REDUCING EMISSIONS FROM DEFORESTATION AND DEGRADATION (REDD) IN THE TRI-NATIONAL SANGHA LANDSCAPE OF CAMEROON

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Abstract
Today, the Earth is facing climate change, a seemingly direct result of our greenhouse gas emissions. Around one-fifth of these emissions originate from land-use change, mainly deforestation, in the planet's densely forested and carbon-rich tropical regions. Addressing the drivers of deforestation will go a long way towards mitigating the costly and destructive impacts of climate change. In Central Africa's Congo Basin Forest, the second largest tropical forest in the world, deforestation is a result of poverty, unclear land tenure and inadequate environmental management. International coordination to reduce emissions from deforestation and degradation, known as REDD, is still in the planning process. Any future REDD strategy that will address Central-African deforestation will have to integrate local preoccupations and realities, especially those of the indigenous inhabitants who have been living in the tropical forest for centuries. A holistic strategy that preserves the Congo Basin Forest whilst also protecting and furthering indigenous people's interests will ensure the sustainable development of the region and guarantee a durable reduction of deforestation, thus decreasing global CO_2 emissions and man-made climate change whilst also reducing poverty. This thesis aims to design such a strategy; a tailor-made REDD plan for the highly biodiverse and carbon-dense tropical forests of the Sangha landscape (TNS), in south-east Cameroon. As of today, this area is under threat from increased logging and has not been subjected to a thorough and concrete REDD plan, thus underlining the unique contribution of this thesis. I shall first conduct a thorough literature review, examining the connection between tropical forests and climate change, the strengths and weaknesses of the REDD mechanism and the unique position of forest-dwelling indigenous people. These will provide the platform for the actual REDD strategy that I shall design in the latter part of this thesis. This thesis's main theoretical premise is that deforestation is driven by a fundamental and global market failure, and that REDD has the potential to reverse this trend, reduce poverty and mitigate climate change, if designed carefully, thus underlining the importance of planning balanced, holistic and area-specific strategies. The practical REDD strategy for the TNS proposed by this thesis will be based on the relatively successful Brazilian model of tenure reform in the Amazon rainforest.

Résumé
Aujourd'hui, notre planète subit les changements climatiques, un résultat censément direct de nos émissions de gaz à effet de serre. Autour d'un cinquième de ces émissions proviennent de la déforestation dans les régions tropicales densément couvertes de forêts. S'intéresser aux sources de la déforestation est une étape importante vers l'atténuation des impacts coûteux et destructifs des changements climatiques. Dans la forêt du bassin du Congo en Afrique centrale, la deuxième plus grande forêt tropicale du monde, la déforestation est une conséquence de la pauvreté, d'un système de propriété foncière confus, d'un cadre institutionnel inapproprié et d'une gestion environnementale inadéquate. La coordination internationale pour réduire les émissions provenant de la déforestation et de la dégradation, connus sous le nom de REDD, est encore en phase de planification. Toute stratégie future REDD qui tentera de ralentir ou d'arrêter la déforestation en Afrique Centrale devra intégrer les préoccupations et réalités locales, particulièrement celles des habitants indigènes qui vivent dans la forêt tropicale depuis des siècles. Un projet global qui préserve la forêt du bassin du Congo tout en protégeant et promouvant les intérêts des peuples autochtones assurera le développement durable de la région et garantira une réduction durable de la déforestation, diminuant ainsi les émissions globales de CO_2 et les changements climatiques causés par l'homme tout en réduisant la pauvreté. Ce mémoire vise à créer une telle stratégie, un plan REDD adapté aux spécificités du paysage Sangha (TNS) au sud-est du Cameroun, hautement riche en biodiversité et carbone. A ce jour, cette zone est menacée par l'augmentation de l'exploitation forestière et n'a pas été sujet à une étude approfondie et concrète d'une application REDD. Ceci constitue la contribution unique de cette thèse. Je vais d'abord entamer une revue approfondie de la littérature en analysant le lien entre les forêts tropicales et les changements climatiques, les forces et les faiblesses du mécanisme REDD et la position unique des peuples forestiers indigènes. Ceci constituera la base sur laquelle ma stratégie REDD se fondera en deuxième partie. La théorie principale sur laquelle s'appuie cette thèse est que la déforestation est due à un échec économique fondamental et global, et le REDD a le potentiel de renverser cette tendance, de réduire la pauvreté et d'atténuer les changements climatiques, s'il est conçu soigneusement. Ainsi s'impose l'importance de planifier des stratégies équilibrées, holistiques et secteurs-spécifiques. La stratégie REDD pour le TNS proposé par ce mémoire sera basé sur le modèle assez réussi de la reforme foncière au Brésil dans la forêt amazonienne.

Acknowledgments

I wish to acknowledge gratefully the McGill Research Grants Office, the Faculty of Arts and the Development Studies Option for financial assistance that allowed me to conduct field work in the Congo Basin Forest. My supervisor, Professor Jon Unruh, greatly helped me to focus my research, organize my timetable, meet all the university requirements and improve the overall quality of our work. Working in Cameroon and the Central-African Republic with the African Development Bank (ADB), the International Union for the Conservation of Nature (IUCN) and the World Wildlife Fund (WWF) was a life-changing experience, made possible thanks to the coordinating skills of Mr. Bihini Won Wa Musiti, manager of the ADB's Congo Basin program in Yaoundé, and Mr. Maurice Henri Tadjuidje, principal technical consultant of the IUCN in the TNS landscape. I am grateful to the WWF and its fabulous ecotourism program, which allowed me to follow pygmy guides deep into the forest to observe lowland gorillas, forest elephants, bongos, buffaloes, monkeys and many other wonderful creatures. I had the privilege of observing first-hand how biodiverse and rich the TNS landscape is, and, consequently, how conservation efforts are vital. I must also mention the Bayaka Pygmies of the Sangha landscape, who shared with me inspirational information during our interviews. Also, I met people from all over Cameroon who had migrated towards the rainforest area to work for timber companies, but were mostly rejected or worked as security guards and motel clerks in neighboring logging towns. Their poverty helped me realize the unsustainability and unfairness of the current forestry economy in Cameroon. Many other people helped me along the way, on and off the field, which have not been named in this acknowledgments section but are nonetheless appreciated. Last but not least, I would like to thank Patrick, my guide and driver in the Sangha, who translated all my questions to the pygmies, drove me to all their villages and helped organize my visits to the forest, to see the wonderful gorillas, elephants and other wonders of the Congo Basin.

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Part II: Field Work/Personal Work – REDD in the Tri-National Sangha Landscape, Cameroon

Quotations

“Humanity is cutting down its forests, apparently oblivious to the fact that we may not be able to live without them”.
Isaac Asimov (1920-1992), Isaac Asimov's Book of Science and Nature Quotations - 1988

"Deforestation and forest degradation in tropical countries represent up to 17% of global human-caused greenhouse gas emissions and incentives to reduce these emissions have the potential to have the largest and most immediate impact on global greenhouse gas emissions in the short term”.
Jim Prentice, Canada's Environment Minister, Nagoya, Japan - October 26, 2010

“As we examined what we thought were still vast, untouched stretches of intact forests in the world, we came to the conclusion that they are fast becoming a myth. Much of the green canopy that is left is, in reality, already crisscrossed by roads, mining and logging concessions”.
Jonathan Lash, World Resources Institute president, Environment News Service - 4 April 2002

“Selective logging negatively impacts many plants and animals and increases erosion and fires. Additionally, up to 25 percent more carbon dioxide is released to the atmosphere each year, above that from deforestation, from the decomposition of what the loggers leave behind”.
Greg Asner, Professor of Geological and Environmental Sciences, Stanford University

“In old forests, huge amounts of carbon taken from the air are locked away not only in the tree trunks and branches, but also deep in the soil, where the carbon can stay for many centuries. When such a forest is cut, almost all of that stored carbon is eventually returned to the air in the form of carbon dioxide. It took a huge amount of time to get that carbon sequestered in those soils, so if you release it, even if you plant again, it'll take equally long to get it back”.
Kevin R. Gurney, research scientist at Colorado State University

“All over the world, there are libraries of a sort. They are among the most beautiful places on the earth, and they hold more information than the Library of Congress. Within these libraries are millions of books, each a unique masterpiece to see and touch. They are teaching this language to scientists. However, so far only one percent of the books have been deciphered. Some tell how to find new medicines; others reveal new things to eat…These treasure houses of knowledge are the ancient forests of our planet”.
Brock Adams, National Audubon Society, quoted in Religion and Forests - spring 2000

“We, the richest nation in the world, are going to tell the dirt-poor people of Brazil and Indonesia and Zaire to be good environmentalists and not cut down their rainforests”?
Elliot A. Norse, President of the Marine Conservation Biology Institute, quoted in Los Angeles Times - 6 Aug 1990

“Many of the forests of the world are being mowed down… But the rest of the world isn't going to say, "Okay, we'll save our forests, but you Americans can keep driving all your cars!" There has to be give and take”.
Thomas R. Pickering, U.S. Ambassador to the United Nations, quoted in Cosmopolitan - September 1989

“Destroying a rainforest for economic gain is like burning a Renaissance painting to cook a meal”.
Edward O. Wilson, American Biologist, quoted in Time - 3 Sept 1990

“If I were a Brazilian without land or money or the means to feed my children, I would be burning the rainforest too”.
Sting (Gordon Matthew Sumner), quoted in International Herald Tribune - 1989

“It took more than three thousand years to make some of the trees in these western woods…Through all the wonderful, eventful centuries since Christ's time – and long before that – God has cared for these trees, saved them from drought, disease, avalanches, and a thousand straining, leveling tempests and floods; but he cannot save them from fools.”
John Muir (1838-1914), American naturalist and author, quoted in Atlantic Monthly - 1897

“A tree's a tree. How many more do you need to look at”?
Ronald Reagan (1911-2004), 40th U.S. President, quoted in Sacramento Bee, from speech - 12 September 1965

States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free and informed consent prior to the approval of any project affecting their lands or territories and other resources, particularly in connection with the development, utilization or exploitation of mineral, water or other resources.
Article 32, United Nations Declaration on the Rights of Indigenous Peoples (DECRIPS) - 2007

General introduction

The Tri-national Sangha landscape in Central Africa (Figure 1) is home to a small fraction of the massive Congo Basin Forest (CBF), the second largest tropical forest in the world after the Amazon Basin Forest[1]. The CBF stretches over six Central-African countries: Cameroon, Central African Republic, Democratic Republic of Congo, Equatorial Guinea, Gabon and the Republic of Congo[2]. This massive forest harbors a unique richness of biodiversity, with 10.000 species of plants, 1.000 species of birds, and 400 species of mammals[3], and its level of endemism is extremely high, with up to 80% of native plants found only here[4]. More than 29 million people live within the forest, most of who rely to some extent on the forest and its wild products[5]. Furthermore, the forest is one of the largest carbon

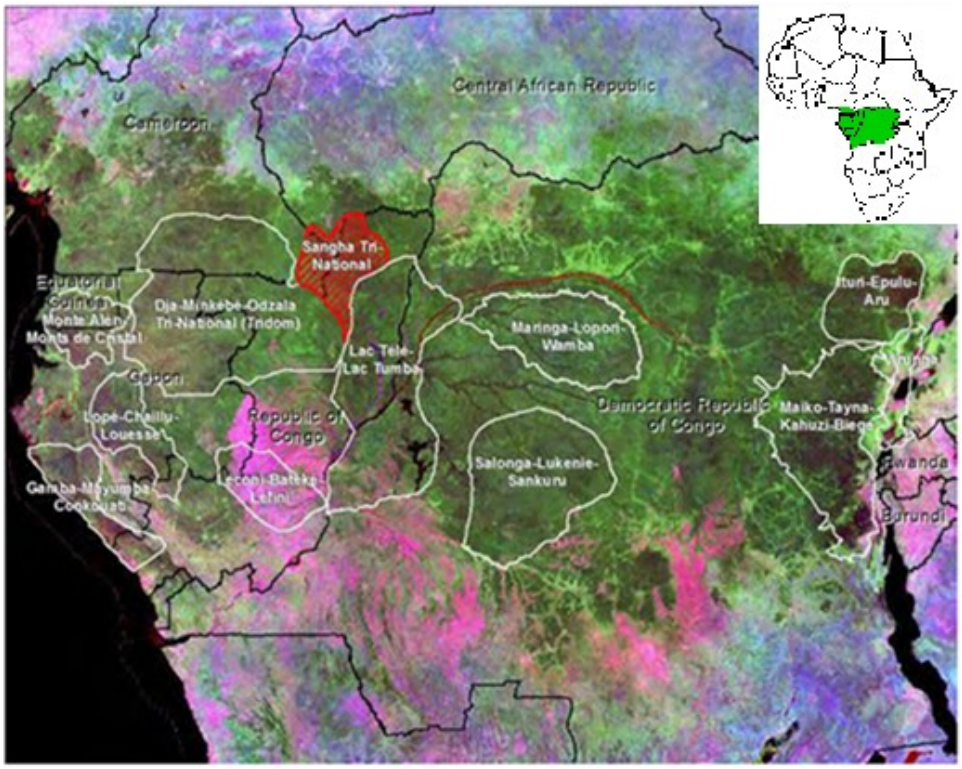

Figure 1: The TNS landscape in Central Africa
Source: USAID CARPE program

[1] M-L. Du Preez, "Whose forest is it anyway? A critical exploration of the network governance model and the Congo Basin Forest Partnership", *South African Journal of International Affairs*, Volume 17, Issue 2, 2010
[2] J.E. Fa, D.Currie and J.Meeuwig, "Bushmeat and food security in the Congo Basin: linkages between wildlife and people's future", *Environmental Conservation*, 30, pp 71-78
[3] Congo Basin Forest Fund (CBFF), "A statement… why a fund is needed", available at www.cbf-fund.org/cn/why/statement.php
[4] FAO, "Participatory land-use planning for priority landscapes of the Congo Basin", *Unasylva*, Volume 59, Issue 230, 2008, available at www.fao.org/docrep/011/i0440e/i0440e00.htm
[5] WWF, "The forests of the Green Heart of Africa", available at wwf.panda.org/what_we_do/where_we_work/congo_basin_forests/the_area/

sinks in the world[6]. Along with the Amazon forest, it acts as the planet's lungs, storing gigantic amounts of CO_2, thus cooling the world's atmosphere and weather[7]. This service is indispensable to humans. The CBF as a whole remains generally untouched and unexplored. However, its natural resources are under increasing pressure from deforestation and forest degradation, the results of sustained logging practices and agricultural expansion.

On a global level, deforestation and forest degradation are responsible for roughly one-fifth of global greenhouse gas emissions, greatly contributing to global warming and climate change[8]. Deforestation has such a massive effect on global climate change that Indonesia and Brazil are now among the largest emitters of carbon dioxide on the planet[9]. Up to 75 per cent of Brazil's emissions come solely from deforestation in the Amazon, namely the clearing and burning of the rainforest[10]. Smoke stacks above the forests of these two countries climb high into the sky and the atmosphere, and are even visible from space[11]. In comparison, the forests of the Congo Basin have relatively low annual deforestation rates: less than 0.76 percent between 2000 and 2005, in contrast to 2.56 percent in South America and 2.90 percent in tropical Asia, for the same period[12]. The CBF's ecosystems are thus still quite well-preserved, due notably to the absence of large-scale industrialization processes, such as in Brazil and Indonesia[13]. The poverty of Africa, it seems, has saved the tropical forest thus far. However, forests in the Congo Basin are now under increasing pressure from a multitude of forces, including logging, mineral extraction, road development, population growth and agricultural

[6] E.A.Davidson, P.Artaxo, "Globally significant changes in biological processes of the Amazon Basin: results of the large-scale biosphere–atmosphere Experiment", *Global Change Biology*, Volume 10, Issue 5, pages 519-524, May 2004

[7] B.G.Marcot, "The ecological and cultural functions of invertebrates in the Congo River Basin", *The Xerxes Society*, 28(1):pp 13-17, 2005

[8] Center for International Forestry Research (CIFOR), "Thinking beyond the canopy", annual report, 2008

[9] M. Santili, P. Moutinho, S.Schwartzman, D. Nepstad, L. Curran and C. Nobre, "Tropical Deforestation and the Kyoto Protocol", Environmental Defense Fund, 2005, available at www.edf.org/documents/4250_CR_eng.pdf

[10] Government of the United States of America, "Brazil: Overview of a Range of Threats", 2009, available at www.america.gov/st/energy-english/2009/September/20090917163748mlenuhret0.5190393.html

[11] P. Moutinho and S.Schwartzman, "Tropical Deforestation and Climate Change", Amazon Institute for Environmental Research, 2005, available at www.environmentaldefense.net/documents/4930_TropicalDeforestation_and_ClimateChange.pdf#page=23

[12] World Resource Institute, "Voices from the Congo Basin", 2009, available at pdf.wri.org/working_papers/voices_from_the_congo_basin.pdf

[13] T.K.Rudel, R.Defries, G.P.Asner, W.F.Laurance, "Changing Drivers of Deforestation and New Opportunities for Conservation", *Conservation Biology*, Volume 23, Issue 6, pages 1396-1405, December 2009

expansion[14]. The multiplier effects of these activities threaten to amplify the rate of deforestation and forest degradation in the coming future.

Theoretical Premise

Forests absorb CO_2 from the atmosphere and produce the oxygen we breathe. They also provide food, medicine, shelter and natural services that affect our economies[15]. In addition to climate regulation, forests also provide many invaluable ecological services to humans, namely carbon sequestration and weather regulation at local and regional levels[16].

Nonetheless, forests are cut down, to provide products like timber and paper, because trees are valued more cut down than standing. Market dynamics and the international economy have failed to capture the real value of forests and make conservation profitable[17]. It has virtually never been financially beneficial for landowners to preserve their forests, despite the priceless goods and services produced and provided by these ecosystems[18]. Furthermore, the ecological benefits of forests are not reflected in the prices of the commodities that drive deforestation, such as palm oil, timber, beef etc. As a result, farmers, corporations and governments, the main protagonists of deforestation, cut down trees without hesitation, convinced by the immediate financial returns. This failure of markets to place an economic value on less tangible goods and services provided by forests has long been a major difficulty when implementing measures to reduce deforestation[19]. Because markets find it difficult to place a value on these kinds of services, the forest is completely undervalued, compared to the income generated by converting forests to agriculture and wood for exportation, and this

[14] W.F.Laurance, "Reflections on the tropical deforestation crisis", *Biological Conservation*, Volume 91, Issues 2-3, December 1999, pp 109-117

[15] D. Pimentel, M.McNair, L.Buck, M.Pimentel, and J.Kamil, "The Value of Forests to World Food Security", *Human Ecology*, Volume 25, Number 1, pp91-120, 1997

[16] V.H. Dale, L.A. Joyce, S. McNulty, R.P. Neilson, M.P. Ayres, M.D. Flannigan, P. J. Hanson, L. C. Irland, A.E. Lugo, C.J. Peterson, D. Simberloff, F.J. Swanson, B.J. Stocks, and B.M. Wotton, "Climate Change and Forest Disturbances", *Bioscience* 51(9): 723-734, 2001

[17] B.M. Belcher, "Forest Product Markets, Forests and Poverty Reduction", International Forestry Review 7(2): 82-89. 2005

[18] C. Kremen, J.O. Niles, M.G. Dalton, G.C Daily, P.R. Ehrlich, J.P. Fay, D. Grewal and R.P. Guillery, "Economic Incentives for Rainforest Conservation across Scales", *Science*, Vol. 288 no. 5472 pp. 1828-1832, 9 June 2000

[19] C.Crook, R.A. Clapp, "Is Market-oriented forest conservation a contradiction in terms?", *Environmental Conservation* (1998), 25:pp 131-145

causes deforestation, at least in economic terms[20]. Deforestation is thus driven by fundamental market failures, in addition to governance failures. It is often a question of interests, the economic interests of certain groups who benefit from the status quo of deforestation, such as stakeholders in the lucrative international wood and paper industry and the government officials who profit from the export of these products. These interests collide with those of environmentalists, conservationists and scientists who view these forests as essential assets in the preservation of the planet's ecosystem and proper function[21]. In sum, deforestation is often due to a set of social, political and mostly economic factors that take place outside forest settings. The 2006 Stern Review states that climate change is the greatest and widest-ranging market failure ever seen, presenting a unique challenge for economics. The Review's main finding is that the benefits of early, preventive action on climate change considerably outweigh the costs. It recommends that one percent of global gross domestic product (GDP) per annum is required to be invested in order to avoid the worst effects of climate change, and that failure to do so could risk global GDP being up to twenty percent lower than it otherwise might be. Stern then increased his estimate of the annual cost to avoid the worst effects of climate change to 2% of GDP in 2008, to account for "faster-than-expected climate change"[22]. Furthermore, the Review, considered the most significant environmental report of the decade, studied the economics of climate change mitigation and identified the reduction of deforestation and forest degradation as one of the most cost-effective ways to lower our greenhouse gas emissions. The report also highlighted that reducing the rate of deforestation and forest degradation has the benefit of multiple positive externalities, notably environmental, social and economic impacts associated with deforestation. Stopping deforestation and degradation, and adopting a sustainable forest management system, conserves water resources and prevents flooding,

[20] N. Stern, "Stern Review on the economics of Climate Change", 2006, available at webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm

[21] C. Romero, and G.I. Andrade, "International Conservation Organizations and the Fate of Local Tropical Forest Conservation Initiatives," *Conservation Biology*, Volume 18, no. 2 (2004): 578–580

[22] N. Stern, "Stern Review on the economics of Climate Change", 2006, available at webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm

reduces run-off, controls soil erosion, reduces river siltation, protects fisheries and investments in hydropower facilities, preserves biodiversity and contributes to avoided emissions[23].

However, the destructive and costly impacts of climate change are now transforming our economic priorities. The rules and incentives governing markets at all levels, from global to national and local, are slowly being redesigned to attach economic value to actions that help reduce greenhouse gas emissions. Resources users and proprietors from around the world are gradually recognizing the economic, social and environmental importance of ecosystem services provided by forests[24]. Today, forests can no longer be exploited for economic gain without economic loss, a new and global paradigm shift[25] (see Figure 2). Carbon markets and Payments for Ecosystem Services (PES), such as REDD, provide a promising opportunity to create long-term economic incentives for maintaining forests and reducing carbon emissions significantly, if properly-designed and reinforced with other measures. The planned creation of new systems of payments and markets for ecosystem services are part of a global restructuring of the forest industry in an effort to acknowledge this value[26]. Emerging carbon emissions trading markets are the first major tools that place a monetary value on ecosystem services, offering great hope for sustaining forests and their resources. By using market forces to avert deforestation, the aim is protect standing forest carbon stocks that would otherwise be lost in a normal, business-as-usual scenario of forest exploitation. Market forces could render forests more valuable standing than cut down, by generating revenue from carbon stocking that will be superior to the funds generated by activities that cause deforestation, such as unsustainable logging and agricultural expansion in forests[27]. In the case of REDD, probably the most promising and advanced PES mechanism yet, the carbon market offers historic new opportunities for low-income forest-dwellers, who might possibly benefit financially from the conservation of their forest resources.

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[23] Forest Carbon Partnership Facility, "a framework for piloting activities to reduce emissions from deforestation and forest degradation", 2008

[24] R. Panwar, T. Rinne, E. Hansen, and H. Juslin, "Corporate responsibility: balancing economic, environmental, and social issues in the forest products industry.," *Forest Products*, Volume 56 , Issue no. 2, February 2006

[25] CIFOR, "Realizing REDD+, National Strategies and Policy Options", 2009

[26] J.B. Kelsey, C.Kousky, K.R.E. Sims, "Designing payments for ecosystems services: Lessons from previous experience with incentive-based mechanisms", *Proceedings of the National Academy of Sciences of the USA / PNAS*, Volume 105, Issue no.18, July 2008

[27] Center for International Forestry Research (CIFOR), "Forest Carbon and Local Livelihoods", 2002

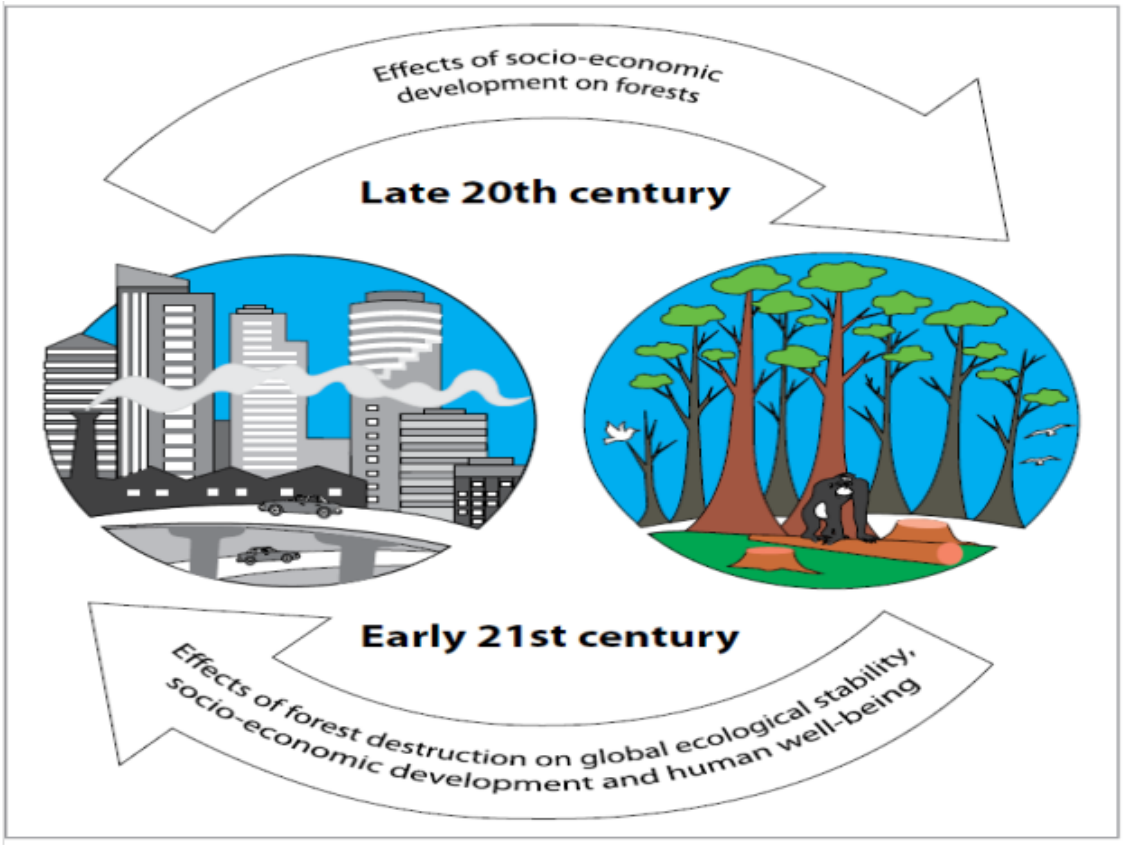


Figure 2: A paradigm shift in the dominant view of the relationship between people and forests
Source: CIFOR, "Realising REDD+", 2009

Objectives

There is a growing consensus among the international environmental and scientific community that reducing CO_2 emissions from the anthropogenic activity of deforestation will be an essential component of any global effort to avert or mitigate climate change and protect human societies. Over four-fifths of tropical forests lie outside protected areas, and much is likely to be lost to agriculture and timber extraction[28]. The leading rainforest scientists are calling for the immediate inclusion of forests in internationally regulated carbon markets that could provide sufficient financial incentives to halt deforestation. Human beings must design durable strategies to halt deforestation in the Amazon, the Congo Basin and the Indonesian rainforests, the lungs of the Earth. Increasing the value of standing trees, to a point where this value is superior to the one of cut trees, is the only durable way to slow their destruction,

[28] Center for International Forestry Research (CIFOR), "Thinking beyond the canopy", annual report, 2008

especially in poor areas. This study aims to design such a strategy, a thorough, customized and holistic plan for reducing emissions from deforestation and forest degradation, in the Tri-national Sangha (TNS) landscape of Cameroon. As mentioned earlier, the TNS contains a part of the carbon-rich Congo Basin Forest. Deforestation in this area is occurring at a low, but increasing, rate. Furthermore, indigenous communities have been living in this area's forests for centuries, and are now faced with extreme poverty, insecure land tenure and expanding logging concessions. A successful REDD strategy for this region must therefore incorporate all these dynamics. Thus, the objectives of my thesis are the following: 1) using scientific literature as an analytical framework, to speculate on the advantages and disadvantages of proceeding with the advancement and development of REDD as global tool for protecting forests, reducing poverty and benefitting vulnerable and impoverished forest-dwelling communities; 2) to test the profitability of REDD as a potential economic replacement for traditional deforesting activities in the TNS; 3) to design a model REDD strategy that corresponds to Cameroon and the TNS's specific political, economic, social and environmental priorities.

Chapters 1 through 4 will be based on information gathered from a literature review and from scientific data acquired during my off-field assignments prior to my field work in the TNS rainforest (see 'Methodology' below). These chapters will provide the background information that will guide my personal work in Chapters 5 and 6, where I shall attempt to design a REDD model for the TNS.

Methodology

Before undertaking field work in the tropical forests of Central Africa, I decided to collect as much relevant data as I could in the offices of international development organizations that were financing projects in the Congo Basin. My first assignment was at the Global Environment Facility (GEF), an affiliate of the World Bank, in Washington D.C. The GEF has initiated and supervised multiple projects in six Congo Basin countries, working on REDD capacity strengthening, sustainable logging and the protection of indigenous rights to land. I had the privilege of interning in this world-renowned organization, one of the largest financers of environmental projects in the world, for 4 weeks in June 2009, where I was able to meet with

GEF environmentalists supervising CBF projects. In particular, Mr. Jean-Marc Sinassamy, an environmental specialist in charge of GEF projects in Central Africa, provided me with valuable electronic documentation concerning the organization's projects in the CBF. These reports were my first introduction to the concept of Reducing Emissions from Deforestation and Degradation (REDD), and illustrated the many obstacles faced by CBF countries in adhering to this mechanism (Chapters 2, 3, 4). In January 2010, I started a 3-month internship at the International Fund for Agricultural development (IFAD), in Rome, Italy. I was working in the Environment and Climate Change division, under the supervision of Project Manager Naoufel Telahigue. Although the IFAD does not work specifically on deforestation issues, I acquired valuable documentation on the impacts of climate change on agriculture systems in Central-Africa. These documents explained that the indirect impacts of deforestation, changing rainfall patterns and increasing weather variability, were severely affecting food security and agricultural production in Cameroon and the DRC, the two largest hosts of the Congo Basin forest. Furthermore, the IFAD literature demonstrated that agriculture itself was an important source of deforestation in the region, but that people could not afford to stop converting forest into farmland. This convinced me to focus my REDD project on logging, a more easily-replaceable activity than (subsistence) agriculture (Chapter 6). After the IFAD assignment, I went through the last of my off-field internships, with 4 weeks at the African Development Bank (ADB) headquarters, in Tunis, Tunisia, in April and May of 2010. At the ADB, I interned at the Congo Basin Forest Fund (CBFF), responsible for financing projects in Central Africa that were geared towards reducing deforestation in the tropical forest, and chaired by former Canadian Prime Minister Paul Martin and former British Prime Minister Tony Blair. In Tunis, I acquired essential data and research material on deforestation drivers, carbon stocks and efforts to protect the forest (Chapters 4, 5, 6). Most importantly, it was at the CBFF that Clothilde Ngomba and Cyrano Ombolo, coordinator and project manager, respectively, helped me to pinpoint which area of the Congo Basin was going to be the subject of my REDD case study.

I travelled to Cameroon in February 2011, to undertake my field research with the assistance of the ADB's regional office in Yaoundé. There, I collaborated closely with Maurice

Henri Tadjuidje, the principal technical consultant of the International Union for the Conservation of Nature (IUCN) in the TNS landscape. He is in charge of spearheading and supervising the IUCN's overall project for the TNS: Increasing and diversifying livelihood opportunities for rural people near protected forest areas, in all three countries of the landscape (Cameroon, the Central-African Republic and the Republic of Congo). In the TNS, I conducted several informal interviews with people working on forestry issues, most notably:

- Albert Monga, the conservation director of the Lobéké national Park.
- Alphonse Ngniado Wouala, forest officer for the World Wildlife Fund (WWF) in Cameroon.
- Richard Ndoh Tamungang, GIS officer for the WWF in Cameroon.
- Yelem Basile, the TNS departmental delegate of the Ministry of the Environment and Protection of Nature of Cameroon.
- Gerard Sindemo, president of the 'Réseau des ONG locales du Sud-est Cameroon' (ROSE).
- Eitel Pandong, departmental delegate of the Ministry of Fauna and Flora in the TNS in Cameroon.

