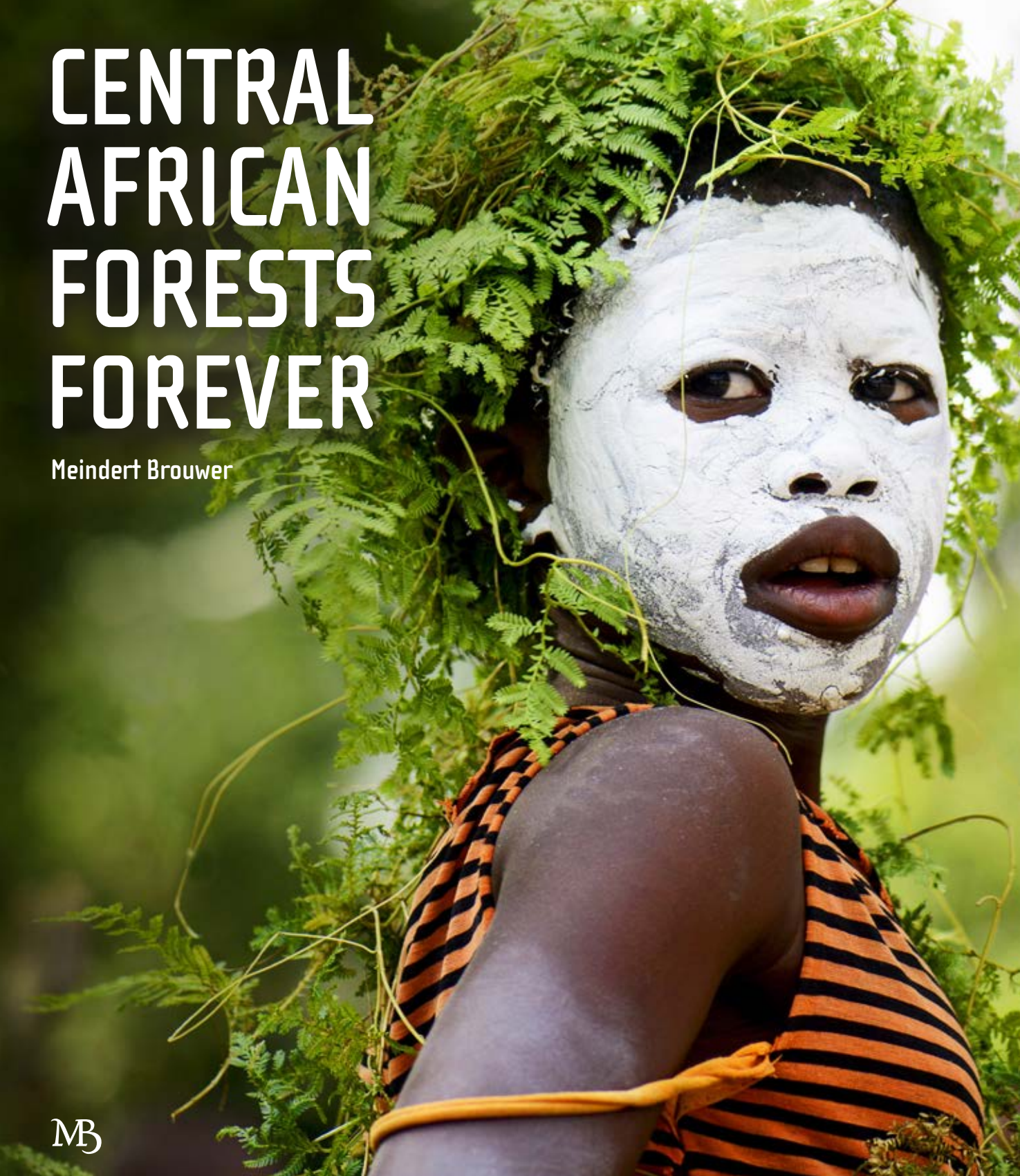
CENTRAL AFRICAN FORESTS FOREVER

Meindert Brouwer



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COLOPHON
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Dedicated to Wangari Maathai

> Nature gives us everything.
> When nature is healthy,
> I am healthy.
> When something goes wrong with nature,
> I am affected.
>
> *Ghislain Bouassa*

Democratic Republic of Congo.
PHOTO MEINDERT BROUWER

SUSTAINABLE DEVELOPMENT GOALS

Conservation and sustainable use of the Congo Basin rainforest contribute to 14 of the 17 UN Sustainable Development Goals:

1. No poverty
2. Zero hunger
3. Good health and well-being
5. Gender equality
6. Clean water and sanitation
7. Affordable and clean energy
8. Decent work and economic growth
10. Reduced inequalities
11. Sustainable cities and communities
12. Responsible consumption and production
13. Climate action
15. Life on land
16. Peace, justice and strong institutions
17. Partnerships for the goals

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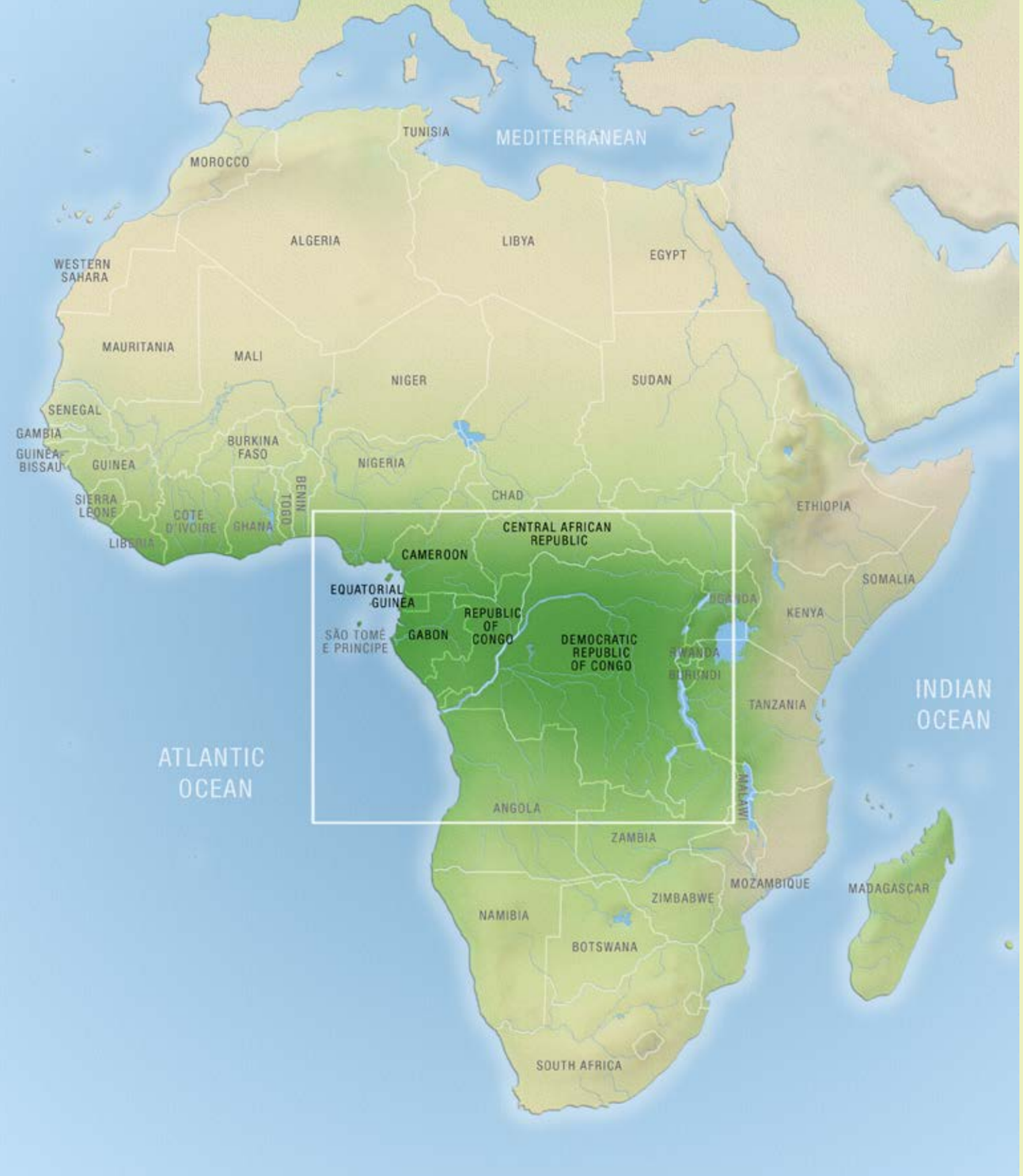


Preface

The Congo Basin forest in Central Africa is the second largest continuous tropical forest after the Amazon. It covers nearly 240 million hectares and is shared between six countries: Cameroon, the Central African Republic, the Republic of Congo, the Democratic Republic of the Congo, Gabon and Equatorial Guinea. It is home to and provides livelihoods for over 75 million people.

Government efforts in forest governance, difficult access and lack of infrastructure have helped protect the forest cover in this region of the world for a long time. Therefore, the forests of the Congo Basin form one of the last reserves of biodiversity where primary forests are interconnected and provide essential ecosystem services.

They are of great value to the global community because their huge carbon stocks help reduce global warming and climate change. The forests are a huge source of fresh water, which is increasingly scarce on the planet. Moreover, for local communities and "Indigenous Peoples", the forest is not only an economic asset, but it is also the main source of their identity, a place of reflection and rituals.

At the same time, the forest ecosystems of the Congo Basin are now facing several threats of collapse, linked to overexploitation of timber and mineral resources, illegal trade in biodiversity and the appetites of the agro-industry. This requires urgent and concerted action with stakeholders, among whom Asian operators increasingly occupy a position of essential discussion partners.
In this regard, thanks to the convergence plan of the Central African Forests Commission (COMIFAC), we are witnessing the continued implementation of concerted measures between governments, supported by international cooperation, which contribute to an ongoing improvement of forest governance in the sub-region.
Let us refer to the declaration dated September 26, 2018, of His Excellency Ali BONGO, President of the Republic of Gabon who, from the forest site of Mevang, set the objective that all Gabonese forest concessions be certified by 2022.

This commitment, which deserves to be followed by the other countries of the sub-region, has mobilized companies in Gabon, in particular Asian companies, to make rapid progress in their operating and transformation practices, in respect to relationships with indigenous populations and the protection of biodiversity.
In addition, the sustainable management of forest concessions guarantees a constant availability of timber in the future.

The trade sector and end consumers are therefore willing to participate in this sustainable management effort and buy and use only certified wood, provided that they are informed and made aware of the crucial importance, for humanity, of preserving these forests "forever".
May this work by publisher Meindert Brouwer contribute to it.

The Executive Secretary of COMIFAC
Hervé Martial MAIDOU

Langoué Bai, Ivindo National Park, Gabon.
PHOTO DAVID GREYO / COURTESY OF WCS AND ANPN

Megabiodiversity in the Congo Basin rainforest

by Kevin Yana Njabo

The Congo Basin is the world's second largest rainforest after the Amazon and makes up one of the most important wilderness areas left on earth. With its 228,000,000 hectares, the Congo Basin represents 70% of the African continent's plant cover and shelters approximately 26% of the planet's rain forests and a wealth of biodiversity.

The Congo Basin rainforest contributes to the collective 30 percent of the world's oxygen supplied by rainforests. While nine countries (Angola, Cameroon, Central African Republic, Democratic Republic of the Congo, Republic of the Congo, Burundi, Rwanda, Tanzania, Zambia) have part of their territory in the Congo Basin, only six countries (Cameroon, the Central African Republic, Democratic Republic of the Congo, Republic of the Congo, Equatorial Guinea and Gabon)[1] are conventionally associated with the Congo Basin in general.

[1] Atyi RE, Devers D, de Wasseige C et Maisels F. 2009. État des forêts d'Afrique centrale: synthèse sous-régionale, In C. de Wasseige, Devers D, de Marcken P, Eba'a Atyi R, Nasi R et Mayaux P, eds. Les forêts du Bassin du Congo – État des forêts 2008. Luxembourg: Office des publications de l'Union européenne. 17–44. ISBN 978-92-79-132 11- 7. doi: 10.2788 /32456

KEVIN NJABO

In this chapter ecologist Kevin Njabo from Cameroon tells about the value and the state of the Congo Basin rainforest, the largest rainforest in the world after the Amazon. He describes its megabiodiversity and the functions of animals and plants in the forest ecosystem. Njabo is Adjunct Associate Professor at the Institute of the Environment and Sustainability and the Department of Environmental Health Sciences at the University of California, Los Angeles (UCLA). He is also Associate Director and Africa Director at the UCLA Center for Tropical Research and the Congo Basin Institute. He teaches in the US, Cameroon, China and in Rwanda.

The removal of any species from its ecosystem can drastically alter the populations of other organisms.

The Congo Basin, with a medley of rivers, forests, savannas, swamps and flooded forests, is teeming with life[2]. Large mammals such as gorillas, elephants, buffalo mingle in the understory and ecotone areas. The rich biodiversity comprises over 11,000 species of tropical plants, of which 30% are unique to the region, over 1,200 bird species, 450 mammal species, 700 species of fish, about 280 species of reptiles, including snakes, crocodiles and tortoises, amphibians (frogs, toads, salamanders, newts, and worm-like caecilians)[3], ranging from the high canopy to streams and creeks.

CLIMATE STABILITY The Congo Basin rainforest also plays an important role in climate stability and helps regulate local and regional rainfall. The region has an average temperature of 20 to 25 degrees Celsius, which remains relatively stable throughout the year, and a high humidity averaging 80 to 90 percent. However, there are some areas in the Congo Basin rainforest where the temperature can drop as low as 10 degrees Celsius due to the unique geography. In general, there are two primary seasons, the wet or rainy season and the dry season, which may vary slightly in different parts of the Congo Basin. The wet season typically begins in March and lasts into November and has several months of heavy rain, about 1,500 mm on average per year, while the dry season is drier with little precipitation. The region is very wet for most of the year, therefore most of the rainfall in Africa comes from the Congo Basin.

The region absorbs rainfall and releases it slowly into the atmosphere throughout evaporation during sunshine, creating air masses and clouds, which in their turn result in rainfall. Forests are not the only contributor to rain, but they can influence the amount and timing of downpours[4,5]. Massive deforestation in the Congo Basin rainforest may change rain patterns in Africa and perhaps result in more drought. As the forest is cleared, the rain decreases at a faster rate, leading to longer droughts and higher temperatures. The longer droughts mean that the fires are also longer and hotter, which clear more forest, hence speeding up the process. This could therefore put human sustaining activities such as agriculture in the Congo Basin and elsewhere in Africa at risk.

The Congo Basin is abundant in natural resources such as timber, diamonds and petroleum, but current methods and rates of extracting these resources are unsustainable and threaten the future of this vast wilderness area. The region is regarded as a prime target for future agro-industrial expansion and deforestation is particularly severe, largely driven by expanding subsistence agriculture to support the high population growth rate (over 3.0% per annum)[6], but also by commercial agriculture and logging. The publication 'The Forests of the Congo Basin – State of the Forest' [7] reports that the region's annual overall deforestation rate doubled from 0.13 percent to 0.26 percent between 1990 and 2005. On the other hand, gross degradation caused by logging, fire, and other impacts increased from 0.07 percent to 0.14 percent on an annual basis according to the same report.

HUNTING PRESSURE In addition, unsustainable hunting of wildlife such as forest elephants, gorillas, forest antelopes, and other seed-dispersers for the commercial bushmeat market threatens to wipe out many species, mainly the 'forest architects'. This unsustainable hunting of wildlife could have long-term impacts on the health and resilience of Congo Basin rainforests. Unless effective management plans are put into place, the hunting pressure is likely to increase, with knock-on ecological effects[8]. Indeed, if current levels of hunting are maintained or increased, the forest architects and intermediate-sized animals will be reduced, and smaller-sized animals (small-bodied seed predators) not hunted by poachers will become the dominant species. This in turn will promote fast-growing tree species that are dispersed by wind instead of large-seeded, animal-dispersed, slow-growing, shade-bearing tree species, reducing carbon storage, fruit availability and associated biodiversity. In the end, the forests' ability to support large frugivorous,

Nki falls, Nki National Park, Cameroon.

PHOTO JAAP VAN DER WAARDE, WWF

[2] www.worldwildlife.org

[3] http://kids.mongabay.com/elementary/204.html

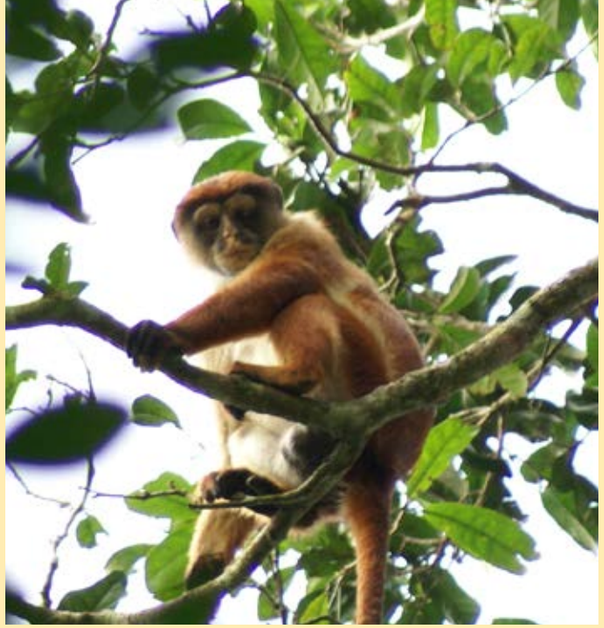
[4] Barbara Fraser 2014. Forests may play a greater role in rainfall than estimated. CIFOR Report. http://blog.cifor.org/22060/report-forests-may-play-bigger-role-in-rainfall-than-estimated?fnl=en

[5] Sheil, D.; Murdiyarso, D. 2009. Climate change, environmental services, transpiration. BioScience 59(4): 341-347. 10.1525/bio.2009.59.4.12

[6] Joel Hourticq Carole Megevand. 2013. Deforestation Trends in the Congo Basin Reconciling Economic Growth and Forest Protection. Working Paper. The World Bank Africa Region

[7] The Forests of the Congo Basin – State of the Forest 2013. Eds: de Wasseige C., Flynn J., Louppe D., Hiol F., Mayaux Ph. – 2014. Weyrich. Belgium. 328 p.

[8] K. A. Abernethy, L. Coad, G. Taylor, M. E. Lee, and F. Maisels. 2013. Extent and ecological consequences of hunting in Central African rainforests in the twenty-first century. Philos Trans R Soc Lond B Biol Sci. 2013 Sep 5; 368(1625): 20120303. doi: 10.1098/rstb.2012.0303



PHOTOS: VIOLETTE DÉROZIER

Upper left: Black crested mangabey (Lophocebus aterrimus). Upper right: Red colobus (Piliocolobus badius tholloni).
Below: Male Mandrill (Mandrillus sphinx).

© CAN STOCK PHOTO / GILMOURBTO 2001

800,000 hectares of the Congo Basin forests are lost every year.

seed-dispersing mammals will greatly decline, spurring a negative feedback loop whereby both large mammals and large-seeded, long-lived, hard-wooded trees will further decline, which in its turn will reduce carbon storage and hence global resilience to climate change. Critically threatened by the aforementioned pressures, the wildlife of the Congo Basin relies on refuges such as transboundary protected areas as the Sangha River Tri-national Protected Area in the Central African Republic, the Republic of Congo and Cameroon. Transboundary conservation[9], an "eco-regional" approach to conservation, has acquired greater significance because international treaties, such as the Convention on Biological Diversity, have included such projects in their programme of work. Such sites also provide opportunities for ecotourists to seek glimpses of native fauna.

Humans have been known to inhabit the Congo Basin for more than 50,000 years, where their lives and well-being are linked intimately with the forest. The region provides food, medicine, fresh water, shelter and security to more than 75 million people of nearly 150 distinct ethnic groups. Unique among these ethnic groups are the Baka people who are among the most well-known representatives of the ancient hunter-gatherers. However, the Bakas are slowly becoming a more sedentary people due to the intensive deforestation of the rainforest[10]. Currently, the region has a low human population density (approximately 30 people per square kilometre in 2005), of which over 60% live in rural areas, but a high population growth rate (over 3.0% per annum). Historically, the region has been subject to relatively low levels of anthropogenic disturbance, related not only to low human population densities, but also to widespread poverty (gross income per capita was around 600 US dollars in Sub-Saharan Africa in 2015, and slightly over 380 US dollars annually for the Congo Basin countries[11].

MEGABIODIVERSITY In the Congo Basin the Democratic Republic of the Congo is known for its megabiodiversity. Megabiodiversity[12] refers to the number and variation of animal and plant species native to an area. The term was first introduced in 1998 at the Conference on Biodiversity at the Smithsonian Institution in Washington D.C. Among the countries listed as megabiodiverse, the Democratic Republic of the Congo was the only one in the Congo Basin. The other countries listed were Australia, Brazil, China, Colombia, Ecuador, India, Indonesia, Madagascar, Malaysia, Mexico, Papua New Guinea, Peru, Philippines, South Africa, United States, and Venezuela.

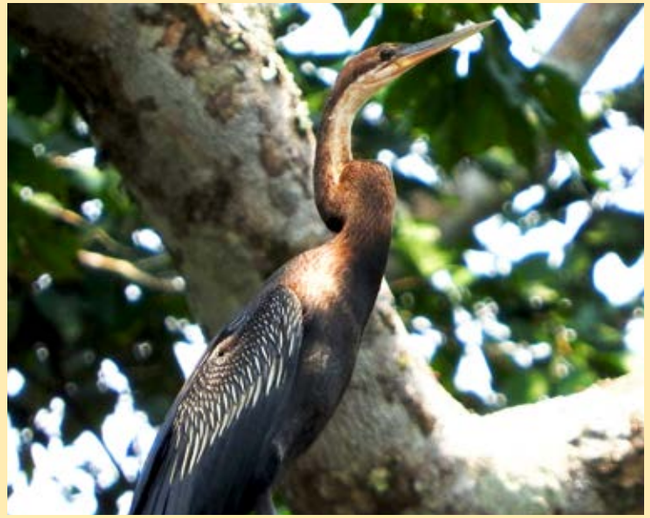
The factors that influence biodiversity include hot temperature, the amount of rainfall, soil, and altitude, among others. Such simple descriptions indicate that the countries within the Congo Basin, in addition to the Democratic Republic of the Congo listed at the Conference on Biodiversity, are megabiodiverse since they are all close to the earth's equator and the hot, moist, stable environments of the ecosystems within the Congo Basin rainforests allow flora and fauna to thrive.

BIODIVERSITY PER COUNTRY IN BRIEF

Democratic Republic of Congo (Kinshasa, Congo DRC)
With an area covering over 100 million hectares, the Democratic Republic of Congo (DR Congo) has the greatest extent of tropical rainforests in Africa. The forests in the eastern sector are amazingly diverse and one of the few forest areas in Africa to have survived the ice age[13, 14]. Almost half of the DR of Congo is covered by primary forest, and this forest cover provides a refuge for several large mammal species such as the African forest elephant, golden cat,

[9] Saleem H. Ali. 2011. Transboundary Conservation and Peace-building: Lessons from forest biodiversity conservation projects. ITTO and the United Nations University Institute of Advanced Studies (UNU-IAS). UNU-IAS Policy Report.
[10] http://www.pygmies.org/baka/introduction.php
[11] Tchatchou B, Sonwa DJ, Ifo S and Tiani AM. 2015. Deforestation and forest degradation in the Congo Basin: State of knowledge, current causes and perspectives. Occasional Paper 144. Bogor, Indonesia: CIFOR.
[12] http://www.conservation.org/documentaries/Pages/megadiversity.aspx
[13] Hamilton, A.C. 1982. African forests, in Tropical Rainforest Ecology and Management
[14] Mayaux, P. and J-P. Malingreau. 1996. Central Africa forest cover revisited: an iterative approach based on a multi-satellite analysis, Ambio July, 1996.

Top left: Pyrenestes ostrinus; top right: Smithornis rufolateralis bis; middle left: Anhinga rufa; middle right: Chalcomitra rubescens; below left: Malimbicus malimbicus; below right: Malimbus coronatus.
PHOTOS VIOLETTE DÉROZIER



golden wolf, leopard, and manatee driven to extinction in other African countries. Overall, the country is known to have more than 11,000 species of plants, 450 mammals, 1,184 birds of which 20 are endemic and 41 globally threatened, 300 reptiles, and 200 amphibians.

Republic of Congo (Brazzaville)
The Republic of Congo (Brazzaville) is second only to the Democratic Republic of Congo in terms of tropical rainforest coverage among African countries. It is also strikingly diverse for its size and home to 727 species of birds of which 13 are globally threatened, 166 mammals, 58 amphibians, 149 reptiles, and more than 6,000 species of plants.

Gabon
With an area of nearly 270,000 square kilometres of which 80% is forested, Gabon holds some of Africa's most biodiverse rainforests. It has an estimated 8,000- 10,000 species of plants (20 percent of which are endemic), more than 757 species of birds of which 16 are globally threatened, and nearly 200 mammals including lowland gorillas, chimpanzees, 10 species of monkeys, forest elephants, and even hippos that surf ocean waves. Gabon is one of unique places of the world where a primary tropical rainforest extends to the Atlantic Ocean beach[15]. Offshore the country has a wealth of marine life, including a large population of humpback whales, while the forested coastal terrain of its famed Loango National Park shelters a diversity of wildlife.

Cameroon
The country has some 978 species of birds of which 11 are endemic and 33 globally threatened, 211 mammals, 322 reptiles, 192 amphibians, and 8,260 species of plants.

[15] http://rainforests.mongabay.com/20gabon.htm
[16] Kenneth, Whitney, Mark K. Fogiel, Aaron M. Lamperti, Kimberly M. Holbrook, Donald J. Stauffer, Britta Denise Hardesty, V. Thomas Parker and Thomas B. Smith1998. Seed dispersal by Ceratogymna hornbills in the Dja Reserve, Cameroon. Journal of Tropical Ecology 14:351–371

Central African Republic
The Central African Republic is home to about 3,600 species of plants, 794 birds of which 13 are globally threatened, 131 mammals, 187 reptiles, and 29 amphibians.

Equatorial Guinea
Equatorial Guinea is found in a region of high animal diversity, including 194 species of mammals, 853 birds of which one is endemic and 18 globally threatened, and 91 reptiles. The country is also home to 3,250 species of plants.

BIRDS OF THE CONGO BASIN The Congo Basin forests are indeed rich in birdlife, from the African grey parrot to the western bronze-naped pigeon and the bare-cheeked trogon to the African crowned eagle, the vermiculated fishing-owl and the white-crested hornbill, plantain-eaters and numerous parrot species. These birds play a great role in the movement (dispersal) of seeds, which is a crucial part of forest regeneration. Indeed, birds disperse the seeds of more than two-thirds of the plant species in Congo rainforests and hornbills alone disperse 22% of the known tree flora of the Dja forest in Cameroon[16]. The dispersal of seeds throughout the forest increases the chances that seedlings will grow and survive. Moreover, dispersal allows plants to colonize new areas, including land that has been cleared. Parrots, hornbills, turacos as well as other fruit-eating animals, feed on fleshy fruits of Congo rainforest plants and spread them by regurgitating, defecating or burying seeds to help the tropical trees reproduce. Some plants also grow sticky or have spiky seeds that latch onto birds' feet and feathers. There is evidence that the colour of certain fruits have evolved to attract birds and plants have been shown to put the minimum possible flesh around their seeds – just enough to attract the birds to eat them. Birds are likely to become increasingly important in forest regeneration as the populations of larger mammalian seed dispersers, such as forest elephants, primates and other megafauna decrease. Most of the plants that are not dispersed by animals are dispersed by wind.

PHOTO JAAP VAN DER WAARDE, WWF

PHOTO JAAP VAN DER WAARDE, WWF

PHOTO LEE WHITE / ANPN

PHOTO MATTHIAS DAHMEN

PHOTO JAAP VAN DER WAARDE, WWF

If the forest elephants disappear, the forests will be greatly threatened or may vanish as well.

MAMMALS OF THE CONGO BASIN The Congo Basin is home to at least 450 mammal species and is well known for its large population of forest elephants (*Loxodonta cyclotis*) and primates (apes, monkeys, and prosimians such as bush babies). The forest elephant is the largest terrestrial mega-herbivore in the rainforest and weighs approximately 5,000 kilograms. Several tree species strongly rely on forest elephants as seed dispersers and they play an important ecological role in maintaining forest ecosystem diversity. The main diet of elephants is the fruit of forest trees, but they also commonly feed on bark and leaves. They are thus considered as super spreaders, that is, they spread and plant more seeds in the Congo Basin than any other species, and if the forest elephants disappear, the forests will be greatly threatened or may vanish as well. The number of elephants have fallen from around 700,000 to below 100,000 due to the extreme demand for ivory and the resultant poaching, and half of the population that remains is found in Gabon. The good news is that some places in Central African Republic, Congo-Brazzaville and Gabon have relatively undisturbed elephant populations.

The Congo Basin is also well known for its large population of primates, with the highest diversity found in the Atlantic coastal forests (from Cameroon to Gabon) and in eastern DRC. Species such as the bonobo (*Pan paniscus*), the sun-tailed monkey (*Cercopithecus solatus*), the lesula monkey (*Cercopithecus lomamiensis*) and the black colobus monkey (*Colobus satanas*) can only be found in the Congo River Basin.

The endangered western lowland gorilla (*Gorilla gorilla*) and eastern lowland gorilla (*Gorilla berengei graueri*), also find their home in the Congo Basin. The mountain gorilla (*Gorilla beringei beringei*) in eastern Democratic Republic of Congo (DRC), is one of the two subspecies of the eastern gorilla.

From top to bottom: Female Sitatunga (*Tragelaphus spekii*); Hippopotamus, Loango National Park, Gabon; Genetta servalina and forest buffalos.

© CAN STOCK PHOTO / STEVEMEESE.

Above: Chimpanzees (Pan troglodytes). Below: Mountain gorillas (Gorilla beringei beringei).

© ALL FOR NATURE

PHOTO MAURICE EMETSHU, HART ET AL. (2012)

Lesula (Cercopithecus lomamiensis). Endemic to the Democratic Republic of Congo. Discovered in 2007 by western scientists, previously undescribed.

CHIMPANZEES The distribution of chimpanzees across Equatorial Africa is wide but discontinuous. It expands from southern Senegal across the forested belt north of the Congo River to western Uganda and western Tanzania, with the largest remaining populations occurring mainly in Gabon, Democratic Republic of Congo (DRC), and Cameroon. Three subspecies have been described in this region based on differences in appearance and distribution: the most numerous of the three is the Central chimpanzee (*Pan troglodytes troglodytes*). The other two are the Eastern chimpanzee (*Pan troglodytes schweinfurthii*), and the Nigeria-Cameroon chimpanzee (*Pan troglodytes ellioti*). These three subspecies have been known to exhibit a wide range of behavioural differences between the groups, so it is important to protect each as the loss of any one group is a loss of cultural as well as biological heritage.

A population of "super-sized" chimpanzees, the so-called Bili apes that the local people believe to feed on birds, has been reported from Bili Forest in the far north of the Democratic Republic of Congo. Indeed, these chimpanzees have been observed eating the carcass of a leopard, but there is no scientific evidence that they hunt and kill big cats. However, the Bili chimpanzees exhibit unusual behaviour, because they sleep in large nests on the ground rather than in trees. This is a possible indication of the lack of fear of predators.

The populations of the mammals of the Congo Basin are seriously threatened. Gorillas are slaughtered, packaged and shipped around the world, while elephants are hunted for meat, skin, bones, and tusks. In 1989 the hunting of the African elephant for ivory trading was forbidden, but trophy hunting continues despite increasingly severe penalties imposed by governments against illegal hunting. Like elephants, primates play an integral role in the ecology of the forest. They help the forest by being pollinators, seed predators (feeding on the seeds of plants as a main or exclusive food source), and seed dispersers (movement or transport of seeds away from the parent plant). Their predominantly vegetarian diet allows them to build up higher population densities than the carnivorous mammals, and their tree-living nature or arborealism permits them to make use of all edible plant material available in a tridimensional environment.

"GHOSTS IN THE DARKNESS" Other interesting mammals found in the Congo Basin include three species of pangolins[17], the only mammals in the world covered in scales and the world's most hunted animal. Pangolin scales are believed to cure everything from cancer to acne. The little-known leopards (Panthera pardus), also known as the "ghosts in the darkness", find their home in the Congo Basin occupying both the rainforest and arid desert habitats. Hoofed mammals, or ungulates, several varieties of wild pigs, the red river hog and – largest of all – the dark, hairy giant forest hog can also be found here. Other interesting mammals include the small to medium-sized antelopes (such as the blue and yellow-backed duikers), the bushbuck and the swamp-dwelling sitatunga or marshbuck. The biggest rain forest antelope is the mostly nocturnal forest ungulate, commonly called the bongo – the only spiral-horned antelopes in which both sexes have horns. The largest ungulate in the Congo Basin, the hippopotamus, which can weigh up to 3,500 kilograms, inhabits a diminished range of waterways within the Congo Basin. The only close relative of the giraffe, the tall, elegant but short-necked okapi finds its home in gaps and clearings. Forest buffalo, smaller and redder than the savanna subspecies of African buffalo, graze and wallow in marshy glades.

[17] Gaudin, Timothy. 2009. The Phylogeny of Living and Extinct Pangolins (Mammalia, Pholidota) and Associated Taxa: A Morphology Based Analysis. Journal of Mammalian Evolution. 16 (4): 235–305

Massive deforestation in the Congo Basin rainforest may change rain patterns in Africa and perhaps result in more drought.

PLANTS OF THE CONGO BASIN With more than 11,000 species of tropical plants, including over 600 tree species, the Congo Basin is very rich in plant life. Several common foods and medicinal plants are harvested from the rainforest, bio-chemicals are extracted and are used to synthesize drugs. International Cancer Institutes have identified 1,400 tropical forest plants with a potential to fight cancer[18]. Of the tropical plants 1,100 are endemic to the Congo Basin forest and found nowhere else. Around 69 of these plants are threatened. Broad-leaved trees, such as African oak, red cedar, and mahogany, form a dense upper canopy, usually over 40 metres above ground, while smaller trees of various sizes form several canopies below. The competition for light in the understorey implies that tall growth is necessary, as only about 1% of the light reaches the ground.
The African hardwood mahogany is abundant and popular for its dark-coloured wood. It is used to make furniture, wood flooring, and the exterior of yachts and boats because it has an interlocking grain which makes it resistant to water damage and seepage. Due to its light weight, the okoume tree is heavily logged, and used to make plywood as well as wood veneer products. Lianas and Ficus (strangler figs), also known as climbers, send shoots around the trees to obtain more sunlight. The very bottom layer of the forest is made up of rapidly decomposing dead leaves, moss growing on downed and rotting trees, and small ferns, because few plants can survive on this layer. The dead trees provide shelter and breeding sites for bats and birds, as well as other small animals. The decomposition of dead materials is therefore very important to the rainforest as plants depend on mineral nutrients.

