?** ……	__
P8QB12	**Si non, expliquez pourquoi ?** ……	__

P8QC CONFIANCE AUX ACTEURS INTERVENANTS

Dans chaque communauté ou lieu de travail, certaine personnes ont confiance les uns des autres tandis que d'autres n'ont pas en matière de gestion des forêts et des arbres. Maintenant, je vais vous parler de la confiance que vous avez pour les autres producteurs, le gouvernement, et les ONG qui travaillent dans ce domaine.

Pouvez-vous s'il vous plaît me dire si en générale vous êtes en accord avec les énoncés suivants.

1= Tout à fait d'accord ; 2= D'accord ; 3= Désaccord ; 4= Fortement en désaccord ; 5= Pas sur

P8QC1	**Je pense que je peux faire confiance à la plupart des habitants de ce village.** ( )	
P8QC 2	**Je pense que je peux faire confiance aux gens qui sont partie de la même GIC que moi.** ( )	
P8QC 3	**Je crois que je peux avoir confiance au Gouvernement Camerounais.** ( )	
P8QC 4	**Je crois que je peux avoir confiance aux officiels du ministère des forêts et la faune.** ( )	

P8QC 5	**Je crois que je peux avoir confiance aux officiels du ministère de l'agriculture et du développement rural.** ( )	
P8QC 6	**Je crois que je peux avoir confiance aux officiels du ministère de l'environnement et de la protection de la nature.** ( )	
P8QC 7	**Je crois que je peux avoir confiance a la plupart des Gouvernement internationale de l'Ouest.** ( )	
P8QC 8	**Je crois qu'on peut faire confiance à la plupart des ONG Internationale qui travaillent dans ce domaine (exemple : WWF, ICRAF, IUCN, CARE)** ( )	
P8QC9	**Je crois qu'on peut faire confiance à la plupart des ONG nationale et locales qui travaillent dans ce domaine (CED, SAILD, etc.)** ( )	
P8QC10	**Je crois qu'on peut faire confiance à la plupart des entreprises privée qui travaillent dans ce domaine.** ( )	

PARTIE 9 : VOLONTE D'ACCEPTERLES FORMES DE PAYEMENT

Supposons que vous êtes intéressés à participer dans ce programme visant la conservation des forêts et des arbres dans les champs. L'accord que vous signez indique que _____ serait votre interlocuteur principal, _____ veilleraient à ce que vos arbres sont encore debout sur vos terres et _____ paierait pour la conservation des arbres. **Cependant, nous pouvons encore négocier le prix et la forme de payement**.

Tout comme la dernière partie, vous serez payé pour entrer dans l'accord qui vous engageant à maintenir tous les arbres de vos vielle jachères, vos très vielle jachères, vos plantations de cultures pérennesand les forets que votre ménage à l'accès (*nfos afan*). Tu ne peux pas défricher ses champs pour les cultiver mais tu *peux* planter d'autres arbres ou augmenter a les plantations des cultures pérennes (agroforesterie).

L'accord serait de 15 ans, alors vous recevrez 10 paiements (une par 1.5 année) durant cette période.

P9 QA Sous quelles formes souhaiteriez-vous recevoir les compensations afin de continuer la gestion durables des écosystèmes ?

P9 QA1. **C** [ ]= En cash

P9 QA2. **NC** [ ]=Non cash (promotions innovations agro forestières et agricoles)

P9 QA3. **NCC** [ ]=Les deux combinées

Je vais passer des quantités différentes avec vous. S'il vous plaît veuillez me dire si vous voudriez ou non accepter l'accord pour chaque montant.

(Pour chaque montant, demandez): **Seriez-vous d'accord pour _____CFA?**

(S'ils ont besoin des explications supplémentaires, dites quelque chose comme ceci:

Vous devez me dire le montant que vous voulez être payé, tout comme cet accord qui se passait réellement. Si vous dites trop faible d'un montant, vous aurez alors besoin demain de maintenir les arbres et les laisser debout, même s'il ya d'autres choses que vous préférez faire avec votre terre. Si vous dites des montants trop élevés, alors vous ne serez pas demandé de faire partie de ce programme, et vous pourriez continuer comme vous le faites maintenant, et ne recevrez pas de paiement.)