I also met representatives of the Forest Peoples Program (FPP) in the TNS, an international NGO which works to help defend and secure the rights of indigenous, tribal and other forest peoples to control their lands and natural resources. These interviews, and the subsequent data I collected from the FPP, helped to confirm and complement many ideas I had about the integration of the often-marginalized indigenous populations in the REDD process, and which mechanisms would be appropriate to ensure local participation. I also held informal meetings with pygmy communities in their villages. With the help of a translator, I was able to conduct valuable interviews with Bayaka pygmy women, where we discussed everything from hunting, nutrition and health issues, to gender roles, trade with Bantus and relations with the WWF. In the logging town of Libongo, I was able to observe the impact of the CEFAC forestry corporation, and to collect data and research material on logging revenue, deforestation in logging concessions and the social impacts of this activity. I also spent some time in Mambele,

an ecotourism camp. There, I collaborated with Benjamin Abono, a liaison officer for the Cameroonian government in the TNS, who provided me with data and information regarding the TNS forestry sector, carbon emissions and the whole process of REDD in his country. After Mambele, I headed back to Yaoundé, where I was able to integrate all the data and information I had acquired in the field. Also, in Yaoundé, I was able to meet the following people, who were all involved in the REDD process in the TNS and Cameroon, albeit in very different ways:

- Anne-Marie Tiani, a researcher at the Center for International Forestry Research (CIFOR)
- Georges Akwa, a project officer at the UICN
- Marcelle Ngono, President of the student-led 'Environment for Life' NGO
- Raymond Mbitikon, Executive secretary of the 'Commission des Forêts d'Afrique Centrale' (COMIFAC)
- Olivier Sene, a researcher at the Wildlife Conservation Society (WCS)
- Mbenda Rosette Epse Leunkeu, a sociologist at 'Institut Africain pour le Développement Economique et Sociale' (INADES)
- Samuel Nguiffo, Secretary General of the 'Centre pour l'environnement et le développement' (CED)

In general, most of the data concerning deforestation rates, indigenous communities and economic activities in the Tri-Sangha region will have been acquired in Washington D.C, Rome, Tunis and Yaoundé, whilst the field work provided direct observation of the above-mentioned information, discussions and consultations with NGOs, indigenous groups, government officials and logging companies and a photographic documentation to illustrate this thesis. Additionally, I conducted an analysis of the current government institutions and NGOs in Cameroon, their roles, abilities, and responsibilities, as well as their weaknesses, during my fieldwork. This was crucial as it helped me design a REDD strategy that could realistically work in the current government setup.

PART I – LITERATURE REVIEW

CHAPTER I – TROPICAL FORESTS, THE CONGO BASIN AND CLIMATE CHANGE

The connection between forests and climate change

Forests contain most of our planet's biodiversity and maintain CO_2, hydrological and climatic cycles[29]. These ecosystem services to the world protect us from climate change, increasing our resilience and adaptive capacity[30]. Like oceans, forests are an indispensable part of the global carbon cycle equilibrium. They store around 80% of the world's above-ground and 40% of below-ground terrestrial carbon within their trees and soil[31]. Terrestrial biomass stock approximately 500 Gigatonnes of carbon, essentially in trees[32]. Mature tropical forests in particular, like the Congo Basin Forest, sequester, or stock, about 50 percent more carbon than non-tropical forests[33]. Tropical forests store these enormous quantities of carbon both in the trees and vegetation itself and within the soil in the form of decaying plant matter[34]. This is why the CBF and the Amazon (and to a lesser extent the Indonesian rainforest), the two largest tropical forests in the world, are considered the lungs of the Earth. Together, they regulate the global carbon cycle, absorbing and storing terrestrial carbon, thus diminishing the warming effect of carbon release into the atmosphere[35]. These rainforests form a precious cooling band around the Earth's equator[36]. When terrestrial vegetation dies, as a result of deforestation and/or degradation, the carbon that was contained in these trees is released into the

[29] S.L. Pimmm, P.Raven, "Biodiversity: Extinction by numbers", *Nature,* Issue 403, pp 843-845, February 2000
[30] O.N Krankina, R.K. Dixon, A.P. Kirilenko, K.I. Kobak, "Global Climate Change Adaptation: Examples from Russian Boreal Forests", *Climatic Change,* Volume 36, Numbers 1-2, pp 197-215, 1996
[31] UNESCO, "Protecting biodiversity, protecting forests", available at www.unesco.org/new/en/natural-sciences/about-us/single-view/news/protecting_biodiversity_protecting_forests/
[32] A. Riedacker, "Changements Climatiques et Forêts", Réseau International Arbres Tropicaux (RIAT), 2004
[33] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf
[34] J.Lloyd, "The CO_2 dependence of photosynthesis, plant growth responses to elevated CO_2 concentrations and their interaction with soil nutrient status, temperate and boreal forest productivity and the combined effects of increasing CO_2 concentrations and increased nitrogen deposition at a global scale", *Functional Ecology*, Volume 13, Issue 4, pages 439–459, August 1999
[35] J.L. Probst, J. Mortatti, Y. Tardy, "Carbon river fluxes and weathering CO_2 consumption in the Congo and Amazon river basins", *Applied Geochemistry,* Volume 9, Issue 1, Pages 1-13, January 1994
[36] E.A.B Eltahir, "Role of Vegetation in Sustaining large-scale Atmospheric Circulations in the Tropics", *Journal of Geophysical Research",* Volume 101, pp 4255-4268, February 1996

atmosphere[37]. Naturally, dying tropical rainforests release more sequestered CO_2 than non-tropical forests, which can produce a global warming vicious circle when dying trees release CO_2, which increases atmospheric CO_2 concentrations, causing atmospheric warming and temperature rise, leading to prolonged droughts and drier weather, robbing trees of moisture and hindering their natural ability to pump vapor into the atmosphere, leading to their degradation and collapse of forests, which then release their CO_2, increasing once more global CO_2 emissions and warming the Earth's atmosphere[38]. Therefore, many scientists fear the oncoming collapse of the tropical rainforests[39]. This collapse would partly be caused by direct human activities in forests, such as clear-cutting and burning for pastures or farms. But more importantly, the impacts of climate change would primarily be responsible for the potential collapse of rainforests, namely the increase in global temperatures, global carbon levels and extreme weather events, such as droughts and forest-fires[40]. On the other hand, certain rainforest scientists argue that more carbon in the air might lead to forests flourishing, since plants need carbon to grow through photosynthesis[41]. But the fact is too much carbon hinders trees' and soils natural ability to exhale oxygen and water vapor, ultimately leading to drier forests[42]. Climate Change, and more specifically CO_2 increases in the atmosphere, will lead to the migration of certain tree species, which will survive, while other species will certainly perish[43]. Furthermore, forests will likely become more vulnerable to parasites, insects and forest fires as a direct consequence of temperature and weather pattern changes[44]. For instance, higher temperatures will render certain forest areas more hospitable to tropical

[37] *Ibid*
[38] A. Riedacker, "Changements Climatiques et Forêts", Réseau International Arbres Tropicaux (RIAT), 2004
[39] B.S. Soares-Filho, D.C.Nepstad,L.M. Curran, G. C.Cerqueira, R.A. Garcia, C.A. Ramos, E. Voll, A. McDonald, P. Lefebvre & P. Schlesinger, "Modelling Conservation in the Amazon Basin", *Nature,* Issue 440, pp 520-523, March 2006
[40] Hadley Center, Meteorology office of the UK, "Amazon under threat from cleaner air", 2008, available at www.metoffice.gov.uk/corporate/pressoffice/2008/pr20080508.html
[41] Michigan Technological University's School of Forest Resources and Environmental Science, "Climate Change, Acid Rain Could Be Good for Forests", 2008, available at www.admin.mtu.edu/urel/news/media_relations/767/.
[42] A. Riedacker, "Changements Climatiques et Forêts", Réseau International Arbres Tropicaux (RIAT), 2004
[43] S.N. Aitken, S. Yeaman, J.A.Holliday, T.Wang, S.Curtis-McLane, "Adaptation, migration or extirpation: climate change outcomes for tree populations", *Evolutionary Applications,* Volume 1, Issue 1, pages 95–111, February 2008
[44] D.R. Brooks, E.P. Hoberg, "How will global climate change affect parasite-host assemblages?", *Trends in Parasitology,* Volume 23, Issue 12, Pages 571-574, December 2007

vectors such as dengue and malaria-carrying mosquitoes[45]. Furthermore, climate variability may cause an increase in viral transmissions from animals to humans by reducing the alleviating role biodiversity plays[46]. Additionally, extreme weather patterns will cause more frequent landslides and forest fires, endangering wildlife as well as the human communities present in these tropical forests[47]. Forests are thus very vulnerable to climate change. Changes in temperature and precipitation, even relatively small ones, can have major impacts on the fauna and flora of forests. It has been proven that a 1 degree increase in temperature can modify the whole function and composition of forests[48]. Given that up to 80 percent of the world's terrestrial species live in tropical forests, the smallest of changes in temperature and rainfall patterns will have enormous repercussions on the sensitive and fragile tropical ecosystem and biodiversity[49].

The role of humans

Since the industrial revolution and over the past century more specifically, humankind has altered and degraded its natural environment more than at any other time in history[50]. This has undermined and damaged the ecosystem services upon which all societies depend. Today, human economic activity has reached such a scale that it is perturbing the global climate system, exposing us all to increasing extreme weather events and a host of adverse effects. Deforestation and forest degradation are responsible for an estimated 15 to 25% of global anthropogenic greenhouse gas emissions (according to different calculations), second only to the energy sector[51]. This translates into annual carbon emissions of 1.7 billion tons[52]. Deforestation can be defined as a human-induced, long-term or permanent, conversion of land

[45] P.R. Epstein, "Climate Change and Human Health", *New England Journal of Medecine,* Issue 353, pp 1433-1436, October 2005
[46] Convention sur la diversité Biologique (CBD), « La diversité biologique et les changements climatiques », 2007
[47] Center for International Forestry Research (CIFOR), "Forests and Climate Change: Tough but fair decisions needed", 2007
[48] Convention sur la diversité Biologique (CBD), « La diversité biologique et les changements climatiques », 2007
[49] Center for International Forestry Research (CIFOR), "Thinking beyond the canopy", annual report, 2008
[50] L.E. Rustad, T.G. Huntington, R.D. Boone, "Controls on Soil Respiration: Implications for Climate Change", *Biogeochemistry*, Volume 48, Issue 1, pp 1-6, 2000
[51] UNREDD Program, "About REDD+", available at www.un-redd.org/AboutREDD/tabid/582/Default.aspx
[52] Convention sur la diversité Biologique (CBD), « La diversité biologique et les changements climatiques », 2007

from forest to non-forest[53]. Forest degradation refers to changes within the forest which negatively affect its structure or function, thereby lowering its capacity to supply products and/or services[54]. Forest degradation also results in the net loss of stocked carbon from the ecosystem. Around 45% of the earth's forest cover has already been transformed over the past 8000 years of human settlements[55]. However, a major share of this forest space has been impacted only in this past century. In the 19th and early 20th century, deforestation mainly took place in temperate regions of the globe. Since the second half of the 20th century, deforestation has been mainly occurring in the tropics[56]. One-third of the earth's surface is covered by forests, whilst the world tropical forest covers some 13 billion hectares[57]. But the world is increasingly losing its great tropical forests, which are being reduced by an alarming 13 million hectares, or an area the size of Greece, each year, more so in the Amazon and South-Asia than in Central-Africa[58]. As a result, deforestation is now adding more carbon to the atmosphere than the global transport sector[59]. This makes deforestation a major cause of global warming. The main activities that induce forest loss in the major tropical forests of the world are agricultural development, transport and infrastructure development and trade and investment policies, notably the trade of timber[60]. In particular, the effects of extensive, industrial-scale logging are devastating to animal species and the fragile tropical environment. Logging involves the unsustainably selective cutting-down of trees, including rare and valuable ones, and the construction of roads, which penetrate the rainforest and expose it to agriculture and other development[61].

53 FAO, "Forests and Climate Change Working Paper 5", 2007, available at www.fao.org/docrep/009/j9345e/j9345e07.htm

54 *Ibid*

55 Convention sur la diversité Biologique (CBD), « La diversité biologique et les changements climatiques », 2007

56 A. Riedacker, "Changements Climatiques et Forêts", Réseau International Arbres Tropicaux (RIAT), 2004

57 Center for International Forestry Research (CIFOR), "CIFOR and CPF launch first 'Forest Day' at UN global climate change talks in Bali", 2007

58 *Ibid*

59 R.M. Martin, "Deforestation, Land-use Change and REDD", *Unasylva,* Volume 59, Issue 230*,* 2008

60 Center for International Forestry Research (CIFOR), *Thinking beyond the canopy*, annual report 2008

61 W.F. Laurance, B.M. Croes, L.Tchignoumba, S.A. Lahm, A.Alonso, M.E. Lee, P. Cambpell, C.Ondzeano, "Impacts of Roads and Hunting on Central-African Rainforest Mammals", *Conservation Biology,* Volume 20, Issue 4, pp 1251-1261, August 2006

Climate change will certainly affect some people more than others. Although the entire planet will be affected, those hardest hit will be the one billion people living in extreme poverty who depend on forests for some part of their livelihoods[62]. Natural forests provide a range of goods, such as bushmeat, fruit and traditional medicine, and essential local environmental services, whose loss will disproportionately affect the more vulnerable groups who have fewer alternatives, namely the poor who often subsist on the above-mentioned wild products and services[63]. The people that have the resources necessary to adapt their livelihoods and homes to the impacts of climate change will suffer the least, as opposed to the more impoverished communities who have little adaptive capacity[64].

Some economists have stipulated that the conservation of tropical forests will be difficult, unsustainable and unfair unless the mostly poor, local people who depend on these forests are financially compensated for the environmental services their forests provide to the world community[65]. This will be the object of succeeding chapters.

International negotiations

Despite the significance of emissions from deforestation and degradation, international environmental agreements have thus far failed to agree on measures to reduce deforestation internationally[66]. The Kyoto Protocol, the most significant environmental treaty of our times, fails to include in its current form measures to combat deforestation[67]. The Protocol and its accompanying commitments end in 2012. The role of forests in international negotiations is expected to change. Forests are now receiving an unprecedented amount of attention in

[62] Center for International Forestry Research (CIFOR), "CIFOR's Climate Change and Forests Initiative", 2007
[63] P.A.Sanchez, "Linking climate change research with food security and poverty reduction in the tropics", *Agriculture, Ecosystems and Environment,* Volume 82, Issues 1-3, pp 371-383, December 2000
[64] R.Mendelsohn, A.Dinar, L. Williams, "The distributional impact of climate change on rich and poor countries", *Environment and Development Economics,* Volume 11, Issue 2, 2006
[65] Center for International Forestry Research (CIFOR), "Forest Carbon and Local Livelihoods", 2002
[66] P.Moutinho, M.Santili, S.Schwartzman and L.Rodrigues, "Why ignore tropical deforestation? A proposal for including forest conservation in the Kyoto Protocol", *Unasylva, 222,* Volume 56, 2005
[67] Center for International Forestry Research (CIFOR), "CIFOR and CPF launch first 'Forest Day' at UN global climate change talks in Bali", 2007

today's global climate change debate[68]. Addressing this concern has now become a major focal point in the struggle to tackle global warming[69]. Recent Climate Change negotiations, such as the 2007 Bali United Nations Framework Convention on Climate Change (UNFCCC) and the 2009 Copenhagen UNFCCC meetings, have clearly recognized that forests must no longer be a climate change problem, i.e. a cause of global warming, but the opposite; they must be part of the solution to reducing emissions[70]. At the 2009 Copenhagen meeting, a concrete agreement to work collectively and internationally on reducing deforestation was finally reached: developed countries pledged to "enable and support enhanced action on mitigation, including substantial finance to reduce emissions from deforestation and forest degradation (REDD/REDD+), adaptation, technology development and transfer and capacity-building, for enhanced implementation of the (Copenhagen) Convention[71]." The newly created Copenhagen Green Climate Fund is projected to administer a large portion of the funds allocated by developed countries towards reducing deforestation internationally, which will be part of a USD 100 billion/year global financial climate change mitigation endeavor by these countries, by 2020[72].

Geography of the Congo Basin Forest

The Congo Basin forest belongs to the biome known as tropical moist forests, or tropical rainforests, which are characterized by high rainfall and extremely rich biodiversity[73]. This biome also includes the Amazon basin, the forests of Indonesia and New Guinea and a host of equatorial islands in the Pacific and Atlantic, as illustrated in figure 3[74] below. The Congo Basin Forests in particular, which are still relatively intact, contain some of the richest areas of

[68] D. Mollicone *et Al.,* "Elements for the expected mechanisms on 'reduced emissions from deforestation and degradation, REDD' under UNFCCC", *Environmental Research Letters*, Volume 2, Number 4, December 2007
[69] C.Okereke, K.Dooley, "Principles of justice in proposals and policy approaches to avoided deforestation: Towards a post-Kyoto climate agreement", *Global Environmental Change,* Volume 20, Issue 1, February 2010
[70] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf
[71] UNFCCC, "Decision, Conference of the Parties 15 Copenhagen", December 2009, available at http://unfccc.int/files/meetings/cop_15/application/pdf/cop15_cph_auv.pdf
[72] *Ibid*
[73] M.C.Hansen, S.V.Stehman, P.V. Potapov, " Quantification of global gross forest cover loss", *Proceedings of the National Academy of Sciences of the United States of America*, Volume 107, Issue 19, pp 8650 – 8655, May 2010
[74] Rainforest Foundation UK, "Rainforests… What you need to know", available at www.rainforestfoundationuk.org

vertebrate, plant and fauna species on the planet[75]. The other lung of the Earth, the Amazon forest, has lost a great part of its megafauna though deforestation, in comparison with Central Africa where elephants, great apes and other rare animals still remain an integral part of the region's ecology[76].

Figure 3 – Tropical rainforests of the World

The Tropical Rainforests of the world, in dark green on this map, form a belt around the equator, stretching from the South American Amazon Basin to South-East Asian tropical forests, crossing through Central Africa's Congo Basin.

Source: Rainforest Foundation UK, "Rainforests… What you need to know", available at www.rainforestfoundationuk.org

The Congo Basin is the second largest area of tropical forest in the world after the Amazon, covering 2 million square kilometers and storing an estimated 30-40 billion tons of carbon[77]. The Congo Basin area is home to many unique animal and plant species, as well as ancient indigenous Pigmy tribes. Its survival and integrity is essential for the millions of people whose livelihoods depend on it, as well as the world's climate[78]. The region accounts for 20% of

[75] Congo Basin Forest Fund (CBFF), "A statement… why a fund is needed", available at www.cbf-fund.org/cn/why/statement.php
[76] African Development Bank, "State of the Forest 2008" – Chapter 1
[77] Center for International Forestry Research (CIFOR), "Thinking beyond the canopy", annual report, 2008
[78] B.Unmüßig, S.Cramer, "Climate Change in Africa", *Focus Afrika,* Issue 2, 2008

the world's biodiversity hotspots and 25% of the world's remaining rainforests[79]. Yet despite these essential assets, Central Africa has the third highest deforestation rate in the world, and the second highest in terms of lost forest surface, with some four million hectares disappearing each year[80]. The consequences are disastrous on both environmental and human levels, damaging precious natural resources whilst also threatening rural communities[81]. Scientists agree that no continent will be as harshly struck by climate change as Africa, because of the vulnerability and low adaptive capacity of its severely impoverished populations[82]. The CBF, and forests ecosystems in general, protect poor and vulnerable groups from climate change, by providing renewable forest products and services, such as food, construction material, medicine and soil stability[83]. As deforestation and climate change increase, forest-dwelling groups become more vulnerable to the impacts of weather variability, thus highlighting the importance of the rainforest for these populations.

The Congo Basin forest stretches over six countries: Cameroon, Republic of Congo, The Democratic Republic of Congo, The Central African Republic, Gabon and Equatorial Guinea[84]. These countries cover a total area of over 4 million km^2 and contain 86 million inhabitants, as of 2005[85]. This sub-region of Central Africa is characterized by a very rapid population growth, estimated at 2.87% a year[86]. To this effect, the United Nations predicts that the total population of these six countries will reach some 200 million by 2030[87]. The region is also characterized by widespread extreme poverty, notably in its most populated country, the Democratic Republic of Congo (DRC), which is ranked among the lowest income countries in the world, while Cameroon and Congo are classified as lower middle income[88]. Gabon is a middle income country and Equatorial Guinea is a high income one, but the combined populations of these

[79] Center for International Forestry Research (CIFOR), "Science for People and Forests", annual report, 2003
[80] *Ibid*
[81] D.Macqueen, S.Vermeulen, "Climate Change and Forest Resilience", *Sustainable Development Opinion,* 2006
[82] B.Unmüßig, S.Cramer, "Climate Change in Africa", Focus *Afrika,* Issue 2, 2008
[83] D.Macqueen, S.Vermeulen, "Climate Change and Forest Resilience", *Sustainable Development Opinion,* 2006
[84] O.Ndoye, J.C.Tieguhong, "Forest Resources and Rural Livelihoods: The Conflict Between Timber and Non-timber Forest Products in the Congo Basin", *Scandinavian Journal of Forest Research,* Volume 19, Supplement 004, pp36-44, 2004
[85] African Development Bank, "State of the Forest 2008" – Chapter 1
[86] *Ibid*
[87] *Ibid*
[88] African Development Bank, "State of the Forest 2008" – Chapter 1

two countries represent less than 2% of the region's total[89]. The region also illustrates high degrees of economic disparities and inequitable distribution of national wealth[90]. This wealth relies greatly on the exploitation of raw natural resources, such as the ones found in tropical forests[91]. The majority of inhabitants in this sub-region practice small-scale slash-and-burn agriculture for subsistence[92]. They also depend on forest products for food and fuelwood energy[93]. The management of these forest resources is therefore of great importance in terms of these countries' ambitions to reduce poverty and develop. Forest management in this region takes place against a background of widespread poverty and inefficient, inadequate governance[94].

The forestry sector in the Congo Basin

The formal forestry sector has played an important role in the Congo Basin since the colonial era[95]. The sector's economic activities currently account for 3-8 % of the gross domestic product in CBF countries and as much as 20 % of employment[96]. The sector's contribution to GDP has decreased over last decades, but exports of timber products still generate an important share of export earnings[97]. Furthermore, the forest sector is among the largest employers in many countries, such as the CAR, Gabon and Cameroon, especially in rural areas where there is little employment opportunities aside from the logging trade, making the formal forestry sector the largest private employer in non-urban areas by far[98].

In 2007, the formal forestry sector produced around 8.4 million cubic meters of timber in the CBF[99]. The DRC was the largest producer, followed by Cameroon and Gabon, while

[89] *Ibid*
[90] A.Karsenty, "Economic Instruments for Tropical Forests: The Congo Basin Case", *Instruments for Sustainable Private Sector Forestry Series,* CIFOR, CIRAD, IIED, 2000
[91] *Ibid*
[92] J.E.Fa, D.Currie and J.Meeuwig, "Bushmeat and food security in the Congo Basin: linkages between wildlife and people's future", *Environmental Conservation,* Issue 30, pp 71-78, 2003
[93] *Ibid*
[94] African Development Bank, "State of the Forest 2008" – Chapter 1
[95] D.E.De Blaz, M.R.Perez, "Prospects for Reduced Impact Logging in Central African Logging Concessions", *Forestry Ecology and Management,* Volume 256, Issue 7, pp 1509-1516, September 2008
[96] African Development Bank, "State of the Forest 2008" – Chapter 1
[97] *Ibid*
[98] *Ibid*
[99] African Development Bank, "State of the Forest 2008" – Chapter 1

Cameroon generates the greatest amount of revenue from the forest sector[100]. Timber companies log more than 50 tree species across Central-African forests, but only a dozen are well-known and marketable[101]. The most exploited species is *okoume*, representing 1/3 of all timber products in Central Africa, followed by *Sapelli* (16%) and *Ayous* (11%). These three species thus account for nearly 2/3 of the overall timber volume in the region[102]. Logging companies are very selective, always targeting high grade timber. Less-marketable, low-grade wood is characterized by unfavorable technical properties, such as density and its tendency of being infested by insects or fungus[103]. Loggers are progressively diversifying their harvests, but at a very slow place. Gabon and Cameroon have the highest number of industrial timber processing facilities, with 73 and 60, respectively[104]. Cameroon distinguishes itself from its neighbors by being the only country where the volume of processed products exported exceeds that of raw logs and is the most active timber processing country in the region, with nearly 75% of timber processed in-country, an intentional policy to promote in-country wood processing, as opposed to others that export raw wood, which is then processed abroad[105]. The timber processing rate in Central Africa remains quite low overall due to the lack of industrialization. This rate is increasing though, allowing the forest sector to further its contribution to national economies[106]. The main obstacle is that it is often more profitable to export raw logs then processed timber. In fact, unprocessed logs represent the largest product category exported

[100] P.R. Oyono, "Profiling Local-Level Outcomes of Environmental Decentralizations: The Case of Cameroon's Forests in the Congo Basin", *Journal of Environment and Development,* Volume 14, issue 3, pp317-337, September 2005

[101] African Development Bank, "State of the Forest 2008" – Chapter 1

[102] *Ibid*

[103] *Ibid*

[104] O.Ndoye, J.C.Tieguhong, "Forest Resources and Rural Livelihoods: The Conflict Between Timber and Non-timber Forest Products in the Congo Basin", *Scandinavian Journal of Forest Research,* Volume 19, Supplement 004, pp 36-44, 2004

[105] P.R. Oyono, "Profiling Local-Level Outcomes of Environmental Decentralizations: The Case of Cameroon's Forests in the Congo Basin", *Journal of Environment and Development,* Volume 14, issue 3, pp317-337, September 2005

[106] M.R.Perez, D.E.de Blaz, R.Nasi, J.A.Sayer, M.Sassen, C.Angoue, N.Gami, O.Ndoye, G.Ngono, J.C.Nguinguiri, D.Nzala, B.Toirambe,Y.Yalibanda, "Logging in the Congo Basin: A multi-country characterization of timber companies", *Forest Ecology and Management,* Volume 214, Issues 1-3, pp 221-236, August 2005

from Central Africa[107]. The main importers of CBF timber products are the European Union, followed closely by Asia. China in particular has been rapidly increasing its imports[108].

Very little of the industrially processed timber is sold locally. The informal (and technically illegal) timber sector, which is mainly supplied by traditional wood processers and wood-by-products of the formal sector, meets the majority of local demand[109]. There is no real data concerning these transactions on a regional scale, but Cameroon's informal sector is discussed in Chapter 4.

Drivers of deforestation in the Congo Basin Forest

In the Congo Basin Forest, deforestation is relatively low compared to other regions in the world, such as Brazil and Indonesia. Low deforestation rates have traditionally been driven by small-scale agriculture and wood harvesting[110]. However, this is starting to change. With renewed industrialization and economic growth in certain CBF countries, such as Cameroon, industrial timber extraction and forest-to-pastures conversions are starting to make an impact[111]. Western donors are showing great interest in the preservation of the Congo Basin Forest. The Congo Basin Forest Fund, for instance, is a multi-donor fund which aims to reduce poverty and mitigate climate change by reducing deforestation and forest degradation in Central Africa's Tropical forests, and has received financial inputs from two main donors, Norway and the United Kingdom[112]. However, it is interesting to note that it is the Western world's own domestic policies and investments which are, in large part, responsible for deforestation in the CBF and other tropical forests. Global demand for timber and other forest

[107] African Development Bank, "State of the Forest 2008" – Chapter 1
[108] A.Zafar, "The Growing Relationship Between China and Sub-Saharan Africa: Macroeconomic, Trade, Investment, and Aid Links", *World Bank Research Observer,* Volume 22, Issue 1, pp103-130, 2007
[109] African Development Bank, "State of the Forest 2008" – Chapter 1
[110] *Ibid*
[111] K. Lawlor, D. Huberman, "REDD and human rights", *Rights-based approaches, Exploring issues and opportunities for conservation*, 2008
[112] Congo Basin Forest Fund (CBFF), "A statement… why a fund is needed", available at www.cbf-fund.org/cn/why/statement.php

commodities has traditionally originated in the developed world[113]. The European Union, for instance, is the largest purchaser of timber from Central Africa, while Indonesia is cutting down trees in order to make space for palm oil plantations to feed Western demand for biofuels and Brazil's soy plantations and cattle ranching products are destined for exportation towards Western markets[114]. In recent times, China has added to the problem by increasing demand for forest commodities in order to feed its rapidly growing economy[115]. Global demand and globally active corporations are the major drivers of deforestation in the tropics[116]. International markets for agricultural and forest products, as well as minerals and other resources found in forests, are putting pressure on forests in the Congo Basin and elsewhere[117].

The deforestation phenomenon still remains relatively low in the Congo Basin, compared to similar landscapes in Brazil and South-East Asia. The highest deforestation rates are found in the DRC, CAR and Cameroon, which can be explained by the fact that they have the highest densities of rural populations who practice slash-and-burn cultivation and work in timber extraction[118]. These countries also have high population growth rates, which generates growing food needs and ever-increasing demand for fertile lands for agriculture, as well as important economic needs[119]. On the other hand, forest degradation rates are thought to be much higher than deforestation rates in the Congo Basin[120]. As explained earlier, degradation is generally understood to be a human-induced, long-term reduction in forest carbon stocks, by

[113] E.B.Barbier, J.C.Burgess, A.Markandya, "The Economics of Tropical Deforestation", *Ambio,* Volume 20, Issue 2, April 1991
[114] R.A.Butler, W.F.Laurance, "New Strategies for Conserving Tropical Forests", *Trends in Ecology and Evolution,* Volume 23, Issue 9, pp469-472, September 2008
[115] A.Zafar, "The Growing Relationship Between China and Sub-Saharan Africa: Macroeconomic, Trade, Investment, and Aid Links", *World Bank Research Observer,* Volume 22, Issue 1, pp103-130, 2007
[116] R.A.Butler, W.F.Laurance, "New Strategies for Conserving Tropical Forests", *Trends in Ecology and Evolution,* Volume 23, Issue 9, pp469-472, September 2008
[117] *Ibid*
[118] African Development Bank, "State of the Forest 2008" – Chapter 1
[119] *Ibid*
[120] World Resource Institute, "Voices from the Congo Basin", 2009, available at pdf.wri.org/working_papers/voices_from_the_congo_basin.pdf

an activity that damages the forest ecosystem without intentionally deforesting. Such activities include[121]:

- the collection of fuel wood, where part of the tree is cut, diminishing the carbon sequestration of the whole tree
- Selective logging, where certain trees are cut down, degrading the health and carbon sequestration potential of the whole forest
- The construction of roads for commercial logging or mining activities, where trees are cut down simply to clear the area. Once built, these roads attract people to remote areas, thereby leading to the growth of human settlements, the expansion of pastures along roads and the leasing of timber concessions deeper within the forest. Degradation and deforestation are thus often intertwined.

The growing international demand for timber is likely to provoke an increase in industrial logging in the Congo Basin, as approximately one-third of the forested region has already been allocated to logging concessions[122]. In addition, large-scale transportation infrastructure projects are planned deep within the forest, in order to facilitate access to remote regions[123]. Population growth and migration towards these planned road infrastructures, and the proliferation of mining activities inside the forest, are predicted to cause even more degradation and deforestation[124].

[121] D.Murdiyarso, M. Skutsch, M. Guariguata, M. Kanninen,C. Luttrell, P. Verweij and O. Stella, "Measuring and monitoring forest degradation for REDD:Implications of country circumstances", *CIFOR infobriefs*, Issue 16, November 2008

[122] World Resource Institute, "Voices from the Congo Basin", 2009, available at pdf.wri.org/working_papers/voices_from_the_congo_basin.pdf

[123] *Ibid*

[124] *Ibid.*

Carbon sequestration in the Congo Basin Forest

The African Development Bank gives estimates of 46 billion metric tons of carbon stored in the 1.875 million km^2 of Congo Basin forest[125]. To put this number into perspective, the world emitted some 30 billion metric tons of CO_2 in 2009[126]. Of this total, 6 billion tons were due to deforestation, while the remaining 24 billion tons were emitted by the burning of fossil fuels[127]. Globally, undisturbed tropical forests in Asia, South America and Central Africa remove from the atmosphere nearly one-fifth of the $C0_2$ released by fossil fuels, around 4.8 billion tons[128]. Therefore, forests act as both major sources and sinks in global carbon fluxes.