CORRELATION Plants are the most important producers. They use energy from sunlight to convert carbon dioxide into glucose (or other sugars) through the process of photosynthesis, providing organic molecules for energy (food) for the entire ecosystem. Plants also produce oxygen, required by most organisms including humans, and shelter many great animals of the earth as well as small organisms among their leaves and roots. There is a direct correlation between the number of plants found in an area of the rainforest, and the number of insects because there is an interdependent relationship between insects and plants. Many insects eat plants, their dung goes into the soil, which provides nutrients for the plants to grow. Insects also play an important role in the pollination of plants insuring their survival. Other insects inhabiting the forest are also linked to human diseases, such as the tsetse fly, which causes severe sleeping sickness and the mosquito, which carries malaria and yellow fever. Other important roles of plants include helping to hold soil in place and they can help filter the air and water, removing certain contaminants such as formaldehyde, benzene, and carbon monoxide from the air by absorbing these gases through their leaves and roots through a technique known as phytoremediation. The micro-organisms that live in the soil also play an instrumental role in neutralizing volatile organic compounds (VOCs) and other pollutants.

Unfortunately, 800,000 hectares of the Congo Basin forests are lost every year due to human activities such as logging, mining, agriculture and fuel wood for a growing population[19].This forest loss negatively impacts the lifestyle of people and threatens the wildlife established in this area. It also causes greenhouse gas emissions, therefore igniting the repercussions on global climate change. Scientists believe that two thirds of the Congo Basin forests could be lost by 2040, unless adequate efforts are firmly implemented to protect them.
Rainforest restoration will bring back landscapes that support healthy populations of seed dispersers. Some plants are not likely to be dispersed naturally in small rainforest remnants, regrowth or replanted sites. Planting or directly seeding locally native species from these groups will mean that they will be present in future forests in these areas.

[18] Global Biodiversity: Status of the Earth's Living Resources. 1992. Report by World Conservation Monitoring Centre. Editor Brian Groombridge. Natural History Museum London.

[19] The State of Forests in the Amazon basin and Southeast Asian. Brazzaville, Republic of Congo: Food and Agriculture Organization of the United Nations (FOA). ISBN 978-92-5-106888-5. 2012

PHOTOS JAAP VAN DER WAARDE, WWF

Top: Rhampholeon spectrum spectrum, photo Matthias Dahmen. Below: Blueish viper, photo Jonas Eriksson Abana.

In some areas reptiles such as constrictor snakes, help control serious agricultural plagues by consuming rodents and insects that can destroy crops.

REPTILES OF THE CONGO BASIN Over 280 species of reptiles, including snakes, crocodiles and tortoises are found in the Congo Basin. The forest indigenous hinge-back tortoises thrive in marshy areas along rivers and streams. Unlike other tortoises, the forest hinge-back tortoise can only lay two to five eggs at a time on the ground covered with leaves.
The Congo Basin is also home to some of the world's venomous snakes, including the black mamba, cobras and vipers. Gaboon vipers inhabit savannas and the rainforest as the heaviest vipers with the longest fangs and the highest amount of venom among venomous snakes[20]. Gaboon vipers are fast strikers, though they are considered to be tolerant and would not bite unless severely provoked. There are hundreds of species of snakes living in the world's tropical rainforests and all are carnivores, including the African black iguana (*Endothermis iguanaformis*). It is not related to true iguanas, in fact it is a snake believed to have evolved from the black mamba of sub-saharan Africa and it retains the extreme venom of its ancestor, the black mamba, which it uses to hunt. Snakes are either venomous or non-venomous, but most snakes of the Congo Basin are non-venomous.

The African slender-snouted crocodiles dwell in the rivers, marshes, ponds and lakes within the Congo rainforest and other parts of West and Central Africa. This crocodile has an extremely slender snout that limits its diet to fish, amphibians, crustaceans and small mammals. It is the least known crocodile and also the only crocodilian species that can climb as high as several metres in the limbs of fallen trees. The Nile and dwarf crocodiles are also native to the Congo River Basin.

NUTRIENT RECYCLING In freshwater ecosystems of the Congo Basin, several species of turtles are critical components for nutrient recycling through ingestion and excretory processes, as well as nutrient retention. Freshwater turtles feed and spend most of their time in aquatic systems, but all species emerge to lay eggs throughout the terrestrial landscape. Turtles are therefore an important component of the food webs in the Congo Basin forest ecosystem, and they play a critical role both as predators of plants that grow in the water, small insects, snails, worms, and even dead marine animals and fish, as well as prey species of crocodiles, some big cats may gnaw at a turtle shell until they reach the turtle.

The herbivorous reptiles such as tortoises can also be important seed dispersers. Reptile species may also have a useful anthropogenic role in ecosystems. For example, they have been popularly used in symbology and myth. Some local communities of the Congo Basin use snakes as a symbol of power and for medicine and sometimes evil. Turtles, on the other hand, usually represent longevity and stability, and are also often associated with creation stories. In some areas, reptiles such as constrictor snakes, help control serious agricultural plagues by consuming rodents and insects that can destroy crops.

[20] Mallow D, Ludwig D, Nilson G. 2003. True Vipers: Natural History and Toxinology of Old World Vipers. Malabar, Florida: Krieger Publishing Company

Northern four-horned chameleon (*Trioceros quadricornis gracilior*).
PHOTO JAAP VAN DER WAARDE, WWF

From top to bottom: Afrixalus paradorsalis, Hyperolius adspersus, Cardioglossa nigromaculata, Hyperolius flusciventris, Hyperolius bolifambae. Large picture, far right: Leptopelis brevirostris.

PHOTOS MATTHIAS DAHMEN

AMPHIBIANS OF THE CONGO BASIN The Congo Basin rainforest is home to hundreds of species of frogs and toads, as well as species of caecilians. The caecilians superficially resemble worms or snakes and lay eggs in soils. The eggs hatch into aquatic larva that live in streams or seepages of the soil, though some species skip the larva stage and develop into juveniles at once. The altitude ranges of the amphibians vary, with some species such as the Schmidt's snouted frog, *Mertensophryne schmidti*[21] living at extremely high altitudes. The habitats of these toads and frogs also tend to extend to other regions of Western Africa, and some species are also found in East Africa. Some examples of amphibians from the Congo Basin rainforests include the very distinctive patterned African Painted Frog (about 250 (!)) species of this frog find their home in the Congo Basin) and the Bushoho Reed Frog.

[21] Frost, Darrel R. (2015). Mertensophryne schmidti Grandison, 1972. Amphibian Species of the World: an Online Reference. Version 6.0. American Museum of Natural History.

HERPS

Collectively, reptiles and amphibians are known as herps and can achieve remarkable densities and biomass and have high metabolic efficiencies, which means that they have an ability to use internally stored nutrients, specifically carbohydrates and fats, more efficiently. Because of their "low-energy life styles", herps can also prey extensively on small invertebrates such as mites and ants. Many of the invertebrates that are important in the diets of herps influence the decomposition, distribution and abundance of plant species.

The removal of any species from its ecosystem can drastically alter the populations of other organisms, but those that have a particularly influential role within an ecosystem are known as keystone species. Top predators, such as the crocodile, are often keystone species, though they also contribute to the food chain as prey while they are still young. Some species of crocodiles such as the slender-snouted crocodile of the Imame and the Lomami River of DRC are considered to be critical for the way they adapt to their habitats. Such adaptations include body armour that protects them from predators, strong jaw muscles that allow them to crush bones, a powerful immune system to fight off illness, behaviours that allow them to control body temperature, an evolved metabolism that allows them to go for extended periods without food, and the ability to shut down their body and live from its own tissue if the need arises.

Many herps are threatened by habitat loss, and environmental change. Amphibians for example, are particularly at risk from a deadly disease caused by the Chytrid fungus[22] that is spreading around the globe. This disease has already caused the extinction of at least 170 species of frogs and toads over the past 30 years and scientists are not sure what is causing the outbreak or how it can be controlled. Emergency measures are currently implemented for some endangered species, which are collected and kept in zoos, aquariums, and botanical gardens until a cure can be found.

[22] Olson, Deanna H. et al. (2013). Stajich, Jason E, ed. Mapping the Global Emergence of Batrachochytrium dendrobatidis, the Amphibian Chytrid Fungus. PLoS ONE. 8 (2): e56802.

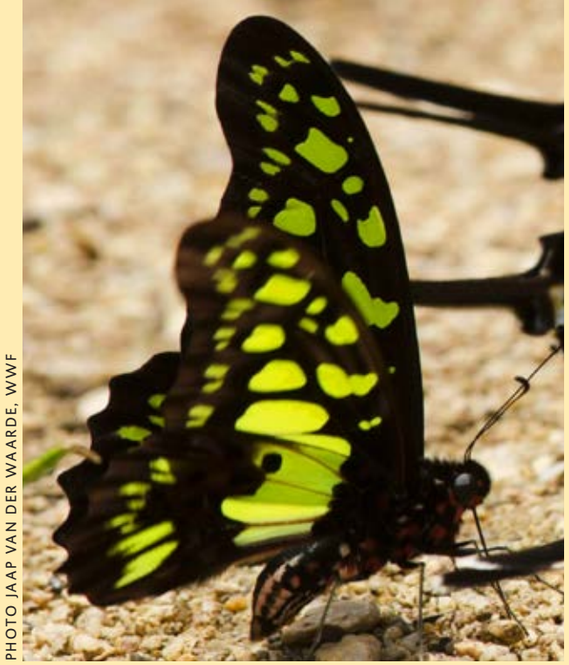


PHOTO JAAP VAN DER WAARDE, WWF

PHOTO COURTESY FIELDSTATION MAX PLANCK INSTITUTE, SALONGA NATIONAL PARK

INSECTS OF THE CONGO BASIN There could be around 30 million of all sorts of amazing insect species on earth and a great many live in the world's tropical forests. Some colourful, some scary, and some very strange looking. The Congo Basin rainforest is home to butterflies, ants, stick insects, and a considerable diversity of other insects ranging from the smallest wasps commonly called fairy flies (*Mymaridae*) to the giant rainforest insects such as goliath and titan beetles. The most abundant insects are believed to be ants (for example, the African weaver ants – *Oecophylla longinoda* – are a dominant ant species and well known for their painful bite), but beetles account for the highest known diversity and include over 370,000 different species in the Congo Basin. The common name of the African weaver ants reflects their weaving behaviour, where they use their silk-exuding larvae as living glue guns gluing leaves into hollow balls where they nest. Their nests are spread through the trees and they even build small leafy barracks at territory boundaries. The weaver ants are very aggressive and fiercely territorial.

RHINOCEROS BEETLES The Rhinoceros beetles (*Dynastinae*) are the most common and diverse beetles in the Congo Basin. Although found worldwide, little is known about their life history. They seem to only live in forests and probably feed on soil humus. The males have larger horns than females and use these to carry females or for defence mechanism. When males carry out these behaviours, they make a mysterious sound and its function and cause are not yet known. An interesting beetle native to West and Central Africa feeding on sap and nectar is the goliath beetle. The goliath beetles belong to the heaviest insects in the world and are often desired by collectors. Despite their weight, they can still fly competently.
Other examples include the little-known titan beetles (*Titanus giganteus*) and the Stingless bees (*Meliponinae family*), also known as barber bees and hair-cutting bees. The bees have a defensive behaviour when disturbed and attacked. Some species are harmless and simply try and fly into your mouth and ears to make you move, whereas others cut the skin and spray an acrid solution into wounds, which explains their other name of fire bees. Other sting-lacking bees, ants and wasps have a similar defence.

BUTTERFLIES There are well over 1,000 species of butterflies and moths in the Congo Basin. A few examples of butterfly species in these forests are the emperor moth (*Saturnidae*) and swallowtail butterfly (*Papilonidae*) families, the clear-wing butterfly, owl butterfly, leaf-wing butterfly (*family Nymphalidae*), and the blue morph butterfly (*family Morphidae*). Butterflies are perhaps the most beautiful insects in the rainforest and adult butterflies feed by sipping liquid food with their long tongue (called a proboscis). Mostly, this food is nectar from flowers, but some butterflies live on other types of liquid, such as from rotting fruit.
Insects play a very important role in the health of all tropical rainforests, including the Congo Basin rainforest, and their rapid demise can have severe consequences for these biomes. For example, insects serve as an important food source for many higher animals such as birds, lizards, frogs, and bats. They are also agents of soil fertility, because many insects eat leaves, bark and other parts of plants. The insects' excrement is deposited into the soil with the organic matter already significantly broken down into micro-organisms that decompose the organic matter even further, supplying nutrients into the soil for plant growth. Some insects, such as the bark beetle, colonize dying trees and kill them as a result of their feeding. The benefits are that nutrients from the trees bark are returned to the soil, room is made for new trees and plants, and a little more sunlight may be made available for forest layers below the canopy.
Because plants are an important part of the rainforest, insects help plants reproduce by transporting pollen from one plant to another. Many plants produce nectar that attracts numerous insects, including butterflies, flies, and beetles. These insects drink the nectar and eat the plants pollen, carrying the pollen to other plants and pollinating them. Many plant species can only be pollinated successfully by one or two species of insects. Therefore eliminating the insect from the forest will result in the extinction of the dependent plant species.

KNOWLEDGE OF INDIGENOUS PEOPLE IS IMPORTANT FOR NATURE CONSERVATION

Bakas, southern Cameroon.

PHOTO COURTESY UNIVERSITY OF CALIFORNIA, LOS ANGELES

In addition to containing thousands of species of plants and animals, and sources of water, food and medicine, the Congo Basin rainforests are also home to tens of thousands of indigenous forest communities, who are directly impacted in many ways by both forest exploitation and conservation. These indigenous peoples play a key role in climate change mitigation and adaptation. Preserving the forests would not only support the climate change objectives, but it would respect the rights of indigenous peoples and conserve biodiversity as well.
A climate change agenda fully involving indigenous peoples has many more benefits than when only government and/or the private sector are involved. Deforestation and degradation disrupt these communities, and in some cases trigger conflict. Indigenous peoples have the most intimate contact with the diverse ecosystems they inhabit, and are characterised by traditions, cultures, and knowledge of their environments, plants, medicine, astronomy, inner science, and land and soil management. For example, indigenous peoples have developed adaptation models to climate change over the millennia. They have also developed genetic varieties of medicinal and useful plants and animal breeds with a wider natural range of resistance to climatic and ecological variability. They are therefore carriers of ancestral knowledge and wisdom about the biodiversity. Even the Paris Agreement on climate change[23] recognizes the intrinsic relationship between indigenous peoples and their environments. What all indigenous peoples have in common is a deep connection to the natural environments in which they live. Their effective participation in biodiversity conservation programmes and in managing natural resources would result in a greater comprehensive and cost effective conservation and management of biodiversity in the Congo Basin.

[23] http://ec.europa.eu/clima/policies/international/negotiations/paris/index_en.htm

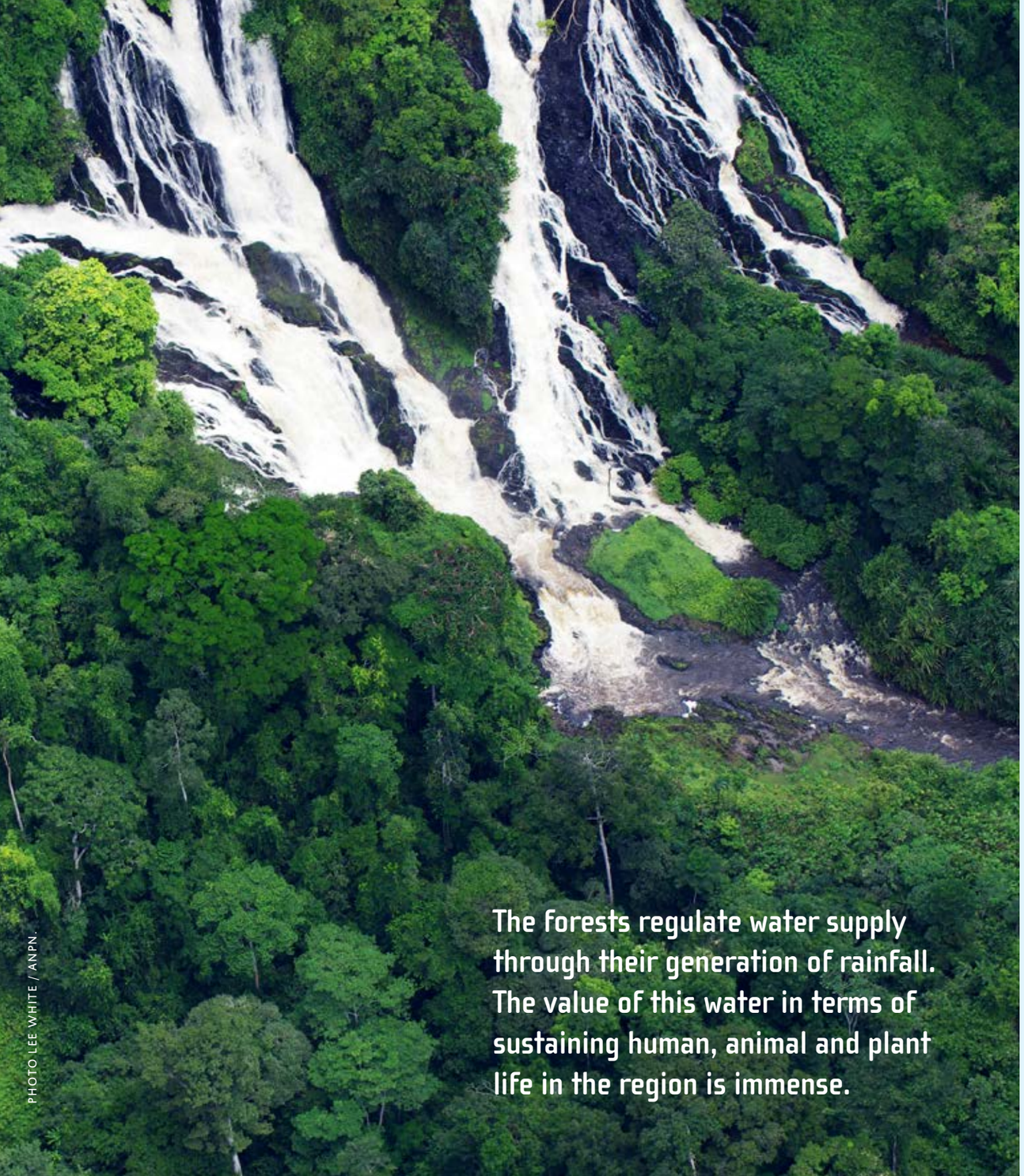


PHOTO LEE WHITE / ANPN.

The forests regulate water supply through their generation of rainfall. The value of this water in terms of sustaining human, animal and plant life in the region is immense.

Functions and benefits of ecosystem services in the Congo Basin forests

by Godwin Kowero, Executive Secretary of the African Forest Forum

The Congo Basin rainforest is the largest continuous rainforest in the world after the Amazon and at the same time an immense watershed.

I INTRODUCTION The main functions of the Comgo Basin rainforest are production of biomass and soil formation, nutrient cycling and water cycling. These functions are the basis for a whole range of ecosystem services that are important to the well-being and welfare of the people living in and outside these forests. Many such services are already mentioned elsewhere in this book; suffice to highlight a few common benefits to local communities that arise from provisioning services such as wild foods, medicines, building materials, water and fuel wood. Also important are cultural services such as spiritual places and symbols. On the broader national level some provisioning services are key factors, such as supply of industrial roundwood to the timber industry, medicinal plants for pharmaceuticals and hydropower energy are important to national economic development. The potential for hydropower generation is immense, the region could even export some of this energy, if such potential is fully exploited.

The Congo River basin is the second largest river system in the world. It drains a watershed area covering the Democratic Republic of Congo, Republic of Congo, Cameroon, Central African Republic, Equatorial Guinea, Gabon, Angola, Zambia, Tanzania and Burundi. Both on national and international levels the regulating services such as carbon sequestration to contain global warming and supply of water receive much attention and are increasingly recognised for their role in sustaining life on the planet.

AWARENESS Managing the Congo Basin forests to cater for the provision of these ecosystem services on all these levels is a major challenge. It requires the cultivation of public awareness about the functions, benefits and values of these forest ecosystems as a means to raise national and international understanding, appreciation and support for their sustained availability. This chapter highlights some of the benefits arising from the regulating and provisioning services, given the increasing attention they are receiving; and more specifically their role in human, animal and plant survival as well as in socio-economic development and environmental stability.

The Congo Basin has great potential for generating incomes to its people from the sale of forest carbon.

II REGULATING SERVICES The Congo Basin forests are known for their capacity to generate rainfall, regulate climate and air quality, not only within the region itself, but also in countries beyond. Of key interest is the fact that natural forests act as a pump that can draw atmospheric moisture from the ocean to the mainland. In this regard the Congo Basin forests increase the moisture above them by pumping it from the Atlantic Ocean. This adds to the moisture that is already in these forests and generates rain from evapotranspiration from within the forests themselves. Natural forests have a high leaf area index making it possible for the evapotranspiration from the forest canopy to exceed that from a similar area of the ocean surface water. Since the evaporative force is stronger on the forest canopy than on the ocean water surface, this causes oceanic air which is rich in moisture to flow to the forest. In doing so it ascends, causing precipitation, becomes drier and eventually returns to the ocean through the upper atmosphere. As this process continues it constitutes an atmospheric circulation that is facilitated by the forests; this is then the pump effect that natural forests exert to draw moisture from the ocean to mainland.
Understanding the generation of rainfall, its seasonality, spread in the Congo Basin and links to other regions is complex. In fact the Earth's climate is very much shaped by intense storms over the Amazon Basin, the Congo Basin and the Pacific Ocean. For example, floods over the Amazon Basin are reported to tend to coincide with droughts in the Congo Basin and vice versa.

EVAPOTRANSPIRATION Various reports indicate that 75-90% of the rainfall in the Congo Basin comes from moisture from evapotranspiration that is generated within the region. This implies that the rainfall in this Basin is very sensitive to any disturbances in the forest condition. Deforestation and adverse effects of climate change and other disturbances will most likely compromise this 'pump' effect. This will therefore reduce rainfall and water availability to and beyond the Basin; threatening human, animal and plant survival.
While the forests are a watershed to the Congo River basin and other smaller basins, only about 0.2% of their area is reported as designated for protection of soil and water resources. The forests regulate water supply through their generation of rainfall that is released into streams and eventually into rivers. They also regulate water flow and its quality, by for example controlling siltation and sedimentation. The value of this water in terms of sustaining human, animal and plant life in the region is immense. For example, the water supports household needs, crop farming, industrial production, hydropower and wildlife. The latter is important not only for tourism and game hunting, but forms the major protein source for the majority of the people in these countries.
Given these immense contributions of this Basin to water supply within and beyond it, much more needs to be done to sustain this function.

The Congo Basin forests regulate air quality by storing carbon dioxide, a gas that contributes to global warming. Estimates of the total stock of carbon in these forests vary widely, however the Congo Basin is only second to the Amazon in this regard, and has much higher carbon stocks than the Southeast Asia basin. The Congo Basin is therefore not only important as a carbon sink, but has great potential for generating incomes to its people from the sale of forest carbon.

ERODED However, this potential is being eroded by small-scale agriculture and to a lesser extent wood fuel harvesting and development of large scale agribusiness investments in some countries that are driving deforestation in the region. Public forest administrations are seriously constrained by funding and this results in serious weaknesses in enforcing laws and regulations. This has led to the prevalence of many illegal activities in the forest sector, with in particular illegal logging and trade in forest products receiving more public attention; encroachment on the forests for agriculture also remains a major threat.
Deforestation, combined with weak efforts to assess and sell forest carbon are denying the region considerable income.

PHOTO MEINDERT BROUWER

Eau pour tous: water for all. In the Republic of Congo every village has access to clean drinking-water. Three water tanks painted in the colours of the national flag are a familiar sight. The water is pumped up with solar energy. The solar panels can be seen behind the water tanks.

III PROVISIONING SERVICES Provisioning services are products and services from the forest ecosystems. They include raw material from trees for the industry, foods (from plants, wild animals, insects, and also from water bodies such as fish), water, minerals (such as gold, diamonds, and copper), biomass (such as firewood) and hydropower energy, ornamental materials (such as furs and feathers), medicines and genetic resources (such as crop improvement genes from wild varieties of the same). Also included are other non-timber products such as medicines from plants (e.g. from Prunus africana for treating prostrate conditions), fodder for both livestock and wildlife, and wild fruits.
These provide the potential areas for investment in value addition for socio-economic development on local and national levels. They tend to attract more private sector investments than the regulating services that appear to be largely of public sector interest. A characteristic of the Congo Basin countries is that they are rich in forests, but have a low value with regard to adding industrial development of the resource.

TRADE In addition, there is no appreciable intra-African trade in forest products, largely due to a poor infrastructure that hinders broader continental economic integration.
Most of the forest products are traded in informal markets,

Massive deforestation in the Congo Basin would have an enormous impact on its river system and jeopardize the production of hydroelectric power.

a component of the informal forestry sector. It is argued that this sector is much more important to the economies of these countries than the formal forestry sector in terms of quantity of products harvested from the forests, processed and traded, employment and incomes to local people. There are many issues constraining the availability of more benefits from these forests, but the key ones that have to be addressed urgently are: a dismal product value addition, illegal activities in the forest sector, deforestation, and a low priority of the informal forestry sector in national development.

IV THE DRY FORESTS OF AFRICA In Africa the term 'dry forest' is used in a very broad sense, covering the spectrum of vegetation types from deciduous forests with a continuous tree canopy to tropical moist dystrophic savannas (e.g. miombo woodland) and to dry eutrophic savannas (e.g. Sahelian wooded grassland). The area of dry forests in Africa is about two and half times that of these rain forests, and the dry forests have about five times more people depending on them. While the dry forests do not receive similar attention and resources, it is important that both these forest types are examined simultaneously rather than at random if we are to address issues related to forests and trees in Africa holistically. In fact, dry forests also occur in some Congo Basin rainforest countries. The degradation and conversion of dry forests is far more advanced than that of the rain forests, largely because they have more people, livestock and wildlife and also per land area unit, and the issues that play a role in them are more related to human and animal survival based on these resources rather than on harvesting them for timber.

KEY Dry forests are a major vegetation type in 63% of African countries. They support far larger human and animal populations than rainforests. Dry forests, much more than rainforests, are a central key to food security and a major component of livelihoods on the continent. They offer the bulk of dry-season fodder to most of the livestock and wildlife populations on the continent, without which livestock husbandry and wildlife tourism sectors in some countries would be unviable. They provide the bulk of the timber and non-timber forest products consumed on the continent, and are therefore of greater use to humans in Africa. Most rivers on the continent originate from dry forests and many river basins are found in them. They sandwich the agricultural belt in Sub-Sahara Africa, hence they are at the frontier of more agricultural expansion than rainforests and will therefore continue to be exposed to considerable pressures. Most African towns and cities are located within them or in their vicinity, making them very vulnerable to the rapid urbanisation of Africa.

V CONCLUDING REMARKS The significance of the Congo Basin rainforests extends over a much broader area than that covered by the forests, as evidenced by the watershed area spanning nine countries. Without this Basin many ecosystem services would not be available to these countries, putting at risk considerable human, animal and plant life, not only in Africa but in the world as a whole.
On the other hand, the sustained supply and wise exploitation of the ecosystem services from the Congo Basin holds potential to significantly accelerate economic development for these countries, reduce poverty for millions of people, stabilise the environment and safeguard biodiversity. The same is true of dry forests. Food and nutrition security, through better rainfall and reliable water supply for irrigated agriculture, will improve the health and well-being of the people in these countries. Reliable and sufficient supplies of hydropower are an important ingredient to socio-economic development and a healthy society. Massive deforestation in the Congo Basin would have an enormous impact on its river system and jeopardize the production of hydroelectric power.
In all this it is very important to reconcile very carefully economic development with the sustainability of forest resources.
The rain forests and dry forests are central to life on the African continent. No meaningful and sustainable socio-economic development on the continent can be conceived without people and these forests at the centre. It is therefore necessary to considerably increase attention and resources to develop, manage and exploit both the rain and dry forests in a sustainable way, because without them considerable human, animal and plant life on the continent would disappear, which will have a broader global impact. Both forest types provide important international public goods and services such as carbon sequestration, with global effects, rain and supply of clean water in a world where water is getting increasingly scarce.

THE AFRICAN FOREST FORUM (AFF)

Professor Godwin Kowero, Executive Secretary-CEO of the African Forest Forum.

The African Forest Forum (AFF) is a pan-African individual membership institution that provides a platform and creates an enabling environment for independent and objective analysis, advocacy and advice on all relevant policy and technical issues pertaining to achieving sustainable management, use and conservation of Africa's forest and tree resources, as part of efforts to reduce poverty, protect the environment and promote economic and social development on the continent. In this regard AFF is guided by three strategic objectives:

a. To build and strengthen *networking* among the many and varied stakeholders in African forestry;
b. To develop and *implement specific programmes, projects and activities* that address the priority issues and opportunities in African forestry; and,
c. To raise the profile of forestry, highlight threats to forest resources and the environment, and champion a better management of African forests through *policy and advocacy approaches*.

For more information contact:
Professor Godwin Kowero
Executive Secretary-CEO
African Forest Forum (AFF)
United Nations Avenue, Gigiri
P.O.Box 30677-00100, Nairobi, Kenya
Phone: +254 20 722 4203, Fax: +254 20 722 4001/4181
Email: g.kowero@cgiar.org / godwinkowero@yahoo.co.uk
Website: www.afforum.org

Interview with Prof. Lee White,
Minister of Water, Forests, Seas, Environment
and Climate Strategy of the Republic of Gabon

'Certification is the future of the industry'

by Meindert Brouwer

In Gabon history may be written. All forest concessions have to be managed in a sustainable way according to today's best standards: those of the Forest Stewardship Council (FSC). If this transition succeeds, it will change forestry in the Congo Basin and possibly elsewhere in the world's tropical forests. Minister Lee White explains.

Minister Lee White
PHOTO MINISTRY OF WATER & FORESTS, GABON

You have been director of the Gabonese National Park Agency ANPN for many years. In June 2019 you were appointed Minister of Water, Forests, Seas, Environment and Climate Strategy of the Republic of Gabon. What made you decide to accept the offer to become minister in these fields?

'In many ways my decade running the National Parks was the perfect preparation to becoming Minister. I have had to deal with local communities, parliamentarians, ministers and Presidents; have dealt with local and international issues; and built ANPN up from very little into an effective park management agency with over 800 staff. The new role I was offered in June 2019 was to apply what I had learned to the Marine, Forestry and Environment Sectors as well as coordinating Gabon's Climate Change policies, for which my 11 years as Gabon's Forest and Agriculture negotiator again help me in good stead.

I took the job because it gives me the chance to apply the principles of sound management I developed at ANPN for the entire land sector, with a true political mandate to take the decisions necessary to make the Gabonese Forestry sector truly sustainable, 100% FSC-certified and to try to tackle planetary issues such as climate change and marine acidification and plastic pollution of the oceans.'

How would you describe your mission as a minister?

'To ensure that there is a healthy equilibrium between exploitation and protection of renewable natural resources in Gabon and that our development is sustainable and climate resilient.'

DECISION

In the summer of 2018 President Ali Bongo of Gabon announced that all forest concessions in Gabon would have to be managed according to FSC-standards by the end of 2022. What are the reasons for this decision? Were the forest concessions not managed well before?

'Some forests were already certified by FSC and other schemes and were well managed. That said, illegal logging began to rise after the log export ban in 2009 and when in 2017 we discovered the scale of illegal logging – as subsequently reported in the "toxic commerce" report of EIA (Environmental Investigation Agency, ed.) – the President decided to impose 100% FSC, to add an external audit to any re-enforced controls put in place by the forestry ministry.'

What are the benefits of FSC-certified forest management for Gabon?

'The current FSC-concessions can almost be considered as protected areas – timber is harvested following a rigorous sustainable harvesting plan based on detailed field inventories; wildlife is protected; ecological services maintained and there are effective social programmes for surrounding communities. Progress is monitored in 6-monthly audits.'

What kind of social programmes have been put in place?

'FSC companies have been much better than other companies in investing in community funds which fund schools, clinics, solar power and many other local initiatives. In addition company schools and medical facilities become resources for communities around the concessions.'

What are the benefits of FSC-certified forest management for forest concession holders operating in Gabon?

'FSC certification opens up some markets that are otherwise closed to our timber products and results in a modest price increase in some markets – but to be honest the benefits are not in proportion to the effort required and this is something we need to work on.'

But for forest concession holders the major incentive of FSC-certified sustainable forest management is

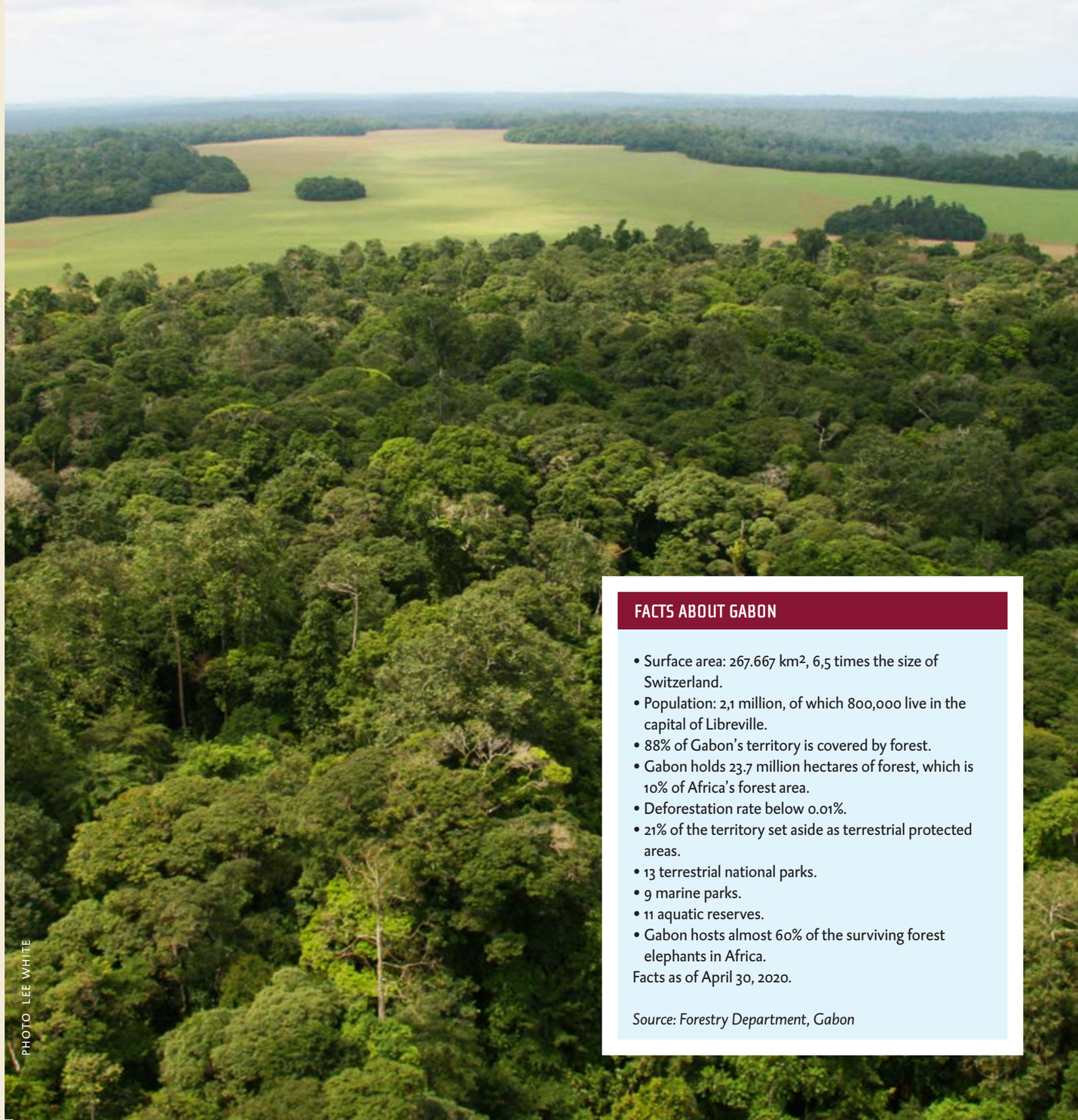


PHOTO LEE WHITE

FACTS ABOUT GABON

- Surface area: 267.667 km², 6,5 times the size of Switzerland.
- Population: 2,1 million, of which 800,000 live in the capital of Libreville.
- 88% of Gabon's territory is covered by forest.
- Gabon holds 23.7 million hectares of forest, which is 10% of Africa's forest area.
- Deforestation rate below 0.01%.
- 21% of the territory set aside as terrestrial protected areas.
- 13 terrestrial national parks.
- 9 marine parks.
- 11 aquatic reserves.
- Gabon hosts almost 60% of the surviving forest elephants in Africa.