Total des sommes versées par an (CFA par are =1omx10m)	**Oui, je suis d'accord avec ce montant**	**Non, je ne suis pas d'accord avec ce montant**
5000	○	○
7500	○	○
10000	○	○
12500	○	○
15000	○	○
17500	○	○
20000	○	○
22500	○	○
25000	○	○
Plus (préciser)	○	○
Ne sais pas	○	○

MERCI POUR VOTRE BONNE COLLABORATION

Pour tout détail que vous jugez nécessaire, veuillez contacter Serge Ngendakumana, ICRAF, Bureau régional au tel. : **79 53 28 19**

Heure de fin de l'entretien : _____

APPENDIX D: INTERVIEW QUESTIONNAIRE TO INSTITUTIONS

COUNTRY REDD+ & REALU READINESS ASSESSMENT

QUESTIONNAIRE SEMI-STRUCTUREE (MINEP, MINFOF, MINADER, R&C.O., NGO)

Préambule :

L'ICRAF en partenariat avec d'autres membres de l'ASB entreprennent de mener des études dans les Régions de l'Est, Centre et Sud en vue de documenter la gestion durable des ressources forestières par les communautés ainsi que d'appuyer les institutions dans leurs quête d'approfondir les connaissances sur l'opérationnalisation des processus REDD et REALU au Cameroun. Cette étude vise à analyser la politique de la REDD+ et les prévisions légales ainsi que techniques y afférentes. Voudriez-vous, répondre aux questions ci-dessous. Soyez rassurés que les informations seront traités avec professionnalisme et discrétion.

A. CONTEXTE ET INFORMATION TECHNIQUE

1. Département / Organisation / Structure :
2. Statut légal: a. service d'état ou public b. ONG c.''CBO'' d. Autres (spécifiez)……
3. Couverture géographique de vos interventions: Nationale, régionale ou locale
4. Quelle région spécifique du Cameroun couvrez-vous?
5. Avez-vous développé votre mission stratégique: OUI NON
6. Si oui, précisez: …..…… ….……..…… ……
   ……..……..……
7. Quelle est votre vision stratégique institutionnelle ?
   ……..……
   ……..……..…..……
   …….....
8. Avez-vous déjà pensé à aligner votre mission et votre vision aux effets du changement climatique mondial? OUI NON
9. Si oui, quels sont les éléments à intégrer dans la nouvelle vision ou mission pour lutter contre le CC?
   a. ……....……
   b. ……..…….…….
   c. ……..……...……
   d. ……..……..……...……..….

10. Quels sont les éléments à prendre en compte dans la nouvelle vision ou mission pour s'adapter au CC?
    a. ……
    b. ……
    c. ……
    d. ……
11. Comment pouvez-vous qualifier vos principales actions au regard de ce qui concerne les affaires liées au carbone forestier depuis 2005 et combien de temps vous engagez sur les 12 mois de l'année ?
    - (a) Suivi et inventaire forestier?
    - (b) Renforcement de la législation forestière?
    - (c) Foresterie et la conservation des forêts?
    - (d) l'agroforesterie basée sur la plantation des arbres dans les paysages
    - (e) l'agriculture et développement rural
    - (f) la Politique et le plaidoyer
    - (g) Autres (préciser)

12. S'il vous plaît indiquer où vos activités ont été ou sont mise en œuvre?
    1).....2).....3).....
    4).....5).....
13. Pourriez-vous donner la liste des institutions/organisations avec lesquelles vous collaborez dans le domaine du changement climatique?

    Organisations internationales …….
    ONG:……..
    Les bailleurs de fonds: ……..……..

B. Les indices de niveau de préparation pour la REDD+ / REALU

Les questions suivantes sont appréhendées afin que nous entamions l'évaluation en ce qui concerne les perspectives de fonctions REDD comme suit:

- Planification: politiques (sur les droits, occupation de terre, CC,), règlements, stratégies, prise en compte des parties prenantes
- Coordination: Rôles et responsabilités, les procédures, renforcement
- MRV: mesure du carbone, des rapports, des bases de données
- AUDIT: Niveau national et sous régional
- Démonstration et pilotes
- Facilitation et Gestion des systèmes de motivation, le partage des bénéfices, financement et négociation avec les partenaires.