The two principal land uses in the Congo Basin region are logging concessions (595,380 km^2) and protected areas (444,970 km^2)[129]. In third place, shifting cultivation from slash-and-burn agriculture is not easily detected by satellite imagery, but estimates[130] are of over 400 000 km^2. For the 1990-2000 period, the annual deforestation rate for Central Africa's tropical forest is estimated at 0.16% per year, with a total deforestation rate of 1.6 % over 10 years, equaling 30 000 km^2 [131]. As for the period of 2000-2005, satellite data has shown an average forest loss rate of 0, 48% annually for 5 years, for a 5-year total of 2.4%, or 45 000 km^2 [132]. In total, between 1990 and 2005 around 75 000 km^2 of forest area has been cut down in the Congo Basin[133]. In comparison with deforestation rates in other equatorial forests, the CBF rates are by far the lowest[134]. Based on the measure of the total carbon stocked in the whole of the CBF[135],

[125] African Development Bank, "State of the Forest 2008" – Chapter 12

[126] United Nations Statistics Division, "Millennium Development Goals indicators, Carbon dioxide emissions (CO_2), thousand metric tons of CO_2", available at mdgs.un.org/unsd/mdg/SeriesDetail.aspx?srid=749&crid=

[127] Center for International Forestry Research (CIFOR), "Thinking beyond the canopy", annual report, 2008

[128] Consultative Group on Agricultural Research (CGIAR), "Trees Grow into the Job", *CGIAR NEWS*, September 2009, available at www.cgiar.org/enews/september2009/story_04.html

[129] African Development Bank, "State of the Forest 2008" – Chapter 12

[130] *Ibid*

[131] The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, "CONGO BASIN FOREST COVER CHANGE ESTIMATE FOR 1990, 2000 AND 2005 BY LANDSAT INTERPRETATION USING AN AUTOMATED OBJECT-BASED PROCESSING CHAIN", 2009, available at geobia.ugent.be/proceedings/papers%20proceedings/ErnstC_126_CONGO%20BASIN%20FOREST%20COVER%20CHANGE%20ESTIMATE%20FOR%201990,%202000%20AND%202005%20BY%20LANDSAT%20INTERPRETATION%20USING%20AN%20AUTOMATED%20OBJECT-BASED%20PROCESSING%20CHAIN.pdf

[132] *Ibid*

[133] *Ibid*

[134] World Resource Institute, "Voices from the Congo Basin", 2009, available at pdf.wri.org/working_papers/voices_from_the_congo_basin.pdf

75 000 km^2 of forest lost between 1990 and 2005 equals the release of approximately 1.8 billion metric tons of carbon for that period (uniquely from deforestation, not other anthropogenic CO_2 emitting activities.)

CHAPTER II – REDUCING EMISSIONS FROM DEFORESTATION AND DEGRADATION: REDD

Introduction to REDD

Measures to reduce CO_2 emissions emanating from deforestation and forest degradation are known as REDD, an internationally designed and nationally implemented mechanism to compensate forest and forest-resources owners and users for their lost income from the cessation of activities that emit forest carbon[136]. As of today, no global REDD system exists yet, but pilots projects in certain forested regions have been initiated[137].

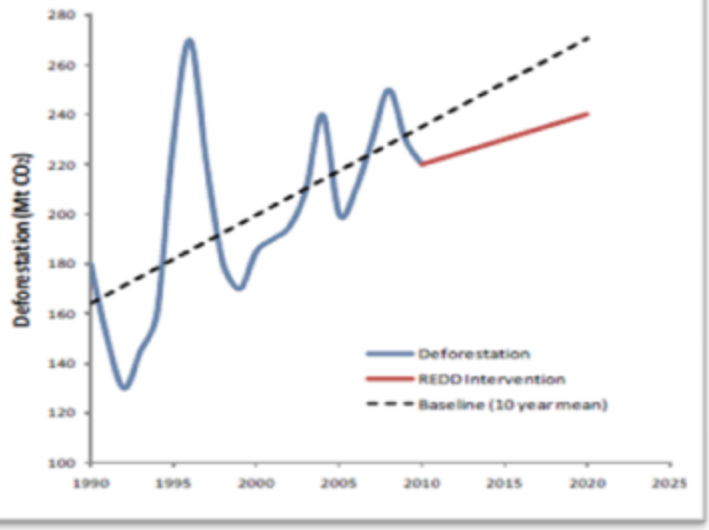
The general idea behind the concept of REDD is to offer financial incentives to developing countries that will voluntarily reduce national deforestation rates, or completely preserve forests all-together. By preserving forests, and more specifically the carbon stocked in trees, these countries could sell carbon credits on the international carbon market or receive financial compensation for the service they provide to the world: averted deforestation and averted CO_2 emissions. In other words, the basic aim of REDD is to transform the forest sector by using financial incentives to make intact, standing forests, and the carbon within them, more lucrative and valuable than forest-derived commodities such as agricultural goods and timber products. These incentives intend to make forest conservation more profitable and beneficial than forest exploitation and deforestation. The superior value of standing trees would lie in their carbon value, tradable in the global carbon market. This would enable forest conservation, through the above-mentioned market, to compete economically with the main drivers of deforestation, namely logging practices and the conversion of forest land to other uses.

The REDD architecture would entail, in the future, a system where developed countries pay developing countries for reductions in national deforestation levels. If countries eligible to

[135] African Development Bank, "State of the Forest 2008" – Chapter 12
[136] J. Hatcher, "Securing tenure rights and REDD", Rights and Resources Initiative, 2009
[137] K.M.Carlson, L.M.Curran, "REDD pilot project scenarios: are costs and benefits altered by spatial scale?", *Environmental Research Letters,* Issue 4, 2009

participate in REDD wish to receive credit for their forest carbon, within an internationally established carbon market, they would need to demonstrate measureable reductions in emissions. These emissions reductions would be compared to a "business-as-usual" reference level, known as the baseline, i.e. what would have happened anyway had reductions efforts not been initiated[138], as illustrated in figure 4. This baseline would thus project the amount of deforestation that would have occurred in the absence of REDD incentives. The amount of REDD payments would depend on the amount of reduction efforts. If deforestation is reduced below the set baseline, then countries would be rewarded for the avoided carbon emissions. The international carbon market, responsible for determining the international price of carbon, would then be utilized by industrialized nations to offset their own emissions by financially rewarding developing countries for the carbon sequestration performed on their territory[139]. In theory, all parties involved would benefit from this system. Developed countries would ensure that enough carbon is sequestered on the Earth's surface and doesn't reach the atmosphere, thus preventing further global warming and its costly impacts, while developing countries would receive money that is based on sustainable practices and is superior to other forests uses, such as timber extraction and conversion to pastures. The previously mentioned Stern report highlighted that climate change impacts, such as extreme weather events, are very impactful and cost all nations, rich and poor, a small percentage of

Figure 4 - How the historic baseline is determined



Source: K.Dooley, "Why Congo Basin countries stand to lose out from a market based REDD", Avoiding deforestation and Degradation, 2009

[138] K.Dooley, "Why Congo Basin countries stand to lose out from a market based REDD", *Avoiding deforestation and Degradation,* 2009

[139] A.Angelsen, "REDD Models and Baselines", *International Forestry Review,* Volume 10, Issue 13, pp 465-475, 2008

their GDP, demonstrating that climate change is not in anyone's financial interest[140]. Simply put, REDD entails channeling money from the developed world to forest holders, aiming to mitigate climate change and make forest conservation more profitable than the unsustainable exploitation, conversion, degradation and destruction of forests.

REDD seeks to fill an important gap: there is little economic valuation of biodiversity in Central Africa (and other tropical regions) and a general lack of financing for conservation efforts[141]. Conservation groups have long been the private financiers of the protection of the environment, but they cannot provide funding to preserve ecological hotspots indefinitely. The absence of economic incentives to conserve forests often results in a lack of interest amongst the local population and the industrial sector, especially when facing extreme poverty and immediate development needs[142]. REDD seeks to act as a positive incentive for these very people to conserve their forests. It has the appealing potential of achieving significant co-benefits, namely poverty alleviation and the conservation of biodiversity and ecosystem services. By financially rewarding individuals, communities, projects and countries that reduce greenhouse gas emissions from forests, REDD has the potential to deliver large cuts in emissions while at the same time contributing to poverty reduction and sustainable development.

Under a REDD regime , carbon sequestration projects would be undertaken by national or local governments, relevant NGOs that work in the concerned forest, the private sector, or any combination of these. A number of international organizations have already demonstrated their support for developing countries that wish to engage in REDD activities, such as the World Bank's Forest Carbon partnership facility, the UNREDD Program and Norway's International Climate and Forest Initiative. However, the direct actors and participants of REDD will be the

[140] N. Stern, "Stern Review on the economics of Climate Change", 2006, available at webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm

[141] A.Long, "Taking Adaptation Value Seriously: Designing REDD to Protect Biodiversity", *The Carbon & Climate Law Review*, Volume 3, Issue 3, pp. 314-323,October 2009

[142] D.W.Pearce, "The Economic Value of Forest Ecosystems", *Ecosystem Health,* Volume 7, Issue 4, pp 284-296, December 2001

populations who live off the forests and within them: the indigenous people and forest-dependent communities.

REDD on the international scene

The 1997 Kyoto Protocol was a major turning point in the fight against climate change. As of July 2010, 191 states have signed and ratified it, with the goal of achieving stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system[143]. However, despite the enormity of CO_2 emissions from deforestation, this issue was not included in the Kyoto agreement. The Protocol had discussed reforestation projects as way to obtain carbon credits, but had no mandate to address avoided deforestation[144]. Almost 15 years later, state leaders and decisions makers are finally paying attention to forests as almost never before, mainly because deforestation emits more greenhouse gases then than the transport or agriculture sectors, forests help maintain healthy ecosystems and they mitigate climate change[145]. The renowned Stern Review highlighted the importance of 'avoided deforestation' as an essential element in any future international agreement to combat climate change[146]. Despite this, it has taken the international community many years to notice that reducing emissions from deforestation and sequestering carbon from standing forests is an unavoidable element of an internationally coordinated effort to curb climate change. This was finally officially recognized at the 2007 Climate Change conference in Bali, organized by the United Nations Framework Convention on Climate Change (UNFCCC)[147]. Prior to Bali, international climate negotiations, such as the Kyoto Protocol, had more focus on fossil-fuel emissions and the reduction of greenhouse gases. Today, REDD is a crucial building block for the global climate regime that will follow Kyoto's end

[143] A. Grainger, D.H. Boucher, P. C. Frumhoff, W. F. Laurance, T. Lovejoy, J. McNeely, M. Niekisch, P. Raven, N. S. Sodhi, O. Venter, S. L. Pimm, "Biodiversity and REDD at Copenhagen", *Current Biology,* Volume 19, Issue 21, pp 974-976, November 2009

[144] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf

[145] J. Hatcher, "Securing tenure rights and REDD", Rights and Resources Initiative, 2009

[146] N. Stern, "Stern Review on the economics of Climate Change", 2006, available at webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm

[147] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf

in 2012. REDD has moved to the centre of the international climate debate over the past five years, after it was first mentioned in 2005 by the Coalition of Rainforest Nations and seriously discussed in 2006 within the UNFCCC[148]. The co-benefits of REDD, namely the reduction of global CO_2 emissions, the reduction of poverty and the vast ecological benefits of forest conservation, have sparked the interest of the international environmental community, composed of the many United Nations organizations, NGOs, research centers and State-led initiatives. International negotiations at the UNFCCC are now in the process of elucidating how the REDD reduction is to be measured and rewarded. For the moment, the idea in place is to award payments to forested countries which make improvements against a set deforestation baseline. These negotiation processes stress that countries with tropical forests should be given time and resources to build capacity and readiness for REDD implementation[149]. Many forest nations are preparing their REDD strategies and implementing pilot projects[150]. At the latest international Climate Change Conference, Cancun 2010, REDD was thoroughly discussed and State leaders agreed to set up a massive global 'green fund' that would finance carbon sequestration projects in the developing world, regardless of the evolution of a global carbon market[151]. It remains to be seen if, firstly, this fund will suffice in view of the billions needed to protect the world's forests and, secondly, if the developed world complies.

In 2007, at the above-mentioned Conference of the Parties to the UNFCCC in Bali (COP-13), the Bali Action Plan was created, aimed at enhancing original REDD objectives toward forest conservation, sustainable forest management and the enhancement of carbon stocks[152].

[148] C.Lang, "Forests, Carbon Markets and Hot Air: Why the Carbon Stored in Forests Should not be Traded", redd-monitor.org, available at www.redd-monitor.org/2010/01/11/forests-carbon-markets-and-hot-air-why-the-carbon-stored-in-forests-should-not-be-traded/

[149] K.Dooley, "Why Congo Basin countries stand to lose out from a market based REDD", *Avoiding deforestation and Degradation,* 2009

[150] K.M.Carlson, L.M.Curran, "REDD pilot project scenarios: are costs and benefits altered by spatial scale?", *Environmental Research Letters,* Issue 4, 2009

[151] S.Oberthur, "Global Climate Governance after Cancun: Options for EU Leadership", *The International Spectator,* Volume 46, Issue 1, pp5-13, 2011

[152] UNFCCC, "Fulfillment of the Bali Action Plan and components of the agreed outcome", 2009, available at unfccc.int/resource/docs/2009/awglca5/eng/04p01.pdf

REDD had evolved to REDD+. This upgrade is of great importance, as new considerations have now been integrated in order to provide innovative compensatory measures[153]:

- REDD was initially conceived to simply compensate countries for emissions reductions when compared to a "business-as-usual" scenario, or an average deforestation rate, the baseline. The higher the baseline deforestation rate, the higher the compensation for this avoided deforestation and avoided CO_2 emissions. In this context, there would have been an incentive to amplify future deforestation rates in order to obtain higher compensation. Furthermore, countries with low deforestation rates, such as Congo Basin nations, would receive little financial benefits, despite their extreme poverty[154]. Other tropical countries, such as Brazil and Indonesia, would receive the bulk of financial dividends, given their high deforestation rates. This would be unfair and inequitable, given that Brazil and Indonesia are much more developed and affluent countries than, for instance, the DRC. But the value of the tropical forests in all these places is practically the same: they all sequester carbon. In order to address this problem, REDD was upgraded to REDD+.
- REDD+ goes further than encouraging emissions reductions, it also provides compensation for forest conservation, sustainable forest management and enhancement of carbon stocks, directed towards local communities, indigenous people and forests involved in reducing emissions from deforestation and forest degradation. The primary aim of REDD had been to offset emissions though carbon financing. But with REDD+, the added objective of pro-poor development was put forth, making REDD+ a more socially responsible investment program. REDD+ doesn't merely aim to "not harm" poor communities through carbon retention, like REDD, but it aspires to deliver positive developmental and environmental benefits and pro-poor added value.

[153] C.Luttrell, K. Schreckenberg and L.Peskett, "The implications of carbon financing for pro-poor community forestry", *Forestry Briefing 14,* Forest Policy and Environment Programme, 2007.
[154] A.Karsenty, "The Architecture of Proposed REDD Schemes After Bali: Facing Critical Choices", *International Forestry Review,* Volume 10, Issue 3, pp 443-457, September 2008

REDD concerns

Potential REDD investments in developing countries will aim to guarantee effective maintenance and conservation of forest cover over a long timeframe while at the same time avoiding negative social, economical and environmental impacts. Investments always entail a certain amount of risk, and forestry carbon projects in developing countries are inherently risky investments, given the complex and often unpredictable nature of deforestation in these countries[155]. Furthermore, forest carbon storage can easily be sabotaged and reversed through natural or human causes, affecting the performance and durability of carbon emissions reduction efforts[156]. Add to that the wide geographic scope of tropical forests, difficulties in monitoring and enforcement, complex land ownership issues and poor quality of governance, and the result is investments filled with risks[157]. In the environmental business of carbon trading, risk reduction is thus of paramount importance.

Many issues must therefore be addressed before any serious initiation of the REDD process, which can be summed up in the following categories:

1. Measuring reductions in emissions when data is poor or insufficient;
2. Financing the REDD mechanism, a multi-billion dollar global project;
3. Distributing equitably the benefits of REDD investments in high-risk and fragile socio-economic contexts;
4. Monitoring reductions in deforestation and degradation, verifying that they are real (additionallity), and that they do not lead to more trees being chopped down in other forest areas (leakage) or the next year (permanence);
5. The efficacy and fairness of the baseline approach;
6. The impact of REDD on indigenous people, the subject of Chapter 3 of this thesis.

[155] L. Peskett and Z. Harkin, "Risk and responsibility in Reduced Emissions from Deforestation and Degradation", *ODI Forestry Briefings,* Issue 15, December 2007
[156] *Ibid*
[157] L. Peskett and Z. Harkin, "Risk and responsibility in Reduced Emissions from Deforestation and Degradation", *ODI Forestry Briefings,* Issue 15, December 2007

Measuring reductions in emissions when data is poor or insufficient:

Using satellite remote sensing, scientists are able to quantify tropical forest area and forest change. However, satellite monitoring and imagery in the Congo Basin is more challenging than in other tropical areas in the Amazon and South-East Asia, due to one unique limitation: the persisting presence of cloud cover[158]. Consequently, the ability to monitor changes in forest cover has been strained during the last 5 years, notably over the Atlantic coastal area of Equatorial Guinea, Gabon and Cameroon[159]. The determination of a baseline is therefore particularly problematic in the Congo Basin, due to a lack of reliable data on deforestation and CO_2 emissions. Furthermore, satellite imagery often relies on photo-interpretation, which is quite labor-intensive and costly, especially for long-term monitoring[160]. Satellite technology in this sub-region is thus not always available and reliable[161]. Research on the ground is not yet as developed as it is in other tropical countries, like Brazil, where the monitoring capacity of deforestation is much more advanced[162].

Financing the REDD mechanism, a multi-billion dollar global project:

REDD is considered a relatively low-cost and short-term measure to mitigate climate change, especially when it is compared to the whole conversion of fossil-fuel based economies into greener ones[163]. Still, REDD is estimated to cost billions of dollars annually to protect all the planet's forests. Some estimates go as high as 75 $US billion a year[164]. The costs of REDD can be grouped into three categories[165]:

[158] M. C. Hansen, D. P. Roy, E. Lindquist, B. Adusei, C. O. Justice, A. Altstatt, "A method for integrating MODIS and Landsat data for systematic monitoring of forest cover and change in the Congo Basin", *Remote Sensing of Environment,* Volume 112, Issue 5, pp 2495-2513, May 2008
[159] African Development Bank, "State of the Forest 2008" – Chapter 1
[160] *Ibid*
[161] *Ibid*
[162] Woods Hole Research Center, "Making REDD a Success: Readiness and Beyond", 2009, available at www.whrc.org/policy/pdf/cop15/synthesis_doc.pdf
[163] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf
[164] *Ibid*
[165] J. Hatcher, "Securing tenure rights and REDD", Rights and Resources Initiative, 2009

- Administrative and implementation costs: Measurement, monitoring, capacity building, planning, enforcement, governance, social programs, regulation, enforcement costs; improved forest management (including the clarification of land tenure); local and national capacity building; enhanced land use planning
- Opportunity costs to be offset: Many land uses that generate livelihoods or revenue involving deforesting or forest degradation will have to be abandoned. The loss of revenue from timber extraction, for instance, will have to be compensated.
- Transaction costs (especially with regard to carbon financing): Brokerage, verification, certification, insurance, quantifying existing carbon stocks; external verification; project documentation; registration fees

The main options and ideas for financing REDD are the following:

- Public-funding: Establishing a global REDD public fund[166], largely financed by budgetary allocations from developed countries, which are responsible for global warming in the first place. However, it is difficult to assess whether this type of funding will be sufficient and long-term. Experience indicates that securing sufficient sources of funding is a common and recurring problem in environmental projects and can hinder the ability of a financing mechanism, such as REDD, to achieve its objectives[167].
- Market-funding: Norway, a pioneer of REDD, argues that income from the auctioning of emission rights in industrial countries could finance REDD[168]. Basically, industrialized nations would pay for the right to pollute and emit CO_2, thus offsetting their carbon emissions by paying developing countries to preserve their carbon pools, i.e. their forests. These transactions would occur in a carbon market,

[166] T.Griffiths - Forest Peoples Programme, "Seeing 'REDD'? Forests, climate change mitigation and the rights of indigenous peoples and local communities", December 2008, available at ibcperu.org/doc/isis/9981.pdf
[167] World Bank, "Environmental Funds", Pollution Prevention and Abatement Handbook, July 1998, available at www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/p_ppah_finanEnviroFunds/$FILE/HandbookEnvironmentalFunds.pdf
[168] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf

potentially the most powerful and promising tool to ensure that enough financial resources are generated to meet the enormity of the task of protecting the Earth's forests. But the carbon market has many unresolved issues. The principal critique is that market-based solutions allow industrialized countries to continue emitting CO_2 by acquiring offsets in developing countries[169]. The largest emitters in the world would still maintain their fossil-fuel based economies, simply delaying the necessary and ultimately inevitable transition towards greener and more sustainable ones.

Distributing equitably REDD payments in a high-risk and fragile socio-economic context:

REDD mechanisms are very likely to be context specific, although bounded by certain international rules and the fundamental principles of market systems[170]. In the context of Africa, REDD and the accompanying carbon trading will have to deal with risk, specifically the risk of uncertainty in weakly governed and corrupt nations, which has been a historical, long-standing barrier to private sector investment on the continent[171]. As the international community ponders how the REDD mechanism will function, there is a growing consensus that private sector finance is the most feasible way of financing such a monumental environmental program[172]. But private investment is guided by the amount of risk involved, specifically the level of institutional capacity needed to attract and facilitate foreign investment[173]. The investment climate in Africa (especially Central Africa) requires the improvement of local and national institutions, in a way that transparent and enforceable laws, and stakeholder involvement in decision-making processes, are ensured[174]. The poor are the most vulnerable to

[169] K.Dooley, "Why Congo Basin countries stand to lose out from a market based REDD", *Avoiding deforestation and Degradation,* 2009

[170] L. Peskett and Z. Harkin, "Risk and responsibility in Reduced Emissions from Deforestation and Degradation", *ODI Forestry Briefings,* Issue 15, December 2007

[171] G. Cerbu, P.A Minang, B. Swallow, V. Meadu, "Global survey of REDD projects: What implications for global climate objectives?", *ASB PolicyBrief No. 12,* ASB Partnership for the Tropical Forest Margins, Nairobi, Kenya, 2009, available at www.asb.cgiar.org/pdfwebdocs/ASBPB12.pdf

[172] A. Grainger, D. H. Boucher, P. C. Frumhoff, W. F. Laurance, T. Lovejoy, J.McNeely, M. Niekisch, P.Raven, N. S. Sodhi, O. Venter, S. L. Pimm, "Biodiversity and REDD at Copenhagen", *Current Biology,* Volume 19, Issue 21, pp 974-976, 17 November 2009

[173] K.Dooley, "Why Congo Basin countries stand to lose out from a market based REDD", *Avoiding deforestation and Degradation,* 2009

[174] E. Asiedu, "Policy Reform and Foreign Direct Investment in Africa: Absolute Progress but Relative Decline", *Development Policy Review*, Volume 22, Issue 1, pp 41–48, January 2004

the interests, roles and responsibilities of different stakeholders, especially the more powerful ones such as timber corporations and the government. The lack of adequate safeguards against risks such as corruption and the lack of general assurance of the wider social and environmental impacts of REDD mechanisms mean that it is unlikely that Western investors will commit seriously to REDD[175]. Moreover, if risk-reduction is too focused on the interests of investors, then there is a danger that REDD will be inequitable, because certain affected stakeholders may end up being excluded from the system and its compensatory benefits[176]. The losers are most likely to be the poor, making REDD potentially inequitable in the long-run. There are unlikely to be any quick fix options for the design of the REDD mechanism or safeguards. The most dependable option is to encourage wider sectoral reform and institutional strengthening at national and local levels, and to design customized REDD systems that are adapted to the specific institutional and social contexts of implementing countries. Congo Basin countries are eager to benefit from carbon offsetting and green investments. But lucrative economic activities in the natural resources sectors of these countries, such as mining, logging and oil extraction, are often fraught with corrupt practices, low transparency, weak governance, inequitable distribution of profits and the marginalization of poor populations[177]. On the whole, investments in the Congo Basin come with high political, economic and social risks. REDD is also a form of investment, and these are the realities that its proponents will have to face if the mechanism is to help protect Congo Basin forests.

[175] L. Peskett and Z. Harkin, "Risk and responsibility in Reduced Emissions from Deforestation and Degradation", *ODI Forestry Briefings,* Issue 15, December 2007
[176] *Ibid*
[177] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf

Monitoring reductions in deforestation and degradation, verifying that they are real (additionality), and that they do not lead to more trees being chopped down in other forest areas (leakage) or the next year (permanence):

Congo Basin countries have a lot to gain if they participate in international carbon markets and thereby receive potentially large financial returns. Carbon and REDD investors in the West will be looking for the following results on the ground in the CBF[178]:

- Additionality and permanence: proof that the REDD activity will make a positive difference compared to a "business-as-usual" scenario, and that this added value, or additionality, will not be temporary and will not be affected by destabilizing factors, such as political change, land ownership issues, conflict and other in-country difficulties. Investors will also require regular verification of the positive changes which result from their investments, in a transparent, thorough and neutral manner.

- Absence of leakage: REDD activity in one area will not result in the shifting of deforestation elsewhere. Simply put, companies or entities which profit from deforestation in one area where REDD is suddenly implemented simply transfer their activities to another REDD-free forested area. For example, the expansion of commercial agriculture on forest soils in one country is the main source of deforestation, and is replaced by a REDD mechanism and the accompanying financial incentives, so the activity is simply relocated to another forested area where REDD is absent. This is carbon 'leakage'. Leakage can be minimized through regional monitoring of land use changes and the broadening of conservation incentives[179]. Nonetheless, risks of leakage definitely undermine the REDD system, especially if incentives are not in place for neighboring countries to protect their forests. This is very likely to happen, as long as demand for global commodities continues to put pressure on forests.

[178] C.Luttrell, K. Schreckenberg and L.Peskett, "The implications of carbon financing for pro-poor community forestry", *Forestry Briefing 14,* Forest Policy and Environment Programme, 2007.
[179] K. Lawlor, D. Huberman, "REDD and human rights", *Rights-based approaches, Exploring issues and opportunities for conservation*, 2008

The efficacy and fairness of the baseline approach:

As explained earlier, the baseline is the average annual deforestation rate over a set historical period, 10 years or so. In practice, one selects a given area, analyses average annual deforestation rates for a 10-year period, then compares current deforestation rates against this baseline average, which represents a business-as-usual scenario, or "what would have happened anyway" if REDD had not been implemented. In order to sell carbon credits generated by forest carbon retention, countries have to demonstrate a reduction in emissions and prove that there is less deforestation in the current year than the "business-as-usual" baseline average. When current deforestation rates are below this average, forest carbon credits can be issued. The problem lies in the fact that deforestation can continue as long as the actual deforestation rate is below the established historical baseline. For instance, a country cuts down an average 5% of its forest per year. Once REDD is implemented in this country, authorities decide to reduce deforestation to 3%. The 2 points difference is converted into carbon credits and cash. But deforestation would still continue, even if at the reduced rate of 3%. REDD would then simply succeed in slowing down deforestation, but would not stop it entirely. This would simply delay or slow-down the destruction and degradation of the forest. Furthermore, in this same example, deforestation could actually increase, from 3 to 4%, and the country would still receive credits. In this logic, countries could simply reduce deforestation in order to receive REDD credits whilst continuing to cut down trees.

The baseline is also problematic in that it risks rewarding more substantially countries with high historical deforestation rates, as mentioned earlier. Currently, CBF countries have relatively low deforestation rates compared to their tropical forest counterparts in the Amazon and South-East Asia, meaning that the poorest Africans may receive only small carbon credits and payments while the more developed and affluent Brazilians and Indonesians will obtain the most financial benefits. Although this issue has been addressed by the newly designed REDD+ concept, it remains an important consideration for the future of the mechanism.

These complex REDD weaknesses touch on varying aspects of the mechanism: socio-economic, technical, scientific, political etc. There are no quick fixes for these issues, and there is no one-size-fits-all REDD system. As explained earlier, REDD will most likely have to be "fitted" and adapted to each country's specific political regime, institutional capacity, scientific capabilities, levels of poverty and development, levels of corruption, environmental priorities and levels of social democracy and representation. The above-mentioned obstacles to REDD will assist the present study in the preparation of an honest and holistic REDD strategy for Cameroon's Tri-Sangha region, in the sixth chapter of this thesis.

CHAPTER III – INDIGENOUS PEOPLE, FOREST TENURE AND REDD

Forest-dwelling communities of the Congo Basin Forest

Forests sustain livelihoods and employment for over 50 million people in the CBF, including some 150 different ethnic groups, some of which follow an ancient hunter-gatherer lifestyle and possess an unmatched indigenous knowledge of the forest ecosystem[180]. These indigenous populations of the CBF, numbered at around 500 000 pygmies, are totally dependent on forest ecosystems for survival and everyday life[181]. Forests are a natural reservoir for their diverse human needs. They provide wood for energy (fuelwood) and construction material. Forests also contain animal proteins, namely bushmeat but also fish, and other foods such as fruits and nuts[182]. Unfortunately, most indigenous forest communities in this sub-region are deeply impoverished and threatened by outside forces[183].

[180] Congo Basin Forest Fund (CBFF), "A statement… why a fund is needed", available at www.cbf-fund.org/cn/why/statement.php

[181] J.Lewis, J.Nelson - Forest Peoples Programme, "Logging in the Congo Basin. What hope for indigenous peoples' resources, and their environments?", 2009, available at cameroun-foret.com/system/files/18_39_09.pdf

[182] E. Baldo-Soriano, "Resource material on indigenous peoples, forest and REDD", TEBTEEBA (Indigenous Peoples' International Centre for Policy Research and Education), available at www.tebtebba.org/index.php?option=com_content&view=article&catid=87%3Aclimate-change&id=96%3Aresource-material-on-indigenous-peoples-forest-and-redd-cameroon&Itemid=64

[183] J.Lewis, J.Nelson - Forest Peoples Programme, "Logging in the Congo Basin. What hope for indigenous peoples' resources, and their environments?", 2009, available at cameroun-foret.com/system/files/18_39_09.pdf

Forest-dwelling communities are often marginalized in the decision-making processes that affect forests. So far, governments in the Congo Basin have been favoring more lucrative large-scale industrial operations, namely logging, mining and agriculture, over community-scale forest tenure and local enterprises[184]. For these reasons, forest resources are slowly diminishing as timber corporations and extractive industries slowly colonize and exploit the forests[185]. These entities often restrict access to certain resources and forest areas, violating indigenous resource rights whilst also reducing their traditional hunting territory[186]. And when governments in the CBF do decide to protect the forest, they often do so in a way that compounds forest peoples' problems by arbitrarily restricting access to protected areas, which also limits local access to forest resources which people traditionally depend on[187]. One important concern about REDD implementation is the possibility that it may create new incentives for States to restrict people's access to forests even further[188]. By valuing forests for their global climate regulation service, the government might be inclined to neglect local needs and isolate the forests. This particularly threatens the voiceless indigenous people, virtually the most vulnerable and marginalized populations of the Congo Basin. In many CBF countries, indigenous people, such as the Pygmies, do not possess formal citizenship and have no legal status or representation[189]. Consequently, they are unable to defend themselves, and their vast and invaluable traditional knowledge about forest ecosystems and their sustainable use is ignored, as well as their customary land rights.