Facts as of April 30, 2020.

Source: Forestry Department, Gabon

We plan to strengthen traceability and monitoring through an electronic database and tracking system to ensure that all wood in Gabon is legal.

that timber harvesting can continue well into the future instead of being cut off in a short time after unsustainable practices and depletion, don't you agree?
'I believe 1) FSC guarantees timber is legal, climate friendly, biodiversity friendly and socially friendly, protecting our wood from unobjective boycotts, while 2) it also protects the forests and its wildlife and 3) guarantees a sustainable approach that will create jobs for people and revenues for governments in perpetuity.'

INVESTMENT

For forest concession holders, transition to FSC standards may be a large investment. What are the financial incentives of the Gabonese government to convince forest concession holders to go ahead and do it?
'We are currently looking at ways to help with this process, for instance we may create a company that will help the smaller Gabonese companies to work through certification. But the bottom line is that if companies want to continue working in Gabon they will have to obtain certification.'

How will the Gabonese government facilitate and support forest concession holders so that they are able to meet the FSC standards?
'Again, we are looking at this – but it is the responsibility of the private sector company to undertake this work and there are plenty of consultants available to accompany them if they lack some or all of the capacity.'

What will happen to forest concession holders who do not meet the FSC standards by the end of 2022?
'We will undertake an audit of progress in 2020 and on the basis of this we will make it clear what the penalties will be for companies that have not finalized the process. The severity of punishment will depend on the progress made.'

What kind of penalties could be imposed for what?
'This has not yet been decided. I image fiscal penalties for companies engaged but not finished and in the extreme case where companies have not engaged cancelling permits.'

Between the announcement of the President in the summer of 2018 to go for FSC and the deadline of FSC certification of 31 December 2022 there are four years. Perhaps forest concession holders are going to extract as much timber as they can and then pull out at the end of 2022. How are you going to cope with this risk?
'As I have already said – we will audit progress in 2020 and then monitor it regularly. Companies not making progress will be sanctioned.'

Some people think that compulsory FSC certification of forest concessions in Gabon in some cases will lead to depletion of forest concessions before the deadline and pave the way for new oil palm plantations. What do you think about that?

Our vision is to have an exemplary forestry industry and to formalise all use of wood in Gabon.

'Oil palm plantations are only allowed in savannas or in highly degraded forest areas with less than 118 ton of carbon/ha based on our 2020 maps. We will be monitoring logging and any excessive harvest will be strictly sanctioned. Such behaviour is not allowed in management plans and this is not a risk.'

What is the destination of forest concessions which have been degraded?
'This is not an issue in Gabon – with or without FSC certification our law requires a sustainable management plan that prevents degradation of this sort. In exceptional cases where excessive logging has happened in the past forests will be left to regenerate. Our Space Agency has funding from the CAFI program (Central African Forest Initiative, ed.) and from a tax on forestry companies to monitor the extent and intensity of logging and there will be field audits undertaken by our Forest Agency.'

A woman works with a rotary cultivator at the veneer plant of TGI (Tropical Gabon Industrie). TGI is part of Precious Woods Gabon just like CEB (Compagnie Equatoriale des Bois). Both companies are FSC-certified, in 2020 they employ around 900 people. Precious Woods Gabon belongs to Precious Woods Group with headquarters in Zug, Switzerland.

CAPACITY

Do you have sufficient capacity to carry out field audits and to check compliance with forest laws and regulations? Will the Gabonese army be involved in demanding compliance?
'Yes, with some additional in-service training we have the capacity – and we will not be using the army for this. It is not their role.'

Some say certification of forest concessions in Gabon will take place in steps: first PAFC certification, then PEFC certification and finally FSC certification. Is this just a rumour?
'It is already happening this way. Companies often prefer

Stock of sawn wood at Precious Woods Gabon - CEB.

PHOTO © NATIONAL PARK AGENCY ANPN GABON

PHOTO MINISTRY OF WATER & FORESTS, GABON

Minister Lee White:
'I believe
1) FSC guarantees timber is legal, climate friendly, biodiversity friendly and socially friendly, protecting our wood from unobjective boycotts, while
2) it also protects the forests and its wildlife and
3) guarantees a sustainable approach that will create jobs for people and revenues for governments in perpetuity.
Unless we make the transition, our wood products will come under ever increasing threats in the future from well-intended, perhaps sometimes ill-informed or naïve and even occasionally malicious boycotts by consumer groups. Certification is the future of the industry.'


PHOTO © NATIONAL PARK AGENCY ANPN GABON

to start with a less comprehensive (and therefore less challenging) system and work their way up. We are happy with this approach.'

What are the barriers to achieve a transition to sustainable, FSC-certified forest management all over Gabon?
'The key barriers will be capacity in the forestry and certification communities; lack of motivation of some companies; and up-front investment to fund the process.'

What are the opportunities to achieve the transition?
'Unless we make the transition, our wood products will come under ever increasing threats in the future from well-intended, perhaps sometimes ill-informed or naïve and even occasionally malicious boycotts by consumer groups. Certification is the future of the industry.'

Taking the FLEGT Action Plan of the European Union into account, integration of the FSC certification system in a national verification and traceability system could make export of timber from Gabon to the European Union easier. This could also help to refocus FLEGT on regulating the informal sector. Do you agree and would you consider integrating these systems?
'Our vision is to have an exemplary forestry industry and to formalise all use of wood in Gabon – I agree.'

FSC is a monitoring tool – the real safeguards are in the law.

How will you formalise all use of wood in Gabon?
'A lot of the illegal wood is transformed in sawmills that specialise in laundering wood, either supplying wood dealers and exporters who hide their profits in offshore accounts, or supplying the informal sector in Gabon. We plan to strengthen traceability and monitoring through an electronic database and tracking system to ensure that all wood in Gabon is legal.'

AUDITORS

Some FSC indicators in forest management seem to be multi-interpretable and may be used in either a severe or in a looser way, depending on the auditor. Auditors are independent but appointed and paid by the companies they certify. This may lead to the appointment of auditors who use indicators the loose way. Would you consider using some of Gabon's forest tax income to establish a fund which pays FSC certification of forest concessions instead of the companies?
'I have not considered this option – interesting idea! We will be undertaking our own evaluations in parallel to try to minimise this risk.'

In Gabon log demand is increasing with the establishment of more and more processing units in the Special Economic Zones of Gabon. On the other hand, the Government wants all the forest concessions to be FSC-certified by 2022. Next to that it would like to reduce the area occupied by forest concessions by 3 million hectares. These policies mean that less timber will be harvested annually. How do you think this gap can be filled? Should it be filled?
'Our medium-term plan is to supplement precious timber from natural forests with plantation timber grown in areas currently covered by savanna or highly degraded forests.'

Our plan is to supplement timber from natural forests with plantation timber grown on current savannas or in highly degraded forests.

Are you planning to grow hardwood or softwood or both in plantations?
'Our plan is to start with Eucalyptus and Teak and to test other fast-growing species, but also to look into the viability of plantations of enrichment of degraded areas with harder slower growing native species.'

What will be the volume of timber plantations in hectares in Gabon in 2030?
'We plan to plant up to 300,000 ha of plantations and to achieve a production of about 10 million m^3.'

What is the destination of the 3 million hectares if they cease to be forest concessions?
'I do not yet have the full answer to this. Some will be new protected areas, others likely will be in 'ecosystem services'


Employees at FSC-certified forest concessions and their families are provided with local housing.


Logs on their way to the saw mill.


Discussing design.

PHOTO © NATIONAL PARK AGENCY ANPN GABON

or sustainable development concessions. It is a work in progress. We passed a Sustainable Development Law in 2014, which creates the legislation for a national sustainable development register and offsetting system. We plan to implement in 2020. We will have a common accounting system for impacts on climate (carbon emissions or sequestration), biodiversity and human capital. A company or administration will calculate their impact – positive or negative – on each and come up with a sustainable development impact. If negative (or if higher than the allocation for that sector), they will have to offset and pay for credits from Sustainable Development Concessions. We are also examining the Costa Rica model of payment for ecosystem services.'

SUSTAINABLE DEVELOPMENT CONCESSIONS

What are Sustainable Development Concessions? What is happening there, who owns them?

'A SD concession is an officially recognised concession – like a logging concession – where the concession holder can undertake activities to increase the carbon stock, creating carbon credits – this is the easy part to account for in tons of CO_2 –, to increase biodiversity and ecosystem services – creating biodiversity credits, what we have not worked out yet is what increase in elephant density is equivalent to a ton of carbon –, and to increase human capital – well being – by generating sustainable jobs and livelihoods, investing in education and health etc.'

In Gabon there are two Special Economic Zones (SEZ) on the coast, specifically one near Libreville and one near Port Gentil. They provide new investors, including timber processing companies from China and palm oil giant Olam International, with fiscal incentives, including 100 percent exemption from withholding tax, property tax, VAT and import duties for 25 years and repatriation of funds. Will these fiscal incentives remain this way? Will the two SEZs perhaps be expanded?

'The SEZ in Nkok has been the motor for shifting from rudimentary processing to the manufacture of high value furniture and use of almost all off-cuts. It is a "for-export" model, but results in significant benefits in terms of employment and growth in transport and supply sectors that pay taxes. I think the jury is still out when it comes to the absolute benefits: many economists hold very different views. We plan to continue to develop this model, with new developments in Franceville and Port Gentil, but we also plan to further develop "on-shore" investments for the local market and particularly for the continental common market.'

Please explain what you mean by "on-shore" investments here.

'These SEZs are tax free and therefore are considered to be offshore when it comes to customs charges – if they sell in the local market, they have to pay import duty. Sawmills outside these SEZs are subject to national fiscality.'

Is demand for sawn timber and perhaps timber products on the continental common market of Africa increasing? Which countries are demanding more?

'We are certainly looking at the markets in Nigeria, South Africa, Eastern Africa and North Africa with great interest.'

Besides compulsory FSC certification in forest concessions, which other measures are you taking or planning to take to safeguard the forests of Gabon and their biodiversity?

'FSC is a monitoring tool – the real safeguards are in the law. Our sustainable development law passed in 2014 is visionary and somewhat complicated to implement. It will require annual sustainable development impact assessments that will evaluate the impacts of each company on carbon stocks, biodiversity and human capital (well-being). We will strengthen our forestry department, particularly the forestry ministry, to ensure that we are a strong partner, helping the good companies and penalising the bad. The new penal code which is very tough on corruption is an important tool. It will put foresters who corrupt officials behind bars for 4 years, but the government officials who take the money will get 10 years.'

The palm oil industry in Gabon is committed to being carbon neutral. No oil palm is allowed in High Carbon Stock or High Conservation Value areas.

Workers at a sawmill of Compagnie des Bois du Gabon (CBG). CBG is FSC-certified, which implies that security at the workplace must be guaranteed. The picture at the right shows workers wearing gloves and masks.

DEFINITION OF FOREST

What is your definition of forest? Are you considering increasing the threshold of forest cover or to adopt a definition based on carbon stored, and up to what threshold?

'The current international definition, that is, 1 ha with 10-30% cover of trees that can grow more than 5 metres tall, equates to about 25 ton of carbon/ha and any piece of land that has been clear cut would be classed as forest within 2 years with the growth of umbrella trees and indeed, many of our wooded savannas. When we talk to rural, or even urban, Gabonese people about what a "forest" is, they say it is vegetation with many BIG trees, scientists would say dbh >70 cm. (Dbh - Diameter at breast height, ed.) When we show people photos it corresponds to a carbon content of about 175 ton of carbon/ha. When we apply the concept of "zero" (net) deforestation to the FAO model, even our farming in our savannas will qualify as "deforestation". We are working on the definition. No decision has been taken. We will likely differentiate different types of forest according to "young secondary forest", "mature intact forest", "swamp forest" etc. rather than simply stating "forest/non-forest". Our High Carbon Stock threshold is 118 ton of carbon/ha, which is the average carbon content of secondary forests in Gabon.'

To which extent can forests be cut and converted into oil palm plantations? Which sustainability criteria apply to palm oil production in Gabon?

'All Gabonese oil palm is RSPO-certified (Round table on Sustainable Palm Oil, ed.). The industry in Gabon is committed to being carbon neutral. No oil palm is allowed in High Carbon Stock or High Conservation Value areas. Our cut-off for deforestation for oil palm is 118 ton of carbon / ha. I challenge you to find a country with better policies and a 100% certification of greenfield plantations! (Greenfield – developing from zero where there is no history of this type of activity, ed.)'

What is the development agenda of the government of Gabon? What will be the focus sectors?

'We plan a transition from a $500 million timber industry to a $5 billion timber industry by 2030, maximizing a 3rd level transformation of natural and plantation-grown timber; to develop a thriving renewable energy sector based on hydro-power; to develop sustainable fisheries including domestic processing of our tuna, which are about 25% of the Atlantic catch; to process more of our mineral resources in Gabon; to improve the service sector (especially banking, financial markets and IT) and to develop tourism, including a strong conservation tourism sector. Who knows, we may even develop a carbon market if the world ever gets serious about climate change.'

We plan a transition from a $500 million timber industry to a $5 billion timber industry by 2030, maximizing a 3rd level transformation of natural and plantation-grown timber.

EXAMPLES

A transition from a $500 million timber industry to a $5 billion timber industry by 2030 is huge. Could you give some examples of a 3rd level transformation of natural and plantation-grown timber?

'3rd degree transformation: furniture, doors, windows, parquet... currently made using wood harvested from natural forests – some of these can be manufactured much more cost efficiently using particle board covered in veneer made from our beautiful hard woods, extending the use of natural wood.'

Poverty and unemployment can force people to carry out illegal forest activities as their only means of survival. Do you think the development agenda of Gabon can provide enough jobs and raise living standards of the people throughout Gabon?

'We expect to create 60,000 jobs over the next 5 years in the sector. In Gabon it is not poor rural people who are responsible for forest crime, but rather criminals and illegal forestry companies.'

In tropical countries with an extensive forest cover like Gabon, could a national economy based on forest ecosystem services bring prosperity to all, making it unnecessary to develop industries and factories like in France or in England?

'In an ideal world maybe – but there is zero market for this today. Look at REDD (Reducing Emissions from Deforestation and Degradation, ed.), the most obvious service we might expect to be able to materialise – we have less than 5% of the funding needed to make it a global reality. Developed countries are not ready to pay for ecosystem services in developing countries!!'

CHINA

In September 2019 China and Gabon signed a Memorandum of Understanding (MOU). Could you tell what you agreed with regard to the extraction of natural resources – timber and mining –, agriculture, building of infrastructure in Gabon by Chinese companies, facilities for Chinese companies in Gabon and trade?

'It was an agreement between the Forestry departments, therefore focussed on forestry and biodiversity. We made a commitment to work together to ensure legality in the forestry sector in Gabon – including by prosecuting Chinese companies that break the law in Gabon; to work together on national parks management and World Heritage and to exchange technology and knowledge to ensure sustainable harvests and the wise use of forest resources.'

What kind of technology and knowledge are you talking about?

'Mostly about wood transformation technology.'

Through the Central African Forest Initiative (CAFI) Norway will support Gabon with up to 150 million euro. Will you be using (part of) this amount for the transition to FSC-certified forest management? How will the people of Gabon benefit?

'This program is a results-based payment for reductions in forest carbon emissions and increases in sequestration and the funds will be used for programmes that allow Gabon to maintain its very low deforestation rate and to further reduce forest carbon emissions. It is likely we will split the funds fairly evenly between conservation, sound forest management and working with rural communities to improve traditional agriculture and reduce human wildlife conflict.'

Regarding traditional rural community agriculture, do you consider to facilitate the replacement of slash and burn by sedentary farming?

'Yes – we are doing a pilot programme with IGAD (Gabonese Institute for Development Support, ed.) with electric fences

We expect to create 60,000 jobs over the next 5 years in the forest sector.

President Ali Bongo Ondimba of Gabon visits one of the sawmills of Rougier Gabon and the workers are proud. In 2020 Rougier Gabon employs around 1200 people, equally divided between logging and industrial timber processing. The company is FSC-certified and part of Rougier S.A. based in Paris.

we have built to keep elephants out of peoples' fields. Our ambition is to use modern tropical agricultural methods to increase production and fix agriculture so we can develop agroforestry in the areas no longer being cut and burnt. This is critical in the Congo Basin, particularly in DRC where the deforestation rate is up to 1.8% per year, mainly because of bad agricultural practices.'

Could you give examples of human wildlife conflict and of solutions to solve these?
'The major issue for us is the conflict between humans and elephants. We are the only country with elephants all over the country. Since most Gabonese citizens respect the fact that elephants are protected, we are seeing more and more cases of crop raiding. This is made worse by the intense poaching we have experienced in remote, mostly border areas, which drives the surviving elephants out of their remote forest strongholds towards people. The solution is multi-form: stop the poaching, build electric fences in places with lots of elephants and develop insurance and compensation in areas were the problem is limited.'

EXPERIENCE

You have been involved in nature conservation in Gabon for many years, as director of the Gabonese National Park Agency ANPN and now as Minister of Water, Forests, Seas and Environment. What has been your saddest experience?
'We lost 25,000 elephants to trans-national criminal gangs between 2006 – 2012 – that tragedy could have been avoided.'

What has been your happiest moment?
'If you would allow me to mention two happy moments: when Omar Bongo (former President of Gabon and father of current President Ali Bongo, ed.) took my hand and walked me out of the presidential palace in 2002 the day he announced the creation of 13 national parks; and the day in 2012 when Ali Bongo Ondimba got emotional about what we are doing to our oceans and instructed Mike Fay and me to create Gabon's marine protected areas; a process we finished in 2018 with the creation of 20 new marine protected areas covering 27% of our EEZ.'

What drives you to keep going for nature conservation?
'The wonder and importance of nature and my children, whose futures depend on our re-establishing the equilibrium of our planet.'

Forest elephants. © NATIONAL PARK AGENCY ANPN GABON

For more information, contact:

Mrs. Guilaine Nzogho Omanda
Press Secretary
Ministry of Water, Forests, the Seas, the Environment, in charge of Climate Change & Land Use Plan
Mobile: + 241 62 40 39 44
Email: omanda.guilaine@gmail.com
Website: www.eaux-forets.gouv.ga

Our ambition is to use modern tropical agricultural methods to increase production and fix agriculture so we can develop agroforestry in the areas no longer being cut and burnt.

‘FSC certification enables forestry companies to increase productivity’

The Forest Stewardship Council (FSC) is an independent non-governmental organisation with over 1000 individual and organisation members from all over the world, including leading international companies. FSC develops and promotes environmentally sound, socially beneficial and economically prosperous management of the world’s forests. Interview with Nathalie Bouville, Regional Communications Manager of FSC Africa.

by Meindert Brouwer

1 What are the benefits of FSC certified forest management?

There are many benefits. FSC certification enables forestry companies to increase productivity thanks to a rigorous organisation and monitoring of activities. It also gives them added recognition on a national and international level, including better market access and green investments opportunities. This is based on the fact that FSC certification encourages beneficial forest community relations and has a positive impact on the working and living conditions of workers and their dependents. The recognition and respect for the legal and customary rights of local forest-dependent people are also obvious benefits of certification.
The compliance of FSC certified holders with all relevant legal requirements has a positive impact on the economic and social welfare of the countries involved. They greatly benefit from the payment of all fiscal and other duties from forest revenues.
Finally, FSC-certified concessions strongly contribute to the protection of biodiversity and to the mitigation of climate change.

2 How can FSC Congo Basin facilitate and support forest concession holders and operators in the timber processing and trading who want to obtain FSC certification?

FSC staff in Brazzaville, Libreville and Douala provide relevant information to forest concession holders and operators in the timber value chain. This includes, for instance, what FSC certification entails for their company, where to start the certification process, and who to liaise with for support. Companies will also be informed about and directed towards the critical entities needed outside the FSC organization, such as accredited certification bodies.

3 How can FSC Congo Basin facilitate and support forest communities who want to obtain FSC certification?

FSC Congo Basin is adapting its national standards to meet the needs of smallholders and community forests of Central Africa. Official representatives of local communities and Indigenous Peoples are duly represented in the FSC standard development groups where they can contribute to the deliberations and decisions regarding the requirements. FSC is familiar with the challenges associated with community forestry and is currently implementing a continuous improvement procedure to allow smallholders and communities to be initially certified, based only on a subset of forest management requirements. It will offer flexible steps towards conformity with the remaining


PHOTO DAVID IGNASZEWSKI
Nathalie Bouville

FOREST STEWARDSHIP COUNCIL

The Forest Stewardship Council (FSC) was created in 1993 to help consumers and businesses identify products from well-managed forests. FSC sets standards by which forests are certified, offering credible verification to people who are buying wood and wood products.

As of February 2020 more than 200 million hectares of forest have been certified according to FSC standards (approximately 17 percent of the world’s production forests), and almost 43,000 forest management and chain of custody certificates have been issued, worldwide.

FSC members include some of the world’s leading environmental non-governmental organisations (WWF and Greenpeace), businesses (Tetra Pak and Mondi PLC) and social organisations (including REPALEAC in Central Africa - Network of Indigenous and Local Communities for the Sustainable Management of Forest Ecosystems in Central Africa), as well as forest owners and managers, processing companies and campaigners and individuals.

Three chambers
FSC membership has three chambers, that is to say environmental, social and economic chambers, which have equal rights in decision making. Moreover, to ensure that FSC has a globally fair representation, members represent either the northern or southern subchambers.

Source: www.ic.fsc.org

FSC certification gives forestry companies added recognition on a national and international level, including better market access and green investments opportunities.

requirements within a defined time frame. We are expecting to complete the procedure by the end of 2020 and pilot test it in the Congo Basin.

4 How can FSC Congo Basin facilitate and support national governments in Central Africa who want to promote and implement FSC standards in forest concessions in their country?

FSC Congo Basin is keen to have good relationships with governments and has already entered into cooperation agreements with the governments of the Republic of Congo and Gabon. FSC Congo Basin works with government officials to increase the appreciation of FSC certification and support the development of a conducive policy, an institutional and regulatory environment for sustainable forestry and certification. Other collaborative goals are to explore and develop market and green investment opportunities for FSC-certified companies and ensure the consistency between FSC requirements and national legislative framework and international regulations (such as VPAs, EUTR, Lacey Act).

5 How is an independent, third-party FSC certification set up?

FSC itself does not certify forest operations or manufacturers. By refraining from certification, FSC can remain independent towards anyone wanting to be certified. FSC sets the standards for forest management and chain of custody certification. It also defines the procedures that certification bodies should follow in their certification assessments. FSC certification is carried out by accredited certification bodies that are internationally qualified and managed by an independent accreditation group called Accreditation Services International. FSC is the only global forest certification system to have an integrated accreditation program that systematically checks its certification bodies.

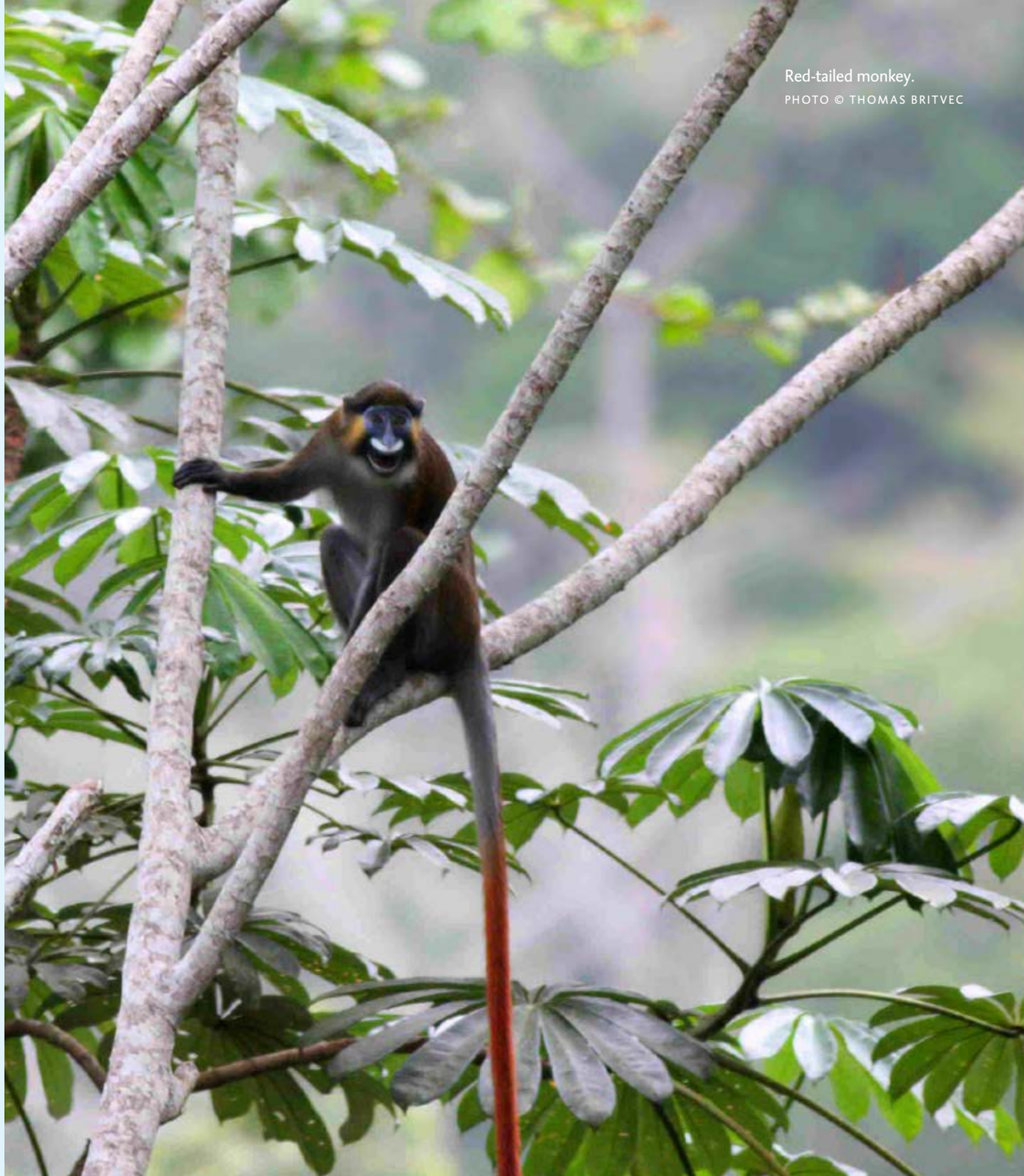
Editor's note: more information at http://www.accreditation-services.com/archives/standards/fsc

6 What are the benefits of membership of the Forest Stewardship Council?

Being a member of the FSC provides a unique opportunity to take an active role in the effort to preserve world forests, which are essential for the protection of our planet and our future. FSC members vote on the motions that define the rules that must be observed by forest management and the timber industry to guarantee to consumers that the timber products come from sustainably and responsibly managed forests. These are forests where timber harvesting operations allow for the renewal of resources, biodiversity conservation, and enhancing the livelihoods of communities. As a business, FSC membership clearly indicates a commitment to responsible corporate citizenship. FSC offers a unique platform for all its members to engage with an exceptional group of organizations and individuals working together to address challenges in the forestry sector and develop new networking or business opportunities.

Contact person FSC in Central Africa

Nathalie Bouville
FSC Africa Regional Communications Manager
n.bouville@fsc.org
Tel: + 241 66005796



Red-tailed monkey.
PHOTO © THOMAS BRITVEC

FSC-certified forest management

Keeping the forest and bettering lives

Text and photos Meindert Brouwer

Timber from the north of the Republic of Congo on its way to the harbour at the Atlantic Ocean.

The rainforest concession of timber producer IFO in the north of the Republic of Congo is the largest FSC-certified single forest concession in Africa.

Being part of the Congo Basin rainforest, IFO's concession has an area of 1.2 million hectares, more than one quarter of the size of Switzerland. IFO employs almost 1,100 workers. Most of them live in the village of Ngombé, next to the IFO premises and sawmills on the banks of the wide river Sangha. IFO belongs to the Swiss based timber company Interholco and stands for Industrie Forestière de Ouesso, the main city nearby.

Logging according to standards of the Forest Stewardship Council (FSC) means this takes place with respect for the forest and the rights of the people living in the concession. What does that mean? In January 2016 I set out to visit the IFO concession. I wanted to see with my own eyes what FSC-certified forest management is like and how the local population (16,000) benefits from the presence of IFO in the region. I wanted to see how huge tropical trees are felled and what the forest looks like after harvest.

Going there meant that I would meet the people at the very basis of FSC-certified products from the African tropics: wooden tables, chairs, garden furniture, garden walls, doors, window frames, floors, wooden coverings, lock gates in harbours and more.

Aerial view: © Interholco
Photo insect on wood: © U. Binhack / Interholco
Photos wildlife: Thomas Britvec

FSC-certified forest management

1 Felling of a tree

Every morning at four o'clock – well before sunrise – 240 Congolese forest workers leave the town of Ngombé, climb in four lorries and head for the tree harvesting zone. The concession is large and they first have to drive 80 km to get to the zone, sitting on wooden benches in the loading platform, yellow helmets on their head, some with a jacket over their orange working clothes and a shawl across their face against the morning breeze.

Frenchman Thomas Britvec, IFO's director of harvesting, leads the daily operation. He takes me in his Toyota Landcruiser. Although Britvec is still in his late thirties, he already has 25 years of experience in forestry. Brought up in the region of Picardie in the northwest of France near the woods of Compiègne, Britvec started as an apprentice in his home region, only 14 years old. After mastering the profession he instructed forest workers in Gabon, Democratic Republic of Congo, Togo, Cameroon, Central African Republic and Guyana as well, before joining IFO.

We all meet in an open area in the forest. It is a quarter to six and broad daylight now. Britvec parks his land cruiser exactly next to the only other land cruiser. Why so neatly, there is plenty of space, I ask. Britvec makes clear that all forest activities, including parking his land cruiser, have to be structured, controlled and carried out well. And so they are. As the forest workers get out of their lorries, taking off their shawls, the engines of the motor saws are waiting for them, neatly drawn up in a battle array on the ground in front of a shed.

FOCUSED Britvec is not tall, around 1.70 metres, but he has a natural authority. An orange helmet on his head, stubbles on his cheeks, wearing a chequered, light red, flannel shirt and black pants, his green-grey eyes look quickly everywhere. He is very focused, gives orders and is clearly on top of things. Looking at a map with many dots in different colours, representing trees that have to be felled and trees that cannot be felled and have to stay, Britvec discusses today's work with Jean-Paul Belinda, his Congolese right hand man.

Thomas Britvec, IFO's director of harvesting.

Jean-Paul Belinda, right hand man of Britvec.

Early morning: arrival at the tree harvesting zone.

The harvesting of trees and getting the logs to the sawmills requires that the men act together, a piece of work leaving no room for improvisation. The 240 forest workers and

Tree felling team



From left to right: Ambroise Bimeth, Jean Romeo Openda and Faustin Okoutonandza.

their supervisors have 10 bulldozers at their disposal, 3 big skidders, 2 small skidders, a riding garage, 5 land cruisers, 2 long transportation vehicles and the 4 lorries mentioned above.

Many different tasks have to be carried out. Trees have to be felled. Crowns of trees which have been lying on the ground for 14 days to release the tension in the wood have to be sawn off. Logs which can reach a length of more than 20 metres have to be sawn into separate pieces so skidders are able to pull the timber out to the forest road.

Britvec drives with his land cruiser from one location to another. The dirt roads in the green forest are orange-brown. Everywhere forest workers are on the move or heating bundles of food above small fires on sandy spots. Only there making a small fire is permitted. When Britvec stops to discuss the work, I walk around. I see workers measuring huge logs and writing their diameters on the outer sections. A skidder with a big grab lifts a log which weighs over 12 tons onto a long transportation vehicle.

The moment has arrived. I will witness the felling of trees. On foot we follow a small path that has been cut through the undergrowth by machete. It is a rather long way through the bushes and I am almost losing my breath, trying to make a good impression and be just as fast as Britvec who is in front of me and is looking back over his shoulder from time to time. Then we arrive at the area in the forest where we are supposed to be. Four trees have to be felled, two of the species Tali and two Sapellis. Their height is 25 metres and more.

BLADE The tree felling team consists of three men: Ambroise Bimeth, the tree feller; Jean Romeo Openda, the assistant tree feller and Faustin Okoutonandza, the administrative assistant who will stamp the IFO-mark and registration number of the tree on the log and on the remaining tree stump.

The blade of the motor saw Ambroise is using, is enormous, bigger than the ones used in Europe, necessary to master huge tropical hardwood trees. The diameter of the trunks may be as big as 2 metres. Ambroise is protected. FSC-certification means that safety of the workers is well monitored. He has an orange helmet which is connected with a screen of wire gauze in front of his face to protect his eyes from dispersing sawdust and possibly pieces of bark. Of course his ears are closed off against the noise of the chain saw. He wears protective clothing and heavy shoes which protect his feet.

Before Ambroise starts the engine, he carefully cleans the links of the chain saw with a small stick to make sure the saw is sharp. If it is not, the huge saw may shake when it is inside the hardwood tree and exert wrong pressure on his arms and shoulders. The forces are huge. While Ambroise is preparing, assistants Jean Romeo and Faustin clear the






FSC-certification means that safety of the workers is well monitored.

ground around the tree by cutting sprouts and lianas with a machete. The team determines the direction in which the tree has to fall in order to minimise damage to the forest. The tree should not take other big trees with it when it falls.

Then Ambroise starts the engine. It roars while Ambroise puts the enormous blade into the huge trunk of the first tree. I can hardly see his face through the blazing sawdust. His craftsmanship is unbelievable. First he directs his blade horizontally right through the trunk, I see the end of the saw coming out on the other side. Then he cuts a wedge over which the tree has to fall at the end. After that he cuts notches in both sides of the tree, in the front and in the back, so the trunk will not splinter. In total he makes eight manoeuvres.

STICKS Before Ambroise makes his final move, Jean Romeo puts two long green sticks of a shrub into the incision in the trunk at the side opposite of the wedge. If they stay down while Ambroise is sawing, the tree will finally fall over the wedge in the right direction. If the sticks go up, the tree is heading for the side where Ambroise is busy working.

While he is sawing, Ambroise can see the sticks in front of him, but he cannot look up to see what the tree is doing. Besides, the tree is so tall, so huge, so heavy – it may weigh as much as 15 tons – that it is impossible to control and change its movements by sawing and looking up at the same time. For safety, a hinge of 'holding wood' is maintained in another incision, so the tree cannot fall on Ambroise and on us, the spectators . . .

Three of the four trees go down like matches in only about 10 to 15 minutes each. The fourth one takes longer. Its trunk is so very straight that it is hard to estimate, even for the experienced Ambroise and his colleagues, in which direction it will fall. During the sawing the green sticks have gone up . . .