<u>Fonction de la politique et processus</u>
(Planification, politiques, droits, domaine, prise en compte des parties prenantes)

14. Avez-vous été impliqués dans le processus national REDD?
    OUI ou NON

15. Si oui, dans quelle étape ou niveau avez-vous été impliqué? Cochez la case appropriée
    A. Développement de la stratégie nationale REDD
    B. 1er Document de la Communication Nationale sur le CC
    C. R-PIN
    D. 2ème Document de la Communication Nationale sur le CC
    E. RPP
    F. Négociations pendant la Conférence des Parties (COP)

16. A quel niveau de fonction ci-dessus avez-vous été très actif?
    A……..B…….. C……..D……
    E……...F……
    Décrirez votre participation
    ……
    ……
17. Si non, pourquoi vous n'avez pas été impliqués dans les différentes étapes du processus? Précisez s'il vous plaît:
    ……
    ……
18. Quel mécanisme a été mis en place pour prendre en compte la participation des parties prenantes dans le processus REDD? Décrivez ci-dessous:
    a)……
    b)……
    c)……
    d)……
19. ? Quel est votre niveau de satisfaction avec la politique actuelle de REDD?
    0→ 1 → 2 → 3 → 4 → 5

(Légende 0: pas du tout, 1: Pas sure 2: moyen 3: Satisfait 4: Très satisfait, 5: Très bien satisfait)

20. Savez-vous si le Cameroun est membre du FCPF: Oui ou Non
21. Savez-vous si le Cameroun a une stratégie nationale REDD? Oui ou Non
22. Si oui, quelles sont les principales questions abordées par la stratégie nationale REDD?
    1).....
    2).....
    3).....
23. Si non, donnez votre point de vue …….
    ……
24. Quels sont les avantages et les inconvénients des options politiques pour la REDD ?
    Avantages

1)…… ……
2)……
3)……
Inconvénients
1)……
2)……
3)……

Fonction de stratégie et de régulations

25. Avons-nous les instruments politiques pertinents pour le suivi du REDD?
    a. Mode de tenure foncière et les droits sur le carbone
    b. Planification des utilisations de terre
    c. L'exploitation forestière illégale
    d. Biocarburants
    e. Conservation de la biodiversité
    f. Genre, conflits et changement climatique

26. Quels sont les instruments politiques qui favorisent la réduction des émissions dues aux changements des utilisations des terres?
    a.……..
    b. ……..
    c. ……..……
    d. ……

27. Selon vous, que devrait être les quatre principaux critères d'une bonne politique pour la question actuelle des changements climatiques?
    a. ……..……
    b. ……
    c. …….
    d. ……..……

28. Quelles pourraient être les défis à relever par une telle politique?
    a.……
    b.……..……...
    c.…….
    d.…….

29. Quelles sont les opportunités dans la REDD/REALU

……
……

30. Selon vous, quelles pourraient être des indicateurs de niveau de préparation à la REDD-REALU au:

a. Niveau politique:
   1……..……2……..3……..
b. Niveau technique:
   1……2……..3……..

c. Niveau social:
   1……2……..3……..
d. Autres
   (spécifiez)…….……..

Fonction de Coordination

(Rôles et responsabilités, procédures, renforcement)

31. Le pays a-t-il des dispositifs institutionnels/organisationnels approuvés pour prendre en compte la REDD (Reducing Emissions from Deforestation and Forest degradation)? Oui ou Non
32. Si oui, les quelles?
    i. ……..
    ii. ……..……
    iii. …….
    iv. ……..……..
33. Quelles sont les autres dispositifs institutionnels/ organisationnels qui ont été mise sur pied pour appuyer l'adaptation au changement climatique ainsi que son atténuation?
34. Précisez:
    i. ……..……..……
    ii. ……..……
    iii. ……..……
    iv. ……

35. Au Cameroun, quelles sont les institutions/organisation responsables pour:
    a. Le suivi et inventaires forestiers?:
       ……..……
    b. Le renforcement de la législation forestière:……..……
    c. La foresterie et la conservation des forêts.....
    d. L'agroforesterie basée sur la plantation des arbres dans les paysages?.....
36. Quels sont les principaux écosystèmes du Cameroun qui sont potentiellement ciblées pour la REDD?