As explained in chapter 2**,** growing international interest in paying developing countries to 'Reduce emissions from deforestation and degradation' depends on effective risk reduction, safeguards and investor assurance at national and sub-national levels. Congo Basin countries have demonstrated eagerness to benefit from the REDD opportunity, and have already

[184] A.Karsenty - CIRAD, "Overview of Industrial Forest Concessions and Concession-based Industry in Central and West-Africa and Considerations of Alternatives", April 2007

[185] E.Reed, M.Miranda – WWF, "Assessment of the mining sector and infrastructure development in the Congo Basin region", January 2007

[186] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf

[187] *Ibid*

[188] K. Lawlor, D. Huberman, "REDD and human rights", *Rights-based approaches, Exploring issues and opportunities for conservation,* 2008

[189] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf

welcomed REDD-preparedness initiatives on their territory[190]. However, these initiatives have already illustrated the many shortfalls regarding adequate governance and respect for human rights[191], matters that will inevitably need to be dealt with if REDD expands into a full-scale international effort. Indeed, REDD happens to address some crucial and long-standing issues in Central Africa, such as governance, corruption, land tenure and the rights of indigenous people. These are complex political and social problems that have somewhat hindered Central Africa's general advancement and development since decolonization[192]. If REDD is implemented in the wrong context, without effective reform and progress on these issues, the risks include large-scale land speculation, eviction and displacement of indigenous and other forest-dwelling populations, loss of traditional indigenous knowledge and corruption as certain elites will look to profit from lucrative carbon deals[193]. Most alarmingly, a poor REDD scenario will probably fail to avert deforestation and reduce CO_2 emissions. Carbon financing has the potential to offer high returns but the downside is the high level of risk for sensitive, small-scale beneficiaries, such as indigenous communities. In an unfavorable context of insecure land tenure and misrepresentation of indigenous rights, REDD risks for indigenous people would also include the following:

- Violation of customary land rights and arbitrary State-led enforcement measures.

  This could lead to loss of access to forests for subsistence and income generation activities, land use conflicts and physical displacement from forests. Pygmies' could then become 'environmental refugees' or 'REDD refugees'. They could end up being the victims of this scheme, rather than the beneficiaries[194].
- Indigenous people may miss out on their legal and moral right to financially benefit from REDD or other forest carbon programs that might

[190] K.Sena, "REDD and indigenous peoples' rights in Africa", *Indigenous Affairs,* Issue 1, 2009
[191] T.Griffiths - Forest Peoples Programme, "Seeing 'REDD'? Forests, climate change mitigation and the rights of indigenous peoples and local communities", December 2008, available at ibcperu.org/doc/isis/9981.pdf
[192] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf
[193] *Ibid*
[194] R.Kyster, "REDD+, transparency, participation and resource rights: the role of law", *Environmental Science and Policy,* Volume 14, Issue 2, pp 118-126, March 2011

follow if these succeed in being lucrative. The government might attempt to ignore their situation and exclude them from other potentially lucrative forest carbon projects[195].

- Their inability to participate adequately in carbon projects might compound and worsen longstanding issues affecting them, such as the recognition of their property rights, their lack of access to information and their historical marginalization from mainstream society[196].
- Their lack of education, information and general understanding of the REDD system might put them at risk of accepting exploitative carbon contracts. Communities might unknowingly accept unfair and disadvantageous terms that sign away their land rights and undervalue the services provided by the forests on their grounds[197].
- REDD benefits might end up in the hands of the elite, due to a misrepresentation of indigenous communities and inadequate and corrupt governance systems, further widening the gap between rich and poor, and indigenous and non-indigenous people[198].

Conversely, REDD might also provide significant opportunities to positively enhance forest-dwelling indigenous livelihoods. With good planning and good governance, REDD could:

- Encourage governments to formalize the customary land rights of forest dwellers. This would help secure the income-generating benefits of REDD and make the process more sustainable, while avoiding land conflicts and bad publicity for the State[199].

[195] K. Lawlor, D. Huberman, "REDD and human rights", *Rights-based approaches, Exploring issues and opportunities for conservation,* 2008
[196] R.Kyster, "REDD+, transparency, participation and resource rights: the role of law", *Environmental Science and Policy,* Volume 14, Issue 2, pp 118-126, March 2011
[197] K. Lawlor, D. Huberman, "REDD and human rights", *Rights-based approaches, Exploring issues and opportunities for conservation,* 2008
[198] L. Peskett**,** D. Huberman, E. Bowen-Jones, G. Edwards, J. Brown, "Making REDD work for the poor", *Research reports and studies*, September 2008
[199] K. Lawlor, D. Huberman, "REDD and human rights", *Rights-based approaches, Exploring issues and opportunities for conservation,* 2008

- Stimulate rural economies by generating new revenue, allowing investments in much-needed social services, such as health care centers, schools, water systems etc[200].
- Create new income for poor forest dwellers, encouraging them to monitor and protect their forests. REDD could succeed in finally bridging the gap between environmental conservation and economic development[201].
- Maintain forest' ecosystem services, such as flood control, disease prevention and carbon sequestration. This would help enhance the adaptive capacity of poor rural populations, who are the most vulnerable to climate change and increasing extreme weather events[202].
- Maintain the forest's provisioning of ecosystem products. These are small-scale sustainable commodities that the forests provide, such as fuelwood, medicinal plants and food. As climate change increases pressure on man-made agricultural systems, these goods could help sustain forest-dwelling communities in the long run[203].

As such, the REDD mechanism clearly presents both opportunities and threats for indigenous people. Given their precarious state and relative isolation, most indigenous communities have naturally little access to information about REDD. But the few NGOs and organizations that work to represent indigenous people and defend their rights have recently begun to address the issue of REDD, expressing both hope and concern[204]:

- Hope about the exceptional and unprecedented opportunity for forest protection, secure tenure and poverty reduction represented by REDD.

[200] *Ibid*
[201] *Ibid.*
[202] I. Bond, M. Grieg-Gran, S. Wertz-Kanounnikoff – International Institute for Environment and Development, "Incentives to sustain forest ecosystem services: a review and lessons for REDD", 2009
[203] K. Lawlor, D. Huberman, "REDD and human rights", *Rights-based approaches, Exploring issues and opportunities for conservation,* 2008
[204] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf

- Concern about the context and climate in which REDD might be implemented, a situation of highly centralized, top-down decision making that favors evictions, expropriations and the corrupted interest of the elite, notably in the forest sector. Indigenous people are afraid that REDD might reinforce inequalities if government and private sector elites attempt to capture lucrative forest carbon deals.

REDD risks for Indigenous people

As mentioned earlier, REDD's effectiveness will not only be driven by its potential climate and environmental benefits but also by its impacts on rural and indigenous communities. The biggest challenges remain governance issues, such as weak rural land tenure regimes, limited access by vulnerable groups to investment finance, markets and information, and the corrupt and unfair capture of benefits by local or national elites. Evidence from a number of existing carbon forestry projects demonstrate the dangers of communities being misled and trapped into unfavorable legal agreements, unaware of the risk of low returns, abusive contracts, land speculation by investors and hidden legal obligations[205].

Indigenous peoples around the world are already starting to label the REDD/REDD+ mechanism "CO2lonialism of forests", or capitalism of the trees and air[206]. At the 2007 Bali Climate negotiations, where REDD was thoroughly discussed, the International Indigenous Peoples Forum on Climate Change (IIPFCC) publicly vented its distrust of the mechanism[207] : "REDD/REDD+ will not benefit Indigenous Peoples, but in fact will result in more violations of Indigenous Peoples' rights. It will increase the violation of our human rights, our rights to our lands, territories and resources, steal our land, cause forced evictions, prevent access and threaten indigenous agricultural practices, destroy biodiversity and cultural diversity and cause social conflicts. Under REDD/REDD+, States and carbon traders will take more control over our forests." Therefore, there is a real fear among Indigenous people that REDD will give more

[205] C.Luttrell, K. Schreckenberg and L.Peskett, "The implications of carbon financing for pro-poor community forestry", *Forest Policy and Environment Programme,* 2007.
[206] F. Mata'ese Elisara, **"**REDD is CO2lonialism of Forests", 2009, available at thereddsite.wordpress.com/2009/12/15/guest-article-redd-is-co2lonialism-of-forests/
[207] Carbon Trade Watch, "NO REDD!", 2010, available at noredd.makenoise.org/wp-content/uploads/2010/REDDreaderEN.pdf

control of their ancestral forests to more powerful entities, such as State forest ministries, timber companies, traders, lawyers, speculators, brokers and even conservation organizations, who might conspire to use carbon offset schemes to secure valuable forest lands[208]. The following points sum up the most pressing REDD concerns voiced by indigenous people and their civil society advocates:

- One of the most contentious issues is the implication that REDD revenues and benefits might not be equitably distributed to forest communities[209]. Conflicts already exist between the State and customary rights holders, and this is currently leading to an inequitable distribution of forest revenues, as is the case in many forested areas of Central Africa[210]. From the perspective of indigenous and traditional communities, climate change is evident in their forests, and industrialized countries are to blame[211]. These communities believe that their traditional activities have not harmed but have protected the forest, and they would thus welcome a form of REDD that would support and reward them to continue this, not one that would prolong the destruction of their forests and perpetuate their marginalization[212].Traditional groups fear that REDD might not benefit them but exclude them further and reward more powerful players, such as loggers, the State and local authorities, and even conservationists, who are recognized by formal national and commercial laws, while ignoring or inadequately compensating local communities whose rights are based on informal norms[213]. The scientific and environmental community has already made abundantly clear that REDD currently focuses too much on markets and less on the issue of poverty, and this might benefit

[208] A.A. Doolittle, "The politics of indigeneity: Indigenous strategies for inclusion in climate change negotiations", *Conservation and Society,* volume 8, Issue 4, pp 286-291, 2010
[209] J. Ghazoul, R. A. Butler, J. Mateo-Vega, L. Pin Koh, "REDD: a reckoning of environment and development implications", Trends in Ecology & Evolution, Volume 25, Issue 7, pp 396-402, July 2010
[210] P.R. Oyono, C. Kouna, W. Mala, "Benefits of forests in Cameroon. Global structure, issues involving access and decision-making hiccoughs", *Forest Policy and Economics,* Volume 7, Issue 3, pp 357-368, March 2005
[211] Forest Peoples Program (FPP), *"Forest people express concerns about REDD in Cameroon",* 2010, available at www.redd-monitor.org/2010/07/08/baka-bagyeli-and-bakola-forest-people-express-their-concerns-about-redd-in-cameroon/
[212] *Ibid*
[213] Forest Peoples Program, "Forest people express concerns about REDD in Cameroon", 2010, available at www.redd-monitor.org/2010/07/08/baka-bagyeli-and-bakola-forest-people-express-their-concerns-about-redd-in-cameroon/

eager money-hungry governments while neglecting poor forest-dwelling communities[214]. It is natural to question whether governments will eventually share and distribute any income provided by a REDD-induced carbon scheme with poor indigenous forest communities, especially when considering the current inequitable distribution of forestry revenue from logging in many CBF countries[215]. Indigenous voices insist that REDD regimes compensate them adequately for their distinctive role in forest protection[216]. They point out that they have historically helped preserve tropical forests and argue that they need to be included fairly in benefit sharing and separately from the other stakeholders, given their unique position as forest holders[217].

- Past and current incentives for developing countries to preserve forests have been characterized not only by unfair benefit redistribution, but also by the limited participation of marginalized, forest-dwelling communities in the decision-making processes that affect these forests[218].The absence of indigenous groups in the planning processes that precede forest conservation projects often leads to inadequate benefit-sharing and other injustices[219]. Indigenous groups and advocates have actively voiced their desire and merit to be included and consulted thoroughly in crucial decision-making and planning processes that precede conservation projects[220].
- Moreover, rural communities also fear that REDD and other environmental projects may aim to primarily protect or sequester carbon, while neglecting other goods and services

[214] Center for International Forestry Research (CIFOR), *Thinking beyond the canopy*, annual report 2008
[215] P.R. Oyono, C. Kouna, W. Mala, "Benefits of forests in Cameroon. Global structure, issues involving access and decision-making hiccoughs", *Forest Policy and Economics,* Volume 7, Issue 3, pp 357-368, March 2005
[216] Forest Peoples Program, "Forest people express concerns about REDD in Cameroon", 2010, available at www.redd-monitor.org/2010/07/08/baka-bagyeli-and-bakola-forest-people-express-their-concerns-about-redd-in-cameroon/
[217] *Ibid*
[218] *Ibid*
Center for International Forestry Research (CIFOR), "Forests and Climate Change: Tough but fair decisions needed", 2007
[219] M.B.Lane, "The role of planning in achieving indigenous land justice and community goals", *Land Use Policy,* Volume 23, Issue 4, pp 385-394, October 2006
[220] Forest Peoples Program, "Forest people express concerns about REDD in Cameroon", 2010, available at www.redd-monitor.org/2010/07/08/baka-bagyeli-and-bakola-forest-people-express-their-concerns-about-redd-in-cameroon/

that have cultural and/or spiritual value for the indigenous people[221]. The fear is that conservation under REDD will prevent indigenous people from accessing and using their traditional forest resources, violating their historical customary occupancy of forest lands[222].

In regions with the highest deforestation rates in the tropics, commercial agriculture and logging are the main drivers of deforestation[223]. Small-scale agriculture and wood harvesting contribute much less to deforestation, as these are mainly subsistence activities practiced by the poor, who simply do not have the means to clear large areas of forests[224]. And the further communities live from roads, markets and urban areas in the forest, the less they contribute to deforestation[225]. Remote, forest-dwelling communities, such as the ones found in indigenous villages, deep inside the forest, have been living there for thousands of years, with little or no environmental impact compared to the less sedentary agricultural communities situated along main roads[226]. Therein lies the issue of misrepresentation and/or ignorance of indigenous communities in the REDD system. If governments want to reduce national deforestation rates drastically, in order to profit from REDD, they will surely make compensatory payments to large-scale landowners, and might overlook individuals and small communities that appear to have a small impact on the forest[227]. Nevertheless, these small communities have historically preserved forests, and have actively used this argument to voice their unhappiness with the current exclusionary evolution of the REDD process[228]. Their traditional lands and resources are under threat from both the drivers of deforestation, such as large-scale agriculture and

[221] Center for International Forestry Research (CIFOR), "Forest Carbon and Local Livelihoods", 2002
[222] Carbon Trade Watch, "NO REDD!", 2010, available at noredd.makenoise.org/wp-content/uploads/2010/REDDreaderEN.pdf
[223] K. Lawlor, D. Huberman, "REDD and human rights", *Rights-based approaches, Exploring issues and opportunities for conservation,* 2008
[224] *Ibid*
[225] *Ibid*
[226] K. Lawlor, D. Huberman, "REDD and human rights", *Rights-based approaches, Exploring issues and opportunities for conservation,* 2008
[227] D.Huberman – IUCN, "REDD and Poverty: The social implications of reducing emissions from deforestation in developing countries", November 2007
[228] Carbon Trade Watch, "NO REDD!", 2010, available at noredd.makenoise.org/wp-content/uploads/2010/REDDreaderEN.pdf

industrial timber production, as well as the potentially exclusionary conservation efforts of governments, such as REDD.

To address these concerns, representatives and NGOs working with traditional groups have called for the reform of national legislations to ensure recognition of land rights of indigenous communities[229]. They have also expressed great concern about corruption in the forest sector, which could hinder the equitable distribution of eventual REDD revenues[230]. If REDD is to be implemented equitably, they have called for the following preconditions[231]:

- Total transparency, and honest management of eventual REDD revenues and market transactions
- Free, prior and informed consent (FPIC) of indigenous people, thus increasing their participation in the identification and planning of projects prior to their implementation
- Recognition of customary indigenous rights to land and resources they have historically occupied and used, certainly the most significant and complex demand

Forest Tenure

Few countries in the developing world have provided adequate legislation concerning forest tenure rights, which remain a complex and challenging issue[232]. Rights to natural forests, or forest tenure, are often unclear and overlapping in most developing countries and subject to multiple claims by different social actors[233]. At the moment, most of the world's forests, especially in the developing world, are under contested ownership claims[234]. In developing

[229] Forest Peoples Program, "Forest people express concerns about REDD in Cameroon", 2010, available at www.redd-monitor.org/2010/07/08/baka-bagyeli-and-bakola-forest-people-express-their-concerns-about-redd-in-cameroon/
[230] *Ibid*
[231] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf
[232] Center for International Forestry Research (CIFOR), "Forest Carbon and Local Livelihoods", 2002
[233] M.Brockhaus – CIFOR, "Realising REDD+: national strategy and policy options", 2009
[234] *Ibid*

countries, two-thirds of forests are State-owned, even though local communities may have historical claims and customary rights to these lands[235].

Natural resource tenure insecurity is the condition wherein users and holders of land and surrounding resources consider their occupancy and tenure rights to be at risk and uncertain in duration[236]. On the other hand, secure tenure is a situation where the user/holder of land/resources has confidence that they will maintain the occupancy/use of this resource without external arbitrary restrictions and/or expulsions for a known, predetermined period of time, or permanently[237]. In practical terms, tenure can be viewed as a bundle of rights, i.e. the right to access a resource, to exploit it, to manage it and to benefit exclusively from it, for people and/or groups vis-à-vis a specific resource[238]. Tenure is secure when communities possess private group rights, because these are less easily controlled or expropriated by governments or outside investors, and are thus more advantageous in negotiations. Conversely, communities that only have access rights to public lands are more vulnerable when dealing with more powerful actors[239].

Secure tenure allows for more equitable benefit-sharing[240], and this is of crucial importance for REDD implementation and determining who the beneficiaries will be. As illustrated in this chapter, in areas where poor people have weak powers to claim and assert their land rights or where rights do not exist, they will be particularly disadvantaged in negotiating benefits, which will probably fall into the hands of more powerful elites[241]. Even the private sector, responsible for kick-starting the global carbon market, has emphasized that clear tenure rights are fundamental in order to guarantee secure and transparent transactions within

[235] Center for International Forestry Research (CIFOR), "Forest Carbon and Local Livelihoods", 2002
[236] FAO and ILRI (International Livestock Research Institute), "Livestock policy analysis", 1995, available at www.fao.org/wairdocs/ilri/x5547e/x5547e1p.htm
[237] *Ibid*
[238] *Ibid*
[239] A. M. Larson & J. C. Ribot, "The poverty of forestry policy: double standards on an uneven playing field", *Sustainability Science,* 2006, available at pdf.wri.org/sustainability_science_poverty_of_forestry_policy.pdf
[240] N. Landell-Mills," Developing markets for forest environmental services: an opportunity for promoting equity while securing efficiency?", Philosophical Transactions of the Royal Society, Volume 360, Issue 1797, pp 1817-1825, 2002
[241] L. Peskett and Z. Harkin, "Risk and responsibility in Reduced Emissions from Deforestation and Degradation", *ODI Forestry Briefings,* Issue 15, December 2007

a REDD financial mechanism[242]. This is especially relevant for Africa, where uncertainty, complexity and conflict surrounding community-informal land tenure and property rights in rural and forest areas are common and recurring issues. At the moment, private investors generally perceive community forestry in the Congo Basin as quite risky, as explained in Chapter 2. The lack of secure rights over land and carbon is one of the major uncertainties facing buyers and producers in the carbon market[243]. Tenurial uncertainties in many CBF countries, in addition to aforementioned concerns, do not make the REDD project an attractive investment option yet[244]. In fact, insecure land tenure is often a driver of deforestation. Unrecognized community tenure rights often lead to conflicts and rapid deforestation as the forests are exploited for short-term gains[245]. Conversely, forest communities with secure land tenure are more inclined and encouraged to maintain and protect their forests than those with insecure tenure[246]. In view of that, secure tenure rights can have positive effects on the ecology of a forest and can thereby reduce forest carbon emissions and enhance carbon sequestration capacities[247]. The vast empirical and practical evidence that communities and individuals with secure tenure rights maintain and conserve forests successfully is an important consideration for REDD supporters, suggesting that REDD payments for avoided deforestation have more chances of succeeding with communities that already benefit from secure tenure[248]. One such example of successful forest management by indigenous people can be found deep inside the Amazon. Indigenous people living in a demarcated forest reserve in the Brazilian tropical rainforest have proven to be very effective at reducing carbon emissions from forest fires[249]. Deforestation caused by these fires is much higher outside the reserve, perhaps due to the superior traditional forest knowledge of the local natives[250]. Other studies have confirmed that

[242] J. Hatcher,"Securing tenure rights and REDD", Rights and Resources Initiative, 2009
[243] *Ibid*
[244] C.Luttrell, K. Schreckenberg and L.Peskett, "The implications of carbon financing for pro-poor community forestry", *Forest Policy and Environment Programme,* 2007.
[245] C. Araujo, C. Araujo Bonjean, J-L. Combes, P. Combes Motel, E.J. Reis, "Property rights and deforestation in the Brazilian Amazon", *Ecological Economics*, Volume 68, Issues 8-9, pp 2461-2468, June 2009
[246] J. Hatcher, "Securing tenure rights and REDD", Rights and Resources Initiative, 2009
[247] *Ibid*
[248] *Ibid*
[249] D.Nepstad *et al.,"*Inhibition of Amazon Deforestation and Fire by Parks and Indigenous Lands", *Conservation Biology*, Volume 20, Issue 1, pp 65-73, February 2006
[250] *Ibid*

community-based forest management is often more effective and successful than State-led forest management when analyzing biodiversity maintenance, community livelihoods and carbon sequestration in community-owned forests[251]. Local communities have surprisingly good capacities of rehabilitating degraded land, protecting fragile forest ecology and maintaining low deforestation rates[252]. Concerning the Amazon, Brazil is a standout example of a heavily forested country which has taken major steps to clarify its tenure system and fully recognize indigenous claims to land. Although deforestation rates in the Amazon are significantly higher than in Central Africa, in terms of land tenure Congo Basin countries can learn a great deal from "the other lung of the earth". Brazilian law has formally recognized 'terras indigenas', a legal category assigned to traditional indigenous lands. This legal basis led to State forest lands being rapidly transferred to indigenous people and local communities, the result being a healthier forest on indigenous lands and fair recognition of indigenous rights[253]. The Brazilian model of terras indigenas is further discussed later in this thesis.

Tenure Reform

Tenure reform in favor of forest-dependant groups secures land rights and reduces vulnerability to expropriation by outside interests[254]. The recognition of forest tenure rights, or rights to property of forests, refers to a situation where central and provincial governments recognize customary rights and cede claims of forest ownership and management rights to communities who have historically used and occupied forested lands[255]. But this type of tenure reform requires political will and the correct implementation on the ground, both largely lacking throughout the Congo Basin. Furthermore, the granting of land and resource rights is almost always contested and controversial, given the highly political context and socio-

[251] J. Hatcher, "Securing tenure rights and REDD", Rights and Resources Initiative, 2009
[252] The Center For Peoples and Forests, "Vietnam: Why REDD+ needs local people", 2010, available at unfccc.int/files/methods_science/redd/application/pdf/recoftc_redd_vietnam_local_people.pdf
[253] *Ibid*
[254] C.Boone, "Property and constitutional order: Land tenure reform and the future of the African state", *African Affairs,* Volume 106, Issue 425, pp 557-586
[255] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf

economic implications[256]. Recognizing tenure rights is not merely an exercise of title granting to communities. Titling or registration is often a necessary legal step, but true tenure security is the outcome of several social, cultural, economic and political measures[257], touching on governance efficiency, markets for timber and non-timber forest products, judicial systems, law enforcement and human rights. An overly simplistic titling approach, where a simple titling program is implemented in order to strengthen tenure security, would not be sufficient. Effective tenure reform also requires the formalization of customary systems and the exclusion of actors with secondary or seasonal rights, such as timber corporations and other resource extracting industries. Tenure recognition measures come in many forms, such as the following[258]:

- Legal reform, rendering customary land claims equal to statutory claims
- Creating and recognizing forest user groups and livelihoods in geographically-defined forest areas
- Creating community forest concessions

Programs to recognize tenure are long-term endeavors that often encounter political and private-market opposition. The cost of recognizing rights are likely to be higher in areas that are contested by different actors, such as indigenous groups and private companies[259]. Furthermore, the implementation of national policies that recognize forest community tenure rights almost always follow costly legislative reform.

The following is a basic list of costs associated with tenure recognition[260]:

- Administrative costs : processing registrations and titles, payroll costs; office costs;
- Legal and dispute resolution costs: court costs, alternative-dispute resolution settlements; documentation
- Equipment and material : vehicles, GPS tools, maps, markers, surveying tools

[256] S. Moyo, "Land in the Political Economy of African Development: Alternative Strategies for Reform", Council for the Development of Social Science Research in Africa, available at www.codesria.org/IMG/pdf/sam_moyo.pdf
[257] G. Feder, A. Nishio, "The benefits of land registration and titling: Economic and social perspectives", *Land Use Policy,* Volume 15, Issue 1, pp 25-43, January 1998
[258] United Nations Human Settlements Programme, "Enhancing urban safety and security, Global Report on Human Settlements", 2007.
[259] J. Hatcher, "Securing tenure rights and REDD", Rights and Resources Initiative, 2009
[260] *Ibid*

- Staff costs: International, national and local staff salaries and benefits
- Awareness raising and consultation costs: printed materials, site-visits
- Training: training on GPS, surveying, consultation skills, para-legal skills

Conversely, these costs do not reflect the savings the government will make by devolving responsibilities to communities. When communities' forest tenure rights are fully recognized, they take on environmental responsibilities, such as forest conservation, avoided deforestation, ecology restoration etc., which frees up State resources from doing these same tasks[261]. Other co-benefits, for both traditional people and the State, include the preservation of cultural identities, reduced conflicts over resources, increased investment in community development, poverty reduction and increased income for poverty-stricken rural communities[262].

Brazilian model of Land tenure reform

Brazil contains the primary "lung of the earth", the massive, unmatched Amazon Basin forest. This rainforest is home to traditional indigenous inhabitants, who are also threatened by forces of modernization and economic development. However, the Brazilian government has greatly succeeded in addressing indigenous tenure issues, which is an important inspiration and model for the REDD plan proposed in this thesis.

The Brazilian government has set aside large sections of forests – roughly 12.5% of Brazil's total area and 25% of the Amazon Basin – for the indigenous population, made up of about 450 000 Indians or 0.25% of the country's total population[263]. This translates into 450 000 people living in a forested area of 1,062,500 km^2, for a very low density of 2.3 people/km^2. Hence, traditional Indians now own ¼ of the Amazon forest, an area twice the size of France[264]. These indigenous reserves were formalized under Brazil's 1988 constitution and have greatly

[261] The Center For Peoples and Forests, "Vietnam: Why REDD+ needs local people", 2010, available at unfccc.int/files/methods_science/redd/application/pdf/recoftc_redd_vietnam_local_people.pdf
[262] *Ibid*
[263] Instituto SocioAmbiental, "Indigenous lands in Amazônia Legal", available at www.socioambiental.org/amazon/?q=who-is-doing-what/protected-areas/ti
[264] *Ibid*

helped indigenous people bounce back after centuries of decline and oppression[265]. This has also benefited forest ecosystems, which have regained their health and vitality under indigenous management[266]. Deforestation and the incidence of forest fires are significantly lower inside demarcated indigenous lands, which are as effective as uninhabited nature parks in preventing burning and clear-cutting[267]. Indigenous Amazonians, like many other indigenous groups (such as the Pygmies), possess a unique traditional ecological knowledge of their *milieu*, a natural result of five millennia of living in the forest, and have thus developed techniques to sustainably manage the rainforest to suit their needs without damaging it[268]. The remaining non-protected areas of the Amazon are being rapidly degraded and plundered by logging and agricultural expansion, making indigenous-owned forests the most important barrier to the total exploitation and degradation of the rainforest[269]. Brazilian Indians have also proven that the protection of nature can be reconciled with human habitation. This is very evident in the Amazon, as the presence of indigenous people within a formalized reserve has directly prevented the colonization and exploitation of these forest areas[270]. The human presence of these indigenous people has provided a barrier to the advancing agricultural and logging frontiers of industrial Brazil[271].

How can other forested countries, such as the ones in the Congo Basin, learn from the successful Amazonian experiment? Brazilian lawmakers have designed a relatively simple, straightforward and efficient process for formalizing indigenous lands. A series of technical and

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[265] Georgia O. Carvalho, "The politics of indigenous land rights Brazil", *Bulletin of Latin American Research,* Volume 19, Issue 4, pp 461–478, October 2000

[266] B. Zimmerman, C.A. Peres, J.R. Malcolm, T. Turner, "Conservation and development alliances with the Kayapó of south-eastern Amazonia, a tropical forest indigenous people", *Environmental Conservation,* Volume 28, Issue 1, pp 10-22, 2001

[267] B.S. Soares-Filho, "Amazon Protected Areas and Indigenous Lands: A Brazilian initiative for the service of humanity", Woods Hole Research Center, Universidade Federal de Minas Gerais, Instituto de Pesquisa Ambiental da Amazonia, 2007, available at www.worldwildlife.org/science/pubs/CommissionedPapers/Soares,%20B. %20AmazonProtectedAreas.pdf

[268] M. Gadgil, F. Berkes, C. Folke, "Indigenous Knowledge for Biodiversity Conservation", *Ambio,* Volume 22, Issue 2/3, pp 151-156, May 1993

[269] B. Zimmerman, C.A. Peres, J.R. Malcolm, T. Turner, "Conservation and development alliances with the Kayapó of south-eastern Amazonia, a tropical forest indigenous people", *Environmental Conservation,* Volume 28, Issue 1, pp 10-22, 2001

[270] *Ibid*

[271] E.F. Moran, "Deforestation and Land use in the Brazilian Amazon", *Human Ecology*, Volume 21, Issue 1, 1993, available at www.jstor.org/pss/4603072

legal measures organized the 'terras indigenas' into formal, demarcated and legitimate forest areas of the Amazon. These were initiated by *Funai*, the National Foundation of the Indian, a federal protection agency that upholds Indian interests and their culture[272]:

1. Firstly, "terras indigenas" are formally defined and integrated into the federal constitution. Under Article 231, these are lands "occupied [by indigenous peoples] on a permanent basis, used for their productive activities, essential for the preservation of the environmental resources necessary for their well-being and necessary for their physical and cultural reproduction in accordance with their uses, customs and traditions". The constitution also emphasized that these lands are federal property, but the rights to occupy these lands and use the resources on them are exclusively allocated to indigenous people legally recognized by the federal indigenous affairs agency *Funai*.
2. Secondly, the Funai agency appoints a qualified anthropologist who leads a formal Technical Group (GT) into the preparation of ethno-historical, sociological, legal, cartographic and environmental studies, as well as a survey of property titles. The resulting report is submitted to *Funai* for approval. After that follows a 90 day period during which the approval can be contested by interested parties, including municipalities and private entities that wish to demand compensation or modifications. Appeals are submitted to the Minister of Justice, who may prevent the creation of the "terras Indigenas". If this happens, the process goes back to step one.
3. If the 90 day period ends without appeals, or if appeals are rejected by the Minister of Justice, this person needs to approve the GT study and sign the order that declares the area to be of permanent indigenous possession. *Funai* then demarcates the area in question and removes any non-indigenous occupiers, whilst also organizing compensatory measures if necessary.
4. 'Terras Indigenas' physically demarcated by *Funai* are then confirmed by a president decree.
5. Lastly, these lands are registered in the relevant municipal land registry and/or federal property registry.

[272] Instituto SocioAmbiental, "Indigenous lands in Amazônia Legal", available at www.socioambiental.org/amazon/?q=who-is-doing-what/protected-areas/ti

The previous chapters have highlighted the immense importance of land tenure issues and their projected impact on the implementation and feasibility of the REDD mechanism. It is increasingly clear that addressing tenure issues will be an obligatory precondition for a successful, effective and sustainable implementation of REDD. Disputed land rights, a constant issue in complex African land tenure affairs, certainly constitutes a stumbling block for REDD implementation on the continent at the moment. Forest carbon deals require clear established rights over forests, land, trees and other forest resources, to allow a fair and predictable distribution of carbon offset benefits, especially for pro-poor outcomes.