Logs waiting to be sawn.

A skidder lifts a log which weighs over 12 tons onto a long transportation vehicle.

FSC-certified forest management

II Rotation in the forest

FSC-certified forest management is based on a sound forest management plan. The forest which is harvested is divided in separate zones, like slices of a big cake, usually 25 or 30. The zones may differ in size, depending on the density of the forest and other forest conditions. Each year the harvesting of trees takes place in one zone only. During the years that follow, the timber company moves from one zone to another. It is called rotation. After 25 or 30 years, depending on the number of zones, the timber company may return to the first zone and harvest there again. In the meantime trees, especially young trees, have had time to grow. IFO applies a rotation of 30 years.

Since logging takes place in one zone only, there is no logging disturbance in the other zones. Therefore the larger an FSC-certified forest concession is, the better it is for the animals that live there, they have more space to withdraw. IFO's concession is home to approximately 70,000 gorillas and approximately 4,000 elephants.

HIGH CONSERVATION VALUE IFO only harvests trees selectively in 800,000 hectares. All together 355,000 hectares across the concession are not touched because they are so-called High Conservation Value areas or because they are vulnerable, such as water banks and swampy forest. The remaining part of the concession consists of villages and areas that have been assigned to the forest communities.

Antoine Couturier, IFO's director responsible for environmental and social company policies and certification.

High Conservation Value areas are important to maintain the level of biodiversity. They may be nesting or feeding areas for animals or contain rare, endemic plants and old patrimonium trees. High Conservation Value also applies to areas of cultural and religious significance to the local population or areas which are important to meet the basic needs of communities who harvest wild fruits and other products in the forest.

Trees are harvested selectively and in a responsible way. Felling trees and getting the logs out must be done with care in order to minimise their impact. In January 2016, Britvec and his men cut 100 trees per day, one tree per hectare on average.

Antoine Couturier (1973) is IFO's director responsible for environmental and social company policies and certification. He has studied physical geography and post doc tropical ecology. Like Britvec, he is French. Couturier: 'Trees must have a Minimum Felling Diameter (MFD), below that we do not fell.' The MFD's are included in IFO's forest management plan. IFO's MFD's are 10 to 30 cm higher than the obligatory diameters of the forest law of the Republic of Congo, in order to ensure sufficient forest regrowth during a rotation period of 30 years. But, what is sufficient?

Spurting initially, tropical hardwood trees continue to grow slow. The diameter of the Sapelli grows 0.5 cm to 0.8 cm per year, Wenge 0.8 cm per year, the diameter of the also highly appreciated and famous Ebony grows 0.2 cm per year. If IFO would return to the first zone after 30 years, eligible Sapelli trees would have grown 15 to 24 cm in diameter, Ebony only 6 cm. Therefore, Couturier tells, IFO does not harvest, but keeps a large part of the trees above the minimum diameter. 60% of Wenge and 90% of Ebony above the minimum diameter are not harvested and left alone.

The law in the Republic of Congo in January 2016 only mentions minimum diameters and no maximum diameters. If a logging company were to cut all objective trees above the minimum, the quality of the forest would deteriorate. Many logging companies don't care. However, IFO operates with a maximum diameter and that is remarkable. IFO will not cut trees with a 2 metre diameter or more, Couturier tells. That means that the biggest and oldest trees are not touched and left alone.

Nevertheless a problem may rise. It has to do with the preference of the international market for only a relative small number of well-known tree species, especially the very popular Sapelli.

I am rather surprised when Britvec tells me that IFO harvests 90 % of the much wanted Sapellis with a diameter between 100 cm and 200 cm in January 2016. Within this diameter range, only the lesser quality Sapellis with twisting trunks and Sapellis which carry seeds and are protected are not harvested. It makes me wonder what the effect will be. If this would go on, many generations of Sapelli would almost vanish. In the whole north of the Republic of Congo Sapellis are under pressure. The market wants them.

IFO's concession is home to approximately 70,000 gorillas and 4,000 elephants.

LESSER KNOWN TREE SPECIES Couturier is not worried: 'Over the whole year 2016 this will level out and the impact will be much less. Since the start of our forest management plan in 2007 about 80 to 85% of eligible Sapellis have been felled. For most other principal species only about 15 to 50% of trees above the minimum diameter have been felled. It is a fact during the first rotation in natural forests that a "bonus" of larger trees is present. Due to the fact that we respect

Architects, project developers and authorities in Europe, the United States and Asia have an important role to play by prescribing timber of Lesser Known Tree Species.

minimum diameters – and ours are higher than required by law – there will be enough trees to harvest in future felling cycles of 30 years. Volume increment will be the same and the harvest of the so-called Lesser Known Tree Species will be added. Our management plan is carried out and respected in such a way that every single species will be present for generations to come.'

Couturier has identified a number of promising Lesser Known Tree Species in the concession. He tells the concession hosts 276 different tree species, a number of which have not even been described yet. IFO plans to harvest 200,000 m^3 of timber in 2016, yet this year's potential of the concession allows a harvest of 350,000 to 400,000 m^3, taking Lesser Known Tree Species into account, according to Couturier. Couturier: 'IFO always cuts much less than could be logged sustainably.'

Couturier is right. Growing demand of Lesser Known Tree Species could release the pressure on well-known tree species. Architects, project developers and authorities in Europe, the United States and Asia have an important role to play to support sustainable forest management in the Congo Basin well into the future, by prescribing timber of Lesser Known Tree Species from FSC-certified forests.

Two days after visiting the tree harvesting zone of 2016, I go and have a look in zone 2009 at my request to see how the forest looks six years after harvest. The road which enters the zone has been closed off by two large logs and laterite heaps, as it should according to FSC-principles and criteria. No car can enter here. It is overgrown with vegetation, more than 1 metre high. I see dung of elephants, a good sign. Then I ask Fulgence Opendzobe and Timothée Epoutangongo, the two men who took me, if we can leave the path and go straight through the closed undergrowth of the forest. It is a bit of an adventure and Timothée cuts our way through with a machete. Looking up I see big trees: the much wanted Azobe, a Sapelli and also Lesser Known Tree Species like Limba and Kanda. There is a lot of light, trees

Measuring a log.

Fruits of the shrub Afromomum. Gorillas love them, they open the fruits with the nails of their fingers.

have been harvested here, but some parts of the concession are less dense than other parts.

On the ground we discover red pointed fruits on light brown roots. They are the size of a thumb of a grown up person and fruits of the shrub Afromomum. Gorillas love them, they open the fruits with the nails of their fingers. So do I, the inside is like a passion fruit, the taste is delicious. Later I come across dung of gorillas. This is a beautiful forest. High up the wind blows through the leaves of the trees. It is a game of shadows and light.

FSC-certified forest management

III Protection of wildlife

FSC certification also means that IFO has to look after protection of wildlife in its concession and establish a team of ecoguards who patrol the forest. In the Republic of Congo the forest law demands to contribute to ecoguard teams, however in practice only the certified companies actually do it, according to Couturier. The government recruits, employs and controls the ecoguards who are armed and pays the head of the team, but IFO and its partner in nature conservation, the NGO Wildlife Conservation Society (WCS) pay the salaries of the ecoguards. IFO also pays the mission costs of jeeps and gasoline. In 2014 there were 15 ecoguards, but in 2015 the number doubled to 30 at the request of the Forest Stewardship Council. The ecoguards do more than patrolling the roads. Since hunting for subsistence by the forest communities is allowed six months per year in parts of the concession, the ecoguards inform the population about the law as well.

It is quite a challenge to combat poaching with 30 ecoguards in an area which has the size of more than a quarter of the country of Switzerland. But their presence is important, Richard Malonga, conservationist at WCS and Director of Parc National Nouabalé Ndoki, tells when I meet him in his office in the capital of Brazzaville: 'The ecoguards of IFO contribute to release pressure on wildlife in neighbouring national park Odzala.' Many animal species can be found in IFO's forest concession. All species are represented in good numbers which have not decreased, according to Malonga. Besides forest elephants and gorillas, IFO's forest concession is home to chimpanzees,

Guy Aimé Florent Malanda, head of the government ecoguards in IFO's concession.

'The ecoguards of IFO contribute to release pressure on wildlife in neighbouring national park Odzala.'

other species of monkey such as the Black-and-white colobus, the De Brazza monkey and the Moustached guenon, leopards, buffalos, antelope like the Sitatunga or Marshbuck, the Blue duiker, the Peter's duiker and many, many other species. During my visit I saw three of them: forest elephants (a mother and her baby), Blue duikers and what could have been a Moustached guenon.

Things can get pretty tough when combatting poachers in the concession. Guy Aimé Florent Malanda, head of the government ecoguards in IFO's concession, tells me an impressive story. In the fall of 2015 his ecoguards were after a gang of poachers who used Kalashnikov machine guns to attack the ecoguards. The ecoguards responded by using their own Kalashnikovs. The ecoguards could catch one of the poachers who was wounded in the leg. They confiscated 36 kilograms of ivory.

The pictures of the forest elephants, leopard and Great Blue Turaco have been taken in the concession of IFO. © Thomas Britvec.

FSC-certified forest management

IV Resource efficiency

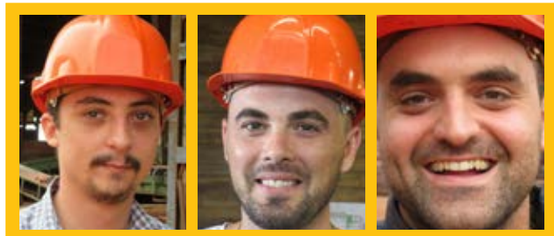
At the premises of IFO vast piles of many hundreds of logs lay waiting to be processed in the two large sawmills. Frenchman Cody Rabeau (1987), deputy director of the factory and a lover of motorcycles, shows me around. Although he is very young, 28, he has much responsibility. That is what attracts him to work here in Africa. In crowded Europe he would have to be a lot older in most cases. I will not forget the detailed explanation of Rabeau how sawn wood has to be dried. Witnessing the care of a professional for his product is nice.

Resource efficiency is important to IFO. Rabeau tells me that residual pieces of wood are used as much as possible, for instance in so-called finger joints. This means that parts of two different pieces of wood are shoved into one another and then fixed. The finger joints may serve as window frames or used for other purposes. Lamellés-collés they are called in French.

The processing of the logs, including the maintenance of machines, administration and transport, is a major operation, involving more than 800 Congolese workers. A small percentage is exported as roundwood, the rest is processed here. Every month 15,000 m3 of timber is sawn. Rabeau, mechanic Miguel Pinto from Portugal, sawmill manager Tommaso Bedei from Italy and their colleagues have to make sure that the sawmills keep operating and contracts with buyers from Europe, Asia and the US are complied with. Sometimes they have to work seven days a week.

SAINT-PETERSBURG I want to talk with Congolese workers without the company management looking over their shoulder. Ferdinand Ndombi (1968) is coordinator in one of the sawmills, who is also in charge of the kilns, huge wood drying chambers. We sit and have a coffee. Ndombi was born in the town of Makoua, right on the equator in the Republic of Congo. To my surprise Ndombi says that he studied forestry in Saint-Petersburg in Russia between 1986 and 1993 just like the current Minister of Forest Economy and Sustainable Development of the Republic of Congo, Henri Djombo. The Republic of Congo maintained close ties with Russia, Cuba and China until the early 90s.

Logs on their way to the sawmills at the premises of IFO.



Cody Rabeau Miguel Pinto Tommaso Bedei

Ndombi has been with IFO since 2005. Previously he worked for the government as head of control of timber exports in the harbour of Point Noire. I ask why he had chosen forestry. 'I have been raised in the forest,' he replies, 'my father was a timber sawer.' Ndombi stresses that it is important to safeguard the forest: 'We must protect it, the animals, the tree species and the balance of biodiversity.' Ndombi continues: 'People go to Paris and take pictures of the Eiffel Tower and the Moulin Rouge. Our identity card is nature, white people come here to see animals. What you see here, is only here.' I ask whether nature is important

Residual pieces of wood are used as much as possible, for instance in so-called finger joints.

Ferdinand Ndombi: 'People go to Paris and take pictures of the Eiffel Tower and the Moulin Rouge. Our identity card is nature, white people come here to see animals. What you see here, is only here.'

Mecanics at one of the sawmills of IFO. From left to right: Yoka Ondze, Serge Allam, Rock Kabotsa.

because of money. 'It is not only the money,' Ndombi replies, 'it is more than that, for us it means wealth.'

Is working for a company which operates sustainably like IFO a choice? Ndombi: 'A choice? That's complicated. It is necessary to work and have a job. I have to sustain my family. If a company would not respect nature and it would be the only company around, I would go and work for that company, for do I have a choice?'
'If I would have a choice,' Ndombi continues, 'of course I would choose the company which protects nature.' If IFO stays, would the forest stay, I ask. Ndombi, immediately: '*Oui, aucun doute*, yes, without a doubt.' He adds: 'If there would be no IFO, there would be no town of Ngombé. That is clear, everybody would leave.' Then Ndombi says, out of himself: 'I am proud to work for IFO, it is the leader in the field.'

I ask him if he worries about climate change. Ndombi: 'Yes, I am worried. I have noticed changes in the rainy season and in the dry season. When the river should rise, it goes down and when it should go down, it rises. Sometimes the rain comes too early, sometimes too late and then we have no maize. Now it has not rained for 45 days in a row.' I ask whether western countries are responsible. Ndombi avoids a direct answer: 'That's for the politicians to decide, everyone is responsible.'

Then Ndombi takes another point of view and adds: 'We have to live off the forest. I do not agree with radical conservationists who say that we cannot touch the forest. We have to eat and the population grows. It may be necessary to convert part of the forest to agriculture and other land uses.'

RESPECT I find it very understandable what Ndombi says. Food security and ending poverty come first. That's why FSC-certified forest management is so important. It is carried out with respect for the forest and with respect for the local people, providing forest workers with a decent income to sustain their families and providing other forest inhabitants with opportunities to develop themselves. That is why WWF and Greenpeace support FSC-certified forest management, they were among the founders of the Forest Stewardship Council back in 1994. Well-managed FSC-certified forests can be part of a national land use plan in which agricultural zones are specified as well. Later, after my return to the capital of Brazzaville, Minister Henri Djombo tells me he wants more forests to be FSC-certified.

Visitor from the forest. © U. Binhack / Interholco.

Sawn wood is dried outside and in the kiln, a huge drying chamber.

V Social performance

Main street in the village of Ngombé.

Next to the premises of IFO lies the town of Ngombé with a population of about 8,000. Most of the 1,100 workers of IFO and their families live there. At the end of the afternoon one can see the men walking home, in their yellow and orange work clothes. Boys play soccer on dusty fields, running and shouting. It is a town of contrasts. There is a busy, long main street, with little shops on each side, selling household articles, spare parts, food and drinks, like everywhere in Africa. Newly built houses with floors of concrete and walls of stone overlook much older houses of wood and clay.

It is IFO that has built the new houses for the workers and their families, so they can live in healthy conditions. IFO pays for their electricity. Tree cutter Ambroise Bimeth lives in one of these houses, together with his wife and three daughters. When I visit him in the late Friday afternoon, he is busy cleaning his motorcycle. I have a glance into the cosy living room with a big couch and television, but we decide to sit outside. Ambroise brings chairs.

IFO has built new houses for the workers and their families, so they can live in healthy conditions.

Hospital doctor Fabien Ngendakumana from Burundi.

IFO's hospital in Ngombé. Mortality rate for children that are brought here, is 3 times lower than the national average for child mortality.

BETTER LIFE Ambroise (1967) started working for IFO in February 2002. The job at IFO meant a better life. Ambroise was unemployed between 1986 and 2000. During those years he grew crops on the field and had to hunt and sell bush meat to make money, so that he could buy clothing and shoes for his daughters and pay their school fees.

We continue talking, the day comes to an end and darkness falls. Ambroise's wife has joined us silently and nearby one of their daughters and a girlfriend listen to the conversation.

IFO offers professional training and education to its workers. They take part in a pension fund like in Europe.

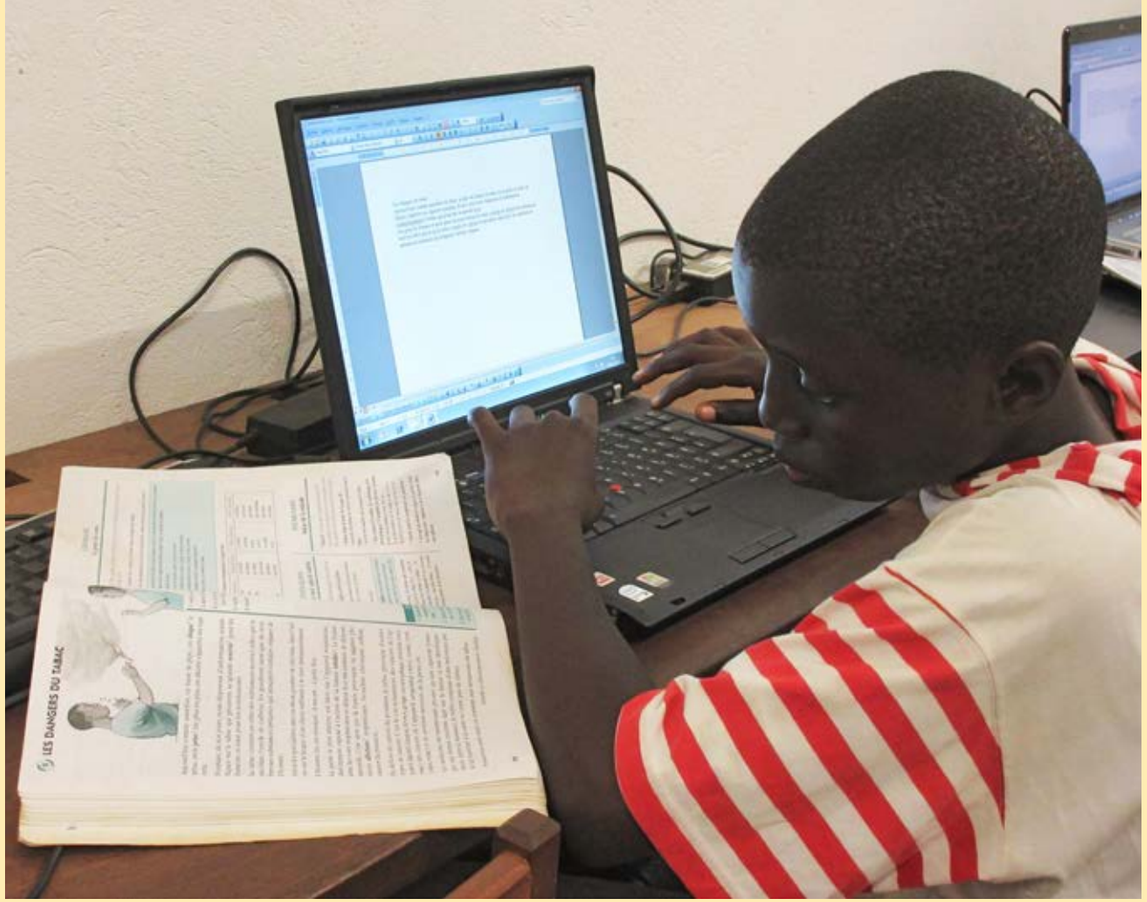
I ask Ambroise whether managing forests in a sustainable way is important. 'Yes, it is,' he answers, 'it is important for our children. When we protect the forest and the young trees, the trees will grow and our children will be able to harvest the forest too. We have to protect wildlife, elephants, monkeys, everything. If they disappear, our children would not be able to see them in nature, but only on television.'

The way IFO supports its workers and the population in the area is impressive. There is a small hospital with a doctor from Burundi and a team of nurses. Soon a surgeon will join them. IFO pays their salaries and vaccinations and other pharmaceuticals. Mortality rate for children that are brought to the hospital in the town of Ngombé is 3 times lower than the national average for child mortality.

In a big store, villagers can buy meat subsidised by IFO. The price is the same as for bushmeat, so there is no need to buy bushmeat from poachers. This helps to reduce pressure on wildlife in the concession. Besides, the meat is not sold out in the open, hot, humid air, but kept fresh in freezers. IFO helps by paying the electricity and the rent for the shopkeeper from Senegal.

Nearby is the library, which has been set up by IFO. The NGO Agir from France has provided the books, IFO has arranged for five computers and six laptops. I watch schoolchildren practice Word by copying texts from their schoolbooks. They can also learn how to use Excel, librarian Audrey Marine Mampouya Louaza tells me, adding there are courses for grown ups too. IFO sponsors the town's sport clubs, where soccer, handball and Ndzango are played. The latter is a Congolese sport in which two girls engage in a rhythmic contest.

I meet the head of IFO's personnel department, Congolese Albert Saturnin M. Ontsiayi. Asked about his priorities, he



A young boy practices Word in the library.

Primary school set up by IFO.

Albert Saturnin M. Ontsiayi, head of IFO's personnel department: 'Important for the moral is that the workers are paid on a fixed date.'

Dieter Haag, general manager of IFO.

immediately replies: 'Good health which means physical health and mental health.' He adds: 'Important for the moral is that the workers are paid on a fixed date.' He is so right, so many employees in other areas of the Congo Basin have to wait months to receive their salary.

IFO offers professional training and education to its workers. It pays its workers more than other companies in the forest sector in the Republic of Congo, IFO's general manager Dieter Haag (1956) from Germany tells me. I ask him how I can check this. 'UNI Congo, the union of employers in the Republic of Congo, can show you the numbers,' Haag replies.

The workers are represented by four labour unions who negotiate with the management. IFO pays the training of members of the work council. The workers take part in a pension fund like in Europe. They receive holiday pay and extra money when they get married, at the birth of a (legal) child and are also supported financially when there is a death. IFO provides its workers with loans when they need it.

Continuous participatory consultation is a key issue for IFO. IFO representatives and forest inhabitants meet on a regular basis, in total almost 300 times per year.

CONSENT IFO is home to 16,000 people in total. They live in 80 villages across the concession. IFO's tree harvesting operations can only take place after so-called Free, Prior and Informed Consent (FPIC) by the indigenous people and others who live there. FPIC is part of the standards and guidelines of the Forest Stewardship Council. Prior to harvesting trees, IFO meets with the local communities and indigenous people to discuss all impacts of the harvest and to make sure that sites and resources which are important to them, are spared. These may be sacred areas, fishing and hunting grounds and parts of the forest with fruit trees.

Continuous participatory consultation is a key issue for IFO. IFO representatives and forest inhabitants meet on a regular basis, in total almost 300 times per year. If there are grievances among forest inhabitants or IFO's employees, mechanisms are in place to resolve these.

IFO invests an annual 130,000 euros into a development fund to support forest inhabitants with, for instance, developing small scale agriculture. It has also established a grammar school to raise literacy among children.

An indigenous woman has collected wild vegetables in the forest.

Ulrich Grauert, Chief Executive Officer of Interholco AG, the Swiss based mother company of IFO.

FSC-certified forest management

VI The business case

Ulrich Grauert (1965) from Germany is Chief Executive Officer of Interholco AG, the mother company of IFO. Interholco, an international producer and supplier of timber based in Switzerland, operates globally and was created back in 1962. Interholco still cherishes its original values, Grauert says: ' A timber company is responsible for its workers and for ecology. Long-term thinking was and is very important. In fact, the aims of our company today are similar to the aims of the Forest Stewardship Council. This means that forest management has to be economically successful and ecologically and socially sustainable. For us, getting FSC certification was a natural thing to do. Certification serves as a good structure to ensure continuity of our company values in the long-term.'

FSC certification of the forest-concession of IFO has been an investment. Has the state of the forest in your concession benefitted from FSC certification?

Grauert: 'Interholco serves the interests of people and the planet through FSC certification. By only harvesting 1 tree on the equivalent of 2 football fields, our wood products give value to the forest. This allows gorillas, elephants and many other animals and plants to thrive in their unique habitat. And the forest regenerates on its own.
We have also managed to eliminate mining permits from the forest concession area. Fortunately, they were only dormant, but still existing. The forest is better safeguarded now for generations to come. The world needs healthy forests, for clean water and rain. Just to give an example, the rain regimes that are so badly needed in Eastern Africa originate in the Congo Basin. Everything is connected.'

What are the benefits of FSC certification for your company, organisation-wise and economically ?

Grauert: 'Behind FSC certification is a global community, collectively driving forest protection. Together, FSC members shape the criteria, procedures and regulations that allow independent auditors to personally check that forests are well protected. This gives a strong back-bone to our operations. At the same time, it provides a forest of solutions, aligned with the UN Sustainable Development Goals: decent work and economic growth , reduced inequalities, climate protection, respect and protection of life on land, peace, justice and strong institutions. Concretely, our teams involve local communities in the process, giving them access to economic benefits and more. Schools, medical facilities and a library are open to thousands of people. FSC allows us to show that prosperity and purpose coexist. With this in mind, we have launched a breakthrough Alliance, looking for like-minded partners who are ready to invest in safeguarding African forests. Our Sustainability Report 2020 on the Interholco website provides more information.'

Behind FSC certification is a global community, collectively driving forest protection.

Do you perceive market preference for your company because your products are FSC-certified?

Grauert: 'Markets are volatile, trends come and go. One thing is sure: end consumers are increasingly eco-friendly in their choices. Take climate change, economic uncertainty and social inequality: nobody wants timber from destructed forests! The world is too connected, for those who endanger others to get away with it. The FSC seal gives peace of mind. When we tell customers that our products respect people and the forest, we do not just *say* it, we engage an independent third party to *certify* it. Architects and designers worldwide are challenged to build greener cities, for rising populations. Buildings should not only be higher, but also resilient to the increasingly frequent natural catastrophes. FSC-certified wood meets this challenge. It is a safe to use as well as eco-friendly material, to build the future we all want.'

www.interholco.com

End consumers are increasingly eco-friendly in their choices.

Diversification of timber harvests is vital for sustainable forest management

In the Congo Basin rainforest hundreds of timber species grow. However, only a few are used for commercial purposes. Overexploitation of these species may cause them to slowly disappear. There are plenty of species which can replace current commercial species in a myriad of applications. These are the so-called lesser known timber species.

by Frank Luijckx

The sustainable management of forests is crucial for preserving the Congo Basin rainforests. To ensure that sustainable forest management (SFM) can continue well into the future, it is essential to diversify timber harvests. In central Africa a few species are harvested disproportionally, diminishing their abundance in the forests and threatening their existence. Sapelli, or African mahogany, is listed as "endangered" on the IUCN Red List, due to overexploitation. Azobé is another example of an overexploited species. It is currently listed as "vulnerable" on the IUCN Red List.

To protect these species, it is vital to diversify timber harvests through the inclusion of lesser known timber species (LKTS). By doing so, the pressure on current commercial species will be reduced.

Diversification is vital for forest health. The enormous biodiversity in tropical rainforest heavily leans on the biodiversity of trees. If tree species are lost, animals that are dependent on that species for food or shelter will follow suit. This has cascading effects on the whole ecological web of the forest. Therefore, it is vital to retain this biodiversity. Biodiverse areas are generally also more resilient to disturbances as their complexity gives them great adaptive abilities. This is very important in the face of climate change. Harvest diversification helps safeguard:

- Commercial species
- Forest diversity
- Species dependent on commercial tree species
- Forest resilience

Many lesser known timber species have properties exceeding those of current "generalist" commercial species.

As such, harvest diversification is vital for the long-term success of SFM. FSC is committed to diversification of timber harvests and is working on promoting the use of LKTS from the Congo Basin.

CRITERIA FOR LKTS TO BE BROUGHT TO THE MARKET To select new LKTS species, it is vital to do research into their usability. Before any species can enter the market, several criteria need to be evaluated:

- Timber availability
- Technical specifications
- Applicability

Timber availability

For a species to be interesting for the market, it is vital that this species is both temporally and spatially widely available in the forest concessions. This guarantees sustained and continuous supplies.

Technical specifications

For many of the LKTS species, technical specifications have been investigated by CIRAD. They have publicly available datasheets with crucial technical information.

FRANK LUIJCKX

Frank Luijckx is a young professional in ecology and environmental sustainability. His interest lies in increasing the sustainability of interactions between humans and the natural environment.
In the period between January and July 2020 he made an inventory of lesser known tree species in the Congo Basin, assigned by FSC The Netherlands.

PHOTO © INTERHOLCO

Kosipo timber frames. Produced at the FSC-certified forest concession of IFO in the Republic of Congo.

Key information is:
- Appearance of timber (Colour, grain)
- Durability (Resistance to water, fungi and termites)
- Mechanical properties (Stress-resistance, elasticity)
- Physical properties (Density, hardness, stability)
- Processing characteristics (Treatability)
- Drying behaviour (Drying rates, risks of deformation, potential drying schedules)
- Machining and assembly information (Blunting effects, sawing tools, assembly recommendations)

APPLICABILITY Based on the technical specifications, CIRAD also advices on end uses. These greatly depend on the appearance, physical and mechanical properties and durability of the timber. Besides the technical possibilities of a species of LKTS, market and customer knowledge are also vital in convincing clients to adopt new LKTS species.

AVAILABILITY OF FSC-CERTIFIED LKTS TIMBER Timber from underutilized species is by no means inferior to current commercial species. Depending on the application, many lesser known timber species have properties exceeding those of current "generalist" commercial species. This is because of the versatility that a greater diversity of species can offer. Together with the concessionaires, FSC inventoried the short- to mid-term abundance of LKTS in FSC-certified concessions in the Congo Basin in 2020. The mid-term availability was examined and exploitable volumes were estimated for a ten year time frame. The following data are as such the combined total exploitable volumes per species of all FSC-certified concessions in the Congo basin and potential harvests will be spread over the next ten years. After the given ten-year time frame, stocks and availability may and will change as concessionaires move their activities to other parts of their concessions.

FSC wants to support initiatives which promote the use of LKTS timber.

Alternatives for current commercial species listed here are applications ranging from indoor to outdoor and from decorative to constructions works. They can be checked in CIRAD datasheets and at the Lesser Known Timber Species site. Availability is always in exploitable volume over the next ten years, and is spread over all FSC-certified concessions in the Congo Basin.

These species are only a small sample of the variety that Congo Basin forests have to offer. Using underutilized species for products is a great method of showing a companies' commitment to sustainability. Due to the great variety in aesthetics between species, products made from underutilized species exhibit a unique character. More information on each of the species can be found on the Lesser Known Timber Species website.

FSC SUPPORTS THE USE OF LKTS TIMBER FROM THE CONGO BASIN

All in all, there are enough reasons to utilize the full diversity of the forest. LKTS timber is not only well suited to give products a unique character, it also allows the forest to be managed better. Recognising the importance of diversifying timber species, FSC wants to support initiatives which promote the use of LKTS timber.

MORE INFORMATION

For more information regarding LKTS species in the Congo Basin and their possibilities, you can contact:
- Supply LKTS Congo Basin:
  Nathalie Bouville, FSC Africa, n.bouville@fsc.org
- International markets LKTS:
  Ben Romein, FSC The Netherlands, b.romein@fsc.nl

Sources

1. *IUCN Red list (https://www.iucnredlist.org/)*
2. *CIRAD (https://tropix.cirad.fr/fiches-disponibles)*
3. *Lesser Known Timber Species (https://www.lesserknowntimberspecies.com/)*

LKTS MAINLY SUITED FOR INTERIOR APPLICATIONS

Fraké

Technical specifications:	Limited durability and strength
Applications:	Veneers, panelling, fibre boards, boxes and crates
Availability:	2.97 million m³
Replacement for:	Okoumé, Ayous

Ilomba

Technical specifications:	Limited durability
Applications:	Veneers, panelling, joinery and boxes and crates
Availability:	2.35 million m³
Replacement for:	Okoumé, Ayous

Beli

Technical specifications:	Distinctive look, relatively strong
Applications:	High class cabinetwork and furniture, veneer, flooring, inside stairs and house frames
Availability:	902 thousand m³
Replacement for:	Sapelli, Ayous in decorative applications, Tali and Azobé in construction work
General comment:	Also known as Awoura or zebrawood because of its black and white striped pattern

Kosipo

Technical specifications:	Red brown with demarcated sapwoods, relatively durable
Applications:	High class furniture, flooring, stairs, light carpentry
Availability:	751 thousand m³
Replacement for:	Sapelli, Ayous

Essia

Technical specifications:	Soft, red timber
Applications:	Decorative veneers
Availability:	576 thousand m³
Replacement for:	Sapelli

Aielé

Technical specifications:	Soft, limited durability
Applications:	Veneer and plywood
Availability:	532 thousand m³
Replacement for:	Okoumé

LKTS MAINLY SUITED FOR EXTERIOR APPLICATIONS

Dabéma

Technical specifications:	Strong and durable
Applications:	Heavy carpentry, house frames, vehicle and container flooring, stairs, industrial flooring, heavy furniture
Availability:	1.25 million m³
Replacement for:	Azobé, Tali

Eveuss

Technical specifications:	Exceptionally strong and durable
Applications:	Hydraulic works, bridges, heavy carpentry, industrial or heavy flooring
Availability:	1.10 million m³
Replacement for:	Azobé, Tali
General comment:	Its high durability makes it well suited for applications in contact with water

Diania

Technical specifications:	Strong, limited durability to fungi or termites
Applications:	Heavy carpentry, vehicle or container flooring, furniture, stairs, flooring, sliced veneer
Availability:	863 thousand m³
Replacement for:	Ayous, Azobé, Tali
General comment:	Also known as Celtis Tessmani, has both interior and exterior applications

Omvong

Technical specifications:	Strong and durable
Applications:	Heavy construction, bridges, decking, fresh water hydraulic works, sleepers
Availability:	735 thousand m³
Replacement for:	Azobé, Tali
General comment:	Also known as Eyoum, can be used in applications in contact with water

Limbali

Technical specifications:	Relatively strong and durable
Applications:	Heavy carpentry, ship building, flooring, joinery
Availability:	637 thousand m³
Replacement for:	Azobé, Tali
General comment:	Used for the terrace of a school in Denmark

Alep

Technical specifications:	Strong, durable, useable in marine environments
Applications:	Hydraulic works, bridges, heavy carpentry, sleepers
Availability:	626 thousand m³
Replacement for:	Azobé, Tali

Taking Control Part I

Working legally makes artisanal loggers strong

by Meindert Brouwer

In the Democratic Republic of Congo a transition from illegal small scale logging to legal logging is on the rise. Both loggers and the state benefit.

Around the city of Kisangani in the northeast, a growing number of artisanal loggers is emerging from the dusky informal economy to go legal and pay taxes. By doing so, they take control of their own destiny and contribute to the functioning of the state and to the improvement of the livelihoods of local communities. Professor in Political Sciences, Alphonse Maindo (52), of the University of Kisangani and director of NGO Tropenbos DR Congo is a pioneer of the transition from illegality to legality in artisanal forestry in the region around Kisangani. Maindo, who once received the Claude Ake Memorial Award of the Africa-America Institute and the African Studies Association in the United States for outstanding young scholars, is convinced about the direction: 'Working formally and legally is necessary, it is mandatory. It is a condition for good forest governance. Formal employment means that the state will receive tax revenues and loggers are complying with (forest) laws. When taxes are paid, the state can function like it should to the benefit of all, provided that there is good governance of the public institutions. Citizens paying taxes to the State can loudly stand and claim for increased accountability in regard to civil servants and State rulers.' He continues: 'To the contrary, working informally means loss of income for the state. When you work informally, you don't pay tax. You are not registered, you don't exist in the administration of the government. In fact when you work illegally, you are vulnerable. A civil servant can come to you and make you pay for himself. And you will not be able to prove that you paid.'
The innovative part of the project is that students in forestry and natural resource management of the University of Kisangani teach artisanal loggers how to manage the forest and how to harvest timber in a sustainable way.