    1).....2)…….3)……

37. Quelles pourraient être vos suggestions visant à améliorer la coordination des activités REDD dans le pays?
    1)……..…….....
    2)……..……
    3)……..……

Monitoring, Rapportage et Vérification (MRV) et AUDIT: Détermination du stock de carbone, rédaction de rapports, données

38. Où avez-vous observé le taux de déforestation le plus élevé à ce jour?
    a. Domaines forestiers nationaux,
    b. Forêts communautaires,
    c. Zones des forets privées
39. Donnez la source et / ou des données pour appuyer votre réponse ci-dessus
    ……
    ……
40. Quels types d'écosystèmes sont le plus souvent touchés par la déforestation et la dégradation des forêts au Cameroun?
    1).....
    2)……..
    3)……..
41. Votre institution/organisation avait-elle les facilités et équipements tells que les outils de suivi du climat, laboratoires, les outils d'évaluation de l'hydrologie, etc? OUI ou NON
42. Si oui, commentez……
.....……
43. Quelle est votre approche pour mesurer le taux de déforestation annuel?
    ……
    ……
44. Quels sont les principaux facteurs qui favorisent la déforestation dans votre aire d'intervention?

    1).....2)…….3)……

45. Avez-vous une base de données sur l'état des forêts dans votre zone d'intervention? Oui ou Non
46. Décrivez brièvement le type de données que vous avez déjà collectées:

	Nationale	Régionale	Paysage
Modes d'utilisation des terres/modifications:			
Causes de déforestation et dégradation des forêts dans les régions			
Données sur le carbone (mesure, des canevas de modélisation)			
Les instruments politique et institutions			

47. Quels outils et approches de travail utilisez vous dans les forêts?

    Précisez ……..

48. Avez-vous des équations allométriques spécifiques pour estimer le stock de carbone? Oui / Non
49. Existent-ils des données sur les gaz à effet de serres ou CO2 dans votre pays? Oui / Non

50. Où observe-t- on la déforestation et dégradation des forêts dans votre pays?

    1).....2)…….3)……

51. En considérant ce qui précède, quel est votre évaluation des moyens techniques, financiers et matériels dont dispose le Cameroun pour le suivi de changement climatique?

0→ 1 →2 →3 →4 →5

(*Légende 0 : pas du tout, 1:Pas sure 2: Moyennes 3: Satisfait 4: Très satisfait, 5: Satisfaction excellente).*

Fonction de démonstration

52. Avez-vous mené des études qui peuvent fournir les informations utiles pour la RPP en cours (or REDD-REALU) au Cameroun? Oui ou Non……., donnez les détails sur ces études (c.-à-d. site web, rapports, bref politique, articles ou autre publication)

    ……
    ……

53. Combiens de projets votre institution/organisation a-t-il exécuté concernant la conservation et la gouvernance forestières dans les 03 dernières années? Cochez une classe ci-dessous :

    A: Nul; B: 1-3 ; C: 4-6 D: Plus (spécifiez SVP)……..

    Listez les projets

    ……
    ……

54. Parmi ces projets, quel est le plus réussi?.....
55. Combien d'arbres votre structure à t'il planté ou appuyer la plantation pour renforcer le couvert forestier dans vos paysages cibles depuis 2007 (Remplissez le tableau ci-dessous)?

	2007	**2008**	**2009**	**2010**	**total**	**Moyenne annuel**	**Spécifiez la région**
Nombre total d'arbres plantés							
Nombre d'espèces							
Partenaires impliqués							
Montant total de financement							

56. Ya t il eu des phases pilotes de démonstrations REDD au Cameroun? Oui ou Non

Où sont-ils établis?	Pour quoi sont-ils établis?	Quelles sont les leaders à ce moment?	Quelles ont étaient les résultats ?