One of the main objectives of this thesis is to design a REDD strategy for a specific landscape, the Tri-National Sangha, in Cameroon, borrowing elements from the Brazilian model of *terras indigenas*. Therefore, it is interesting, and pertinent for this thesis, to note the many similarities between Cameroon and Brazil regarding forest legislation, indigenous peoples' rights and development priorities. Like Brazil, the Cameroonian government formally owns all lands and therefore decides who can 'borrow' these lands for their desired activity[273]. These concessions last a certain amount of time and are then returned to the State. Brazil's Indians shared a similar fate to Cameroon's pygmies before the creation of *Funai* and the formalization of *terras indigenas*: they were discriminated against, their lands were constantly under threat from cattle ranchers and logging companies, roads were increasingly splitting and fragmenting their forests and their future was uncertain[274]. The Brazilian government then realized that they could no longer ignore the decline of their traditional Indians[275]. Furthermore, it was in the interest of the State to formalize indigenous forest tenure, as the government was well aware of the ability of these populations to restore and protect forest lands[276]. *Terras Indigenas* were thus created for the dual benefit of protecting native populations whilst also conserving the dwindling tropical forest. It is interesting to note that these initiatives were taken by the

[273] A. J. Njoh, "The State, urban development policy and society in Cameroon", *Cities,* Volume 16, Issue 2, pp 111-122, April 1999

[274] W.F.Laurance, "A crisis in the making: responses of Amazonian forests to land use and climate change", *Trends in Ecology & Evolution*, Volume 13, Issue 10, pp 411-415, October 1998

[275] B.S. Soares-Filho, "Amazon Protected Areas and Indigenous Lands: A Brazilian initiative for the service of humanity", Woods Hole Research Center, Universidade Federal de Minas Gerais, Instituto de Pesquisa Ambiental da Amazonia, 2007, available at www.worldwildlife.org/science/pubs/CommissionedPapers/Soares,%20B._%20AmazonProtectedAreas.pdf

[276] *Ibid*

Brazilian government without any external financial incentive. Today, Cameroon has the financial incentive of REDD, giving the country the added benefit of receiving payments from the formalization of customary tenure, in addition to the above-mentioned social and ecological advantages. Cameroon thus has many reasons to address indigenous claims to lands, even more than Brazil when it started this process thirty years ago. The current community concessions allocated to pygmies in Cameroon are insufficient: they are often limited in size, do not reflect the historical boundaries of indigenous people, and can be reversed and handed over to more powerful actors at any time[277]. If Cameroon wishes to successfully implement REDD, it will need to seriously engage in tenure reform, with Brazil serving as a worthy model.

CHAPTER IV – THE CONGO BASIN FOREST IN CAMEROON

Geography of Cameroon

Located in the Gulf of Guinea, Cameroon is situated at the intersection of West Africa and Central Africa. Culturally, the country contains more than 200 ethnic groups[278]. The country's physical geography is also quite heterogeneous, with dry and vast savannas in the north, and dense tropical forests in the equatorial south[279]. Cameroon has an extremely rich ecology and biodiversity, notably in the tropical forest. However this environment faces pressing threats, due its value as a poverty reduction asset and provider of international commodities[280].

Cameroon has an estimated 17.8 million inhabitants within its 466.326 km2[281]. The country has a rapid population growth rate of 2.7% and the number of inhabitants has doubled

[277] USAID Land Tenure and Property Rights Portal – "Cameroon Country Profile", available at usaidlandtenure.net/usaidltprproducts/country-profiles/cameroon
[278] Global Forest Watch, "Cameroon Forests", available at www.globalforestwatch.org/english/centralafrica/cameroonforests.htm
[279] African Development Bank, "State of the Forest 2008" – Chapter 2
[280] Global Forest Watch, "Cameroon Forests", available at www.globalforestwatch.org/english/centralafrica/cameroonforests.htm
[281] African Development Bank, "State of the Forest 2008" – Chapter 2

since 1975[282]. There is also a growing urbanization movement, with 54% of Cameroonian people already considered urban dwellers[283]. Urbanization and population growth are putting pressure on land, and demand for farmland and forest resources is increasing rapidly[284]. The moist rainforests of the east are sparsely populated, with 7, 5 inhabitants/km^2, as opposed to the more urbanized coastal areas of the west and north of the country (between 15 and 100 inhabitants/km^2)[285]. These more densely populated areas of Cameroon are characterized by widespread soil degradation, a direct result of increased pressure on natural resources[286]. Biomass provides 76% of Cameroon's energy, which appears to be a clean energy source but is actually unsustainable given that it is the main cause of soil degradation[287]. Cameroon's economy still relies heavily on agriculture and livestock (44% of GDP)[288]. However, the country's main export is oil, followed by raw products such as cocoa and wood[289]. According to its Human Development Index (HDI) of 0.532, Cameroon is in the "medium human development" category, ranked 144th of 177 countries, with relatively low human life expectancy (50 years) and average literacy rates (2/3 of the population)[290]. Forty percent of the population lives under the national poverty line[291]. Like many other developing countries, Cameroon has implemented multiple IMF/World Bank-led structural adjustment programs. Some of these programs helped shape the current forestry and environmental legislation and touched upon forest management, logging, land rights and even benefit-sharing with communities[292]. Government

[282] *Ibid*
[283] *Ibid*
[284] *Ibid*
[285] *Ibid*
[286] *Ibid*
[287] *Ibid*
[288] *Ibid*
[289] Government of the United States of America, "Doing Business in Cameroon", available at www.export.gov/cameroon
[290] African Development Bank, "State of the Forest 2008" – Chapter 2
[291] *Ibid*
[292] International Monetary Fund (IMF), Poverty Reduction Strategy Paper, Cameroon, 2010, available at www.imf.org/external/pubs/ft/scr/2010/cr10257.pdf

reform in Cameroon is a major concern for the IMF, as the country has consistently ranked poorly on Transparency International's annual list of corrupt states[293].

Forest geography

Cameroon contains a multitude of forest resources, mostly located along the southern borders with Gabon and Equatorial Guinea and eastern border with the Central African Republic[294]. The south is characterized by a humid equatorial climate, located between the second and sixth degrees of latitude north and has two variants (Guinean type and Cameroon type) which are both characterized by abundant rainfall[295]. Forty three percent of Cameroon is covered by Tropical Moist forest[296].

From 1990 to 2000, the net rate of deforestation in Cameroon was 0.16%, while the rate of forest degradation was 0.04%[297]. Between 2000 and 2005 both rates increased undoubtedly, although estimations vary widely according to the source. The main drivers of deforestation and forest degradation in Cameroon are:

- The expansion of agricultural activities[298], which follows population increase and the insufficiency of agricultural products on the national market. In particular, slash-and-burn shifting farming is the most widespread farming practice and is responsible for considerable loss of forest cover. Other agricultural activities that cause deforestation include cash crops cultivation, such as cocoa. Furthermore, the geography of agricultural production in Cameroon has shifted and spread recently, from its traditional base in the west of the country towards the more forested provinces of the east, which have become a sort of "el dorado" for Cameroonians.

[293] Transparency International, "Corruption Perceptions Index 2010 Results", available at www.transparency.org/policy_research/surveys_indices/cpi/2010/results
[294] Global Forest Watch, "Cameroon Forests", available at www.globalforestwatch.org/english/centralafrica/cameroonforests.htm
[295] African Development Bank, "State of the Forest 2008" – Chapter 2
[296] Forest Carbon Partnership Facility (FCPF), Readiness Plan Idea Note (R-PIN) for Cameroon, available at www.forestcarbonpartnership.org/.../forestcarbonpartnership.../Cameroon_TAP_ConsolidatedReview.doc
[297] African Development Bank, "State of the Forest 2008" – Chapter 2
[298] W.D.Sunderlin, O.Ndoye, H.Bikie, N.Laporte, B.Mertens, J.Pokam, "Economic crisis, small-scale agriculture, and forest cover change in southern Cameroon", *Environmental Conservation,* Issue 27, pp 284-290, 2000

- The exploitation of timber, often illegally[299]. This is fueled by an increasing international demand, in addition to local needs. Commercial logging destined for exportation contributes both directly (timber harvesting) and indirectly (roads built by logging companies attract people to the forest) to deforestation. Informal logging involves the local use of fuelwood, mostly undocumented, and larger-scale illegal timber extraction, exported in the black market.
- Demographic growth[300], although quite weak in Cameroon (2.2 % per year), compared to its CBF neighbors. Accelerated rural exodus towards urban centers and the subsequent urban expansion provokes net pressure in and around forest zones. New towns and roads cut through the untouched forests, creating 'colonies' within these areas. Conversely, the urban exodus of urban dwellers towards forested areas, in search of work in the timber corporations, also increases pressure on forested areas.
- Poverty reduction and national development plans[301], which intend to colonize and exploit all areas of the country, in particular the forested south-east region. These plans include the construction of a trans-African route that would connect Cameroon, Nigeria and the Central African Republic, in addition to the upgrading of national road networks that would connect the main cities, Yaoundé and Douala, to more remotes areas, such as the tropical forest.
- Other drivers of deforestation[302] include the development of the mining sector and forest fires initiated by game hunters.

While all these factors contribute to deforestation in Cameroon, the immediate and most direct threats to the forest are agriculture and timber extraction[303]. The informal logging sector also plays an important role in forest loss and degradation though illegal logging, estimated at 500 000 to 1 million cubic meters of wood annually[304]. Finally, mining is projected to have a

[299] African Development Bank, "State of the Forest 2008" – Chapter 2
[300] D. Gbetnkom, "Deforestation in Cameroon: Immediate Causes and Consequences", *Environment and Development Economics,* Issue 10, pp 557-572, May 2002
[301] African Development Bank, "State of the Forest 2008" – Chapter 2
[302] *Ibid*
[303] Forest Peoples Program, "REDD and Rights in Cameroon", 2011
[304] African Development Bank, "State of the Forest 2008" – Chapter 2

negative impact on the forest sector in the near future[305]. Existing evidence of minerals under forest soil has sparked the interest of US and Chinese companies, who plan to initiate major transport infrastructure projects covering thousands of kilometers inside dense forest areas[306]. For the time being, mining remains a marginal contributor to Cameroon's economy, but the discovery of minerals deep within the eastern tropical forests certainly poses a future threat to the rainforest[307]. Cameroon has historically been able to maintain relatively low deforestation and degradation rates in the past, compared to other forested countries such as Brazil and Indonesia. But the imperatives of development and poverty reduction are increasing pressure on the country's forests, as they have in other developing countries.

Forest sector

In the 1970s, Cameroon's offshore oil exploitation made it one of the most prosperous nations in Central Africa[308]. But this growth lasted only until the global post-oil boom (1986-1993) and subsequent price collapses, hurling the country into deep recessions and poverty[309]. As Cameroon's oil reserves were being depleted, the government identified the forestry sector as the most promising asset for stimulating the economy, as illustrated in figure

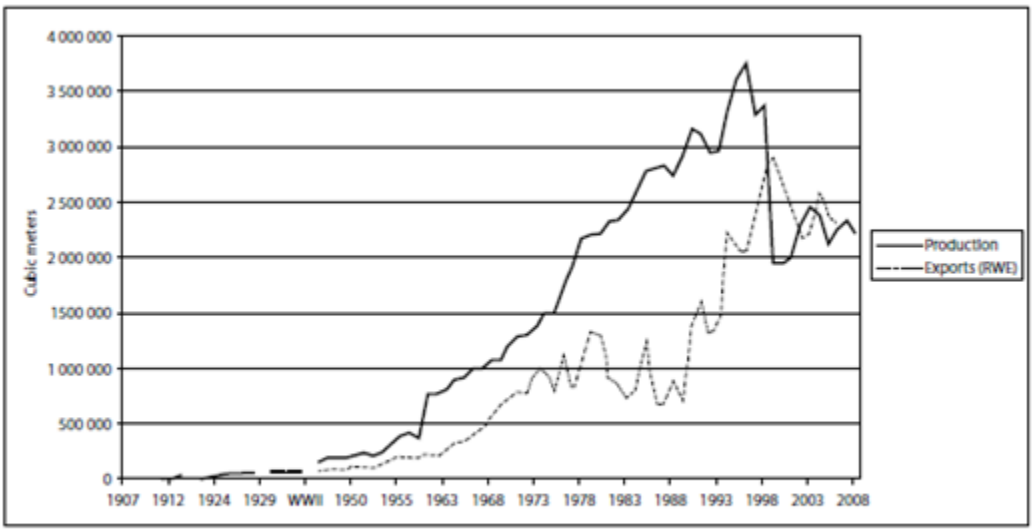

Figure 5 - Timber Production and Export Trends in Cameroon
G.P, Dkamela – CIFOR, "The Context of REDD+ in Cameroon", 2011

[305] *Ibid*
[306] *Ibid*
[307] *Ibid*
[308] G.P.Dkamela, "The context of REDD+ in Cameroon", CIFOR, 2011
[309] *Ibid*

5[310]. This initiated an extensive colonization and exploitation of the vast tropical forest, with large conversions of virgin forest areas into agricultural lands and logging concessions[311]. Wood is now the second export revenue earner after crude oil, contributing 6% to the GDP[312]. The forest sector also generates some EUROS 62 million in tax revenue from logging per year[313]. Furthermore, the formal forest industry employed some 163 000 people in 2006, about 3% of total employment[314]. The government of Cameroon has recognized that the forestry sector plays an important role in poverty reduction, notably in rural areas and in the forested east of the country[315]. However this sector is threatened and undermined by the uncontrolled logging of forests, which only recently has come to the attention of the government[316]. In the mid-1990s, Cameroon started developing new and progressive forestry legislation, whilst also working with other CBF countries – Gabon, Equatorial Guinea, Central African Republic, Congo and the Democratic Republic of Congo – to create a regional political entity for the conservation of the Congo Basin Forest, the COMIFAC (Commission des Forets d'Afrique Centrale)[317]. In spite of these efforts, illegal logging and widespread corruption continue to result in environmental degradation, loss of revenue to the government, displacement of indigenous groups and resource conflicts[318]. In 2006, total national production of the formal logging sector reached 2,296,254 m^3. In comparison, the informal logging sector, which operates without logging titles, is estimated to produce up to 1/3 of the formal production[319]. Despite the importance of this volume, and the associated impacts on employment and local standards of living, the largely

[310] *Ibid*
[311] E. Baldo-Soriano, "Resource material on indigenous peoples, forest and REDD", TEBTEEBA (Indigenous Peoples' International Centre for Policy Research and Education), available at www.tebtebba.org/index.php?option=com_content&view=article&catid=87%3Aclimate-change&id=96%3Aresource-material-on-indigenous-peoples-forest-and-redd-cameroon&Itemid=64
[312] African Development Bank, "State of the Forest 2008" – Chapter 2
[313] *Ibid*
[314] *Ibid*
[315] *Ibid*
[316] P.O.Cerutti, L.Tacconi, "Forests, Illegality, and Livelihoods: The Case of Cameroon", *Society & Natural Resources,* Volume 21, Issue 9, pp845-853, 2008
[317] E. Baldo-Soriano, "Resource material on indigenous peoples, forest and REDD", TEBTEEBA (Indigenous Peoples' International Centre for Policy Research and Education), available at www.tebtebba.org/index.php?option=com_content&view=article&catid=87%3Aclimate-change&id=96%3Aresource-material-on-indigenous-peoples-forest-and-redd-cameroon&Itemid=64
[318] D.Alemagi, R.A.Kozak, "Illegal logging in Cameroon: Causes and the path forward", *Forest Policy and Economics,* Volume 12, Issue 8, pp554–561, October 2010
[319] African Development Bank, "State of the Forest 2008" – Chapter 2

informal domestic timber sector is practically ignored by the State[320]. The European Union is Cameroon's preferred partner for exports of processed forest products, such as sawn timber, veneer and plywood[321]. In 2007, Cameroon and the EU signed a partnership agreement to regulate timber trade exchange[322]. On the other hand, raw log exports are mainly exported to China[323].

The natural beauty of Cameroon is a valuable asset for tourism in the country, and has been identified by the State as a potential source of development for the forest sector, other than the traditional timber products[324]. Ecotourism, however, remains under-developed, as was witnessed by this author (see Chapter 6). In 2007, revenues from ecotourism in protected and hunting areas amounted to a mere 297 000 Euros[325]. There is a lack of tourist infrastructure and logistical organization, such as tourist information centers, to valorize the country's attractive resources[326]. Ecotourism in Cameroon is further discussed in chapter 5 of this thesis.

State intervention in the forest sector

Cameroon is blessed with a rich diversity of flora, fauna and four major ecosystems: dense forest, humid savanna, altitude forest and grassland and the northern savanna. This biodiversity is maintained within a network of protected areas that cover 18% of the country[327]. These protected areas cover some of the tropical forest but also the vast savannas of the north and west. This protected network contains 15 national parks, six game reserves, one botanical garden, three zoological gardens, four wildlife sanctuaries and 77 forest reserves[328]. Natural resources located outside protected areas are also the subject of conservation efforts by the government[329]. In forest concessions, measures are taken to protect certain flora species. One

[320] *Ibid*
[321] *Ibid*
[322] Ibid
[323] Ibid
[324] C. Jum, J. Nguiebouri, M.Zoa & C.Diaw, "Building broad-based partnership for sustainable forest management: the Model Forest experience in Cameroon", International Journal of Environmental Studies, Volume 64, Issue 5, pp625-641, 2007
[325] African Development Bank, "State of the Forest 2008" – Chapter 2
[326] Ibid
[327] Ibid
[328] Ibid
[329] Ibid

particular measure is the production of an inventory of tree species prior to logging operations in a given forest area, where certain species may be selected for protection, although not always enforced[330]. Furthermore, measures are also taken to protect some wildlife species within forest concessions, such as elephants, lions and gorillas[331]. But despite these measures, employees in logging concessions hunt on a regular basis, for nutritional needs as well as commercial purposes[332].

The State is the main body that controls forest management in Cameroon. The State determines the general policies and laws of the forestry sector, and grants logging and concessional rights[333]. More specifically, the State's legal framework for environmental management defines access to forest resources, including customary rights for traditional and indigenous people, boundaries of forest areas, title allocations, sustainable logging practices, taxation on economic activities related to forests, conservation of flora, classification of protected fauna and the institutional framework[334]. Although quite theoretical and rarely applied on the ground, Cameroon's forest legislation is regarded as progressive and innovative[335]. The State classifies the two different types of forest land: permanent and non-permanent forest estate. Permanent forests consist of protected areas that preserve the forest and wildlife habitat permanently, while the non-permanent forest areas allow for multiple other purposes, such as industrial activities[336]. Under the 1994 Forest Act, at least 30% of the national territory should be protected and given the status of permanent forestland, representing the ecological diversity of the country[337]. These protected areas are defined as natural reserves, biosphere reserves, national parks, botanic gardens and wildlife sanctuaries. They allow environmentally-friendly economic activities, such as research, ecotourism and

[330] T. Wanders, "Forest certification in Cameroon", *European Tropical Forest Research Network,* Issue 51, September 2010
[331] *Ibid*
[332] African Development Bank, "State of the Forest 2008" – Chapter 2
[333] P.R.Oyono, "The social and organisational roots of ecological uncertainties in Cameroon's forest management decentralisation model", *The European Journal of Development Research,* Volume 16, Issue 1,pp174-191, 2004
[334] African Development Bank, "State of the Forest 2008" – Chapter 2
[335] F. Ekoko, "Balancing Politics, Economics and Conservation: The Case of the Cameroon Forestry Law Reform", *Development and Change,* Volume 31, Issue 1, pages 131–154, January 2000
[336] IUCN, "Landscape Conservation in the Congo Basin", 2010
[337] African Development Bank, "State of the Forest 2008" – Chapter 2

education, but not logging or hunting[338]. The non-permanent forest is also called agro-forestry, given that the conversion of forests into farmland is a common activity in these areas[339]. Interestingly, this type of forest also includes 'community forests', where a given community is allowed to develop a management plan with the Ministry of Forestry and Wildlife for an allocated forest area of up to 5000 ha. This communal forest concession is granted for a maximum of 15 years, in which the concerned community defines community access, logging rights and the participatory management of forest resources in and around villages[340].

Under Cameroon legislation, logging permits issued by the State allow timber companies to collect well-defined quantities of forest products in a given area[341]. This is not the same as timber concessions, which are much bigger and are granted to larger timber manufacturers[342]. Additionally, a personal harvesting authorization is issued by the State to an individual, granting personal and non-profit use to collect small quantities of wood. This permit does not apply to forest inhabitants who retain their customary rights[343]. Community forests, as mentioned earlier, are granted for a maximum area of 5,000 ha. The community decides whether logging takes place on the granted land, as part of a forest management plan approved by the forest authority. Communal forests are bound by law to hold consultation meetings, in which all relevant stakeholders from that community help define the objectives and limits of that forest area[344].

The main institution in charge of the sustainable management of forests and wildlife is the Ministry of Forestry and Wildlife (MINFOF). This institution receives foreign financial

[338] *Ibid*
[339] *Ibid*
[340] *Ibid*
[341] B. Foahom, "Biodiversity Planning Support Programme, Integrating Biodiversity into the Forestry Sector, Cameroon Case Study"- International workshop on Integration of Biodiversity in National Forestry Planning Programme, Bogor, Indonesia, 13-16 August 2001, available at www.unep.org/bpsp/Forestry/Forestry%20Case%20Studies/Cameroon.pdf
[342] African Development Bank, "State of the Forest 2008" – Chapter 2
[343] B. Foahom, "Biodiversity Planning Support Programme, Integrating Biodiversity into the Forestry Sector, Cameroon Case Study"- International workshop on Integration of Biodiversity in National Forestry Planning Programme, Bogor, Indonesia, 13-16 August 2001, available at www.unep.org/bpsp/Forestry/Forestry%20Case%20Studies/Cameroon.pdf
[344] *Ibid*

assistance from the World Bank, the Global Environmental Facility and the United Kingdom, among other international donors[345]. Regional institutions are playing an increasingly important role in forest sector affairs, not only in Cameroon but in the whole sub-region of Central Africa[346]. In particular, the COMIFAC (Central African Forest commission), based in Yaoundé, aims to harmonize laws and encourage information exchange across Congo Basin Forest countries. International NGOs are also playing an increasingly important role as independent observers and researchers in Cameroon's tropical forests[347]. Some of these roles and services include:

- The Wildlife Conservation Society advising the government during the formulation of different forest policies[348]
- The Rainforest Foundation's use of GIS remote-sensing technology to map human activities, such as road construction, around forested areas[349]
- The deployment, by the World Wildlife Fund, of human and material resources to assist the State in its conservation efforts in protected areas[350]
- Monitoring and mapping forest titles and protected areas, done by the Forest Peoples Programme[351]

[345] Gemma Norrington-Davies – OECD, "Climate Change Financing and Aid Effectiveness, Cameroon Case Study", March 2011, available at www.oecd.org/dataoecd/23/11/48458409.pdf
[346] *Ibid*
[347] *Ibid*
[348] Wildlife Conservation Society, "Where we Work – Cameroon", available at www.wcs.org/where-we-work/africa/cameroon.aspx
[349] Rainforest Foundation, " Cameroon", available at www.rainforestfoundationuk.org/Cameroon
[350] World Wildlife Fund, "Cameroon", available at wwf.panda.org/who_we_are/wwf_offices/cameroon/about_cameroon/
[351] Forest Peoples Programme, "Cameroon", available at www.forestpeoples.org/location/africa/cameroon

Indigenous people of Cameroon

The first inhabitants of Cameroon were hunter-gatherer groups. Several tribes settled in and around the tropical forests, including the Peuhl who participated in the slave trade and introduced Islam[352]. There aren't precise estimations of the indigenous population in Cameroon, as these do not constitute a distinct, homogenous ethnic group in national statistics. Figures for indigenous populations are therefore not very accurate. But there are two main indigenous groups in Cameroon[353]:

- The Mbororo communities, nomadic cattle herders scattered throughout the country, although they are not entirely considered 'indigenous'.
- The Pygmies, the indigenous forest peoples, groups of hunters, gatherers and collectors.

Of a total national population of 15.7 million in 1994, which is essentially divided into three major ethnic groups (and subdivided into 230 others), around 0.4 % are pygmies[354]. The pygmies were the first occupants of the forested areas of Cameroon[355]. They live almost entirely in the forest, occupying around 80.000 km^2 of forest territory, usually sharing this space with other forest dwelling groups[356]. The main pygmy ethnic groups found in Cameroon's forests are the Baka, Bagyeli and Bakola communities. They live in the eastern, central and southern parts of the country, and their estimated total population is around 70,000, out of a total pygmy population of 250,000 to 600,000 in the Congo rainforest[357]. Today, most pygmy communities in Cameroon are partially hunter-gatherers, living partly but not exclusively on the natural products of their forests. They are not as totally isolated as they used to be and trade

[352] E. Baldo-Soriano, "Resource material on indigenous peoples, forest and REDD", TEBTEEBA (Indigenous Peoples' International Centre for Policy Research and Education), available at www.tebtebba.org/index.php?option=com_content&view=article&catid=87%3Aclimate-change&id=96%3Aresource-material-on-indigenous-peoples-forest-and-redd-cameroon&Itemid=64
[353] *Ibid*
[354] E. Baldo-Soriano, "Resource material on indigenous peoples, forest and REDD", TEBTEEBA (Indigenous Peoples' International Centre for Policy Research and Education), available at www.tebtebba.org/index.php?option=com_content&view=article&catid=87%3Aclimate-change&id=96%3Aresource-material-on-indigenous-peoples-forest-and-redd-cameroon&Itemid=64
[355] *Ibid*
[356] *Ibid*
[357] *Ibid*

regularly with neighboring Bantu communities and farms to acquire cultivated foods and other material items[358].

In recent times, the nomadic Pygmies have faced increased pressure in the shrinking forests of Cameroon. The government's plans to develop forested areas through industrialization and agriculture are threatening to push forest-dwelling pygmies out of the rainforest and towards pilot villages along roadways[359]. The pygmies would then sedentarize, leaving the forests in the hands of the government and their wealthy logging and mining partners[360]. This would also enable the government to clear forest lands to allow the settlement of Bantu farmers[361]. Originally, the indigenous Pygmy people lived in peace with their more sedentary Bantu neighbors[362]. Each of these societies upheld pre-colonial traditions of customary norms that governed relations between humans, the land and its resources. This framework meant that Cameroon's rich cultural and ethnic diversity did not obstruct the common and collective rights of different tribal and customary land laws[363]. However, colonization in Cameroon completely disrupted this harmonious way of life and the regulated relations between tribes, their lands and the resources[364]. Today, the modern forces of political and economic change threaten the pygmy culture and way of life. Deforestation in particular has greatly affected them, resulting in somewhat of a tug-of-war over forest resources, which pygmies are losing. They are often driven out of their traditional lands, evicted by government policies and multinational corporations and given the lowest paying jobs in neighboring logging towns[365]. They are forced to into these urban outposts where they face alienation, impoverishment and discrimination. Furthermore, pygmies are exposed to new diseases when

[358] N. V. Pemunta, "The governance of nature as development and the erasure of the Pygmies of Cameroon", *GEOJOURNAL-Earth and Environmental Sciences,* December 2011
[359] *Ibid*
[360] *Ibid*
[361] *Ibid*
[362] C.Ballard, "Strange alliance: Pygmies in the colonial imaginary", *World Archaeology*, Volume 38, Issue 1, pp133-151, 2006
[363] E. Baldo-Soriano, "Resource material on indigenous peoples, forest and REDD", TEBTEEBA (Indigenous Peoples' International Centre for Policy Research and Education), available at www.tebtebba.org/index.php?option=com_content&view=article&catid=87%3Aclimate-change&id=96%3Aresource-material-on-indigenous-peoples-forest-and-redd-cameroon&Itemid=64
[364] *Ibid*
[365] N. V. Pemunta, "The governance of nature as development and the erasure of the Pygmies of Cameroon", *GEOJOURNAL-Earth and Environmental Sciences,* December 2011

they join the more populated areas outside forests, namely HIV/AIDS, which has recently spread into the Pygmy group for the first time in their history[366]. At a national level, Pygmies are marginalized by State services and are often refused identity cards, land titles, health care and proper schooling[367]. The number of Pygmies still living inside their traditional forestlands is unsurprisingly diminishing[368].

REDD Implementation in Cameroon

The Cameroonian government has made it clear that it wishes to conserve its forests, which are globally important and considerably rich in biodiversity, and maintain the vital link which exists between the country's own forests and those of its neighbors in the Congo Basin, which will likely become fragmented and degraded should logging and deforestation continue. The State's will to protect its forests has been proven by the significant development and organization of forest legislation at the national level, and the coordination with neighboring countries at the regional level. For instance, Cameroon's Forestry Act of 1994 introduced a novel and innovative way of redistributing forest taxes to municipalities and rural communities bordering forest concessions[369]. However, results on the grounds are quite different and threats to forests remain high due to weak capacity for implementation and enforcement of existing laws and regulations[370]. In addition, there is a real lack of coordination and synergy between forest policies and those of other relevant sectors (agriculture, mining, energy, transport etc.) and ministries (Forests / Environment / Territorial administration)[371]. The continued enforcement of laws and the participation of civil society, non-governmental stakeholders and indigenous forest people in the planning and development processes of the

[366] World Rainforest Movement, "Central Africa: Deforestation brings HIV/AIDS to indigenous communities", *WRM Bulletin*, 2007, available at www.wrm.org.uy/bulletin/120/Central_Africa.html
[367] *Ibid*
[368] N. V. Pemunta, "The governance of nature as development and the erasure of the Pygmies of Cameroon", *GEOJOURNAL-Earth and Environmental Sciences,* December 2011
[369] P.B.Logo – World Resources Institute, "The Decentralized Forestry Taxation System in Cameroon: Local Management and State Logic", 2003, available at pdf.wri.org/eaa_wp10.pdf
[370] G.P, Dkamela – CIFOR, "The Context of REDD+ in Cameroon", 2011
[371] *Ibid*

forestry sector remain great challenges for the country[372]. Cameroon has clearly indicated its interest to develop national REDD strategies, not only to receive financial benefits, but to genuinely protect forests as well. The State has demonstrated a strong commitment to prepare REDD readiness plans, which present the major threats each country experiences on their forests and outline strategies to prepare for REDD projects[373]. The challenge now is to confront the stakeholders who have an interest in and around the protected areas, such as mining and timber companies[374]. It is also a challenge to find synergies between protected areas and REDD projects for environmental services, where local populations would have the twofold benefit of seeing their forestland and livelihoods protected in addition to receiving payments for the carbon stock preserved on their territory[375]. These are all challenges that the State will have to face once REDD becomes operational. Prior to that, there are many pressing obstacles concerning Cameroon's eligibility to REDD, which can be summarized in the following points:

- Ineffective Legal and Institutional Framework[376]

CBF countries, such as Cameroon, have made considerable progress in creating legislation for sustainable forest management. However, there is a gap between existing laws on paper and their actual implementation in the field. Furthermore, these laws are filled with inconsistencies and incoherent elements, and are often not specific enough. It is probable that the strengthening of national institutions will require a long-term timeframe.

[372] European Tropical Forest Research Network (ETFRN), "Forests and Climate Change: Adaptation and Mitigation", *ETFRN News,* Issue 50, November 2009

[373] Ministry of the Environment and Nature Protection, Cameroon – Readiness Plan Idea Note (R-Pin) submitted in 2008, available at www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/Cameroon_R-PIN_07-31-08.pdf

[374] African Development Bank, "State of the Forest 2008" – Chapter 2

[375] C. Ndikumagenge – IUCN, "IUCN Strategy and Vision on REDDCameroon, Ghana and Liberia", powerpoint presentation, 2011, available at www.rightsandresources.org/documents/files/doc_1618.pdf

[376] World Resource Institute, "Voices from the Congo Basin", 2009, available at pdf.wri.org/working_papers/voices_from_the_congo_basin.pdf

- Lack of data and information[377]

Limited forestry statistics and the lack of reliable information hinder decision-making capabilities. There is inadequate information exchange between civil society NGOs, the private forestry sector and forestry administrations. The structures needed to build institutions and collect data remain absent. Furthermore, forest ecosystems are still poorly understood, despite all the attention they receive. This lack of knowledge is due to insufficient and disparate research efforts and the absence of a network of permanent research posts for monitoring forest dynamics across all Congo Basin countries.

- Underestimated importance of Informal sector[378]

The informal sector plays a significant role in the forestry sectors of CBF countries, as it satisfies local timber needs and sustains poor communities. It provides local rural populations with forest products for subsistence usage and supplies lumber and firewood to large urban centers. Although undocumented, the informal sector is also known to participate in the exportation of timber. But despite its importance, this sector remains relatively unknown and little data is available.

- Poor Governance[379]

Forest monitoring and enforcement of environmental laws remain weak and ineffective. This is a natural consequence of the generally unstable socio-political context in most CBF countries. Corruption and the lack of transparency regarding financials flows are endemic. Furthermore, the level of governance differs from region to region within a single country, depending on the honesty and managerial capacities of locally elected officials.

[377] H. Boll Stiftung, "Global Climate Politics in the Congo Basin", The Green Political Foundation (Germany), November 2009, available at www.boell.de/downloads/Climate_Politics_Congo_Basin_K_Horta.pdf
[378] African Development Bank, "State of the Forest 2008" – Chapter 1
[379] The World Bank – "Roots for Good Forest Outcomes: An Analytical Framework for Governance Reforms", available at siteresources.worldbank.org/INTARD/Resources/forest_governance_combined_web_version.pdf

PART II – FIELD WORK / PERSONAL WORK

In this section I shall seek to design a practical REDD strategy that will be tailor-made for a specific area: the Tri-National Sangha (TNS) landscape of Cameroon, as shown in figure 6[380]. This particular area has been selected for this study because it portrays and exemplifies many of the key points discussed in the literature review: a forest with considerable natural carbon sequestration, the presence of poverty-stricken indigenous groups which depend on this forest, conflicting land uses and tenure issues, and the threat of industrial-scale logging concessions.