PHOTO BONAVENTURE IBANDA, TROPENBOS DRC.

Alphonse Maindo (glasses on dark blue shirt) visits lumber vendors at the central market of Kisangani.

Women resellers of timber in Kisangani, Tshopo province, DR Congo.

PHOTO BONAVENTURE IBANDA, TROPENBOS DRC

LICENSE Working legally means that an artisanal logger has to pay for a license from the government, for the accompanying technical inspection and for the actual permit to log. Illegal loggers do not bother and do not pay such costs. This means they can sell logs cheaper than legal loggers. It is hard for the latter to be competitive. How do you solve this problem, how can legal loggers make a profit? Maindo explains that he and his Tropenbos team employ three strategies: 'First we need to link the legal loggers with the market for a better and fair price. In the second place we advocate the implementation of law enforcement to stop sales of illegal timber. Thirdly, we empower loggers and push for transformation to add value.'
Maindo: 'We seek access to better markets, where buyers are willing to pay more. This is the case in Kenya and Uganda, for instance. In Kenya logging in natural forests is forbidden. There is a growing demand for timber to build houses and for furniture. In Kenya it is more difficult to sell illegal timber. So there are opportunities to sell legal timber from the DRC over there. In Uganda there is little forest and timber harvesting is limited. There is demand and the price is interesting. It is easier to sell legal timber than illegal timber in Uganda. Bribing costs money too.

When taxes are paid, the state can function like it should to the benefit of all, provided that there is good governance of the public institutions.

We are supporting artisanal loggers who started to negotiate in South Africa. We support small holders to organize themselves in order to address market demands collectively because alone they are often not able to provide important quantity requested by clients.'

'In the second place,' Maindo continues, 'we encourage public institutions inside the DRC to buy legal timber only,

We encourage public institutions inside the DRC to buy legal timber only, when they have to build or need chairs and tables.

PHOTO BONAVENTURE IBANDA, TROPENBOS DRC

Artisanal wood sawing in Kisangani.

when they have to build or need chairs and tables. We have also created three awards. One is for the best administrative body on the national level and on the provincial level: which body has only bought legal timber and has imposed penalties on illegal logging?The second award is for the best artisanal logger. The third award is for the association of artisanal loggers which delivers the best assistance to its members to comply with the rules.'

Maindo: 'To avoid bankruptcy for legal small holders who cannot compete with illegal loggers on the market of raw products, we push for transformation of products. We train them to process timber, to make chairs, tables, doors, beds or seats for churches or schools. By doing so, they create more employment and add value to their timber. And when they supply the Kinshasa market, for instance, they almost do not face any hassle from civil servants, compared to what they have to address when providing raw material. Some of the loggers diversify by developing their own carpentry service or other services and goods made from timber. A few of them also start up farming or shops.'
Maindo wants to change that a violation of the law merely results in minor fines: 'Both on the national and provincial level we advocate to increase the penalties, confiscate illegal timber and put recidivists in jail.'

ASSESSMENT How have provincial authorities reacted to the Tropenbos project of encouraging artisanal loggers to go legal? Maindo, proud: 'Our assessment of artisanal logging in the region around Kisangani proved that the number of tax payers has improved significantly in just fourteen months. In August 2014 2% of over 400 artisanal loggers payed taxes. In October 2015 20% of them payed taxes and 40% were recognized as being legal. So the provincial administration and the governor are happy. They support us because they notice an increase in tax income. In 2020 the situation continues to improve though we have not been able to conduct a large survey. In 2019 we assessed legality among artisanal loggers in Bafwasende territory (equivalent to the size of Switzerland, ed.). We got a wonderful result, 80% of legally registered artisanal loggers pay taxes regularly.' In the years that followed, the empowerment of artisanal loggers expanded to other provinces. In 2020 around 450 artisanal loggers from four provinces – Tshopo, Ituri, Haut-Uele and Mongala – all working legally and paying taxes, are part of a producer association which can make a fist in negotiations with the authorities.

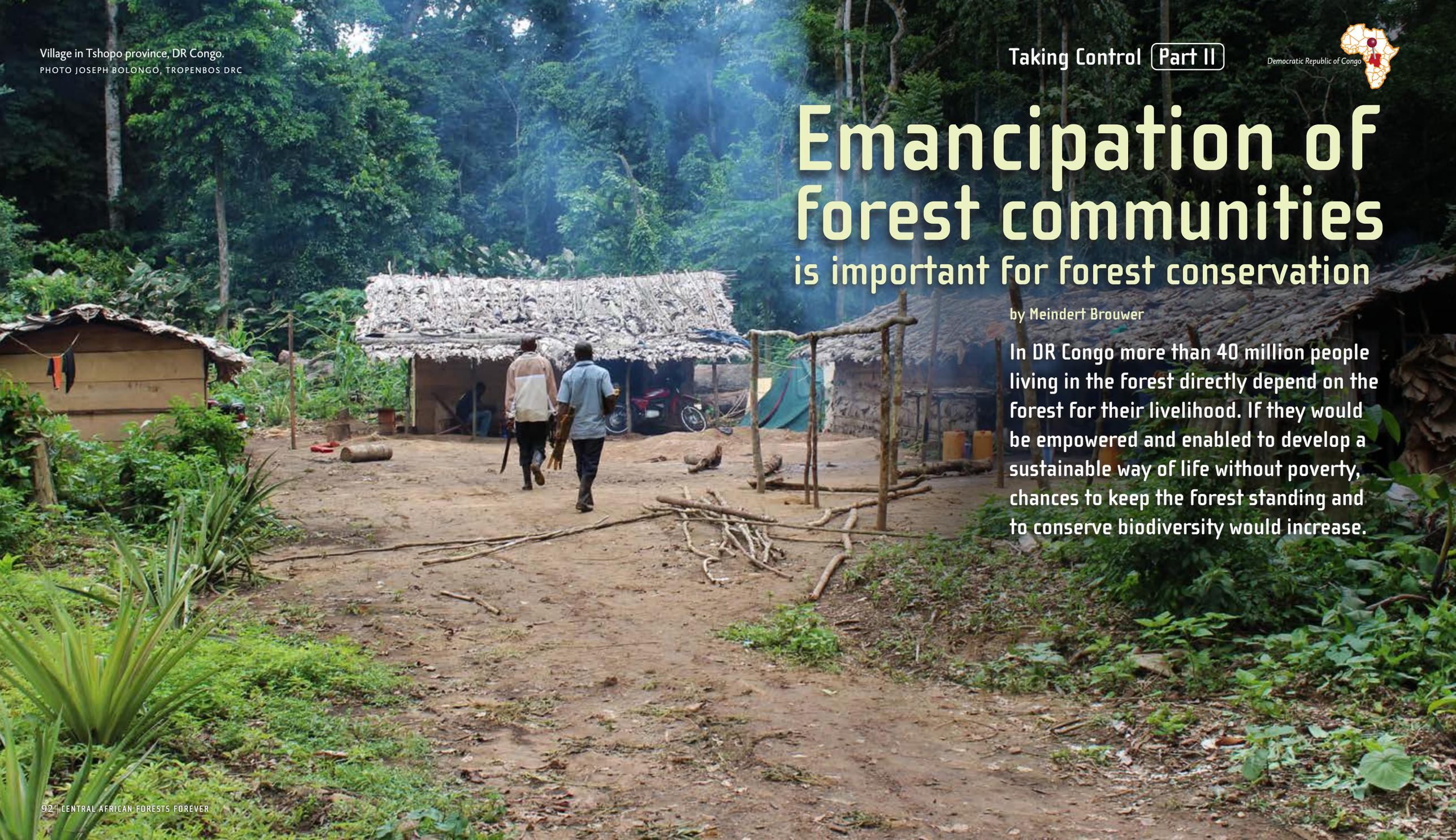
Good governance means true democracy in which leaders are accountable for what they do or don't do.

What is necessary to assure good forest governance in your country, I ask Maindo. His answer touches two important things. Maindo: 'The Democratic Republic of Congo has good forest laws and regulations. So the main thing is compliance with these laws and regulations. Education of civil servants both on the national and provincial level is something which needs attention. Civil servants have to be informed about the law and new regulations. How can they implement law enforcement when their knowledge is not sufficient?' Maindo underlines that civil servants should be paid well. 'Sometimes they have a bad salary. Sometimes they have no salary at all. Some have not been paid for eight years. They need money, so they make illegal loggers pay for their services. Sometimes a civil servant transforms into an illegal logger himself.' The circle is closed. The transition from an informal forest economy in which no taxes are paid to a formal economy in which taxes provide for salaries of civil servants, is important in order to establish a sustainable economy and stability in society.

MIX It is not only this transition, it is a mix of things that have to be arranged well, Maindo tells: 'Good governance means true democracy in which leaders are accountable for what they do or don't do. We need better livelihoods. We need to raise awareness about things that do not go well and strengthen citizens and civil society so they can speak out. So we need capacity building, training in advocacy, training in lobbying, training in defending civil rights, training in knowledge of laws and regulations. And we need money for that.'

SATISFACTION ABOUT TRANSITION

Léon-Dehon Basango Makedjo, then vice-governor of the province of Tshopo, was very satisfied about the work of Tropenbos DR Congo: 'The government of the province of Tshopo is very much in agreement with the work of Tropenbos. We thank Tropenbos, because its action has resulted in an increase of revenues in the timber sector. We hope that Tropenbos will expand its project of transition from illegal logging to legal logging in other areas, so that many people may benefit from the advantages of this intervention. However, the government wishes that Tropenbos also examines other fields, since timber is not the only natural resource. Like logging, mining in particular is an activity which affects many people and in which irregularities also occur. By being active in other sectors such as mining, Tropenbos will reduce human pressure on the natural resources and highly contribute to an increase in people's income. It will specifically contribute to the reduction of conflict between people, since natural resources are a source of conflicts which condemns our country to endless wars.'



Village in Tshopo province, DR Congo.
PHOTO JOSEPH BOLONGO, TROPENBOS DRC

Taking Control Part II

Democratic Republic of Congo

Emancipation of Forest communities

is important for forest conservation

by Meindert Brouwer

In DR Congo more than 40 million people living in the forest directly depend on the forest for their livelihood. If they would be empowered and enabled to develop a sustainable way of life without poverty, chances to keep the forest standing and to conserve biodiversity would increase.

Capacity building is not restricted to forest communities. It is also necessary in provincial and local forest administrations.

Unsustainable logging, unsustainable mining and unsustainable agriculture drive deforestation. The establishment of community forest concessions could reduce those pressures on the forest. In DR Congo a National Strategy on Community Forestry has been developed to do just this. NGO Tropenbos DRC is part of it. Tropenbos is supporting three forest communities to take control of their own lives and it will support more.

The emancipation is taking place in the region of Bafwasende in the province of Tshopo, a sparsely populated part of the rainforest in central-north DR Congo, measuring almost 200,000 square kilometres (almost 5 times Switzerland) and home to between 2.6 and 3 million people. An area where urban elites, military and militia get their way according to the law of being the strongest and through corruption.

DECREE However, since DRC's Minister of Environment signed a Ministerial Decree in 2016 to provide a legal basis for communities to manage their own forests, following the signature of the Community Forestry Decree by the Prime Minister in 2014, things can change for the better for the poor in the forest and for the forest itself. The political decision on a national level paved the way for forest communities to obtain permanent concession rights for 'multi-use' community forest concessions for up to a maximum of 50,000 hectares of land.

PHOTO ANNIE BEKO, TROPENBOS DRC

Traditional ceremony called "Fimbo" in Lingala, literally meaning "whip", at the ceremony of reception of the legal titles of the community forest concessions by the communities in Baego.

Roundtables on community forestry on a national and provincial level, with participation of government actors, civil society organisations, the private sector, local representatives, women's groups, indigenous leaders and traditional authorities, have created a National Strategy on Community Forestry, to strengthen collaboration among stakeholders on all levels – national, provincial and local – and design legal, technical and operational tools and procedures for the creation and participative, transparent and controlled development of community forest concessions.

Nevertheless, getting the three community forest concessions legalized in Tshopo province, proved to be a fight, since power abuse by some in formal and informal power at times delayed the process of demarcating the community's territory, assessing its natural resources and granting the required documents. However, justice prevailed and accompanied by NGO Tropenbos DRC, the three forest communities consisting of around 140 families in total, acquired the permanent titles of their own concessions in the forest in 2020, they totalled 90,000 hectares.

MANAGEMENT PLAN Now the communities have to learn how to make a living of their newly acquired forest concessions. In order to sustain their livelihoods, they elaborated a simple management plan. They will harvest non-timber forest products and develop agroforestry and cattle farming. Logging is not their focus. It is up to the community to decide what the focus will be, Tropenbos DRC's director Alphonse Maindo explains: 'One of the forest communities has decided to develop agroforestry in secondary forest and grow and sell cacao and food crops. They will keep chickens and goats and dig ponds to breed fish. They use rattan to make baskets and use the primary forest to collect non-timber forest products, in this case caterpillars and leaves for vegetables and medicine, also for the market . It comes down to a shift from slash and burn farming to sedentary farming, which means less pressure on the forest.'

PHOTO JEAN-PAUL SHAUMBA, TROPENBOS DRC

Training of members of local communities on agroforestry in Bafwamogo, Bafwasende territory, Tshopo province.

If the other forest communities would decide to focus on small-scale commercial logging, the artisanal loggers which Tropenbos had previously assisted to become legal and independent, will in their turn teach the communities how to manage their forest sustainably.

It is an inspiring process. Already 65 community forest concessions have been established in several parts of DRC by 2020, covering around 1.2 million hectares in total, which is roughly 3 times the size of Switzerland.

In order to get them off the ground, access to credit is needed to pay for a range of costs: assessment of natural resources in the concession by a professional expert, payment for the application of land titles, development of a management plan, training in sustainable farming, agroforestry or sustainable small scale forestry (depending on the focus of activities), in some cases logging permits and in the end taxes on economic activities.

65 community forest concessions have been established in several parts of DRC by 2020, covering around 1.2 million hectares in total, which is roughly 3 times the size of Switzerland.

TRUE COMMITMENT Alphonse Maindo: 'Capacity building is not restricted to forest communities. It is also necessary in provincial and local forest administrations, so civil servants will be able to deal with the new frameworks and processes

PHOTO JEAN-PAUL SHAUMBA, TROPENBOS DRC

Training session at community forestry site in Bafwasende territory, Tshopo Province.

PHOTO BONAVENTURE IBANDA, TROPENBOS DRC

Traditional extraction of palm oil.

put in place to establish community forest concessions and monitor their development. It is very important to have a true commitment by the provincial administration, which can make procedures simple and transparent. It is also very important to send technical experts to forest communities to prepare concessions free of charge.'

Funded by donors, NGOs like Tropenbos DRC take care of capacity building among the forest communities. Alphonse Maindo: 'We train forest communities in what they want to do and how to add value to their products. We support them in developing entrepreneurship, in drafting management plans and also in organizing themselves, including how to deal with powerful outsiders who want to capture their natural resources. It is not only about sustainable economics, it is also about cultural, social and political change and empowerment.'
Yes, there is a risk of donor-dependency, Alphonse Maindo admits. True commitment of all stakeholders and local ownership among the communities will make the difference.

It can be dangerous in Tshopo. There are raids on villages by militias. Things can get difficult because of demands by the military and elite in the background. To which extent do these circumstances pose a risk to forest communities who want to develop and protect their forest concessions? Alphonse Maindo: 'They may pose a risk for forest communities in terms of violence scaling or threats against

We train forest communities in what they want to do and how to add value to their products.

community leaders and concession managers. Communities may still be kept away from part of their forest concessions despite having the formal legal title. It would probably increase the economic loss for forest communities whose forest concessions are not actually generating substantial income until now. The risk is more or less high, depending on the power of the elite and military involved in a conflict with communities and depending on the lobby and advocacy capacity of the forest communities and NGOs or CSOs supporting them.'

MBUTI In Tshopo, indigenous Mbuti people still live off the forest. Will Tropenbos DRC involve them, in one way or another, I ask Alphonse Maindo. He replies: 'Absolutely, we have to involve Mbuti people in the community forestry process as they are dependent on the forest and primary forest owners. Forest is not only a source for living to them, it is also life for them. We are planning to support two

It is not only about sustainable economics, it is also about cultural, social and political change and empowerment.

Mbuti communities to establish their own community forest concession. We are very happy that Bantou people have agreed to support these initiatives for Mbuti people. Now, the great challenge is to what extent Mbuti people will shift from nomadism to sedentary life, from harvesting forest products to farming. We are confident, as some Mbuti are already farming for Bantou and living in villages.'

Shouldn't the Mbuti be enabled to continue their traditional, nomadic way of life in the forest? Or is that not possible anymore? Alphonse Maindo: 'Granting the Mbuti forest concessions does not mean ending their traditional, nomadic way of life in the forest. It contributes to secure forests for them. Otherwise, the urban elite and the military as well as large companies are going to take all the forests. If there is no forest, there is no life for the Mbuti, who are free to decide how they will live in their concession, how they will manage it, how they will value it. The trends we are observing is that the Mbuti are no longer staying in the forest, living a nomadic life. They are already shifting to sedentary life. They are living in villages with Bantous who employ them as farming workers almost for free, because they are paid in kind (alcohol, hemp, food, etc.). They remain poor. We think we should empower them to have their own farm instead of farming for others and being paid badly. The dream of the Mbuti surviving in forest is becoming distant. Therefore, we need to anticipate the change and prepare the Mbuti for a new life. That is transformative change.'

www.tropenbos.org
www.rainforestfoundationuk.org

TROPENBOS DRC

NGO Tropenbos DRC works towards sustainably managed landscapes where natural resources are sustainably exploited, local communities and indigenous people have improved livelihoods and the landscape is pacified in the provinces of Ituri, Mongala and Tshopo.

The three provinces consist of large areas of forests on which the local communities rely for their livelihoods. Although the natural resources are abundant, they face many threats from illegal mining, poaching, agricultural expansion, and deforestation. The levels of deforestation and degradation of forests are highly variable, depending on the areas and population density. Despite this context, securing the livelihoods of local communities represents an opportunity to protect the forests. Their protection for present and future generations will contribute to the fight against poverty, for food security and the preservation of water sources and biodiversity.

Work areas
Tropenbos DRC
- Together with local Civil Society Organisations (CSOs), supports the development and implementation of community forestry, through tools, guidelines and training of community members.
- Together with CSOs lobbies for the revision of national nature conservation legislation regarding the exploitation of natural resources in protected areas.
- Supports the regulation of both artisanal logging and mining by the provincial governments and private sector.
- Supports artisanal loggers and miners to become formal Small and Medium Forest Enterprises (SMFEs).
- Creates awareness on gender related topics, with special attention on the participation of women and other marginalized groups in decision-making processes, with local communities, CSOs and private and public partners.

NGO Tropenbos DRC is a legal national entity of DR Congo and a member of the Tropenbos International Network.

Source: www.tropenbos.org

Building capacity in West and Central Africa for sustainable timber supply chains

by Gerhard Dieterle, Executive Director of the International Tropical Timber Organization (ITTO)

The Lacey Act in the United States of America, the European Union Timber Regulation, Australia's Illegal Logging Prohibition Act, the Japan Clean Wood Act and China's new Forest Law (Article 65) all require evidence of the legality of imported timber. Large retail companies are increasingly adopting buying strategies that favour certified or legally compliant timber in reaction to changing consumer preferences and tightening legal frameworks. Initiatives such as the Sustainable Development Goals, the Paris Agreement on climate change, the New York Declaration on Forests, and the Global Green Supply Chain Network all acknowledge that timber from well-managed forests can be part of the solution to many global concerns.

But how does timber meet such market expectations? Laws and purchasing policies requiring evidence of legality and sustainability can be confusing for producers, importers and traders. This is especially so for small and medium-sized enterprises and smallholders, who may lack the capacity to understand and implement increasingly complex sustainability requirements or who may be unclear about the documentation and verification standards to which they must comply. This confusion can reduce market opportunities for tropical timber producers, especially those with minimal business capacity and support. Many countries in West and Central Africa, for which timber exports have considerable economic importance, are struggling to conform with the procurement policies of the major players.

SUSTAINABLE SUPPLY CHAINS What is needed, therefore, is a systems-based approach to legality and sustainability through integrated green (or "sustainable") supply chains. With adequate support, such an approach can work for small, medium-sized and large operators in West and Central Africa. The ultimate aim of sustainable timber supply chains is to ensure stable, reliable supplies of timber from legal and sustainable sources. It is also important for advancing towards a bio-based green economy in which timber that has been produced legally and sustainably – and proved to be so – can be used as a substitute for non-renewable, unsustainably produced materials.

From the point of view of private operators, sustainable timber supply chains are not merely about maintaining or increasing market share, although this is an important outcome. They also help businesses ensure efficiency, best practices and transparency at every link in the supply chain: in forests, on log trucks, in mills, on ships and in showrooms. Companies that put in place sustainable supply chains will know exactly where their products are from, where they are in the supply chain at any given time, and how they have been produced. Ultimately, the efficiencies this information will bring will help ensure profitability and increase other indicators of healthy businesses. Most importantly, legal and sustainable practices are the best way to maintain a long-term resource base and provide "wood security", livelihoods and income, especially in rural areas.

HOW TO BUILD SUSTAINABLE SUPPLY CHAINS Building sustainable timber supply chains involves various levels of actions and commitments across a wide spectrum of stakeholders, who need to interact in a coordinated manner to ensure sustainable and legal production. Most African timber-producing countries lack sufficient infrastructure, technology and human resources to establish such supply chains. Public-private partnerships, both domestically and with consumer countries, are therefore necessary for sharing the incremental costs and ensuring the viability of initiatives to create sustainable supply chains. A long-term task is to reduce the multiplicity and complexity of the sustainable supply-chain requirements applied in different countries. This is necessary to enable small and medium-sized forest producers in tropical countries to become competitive and confident actors in domestic and international markets and to build capacity for sustainable management and production. In many cases, such enterprises will require external assistance and training to prevail in domestic and international markets and become drivers of sustainable forest management.

Dr Gerhard Dieterle, Executive Director of the International Tropical Timber Organization (ITTO).
PHOTO © ITTO

PHOTO JAAP VAN DER WAARDE, WWF

FACILITATING DEVELOPMENT The shift towards sustainable tropical timber supply chains also requires facilitators. International organizations, including the International Tropical Timber Organization (ITTO), have an important role to play in building capacity among small-scale operators and other stakeholders across supply chains, investigating and demonstrating the elements of sustainable supply chains, and sharing knowledge and technologies.

ITTO is working with major timber-purchasing companies in China (the world's largest importer of tropical timber) and tropical producers and traders on the development of green supply chains. In October 2019, ITTO and a range of public- and private-sector partners convened an international forum in Shanghai, China, at which more than 30 large timber-purchasing companies agreed to create a voluntary network to promote recognition of the economic, social and environmental values of forests and the incorporation of legality and sustainability in all forestry operations. The Global Green Supply Chain (GGSC) Network is an initiative of a coalition of forest companies and other wood-industry stakeholders committed to legal and sustainable supply chains. It is open to all interested parties worldwide, including stakeholders in producer countries and along supply chains to the consumers of final products. The GGSC Network will foster closer collaboration and exchange between all partners in global supply chains by sharing information and enhancing collaboration and know-how. Under its Legal and Sustainable Supply Chains Programme, ITTO is committed to supporting and facilitating the establishment and operation of the GGSC Network through the following actions:

Legal and sustainable practices are the best way to maintain a long-term resource base and provide "wood security", livelihoods and income, especially in rural areas.

- the development of modalities of work and collaboration by building on the experiences of the pre-existing GGSC platform in China;
- the building of an information database accessible to all, including the Global Timber Tracking Network;
- taking into account existing mechanisms for the verification of legality and sustainability within existing global rules and legal frameworks; and
- supporting the implementation of a business-to-business communication and information exchange as part of the GGSC Network, building on the output of an ITTO project and making information on markets for timber and wood products publicly available on a monthly basis.

BUILDING CAPACITY IN AFRICA One of the major constraints in African tropical timber-producing countries is a lack of qualified human resources in government agencies and even among private-sector companies for mastering the complex requirements for producing, verifying, documenting and trading legal and sustainable forest products. These requirements involve, among other things, forest inventories and planning; sustainable forest management practices; forest operations and production; timber verification and forest certification; tracking products from the forest to the landing site; processing and shipping.

ITTO recently launched an initiative aimed at building a critical mass of human resources in both the public and private sectors, with a special focus on small and medium-sized enterprises and smallholders, for implementing sustainable timber supply chains in Congo Basin countries. Financed by the Government of Germany, the initiative will help improve curricula and other training modules to enable professionals and technicians in the private sector, trade and industry associations and government authorities to better understand and manage legal and sustainable tropical timber product supply chains within the framework of sustainable forest management. It will seek synergies with the GGSC Network and other partners to help ensure the availability of decent jobs for well-trained personnel in putting sustainable supply chains in place in West and Central Africa. It will also promote public-private partnerships in the sustainable production, trade and consumption of legal and sustainable wood and other forest products. Overall, the aim is to ensure that productive tropical forests are sustainably managed and that supply chains and trade flows, from the forest to end consumers, comply with legality and sustainability requirements.

ITTO is working with major timber-purchasing companies in China (the world's largest importer of tropical timber) and tropical producers and traders on the development of green supply chains.

We can create sustainable supply chains in West and Central Africa, and must do so if we want to harness the tremendous power of the market for the benefit of small and medium-sized enterprises and the global good. It requires a massive effort, and it requires resources from international donors and committed private-sector actors. However, the rewards will be significant: sustainable tropical timber supply chains will benefit forests, forest communities and, ultimately, all of us.

ITTO

The International Tropical Timber Organization (ITTO) is an intergovernmental organization promoting the sustainable management and conservation of tropical forests and the expansion and diversification of international trade in tropical timber from sustainably managed and legally harvested forests. ITTO is an action and field-oriented organization with more than 30 years of experience. ITTO's membership (www.itto.int/about_itto/members/) represents about 90% of the global tropical timber trade and more than 80% of the world's tropical forests. ITTO's headquarters are located in Yokohama, Japan. *Source: https://www.itto.int/about_itto/*

ITTO SUPPORTS LEGAL AND SUSTAINABLE SUPPLY CHAINS BY:

- Providing regular news and information on tropical timber trade market trends and trade from around the world in its *Tropical Timber Market Report*, published every two weeks (www.itto.int/market_information_service).
- Providing insights into trends in the global timber sector and markets, including the production and trade of primary and secondary processed wood products, in its *Biennial Review of the World Timber Situation* (www.itto.int/annual_review).
- Making an online statistical database available (which contains data since 1990), an important tool for analyzing long-term trends in the trade of tropical timber and primary tropical timber products (industrial roundwood, sawn wood, veneer and plywood) and important shifts in timber production and further processing (www.itto.int/biennal_review).
- Promoting the development of incentive mechanisms for increased investments in legal and sustainable forest management and associated downstream supply chains.
- Building capacity for legal and sustainable forest production (low-impact, efficient wood harvesting, marking, tracking and documentation of volumes and tree species, voluntary legality verification and certification, efficiency of wood-based industry, waste utilization, etc.).
- Advocating and raising awareness among all stakeholder groups about the role of productive forests and sustainable wood for economic, social and environmental development, climate-change mitigation and adaptation, and the conservation of global biodiversity.
- ITTO will hold training workshops on legal and sustainable supply chains in Central Africa as part of its initiative to build a critical mass of human resources for implementing sustainable timber supply chains in Congo Basin countries.

For further information, contact the ITTO Secretariat at www.itto.int/contact_us.

China-UK Collaboration on International Forest Investment & Trade (InFIT)

In pursuit of legality and sustainable conduct in forest lands

Compiled by Dr. Junzuo Zhang[1], Team Leader for InFIT Programme

Since 2014 China and the UK have been working together in their joint International Forest Investment and Trade ("InFIT") programme to address potential negative impacts arising from China's growing demand for forest products and other commodities and to fight illegality in timber trade.

The partnership through InFIT shares a common objective to help low-income countries, accelerate growth and job creation though increasing trade and improving the quality of Chinese outward investment. China's view on environmental issues in itself embodies certain practices and beliefs that deepen the understanding of ecological civilization, green development and shared future. InFIT is a joint initiative of China's Ministry of Commerce (MOFCOM), State Forest Administration (now the National Forest and Grassland Administration - NFGA) and the UK Department for International Development (now Foreign Commonwealth and Department Office - FCDO). InFIT is part of the UK government's broader international initiative on climate change – Forest Governance, Markets and Climate Programme – aimed at addressing governance failures in developing countries and supporting markets for legally produced timber and commodities grown on forest land.

Opposite page: Dr. Junzuo Zhang (3rd from the right) during her visit to rubber plantations in Cameroon in November 2019 together with the InFIT CCCMC delegation. Photo: Mr. Xiao Jianmin, member of the delegation.

[1] Dr. Junzuo Zhang has long been long involved in research and development programs in natural resource management, responsible forestry and environmentally-linked poverty reduction, inside and outside China.

INFIT I (2014-18) In the InFIT's first phase of work (2014-18), the programme implementation embraced a series of activities and results, including:

- The development of a Chinese Timber Legality Verification System (CTLVS), which aims to ensure that Chinese timber imports have been legally produced;
- The establishment of a "China Responsible Forest Products Trade and Investment Alliance" (RFA) and development and provision of due diligence tools and information on market demands for Chinese wood-product exporting businesses;
- The preparation and dissemination of voluntary best-practice guidelines for Chinese forest sector investors in Gabon, Guyana and Myanmar to help them comply with national laws and meet sustainable forest management standards in those countries;

China is the world-processing hub for wood products and the world's largest producer and exporter of wood-based panels, wooden furniture and wood flooring.

- The documentation of lessons learned from China's forest tenure reforms and sharing them with developing countries that are undergoing their own reforms;
- The development and dissemination of voluntary guidelines for sustainable establishment and the management of natural rubber investment in environmentally and politically vulnerable countries;
- The development and dissemination of voluntary Guides for Overseas Investment and Production of Sustainable Palm Oil by Chinese Enterprises.

Findings from an external review conducted in 2016 showed that significant research insights were developed through InFIT I and it has become clear that, in accordance

Meeting of Chinese company representatives, forest officials from Cameroon and members of the InFIT team.

Sawmill in Gabon Special Economic Zone.

ILLEGAL LOGGING AND REPUTATIONAL RISKS

Alongside the Chinese 'Going Global' (or 'going out') strategy, China's demand for natural resources has grown dramatically since 2000 and this, together with the implementation of the Belt and Road Initiative, has resulted in a spectacular increase of Chinese outward investment. In recent years about 55% of the total commercial timber consumed domestically in China was imported (this rate was 45.3% in 2019).

Issues of legality and sustainability need to be addressed and so do reputational risks to Chinese enterprises, especially to those operating in many of the developing countries where governance and enforcement of laws relating to forests is weak. Illegal logging is still commonplace in many countries, including in Central and West Africa. In these areas, forest sectors are poorly governed, corruption is common, high value timber is available and alternative income-generating activities in rural areas are limited. Illegal logging undermines the rule of law and leads to the loss of significant tax revenues. Communities and individuals standing up to illegality risk persecution and violence.

With regard to the aforementioned, many initiatives are already underway in China. Many of them are supported by industry associations, NGOs or others through already established working relationships. Several of these are supported/coordinated through the InFIT Programme, which to a great extent acts as a hub for legality-elated initiatives regarding imported timber in China.

with these insights, China's 'route' is towards a greater alignment and coordination with other international efforts to tackle illegal logging and deforestation. However, efforts to operationalize InFIT insights through the CTLVS, the China Responsible Forest Alliance, and investment guidelines to influence market behavior concretely and substantially, which would reduce the impact of China's trade and investments on global forests, were at a very early stage at the time.

INCREASE China is the world-processing hub for wood products and the world's largest producer and exporter of wood-based panels, wooden furniture and wood flooring. Since the beginning of this century, China's wood consumption increased year by year, from 109 million cubic meters in 2000 to 539 million cubic meters in 2014. The total consumption was 4.9 times that of the year 2000, an increase of 394%. China has become the world's largest consumer of timber and the largest importer of logs and sawn timber.

Made in Gabon Special Economic Zone.

It is important for China to have and implement strong standards in support of responsible and sustainable investment and trade on a global level.

With a dramatically increased consumption of wood on a domestic level, China has seen a considerable diversification of its wood imports in recent years. The expanded and broadened scale in outward forestry investment and trade, especially in environmentally and politically fragile developing countries in Africa and South America, has increased the complexity of supply chain management, which makes it even more important for China to have and implement strong standards in support of responsible and sustainable investment and trade on a global level.

Until now the Chinese government has relied on voluntary guidelines to influence the behavior of Chinese companies trading and investing in overseas forest assets. However, there are many thousands of Chinese timber companies, the majority being small and medium sized companies, and only a few are managing or mitigating the risks of illegality in their supply chains. Few are aware of the requirements, let alone the techniques, which are available to them to do this. When the awareness is low and reaching-out has become difficult, the role of industry associations is key in supporting initiatives to drive behavioral change.

INFIT II (2019-2022) With the renewed partnership between the UK and China, InFIT II (2019-2022) built on and reinforced efforts of the first phase to address these issues and further increase Chinese engagement in reducing global deforestation. While the two national wood industry associations joined the implementation, InFIT II also involves a wider range of state and non-state stakeholders.

The lead agencies to deliver project actions include: the National Forest and Grassland Administration (NFGA); the Chinese Academy of Forestry Sciences and its Research Institute of Forestry Policy and Information (CAF-RIFPI); the China National Forest Products Industry Association (CNFPIA); the China Timber & Wood

CHINA'S CSR ALLIANCE IN AFRICA

At the Beijing Summit of the China-Africa Cooperation Forum, Chinese President Xi Jinping proposed the establishment of "China's Corporate Social Responsibility Alliance in Africa" on September 3, 2018. The establishment of this Alliance aims to strengthen the social responsibility capacity of Chinese companies investing in Africa and advance their CSR performance. It will provide a new exchange platform for a China-Africa policy engagement and promotion of best practices. It will strengthen the China-Africa cooperation under the "Belt and Road Initiative" to contribute to the UN's 2030 Sustainable Development Goals and efforts to build a global community of a shared future.
The Alliance is a non-profit organization of Chinese enterprises, associations and chambers of commerce which conduct business in Africa. China Chamber of Commerce of Metals, Minerals & Chemical Importers & Exporters (CCCMC) acts as a facilitator and the secretariat of China's CSR Alliance in Africa (i.e. Chinese Alliance for Responsible Business in Africa – an official name in the English language). CCCMC will provide new opportunities for the use of responsible resources in all of Africa and for international long-term engagement in governance and market reforms, which reduce the adverse impact on local and global environments and contribute to national development, rule of law and benefit poor people.

With the support of the InFIT project since 2014, CCCMC has been continuously promoting best practices in responsible supply chain management in natural rubber and mining sector.
This has helped to create a solid basis and accumulation of experience for CCCMC to lead in the formation of the Alliance.