57. Fournissez les sources d'information spécifiques sur le projet:
    a. Site web:
    b. Rapports de référence /publications:
    c. Personnes à contacté (Noms et email):
58. Quels sont les obstacles qui empêchent les acteurs au Cameroun d'exécuter le REDD effectivement?
    a. Pas de prise en compte de la dimension **livelihoods**
    b. Focus sur les seules zones forestières
    c. Tracasseries dans le déboursement des fonds
    d. Insuffisance de la capacité et moyens de suivi
    e. Autres (spécifiez)……

<u>Fonction de la capacité</u>

59. Selon vous, le Cameroun a t-il la capacité d'implémenter le REDD?

Domaine ou fonction	Oui le Cameroun peut	Non ou pas encore
Politique et institutions		
Réglementation et stratégie		
Coordination		
MRV et AUDIT		
Démonstration et Pilotage		
Gestion et mesures de motivation (*mesures incitatoires)*		

60. Selon vous quelles sont les organisations les plus aptes dans la gestion des paysages et dans les domaines qui concerne REDD-REALU?

Domaine ou fonction	Institutions nationales	Institutions internationales
Politique et institutions		
Réglementation et stratégie		
Coordination		
MRV et AUDIT		
Démonstration et Pilotage		
Gestion et mesures de motivation (*mesures incitatoires)*		

61. Votre institution/organisation a t-il un personnels qualifiés et compétents avec des responsabilités bien définit dans le cadre du REDD/REALU? Oui ou Non
    Si oui, combien?.....
62. Ces personnels ont-ils une grande expérience dans le processus REDD?
63. Si oui, indiquer les domaines d'expérience acquise par rapport aux fonctions REDD (question 59) jusqu'à maintenant :
    1)……2)……
    ……3)……4)……
    ……
64. Avez-vous utilisé les consultants venant d'ailleurs?
    Si oui, dans quel cas? Commentez
    ……..……
    ……
65. Votre institution était-il impliqué dans les formations liés au changement climatique? Oui ou Non
66. Si oui, citez les partenaires (parties prenantes) et sujets de formation

Partenaire (s) organisateur(s)	Thème de formation	Commentaires

67. Quelles sont les autres exigences dont nous avons besoins pour être prêt pour le REDD?
    1)……..……..……..……..…
    2)……..……..
    3)……..……..……..
68. Quels peuvent être les 03 domaines prioritaires de renforcement de capacité to mieux implémenter le REDD^{+} et REALU?
    1)…….
    2)……..…….……
    3)……..……..

Gestion et facilitation des finances et motivation

69. Y'a-t-il des fonds disponible au Cameroun pour la lutte contre le changement climatique ainsi que l'adaptation au changement climatique?
    1) OUI 2) NON
70. Citez autres challenges dont nous avons besoins de surmonter afin d'être prêt pour le REDD. Vos réponses peuvent portés sur les niveaux suivants.
    a. Niveau politique:
    b. Niveau technique
    c. Niveau social
    d. Autres (spécifiez le niveau)…….
71. Quels sont les opportunités de financement disponible?
    1).....
    2).....
    3).....
    4).....
72. Selon vous, quelles sont les politique optionnelles qui peuvent facilités la mobilisation des fonds à chaque niveau pour pays (local, régional, national) dans le contexte de changement climatique.
    1).....2).....
    3).....4).....

Autres commentaires et suggestions :

……

Noms de répondant (facultatif) :

Adresse (Tel. & Email :

Merci pour votre disponibilité et collaboration.

APPENDIX E : GLOSSARY

These definitions are provided solely for the purpose of this thesis. Web links are provided when applicable for additional information.

Agroforestry: The simple definition of Agroforestry is planting trees on farm or tree based farming. The World Agroforestry centre defines Agroforestry as a collective name for land-use systems and practices where woody perennials are deliberately integrated with crops and/or animals on the same land management unit.

Adaptive co-management: An emerging approach for governance of social-ecological systems. Novelty of adaptive co-management comes from combining the iterative learning dimension of adaptive management and the linkage dimension of collaborative management in which rights and responsibilities are jointly shared. Resilience alliance (http://www.resalliance.org/index.php/adaptive_comanagement)

Baka: One of the indigenous ethnic groups in Cameroon. The group extends to many neigbouring countries on the Congo basin such as Central Africa Republic, Congo, Equatorial Guinea and Gabon.