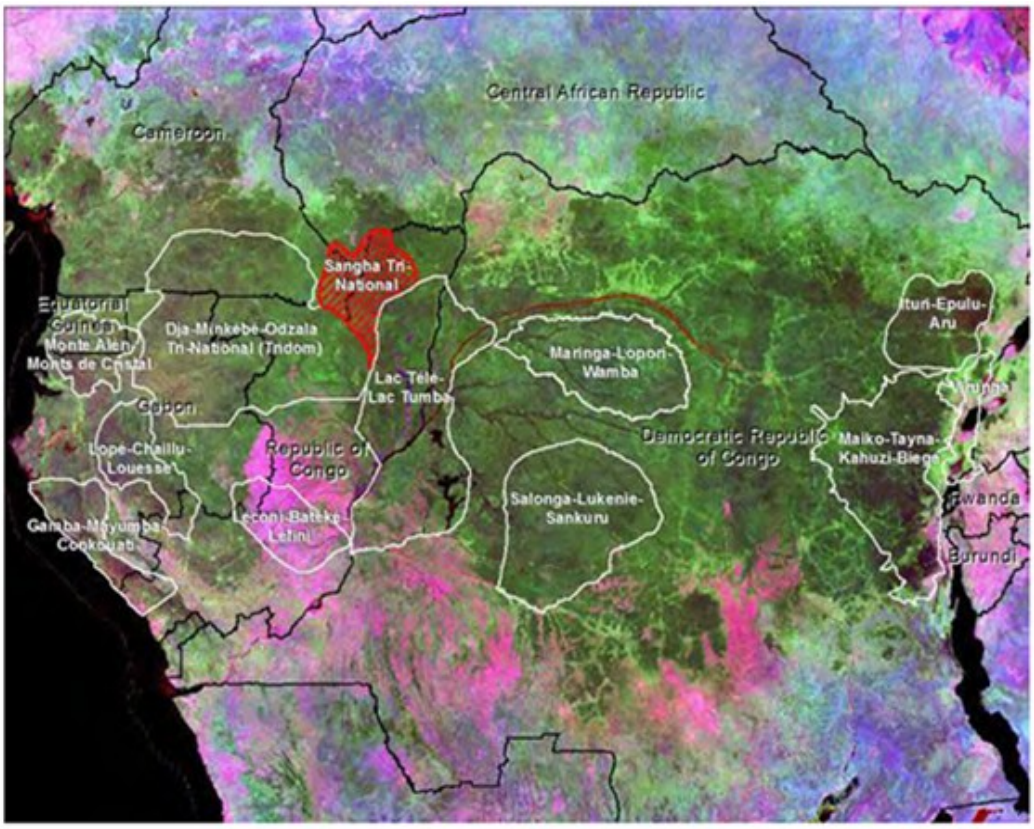

Figure 6 : The TNS landscape in Central Africa
Source: USAID CARPE program

In chapter 5, I shall present an introductory description and context of the TNS landscape in Cameroon, which I shall henceforth refer to as the CTNS (Cameroon's Tri-National Sangha). I shall analyze the area's general geography, history, economy and population, given that REDD will affect all these. This chapter will also describe the exact location where REDD will be implemented, a specific area within the CTNS landscape, around the Lobéké national park, part of a larger protected area in the south-east corner of Cameroon. This protected area is

[380] USAID CARPE program – available at carpe.umd.edu/works/index.php?tab=2

composed of, a) the Lobéké national park, under full conservation status where virtually no human activity is allowed, and b) the peripheral area, where many human activities take place, the subject of this REDD case study (see figure 7[381]). This peripheral area is under threat from logging and other economic activities, and its tenurial situation is unclear and problematic, especially for the many indigenous people present in the territory, making it an interesting candidate for REDD.

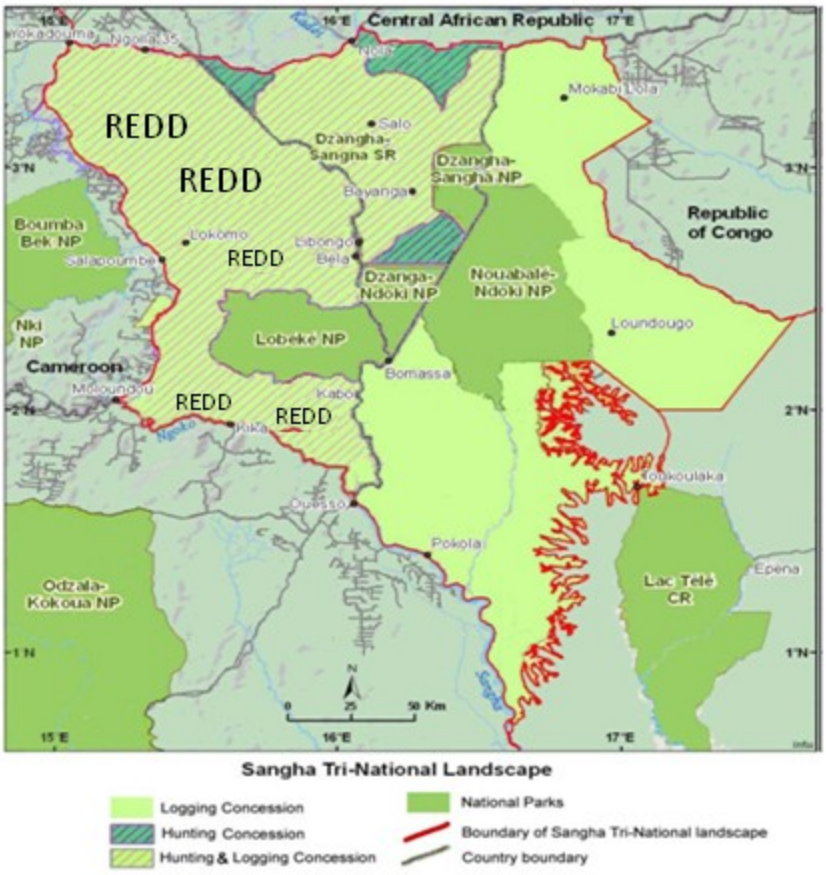

Figure 7 - Land use in the TNS Landscape and location of REDD Case Study
Source: Tropical Forest Conservation Science, Volume 3, 2010

Chapter 6 will outline the proposed REDD strategy for this area, specifically targeting deforestation from industrial logging, the principal threat to the forest in this area. The REDD plan will incorporate elements from land tenure reform in the Brazilian Amazon, where indigenous tenure is at a much more secure and advanced stage. The strategy will also be inspired by existing sustainable activities in the TNS (described in Chapter 5), such as ecotourism and NTFPs (non-timber forest products), which have many practical and philosophical similarities to REDD. Chapter 6 will also contain the crucial quantitative aspect of this study: the calculation of the carbon worth of the CTNS and the carbon released by deforestation. This will allow us to determine the baseline deforestation rate and average carbon release, and calculate the potential revenue REDD could generate for the area. The aim is to demonstrate that REDD is more profitable than logging, for all involved stakeholders in the area. A key component of this

[381] A. Boedhihartano et al., "A Framework for assessing conservation and development in a Congo Basin Forest Landscape", *Tropical Conservation Science,* Volume 3, 2010, available at eprints.jcu.edu.au/15865/1/10-09-27_262-281_Endamana_et_al.pdf

strategy will be the role of NGOs, both local and international. In fact, NGOs will have three major roles under the proposed REDD strategy, which shall be illustrated in a table. The analysis of Cameroon's institutions and environmental governance in chapter 4 is used as a tool to help design a REDD strategy that can realistically fuse into the current functioning of the State, in terms of roles and responsibilities. Finally, I shall conclude with an analysis of the main obstacles REDD faces in the CTNS, in order to provide valuable feedback and recommendations for any actor that wishes to engage in REDD in this area. Many of the lessons learned in this scenario will be applicable to the rest of the Congo Basin, as well as other forested regions of the world.

CHAPTER 5 – THE SANGHA TRI-NATIONAL (TNS) LANDSCAPE

Introduction to the TNS

The borders of Cameroon, the Central African Republic and the Republic of Congo meet at the Sangha River, an area known as the Sangha Tri-National Landscape that is exceptionally rich in wildlife, water, timber and mineral resources. The TNS landscape covers a total area of 4,520,000 ha, or 45 200 km^2, and contains three national parks that are enclosed within a protected area of 29 000 km^2: Lobéké in Cameroon (2100km^2), Nouabalé-Ndoki in the Republic of Congo (4500

The Sangha River, the natural border of the Central-Africa Republic, Cameroun and the Republic of Congo
© Mourad Shalaby

km^2) and Dzanga-Ndoki in the Central African Republic (1700 km^2)[382], as illustrated in figure 8[383]. These parks, which make up 17% of the total TNS area, constitute a core protection zone of roughly 8000km^2, in which human activities are either forbidden or tightly controlled[384]. A peripheral protection zone surrounding the core area is mostly dedicated to timber extraction, hunting in concessions, community forests and agro-forestry activities, covering around 21 000km^2 [385]. Almost half of this peripheral multiple-use area is allocated to logging concessions[386]. The remaining 16 000 km^2 of TNS lands, outside the core and peripheral protected areas, are subject to regular human activities[387].

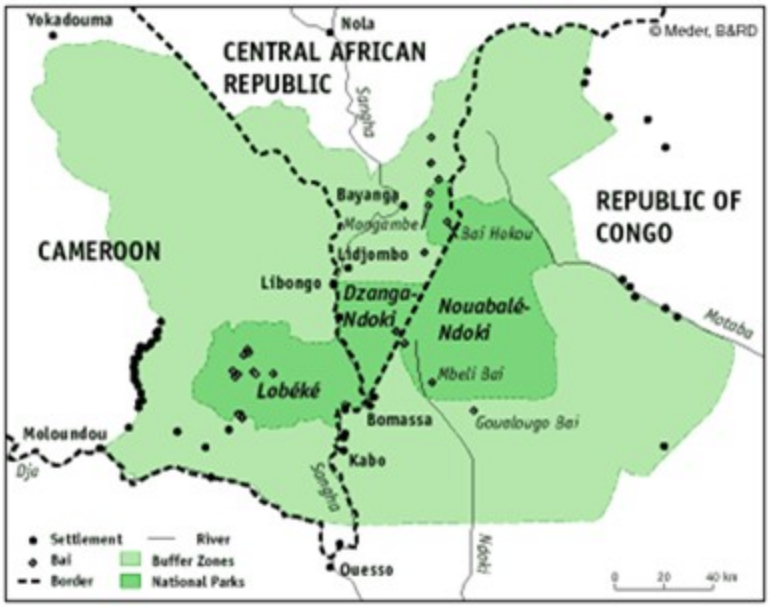

Figure 8 - The Tri-Natiobal Sangha Landscape
Source: L.Usongo, The Gorilla Journal, 2002

The Sangha Basin has long been an object of political and economic tension, most notably since the colonial 'scramble for Africa' when Germany, France and private European companies fought for the exploitation of the area's ivory, timber, rubber, diamonds and animal products[388]. The colonizers converted areas of the virtually untouched forest to commercial plantations for coffee, cocoa and tobacco, with all the spoils of Central Africa shipped off to Europe, much to the disarray of the local indigenous communities[389]. In recent times, the European colonizers have been replaced by national governments as the brokers of power and planning in the TNS, while many local

[382] IUCN, "Landscape Conservation in the Congo Basin", 2010
[383] L.Usongo, "The Gorilla Journal", available at bergorilla.org/english/gjournal/texte/25trinat.html
[384] IUCN, "Landscape Conservation in the Congo Basin", 2010
[385] *Ibid*
[386] *Ibid*
[387] *Ibid*
[388] H. E. Eves, R. Hardin, S. Rupp, Yale School of Forestry & Environmental Studies, "Resource Use in the Tri-National Sangha River Region of Equatorial Africa", 1998, available at environment.yale.edu/topics/799
[389] *Ibid*

communities continue to resist such forms of authority[390]. For a long time, the TNS had not known any intensive economic development. Central Africa's decolonization and consequent slow development helped to preserve the TNS's forest and maintain the high density of large mammals and other wild fauna and flora[391]. In recent years though, the forestry sector has become highly active in many regional countries, becoming key elements of economic development. The forests of the Sangha area came under the control of timber companies in the early 90s. These mostly foreign companies exploit the forest resource base upon which local communities depend for subsistence and the preservation of their livelihoods and ancestral culture[392]. Today, the TNS's economy is virtually entirely based on the extraction of forest resources, in both formal and informal markets[393]. Officially, timber extraction is the primary economic activity, in addition to some agricultural production and mining exploration in Cameroon's TNS section. Unofficially, diamonds, bushmeat, palm wine, fish and other non-timber-forest-products (NFTP) are taken from the forest and traded[394]. But despite the wealth of the forest and evident value of these commodities, poverty is widespread. The revenues generated from the exports of the above-mentioned forest products barely benefit local communities and social services, such as schooling and healthcare[395]. Neither do local people find enough employment opportunities in the forest sector, as most jobs go to better trained workers that migrate to the area[396]. In Cameroon, the logging boom has created somewhat of an urban exodus, as people leave overcrowded cities to find work in timber concessions in rural areas. The lucrative logging industry present in the TNS provides its own services and infrastructure to its employees, within enclosed towns that are self-sufficient and interact little with local villages. Logging is regarded as the *raison d'être* of the TNS, giving the Landscape somewhat of an El Dorado image where urban dwellers from all parts of the three neighboring

[390] H. E. Eves, R. Hardin, S. Rupp, Yale School of Forestry & Environmental Studies, "Resource Use in the Tri-National Sangha River Region of Equatorial Africa", 1998, available at environment.yale.edu/topics/799
[391] *Ibid*
[392] *Ibid*
[393] African Development Bank, "State of the Forest 2008" – Chapter 1
[394] *Ibid*
[395] IUCN, "Landscape Conservation in the Congo Basin", 2010
[396] *Ibid*

countries migrate towards the Sangha area to work and improve their quality of life, but often find disappointment, unemployment and more poverty.

The TNS's native inhabitants are:

- Pygmy hunter-gatherers, known as the forest people. The pygmies belong to the Baka tribe in Cameroon, the Bayaka in CAR and the Mbenzélé in the Republic of Congo. These people are undoubtedly the first to have settled in the forests of the Congo Basin, and thus possess an unmatched knowledge of this milieu[397].
- The Bantus, sedentary agriculturalists who have long settled along the Sangha River. Even though the Bantu probably settled in the region after the pygmies, they are also considered native to the TNS and have maintained close relations with their neighboring forest peoples over the centuries[398].

A Bantu farmer displays the bushmeat he just captured, in the heart of the TNS in Cameroun
© Mourad Shalaby

The population of the TNS landscape is of 191 000 people, with an average density of 5 people/km^2 [399]. Interestingly, the TNS landscape may possibly contain the biggest single

[397] Forest Peoples Program, "Land rights and the forest peoples of Africa", 2009, available at www.forestpeoples.org/sites/fpp/files/publication/2010/05/overviewlandrightsstudy09eng.pdf
[398] *Ibid*

concentration of forest-dwelling pygmies in Central Africa, 19 950 people[400]. Roughly the same number of people are foreign workers employed by the logging corporations[401]. The TNS is also known for its fauna population, harboring some of the healthiest and most abundant groups of great apes and elephants in Central Africa, if not the world[402].

In response to the pressures exerted on the fragile ecosystems of the CBF, Cameroon, CAR and the Republic of Congo decided to create a network of trans-border protected areas in the region[403]. The idea was to connect neighboring parks from all three countries in order to protect the entirety of natural landscapes that spanned borders, while peripheral zones around these parks would be dedicated to sustainable logging, hunting and agricultural activities. This strategy had first been conceived by the World Wildlife Fund[404]. The agreement was ratified at the Yaoundé declaration in 1999, where all six CBF countries committed to the creation of trans-border ecological parks, such as in the TNS, and agreed to reform the forest sector towards more sustainable management practices. The specific TNS agreement was formalized in 2000 when the three governments agreed to establish and cooperatively manage the landscape, making the TNS the first trans-border protected area in the region[405].

[399] IUCN, "Landscape Conservation in the Congo Basin", 2010
[400] Ibid
[401] Ibid
[402] Wildlife Conservation Society (WCS), "Best of the Wild, Ndoki landscape", 2009
[403] African Development Bank, "State of the Forest 2008" – Chapter 19
[404] WWF, "Sangha Tri-National Landscape, International Cooperation for Conservation", available at www.worldwildlife.org/what/wherewework/congo/WWFBinaryitem8796.pdf
[405] IUCN, "Landscape Conservation in the Congo Basin", 2010

Rationale for conservation in the TNS

The TNS contains one of the largest and most pristine contiguous ecological blocks of protected areas in Central Africa, spanning three countries, and harbors an immensely rich natural capital, including a large river system[406]. It also contains one of the biggest intact populations of Central Africa's megafauna, namely forest elephants, lowland gorillas, chimpanzees, bongos and forest buffaloes. The landscape is home to exceptionally high densities of these forest mammals, as well as sizable populations of endangered animal species which still thrive in these forests, although increasingly threatened by anthropogenic activities nearby[407]. The trans-boundary nature of the parks allows many of the large animals to roam freely within their natural home ranges[408]. Furthermore the TNS

A habituated Gorilla is unbothered by my taking a picture
© Mourad Shalaby

Wild forest elephants of the TNS
© Mourad Shalaby

[406] J.Schure, V. Ingram, J.C. Tieguhong, C. Ndikumagence, "Is the god of diamonds alone? The role of institutions in artisanal mining in forest landscapes, Congo Basin", *Resources Policy,* September 2011
[407] IUCN, "Landscape Conservation in the Congo Basin", 2010
[408] *Ibid*

provides a wide range of ecosystem services to local and indigenous inhabitants, urban communities downstream and the global community through carbon sequestration[409]. Forests cover around 95% of the landscape and include precious natural clearings, essential habitats for the megafauna, and some of the most pristine old-growth mature forests found in Central Africa, which contain exceptionally high stocks of carbon[410]. Finally, and perhaps most significantly, the area is home to a uniquely large concentration of the dwindling pygmy population, whose disappearing culture and way of life depend on the forest[411]. These indigenous people use their environment for food, medicine, building materials, local trade and cultural identity. Their traditional knowledge of the forest is unique and has the potential to greatly support conservation efforts. The Tri-national Sangha area is certainly one of the most important, valuable and still relatively untouched natural landscapes remaining in Central Africa, and constitutes a valuable target for conservation by the international community, before irreversible changes happen. The area's intrinsic natural and human wealth is of global importance, making it a very interesting REDD candidate.

At the same time, the TNS's wealth has not gone unnoticed. The area's abundant natural resources have attracted several logging and mining companies, sports hunters, parrot trappers, bushmeat hunters and Bantu farmers. These interests have collided with those of the local forest people, contributing to conflicting land uses, unclear land ownership and access rights and the rapid exploitation of resources, all in all threatening to create an unsustainable future for the TNS.

[409] African Development Bank, "State of the Forest 2008" – Chapter 19
[410] IUCN, "Landscape Conservation in the Congo Basin", 2010
[411] African Development Bank, "State of the Forest 2008" – Chapter 19

The TNS in Cameroon : Lobéké National Park and peripheral area

In Cameroon, the TNS landscape is located within the Boumba and Ngoko District, administrated by the small city of Yokadouma. The CTNS area has a low population density, with a total population of 63,150 individuals spread out over 3 718 km^2, equaling a density of 17 people/km^2 [412]. Seventeen percent of this total population belongs to the Baka Tribe of Pygmies while 15% are workers living in timber processing sites[413]. The presence of vulnerable indigenous groups often creates conflict with the multiple other stakeholders who use the lands extensively, namely loggers, hunters and farmers[414]. The magnitude and diversity of stakeholders have created a challenging management situation in Lobéké[415].

Research has shown that while establishing conservation parks in sensitive natural landscapes is important, this alone doesn't slow deforestation where it most commonly occurs: along the protected forest's retreating edge[416]. The peripheral edge surrounding the protected reserve of Lobéké park is a vast forested area measuring 12 530 km^2, and is zoned as follows[417]:

- 6 village hunting concessions = 487600 ha, 4.876 km^2
- 7 safari hunting grounds = 738 100

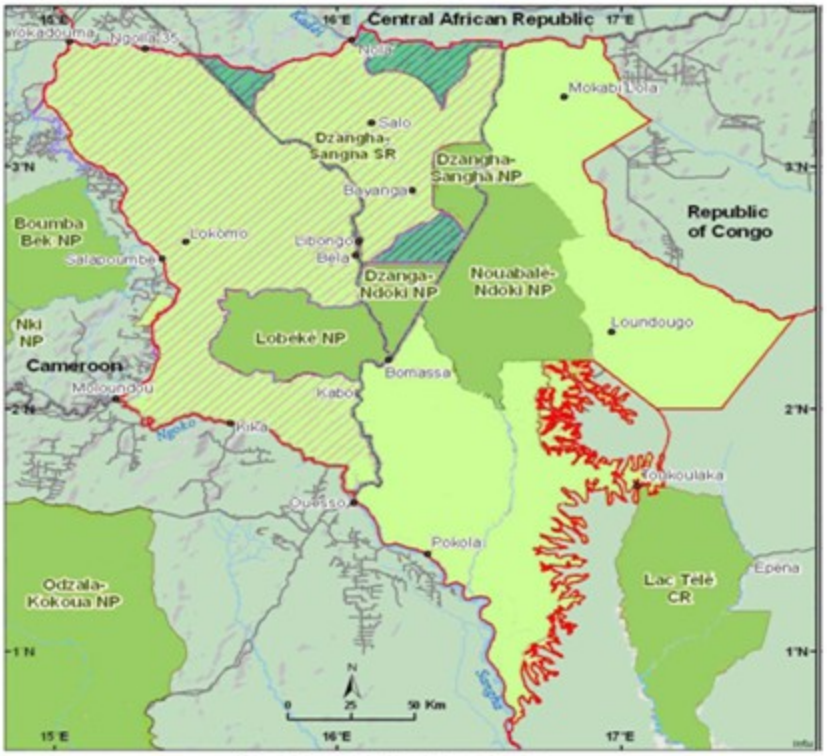

Figure 9 - Conflicting land uses in the TNS
Source: Tropical Forest Conservation Science, Volume 3, 2010

[412] IUCN, "Landscape Conservation in the Congo Basin", 2010
[413] *Ibid*
[414] *Ibid*
[415] IUCN, "Learning From Landscapes", 2008, available at cmsdata.iucn.org/downloads/a_avspecial_learning_from_landscapes_1.pdf
[416] D.Nepstad *et al.,"*Inhibition of Amazon Deforestation and Fire by Parks and Indigenous Lands", *Conservation Biology*, Volume 20, Issue 1, pp 65-73, February 2006
[417] IUCN, "Landscape Conservation in the Congo Basin", 2010

ha, 7381km^2

- 6 community-use forests = 30 000ha, 300 km^2
- 14 commercial logging units = 900 000 ha, 9 000 km^2

The total size of the area, comprising the park and the peripheral, multi-use zones, is 1,471,000 ha, or 14 710 km^2, out of a total of 3,713 800 ha for the Cameroon segment of the TNS. One must take into account that these areas overlap with each other. For instance, many safari hunting grounds overlap with village hunting areas and logging concessions (as illustrated in figure 9), which obviously has the potential to create conflicts over land-uses.

The principal threats to the peripheral area's ecosystem and it's globally important biodiversity are hunting and the informal bushmeat trade, unsustainable commercial logging, farming occurring around penetrative logging roads, informal mining activities and the capture and trade of rare animals, such as grey parrots[418]. The deforestation rate in the CTNS remains quite low in absolute terms, as well as in relative terms when compared to the rest of the Congo Basin[419].

Road construction in the TNS segment of Cameroun
© Mourad Shalaby

Nonetheless, forest loss almost doubled between the periods of 1990-2000 and 2000-2005, and deforestation and forest fragmentation seem to be increasing quite rapidly, due to the increased allocation of forest concessions, the resulting road construction and, to a lesser extent, expanding slash-and-burn cultivation practices[420]. Economic pressures have resulted in the leasing of almost all the forest surrounding the Lobéké Park to international timber

[418] Wildlife Conservation Society (WCS), "Best of the Wild, Ndoki landscape", 2009
[419] African Development Bank, "State of the Forest 2008" – Chapter 19
[420] *Ibid*

companies[421]. This has resulted in increased migration of workers from outside the region towards the TNS. At this rate, there is a risk that deforestation rates will increase rapidly if no measures are taken to mitigate the impacts of infrastructure and industrial development and diversify the regional economy. If the fragile tropical forests of the CTNS are to survive, the rural populations of the area must be given economic alternatives to logging, mining and other environmentally-harmful activities,

Logging activities constitute the greatest threat to the forest and its biodiversity in the CTNS, as illustrated in figure 10*[422], and will consequently be the main target of the proposed REDD plan in this thesis. Roughly ¾ of the Lobéké peripheral area has already been leased to timber corporations. Commercial logging opens up forest areas through the construction of penetrating roads, making primary forests vulnerable to poaching activities, farming and further logging deeper within the forest. This results in the degradation and destruction of animal habitats as well as the cutting down of mature trees filled with high amounts of carbon. Many conservation organizations, which are present in the TNS and elsewhere, have long worked to ensure sustainable logging practices, given that timber companies are the main employers and economic drivers in many rural and forested areas. Such sustainable logging involves two main activities:

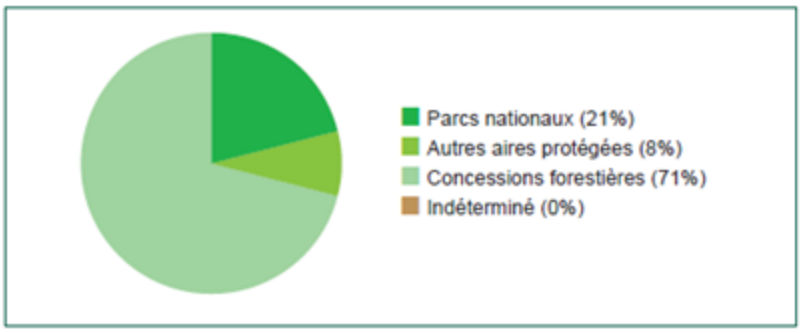

Figure 10: Zoning in the TNS Landscape

71% = Forest Concessions
29% = National Parks and protected areas
Source: African Development Bank, State of the Forest 2006

- Logging companies ensure, through various measures (policing, food provision, financial) that poaching activities do not occur within their concessions[423]
- Loggers practice L.I.L., or low-impact logging, where certain trees are selected for logging while other trees species are exempted. Some trees are considered more

[421] FAO, "Participatory land-use planning for priority landscapes of the Congo Basin", *Unasylva, Volume 59, Issue 230, 2008, available at www.fao.org/docrep/011/i0440e/i0440e00.htm*
[422] African Development Bank, "State of the Forest 2006" – Part III / Chapter 16
*Although Figure 10 shows data for the entire TNS landscape, the numbers for the CTNS are very similar
[423] The Nature Conservancy, "Improved Forest Management and REDD", *Policy Brief,* November 2010

valuable than others because they support wildlife habitats, especially those of endangered species, and play a special role in maintaining forest ecosystems[424]. However, although L.I.L may be considered better than random logging, rainforest scientists state that this practice is in no way sufficient to guarantee environmental sustainability in tropical forests, which are particularly fragile ecosystems[425]. The CBF forests contain such high amounts of carbon that any type of logging will result in substantial carbon release, even more so in the TNS and Lobéké area where some of the oldest, and therefore most carbon dense, trees in Central Africa can be found[426].

Interestingly, loggers argue that forest exploitation does not necessarily affect animals negatively. It appears that gorillas and elephants enjoy roaming around secondary forest regrowth areas, i.e. areas that have been logged and have seen a new type of vegetation grow. These mimic natural clearings, which are found abundantly in the TNS and thus support megafauna movement[427]. However, in terms of carbon value, these artificial clearings and their secondary vegetation sequester nowhere near the amounts of carbon stocked in the original mature trees.

Logging trucks in the TNS
© Mourad Shalaby

[424] *Ibid*
[425] Greenpeace, "Why Logging will not Save the Climate", 2009, available at www.greenpeace.org/raw/content%20/international/press/reports/why-logging-will-not-save-the.pdf
[426] Federal Ministry for Economic Cooperation and Development, Germany, "Cameroon: Foundation Tri-National de la Sangha / Lobéké Park", 2007, available at www.cbd.int/doc/fin/submission/fin-cameroon-ftns-en.pdf
[427] WWF, "Dja-Minkébé-Odzala Tri-National Landscape, Protecting the Largest Block of Intact Forests in the Congo Basin", available at www.worldwildlife.org/what/wherewework/congo/WWFBinaryitem8793.pdf

Furthermore, logging accelerates deforestation and forest degradation through the expansion of logging roads, which provide deeper forest access for commercial hunters, farmers and human settlements. In fact, roads in the Congo Basin play paradoxical and conflicting roles, as they contribute to both positive economic development and negative environmental degradation. Roads allow remote areas to become accessible to development, economic integration and national trade, but at the same time they are used to plunder and transport forest goods, such as wild fauna, timber, diamonds and other resources. The exploitation of these wild products contributes most often to economic systems far beyond the forest and disturbs indigenous forest communities who do not benefit at all from these trades. Research has demonstrated that a greater number of roads correlate with poorer nutrition and declining quality of life for forest people[428]. Vector-borne diseases, such as malaria, also increase along forest roads[429]. Lastly, research also indicates that as road condition and usage declines, nutrition improves among forest dwellers[430]. This suggests that roads adversely affect fragile indigenous lifestyles, which thrive on isolation and the respect of their traditional territorial boundaries.

Indigenous people of the TNS and civil society organizations (CSOs)

As mentioned earlier, the TNS is home to one of the highest concentrations of pygmy populations in Central Africa, with half of these located in the Cameroon segment of the landscape[431]. Most of these semi-isolated tribes remain unaware of REDD proposals that might affect their forests in the future.

[428] H. E. Eves, R. Hardin, S. Rupp, Yale School of Forestry & Environmental Studies, "Resource Use in the Tri-National Sangha River Region of Equatorial Africa", 1998, available at environment.yale.edu/topics/799
[429] *Ibid*
[430] *Ibid*
[431] African Development Bank, "State of the Forest 2008" – Chapter 19

The pygmies of the TNS, in their villages situated along dusty forest roads
© Mourad Shalaby

When addressing indigenous rights in the TNS, the sociopolitical landscape presents the same injustices as in the rest of Cameroon, as discussed in Chapters 3 and 4. The original inhabitants of the TNS, the different tribes of Pygmies, have seen their rights to access land and resources being largely disregarded and ignored by national and regional government actors[432]. Despite the fact that most CBF countries have drafted specific guidelines for ensuring local and indigenous participation in the forest sector, regional decision makers have thus far maintained a mainly top-down and non-participative management of forest resources[433]. With the exception of a handful of sustainable initiatives involving pygmies, such as ecotourism, indigenous people have been largely marginalized in the economic activities of the TNS[434].

[432] E.Freudenthal, S. Nnah and J. Kenrick, "REDD and Rights in Cameroon", February 2011, available at www.forestpeoples.org/sites/fpp/files/publication/2011/02/redd-cameroon-report-final-online.pdf
[433] *Ibid*
[434] *Ibid*

Inadequate and corrupt governance, discrimination and the lack of recognition of customary land rights obstruct the involvement of local people in the management of forest resources[435].

With regards to REDD, the lack of knowledge, education and information about REDD and other forest conservation initiatives (often deliberately) is the primary reason why civil society and traditional communities are left out of these processes. Information is the first prerequisite for REDD application. Without proper knowledge, the indigenous people are sure to be left out of the project. NGOs composed of indigenous people are rare in equatorial Africa, making lobbying almost impossible. Nonetheless, some do exist in the CTNS landscape, but these are not given enough importance by the government when preparing local REDD and conservation plans. This is unfortunate because local organizations are more trusted by local communities, and thus have better and closer rapports with local populations, despite the fact that international NGOS, such as the WWF and the IUCN, may have more experience and technical capabilities than local NGOs. In order to address these issues, the proposed REDD plan in this thesis will outline and describe efforts to increase the presence of traditional people in local governments, create an official indigenous affairs department within the government and further integrate local NGOs in planning processes of the forestry sector, so as to amplify the voices and interests of rural and indigenous communities in decision-making processes that affect their forests.