MOU CHINA AND GABON

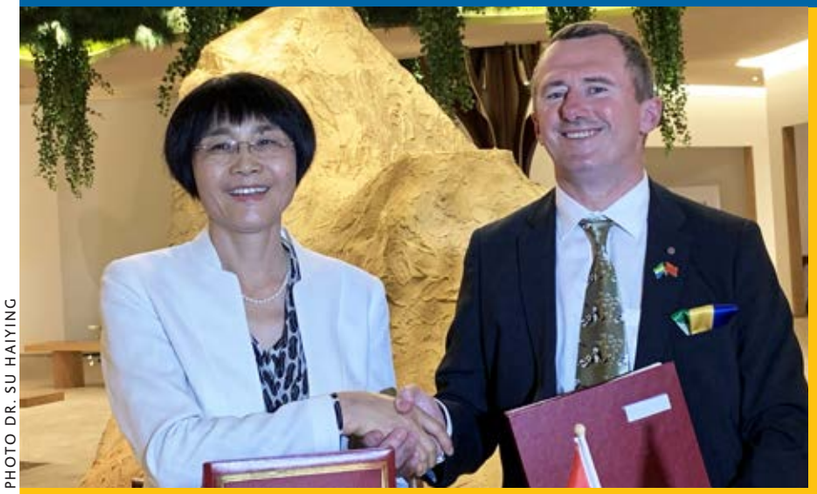


PHOTO DR. SU HAIYING

Madam HU Zhangcui, Deputy Director of China National Afforestation Committee Office, the China National Forest and Grassland Administration and Professor Lee White, Minister of Water, Forestry, Seas, Environment and Climate Strategy of the Republic of Gabon shake hands at the signing ceremony of the Memorandum of Understanding between the two countries in Gabon's capital Libreville, September 2019.

Under the authority of the National Forest and Grassland Administration (NFGA), one of the key results in InFIT's first phase of work ("InFIT I – 2014-2018) has been the preparation and dissemination of voluntary country specific guidelines for Gabon with the aim of guiding legal and responsible investment and trade. The Chinese Academy of Forestry, specifically its Research Institute of Forestry Policy and Information (CAF-RIFPI), is taking a lead in helping Chinese enterprises operating in Gabon make wiser business decisions and improve the overall reputation of the business performance by the Chinese enterprises and the forest industry as a whole. In September 2019, the NFGA and the Ministry of Water, Forests, Seas, Environment and Climate Strategy of the Republic of Gabon signed a MoU on forestry cooperation. The MoU encompasses the strengthening of communication and sharing of information regarding investment possibilities and trade in forest products; the exchange of experiences as well as scientific and technological research in various fields; improving operational capacities of employees of China by visits of experts and training in technical services related to forestry, timber industry; joint capacity building on advanced processing of forest products; supporting the development of sustainable forest management practices and reforestation, and support to upgrade Gabon's forest products processing tools. A regular high-level government dialogue will oversee and monitor progress.

With the support from InFIT 2, there is an opportunity to assist in implementing the China-Gabon cooperation agreement and promoting and supporting the implementation of country guidelines. This is undertaken through the establishment and operation of a technical working group regarding timber legality and local community development. This team will carry out gap assessments of selected Chinese companies, taking the country specific guide and relevant legality/sustainability provisions into account. A leading enterprise group has also been formed to seek commitment and support from participating enterprises to champion good practice for the industry as a whole.

With the log export ban and recent new policies in Gabon in mind, towards FSC schemes for all forestland in the country by 2022 and towards different taxes on forest land, InFIT is investigating the option of a China-Gabon-UK platform which will involve all stakeholders to tackle forest governance failures and the consequent market failures that result in deforestation and the damage to forests and eco-systems inside Gabon.

The role of industry associations is key in supporting initiatives to drive behavioral change.

Products Distribution Association (CTWPDA); the Ministry of Commerce (MOFCOM) which is responsible for formulating policy on foreign trade, export and import regulations; the China Chamber of Commerce of Metals, Minerals & Chemical Importers & Exporters (CCCMC), which works on International Sustainable Natural Rubber standards and other sustainable standards, for example for outbound mining investment by Chinese companies; the China Chamber of Commerce of Import and Export of Foodstuff, Native Produce and Animal By-Products, which works on investment and consumption of sustainable palm oil by Chinese companies.

InFIT II therefore aims to achieve four directly attributable results:

a) Government policy/regulations aimed at ensuring that only legally produced forest products are included in China's supply chains;
b) Systems and tools for deploying responsible supply chains that enable enterprises importing timber products to comply with Chinese policy and regulations and meet the demands of their customers in export markets;
c) Adoption of practices that promote responsible overseas trade and investment by Chinese enterprises in the forest sector and other commodity sectors that have significant impacts on forests, and which complement national stakeholder-led processes in developing countries; and
d) Policy partnerships promoting research and analysis that help identify practices that underpin legal and sustainable trade and investment in the forest sector and related commodity sectors in African countries.

Project actions are implemented by agencies, associations and think tanks to build the evidence and analysis to benefit investors and policymakers as well as advance future cooperation with developing countries.

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INTERVIEW with Madame Jin Jiaman,
Executive Director of the Global Environmental Institute in China

China-Africa dialogue pushes sustainable forestry

by Meindert Brouwer

Between 2014 – 2020 the Global Environmental Institute (GEI) in Beijing participated in two projects to foster dialogue between African and Chinese stakeholders in forestry and promote pro-biodiversity and pro-poor Chinese investment and trade. Both projects were funded by the Department for International Development (DFID) - now Foreign Commonwealth and Development Office (FCDO) - in the United Kingdom. In the China-Africa Forest Governance Project (2014 – 2018) GEI teamed up with Chinese Academy of Forestry (CAF), International Institute for Environment and Development (IIED) based in London and Worldwide Fund for Nature (WWF). GEI's Executive Director Madame Jin Jiaman explains.

Madame Jin Jiaman

‘We wanted to encourage Chinese investors, forest companies and traders to engage in sustainable forest management and involve local communities.’

The China-Africa Forest Governance Project was coordinated by IIED. What was it about?

JJ: ‘The goal of the project was to contribute to improving forest governance in Africa in which Chinese stakeholders play a role. We wanted to encourage Chinese investors, forest companies and traders to engage in sustainable forest management and involve local communities. And we wanted to curb illegal timber trade. In order to achieve all this, we established the China-Africa Forest Governance Platform which facilitated dialogues at all levels between organisations in China and those in Cameroon, DR Congo, Uganda, Mozambique, Madagascar and Gabon. Project partners were government agencies, research institutions, civil societies and non-governmental organisations.’

GLOBAL ENVIRONMENTAL INSTITUTE (GEI)

Global Environmental Institute (GEI) is a Chinese environmental NGO, based in Beijing. GEI works alongside key policymakers, businesses, scientists, civil society leaders and local communities to foster dialogue and innovative solutions to protect the environment and enhance economic opportunity within China as well as in Southeast Asia and Africa. The GEI’s program areas include Energy and Climate change, Ecosystem Conservation and Community Development, Marine Conservation and Overseas Investment, Trade and the Environment. GEI works according to a method of three steps: research, pilot projects and policy recommendations.

GEI Contact person: Lin Ji
Email: Linji@geichina.org

Source: www.geichina.org

What were the results?

JJ: ‘We organised four international symposiums in China and in Africa, during which challenges facing China-Africa forestry cooperation were discussed. In 2018, a bilateral forestry cooperation agreement was signed between the Chinese government and the government of Mozambique and in 2019 between the Chinese government and the government of Gabon.’

JJ: ‘Secondly, the project analysed the wood source, commodity structure and trends in Chinese timber import and African timber export, based on information gained from researches and reports as well as forestry-related trade data from Chinese and African customs authorities. (For reports go to the box text, ed.) We also promoted the development of a trade information system in Mozambique that was based on the exchange and discussions between the General Administration of Customs of China and the Mozambican customs and forestry authorities.’

JJ: ‘Thirdly, the project sponsored five Chinese journalists to conduct investigations in Africa and objectively tell the true stories of China-Africa trade and investment. Articles on China’s investment in the African forestry sector were published in Chinese and foreign media.
In addition, we organised capacity building trainings for Chinese and African journalists in Cameroon, DR Congo, Uganda and other African countries, and gatherings for Chinese and African journalists were held in China.’

NEEDS In 2018 the China-Africa Forest Governance Project came to a close. Then GEI continued in a new two-year project financed by DFID. This time the focus was on central and western Africa, with an emphasis on engaging Chinese stakeholders. Its aim was to strengthen policy coordination, promote responsible trade and investment and mobilize local stakeholders. With regard to the Congo Basin region, the project investigated ‘the understanding and needs of local social organisations and stakeholders in Cameroon and DR Congo regarding Chinese investment and related environmental and social policies. According to their needs, relevant training contents are being designed for local social organisations.’

PHOTO: SIMON LIM

The China-Africa Forest Governance Platform is a mechanism for exchange and strategic policy intervention for African policy researchers and opinion formers and their Chinese counterparts, with a focus on issues of forest governance, investment and trade.

Which Chinese stakeholders are we talking about?

JJ: ‘Stakeholders include China’s Forestry Administration (policy decision-makers), timber companies, timber industry associations, policy and planning research institutes, and environmental NGOs.’

What are the needs of local social organisations in this context?

JJ: ‘Based on preliminary understanding, the main needs of local NGOs include a better understanding of relevant policies in China regulating the environmental conduct of Chinese companies as they carry out outward foreign investments and trade; how they can start engaging in dialogues with Chinese companies investing in their countries; and whether it is possible to use policies to constrain and improve corporate environmental conduct.’

What will be the focus and content of the training of local social organisations? Who will carry out the training and who will pay for the training?

JJ: ‘The main content of the training is intended to include the introduction of China’s environmental policies and guidelines regarding outward foreign investment, the introduction of host country policies regarding the management of the environmental conduct due to foreign investments, and case studies of communication and cooperation between local NGOs and Chinese companies. The training will be co-organized by GEI in collaboration with ClientEarth and local NGO partners. Experts familiar with relevant policies and NGO representatives with experiences communicating with foreign investment companies will be invited to share their perspectives and insights. The training expenses will be supported by the Forest Governance, Markets and Climate Programme of DFID.’

What is the role of the Chinese government?

JJ: ‘As a major wood processor, importer and exporter, China needs to conduct the whole chain operation from logging to planting in a constrained and planned way, in order to ensure a sustainable utilization of forest resources and obtain long-term economic benefits.
The role of the Chinese government is to formulate regulations and policies on sustainable forest management, so that the conduct of overseas Chinese enterprises can

'Tropical rainforests resources in the Congo Basin will bring long-term benefits and economic returns to companies when they are well managed.'

be regulated to achieve legal compliance in logging and sustainability in the processing, investment and trade of forest products.'

JJ: 'Let me add that more education and guidance on sustainability should be provided for overseas Chinese forestry enterprises through industry associations, such as the China National Forest Products Association. Research institutes and NGOs can provide case studies for Chinese companies investing overseas on long-term planning and cost-benefit analyses of sustainable business practices, as well as provide capacity building training for companies on community participation best practices, with an aim to demonstrate that sustainability does not only yield environmental and social benefits, but also long-term stable economic returns.'

JJ: 'Thirdly, dialogues and exchanges with related countries should be strengthened and bilateral working mechanisms and cooperation agreements should be developed between China and Africa, in order to ensure the objectives of biodiversity protection, economic interests and social needs of the two sides.'

What is the role of national governments of Congo Basin countries in your view?

JJ: 'The role of the national governments in the Congo Basin includes: 1) developing a national plan on the use of forest resources, according to the economic and social development needs as well as the forest sustainability in the country; 2) formulating policies and standards on sustainable foreign investment and trade; 3) regulating the conduct of foreign timber companies, ensuring the sustainability of their use of forest resources and protecting the interests of indigenous peoples.'

What are the benefits of sustainable conduct of Chinese companies in Congo Basin countries for these companies themselves? Please address sustainable forest management, sustainable timber trade, agribusiness, mining and infrastructure.

JJ: 'As an important part of the society, companies are also important vehicles for social and economic development. Sustainable resources will bring long-term economic and development benefits, and companies are the largest beneficiaries. In this sense, tropical rain forests resources in the Congo Basin will bring long-term benefits and economic returns to companies when they are well managed. From another perspective, if companies are acting responsibly in sustainable management, social benefits will occur, which can promote stable long-term economic returns.'

JJ: 'Sustainable forest management has long been a topic of concern for the United Nations and many member states, in particular for developed countries. International NGOs have developed many standards and tools. Released by FAO in 2014 at the request of member countries, the Toolkit for Sustainable Forest Management is a consensus in this regard. Relevant websites have provided tools, references, best practices and training materials for member states to use. However, sustainable forest management is more than a methodological and technical issue. It also involves many more challenging factors, such as capacity building, country-specific policies, incentives, supervision and law enforcement ability and strict control of the international market. This is hard and urgent work.
The core issue of sustainable timber trade is to establish a value chain system. This may require broad international agreement and the establishment of mechanisms that can monitor and verify the trade. It is also a very difficult job.'

JJ: 'Agriculture, mineral extraction and infrastructure construction may be direct threats to nature, caused by continued economic expansion. Apart from promoting higher standards of environmental protection and following best practices, more fundamental issues should be considered, including the ultimate limits of human economic development, the balanced distribution of resource wealth, and the sustainability of human consumption patterns.'

PHOTO: JASON LEE WONG /IIED

Anna Amumpire of The Advocates Coalition for Development and Environment (ACODE) in Uganda and Zhong Chen from China's Ministry of Commerce at an international learning event of the China-Africa Forest Governance Platform in Pemba, North-eastern Mozambique.

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China-UK Collaboration on International Forest Investment & Trade (InFIT)

Sustainability overseas

is in the interest of Chinese timber companies

by Meindert Brouwer

The China Responsible Forest Products Trade and Investment Alliance (China RFA) supports Chinese timber companies in sustainable forest management in the Congo Basin and in building a sustainable supply chain of responsibly sourced forest products. Professor Xu Bin[1], Secretary-General of China RFA tells how this is done.

What were the reasons to establish the China Responsible Forest Products Trade and Investment Alliance (China RFA)?

Bin: 'Today we are facing a number of global environmental challenges, including climate change, which has been intensified by globalization of the economy. In order to address these challenges, we should strive for sustainable economic development in harmony with nature. Forests are important for the health of the planet. They play an important role in mitigating climate change by storing greenhouse gas carbon dioxide. That is why there is an international consensus about the need to retain forests and establish conditions for responsible forest management and responsible utilization of forest resources.

China, as a responsible country, has a role to play in combatting illegal logging and associated trade overseas, and in incentivizing the timber industry to engage in investment, production and trade of green forest products only.'

Bin continues: 'In order to push, motivate and support Chinese timber companies to undertake trade of legal and sustainable forest products, a number of organizations initiated the China Responsible Forest Product Trade and Investment Alliance (China RFA) in 2014. It emanated from the China-UK Collaboration on International Forest Investment & Trade (InFIT). In 2019 China RFA was approved as the brand of the National Forestry and Grassland Innovation Alliance by the National Forestry and Grassland Administration (NFGA) of the national government of China.'

[1] Professor Xu Bin (1974) is director of the Sustainable Forestry Research Division at the Reseach Institute of Forstry Policy and Information, Chinese Academy of Forestry.

Professor Xu Bin visits a FSC CoC-certified man made panel company in Fujian.

PHOTO LI YAN

Forest concession in Gabon.

As the public awareness of green and environmental protection becomes popular, wood products with a high environmental protection standard are more welcome in the market.

What are the goals of China RFA?

Bin: 'With the core concept of "Open Collaboration, Collaborative Innovation, Co-construction and Sharing, and Green Development", China RFA uses its resources and services to:

- Jointly build a technological innovation system and an integrated platform of governments, the industry, universities and research organizations to serve the needs of timber enterprises;
- Promote innovation in theories, standards, models, technologies, policies, and mechanisms of forest products trade and investment; and
- Build sustainable supply chains of forest products, so as to promote the responsible forest products trade and investment in China.'

What is your definition of the term "responsible"?

Bin: '"Responsible" is a broad concept. Generally, it means one should comply with all local laws and regulations. Regarding production and trade of forest products, "responsible" means that the wood is sourced in a legal or sustainable way.'

Why is it in the interest of Chinese timber companies and Chinese timber traders acting in the Congo Basin, to engage in ecologically and socially responsible forest management?

Bin: 'The Congo Basin has the second largest tropical rainforest in the world. The sustainable management and utilization of forest resources in the Congo Basin is related to global biodiversity and ecological security. China is the largest importer of wood from the Congo Basin. Chinese timber companies and Chinese timber traders acting in the Congo Basin must take responsibility for forest resource protection and sustainable development in order to keep their number one position in the global forest products trade.'

Bin explains: 'Firstly, Chinese companies should carry out sustainable harvesting and utilization of forest resources. They should ensure the legality and traceability of forest products by taking measures such as forest certification and legality verification in order to maintain the company's positive reputation. Secondly, companies need to focus on local public welfare undertakings, maintain good community relations and drive local economic development to create a good external environment for enterprise development. In recent years China's foreign investment has been growing rapidly, especially in Africa. Operations and investments that conform to the principles of sustainable development are in the long-term interests of enterprises and are the basic requirements for the long-term prosperity of China-Africa relations.'

China RFA wants to support Chinese timber importers to ensure that their supply chains exclude illegal timber and that they are able to meet the demands of their customers. What does the support of the China RFA consist of?

Bin: 'Our key activities and services for China RFA members and other companies are:

- Extend the information center for China Responsible Forest Product Trade and deliver market and policy information for responsibly sourced timber through our website, the We Chat public platform and a newsletter;
- Develop the code of conduct for China RFA members and engage all members to exercise due diligence on wood legality and responsible trade practices;
- Develop technical guidelines and tools/templates for a China Wood Legality Due Diligence System and an on-line risk assessment platform to help companies quickly and efficiently carry out due diligence on the legality of timber sources;
- Offer training and technical support regarding forest trade policy and markets, timber legality and forest certification to improve awareness and capacity in responsible forest product trade;
- Set up a company/product database for China Responsible Forest Product Trade and Investment, and provide the promotion and market linkage service for China RFA members;
- Facilitate the discussion and development of standards and policies relevant to responsible forest trade.'

What type of demands by buyers of Chinese timber end products do you perceive in 2020 and 2021 in markets in Europe, in the USA, in Asia and in China's domestic market?

Bin: 'The European market mainly requires that companies meet timber legality requirements of the EU Timber Regulation, requiring that companies conduct due diligence, forest certification, etc. The U.S. market requires that companies take measures to meet the requirements of the Lacey Act, including tracing the source of timber products, and on the other hand pays more attention to environmental protection requirements such as the release of volatile organic compounds (VOC) of products like furniture and flooring. Some Asian countries such as Japan, South Korea and Indonesia have also put forward regulations on the due diligence system of wood legality, but most countries in Asia do not have such requirements at the moment.' (September 2020, when this interview had taken place, ed.)

Bin: 'In China, the Forest Laws and the Implementation Regulation of Forest Laws also require that forest companies ensure the legal source of wood materials, but it mainly focuses on the domestic wood, and the requirements for the imported wood are under discussion. In addition, products in China's domestic market need to comply with relevant domestic quality and environmental protection standards. As the public awareness of green and environmental protection becomes popular, wood products with a high environmental protection standard are more welcome in the market.'

The Chinese government should promote international negotiations and the development of an international agreement regarding responsible forest product trade and wood legality.

In timber trade between Africa and China both sides play a role in making sure that traded timber is sourced in a responsible way. How can the government of China contribute to this? And how can African governments contribute to this, in your view? Are there other stakeholders who can contribute to this? Please explain.
Bin: 'The Chinese government should strengthen the cooperation with African countries on forest governance and responsible forest product trade using mechanisms such as the China-Africa Cooperation Forum. It should promote international negotiations and the development of an international agreement regarding responsible forest product trade and wood legality. Within China, the Chinese government should strengthen education, training and guidance on sustainable forest resource management and utilization for Chinese companies investing in African countries.'

African governments should continuously strengthen forest laws development, enforcement and forest governance to ensure the legal supply of wood and wood products to the market.

He continues: 'African governments should continuously strengthen forest laws development, enforcement and forest governance to ensure the legal supply of wood and wood products to the market and also create a good investment environment for Chinese companies in Africa. Communication and exchanges with the Chinese government are also strongly recommended, and MOUs on China-Africa forestry cooperation could be signed and implemented to promote enterprises to take the path of sustainable development.'
Bin adds: 'In order to promote the development of responsible forest products trade and investment between China and Africa, it is not enough to rely on governments. Research institutions, industry associations and other non-governmental organizations also play important roles in things such as planning-making and setting guidelines, enterprise training, strengthening communication and cooperation among stakeholders and providing financial support, all of which have great significance in promoting sustainable forest product trade and investment between China and Africa.'

As of July 1, 2020 a new Forest Law has come into force in China. Article 65 of the new Forest Law of China states: 'Timber processing companies should establish an account for the entry and exit of raw materials and products. No unit or individual may purchase, process or transport timber that he/she clearly knows was felled piratically or indiscriminately in forest regions.' The new Forest Law and Article 65 first of all applies to the production and trade of domestic timber inside China. Do you think that the new Forest Law of China may apply to the import of timber from overseas at some point in the future? Please explain.
Bin: 'According to Article 65 of the new Forest Law, timber companies are required to set accounts regarding the storage of material and products, and it is not allowed to purchase, process or transport timber that is known to come from illegal sources. Articles added to the new Forest Law have provided a legal basis for the development of legal and sustainable forest products trade. The law itself has not defined the scope of domestic wood or imported wood, which means that it could apply to all wood sources, but detailed requirements and explanations still need to be clarified or developed.'

Bin adds: 'While countries in the world are strengthening timber legality and prohibiting illegal timber and associated trade, the government of China is also exploring and promulgating relevant policy to strengthen management of imported timber under the framework of the new Forest Law.'

Timber products manufactured in Gabon Special Economic Zone in Libreville.

CHINA RESPONSIBLE FOREST PRODUCT TRADE AND INVESTMENT ALLIANCE (CHINA RFA)

China Responsible Forest Product Trade and Investment Alliance (China RFA) was founded in 2014 by the Center for International Forest Products Trade of the State Forestry Administration of the national government of China (now the National Forest and Grassland Administration – NFGA), in partnership with national and international environmental civil society organizations, research institutes, financial organizations, timber industry associations, well-known enterprises in the timber industry and other organizations.
The Secretariat is the executing agency of the alliance. It is located in the Research Institute of Forestry Policy and Information of the Chinese Academy of Forestry (RIFPI, CAF).

In September 2020 China RFA has 90+ registered members and a database of 9000+ Chinese companies which produce responsible forestry products. China RFA is run by a council of representatives of 26 member organizations.

Source: www.chinarfa.cn

China RFA Contact person:
Xu Bin
Secretary-General
China Responsible Forest Product Trade and Investment (China RFA)
Professor, Division Director
Sustainable Forestry Research Division
Research Institute of Forestry Policy and Information, Chinese Academy of Forestry
Tel: +86 (0)10-62889754
Email: binxu@vip.sina.com

Good land use decisions

can help protect Central African forests

PHOTO LEE WHITE

The Central African Forest Initiative (CAFI) supports reform processes and investments on the ground in sectors that drive forest loss, and aims to provide a foundation for institutional and sectoral changes needed to address deforestation. CAFI's approach is based on integrated multi-sector response and land use planning. It supports national coordination structures to make sure that consensus is found among all different stakeholders, sectors and line ministries.

by Berta Pesti

Berta Pesti is the Head of the Secretariat of Central African Forest Initiative (CAFI) at the United Nations Development Programme (UNDP).

Tackling slash-and-burn and intensification agriculture without considering land use and land tenure issues can result in rebound-effects and an increased expansion into forests.

The specific direct and indirect drivers of deforestation are different in the various countries of Central Africa. However, some general trends point to the particular nature of forest loss in the region, especially when compared to other forest basins. Perhaps the most important is that Central Africa has historically contributed little to global emissions from deforestation and forest degradation. However, in some countries forest loss is accelerating, especially in Cameroon and DR Congo. In the latter country, which boasts a giant forest, most of forest loss is attributed to small-scale farming and wood energy. In Cameroon it is subsistence as well as commercial agriculture that are causing massive forest loss. Where small-scale human activities have such an impact, actions should focus on meeting human needs more sustainably by improving production systems and helping societies benefit from the increasing share of those of working age among their population.

Actions should focus on meeting human needs more sustainably by improving production systems.

SHIFTING CULTIVATION Because of the sheer size of DR Congo, the main cause of deforestation in the region is slash-and-burn agriculture combined with wood energy and artisanal logging. Shifting cultivation has been the predominant farming practice in Central Africa for centuries, where soil quality is poor and farmers do not have access to alternatives such as fertilizers. After clearing the land and farming for a short period, farmers allow secondary forest to grow and soils to regain productivity during the fallow period, before clearing and replanting the land. This system results in the "rural complex," a mosaic of forest patches, cleared land, active fields, fallow fields and land used for other purposes, including logging.

Slash-and-burn agriculture does not necessarily impact forests negatively if population densities are low and fallow periods are long enough. However, in the DR Congo the fallow periods are shortened because of the high population growth and increasing demand for food. Since 1950 the population of DR Congo almost quadrupled. It now exceeds 80 million people[1] and it may, towards 2050, have the world's 3rd largest growth and reach 379 million in 2100, making DR Congo the world's 5th most populous country.[2] At the same time, the current population requires more food: chronic malnutrition affects 43% of children under the age of 5, therefore over 7 million children. Under these circumstances the land cannot regain its productivity and it requires more efforts to produce the same amount of food. Recent studies[3] have shown that the rural complex is expanding into intact forests because of these dynamics. In addition, other factors such as the expansion of road networks into high value forest areas for mining or logging, wood collection for energy, artisanal logging are also shown to have high impact.

DYNAMICS OF DRIVERS Reducing the pressure on forests and achieving the nation-wide emission reductions as expected by the Paris Agreement, requires an integrated multi-sector response led by governments and coordinated with many different stakeholders. This is because the drivers of deforestation span several economic sectors (direct drivers such as agriculture, wood energy, forestry and infrastructure/mining) and indirect drivers (such as lack of land use planning and insecure land tenure, poor governance and rapid population growth). As a result, focusing exclusively on the forest sector will not be sufficient to tackle forest loss. Small scale project-based approaches to REDD+ do not deliver results on a national level, because they too often address only one driver, while ignoring links to others (such as the slash-and-burn agriculture and the wood energy nexus) or cannot prevent leakage of emission to nearby areas. (REDD+ stands for efforts to Reduce Emissions from Deforestation and forest Degradation, and to foster forest conservation, sustainable management of forests and enhancement of forest carbon stocks, ed.)

PHOTO MEINDERT BROUWER

Monkoto, west central DRC. Women carrying leafs and stems of maniok and firewood to cook them with.

CROSS-ROADS Similarly, tackling slash-and-burn and intensification agriculture without considering land use and land tenure issues can result in rebound-effects and an increased expansion into forests. Central African forests are at a crossroads, where the historically present small-scale activities are now compounded by existing or planned agro-industrial plantations. Response measures must therefore address both historical causes and new trends.
To sum up, an integrated multi-sector response is required through the coordination of a government agency with a multi-sector coordination mandate, which is capable of convening and influencing all sectors behind forest loss. This response should cover policies on land tenure, land use planning and allocation (such as forest governance, sustainable agriculture, sustainable mining etc.) as well as ambitious programs on sustainable productive activities in deforestation hot spots (sustainable agriculture, charcoal plantations, sustainable logging, sustainable harvest of non-timber forest products) or encouraging economic activities outside forests (savanna-based agriculture, reforestations, agroforestry etc.).

In partner countries such as Gabon and the Republic of Congo that have maintained low levels of deforestation, the objective is to support this trend and support the governments' efforts to invest outside forests. It is also important to continue to provide incentives to good forest stewardship as well as prevent future risks.

CAFI The Central African Forest Initiative was created in 2015 to offer a holistic solution. It is a partnership of Central African countries, donor governments and implementing agencies. Through interventions in the above-mentioned sectors it seeks to achieve emission reductions and development co-benefits. CAFI's theory of change makes it clear that emission reductions will come from policies and measures that properly address

Children in a forest village, west central DR Congo.
PHOTO MEINDERT BROUWER

both direct/proximate drivers (such as agriculture, wood energy, forestry and infrastructure/mining) and indirect/underlying drivers (such as lack of land use planning and insecure land tenure, poor governance and rapid population growth).
Therefore CAFI supports reform processes and investments on the ground in several sectors behind forest loss, providing the foundation for institutional and sectoral changes needed to address deforestation. CAFI and its partner governments agree on a broad portfolio of programs to be implemented in a coordinated effort by different government ministries and development partners, as opposed to a piecemeal approach of approving individual programs. Through a whole-of-government approach, it also supports national coordination structures to make sure that consensus is found among all different stakeholders, sectors and line ministries. Letters of intent with CAFI are signed by ministries with coordination mandates or heads of state or government.

Through CAFI donor countries pool their financial resources, coordinate their policy dialogue and align their bilateral funding to multiply the impact of their individual contributions.

LAND USE PLANNING A backbone of CAFI's support is land use planning. In countries where 50 to 90% of the territory is covered by forests, forests are intrinsically linked to national sovereignty over the territory and land use planning has a direct impact on forest cover. Land use planning serves several purposes. First, it is a policy process that brings different sectors together to understand their land needs to implement their strategic objectives (produce a certain amount of crops, build X kms of roads and connect specific areas, exploit a certain number of logs etc.).

Secondly, land use planning offers the opportunity to create synergies across different levels of government (national, subnational and local) that have different roles to play in the planning, legislative and regulatory processes related to the use of land. Another important facet of the consultations and consensus building process of land use planning is its potential to bring together government with stakeholders outside of government. In this context, CAFI supports dialogue processes to ensure that all the different stakeholder views are properly considered.
Thirdly, land use planning is a technical exercise where the different uses of land and their utility (to the user, but in broader terms to the community, the nation or the world) are assessed and choices are made. To this end, CAFI supports studies to determine the criteria to be used to make land use decisions and the assessments based on those criteria. More specifically, CAFI's main focus is the identification of high value forests (from carbon, biodiversity or cultural point of view) that will require protection and the identification of human activities that are incompatible with the protection of these high value areas.
In CAFI's approach, land use planning does not stop at the development of land use plans. CAFI also supports the development of legislative and regulatory instruments that ensure that the land use plans become binding law. It is also expected in these processes that sector codes and policies such as the mining code or the agricultural code, will also be aligned with the national consensus reached on land use. To achieve the latter, CAFI also supports relevant economic sectors to align their objectives and priorities with the land use plans and offers investments in productive activities in areas based on sustainable land use and natural resource use plans.

CAFI supports the development of legislative and regulatory instruments that ensure that the land use plans become binding law.

ENABLING ENVIRONMENT, MONITORING AND OVERSIGHT The rest of CAFI supported portfolio is constructed around the support on land use planning. In DR Congo CAFI funds savanna-based economic activities, and provides support to subsistence and commercial agriculture, forestry and energy in several provinces. It also helps develop and implement energy master plans for main urban centers in DR Congo and the Republic of Congo.
CAFI also supports countries to monitor the implementation of the land use plans and resulting legislation in forested areas, for example through funding the national forest monitoring systems in DR Congo, Gabon and the Republic of Congo. It also supports the forestry administration of Gabon in its forest law enforcement duties.

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CENTRAL AFRICAN FOREST INITIATIVE (CAFI)

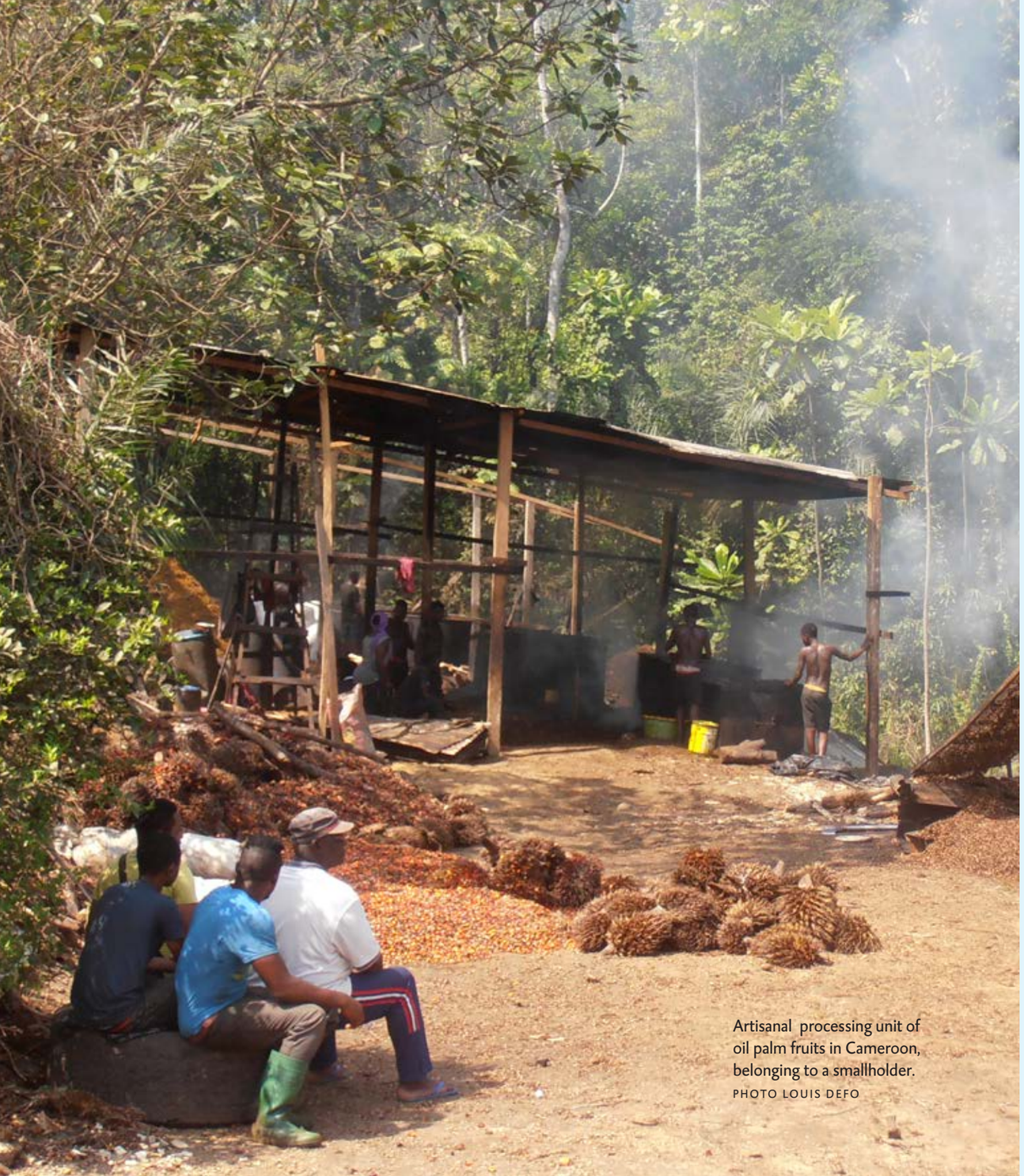
The Central African Forest Initiative (CAFI) is as a collaborative partnership and Trust Fund that includes:
- Central African partner countries: Cameroon, Central African Republic, Republic of Congo, the Democratic Republic of the Congo, Equatorial Guinea and Gabon.
- A coalition of donors: the European Union, France, Germany, the Netherlands, Norway, South Korea and the United Kingdom.
- Brazil as South-South partner.
- Implementing agencies such as World Bank, UNDP, FAO or AFD.

CAFI supports strategic, holistic and country-level REDD+ and Low Emission Development investments while focusing on Central African high-forest cover countries. Its objective is to recognize and preserve the value of the forests in the region to mitigate climate change, reduce poverty and contribute to sustainable development.