Carbon dioxide equivalent: a measure used to compare different greenhouse gasses on their contribution to radiative forcing. The UNFCC (2005) currently uses global warming potentials as factors to calculate the carbon dioxide equivalent.

Carbon stocks: total carbon stored in terrestrial ecosystems as a specific time as living or dead plant biomass and in soil, along with usually negligible quantities of animal biomass. The unit is $Mgha^{-1}$

Clean Development Mechanism (CDM): A project-based mechanism defined in article 12 of the Kyoto Protocol which allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol to implement emission-reduction projects in developing countries. Such project can earn saleable certified emission reduction (CER) credits, each equivalent to one tone of CO2, which can be counted towards meeting Kyoto targets.

Co-management: The process of management in which government shares power with resource users, with each specific rights and responsibilities relating to information and decision making (glossary of statistical terms-OECD, 2001: http://stats.oecd.org/glossary/detail.asp?ID=384)

Ecoregion: an area defined by its environmental conditions, especially climate, landforms, and soil characteristics (http://www.thefreedictionary.com/ecoregion)

Emissions: the release of greenhouse gases and or their precursors into the atmosphere over a specific area and period of time (UNFCCC, Article 1.4)

Forest: In this document, a forest is according to FAO, a land area of more than 0.50ha, with a tree canopy cover of more than 105, which is not primarly under agricultural or other specific non-forest land use.

Forest dynamics: describes the underlying physical and biological forces that shape and change a forest over time, or the continuous state of change that alters the composition and the structure of a forest. Two basic elements of forest dynamics are forest succession and forest disturbance.

Forest ecosystem: A dynamic complex of plant, animal and micro-organism communities and their abiotic environment interacting as a functional unit, where trees are key component of the system. Human, with their cultural, economic and environmental needs are an integral part of many forest ecosystems. (http://www.cbd.int/forest/definitions.shtml.)

Kyoto Protocol: a protocol to the United Nations Framework Convention on Climate Change (UNFCCC). It is an international environmental treaty negotiated in 1997 with the goal of stabilizing the concentration of greenhouse gases in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

Land use: Land use is the human use of land. Land use involves the management and modification of natural environment or wilderness into built environment such as settlement s and semi-natural habitats such as arable fields, pastures and managed woods. It has also been defined as “the arrangements, activities and inputs people undertake in a

certain land cover type to produce, change or maintain it"(FAO, 1997a, FAO/UNEP, 1999). From Wikipedia Free Encyclopedia: http://en.wikipedia.org/wiki/land_use

Land use change: the shift from one land use of a land area to another, such as from forestry to agriculture.

Local actors: Actors, such as communes, communities or individual households or farmers, directly or indirectly involved in, or affected by an intervention.

Nested approach: A hybrid approach to REDD$^+$ accounting that includes elements of both sub-national and national approaches to REDD$^+$. Under this approach, countries can adopt two unique features: first, the capacity to scale up from a sub-national to a national approach over time. Secondly, countries have the option to account for and receive international offsets at sub-national and national levels simultaneously.(http://rainforests.mongabay.com/carbon-lexicon/nested-Approach.html)

Non Timber forest Products (NTFPs): any commodity obtained from the forest that does not involve harvesting trees for wood products or pulp (paper products), such as game animals, nuts and seeds, berries, mushrooms, oils, foliage, medicinal plants or fuelwood.

Ownership: The legal right of possessing something (legal and economical term).

Paradigm: a set of normative factors, assumptions or ideas that serve as a pattern of model for social or political action.

Payments for ecosystem services (PES), also known as **payments for environmental services (or benefits)**, are incentives offered to farmers or landowners in exchange for managing their land to provide some sort of ecological service. They have been defined as "a transparent system for the additional provision of environmental services through conditional payments to voluntary providers. These programs promote the conservation of natural resources in the marketplace. Some PES programs involve contracts between consumers of ecosystem services and the suppliers of these services.

Wetland: Land where an excess of water is the dominant factor determining the nature of soil development and the type of animals and plant communities living on the soil surface. It spans a continuum of environments where terrestrial and aquatic systems intergrade.