Ecotourism, safari-hunting, bio-prospecting, NTFPs and REDD

Certain forms of sustainable development are taking place in the TNS, where sustainable practices are generating revenues for poverty-stricken local communities. These activities include the pygmy-guided observation of gorillas and elephants, controlled trophy-hunting in defined hunting concessions and the trade of NTFPs (non-timber forest products). The funds generated from these practices encourage local participation in developmental and environmental processes, help improve living conditions in TNS villages and stimulate the small local economy[436]. For instance, returns from safari hunting and ecotourism have made possible

[435] *Ibid*

[436] WWF, "Contribution of conservation to livelihood of local communities around Tri-national Sangha landscape", 2008, available at

the construction of health clinics and schools, education and training on agricultural techniques, the provision of electricity, potable water availability and the legalization of low-impact indigenous hunting traditions in the Cameroon area of the TNS[437]. Gorilla and elephant tourism, where small groups of tourists are led by pygmy guides into the forest to observe lowland Gorillas and forest elephants, has also generated revenue for local people in the CAR. This money is often managed by village development funds, whose members are elected by the locals[438]. These community-based initiatives have helped to involve the often-marginalized indigenous people in local development and wildlife and forest management.

The Doli Lodge, in the Central-African Republic segment of the TNS, along the Sangha river, where hundreds of "eco-tourists", attracted by the prospect of seeing habituated Gorillas and wild forest elephants, stay during their travels to the tropical forest each year.
© Mourad Shalaby, 2011

In my opinion, there are many interesting similarities between these existing sustainable initiatives and REDD. Ecotourism has highlighted the link between environmental conservation and development, because it financially rewards local people as stewards and managers of their environment. In this case, the megafauna is the natural resource which has become the vehicle for development. Under REDD, the vehicle for development would be trees and the carbon within them, but the general philosophy would be the same: conserving the environment, generating revenue and involving indigenous people. Furthermore, the implementation of

wwf.panda.org/who_we_are/wwf_offices/cameroon/news/?134501/Contribution-of-conservation-to-livelihood-of-local-communities-around-Tri-national-de-la-Sangha-landscape-TNS

[437] *Ibid*

[438] *Ibid*

REDD would not prevent the continuation of sustainable ecotourism activities. Only logging and other environmentally-damaging activities would have to cease or be reduced. In fact, a REDD program would actually enhance ecotourism, as forests would be maintained and protected, and their aesthetics improved, thus making them more attractive to tourists. Other eco-friendly activities could also take place under a REDD scenario. For instance, bio-prospecting, where pharmaceutical companies explore the rainforest in search of medicinal ingredients, could also benefit from forest conservation under REDD. Bio-prospecting could certainly involve indigenous communities, as pygmies could be consulted about their valuable traditional indigenous knowledge of the forest and its vast medicinal plants, which could be shared with the outside world, providing another sustainable source of revenue for indigenous people. Finally, the trade of non-timber forest products, such as honey, fruit and medicinal plants, would also be enhanced by REDD conservation. Larger areas of intact forest would provide a higher abundance of NTFP products, which could secure a more important role in a new local economy under REDD.

As explained earlier, logging is the main activity that will need to be significantly reduced, or entirely eliminated, under the REDD scenario proposed in this thesis. At first glance, this seems to make no economic sense. After all, logging is a lucrative business that provides millions of dollars, through taxation, to the local and federal government in Cameroon. Furthermore, logging is the main source of employment in isolated rural areas of the Congo Basin, such as in the South-East of Cameroon. The forestry sector as a whole is a staple of national economies in Central Africa (see Chapter 1). However, despite these facts, the logging industry contributes little to local economic and social development in forest villages near concessions[439]. In these villages, poverty is rife, despite all the wealth generated in neighboring forests, and social services, such as schooling and health, benefit little from the revenue earned from timber exploitation. Logging companies establish outposts, expatriate compounds and timber-processing centers within their concessions, and isolate these from the local villages and towns. On the whole, timber extraction in Cameroon does not constitute a form of sustainable development, in terms of social, environmental and economic advancement. Only the

[439] IUCN, "Landscape Conservation in the Congo Basin", 2010

government, and foreign companies, benefit from this trade. Local communities would therefore suffer little from reduced logging, especially if a sustainable financial alternative that benefits local people is provided, such as REDD. Furthermore, national forestry laws in Cameroon state that 10 percent of total forest revenues must be shared with local communities[440], but only a fraction of this percentage actually reaches communities, due to poor, corrupt benefit-sharing mechanisms and the lack of enforcement and recognition of local and indigenous rights, while 40 percent of revenues do reach the local government, as stated by the constitution. Ultimately, poor governance is to blame for inadequate benefit-sharing, rather than logging *per se*. This is why assurances and safeguards against corruption and bad governance are essential for REDD to succeed. These points will be addressed directly in the REDD strategy that will be outlined in the following pages.

Chapter 6 – Personal work: REDD strategy for the TNS in Cameroon

Estimating potential REDD revenues for the CTNS

The current CTNS formal economy, excluding indigenous people' revenue-generating activities, is entirely based on resource extraction and trade[441]:

- Timber is the staple of the formal economy, upon which people depend for employment and the derived sale of goods and services in towns close to concessions. To a lesser extent, diamonds and agricultural goods are also traded.
- Bushmeat, informal diamond trade and other NTFPs in the informal economy are widely practiced

In the CTNS, the REDD strategy proposed here aims to mainly replace logging, the most important and threatening source of deforestation, both present and future. As mentioned in this thesis's objectives, one of the aims of this study is to test the feasibility of REDD as a potential economic replacement for logging, the main driver of deforestation, in the CTNS.

[440] IUCN, "Landscape Conservation in the Congo Basin", 2010
[441] African Development Bank, "State of the Forest 2008" – Chapter 19

Thus, my goal is to demonstrate that REDD can generate revenue equal or superior to that of the timber industry, using the dynamics of the carbon market. To trade carbon units and calculate potential revenue generated by REDD, we need information about carbon stocks and carbon emissions. In any given area, we need to estimate:

1. The total amount of carbon stock, stored in different standing vegetation types and tree species on one hand, and in tree roots and soils on the other hand[442]. Carbon pools aboveground and belowground must be measured, as both depend on intact, standing trees. To determine existing carbon stocks by vegetation type, we need to select a defined forested area, and measure the carbon content per hectare of each vegetation type. Once the total amount of carbon stock is measured, we can then determine the financial value of the forest in the carbon market.
2. The amount of carbon released through logging-related deforestation and degradation. The value of this carbon is converted into dollars using the carbon market, and is then compared to logging revenue.

Accordingly, I shall focus on the following quantitative information about the CTNS to calculate the area's financial potential under REDD:

- The total amount of carbon stocked in the forest
- The amount of carbon lost through deforestation from logging, and the baseline average of logging-induced deforestation and subsequent carbon emissions.
- The financial value of the above-mentioned stocked and lost carbon, according to the current carbon market pricing of one ton of CO_2
- The amount of revenue generated by logging: in total; for the local government; and for local people. These amounts will be compared to potential REDD returns.

[442] S.Palmroth *et al., "*Aboveground sink strength in forests controls the allocation of carbon below ground and its [CO_2]-induced enhancement", *Proceedings of the National Academy of Sciences of the USA / PNAS*, Volume 103, Issue 51, December 2006

The CTNS, in its totality, covers 3,718,000 ha / 37 180km^2. The total size of the Lobéké protected area, which comprises the core national park and surrounding peripheral zones, is 1,471,000 ha / 14 710 km^2 [443]. As explained earlier, REDD will be applied specifically in the peripheral multi-use zone, which covers 1,253,000 ha / 12 530 km^2. Roughly 95 % of this area, 1.190.350 ha, is covered by an exceptionally rich and relatively untouched dense humid forest[444], as figure 11 shows. This type of forest contains various habitats and tree species, such as mixed swamp forests, riparian forests, palm groves and grassy clearings[445]. Dense humid forests are estimated to contain the largest amounts of sequestered carbon in the Congo Basin, if not the world, and constitute some of the largest terrestrial carbon pools[446]. However, estimates of the exact amount of carbon stored in this type of biomass vary greatly, depending on the source. Historical data on carbon stocks in Cameroon have not been compiled regularly, and are thus very hard to find. The most serious and credible inventories found in the scientific literature were thus averaged in order to make a decent estimation. According to the African Development Bank's bi-annual report on the Congo Basin, 'State of the Forest 2008', one hectare of dense humid forest in the CBF contains 147 tons of carbon aboveground and 38 tons belowground, for a total of 185 tons of carbon per hectare[447]. However, a more recent joint study by the German development agency GTZ, the COMIFAC (Central-African Forests Commission) and the Ministry of Forestry and Wildlife of Cameroon (MINFOF), concluded that the average amount of carbon stored in the biomass of an intact dense humid forest, such as

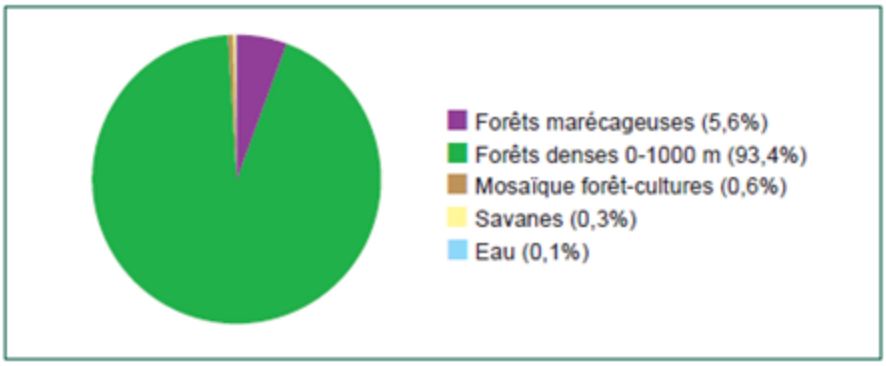

Figure 11 - Different types of forest in the TNS
Source: African Development Bank, State of the Forest 2006

[443] IUCN, "Landscape Conservation in the Congo Basin", 2010
[444] African Development Bank, "State of the Forest 2006" – Chapter 16
[445] *Ibid*
[446] African Development Bank, "State of the Forest 2008" – Chapter 12
[447] *Ibid*

the one in the TNS, is 326 tons/ha[448]. Hence, averaging these two estimates, one hectare of dense humid forest contains roughly 255.5 tons of carbon per hectare. The Rainforest Foundation's literature review on the subject also pointed towards an average of about 250 tons/ha[449]. Furthermore, this figure also correlates with the estimation of the total carbon amount stored in the Congo Basin: 46 billion tons in 1.875.000 km^2 / 187 500 000 hectares (46 billion / 187 500 000 ha = 245 tons/ha)[450]. The Lobéké peripheral (forested) area thus contains: 1.190.350 (size in ha) X 255.5 (tons of carbon/ha) = 304 134 425 tons of carbon. The price of one ton of carbon fluctuates yearly, but is widely expected to rise significantly over the next couple of years. The European Union Emission Trading Scheme (or EU ETS), the largest multi-national greenhouse gas emissions trading scheme in the world, predicts that the price of one ton of carbon will average 22 EUROS for the period of 2013-2020[451]. Hence, the CTNS Lobéké peripheral area's total forest carbon pool is valued at: 304 134 425 (total sequestered carbon in tons) X 22 (price of one ton of carbon) = 6 690 957 350 EUROS / 8 578 877 319.08 USD

Therefore, the value of this forest, in terms of carbon stored, almost reaches 7 billion EUROS. These estimations are obviously approximate, as scientists' measurements of carbon stocks in the CBF differ greatly. As explained in previous chapters, there is an evident lack of research and knowledge about the Congo Basin's carbon stocks. Economists argue that the price of carbon is very likely to increase over the next couple of years, and might reach up to 30 EUROS/ton in the next 5 years, when REDD is expected to become operational[452]. Therefore, regardless of the exact amount of carbon stored in the forest, the market value of carbon pools, such as the CTNS forest, will probably rise considerably in the near future.

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[448] G.P.Dkamela, "The context of REDD+ in Cameroon", CIFOR, 2011

[449] A. L. Hoare, "Clouds on the Horizon, The Congo Basin's Forests and Climate Change", The Rainforest Foundation UK, 2007, available at www.rainforestfoundationuk.org/files/Global%20Warming%20Report%20%28Low%20Res%29.pdf

[450] F. N. Nonga, "Are payments for environmental services (PES) an opportunity for relieving countries of the Congo Basin from poverty ?", *Journal of Sustainable Development in Africa,* Volume 13, Issue 3, 2011

[451] European Commission, *EU Emissions Trading System,* available at ec.europa.eu/clima/policies/ets/index_en.htm and www.businessgreen.com/bg/news/2084152/falling-oil-prices-greek-crisis-offer-boon-carbon-traders

[452] Businessgreen.com, "Falling oil prices and Greek crisis a boon to carbon traders", www.businessgreen.com/bg/news/2084152/falling-oil-prices-greek-crisis-offer-boon-carbon-traders

With regards to deforestation and degradation rates in the TNS, these are even more difficult to find in existing documentation. There exists no official measurement of deforestation rates in the Lobéké peripheral area, although conservationists in the area personally stated to this author that deforestation averaged 1.5 to 1.75 % annually in the major logging concessions. However, I can only reasonably use official deforestation rates for the whole of the TNS landscape, which are undoubtedly significantly lower than the rates found in logged forests. The landscape-wide rates takes into account low-impact activities, such as fuelwood collection and community forestry, while concentrated industrial logging is known to have higher deforestation rates. In any case, the only available statistics for the area, published by the African Development Bank's bi-annual study on the Congo Basin Forest[453], will be used for this exercise, as described below.

Between 1990 and 2000, the Lobéké peripheral area's rate of deforestation (official TNS average rates) was 0.18% of its total forest cover, a rate that increased to 0.32% (of the remaining forest cover) for the period of 2000 and 2005[454]. The forest surface loss was thus 21.5 km^2 between 1990 and 2000 (0.18% of 11 903.5km^2) and 38 km^2 between 2000 and 2005 (0.32% of 11 882km^2). In sum, the area lost roughly 60 km^2 out of a total forest cover of 11.903 km^2 between 1990 and 2005[455]. In order to determine the baseline, which is the average annual deforestation rate for a given period, we must look at annual deforestation rates for the most recent 10-year period on record and calculate the average annual deforestation rate for that period: between 1995 and 2005 in this case of the CTNS. Given that the 1990-2000 period had a total deforestation rate of 0.18%, the average annual rate for that period was 0.18/10 = 0.018%/year. As for 2000-2005, the total deforestation rate was 0.32%, for an average annual rate of 0.32/5 = 0.064%/year for that period. Averaging these two numbers together provides an annual average deforestation rate for the period of 1995-2005 of 0.018 + 0.064 / 2 = 0.041. Therefore, the baseline rate of deforestation in the Lobéké peripheral area is 0.041%/year, for the period of 1995-2005. However, by 1995 the forest had already lost 0.018% of its cover annually since 1990, or 0.09% for 1990-1995, an area of 10.5 km^2. Hence, the forest area in

[453] African Development Bank, "State of the Forest 2008" – Chapter 19
[454] *Ibid*
[455] *Ibid*

1995 was 11 903.5 km^2 – 10.5 km^2 = 11 893 km^2. So, for the period of 1995-2005, the average annual forest area loss was: 0.041% (baseline) of 1.189.300 ha (total size of forest in 1995) = 490 ha. Given that 1 ha of dense humid forest contains 255.5 tons of carbon on average, as explained earlier, 490 ha contain: 490 X 255.5 = 125 195 tons of carbon released each year between 1995-2005, for a financial value of: 125 195 X 22 US EUROS (average price of one ton of carbon) = 2 754 290 EUROS/year – 3 530 742 USD/year. This is the approximate financial value of the carbon released annually from logging-induced deforestation in the Lobéké peripheral and, correspondingly, the potential amount of REDD payments the CTNS could receive. In the CTNS, industrial logging revenue amounts to roughly 5,000 000 US$ a year[456]. However, only 42% of this amount actually benefits Cameroon[457]. The national constitution stipulates that a foreign-based logging company's revenue must be allocated as follows[458]:

- 50 % is kept as profit.
- 40 % must go to the local government, a sum of $2,000,000 US in the CTNS, using the above figures.
- 10 % must go the local communities, a sum of 500,000 $US in the CTNS using the above figures.

In reality, only the first two conditions are respected. Local communities actually receive only 2% on average in the CTNS, or $100,000 US, the rest is absorbed by corruption[459]. Hence, only 42% of the total revenue made by the logging industry in the landscape actually benefits Cameroon (when excluding corruption as a 'benefit'). This amounts to $2,100,000 US, which is inferior to the 3.5 million US$ REDD could generate. Under a REDD scenario, the government would need to be allocated 57 % of the total REDD sum in order to receive the same US$ 2,000,000 they currently enjoy under the business-as-usual scenario of logging, whereas local communities would only need 2.8% of the amount generated from REDD to get their $100,000 US, the amount they are used to receiving under the current, business-as-usual forestry

[456] IUCN, "Landscape Conservation in the Congo Basin", 2010
[457] *Ibid*
[458] *Ibid*
[459] *Ibid*

revenue distribution scheme. Hence, even under a particularly unfair REDD benefit-sharing scheme, it would be quite easy for both the government and the people to earn the same revenue they earned from the logging industry. After allocating $2,000,000 US to the government and $100,000 US to the local people, there would remain just under 1.5 million US$, which could partly be used to compensate the logging industry. But if the State is convinced that REDD could be more beneficial than logging, the government could evict logging companies altogether at the end of the budget year, without compensation. Although this may appear illegal and authoritarian, it is not entirely. Many logging companies and their employees are known to engage in numerous unlawful and illegitimate activities in concessions, namely poaching, harmful forestry and environmental practices, logging out of boundaries, discrimination against pygmies and the informal trade of NTFPs. The Cameroonian government would thus have a legal and moral basis to evict logging companies, even if the primary incentive would be to financially benefit from REDD. In any case, compensation, if there is any at all, would likely take the form of a one-time payment to loggers. In 1999, the government of the DRC issued a moratorium on the national forestry sector, in an effort to clean up the sector from corruption and informal logging[460]. Under REDD, Cameroon could issue a similar moratorium, with a view to allocating forest lands to carbon sequestration activities. In any case, the focus of REDD is on poverty reduction in developing countries, not the protection of the interests of Western-based logging companies. Poverty is more likely to be reduced in the CTNS under a REDD-based scenario, which would generate a full 40% more revenue than logging*[461]. Ideally, both the government and local people would receive more money under REDD than under logging, instead of simply trying to recover the same previous earnings from logging. But these calculations demonstrate that it highly likely that carbon payments can equal and surpass logging revenue. Under REDD, conservation could finally become economically beneficial, an added value to the natural benefits of environmental protection. The REDD potential for the CTNS is thus very promising.

[460] African Development Bank/OECD, "Democratic Republic of Congo, African Economic Outlook", 2008, available at www.oecd.org/dataoecd/13/39/40577125.pdf

[461] *3,530,742 US$ (amount generated by REDD scenario) - $2,100,000 US (current amount generated by logging that is kept by Cameroon's government and people) = 1,430,742 US$, which is 40% of 2,100,000, hence the 40% increase in revenue generated by REDD compared to the current business-as-usual dynamic

Furthermore, a REDD scenario in the area will generate revenue not only from carbon sequestration, but is also likely to boost returns from other sustainable economic activities in the forest, namely ecotourism, NTFPs and bio-prospecting, as mentioned earlier. The potential revenue from these activities may be added to those generated by carbon payments to tip the balance even more in favor of conservation and REDD. Under current conditions, with the majority of forest lands leased to logging concessions, it is quite difficult for eco-friendly activities like ecotourism to take place. Also, deforestation rates in logging concessions are certainly much higher than those of the entire TNS landscape, meaning that the carbon released in logged forests is probably 10 to 20 times higher than the amount used in this exercise, which means that REDD payments could actually be even much larger.

In practice, the present and future price of a metric ton of carbon, and the numerous co-benefits of conservation, leave little doubt of the ability of REDD to exceed current opportunity costs. This is especially true for the Congo Basin, where high carbon stocks lost from deforestation may lead to large payments through the up-and-coming carbon market. Furthermore, REDD payments are likely to benefit local communities, by providing revenue, more livelihood opportunities from forest conservation and less ecological degradation, as opposed to current logging activities which mostly benefit the government and foreign companies and neglect local development. For this happen, and in order to avoid the mistakes of the past, such as the unfair and corrupt redistribution of forestry revenues and the exclusion of vulnerable rural communities in decision-making processes, there are certain preconditions which, in my opinion, need to be fulfilled before any attempt to replace timber concessions with carbon payments in the CTNS. The current socio-economic setup in Cameroon's rural and forested areas leaves little doubt that if REDD were to be implemented immediately, vulnerable rural and indigenous groups would not obtain the benefits and human rights they are entitled to.

REDD prerequisites in the CTNS

The following measures must be undertaken, in my opinion, to rectify the precarious social situation of indigenous people before REDD implementation:

- Tenure reform on forest lands, with recognition of customary rights and historical occupation of forests. The different pygmy communities who have historically occupied and managed the forest areas around Lobéké Park must have their customary claims to land formally and practically recognized by the State, while Bantu agricultural lands must be delineated so as not to expand unjustly into surrounding forests and indigenous territories. This will be further discussed and detailed in the following pages.
- Free, prior and informed consent (FPIC) of indigenous communities must be achieved. National and regional governments in Cameroon must engage with rural communities and pro-actively work to involve these in all the planning stages of REDD, given that this mechanism will affect indigenous territories and forests. Some organizations have called for the government to apply a positive discrimination principal[462], where indigenous people, or their representatives, would be given specific positions and responsibilities within the local government in the TNS, namely administrative and economic functions. Citizen participation in local government would help regularize benefit-sharing and would ensure FPIC, a standard right for indigenous people that is often ignored in Central Africa.
- In addition to indigenous participation in local government, or in case this measure does not succeed in protecting pygmy rights, the creation of a governmental body that represents and defends indigenous interests would be needed. A national indigenous affairs entity, inspired by Brazil's creation of such a program for Amazonian Indians (see chapter 3), would uphold the above-mentioned tenure reform, FPIC in forest management and equal benefit-sharing, and would be invited to planning processes as

[462] IUCN, « Droits, participation et représentation de la société civile et des communautés du Tri National de la Sangha aux instances de décisions nationales et sous régionale », August 2010 Workshop summary, available at www.rightsandresources.org/documents/files/doc_1679.pdf

the official representative of indigenous people. Pygmy people could finally have a voice within the government and with the rest of the regional stakeholders.

- All these new initiatives would need to be supported and monitored by experienced NGOs in the area, both Cameroonian and international. The IUCN, the WWF and GTZ all have extensive experience in the TNS, but local NGOs and CSOs (civil society organizations) would also need to be given important roles. A full table, describing the different roles and tasks of NGOs, local and international, is outlined in the following 'implementation' section.

These 'prerequisites for REDD' are incorporated in the REDD plan proposed in the following section.

10 steps for REDD implementation in the CTNS

Revenues from REDD that reward carbon sequestration in the CTNS could go to the following actors:

- Local communities, the stewards and rightful owners of forests
- The government, who could organize, manage and host the overall REDD mechanism on national forestlands.
- The logging industry, to a lesser extent, who will surely seek some form of compensation.

A vital condition and element of success for REDD is that local people receive their fair share of benefits. Hence, the management of the forest and its resources should be completely reversed and transformed: logging concessions could be converted into REDD carbon parks, and the indigenous inhabitants of the forest could have their customary rights partly or fully recognized in these newly-created forestlands. The process of creating a REDD carbon park in the peripheral area of the Lobéké park, I propose, will mimic the plan designed to create the original protected area of the TNS, back in 2000, while incorporating important elements inspired from the Brazilian model of *terras indigenas*:

1. REDD could be applied in the TNS section of Cameroon, specifically in the peripheral protected area where deforestation occurs. Given that the core area is a protected park where only ecotourism is allowed, the peripheral area that is virtually entirely leased to loggers could be transformed into a carbon park where timber extraction would be replaced by carbon payments as the principal economic activity. The amount of carbon stocked and lost in the CTNS through deforestation, and the value of these on the carbon market, will constitute the market prospectus of the area, along with the historical baseline rate. This could then be communicated to potential investors, international organizations and conservation societies who wish to offset their own emissions and/or protect carbon stocks, biodiversity and pygmy livelihoods in the Congo Basin. In the REDD project for the CTNS, outside investors would be enticed by the social and environmental co-benefits, namely the conservation of an area exceptionally rich in megafauna, primary rainforests and indigenous pygmies, and the verifiability of the reduction in deforestation rates (explained below).
2. Indigenous lands could be formally defined and integrated into the Cameroon constitution. These would be distinct from current "community forests", which integrate only a fraction of historical ownership claims and are temporary in nature and limited in size. The government, both national and local, could ensure that indigenous lands are occupied exclusively by their native inhabitants' vis-à-vis occupancy but also resource use. The government could ensure this recognition constitutionally as well as practically, enforcing theses measure in the field. In essence, the government could ensure the formal and physical conversion of logging concessions into indigenous territories. This is certainly an ambitious idea, but can be realistically achieved if the government is convinced by the financial, social and ecological advantages of a REDD scenario. Furthermore, the formal recognition of indigenous lands in tropical forests has already been achieved in other parts of the world, namely Brazil (see below).
3. The Cameroonian government could create an indigenous affairs department, the equivalent of Funai in Brazil. This department, henceforth referred to as IAD in this thesis, could oversee the creation of indigenous territories that would serve as REDD

carbon parks. These would be exclusively occupied (not owned) by indigenous people, while ownership of the lands would remain with the government. As is the case in Brazil, the IAD could appoint a qualified anthropologist who would lead a formal Technical Group (TG) into the preparation of ethno-historical, sociological, legal, cartographic and environmental studies, as well as a survey of property titles and customary claims to land, in order to determine which communities are native to the forests released by the loggers. These experts could ensure the forests are returned to their native inhabitants, or remain empty if they were originally uninhabited, in which case they would serve as uninhabited carbon parks. The TG could collaborate closely with relevant NGOs, both local and international, who have been working in the area for a long time and maintain good relations with both the government and local communities (see table below). These organizations could act as neutral and independent third parties and may facilitate dialogue and cooperation between the government and local people, whilst also providing valuable technical expertise and assistance when needed. It would be essential that the TG work with local Cameroonian NGOs, who maintain very close relations with local people, especially pygmies, and have the ability to facilitate the whole process. The results of the studies could be presented at village meetings, where all three actors, the TG, the NGOs and the villagers, would be able to discuss and debate over the proposed boundaries of, on one hand, indigenous lands and carbon parks and, on the other hand, potential areas that would allow ecotourism, safari-hunting and bio-prospecting. These village meetings could be co-chaired by the village chief and the main anthropologist in charge of the TG. The meetings would allow villagers to fully participate and witness the transformation of their environment, in their favor. They could suggest adjustments, or accept and support the proposed boundaries, fostering communication and collaboration between all three actors. The resulting TG proposal, comprising the original studies and the villagers' input, could then be submitted by the IAD to the political capital of Yaoundé for a 90 day appeal and final approval period.

4. In Yaoundé, The TG proposal could be approved or amended by the following authority:

- Le Ministère des Domaines, translated as the Ministry of Properties, principal manager of all land ownership and property titles in Cameroon. Although indigenous lands would ultimately remain the property of the State, they would be permanently, legally and formally occupied by indigenous communities, as recognized by this Ministry.

5. After receiving approval by the Ministère des Domaines, the Indigenous lands cartographically demarcated by the IAD could then be confirmed by a presidential decree.
6. The newly-formalized indigenous lands could then be registered in the relevant municipal land registry and/or federal property registry, namely the Registry of Land Property in the city of Yokadouma, the admininistrative centre of the TNS in Cameroon. The Ministry of Forestry and Wildlife (MINFOF), which manages all forest and hydrological resources and is responsible for land-use and zoning in forest areas, would have a role to play at this stage. Given that REDD carbon parks are a form of forest land use, this ministry would have the responsibility of imposing a moratorium on the forestry sector, cancelling all logging contracts in the Lobéké peripheral area with a view of converting these into REDD concessions for indigenous people and sustainable economic activities, as mentioned previously. This would be followed by the gradual dismantling and removal of logging settlements and installations.
7. My research into the capacity of the Cameroon government has revealed that there is a major scientific and research gap (see chapter 4). In this seventh step, a reliable methodology to measure and monitor carbon stocks, establish deforestation baselines and quantify forest GHG fluxes and inventories in the CTNS forests could be created, aimed at addressing the dearth of carbon and deforestation data in the area. This methodology would need to be in compliance with strict IPCC and UNFCCC guidelines, and could be overseen by the current Ministry of the Environment and Nature Protection (MINEP), which manages all climate change-related issues. At the moment, Cameroon is not collecting national data on forest cover and change in a systematic fashion, lacks methods and systems for detecting deforestation and forest degradation and is not measuring carbon stocks in national forests, due to a lack of technical capacity

to conduct these activities[463]. In the Congo Basin, estimations of carbon rely largely on the use of allometric equations from other continents. This creates inaccuracies, as parameters of biomass equations are highly site and specie specific[464]. There is a crucial need to build biomass equations specifically adapted to the different forest types of Central Africa. Relevant field data would need to be collected, and vegetation and carbon stock maps of the Congo Basin, outlining the different forest types and carbon content of each of them, could be created. Coordination and closeness between remote sensing information and field data could also be enhanced, with a view of combining lab-based research with field information. A regional scientific platform for the Congo Basin could be established in the area, to which national institutions, such as MINEP, could contribute through data collection and analysis. Ideally, this center would be independent and non-governmental, and would make information about forest monitoring and carbon fluxes freely available for the development of REDD projects. Also, there is no satellite-reception station in all of Central Africa and there is a lack of access to high-resolution imagery, due the continuous cloud cover over large parts of the rainforest. In other parts of the world, these images help identify the location and extent of deforestation processes. Ideally, a local reception station would be established, in order to address the shortage of coverage and image availability and increase the number of cloud-free images. Thus, a combination of high-resolution maps and imageries, accurate and scientifically-established allometric coefficients and sufficient training of on-the-ground staff, for both laboratory and field work, could ensure that Cameroon and the region are ready to meet UNFCCC requirements for emissions to be measurable, reportable, and verifiable (MRV), and benefit from the REDD market. In sum, the Cameroonian government would need to assign MINEP specific MRV responsibilities, which would coordinate all the above-mentioned activities

[463] Congo Basin Forest Fund (CBFF), Funding application form for the Wildlife Conservation Society, 2008, available at cbf-fund.org/sites/default/files/WRI.pdf

[464] Z. Somogyi, E. Cienciala, R. Mäkipää, P. Muukkonen, A. Lehtonen and P. Weiss, "Indirect methods of large-scale forest biomass estimation", *European Journal of Forest Research,* Volume 126, Issue 2, pp 197-207

and report to a regional scientific platform and to the international REDD body at the UNFCCC, under the guidance, supervision and support of NGOs (see table below).

8. REDD payments could begin, through the carbon market. Potential investors include multilateral institutions, conservation organizations and carbon-dealing companies. These would purchase the carbon otherwise lost in a business-as-usual scenario. In Cameroon, a constitutional provision requires the sharing of tax revenues generated by forestry activities among the national government, the local council and communities adjacent to forestry concessions (see chapters 4 and 6). These forestry funds are organized into a single budget structure, the national Treasury within the Ministry of Finance, which is responsible for distributing money to the appropriate stakeholders[465]. However, communities rarely receive their fair share in Cameroon, due to 2 mains reasons:

- Land rights not being formally recognized.
- Recurrent misappropriation of funds.