CAFI's support focuses on:
- developing and implementing National Investment Frameworks (NIFs) endorsed at the highest level by national institutions with cross sectoral mandates;
- providing funding based on the achievement of policy and programmatic milestones that are spelled out in letters of intent;
- encouraging donor coordination and alignment of bilateral assistance to partner countries based on NIFs;
- promoting inclusive participation of all stakeholders.

Source: www.cafi.org

General Contact
CAFI Secretariat
United Nations Development Programme
International Environment House, 7th floor
11-13 Chemin des Anémones
Châtelaine CH 1219, Switzerland
E: secretariatcafi@gmail.com



Artisanal processing unit of oil palm fruits in Cameroon, belonging to a smallholder.
PHOTO LOUIS DEFO

Preconditions for responsible production of agro commodities in the Congo Basin

by Dr. Louis Defo[1]

Consumers in international markets expect that agro commodities they use are produced in a responsible way with respect for the environment and for local small holders at the beginning of the value chain. Dr. Louis Defo from Cameroon explains preconditions for responsible production of agro commodities in the Congo Basin. He addresses the role of agro businesses and multinationals, the contribution of importing and consuming countries and the responsibilities of Congo Basin's States.

The issue of responsible production of agro commodities (cocoa, coffee, palm oil, rubber, etc.) in the Congo Basin is relatively new and this contribution is therefore a preliminary reflection. It is essentially based on the experience that the author has drawn from supporting agro industries and small producers, from his participation in forums as well as from his involvement in animating multi-stakeholder platforms regarding agro commodities in the region.

In Congo Basin as well as elsewhere in the tropics, the recurrent practices that are likely to compromise environmental conservation, social acceptability and inclusiveness as well as economic viability in the context of the production of agro commodities include deforestation, degradation of natural ecosystems, erosion of biodiversity, illegality, use of child labor, use of forced labor, violation of community and human rights, non-respect of workers' rights , gender inequalities and a low remuneration for producers. The objective of this chapter is to highlight the actions that can generate an environment that is favorable to the eradication or to a significant reduction of these problems. These actions are the responsibility of all

[1] Dr. Louis Defo is a consultant from Cameroon. He works for Proforest, a non-profit group that supports companies, governments and other organizations to implement their commitments to the responsible production and sourcing of agricultural commodities and forest products.

It would be good if all global parties interested in sourcing agro commodities from the region would sit down with governments and other stakeholders in the region and develop some collective standards, principles or guidelines.

stakeholders, but mainly that of multinational companies, local producers, importing countries and producing countries.

The role of agro businesses and multinationals

Agricultural enterprises (large-scale producers , exporters, importers or processing companies) are major players in the agro commodities sector and can play a key role in creating and developing a favorable environment for responsible production in the Congo Basin and elsewhere in the world. Some of these companies both upstream and downstream of the supply chains have adopted commitments and programs to tackle the aforementioned problems.

The translation into concrete acts and the effectiveness of these initiatives will depend, among other things, on the collaboration of companies with other stakeholders, in particular with States and small holders (see the box). So, for example, a win-win partnership between, on the one hand, companies that export and / or process cocoa (Olam, Cargill, Barry Callebaut, Mars, Mondelez, Nestlé. . .), and, on the other hand, small holders (who produce almost all the cocoa in the Congo Basin) may have a decisive impact on the pursuit of sustainability.

Unsustainable practices on the part of these small holders in Congo Basin result from a combination of factors, including technical and organizational shortcomings, no access to information, absence or insufficiency of environmentally friendly inputs and equipment, low and decreasing purchase prices paid to farmers, the lack of an adequate credit system and an overall context of endemic poverty.

WIN-WIN COLLABORATION In the framework of a win-win collaboration, companies can introduce expertise, technology and influence on the market and funding capacities to support small holders to address these issues. In addition, the actions of these companies should be governed by compliance with international good practices, tools and guidelines such as Free Prior and Informed Consent (FPIC), High Conservation Value (HCV), High Carbon Stock Approach (HCSA), OECD -FAO Guidance for Responsible Agricultural Supply Chains, OECD Guidelines for Multinational Enterprises, UN Guiding Principles on Business and Human Rights and the Core Principles of the Accountability Framework Initiative (AFI).

PHOTO LOUIS DEFO

Rubber nursery in an agro industry plantation in Cameroon.

However, it would be naive to believe that these companies will make these efforts voluntarily. It is for this reason that NGOs, other non-profit groups and end consumers in the North should increase pressure on companies in the agro commodity supply chain regarding respect for the environment and the rights of stakeholders in production areas. The role of importing countries should also be emphasized.

Potential contribution of importing and consuming countries

The countries of the European Union, the United States, China, the United Kingdom, India, Japan, Russia, and India are the main importers of agro commodities from the Congo Basin. These countries are therefore very important in all initiatives to use the lever of demand and international trade in efforts to promote the sustainability of agro commodities in the region. Therefore, any guidelines, norms, regulations, standards or public policy these countries impose on imports can directly or indirectly influence the production conditions of these commodities in the Congo Basin.

In this context, it is appropriate in Europe to welcome, for example, initiatives such as the German sustainability strategy (2016), the German plan for sustainable cocoa (2019), French law n° 2017-399 relating to the duty of vigilance of parent companies and ordering companies (2017) and the French strategy to combat imported deforestation (2018). However, these initiatives have so far had an insignificant impact on the ground for several reasons.

In the United States and China, for example, the governments are still almost indifferent when it comes to efforts to tackle sustainability issues linked to the import of agro commodities. Nevertheless, it is important to note the increasingly obvious will of China in this context, with a number of green supply chain policies and guidelines.

Louis Defo takes young plants of plum trees (dacryodes edutis) to his cocoa farm in Cameroon, in order to practice crop and income diversification.

It is also important to mention, for example, the recent bans of imports of palm oil from Malaysian producers , FGV Holdings Berhad (September 2020) and Sime Darby (December 2020) by the US, following concerns about forced labor and child labor.

MANDATORY REGULATIONS The initiatives mentioned show that there is progress, but it is clear that the adoption of mandatory regulations on the supply chains of risky commodities by consumer countries could constitute a decisive step in the creation of a favorable environment for responsible production of agro commodities. The VPA FLEGT process for timber is a good example of creating a conducive environment in which all stakeholders sit down, debate and resolve (find consensus) on policy and regulations for the production and transformation of commodities along its value chain.

The above-mentioned importing and consuming countries can also directly support governments and other stakeholders in Congo Basin to tackle environmental

PHOTO MEINDERT BROUWER

Cacao plantation in Cameroon.

and social problems associated to the production of these agro commodities. Collective actions associating all leading importing countries may also be important: it would be good if all global parties interested in sourcing agro commodities from the region would sit down with governments and other stakeholders in the region and develop some collective standards, principles or guidelines, take collaborative responsibility for development and for locally adding value to the commodities so as to encourage genuine local economic and social development.

Responsibilities of Congo Basin's States

The role of the Congo Basin States in establishing an environment conducive to the sustainability of agro commodity production can be primarily on the level of land use planning, policies, regulations and poverty alleviation. Indeed, avoiding or limiting the destruction or degradation of natural ecosystems also requires a consensual adoption, implementation, and monitoring of land use plans. Such consensual land use plans can help avoid conflicting overlaps in allocation and conflicts of use as well as the conversion of High Conservation Value and High Carbon Stock areas.

Beyond the rationalization of space management, each State will have to harmonize forest, environmental, agricultural and land tenure policies as well as the actions of the ministerial departments in charge of the management or use of space, which sometimes contains discrepancies that can compromise the efforts of sustainable production of agro commodities.

On a legislative, regulatory and governance level, new codes will have to be adopted or certain aspects of existing codes revised in almost all the countries concerned. So, for example, on the level of the labor code, specialists hold that the texts in various countries are relatively soft with regards to the fight against child labor, forced labor and gender inequality. With regards to the land code, it is for example generally admitted that the current texts do not guarantee any land security especially for the peasants/farmers. The precariousness of rights in which they find themselves is not likely to encourage them to manage the land, produce and at the same time, take into account sustainability concerns.

Consuming countries can help producing countries to set up adequate agricultural credit systems.

The recognition and effective consideration of customary land rights and use rights of local and indigenous communities would, for example, be the beginning of a solution to the problem of land insecurity which affects peasants. In another domain, the land tenure code should also include a transparent and competitive system for the allocation of land concessions to agro industries. With regard to agriculture, there is a real need for an appropriate code in many countries, that is to say, a consolidated, coherent and up-to-date body of guidelines, principles and rules covering all aspects of the agricultural and rural sector (agricultural land, production, training, research, financing, conservation, marketing, customs and fiscal regime, investment incentives, etc.), including environmental protection and natural resource conservation.

On the level of the labor code, specialists hold that the texts in various countries are relatively soft with regards to the fight against child labor, forced labor and gender inequality.

POVERTY REDUCTION All the above-mentioned efforts should be supported by effective poverty reduction policies. In Congo Basin, nearly all farmers live under the poverty line ($1.90 a day, according to the UN threshold). It is well-known that poverty and environmental protection or sustainable production cannot coexist easily. Consuming countries can help Congo Basin States to gradually remove the barrier of endemic poverty. Consuming countries can, for example, support income diversification programs or projects to open up agricultural production basins (by creating roads) in the areas of producing countries in question. They can also help producing countries to set up adequate agricultural credit systems. Finally, sustainable production of agro commodities in the region requires a significant improvement in governance. The current situation marked by corruption, lack of stakeholder participation and transparency in the management of public affairs and impunity cannot be conducive for sustainability.

More information:
Louis Defo
Email: louis@proforest.net /defotls@yahoo.fr

ROADMAP TO DEFORESTATION-FREE COCOA (DFC) IN CAMEROON*

Cameroon is the largest producer of cocoa in the Congo Basin. Cameroon is also one of the countries most affected by deforestation in the region. Cocoa farming is one of the drivers of deforestation and forest degradation in Cameroon. The country's ambition to significantly increase its cocoa production over the next few years is potentially damaging to its forests. Faced with this challenge, Dutch Sustainable Trade Initiative IDH has undertaken to facilitate the establishment of a public, private, and civil society partnership, of which the goal is to end cocoa-related deforestation in the country and tackle other sustainability issues in the cocoa sector. This partnership is centred on a roadmap to DFC and a framework for action for the conservation and restoration of forests, sustainable intensification of growing cacao and diversification of income and engagement and empowerment of cocoa-growing communities.

Participatory process

The framework for action was developed through a participatory process involving the public sector, private companies, civil society organizations (CSOs), farmer organizations and financial and technical partners. Now the framework for action has been approved by the government and signed by several cocoa companies, farmer organizations, NGOs and research institutions. The actual implementation of the activities of the framework for action is scheduled to start in 2021. In order to test innovative solutions which are part of the Roadmap to DFC, IDH and WWF have been engaged in setting up an initiative called "Green Commodities Landscape Program" since 2019.

* The main sources of the information in this box is taken from a Draft Note published by Dutch Sustainable Trade Initiative IDH in April 2019 and from the author's participation in this process from its beginning (2019) until now.

China-UK Collaboration on International Forest Investment & Trade (InFIT)

Guidance for Sustainable Natural Rubber

With the increasing demand from the world due to its rapid economic growth, the sector of natural rubber faces unprecedented challenges. As a key producer, leading importer and growing investor of rubber industry, China needs to pay attention to Environmental, Social and Governance (ESG) risks/sustainability issues in the activities of investment and supply chain management.

Deforestation, the loss of the habitats endangered animals depend on, the disruption of the biologic chain leading to environmental issues (climate change, soil erosion and vegetation degradation, et cetera), land grabbing and human rights violations, the livelihood of smallholders, local communities and indigenous people are the main environmental and social issues related to natural rubber investment in natural rubber producing countries, including the natural rubber producing regions in Africa.

CCCMC Since 2014, with the active engagement of stakeholders, China Chamber of Commerce of Metals, Minerals & Chemicals Importers & Exporters (CCCMC) has led the development of a comprehensive risk-based Guidance for Sustainable Natural Rubber(rubber guideline) and its implementation tools under the China-UK Collaboration on International Forest Investment and Trade (InFIT) Programme which is supported by the Ministry of Commerce of the People's Republic of China, the China National Forestry and Grassland Administration(NFGA) and UK Department for International Development.
The rubber guideline aims to provide the companies engaging in natural rubber investment, planting and processing with business policies, management frameworks, risk analysis, evaluation references and implementing methods for identifying, preventing and managing ESG risks, so as to help them incorporate risk-oriented due diligence systems into their daily management activities, and achieve business compliance and sustainable development.
The rubber guideline was officially issued in October 2017 at the Association of Natural Rubber Producing Countries (ANRPC) conference in Vietnam.[1]
The Guidance is the first comprehensive and risk-oriented guideline to the natural rubber industry that fills in the void of non-sustainability standards for natural rubber growing and processing industries. The rubber guideline got the attention and recognition of the rubber companies and stakeholders. For example, the rubber guideline was listed as a reference in the Pirelli's Sustainable Natural Rubber Policy Implementation manual[2] and introduced in the The Natural Rubber Supply Chain, How companies can identify and resolve sustainability issues, published by Global Nature Fund and Suedwind institute and judged as "The guidelines are voluntary, but they offer a sound basis for adoption as mandatory standards".[3]

To implement the rubber guideline, cooperating with domestic and international stakeholders widely, CCCMC is conducting works on the development of implementation tools, awareness and capacity training, a sustainable natural rubber demonstration project, smallholder support and industry organization initiatives.

PILOT PROJECT CCCMC collaborates with the global leading natural rubber company Halcyon Agri(HAC) to conduct a Sustainable Natural Rubber pilot project. Halcyon Agri is a subsidiary of Sinochem International Corporation – a Chinese listed corporation –, and has invested in natural rubber production in Africa. In the collaboration project, CCCMC will assess Halcyon Agri's policy, procedures and practices against CCCMC's rubber guideline and international best practice. CCCMC will also assist to develop practical and systematic solutions to improve Halcyon Agri's sustainability systems and practices, with the objective of advocating Halcyon Agri's development toward sustainability as industry reference. Halcyon Agri operates its own integrated natural rubber supply chain, and has control over how its natural rubber is grown, sourced, produced, and distributed. CCCMC seeks to identify the applicability of its Guidance and implementation tools from this exercise, to build a sound foundation to provide standards and tools for natural rubber companies more widely.[4]

"The guidelines are voluntary, but they offer a sound basis for adoption as mandatory standards."

With the rubber industry organizations in Mekong region, CCCMC is exploring to launch an initiative towards building a sustainable natural rubber value chain in the Mekong region, to make contributions to the balanced development of the environment, society and economy. Industry organizations are between the government and enterprises. Connecting participants in different links of the value chain, industry organizations can mobilize all stakeholders to participate, in various aspects including service consultation, technology introduction, building communication platforms, formulating regulations, and policy recommendations. The experiences of this collaboration model among industry organizations could be taken as references for driving sustainable natural rubber in Africa and other regions/countries around the world.

SDGS CCCMC will continue to cooperate with global and regional partners to work as impact-oriented partnership to promote collaboration from various stakeholders, to enhance sustainability in the natural rubber value chain, contributing to achieve the 2030 Agenda for Sustainable Development and the United Nations Sustainable Development Goals (SDGs).

Source: CCCMC.
http://en.cccmc.org.cn
For more information, contact:
Rubber project secretariat: rbc@cccmc.org.cn

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Switching from slash and burn to sedentary farming

Slash and burn practices of small farmers account for 90 percent of deforestation in the rainforest in Democratic Republic of Congo (DRC), according to forest expert C.M. Hansen. Near the village of Monkoto, at the border of Salonga National Park, a World Heritage Site in west-central DRC, World Wide Fund for Nature (WWF) assists farmers to switch to sedentary farming and save the forest. The new farming model is a success. In April 2018 I travelled there to see it with my own eyes.

Text and photos by Meindert Brouwer

Flying in a two-propeller Cessna from Kinshasa in northeastern direction to the town of Boende, I saw the landscape beneath me change from savannas mixed with patches of forest to continuous, endless rainforests as far as one could see, with blue rivers winding through the forest made up of countless bulbs of tree tops in countless shades of green. Nearing Boende, the forest showed its wounds: brown stamps of cleared forest, next to each other, amidst the green.

From the town of Boende I continued on the backseat of a motorbike, driven by Obed, a young inhabitant of Monkoto who had come to fetch me. On a small path with walls of green rainforest on both sides we made our way, through villages of small rectangular houses made of yellow loam and palm leaf roofs, meeting women in between, carrying huge baskets on their backs, filled with green vegetables, firewood or a yellow, plastic jerrycans filled with water from a stream. We passed clearings in the forest, sometimes messy with dark trunks and black roots of trees scattered around in silver gray ashes or filled with the green leaves of cassava plants, slash and burn agriculture in different stages.

COMMON PRACTICE Slash and burn agriculture is a common practice in tropical rainforests around the world. Poor, often landless farmers slash a section of forest, burn the remains of trees and then plant crops. When the soil becomes infertile after a few years, the farmers cut a new piece of forest and continue farming there. Slash and burn practices of small farmers account for 90 percent of deforestation in the rainforest in Democratic Republic of Congo (DRC), according to forest expert C.M. Hansen.

After covering 250 kilometers, including an overnight stop in a village and crossing three rivers taking the motorbike in a small canoe, we arrived in the town of Monkoto, at the Luilaka river which serves as the border of Salonga National Park, a World Heritage Site in west-central DRC.
It is in Monkoto that WWF and the Congolese Institute for the Conservation of Nature (ICCN) are located to co-manage

Slash and burn agriculture on the way from Boende to Monkoto.

Salonga National Park. Salonga is the largest protected forest area in Africa and the second largest in the world, measuring 33,350 square kilometers (larger than the country of Belgium). Funds of the European Union, the German Development Bank KfW and the Norwegian and American government (USAID) enable the conservation organizations to do their work. Apart from WWF and ICCN, also Wildlife Conservation Society (WCS) and Zoological Society of Milwaukee (ZSM) work as partners in the park.

All of them know that nature conservation on the ground is much more than park management, biomonitoring and law enforcement. It is also about developing alternative livelihoods for the people around the park to alleviate poverty and reduce the pressure on natural resources. New sources of income and sustainable economic development

Nature conservation is also about developing alternative livelihoods for local people.

will reduce their dependency on the forest. Besides, support of the local population is key to achieve results in conservation. In and around Monkoto WWF assists local farmers to replace slash and burn (swidden) agriculture by sedentary farming on the spot.

MODEL FARM It is on the slopes of a tiny valley just outside of Monkoto where one of the sedentary agricultural "model farms" is installed, with agricultural crops growing on its slopes, surrounded by rainforest. The plantation is covered with growing maize, cassava plants, banana and avocado trees and a stretch of pineapple sprouts. Down in the valley rice is planted next to five fish ponds situated at different heights, with gently streaming water from one pond to another, while chickens are held in a small pasture near the forest.
The farmer, Ekumba Benz, born in 1970, father of eight children, had started his pilot farm on newly bought land

Village of Watsikengo between Boende en Monkoto.

Women returning from their field in the forest. Every day they walk for many kilometers, carrying heavy baskets with vegetables, firewood or jerrycans with water from forest streams.

The model of sedentary farms in Monkoto could be replicated all over central Africa and in tropical forests around the world.

in 2008. His older brother had provided the money. It consisted of 30 hectares of virgin rainforest at the time. Ownership of land is very important in this region, as land renting contracts are often not respected in the long term.

Ekumba: "We started by clearing 2 hectares for agriculture. The remaining 28 hectares will remain to be rainforest to produce oxygen. We may clear a maximum of 3 more hectares in the future."

The farmer can continue farming in this plot over the years – and refrain from slash and burn agriculture – by keeping the soil fertile with planting the Mucuna liana (Mucuna pruriens) in between harvesting and planting crops. Mucuna has the unique property fixing nitrogen and fertilizing the soil, while the beans it produces can be eaten by people or used as fodder with the rest of the plant.

Ekumba added: "Slash and burn agriculture is very heavy work. It is easier now. My model farm is near my house, so I do not have to walk to the forest anymore".
Thanks to diversified products such as chicken, avocado, rice, cassava, fish and more, the sedentary model farm also provides for year-round income. Ekumba: "My yields have gone up, and the new way of farming brings in more money than the old way. Now I am able to pay the costs of school for my children." School is expensive here. Parents pay the salary of the teacher who is not paid by the government. Parents also pay for schoolbooks, notebooks, pens, school uniforms and shoes. Seven out of ten children in Monkoto do not go to school because their parents cannot afford this.

The village of Monkoto, west central DRC.

"The advantage is that now our family lives well", continues Ekumba, "and we eat good food and that is why we are in good health." People in the area tend to have a very none-diverse diet of mainly cassava (manioc) and bush meat and eat very few fruits and vegetables. The model farm therefore not only sedentarizes, but also diversifies food supply.

LIVESTOCK WWF invested in setting up this model farm with seeds, technical assistance and practical tools such as machetes. By 2020 the initiative of WWF DRC has resulted in the development of 60 model sedentary farms in Monkoto and surroundings since the start in 2008. WWF DRC aims to help establish 150 sedentary farms in the years to come.
In Monkoto sedentary farms are part of a larger scheme of husbandry for which cows have arrived for meat production. Livestock as an alternative source of protein, meant to reduce the hunting of animals in the forest.

Sedentary farms reduce deforestation and dependency on the forest and drive sustainable economic development. They are important for forest and biodiversity conservation, food security and social stability. The model of sedentary farms in Monkoto could be replicated all over central Africa and in tropical forests around the world.

Contact person sedentary farming at WWF DRC:
Papy Lolatui, rural development officer
Email: plolatui@wwfdrc.org

Right: Ekumba Benz and three of his eight children at his sedentary farm in Monkoto. Green maize in the back, pineapples in front.

PHOTO ICRAF

Allanblackia floribunda

Tree domestication

spares forests and increases farmer income

by Zac Tchoundjeu[1] and Bertin Takoutsing[2]

Domestication of valuable wild fruit and nut trees, has resulted in significant improvements in incomes, diets and in rural business development in the Congo Basin. The World Agroforestry Centre (ICRAF) has set up rural resource centres managed by local communities which train farmers in how to propagate and manage trees and which facilitate them in many ways.

1 Principal Scientist Tree Improvement, ICRAF Regional Coordinator for West and Central Africa.
2 Landscape Agroecologist, ICRAF West and Central Africa Regional program.

The Congo Basin forests are inhabited by 30-70 million people, many of whom are dependent upon forests for a range of ecosystem products and environmental services (wood, medicines, fruits and spices). The rural populations that reside in the area are characterised by widespread poverty, low agricultural productivity partly associated with degrading the natural resource base, poor access to markets, and limited formal access to the forest and its derived products which tend to be controlled by the state for central government benefits.

Agricultural land is difficult to define in the area, where local people have practised shifting cultivation for many centuries. The traditional smallholder agriculture is based on shifting cultivation, primarily of root crops such as cassava, yams, and cocoyam, trees of banana (plantain), and occasionally groundnuts (Arachis hypogaea). Traditionally, farmers cleared an area of forest, cultivated this during 2 years, allowed a fallow period of 5-20 years, depending on soil conditions, land availability, and various other factors, and returned to clearing and cultivating again. In the meantime these farmers may have cleared and cultivated other areas of forest, moving on from one spot to another.

SECONDARY FOREST Secondary forest is often dominated by regrowth of species such as Musanga cecropiodes (morphologically similar to the Cecropia pioneer trees of the Amazon Basin); shifting cultivation often targets these secondary forests because they are easier to clear than mature forest. More recently, an increasing population size and development have encouraged more sedentary settlements and necessarily shorter fallow periods, without full restoration of soil fertility.

Forest clearing for agriculture does not only include slash-and-burn shifting cultivation, which has been recognised as the key driver of deforestation in the Congo Basin, but also for cash crops such as cocoa (Theobroma cacao). With the current trend in the global market, most governments in central Africa have encouraged the increase of cocoa production, however this has been achieved at the expense of forest clearance.

Zac Tchoundjeu

Bertin Takoutsing

In spite of the recognised importance of forest products, tree cultivation is constrained by the limited knowledge of farmers of tree propagation techniques and incompatibility with other land uses. In addition, farmers cannot reap full benefits, because of marketing constraints such as seasonality of products, weak infrastructure, limited market knowledge, lack of networks and associations and inadequate processing and storage methods. Agroforestry practices such as tree domestication have the potential to ensure rural livelihoods, reducing pressure on the forest resources and encouraging farmers to integrate more trees in landscapes, while maintaining forest cover and biodiversity. In order to overcome these constraints, the World Agroforestry Centre (ICRAF) has been implementing a participatory tree domestication programme in Central Africa that is built on three pillars: (1) development of vegetative propagation techniques, (2) increasing economic

ICRAF

The World Agroforestry Centre (ICRAF) is a CGIAR Consortium Research Centre. ICRAF's headquarters are in Nairobi, Kenya, with six regional offices located in Cameroon, China, India, Indonesia, Kenya and Peru. ICRAF generates science-based knowledge about the diverse benefits – both direct and indirect – of agroforestry, or trees in farming systems and agricultural landscapes, and disseminates this knowledge to develop policy options and promote practices that improve livelihoods and benefit the environment.
Source: www.worldagroforestry.org

Farmers during the practical training session on vegetative multiplication techniques. PHOTO ICRAF

and ecological productivity of agroforests and (3) improving marketing knowledge and skills for tree products.

SELECTION Studies have shown that farmers in central Africa preferred to plant indigenous fruit trees, but that little scientific information was available for improving planting material of these species. Addressing this constraint went hand in hand more generally with capacity development in agroforestry production. An important component of the participatory tree domestication in the Congo Basin is the selection of valuable fruit trees that can produce high yields and with required traits. Much of this selection is done through a participatory process known as priority setting, where researchers work with communities to select varieties and adapt them for local use. Tree cultivation is often done through vegetative reproduction, using techniques such as air layering (marcotting), cuttings, and grafting, which allow greater selection of desirable traits than simple seed planting. Required traits for agroforestry species include not just size and taste, but also fast growth and fruiting and uniform fruit size. The selection process identified priority species that were included in the tree domestication programme. The main species were: African mango (*Irvingia gabonensis*), safou or butterfruit (*Dacryodes edulis*), Kola nut or Cola (*Cola spp*), bitter kola (*Garcinia kola*), mangosteen (*Garcinia mangostana*), Njangsa (*Ricinodendron heudelotii*), *Pausinystalia johimbe* and bark of the African cherry (*Prunus africana*), with latter a product with major medicinal value and unsaturated markets.
It is believed that hundreds more species in the Congo

As human populations continue to grow and the demand for resources increases, tree domestication to provide food, fodder, medicines and other products is an important approach to meet demand.

Basin have great potential for domestication and use in agroforestry systems. The approach is extended through the development of rural resource centres managed by local communities which: train farmers in how to propagate and manage trees; hold stock-plants for vegetative propagation; link with smaller nurseries to provide germ plasms more widely; provide fruit processing facilities and business training; and act as venues for farmers to meet and form associations that allow them to market their products and obtain services more effectively .

MARKET ECONOMICS Experience has shown that tree domestication and cultivation is only one component of successful agroforestry; market economics are also crucial. Capacity building programmes and microcredit assist landowners to obtain storage facilities in order to be able to provide more constant product supply throughout the year as well as more efficient technology to process fruits and nuts. Adoption of the participatory domestication method, particularly in the humid forest margins of Central Africa, where indigenous fruits and nuts are highly valued in the local economy, has resulted in significant improvements in incomes, diets and in rural business development, supporting diversified, more resilient and more productive farms and improving the social well-being of the communities involved. A multi-faceted approach by which agroforestry supports food and nutritional security, and provides other tree products (nuts, fuel wood, timber, medicinal plants) and environmental services (soil fertility improvement, water purification) involves 1) the support for soil fertility replenishment technologies to improve overall farm productivity and increase staple crop self-reliance; 2) participatory tree domestication of more nutritious fruit and nut trees; and, 3) entrepreneurship and value-addition. The domestication of high-value trees species in agricultural landscapes is increasingly recognised for its important contribution to rural livelihoods, now that the natural forests which provide tree products and services are reduced in size in the face of demand for agricultural land. As human populations continue to grow and the demand for resources increases, tree domestication to provide food, fodder, medicines and other products is an important approach to meet demand. These tree products have to be grown in the right niches (hedgerows, gardens, contour strips, etc.) to complement other agricultural production options.

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Analog forestry enriches the soil

by Meindert Brouwer

Grassroot organisation CENDEP in Cameroon successfully trains small farmers in analog forestry, a chemical–free way of growing crops. This benefits soil fertility and restores ecosystem services. Food security increases and farmers are getting more prosperous. As a result of analog forestry, farmers can practise sedentary farming instead of having to slash and burn new forest plots again and again. Wirsiy Eric Fondzenyuy and Perry Ndzefemmegho of CENDEP explain.

The land has turned green again. Perry Ndzefemmegho, forest and nature conservation officer at CENDEP.

Plant nursery along the road, Cameroon

What is analog forestry? Wirsiy: 'It is about turning degraded land into a productive, forested area from which people and biodiversity benefit. The word analog is derived from the word analogy and stands for: to make similar, to mimic or to imitate. Therefore, analog forestry is a silviculture method that tends to mimic an existing or once existing natural forest ecosystem in both vegetation structure and ecological functions.'

Wirsiy explains how you go about: 'You start by restoring the fertility of the degraded farmland. This can be done in many ways, for example by incorporating nitrogen-fixing plants in farmer's fields or through green manuring. Then you plant the trees, shrubs and plants which grew there in the past, if available, or you plant similar ones which may also play a similar role. In between you add food crops and vegetables, which nourish your family, and other plants and trees which provide you with products to sell on the market. These can be forest vegetables such as eru, indigenous fruit trees, and also exotic fruit trees, medicinal plants, flowering plants which attract bees to harvest honey and commodities such as tea, coffee and cacao.'

Wirsiy continues: 'In the first phase or simultaneously with soil fertility restoration activities, you grow sun-loving, short-cycle crops such as maize, cassava and potatoes. After two to four or five years, depending on the area, you stop growing these crops, because shade has arrived since the other plants and trees have grown bigger. Then you focus on these. In this way you follow the principle of ecological succession, which constitutes an important element in the design of an analog forestry landscape. This design gives the landowner control over his/her land resources in terms of the crop types grown (for home consumption and sale) and also contributes to maintaining a resilient ecosystem through increased biodiversity.'

INVESTMENT The investment to set up analog forestry may be perceived as rather high. Wirsiy: 'Being a new farmer, you need money to buy seeds to reforest the area, because collecting these seeds yourself is not easy, but eventually when you get connected with other farmers you can exchange seeds, which is much cheaper. You do not use chemical fertilizers, but compost of fresh and dry plant material and cow dung as well. Compost can be easily made on the farm, but you may need to buy cow dung. Alternatively, you can cultivate nitrogen-fixing plants to enrich your soil and protect it from erosion and fertility loss. Then it takes time to prepare the field for reforestation and cultivation and time is money, but the long term returns are laudable: resilient landscapes with diversified products for the family and local markets. When the terrain has slopes, you have to apply soil conservation techniques such as making terraces and planting vetiver plants against erosion. You can hire someone to do the labour, but then you have to pay him. And it takes time for plants and trees to grow before you can harvest.'

However, a farmer does not have to use 100 % of the land to develop analog forestry. He may set aside a piece to cultivate short-cycle crops. When he does this, he has to grow these in an organic way, without using fertilizers. He should not jeopardize the potential certification of his products from the analog forest. Certification is very important, Perry points out. Perry: 'Certification proves you have grown products organically, in a way that is

SEDENTARY FARMING INSTEAD OF SLASH AND BURN

Could analog forestry reduce or prevent slash and burn practices? If that would be the case, analog forestry could also contribute to reducing deforestation and mitigating climate change. Perry: 'An analog forester does not need fire as a tool. He knows how to stay on the same piece of land without using external inputs and obtain increasing yields. Farmers move from one place to the other because the fertility of their farmland has reduced. Analog forestry helps restore degraded lands making it needless for farmers to move from place to place in search for new farmland. Most of our population is becoming sedentary. Adopting sustainable land-use practices through analog forestry techniques is the only way we can obtain a variety of both food and tree crops from the same piece of land without recourse to slash and burn.'

'200,000 to 300,000 people in the region benefit from an increased supply of water.'

Wirsiy Eric Fondzenyuy, knowledge management officer at CENDEP.

Organic products from local farmers.

A farmer poses in a multi-crop tea garden at Kitiwum.

good for the environment, without using fertilizers. The trademark of Forest Garden Products adds value to the products, which the farmer can then sell for a premium price. The premium price is the return on investment for the farmer, this is the opportunity.'

Is certification expensive? Perry: 'No, it is not, because it can be a participatory certification. That means that the farmers organize themselves in a cooperative with a board of directors. The cooperative pledges to apply the standards of analog forestry and the farmers monitor each other using a peer review mechanism. That works for the local market. If products would be sold on the international market outside Africa, then third party certification would be necessary.' Is there a local market in Cameroon for certified Analog Forest Garden products since many people are poor? Perry: 'Yes, it has started. In Cameroon there are people who are willing to pay a premium price for a healthy product that has been produced in a natural way. There is also an interest to buy these products in the East and Southern African markets. With the arrival of the corona virus, people are advised to boost their immune systems by eating healthy foods. Healthy foods are free of chemicals and are produced according to organic methods which are used in analog forestry.'

ECOSYSTEM SERVICES Practising Analog Forestry has other major advantages, which should not be underestimated. Reforesting according to the analog forestry method results in the restoration of ecosystem services, such as the supply of water. Now 200 to 250 farmers in and around Kitiwum village in the North West region of Cameroon have been practising analog forestry since 2008.

Wirsiy: 'They are already enjoying a better lifestyle. The regreening of the land has resulted in more abundant water in the dry season. Farmers have their own water sources and do not share the same water collection points with cattle as in the past. In the dry season they do not have to take water from only one, perhaps contaminated spot. The degree of water-related diseases such as cholera, diarrhoea and typhoid has decreased in the area. Ten communities are practising analog forestry and 200,000 to 300,000 people in the region benefit from an increased supply of water. You can see that analog forestry has in a way prepared the local people for the unknown. Because of the corona virus people are asked to regularly wash their hands. They wash their hands with water that comes from the forest. Analog forestry helps people to live in harmony with nature, not against nature.'

Photos Both ENDS and CENDEP

ANALOG FORESTRY TRAINING CENTRE

CENDEP trains farmers in Cameroon and across Africa in analog forestry techniques and facilitates their transition from traditional monocrop practices (for example tea) to a multi-crop organic production system. CENDEP further designs tailor-made trainings and practices for farmers and NGOs in agriculture, horticulture and forestry. Different products are harvested from these systems at different times of the year, so farmers always have something to sell or eat. CENDEP runs a training centre in Mbiame village in the Northwest region in Cameroon which covers an area of 11 ha.

The objectives of the training centre are to:

- Train and mentor key actors and stakeholders on the restoration and regeneration of degraded and/or fragile ecosystems to ensure sustainable land, forest and soil management;
- Build local capacity through training and mentorship to promote increased agricultural productivity, entrepreneurship - including the creation of income generation/ diversification activities within the framework of analog forestry, as well as the certification and commercialization of forest garden products;
- Disseminate best practices through communication, exchange, partnerships and networking.

CENDEP and local partner organisations have set up analog forestry demonstration plots in Benin, Ghana, Togo, Uganda and Zimbabwe.