The first point has already been addressed in this REDD plan. As for the second point, the State would need to improve revenue distribution mechanisms in order to become eligible to REDD and receive carbon sequestration credits. The Treasury would need to make information about REDD-related funds publicly available, so as to improve decision makers' accountability, and enhance transparency and predictability of fund-distribution. Again, a reliable way to ensure adequate benefit-sharing could be to involve local-based NGOs, foreign and Cameroonian, to act as neutral third-party observers and enforcers. In the case of carbon sequestration payments in the CTNS, the national Treasury would have to share REDD funds with the local TNS government, based in the City of Yokadouma, before distributing a predetermined amount to local rural communities, indigenous (Pygmies) and non-indigenous (Bantus). As explained in chapter 4, there are two groups that are considered 'native' to the TNS: the traditional forest-dwelling pygmies and the agriculturalist Bantus. Bantus have closer relations with the local government in the TNS, and are less discriminated against by the State than

[465] World Resources Institute, "Broken Promises: Forestry Revenue-Sharing in Cameroon", 2009, available at pdf.wri.org/broken_promises_forest_revenue_sharing_in_cameroon.pdf

the pygmies[466]. This generally leads to most forestry revenues being distributed to Bantu villages, at the expense of the pygmies. NGOs would need to ensure that communities are able to voice their complaints in case they do not receive stipulated payments. In particular, NGOs would need to monitor REDD funds after they are disbursed by the government, so as to ensure equal distribution and spending among Bantus and pygmies. If there were to be any misappropriation of funds along the distribution chain, at the government level and locally, the NGOs could inform the REDD body at the UNFCCC, and REDD payments could be reduced or stopped entirely. It would thus be in the financial interest of the State to respect its engagements and ensure proper distribution of REDD funds. At the village level, revenue from REDD could be administered by management committees whose members are elected by the villagers, already the case with ecotourism and safari-hunting funds, and this could be done in collaboration with NGOs to ensure that the money is managed adequately.

9. REDD does not stop at implementation. As mentioned earlier, the collection and communication of measurable, reportable and verifiable (MRV) data will be an essential element of the continued respect of REDD pledges. The CTNS government would have to report annually to the UNFCCC on specific carbon fluxes from the REDD forest, through MINEP. Once more, NGOs would need to monitor and verify this data. Ideally, this task would be undertaken by local staff, so as to reduce dependency on foreign expertise. Local ministerial staff and civil society members could be trained by the UNFCCC in methods and concepts of forest cover change detection, carbon measurements and carbon accounting. In the CTNS, MINEP would need to employ teams of remote sensing experts to measure and publish annual estimates of carbon stocks and emissions from deforestation and degradation, from now leading up to REDD implementation. These reports could be made available online or by other means. Furthermore, reports on past and current deforestation and degradation rates and drivers could also be made publicly available.

[466] World Bank, "Indigenous People, Poverty and Development", 2009, available at siteresources.worldbank.org/EXTINDPEOPLE/Resources/407801-1271860301656/Chapter_4_Africa.pdf

10. An overall monitoring system, assessing the social and environmental governance of REDD, quantitative information about carbon fluxes and forest cover, and actions to avoid leakage and non-permanence, could also be put in place, by a joint-collaboration of MINEP and the IAD. This system would report to the UNFCCC REDD body annually and be verified by independent third-party NGOs, ensuring that if the government fails to respect all REDD social and environmental conditions, carbon payments would stop. Cameroon is probably the best-equipped CBF country to design such as system, and already has the ability and technical capacity to produce high quality data that meets MRV requirements, as many well-known development agencies, NGOs and research scientists are firmly established in the country's tropical forests. In an effort to combat illegal logging, Cameroon has made great strides in providing information and data about basic forest management in logging concessions, which was not available 10 years ago. Today, the government needs to do the same about carbon and deforestation data, as MRV information is a certain prerequisite for an effective REDD system.

This following table is composed of NGOs with a proven track record in the TNS. These specific organizations have been selected for this table because they have experience and technical expertise on the precise roles I have assigned to them. During my field research, I met with representatives of virtually all these organizations (see methodology section). This table is not complete, as there are certainly other organizations which could be included in this monitoring system. My intention is simply to demonstrate that there are both local and international NGOs in Cameroon which can work to advance the REDD endeavor in the country and work with MINEP and the IAD under this plan. Ultimately, the inclusion of a wide range of different organizations should encourage better transparency and partnership between technical experts.

REDD Monitoring System Table

ROLES	NGOs
Monitoring of Land tenure reform prior to REDD (IAD / Ministère des Domaines / MINFOF responsibility)	**International**: - WWF Cameroon - Forest Peoples Program **Domestic**: - Institut Africain pour le Développement Economique et Social (INADES) - Le Réseau Recherche-Actions Concertées Pygmées (RACOPY) Yokadouma - Centre pour l'environnement et le développement (CED)
Monitoring of REDD revenue distribution and spending (IAD / National Treasury, Ministry of Finance responsibility)	**International**: - IUCN - WWF Cameroon - GTZ - Forest Peoples Program **Domestic**: - Centre d'Information et de Formation pour l'Environnement et le Développement (CIFED) - Organisation d'Appui du Développement Rural (ORADER) - Centre d'Etude et d'Appui aux Microprojets de Développement Rural (CEAMDER) - INADES - RACOPY Yokadouma
Monitoring of MRV data related to REDD (MINEP responsibility)	**International**: - CIFOR - WCS - GTZ **Domestic**: - CED

If successful, the REDD model for the CTNS could be exported to neighboring national parks in the landscape, namely Nouabalé-Ndoki in the Republic of Congo and Dzanga-Ndoki in the Central African Republic, creating a trans-boundary and collaborative REDD project for the whole of the TNS forests, promoting both poverty alleviation and reduced emissions from deforestation and forest degradation. This could ensure the preservation of the totality of the TNS forest carbon pool, and help conserve its globally significant biodiversity. Most importantly, a landscape-wide REDD scenario could help prevent leakage.

Outcome

The implementation of a well-defined REDD mechanism, within a context of secure tenure, enhanced local participation, transparent benefit-sharing and improved scientific knowledge of the forest, could bring about a host of possible co-benefits in the CTNS, notably:

- An improved and durable sustainable management of the forest
- The implementation of an innovative financial mechanism to preserve forests and reduce poverty simultaneously
- A sizable, if not total, reduction in logging activity. This would also curtail road construction in the forest and limit poaching
- Improved livelihood options and incomes for rural communities. Local villages in the CTNS would have the unprecedented opportunity of fully benefiting from forestlands, without the interference of industrial logging activities. Local people could thus exclusively use the forests to meet their own needs and generate revenue, with the added benefit of receiving regular income from REDD, as long as their exploitation is low-impact and does not affect carbon stocks
- More secure tenure for Bantu and Pygmy natives, in terms of occupation and exclusive usage of forest resources, perhaps the greatest reward REDD can offer for local communities
- The safeguarding of indigenous cultures and their low-impact forest activities, such as traditional hunting and medicinal plant cultivation

- The maintenance of ecosystem services provided by intact rainforests, such as climate stabilization and the regulation of rainfall patterns
- The dual reduction of GHG emissions in the TNS, Cameroon and the world, through reduced deforestation and enhanced carbon sequestration
- The protection of a critical biodiversity hotspot, for the Congo Basin and the world. By conserving forests for carbon sequestration, the habitats of the area's exceptional megafauna would also be preserved for years to come. This would enhance the TNS's chances of becoming a UNESCO World Heritage Site[467], and could certainly boost the local ecotourism industry
- Enhanced technical capacity of the CTNS to measure and monitor its mostly pristine tropical rainforest, communicate results to the outside world and valorize marketable carbon stocks

My REDD vision for the CTNS is the following: by 2020, when REDD is expected to become operational, the first carbon parks have been created in place of logging concessions, on forest grounds formally occupied by their native inhabitants. The carbon market is a dynamic force in which Western investors trade large sums, to offset their own emissions and/or protect global carbon pools. The price of one ton of carbon is stabilized, at a rate which is high enough to reflect the importance of forest ecosystem services to humankind. REDD is slowly transforming the rural landscape, local economy and forestry sector of the CTNS, empowering local people by rewarding them for nurturing their forests. On a regional scale, forests are becoming carbon sinks only, rather than being sources and sinks at the same time. The enhanced state of the protected forest has benefited the megafauna, which is now thriving in a newly-expanded protected area. The forest's enhanced aesthetic and wildlife appeal has boosted ecotourism opportunities. Local villages adjacent to former logging concessions which have now been transformed into carbon parks are starting to cater to tourists rather than loggers. Local people

[467] Commission des Forêts D'Afrique Centrale (COMIFAC), «Capitalisation effective de la Fondation pour le Tri-national de la Sangha », 2010, available at www.comifac.org/Members/webmaster/capitalisation-effective-de-la-fondation-pour-le-tri-national-de-la-sangha/view?set_language=en

are thus enjoying the added benefit of generating revenue though tourism, in addition to receiving funds from REDD. Poverty is slowly being reduced; REDD funds are being used to build schools and clinics, and are benefiting local and indigenous communities. Indigenous pygmies are undisturbed in their traditional forests, and are slowly nursing formerly-logged forests back to health, thus enhancing their already-formidable carbon sequestration potential.

A successful implementation of REDD in the CTNS is leading the way to its promotion at the tri-national level, spanning the whole of the TNS landscape across boundaries into CAR and the Republic of Congo. This corresponds more closely with the conservation of the natural boundaries of the TNS, rather than its political ones. Partnership and cooperation between all three governments is being encouraged and enhanced by mutual implementation of REDD, leading to the possibility of producing tri-national REDD workshops, information exchange, research on common carbon stocks and fluxes, technical teamwork, education, indigenous participation, knowledge-sharing and the surveillance of leakage. This supra-national approach to REDD is complementing the original TNS conservation project and agreement, with the added co-benefits of protecting the entirety of the TNS forest and carbon pool, generating sustainable revenue across the area and preventing leakage.

Obstacles and recommendations

Obstacles

REDD appears to be the most promising concept for reducing deforestation in the long-term. Incidentally, this mechanism forcefully opens up political space to address long-standing issues of governance, corruption, land tenure, the status of indigenous people and scientific capacity. These issues will have to finally be addressed by governments, in Cameroon and elsewhere, before the forthcoming implementation of REDD. In particular, State leaders will need to improve environmental governance, by working to involve all social groups and share the benefits generated from the exploitation of forest resources. REDD can be viewed as, on one hand, a cost-effective solution to combat climate change and reward rural people, and, on the other hand, a highly-costly endeavor with unpredictable consequences for forest peoples and ecosystems. Which of these two scenarios will unfold? Much will depend on governments

and their handling of key social and political issues before REDD. The CTNS faces several significant impediments to REDD, which should no longer be ignored by the State. These impediments mostly concern national environmental governance rather than specific issues in the TNS landscape. Advocates of REDD in Cameroon, foreign and domestic, will have to take note of the following major concerns:

1. Land tenure

In Cameroon, all lands belong exclusively to the State, even when they are temporarily leased to private entities.[468]. Accordingly, the carbon present in forests, the main currency of REDD, also belongs to the State, despite the fact that some local populations have inhabited these forests and protected carbon stocks for centuries. Certain communities do enjoy some liberties in government-leased community forests, such as hunting and small-scale farming, but these concessions are often precarious and limited in size and number, especially when compared to similar agreements in the Brazilian Amazon. Full tenure recognition and security remain a distant, but achievable, goal. As a result, indigenous people worry that REDD might perpetuate their marginalization and generate revenue on their traditional lands without benefiting them. They fear that a situation of unclear land-ownership and unrecognized customary tenure will entail that more powerful actors benefit from the carbon sequestration performed on indigenous lands. Advocates of indigenous rights predict that the financial incentive of REDD payments and the resulting increased value of forests will influence more powerful actors to disregard indigenous rights and take control of their lands[469]. This concern is exacerbated by the ongoing and considerable inequalities that have historically existed between, on one hand, rural and indigenous people and, on the other hand, the government, its industrial partners and urban elites. Additionally, there are inequalities even within impoverished rural communities, between Bantus and Pygmies, as mentioned throughout this thesis. It seems that indigenous people are at the bottom of the 'food chain' in the rainforest of Cameroon.

[468] African Development Bank, "State of the Forest 2008" – Chapter 2

[469] Forest Peoples Program, Press Release for Civil Society Workshop held in Yaoundé, 30th of June 2010, on "Cameroon, Communities and REDD"

2. Scientific and research capacity

Forest researchers in the Congo Basin have long identified the lack of knowledge about forest and carbon resources as an impediment to the effective implementation of carbon sequestration projects in the sub-region[470]. In particular, they mention the following gaps in knowledge[471]:

- Lack of countrywide data on forest cover change, which is not gathered in a systematic and regular fashion
- Lack of methods and systems for detecting deforestation and forest degradation
- Difficulty in finding information on forest carbon stocks and fluxes, which are often inaccurate or gross estimations
- Lack of local technical capacity to gather this information autonomously

As a result, Cameroon still faces challenges to meeting UNFCCC requirements for emission reductions to be measurable, reportable and verifiable (MRV). Without adequate knowledge about carbon, it will be impossible to move forward with REDD implementation.

3. Social and environmental governance

In Cameroon, the misappropriation of revenues generated by forestry activities, often by the government rather than logging corporations, is commonplace. To this effect, local communities receive little benefits from revenue-generating activities that occur in the vicinity of their villages, and are thus mostly excluded from all the wealth accumulated in the forestry sector. The fear is that this could extend to REDD, where benefit-sharing from carbon sequestration could benefit governments and other powerful stakeholders, to the detriment of the original stewards and inhabitants of the forest, indigenous people. At the same time, traditional people worry that REDD will prevent them from using the forests to subsist and sustain livelihoods. So far, the State's strategy for REDD has only confirmed the fear that indigenous people will be excluded under the mechanism. To date, there have not been any

[470] World Resource Institute, "Voices from the Congo Basin", 2009, available at pdf.wri.org/working_papers/voices_from_the_congo_basin.pdf
[471] *Ibid*

public consultations with the pygmies on the REDD theme[472]. It seems that the representation of rural and indigenous communities in Cameroon's REDD strategy might only develop through the efforts of NGOs, such as the World Wildlife Fund and the Forest Peoples Program, rather than the government's. The integration and participation of civil society as a whole, including the often-marginalized pygmy people, in the REDD process is fundamental in ensuring the respect of indigenous rights and the equitable distribution of carbon market benefits towards rural and poor populations. Vulnerable groups, and their advocates, will not embrace REDD if they are left out and misrepresented. The basis of the State's neglect for pygmy rights is the lack of respect for indigenous culture and way of life. It seems that the government deems forests too valuable to be controlled by pygmies, who are often discriminated against, perceived as 'inferior' or 'less important', by other tribes and the authorities. The State maintains absolute power over the forest and its resources, and has identified these as staples of the economy which will lift the country out of poverty. In the face of these grand ambitions, the government considers the traditional rights of pygmies as secondary. The hope for REDD is that development, conservation and human rights will all successfully coalesce and co-exist.

Recommendations

Landscape conservation in an area where there are many different groups and stakeholders, like in the TNS, is a science of compromise. No single group should simply impose their agenda and reap the rewards while the other stakeholders stand by and are unfairly relegated to secondary roles. All stakeholders, even the less powerful ones, are capable of threatening the biodiversity and causing negative environmental impacts, especially when they feel left out or unfairly treated. Sustainable development and conservation of ecologically fragile environments work best when all relevant actors and stakeholders are brought to the negotiating table. Proper conservation is a thus a social and participative process. In Central-Africa, it is widely known that when governments forcefully impose their will upon local and indigenous communities, they are met with resistance, rejection and ultimately, relative failure, even if the objective is conservation. These top-down approaches from government authorities

[472] Forest Peoples Program, "REDD and Rights in Cameroon", 2011

are frequently boycotted and ignored by villagers, who are generally suspicious about government authority, imposition and interference. On the other hand, conservation NGOs often maintain good rapports with local communities, such as the WWF in Central Africa, and can play key roles in facilitating dialogue between different stakeholders. NGOs are seen as neutral entities which have the ability to work effectively with indigenous communities, local and national governments and private stakeholders. They also provide indispensable technical advice and research capacity, often lacking in Central Africa, and are no longer considered as competitors that advocate conservation for their own interests at the expense of other stakeholders, as once was the case in the region. In view of this, when governments act locally and engage in open and collaborative approaches with local communities, assisted by relevant NGOs, they are better received by indigenous people. This can be referred to as the bottom-up approach, a considerably more successful and sound way of generating positive results, environmentally and socially, than the top-down approach. Authoritarian approaches have historically resulted in the mistreatment and displacement of vulnerable groups and the mismanagement of natural resources, as witnessed in both Amazonia and certain forest areas of Central Africa[473]. Small-holder indigenous and local populations have their respective memories of the devastations of authoritative power, first fearing Western colonial administrations, and then more recently, the State. Forest-dwelling people are thus inherently wary of centralized authority, and of losing their heritage to more powerful entities.

The innovation of REDD/REDD+ is that it aims to directly involve and reward local people within the conservation objective. This seems to have been understood by NGOs, who have greatly succeeded in establishing durable partnerships with local populations, thus allowing them to reach important conservation goals that were also socially beneficial and participative. But this has rarely been the case with the Cameroon government, who is often pressured by the country's economic priorities into sidestepping local rights and selling off forest resources to the highest bidder. Cameroon has shown great willingness to prepare the country for REDD and participate in PES (Payment for Ecosystem Services) schemes, for both ecological and financial reasons. But it is the social dimension of environmental governance which needs to be

[473] IUCN, "Landscape Conservation in the Congo Basin", 2010

addressed by the State. In 2008, Cameroon submitted its national REDD readiness plan, a prerequisite document for seeking financial support from the Forest Carbon Partnership Facility (FCPF) for national REDD planning and pilot activities[474]. Essentially, this document outlines the strategy the government has designed to prepare the country for REDD implementation, and identified sectors in which assistance, mostly financial, will be needed to enhance the 'readiness' for REDD. The most striking feature of Cameroon's REDD readiness planning is that it thoroughly ignores indigenous communities' right to participation, FPIC and benefit-sharing[475]. As such, if REDD were to be implemented today in Cameroon, pygmy communities would undoubtedly be left out, and their rights to land and resources completely ignored and violated. Cameroon is a signatory of the International Labor Organization's Convention (1989) and the UN Declaration on the Rights of Indigenous Peoples (2007), both of which mention the right to FPIC, the right to customary tenure recognition and the right to resource-use and benefit (see Annex). These principles on human and indigenous rights were meant to act as safeguards, upon which all people could depend to protect their rights to land and resources. Given that Cameroon has ratified these conventions, although not legally binding, the State is required, under international law, to respect indigenous and customary claims to land ownership and resource use. Furthermore, the county's own 1994 national forestry law calls for the consultation of local communities in decisions that may affect their access to resources[476]. In sum, the most important obstacle on Cameroon's path to prepare the country for REDD is the significant disregard for local and indigenous communities' interests and rights. If the government fails to address this issue, it could either be rejected financing for REDD, or risk implementing REDD projects that further perpetuate the marginalization of local and indigenous communities. It is imperative that the government integrate the pygmy populations into the planning process before, during and after the development of its national REDD

[474] Ministry of the Environment and Nature Protection, Cameroon – Readiness Plan Idea Note (R-Pin) submitted in 2008, available at www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/Cameroon_R-PIN_07-31-08.pdf

[475] Forest Peoples Program, "REDD and Rights in Cameroon", 2011

[476] *Ibid*

strategy. This is essential if REDD is to successfully and expectedly stimulate the economies of rural populations and incite other communities to manage forest resources sustainably.

Cameroon's most immediate priorities to host REDD projects remain the enhancement and building-up of institutional capacity, needed to ensure the social and environmental sustainability of REDD investments in rural areas; and the development of research infrastructure, in order to generate marketable carbon instruments:

- Enhancing institutional capacity: the government needs to create an Indigenous Affairs Department specifically for REDD, which would have two main mandates. Firstly, the IAD would coordinate the new configuration of land tenure regimes prior to REDD, ensuring the respect of the customary and human rights of indigenous peoples. Secondly, it would monitor the distribution of REDD investments, ensuring adequate benefit-sharing with pygmy communities. As illustrated in the monitoring system table, the IAD would be assisted by relevant NGOs in both mandates. It would then periodically communicate this information to the international REDD body within the UNFCCC, which could grade the project and inform investors.
- Developing research infrastructure: the government needs to establish research outposts in the forest that specifically measure (a) deforestation and degradation rates and (b) carbon stocks and emissions, using trained local staff and researchers, GIS and mapping tools and NGO expertise and assistance. This MRV information would be communicated, through MINEP, to an international REDD body within the UNFCCC.

If REDD is implemented in the Congo Basin, it will entail the reduction or elimination of logging activities in places like the CTNS. An evident question arises: how will humankind's needs for forest commodities be addressed? Firstly, it is important to understand that timber products made in Cameroon and the CTNS are mostly exported towards foreign markets, namely the European Union and China, while local demand is quite low and easily met. The world's substantial demand for wood should not be addressed through exploitation of the tropical forest, whose exceptionally high carbon sequestration provides a more important service to humans than the supply of timber.

If humans must cut down forests to feed the world's timber needs, then this deforestation should not occur in tropical forests, which provide indispensable ecosystem services and should thus be considered a global heritage. The exploitation of timber should take place in forests which are less carbon rich than tropical forests. As such, REDD would result in a "carbon-friendly leakage", where logging companies would simply transfer their activities into less carbon-dense forests outside the tropics. But this would also produce considerable negative impacts on the environment. Non-tropical forests, such the ones in temperate and boreal landscapes, also sequester large amounts of carbon, and harbor their own endemic species and rich biodiversity, which would suffer greatly

The immensity of this tree's base illustrates its enormous carbon sequestration ability
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if logging 'leaked' out of the tropics and into these forests. The most promising option for the world, as suggested abundantly in the literature, is afforestation. By planting new trees, wood could be cultivated in artificial timber exploitations, leaving natural forests for the conservation of biodiversity and the sequestration of carbon. This could possibly feed the world's demand for timber and reduce deforestation in natural forests.

General conclusion

As the international community considers the best strategy to implement REDD, protect tropical forests and mitigate global climate change, more attention needs to be focused on the underlying drivers of deforestation, which lie outside the forest sector of tropical regions. International market demand for tropical forest commodities, agricultural products and minerals located in poor and developing rainforest countries are the leading causes of deforestation. In Brazil, export-oriented soy plantations and cattle ranching are eating up the Amazon forest. In Indonesia, palm oil plantations to feed the global biofuels demand are responsible for deforestation. In the Congo Basin, large scale industrial logging and mining operations headed by mostly European companies are threatening the tropical forest and marginalizing forest-dwelling indigenous groups. The demand is coming mainly from the Western world and, more recently, China. As these countries increase their demand for tropical forest commodities, their own temperate and non-tropical forests remain largely untouched. Under REDD, this is likely to change. Countries will have to learn to rely on their own forests to feed their needs, as tropical ones will probably be set aside for a more important purpose than the provision of wood or paper: the preservation of the biosphere and the Earth's climate. As climate change becomes increasingly disruptive and pervasive, and extreme weather events more frequent and destructive, the world will need to act and save terrestrial carbon pools. If we fail to do so, the consequences might be disastrous, both in human and economic terms. China's economy, expected to soon become the world's largest, is already losing up to 5% of its GDP to environmental damage[477]. It is in the interest of all nations to mitigate climate change

[477]J. Z. Yin, "Green GDP strategy and corporate responsibility", *Journal of International Business Ethics*, Volume 1, Issue 1, 2008, available at www.americanscholarspress.com/content/BusEth_Abstract/v1n108-art7.pdf

and, consequently, protect tropical forests. As such, the financial support of the world must be reflected through REDD and other forest conservation schemes. The pricing and value of the globally significant carbon sequestration service of forests must equal or surpass revenue generated by current and unsustainable uses of forests which cause deforestation. Climate change is evidence of a global market failure, and PES schemes, such as REDD, are a way of reversing this trend.

The Congo Basin Forest is a world treasure that provides indispensable ecosystem services to forest-dependent communities as well as the global community. However, these services remain largely unknown and unappreciated by the rest of the world. The forest spreads over some of the poorest countries in the word, and is exploited by these to subsist, reduce extreme poverty and industrialize. Consequently, the CBF is facing increasing pressure from population growth and resource extraction. The gradual industrialization of Central Africa and integration of its most valuable rainforest commodities into global trade will surely continue to increase pressures on this fragile environment. Large-scale transportation projects that connect logging and mining concessions deep within forests threaten to turn the Congo Basin into a new Amazon, where deforestation is already at a very advanced and destructive stage. REDD can provide a sustainable financial alternative to this scenario and curb the devastation of forest resources. But there is more to REDD than economics. The three major rainforests of the world are all home to ancient hunter-gather indigenous groups who, after centuries of surviving wars, epidemics, natural disasters and colonialism, are now facing their greatest threat: economic development. Therefore, a major component of REDD is its social and anthropological dimension. In Central Africa, the indigenous pygmy people, traditional inhabitants of the tropical forest for centuries, are threatened by the modern world's political and economic forces. An open conflict over the forest's resources is taking place, a conflict that the pygmies are losing. They share the same fate as many other indigenous peoples all around the world, where traditional and modern societies have collided in their quests to control natural resources. One needn't go far to find a prime example of such a collision: the struggle over forestlands and hydrological resources in Quebec, involving native Indians and Quebecers of European descent.

In Central Africa, political challenges to both forest management and indigenous rights have been problematic for quite some time now. However, governments in the region have recently become aware of the valuable contribution of their national forests to global climate change mitigation, and the potential for economic gain from carbon sequestration, convincing these decision-makers to finally address long-standing socio-economic and governance issues. REDD may therefore provide an excellent opportunity to finally resolve these long-standing issues whilst at the same time protecting the planet's second largest rainforest. The innovation of REDD is that it firmly includes the participation of local people in the conservation act, at least theoretically. Ultimately, a successful REDD implementation would help mitigate climate change, improve environmental and social governance and benefit local and indigenous populations. Today, REDD is still in the planning process, except for a handful of pilot projects. Now is the time to prepare potential REDD candidates and support their readiness for the project. Such an endeavor requires time and commitment. REDD is projected to become fully operational in the next 5-10 years. Until then, expect governments in Central Africa to make profound changes to the way they perceive and manage forests and the people within them. If not, they risk either alienating indigenous populations or failing to protect forest carbon pools, or both.

REDD tackles the long-standing issue of governing indigenous peoples. All over the world, there have been open conflicts between governments and the indigenous communities they govern, mostly over territory and natural resources. Under REDD, the conflict would be over trees and carbon ownership. But the mistakes of the past must not be repeated. Today, with REDD, there is a chance of developing Central Africa without harming local populations, if we understand their priorities and integrate these in planning processes and strategies. Central Africa's pygmies are world-renowned and famous for their mastery of the forest. These people are inherently forest people, and belong in this environment. It is their home, their food source, their cultural heritage, their social *milieu* and their way of life. The greatest reward REDD could offer to them is, simply, the forest itself. By securing their tenure, and handing them back control over forest resources and space, REDD will undoubtedly be the greatest thing the 'outside world' has brought to the pygmy world, much better than the discrimination, injustices

and land-grabbing they have historically been subject to. In Cameroon, I had the privilege of meeting with Mme Tadjudje, en employee of PLAN, an NGO that aims to formally educate pygmy children. We discussed various issues concerning Central Africa's pygmies; their sense of belonging to the forest, the effects of roads on their villages, Bantu segregation towards them and efforts to formally educate their children. We came to the conclusion that pygmies simply did not wish to integrate and blend with the outside world. They consistently resist and reject all forms of formal education, never spending more than just a handful of days in newly-built schools before retreating back into the forest. Mme Tadjudje added that many pygmies did not understand the value of money either, and had only been exposed to hard currency recently though Bantu interaction. Pygmies who had witnessed Bantu villages expand on their traditional territories had been exposed to money, discrimination, abuse, alcohol, AIDS and the loss of their culture. As a result, the pygmies had become somewhat of a hybrid society: on one hand, they are traditional hunter-gatherers who rely on the forest for all their needs and thrive on isolation from the outside world; on the other hand, they are an impoverished rural group with material needs, such as money, clothes, casseroles, salt etc., and would like to offer a better future to their children by earning money and having access to infrastructure, notably medical clinics. I had witnessed this duality first-hand in my interviews with Bayaka Pygmies, who had told me that they wanted to be left alone in the forest, without the intrusion of Bantu agriculturalists, but at the same time wanted to work for the Bantus in order to make money and buy material goods. The pygmies have thus

Many pygmies who have been "influenced" into living in logging towns have problems with alcohol, discrimination and poverty
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become somewhat of a complicated society. However, one thing is certain and uncomplicated: their relation with the forest. Whether it's the Bayaka people of the CAR, the Baka of Cameroon or the Bakola of the Republic of Congo, the pygmies have always lived in total harmony with the tropical rainforest. They have been living in the forest for hundreds, maybe thousands of years. Yet, more damage has been done to the forest in the past 30 years than in the previous 1 000. Thanks to REDD and the threat of climate change, the pygmies may be approaching a historical and crucial period, where forests might be on the verge of returning to their previous, pristine state. One thing is certain : if REDD and the carbon market do succeed in providing tangible and sizable financial incentives to poor forested countries, then many forests will be saved and conserved. Whether or not indigenous peoples will be a part of these saved forests is impossible to predict. But we, as human beings, owe a lot to these people, for simply nurturing some of our most valuable natural assets for such a long time.

Appendices

1989 International Labor Organization's Convention[478]

(Article 7)

The peoples concerned shall have the right to decide their own priorities for the process of development as it affects their lives … and the lands they occupy or otherwise use, and to exercise control, to the extent possible, over their own economic, social and cultural development. In addition, they shall participate in the formulation, implementation and evaluation of plans and programs for national and regional development which may affect them directly.

(Article 14)

The rights of ownership and possession of the peoples concerned over the lands which they traditionally occupy shall be recognized. … Governments shall take steps as necessary to identify the lands which the peoples concerned traditionally occupy, and to guarantee effective protection of their rights of ownership and possession.

2007 United Nations Declaration on the Rights of Indigenous Peoples (DECRIPS)[479]

(Article 27)

States shall establish and implement, in conjunction with indigenous peoples concerned, a fair, independent, impartial, open and transparent process, giving due recognition to indigenous peoples' laws, traditions, customs and land tenure systems, to recognize and adjudicate the rights of indigenous peoples pertaining to their lands, territories and resources, including those which were traditionally owned or otherwise occupied or used. Indigenous peoples shall have the right to participate in this process.

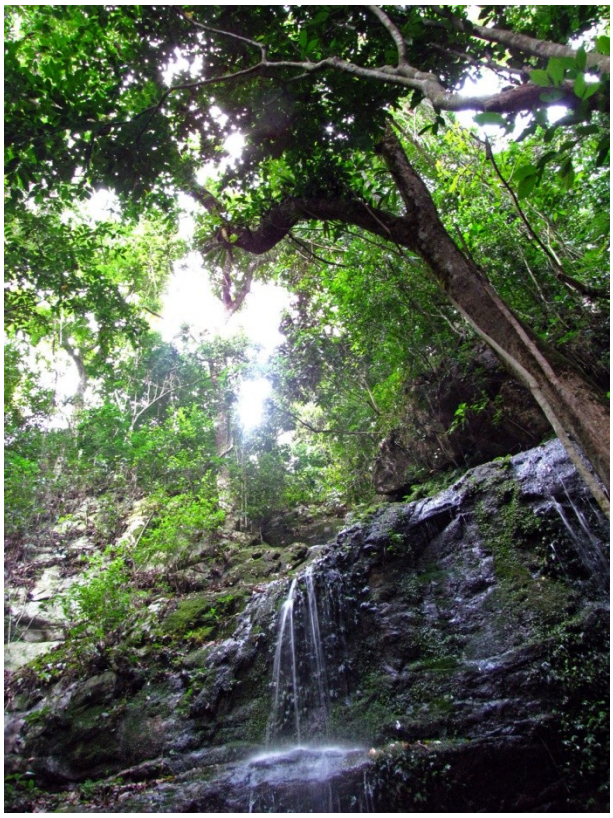
(Article 26)

[478] International Labor Organization, Indigenous and Tribal Peoples Convention, 1989, available at www.ilo.org/ilolex/cgi-lex/convde.pl?C169

[479] United Nations Declaration on the Rights of Indigenous Peoples, 2007, available at www.un.org/esa/socdev/unpfii/en/drip.html

Indigenous peoples have the right to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired. Indigenous peoples have the right to own, use, develop and control the lands, territories and resources that they possess by reason of traditional ownership or other traditional occupation or use, as well as those which they have otherwise acquired. States shall give legal recognition and protection to these lands, territories and resources. Such recognition shall be conducted with due respect to the customs, traditions and land tenure systems of the indigenous peoples concerned.

Photos from the field – Tri-National Sangha Landscape, Central Africa



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