CENDEP
Contact person: Eric Wirsiy
Email: wirsiyef@yahoo.com
www.cendep.org
www.analogforestry.org

Interview with Cécile Ndjebet, president of REFACOF

'Securing women's rights is essential for forest preservation'

by Meindert Brouwer

'Women play a crucial role in forest protection and in food production in rural Central Africa. However, women's needs and interests are often not sufficiently addressed, due to social and institutional norms. That needs to change. Women should be entitled to their own land and participate in decision-making that concerns them. Tenure security for rural women will improve the socio-economic situation in Central Africa.' This is the firm belief of Cécile Ndjebet (48), president of the African Women's Network for Community Management of Forests (REFACOF).

During our conversation, Ndjebet describes what she calls the socio-cultural reality in rural Central Africa. She tells about the division of roles between men and women, the existing dominance of men over women and why this should change. She shows that equal rights in rural Central Africa are not only in the interest of women themselves, but also in the interest of communities and society as a whole. Ndjebet presents concrete proposals on how best to achieve and secure women's rights, especially the need to include the words 'women' and 'men' in the law.

Ndjebet: 'It is the men that cut trees, it is the women that know their way in the forest to collect fruits, vegetables, mushrooms and other non-timber forest products. To women, the forest is like a mother, it nourishes her children and grandchildren. To men, the forest is business and money. Women are more protective, they think more about tomorrow and future generations. Men tend to think of today and maybe of tomorrow.'

AWARE She continues: 'Women are more aware of the multiple roles forests play, its biodiversity, its insects which pollinate crops, the water it provides for drinking and irrigation purposes. Women are aware of the value of the forest for the well-being of their communities. They know what a healthy forest is like and if conditions in the forest change, they are among the first to notice. Women could contribute highly to keep forests and the environment healthy. However, the knowledge and experience of women is often ignored, because women do not have ownership of forests and lands and do not take part in decision-making in their communities, in which usually only men take the decisions.'

Ndjebet: 'It is the same in food production in agroforestry and on agricultural lands. Women plant, weed and harvest. If climate change and climate variability reduce the availability of water or harm the growth of crops and reduce harvest quantities, women, because of their experience, can be ingenious to adapt to new circumstances. Women can be a source of knowledge to take effective, necessary measures, including planting

'Tenure security for women towards forests and lands as well as gender equality in decision-making are in the interest of all.'
Cécile Ndjebet, president of REFACOF

Organic farmer showing her products, Cameroon. PHOTO © BOTH ENDS

other, more climate resilient crop species. Therefore, tenure security for women towards forests and lands as well as gender equality in decision-making are in the interest of all.'

'In the area of commercialization, women are mainly involved in processing products. When they live in enclaved communities without access roads, women stay at home, while the men travel with the products to the markets to sell. In these communities, the men are considered the masters and landlords, and so the women can neither own a piece of forest nor take part in decision-making. In most places in rural Central Africa this is the picture. While 64% to 80% of the people engaged in agriculture in rural areas in Central Africa are women, these women still depend on men for their basic needs.' Can you give an example, I ask Ndjebet. She replies:

'In Cameroon, where I live, forests are controlled by men. The government owns 95% of the forests, 2% is private property and 3% of the forest territory is owned by families. According to customs and traditions, the man is the head of the family. His wife may work on the forest land, but she does not own it. In the case where her husband dies without a son, her husband's brother inherits the land and takes it over.'

RISK Ndjebet gives another example: 'In rural Cameroon, women do not have money to buy land. But if a woman is successful in business and wants to buy a piece of land, she can. Unfortunately, this is very difficult for most of the women in rural areas. If a woman wants to use the land, she can get it from her husband or borrow it from the owner, who is either the municipality or a traditional chief. If the owner says "stop", the woman has to negotiate with her husband, the mayor or the chief. She stands the risk of being thrown out.'

'While 64% to 80% of the people engaged in agriculture in rural areas in Central Africa are women, these women still depend on men for their basic needs.'

Ndjebet concludes: 'Social transformation is really necessary to redress gender-based inequalities. Land grabbing at the expense of women has to come to a halt. Power and resources should be equally distributed among women and men, giving them both the same opportunities.' And: 'Securing women's rights is essential for forest preservation.'

She observes that 'countries in the Congo Basin have widely recognized women in forest communities as key actors in forest management, biodiversity conservation and the fight against poverty and climate change.' Ndjebet: 'Unfortunately, this recognition is not accompanied by concrete means and resources to improve women's meaningful participation in decision-making, and benefit-sharing, as social, institutional norms, as well as customary and local practices continue to discriminate against women. National policies and laws governing forests and related resources in most of the Congo Basin countries are gender-neutral. They lack statutory mechanisms to ensure women's ownership rights are achieved, protected and secured.'

REFORM Ndjebet: 'There is an urgent need to reform policies and laws governing land, forest and related resources in the Congo Basin countries in order to protect and secure women's tenure, moving from simply usufruct rights to full ownership rights for rural women.'

To secure independence for women in forest communities and in rural areas, what should effectively be incorporated into the national laws? What has to be changed into what?

Ndjebet: 'The new policies and laws including customary rules should explicitly use the words "women" and "men" in the formulation, making women's rights visible. The general and very globalizing terms such as "people", "local population", "local communities" and "indigenous people" used so far, have contributed to the marginalization of women in forest management.'

'The explicit use of the words "women" and "men" in policies will lead to gender-sensitive laws and regulations – which should include customary laws – and to gender equality. This will influence local practices that will be re-modeled. This will gradually improve women's inclusion and effective engagement in the sustainable management of forests and related natural resources. If governments really want to achieve sustainable management of forests, overcome poverty and realize climate change mitigation and adaptation, then policies governing forests, lands and other natural resources in the Congo Basin should make provisions for gender equality.'

What would be your advice to women in forest communities and in rural areas?

Ndjebet: 'From experience, we would really insist on capacity building of women and men. Women should be trained, educated, sensitized, informed, empowered and should get better organized.'
Men are important too, Ndjebet underlines: 'If men are well informed and sensitized, they are likely to become strong advocates for women's empowerment. Men are very important strategic partners for REFACOF to achieve gender equality.'

What needs to be done in practice? What kind of training and education are you thinking of? Who could be the actors in this, in Cameroon and elsewhere in the Congo Basin?

Ndjebet: 'Next to training women in leadership and securing rights to forests and lands for rural women, adequate resources should be allocated to women, to support the development of forest-based enterprises on a community level resulting in added value for women's products. In addition, improve women's access to appropriate technology, markets, communication facilities, etc. All that should be translated into long-

'The new policies and laws including customary rules should explicitly use the words "women" and "men" in the formulation, making women's rights visible.'

term schemes and programs that should be developed within a multi-stakeholder approach, which includes governments, development partners, private sector, donors and civil society organisations.'

'Women in the Congo Basin Congo are gradually getting better organized through the creation of women's networks and platforms that can play a key role in supporting rural women's capacity building activities. These women's organizations have the potential to perfectly serve as key implementers of such programs.'

What is your advice to women, in order to play a role in decision-making?

Ndjebet: 'We need to engage all stakeholders on all levels to achieve women's full participation. These include local community leaders (men and women) and family heads, to advocate our cause towards female political leaders within local and national government bodies. We must work with women themselves to build their leadership skills and capacities, build strategic alliances with traditional rulers, local governing authorities (mayors, councilors) and parliamentarians. Finally, we need to establish dialogue and connect rural women to decision makers (men and women) to advance women's property rights to forest, land and other related resources in the Congo Basin.'

Women and men who seek REFACOF's advice and support can contact:
Website: www.refacof.com
REFACOF President: Mrs Cécile Ndjebet, Cameroon
Email: cecilendjebet28@gmail.com
REFACOF Vice President: Mrs Julie T.B WEAH, Liberia
Email: fcommunityinitiatives@yahoo.com

Women getting together in the community of Mbiambe, Cameroon.

PHOTO © BOTH ENDS

Tea farmer in Cameroon.
PHOTO © BOTH ENDS

REFACOF

REFACOF, the African Women's Network for Community Management of Forests, established in 2009, is a network created by 45 women from 8 countries in West and Central Africa. On a regional scale, REFACOF is dedicated to the collective action of African women to address social challenges and political, legal and economic issues related to forest management in Africa. REFACOF is part of the network of Women Organizing for Change in Agriculture and Natural Resource Management (WOCAN).
Source: www.wocan.org/content/refacof

THE RIGHTS AND RESOURCES INITIATIVE RRI

The Rights and Resources Initiative (RRI) supports the developing world's Indigenous Peoples and local communities in forests and other rural areas, helping them to secure and realize the rights to own, control, and benefit from the natural resources they have depended on for generations. RRI works together with community organisations, civil society, governments, international institutions, and the private sector to promote and accelerate global efforts to improve local livelihoods, reform forest tenure and governance, combat poverty, mitigate the effects of climate change, and deliver sustainable development.
Source: www.rightsandresources.org

Keepers of the forest

Text and photos Samuel Nnah Ndobe[1]

Samuel Nnah Ndobe

Central Africa harbours the Congo Basin forest, also called the Green Heart of Africa: the second largest intact tropical forest in the world after the Amazonian forest. Central Africa is known for the diversity and richness of its flora and fauna species in the different landscapes. The region is also known for a unique group of indigenous forest people (IFPs) who have lived there longer than any other human tribe or race.

This group of people, often called the "Pygmies" (a term which can, however, have pejorative associations), include the Baka, Bagyeli, Bakola, Bedzang, Bayaka, Mbendnjele, Bambuti, Batwa and Babongo, found in countries such as Burundi, Cameroon, Central African Republic (CAR), Equatorial Guinea, Gabon, Democratic Republic of Congo (DRC), the Republic of Congo and Rwanda. No disaggregated data on the population of IFPs from the census are available in the countries of Central Africa. Olivera et al (2016)[2] estimate the potential population of IFPs at 920,000.

IFPs are strongly attached to the forest for their livelihoods, mainly hunting, gathering and freshwater fishing. Their whole culture and way of life is related to the forest.[3] The forest is everything to them, providing food, snacks, medicine/healing, shelter, a prayer ground and leisure place. For IFPs the forest is like a supermarket, pharmacy/hospital, church/mosque or a playground for a city dweller in the modern world, but with far deeper relations. They

Resource map drawn on the ground by the Batwa in Lokuku, Equateur Province, DR Congo, March 2017. The resource map serves as a participatory tool to enhance broad community participation and ownership of processes that relate to the lives of indigenous forest peoples and their livelihood sources. The resource map permits communities to illustrate what they do and where they carry out their activities in the forest. They first draw these sketch maps on the ground, showing rivers, paths/roads and hills and using symbols to indicate the forest types and activities they carry out there. With the help of high tech GPS their land use maps are integrated into classical government maps and clearly show the overlappings between community traditional use areas and government allocations. The resulting map eases dialogues and negotiations with governments and their partners.

Those who have catered for the forest do not have their rights recognized over the land, while this is the opposite for those who destroy.

are a very spiritual people, communing with the Great Spirit, called "Komba" by the Baka, while the Spirit of the Forest is called "Enjengui" by the Baka. Their way of life is intricately linked to and synchronized with the other beings in the forest, including large and small animals, fishes, insects, all sorts of plants and mushrooms, and rivers and hills. As such they have long known where and when to hunt, fish or gather and which areas are reserved as worship sites or sacred sites, also serving as regenerative sites for what they use. Jerome Lewis,[4] in his work with the Bayaka, confirms that the IFPs follow strict hunting and gathering rules. Most importantly, they live the lore of the forest, and in harmony with this lore: this is the reason that the forest has remained intact and stable where indigenous forest people live.

EVICTED Despite this wealth of knowledge and wisdom of the forest, IFPs have been denigrated, evicted from the forest and sidelined from decision-making processes regarding the forest since the brutal colonial era. In most countries they have been pushed out of the forest to roadside settlements, causing new forms of conflicts with neighbouring Bantu farmers. Tragically, but true, the first inhabitants of the forests in Central Africa are mostly landless, because their ancestral land, the forest, is taken and converted for other use, while ownership of their roadside settlements is claimed by the Bantus. The Bantus have "added value" to the land by planting crops which are visible, whereas the activities of the IFPs, hunting, gathering and fishing, leave no trace on the land, hence go unrecognized.

Lokuku, Equateur Province, DR Congo, March 2017. The Batwa show the forest use map they have drawn to their community.

No "value addition" or conversion of intact forests, no recognition of rights to forest. This is paradoxical, as those who have catered for the forest do not have their rights recognized over the land, while this is the opposite for those who destroy.

By keeping the forest intact, IFPs contribute to safeguarding the great web of life and ecosystem services which are of great importance to Africa and to the world: preserving important medicinal plants, clean air and stabilizing the climate through the storage of carbon dioxide and also providing clean sweet water, generating rain and the free flow of gigantic rivers in the Congo Basin. Even when, within the current capital dominant world, these functions of the forest are being commercialized, the IFPs often receive no returns, not even the recognition of their stewardship regarding the forest.

Their special status as indigenous peoples or as first inhabitants of the land is not taken into account in policies, laws and regulations.[5] Their traditional and customary rights in the forest are not recognized, as national laws have carved out forests into Protected Areas for flagship species or logging concessions for commercial wood/timber production, and forests are still being converted into monoculture agro-industries and plantations and used for mining.

CATEGORIES In these new processes of forest use, IFPs are treated badly. The indigenous peoples are now placed in categories. Some who live in a kind of voluntary isolation, living in the forest for months; come out for a short time and then return. Others live in a more dualistic way – they go back and forth from the forest and the roadside. Then you have a third category, those who are more or less 'modernized', who live in the urban centres. In all three categories, the one common denominator is that they are all marginalized and all discriminated against; they have no identity.

The benefits from the forest hardly ever go to the IFPs. This recurrent marginalization has often affected their self-esteem, rendering them voiceless.

International legal instruments like the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), and the International Labour Organisation's Convention 169, on Indigenous and Tribal Peoples, strongly protect the rights of IFPs. In Central Africa, some governments are making efforts to see how to address the issues of rights of IFPs, even though this is only on paper. The Central African Republic

The way of life of IFPs is intricately linked to and synchronized with the other beings in the forest.

ratified the ILO 169 convention, while most of the countries have signed UNDRIP. The Republic of Congo is the first to adopt a national legislative framework to protect the rights of indigenous peoples in line with UNDRIP; the DR Congo is also following with a Fundamental Law Protecting the Rights of Indigenous "Pygmy" Peoples, which is already at an advanced stage of adoption by the National Assembly of the country. In Cameroon questions over the indigenous status prompted the Ministry of External Relations to conduct a study in 2009 to identify and characterize indigenous peoples and their problems. The study, which was completed in 2011, proposed that the groups to be considered indigenous include the Mbororo pastoralists and the hunter-gatherers (Pygmies).[6] Cameroon officially celebrates the annual International Day of the World's Indigenous Peoples and the Government is involved communities in celebratory events. All this is rather superficial, because in practice the governments do not sufficiently enforce the protection of IFPs.

By keeping the forest intact, IFPs contribute to safeguarding the great web of life and ecosystem services which are of great importance to Africa and to the world.

CONFLICTS The deep knowledge of the IFPs of the Congo Basin has been neglected, as their way of life and culture is regarded as unworthy by the current resource-extractive and capital-driven system. In the future, as climate breakdown and resource depletion diminish the prospects of prosperity, this dismissal of sustainable practices will haunt our descendants. There are recurrent conflicts between IFPs and different forest users. Tensions between IFPs and neighbouring Bantus and herdsmen, resulting in ethnic violent conflicts, have been recorded.[7] This the case in the Kasai and Tanganyika Provinces in the DRC, where the Batwa people and the Luba ethnic tribe have been in armed conflicts over land rights. Indigenous peoples have been displaced or resettled with little or no compensation, as is the case in another typical scenario where the forest on which IFPs depend is converted to oil palm or rubber plantations, for large infrastructure development projects such as the Chad-Cameroon Pipeline and the Deep Sea Port in Cameroon, or for Agricultural Parks in the DR Congo. Some of the most prevalent and documented conflicts are the various conflicts between IFPs and Protected-Area managers. It sounds surprising that those who are supposed to protect the forest, for or with the IFPs, are seemingly their worst enemies. Below are some notorious cases of conflicts between IFPs and Protected-Area managers.

- Concerning the IFPs in the Kahuzi Biega National Park. This park was created during the colonial period and expanded twice; it is in a region with a high population density and a huge pressure on land. The indigenous Batwa people, who were evicted from their land following the expansions without a resettlement, are landless and have conflicts with the neighbouring agrarian Bantus. Unable to bear the landlessness, some Batwa communities had to return to their ancestral lands in 2018 following failed negotiations. Some local and international organizations have been facilitating the dialogue between the Congolese Nature Conservation Institute (ICCN in French), which is in charge of managing protected areas, and Batwa representatives. The negotiations have been exploring co-management options, whereby the Batwa are resettled outside or inside the Park and participate actively in the conservation of the park, their ancestral lands.[8] The conflicts have been violent and led to the loss of lives for both Batwa people and eco-guards of the park.
- Other cases concern serious allegations of government eco-guards/rangers, who receive technical support from an international organization, and who are involved in a wanton abuse of the rights of IFPs in and around protected areas found in Cameroon, CAR, DRC and Republic of Congo. This case was reviewed by a high-level independent panel of experts, whose results showed a very serious undermining of the rights of indigenous peoples.[9]

Legally recognizing IFPs' rights has been possible in other parts of the world, including the cases of Indigenous Reserves in the Amazon.

The problem lies with policies and practices that result in the abuse of the rights of indigenous peoples, especially by the institutions that are supposed to protect them, and the imposition of solutions that are not culturally appropriate nor designed, considering their free, prior and informed consent (FPIC). The result is that most IFPs live in misery, poverty and quasi-dependence on neighbouring Bantus, leading to a loss of dignity, self-esteem and say. Moreover, in rare cases, they have joined commercial poachers in desperation.

OPPORTUNITIES There are huge opportunities to reverse the trends by legally recognizing IFPs' rights over their customary and ancestral lands and supporting them to reweave those ancestral spiritual attachments to the forest and live in harmony with the forest. This has been possible in other parts of the world, including the cases of Indigenous Reserves in the Amazon.

Baka Community Dialogue at the OKANI Learning Centre, Ntam, Cameroon, showing traditional sitting arrangements to ensure equity during the dialogue. November 2020.

This could be done through several actions, including:

- Facilitating meaningful dialogues among IFPs, especially elders and custodians of ancestral knowledge, raising their awareness of the pains of a rapidly depleting forest and their motivation to redeem its secret potency;
- Based on the above, facilitating meaningful dialogues between genuine IFP representatives, including elders or Kobos, custodians of ancestral wisdom, on the one hand and governments and their allies in protected area management and "development" on the other hand;
- Ensuring that legal reform processes and legislation in favor of IFPs are enacted and implemented, taking into consideration their free, prior and informed consent (FPIC) and their traditional ecological governance systems;
- Using emerging global and bilateral processes such as REDD+ and VPA FLEGT to enhance and strengthen the recognition of the rights of IFPs to the forest, which is their ancestral land.
- Government and nature conservation bodies should protect the cultures, knowledge and wisdom of IFPs, while acknowledging their conservation expertise.

Implementing these actions contribute to the protection of life-sustaining forest ecosystems, in which IFPs can play an important role. This would serve the national interests of the countries where they live and have a great value for the global community, which needs solutions to keep the world healthy and safe.

1 Samuel Nnah Ndobe is an independent consultant providing support to indigenous peoples, local communities and civil society organisations in the Congo Basin.

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Charcoal plantations and efficient cook stoves reduce deforestation

by Meindert Brouwer

Tree plantations producing charcoal for cooking and efficient cook stoves are important solutions to reduce deforestation and pull people out of poverty at the same time. Worldwide Fund for Nature WWF, local NGOs, tree planting farmers and women networks are proving this every day in the eastern Democratic Republic of Congo (DRC).

EcoMakala, the solution is called, 'makala' being the Swahilian word for charcoal: sustainable charcoal produced in tree plantations set up by WWF and its partners to reduce pressure on forests inside Virunga National Park, where people have gone to burn charcoal and collect firewood on a massive scale in the past two decades. The production of charcoal is combined with the production of energy-efficient cook stoves for a greater impact. Thierry Lusenge (39) of WWF DRC, manager of the EcoMakala project, explains how it has all evolved.

Lusenge: 'Developing tree plantations for charcoal outside Virunga National Park was part of a large scheme to tackle deforestation, one of the three major threats to Virunga. The other big threats are poaching and plans to drill for oil. The scheme to reduce deforestation was twofold: DRC's wildlife authority Congolese Institute for the Conservation of Nature (ICCN) was to scale up patrolling on the borders of the park and inside, by increasing its number of ecoguards to keep charcoal burners and firewood collectors out. Parallel to that, WWF and local partner organizations were to create new sources of charcoal outside Virunga by developing tree plantations and hence reforest the degraded hills and mountains outside the national park.'

PRESSURE Virunga is the oldest national park of Africa and one of the most important on the continent because of its variety of landscapes and wildlife, including elephants, chimpanzees and the last remaining mountain gorillas. Pressure on the park for wood energy and bushmeat hunting had become huge after hundreds of thousands of people fled to eastern DRC to escape the genocide in Rwanda in 1994. More than twenty years of war between militias in eastern DRC followed and today armed gangs remain to be a threat. Due to the acts of war, people fled to the city of Goma, located just outside Virunga National Park.

We trained the associations to select, train and assist individual farmers to become tree planters and caretakers of their own tree plantations.

Planting tree seedlings.

In 1994 Goma had 15,000 inhabitants. In 2007, the year the EcoMakala project of sustainable charcoal started, Goma had 800,000 inhabitants, who needed 50,000 to 60,000 tons of charcoal annually for cooking. Imagine, that is 50,000,000 to 60,000,000 kilos of charcoal per year. In 2007 80% of the charcoal sold in Goma came from the natural forest in Virunga. Twelve years later, in 2019, Goma had 2 million inhabitants. Around 4.1 % had access to electricity: 20% of the households used electricity and LPG to cook, while 80% still cooked on charcoal. Thanks to the charcoal plantations, the destruction of forest in Virunga national park has decreased. Now a substantial part of the charcoal sold in Goma is supplied by farmers in the region who have a new source of income.

CHAIN Lusenge explains how the charcoal plantations evolved: 'In 2006, after ten years of war, we began by helping to settle landrights of small holder farmers. That provided the basis to actually start. We did not deal with farmers individually. WWF concluded contracts with almost 75 tree planting associations, which are in fact local grassroot NGOs.' He continues: 'Together with the associations we developed a production chain and a marketing chain for sustainably produced charcoal. First we helped the associations to set up nurseries for tree seedlings. We provided them with seeds and bags for the seedlings. Then we trained the associations to select, train and assist individual farmers to become tree planters and caretakers of their own tree plantations. The associations received a fee per hectare. The farmers received seedlings free of charge and starting capital per hectare.'

The project consisted of two main components. The first one was that WWF DRC obliged the tree planting farmers to save part of their field for food production, so they would have food and short-term income while waiting for the trees to grow, either indigenous species or exotic species, such as eucalyptus. The second component was securing income from charcoal every year. Tree plantations were divided into three blocks. Every year farmers would harvest in one block only, so that way they would have a permanent income from charcoal.

The size of small holder tree plantations outside Goma varied from 0.25 to 5 hectares. Big landowners took part as well with 10 hectares and more. More than 12,000 hectares of tree plantations were realized during the period 2007 - 2020. After initial doubts among farmers in the beginning, other small holder farmers around Goma, who were not part of the EcoMakala project, also started to grow trees for charcoal. They noticed that charcoal from tree plantations is good business. Despite disruptions by armed gangs the EcoMakala project has become a remarkable success.

Marketing the charcoal played an important role, Lusenge tells: 'We also assisted the farmers in setting up cooperatives. Organized that way, tree planting farmers were able to sell their legal charcoal for prices competitive to illegal charcoal from Virunga. It is still an informal sector controlled by armed groups. Around the year 2015, trade in charcoal in and around Goma was worth an estimated 40 million US dollars a year.'

Above: tree plantation with Eucalyptus (Eucalyptus saligna) for charcoal and timber outside the city of Goma in eastern DRC. From left to right: Thierry Lusenge, sustainable energy program manager of WWF-DRC and his colleagues Hicham Daoudi, Ernest Ntumba and Gregory Claessens (WWF-Belgium).

Right: start of charcoal production.

Improved, energy-efficient cook stoves in the making.

Goma had 2 million inhabitants in 2019. Around 4.1 % had access to electricity, while 80% of the households in Goma still cooked on charcoal and firewood.

COOK STOVES 'A mix of different solutions is necessary to meet the need of wood energy supply in a sustainable way,' Lusenge explains. That's why WWF DRC has undertaken local production of energy-efficient cook stoves, which reduce charcoal usage by 50%, a major reduction. The cook stoves have become a remarkable success too, just like the charcoal plantations.

Lusenge: 'Between 2009 and early 2020, a growing network of women in Goma (around 600 women organized in 20 local NGOs), produced over 115,000 energy-efficient cook stoves, of which 95,500 were sold in Goma, 16,000 in the province of South-Kivu and there were even sales in DRC's capital Kinshasa. In 2017 WWF helped them to set up a company called Goma Stove so they could scale up their business. Based on this experience we started supporting another women's network in the city of Beni in North-Kivu to also produce energy efficient cook stoves.'

12,000 hectares of more than 9,000 small-holder tree plantations for charcoal are not sufficient. In 2020 40,000 hectares of additional charcoal tree plantations would still be required to satisfy the need of the population in Goma. Nearby there is not much land available anymore, due to the large population density in the region of 300 people per km2. The need for charcoal outside the city is huge as well. Lusenge: 'In 2018, charcoal consumption of households in Goma's province of North Kivu was estimated to be between almost 115,000 and almost 159,000 tons and predicted to rise to a range between approximately 160,000 and 222,400 tons by 2028, according to ONF International.'

ALTERNATIVES There is a need for alternatives, also because burning charcoal is not healthy, although a test has shown that the energy efficient cook stoves are healthier than the ones used before. Lusenge and his colleagues are trying out home biogas. In 2019 they installed biogas digesters of food scraps and manure in 39 households outside Goma. Lusenge is also examining the feasibility of the so-called PV-eCook, a battery-supported solar electric cooking device. Energy left in

Cook stove sales.

The proof is in the cooking.

I AM AGAIN FEELING ALIVE

'Thanks to EcoMakala, I am able to meet the needs of my family and pay for the education of my children. I stopped selling fruits on the streets and carrying charcoal and other products for less than 1 $ a day. After the death of my husband during the war, I am the only one to look after my 5 children. This was difficult with the little income I was making from the hand jobs. However, not only am I now involved in preserving the Virunga Park, I am again feeling alive …' Helène Batachoka, member of the Improved Stoves Producers Network (REPROFCA).

Charcoal will be needed until the access and the price of other sources such as LPG and electricity will be reliable and affordable.

Charcoal transportation.

THREE PILLARS

According to project manager Thierry Lusenge, the sustainability of the EcoMakala project is based on three pillars:

1. Networking by establishing cooperatives of farmers for charcoal business.
2. Revolving capital: farmers pay back 20% to the local association that produces seedlings for other farmers.
3. Carbon credits. Setting up tree plantations for sustainable charcoal – which is a form of reforestation – and the large production of energy-efficient cook stoves have resulted in carbon credits, which have been paid for by Belgian company UCB in this case, offsetting its own emissions. Belgian consultancy CO2logic has acted as carbon credits project developer. A carbon revenue share mechanism has been initiated.

the battery can also enable access to lights, TV, radio, mobile phone charging and other low power energy services.

Virunga Alliance – a public-private partnership – has built 3 hydropower plants in the region. Moreover, Wildlife authority ICCN also started a project to generate hydropower in the rivers. The local government established a hydropower plant in the city of Butembo, not far from the national park of Virunga. In February 2020 the Congolese company Nuru launched an off-grid solar hybrid production facility in Goma. The installation has nearly 4,000 solar panels, each with a generation capacity of 335 Watts, giving a total output of 1.3 MW. The facility is a result of the ÉLAN RDC project, a market systems development project financed by UKAID.

What will be the impact of these projects for cooking in households in Goma, I ask Lusenge. He replies: 'Households could adopt electricity for cooking, depending on the price. That could contribute to reducing deforestation. Charcoal plantations and energy-efficient cook stoves for charcoal will be needed until the access and price of other sources such as LPG and electricity will be reliable and affordable.'

RESULTS ECOMAKALA PROJECT

The EcoMakala project was mainly funded by the European Union, the Ministry of Foreign Affairs in the Netherlands (Department of Development Cooperation), the Swedish International Development Cooperation Agency (SIDA), the Directorate-General of Development Cooperation and Human Aid (DGD) of Belgium, the Wallonian Agency of Air and Climate (AwAC), Congo Basin forest Fund (CBFF), WWF Belgium, WWF Sweden, IFDC (International Fertilizer Development Center) and Kellogg corporation. WWF-DRC received two awards for the EcoMakala project: the International Ashden Award in 2013 and the Energy Globe National Award in 2016. The EcoMakala project shows that nature conservation in Central Africa is also about meeting energy needs and job creation and poverty alleviation.

Charcoal plantations

1. More than 12, 000 hectares of tree plantations were realized during the period 2007 - 2020.
2. On top of that, almost 3,000 hectares of agroforestry were realized between 2016 - 2020.
3. Less pressure on natural forests in Virunga National Park. Between 2007 and 2017 the rate of deforestation decreased in comparison with the 1997-2007 period (55% drop in real terms from 154,764 ha to 69,390 ha).
4. Less soil erosion outside Virunga because of the newly planted trees.
5. Increase of soil fertility.
6. Job creation in a new, legal charcoal product chain: producers of tree seedlings; more than 9,000 farmers diversified their product range and became sellers of charcoal and timber; 159 charcoal makers (in some cases farmers became charcoal makers themselves); 4 cooperatives in charcoal wholesale; transporters of charcoal; charcoal retailers.
7. Gold Standard certification of 'Emission reduction through sustainable charcoal production and consumption': https://registry.goldstandard.org/projects/details/1558
8. Carbon credits.
9. Replication of the Ecomakala model in the province of North-Kivu, resulting in 20,000 hectares of planted trees for charcoal.
10. 39 households provided with biogas digesters, solar lighting systems and kitchen gardens.
11. 156 farmers produced almost 30,000 kilograms of honey between 2016 - 2020.

Energy-efficient cook stoves

1. Between 2009 - 2020 a growing network of women in Goma produced over 115,000 energy-efficient cook stoves, which reduce charcoal usage by 50%.
2. Significant reduction of emissions of greenhouse gas CO_2.
3. Job creation for more than 600 women producers.
4. Sales in Goma, South-Kivu and Kinshasa.
5. Establishment of a business company: Goma Stove.
6. Replication by a second network of women JIKO Bora in the city of Beni in North-Kivu, which produced over 4,350 energy-efficient cook stoves in just a few years.

Source: WWF DRC

WWF DRC, office Goma
Sustainable energy
Contact persons:
Thierry Lusenge +243 971321047, Tlusenge@wwfdrc.org
Consolée Kavira +243 813172893 or +243 971291098, Ckavira@wwfdrc.org

China-UK Collaboration on International Forest Investment & Trade (InFIT)

Responsible Cobalt Initiative

wants to improve the lives of artisanal miners

by Meindert Brouwer

Due to the energy transition, the production of electric cars is expanding rapidly around the world. The global demand of cobalt required in batteries of electric cars and also in batteries of smartphones, laptops and other electric devices continues to increase. Profits made by companies in the cobalt chain may have a dark downside. More than 60% of the world's cobalt comes from the Democratic Republic of Congo (DRC) and about 20% of it is dug there by hand by poor artisanal miners, including children. Working conditions may be hazardous. According to the Responsible Cobalt Initiative, this must change.

Creuseurs in artisanal cobalt mining pit near Kolwezi, southern DR Congo. The hole goes 30 meters deep into the ground where the cobalt ore can be found. From there the creuseurs dig little tunnels to collect the ore. It takes 2 months for a team to dig a hole like this ... manually.

The Responsible Cobalt Initiative (RCI) wants to eliminate child labor in artisanal mining of cobalt in DRC, establish safe working conditions and fair income for artisanal cobalt miners and support the well-being in their communities by funding the building of schools and developing alternative sources of income.
In fact it is up to all cobalt stakeholders inside and outside DRC, including DRC's government authorities, to take responsibility and proactively contribute to change.
If the initiative succeeds, this may serve as an example to improve the lives of artisanal miners of coltan, gold and other minerals elsewhere in the Congo Basin.
In an interview CCCMC director and chairman of the Responsible Cobalt Initiative (RCI), the experienced mining expert Mr. Sun Lihui sheds light on the necessity and conditions for good, standardized governance of artisanal mining of cobalt and on how CCCMC supports Chinese companies to meet new environmental and social standards in the cobalt chain.

Mr.Sun Lihui

Lihui: 'RCI adheres to the principle of "equality, openness, inclusiveness and transparency" to systematically identify and address the social and environmental risks in the cobalt supply chain, to build and promote the due diligence management system of the cobalt supply chain, to improve risk awareness and governance capacity, to strive to reduce the negative impact of the cobalt supply and trade, and to improve the livelihood of affected communities.'

Your initiative is called Responsible Cobalt Initiative. What is your definition of the term 'responsible'?
Lihui, contemplating: 'It needs to be analyzed from several perspectives. The first is to define the responsible entity, that is, to clarify who should be responsible. Regarding companies, upstream and downstream companies in the supply chain should all be responsible and bear common but differentiated responsibilities.
Secondly, it is necessary to clarify "whom should the company be responsible to"? Responsible to the company itself, to its suppliers, to other companies along the supply chain, and more importantly, be responsible to affected community residents and miners in the mining areas. Companies should not disregard other parties' problems just for the sake of preventing their own supply chain risks. Thirdly, it is necessary to clarify the scope and the issues the company should be responsible for. It should include all economic, social and environmental issues, and the entity should not just be responsible for the issues related to its own role and activities. It is necessary to conduct integrated assessments to identify all negative impacts that are directly or indirectly linked to its own activities, and to take responsibility for these identified impacts.'

Lihui points out something else: 'There are several misunderstandings. The first misunderstanding is that companies – even large numbers of international brands – think that as long as they say no to minerals from artisanal mining and only purchase minerals from mechanized, industrial mining, their supply chain is responsible and clean. However, in industrial mining bad practices probably also exist, regarding corruption, safety, environment and other issues. The second misunderstanding is that when they identify the supply chain risks, companies consider disengaging the suppliers to be a responsible approach. What has been solved I ask.'

Why is it in the interest of Chinese cobalt mining and refining companies to mine and refine cobalt in a responsible way?
Lihui replies instantly and then reflects: 'Currently, more and more buyers and public opinion want responsible cobalt in products. Building a responsible, inclusive and sustainable cobalt supply chain can effectively reduce the social and environmental risks that may exist in the supply chain. It does not only meet the requirements of downstream customers, but also increase the trust of and gain support from local communities. Therefore it improves corporate reputation and image, and ensures a healthy and sustainable operation of the company. This is in the self-interest of the

More and more buyers want responsible cobalt in products.


PHOTO © FAIRPHONE
Cobalt is often found alongside copper and malachite (stones with blue-green). Therefore, these supply chains, and the related risks, are often closely linked to each other.

THE RESPONSIBLE COBALT INITIATIVE (RCI)

The Responsible Cobalt Initiative (RCI) was launched by the China Chamber of Commerce of Metals, Minerals & Chemicals Importers & Exporters (CCCMC) and the Organisation for Economic Co-operation and Development (OECD) in 2016. In 2020 RCI has more than 20 member companies across the cobalt supply chain, upstream and downstream. Among them are Chinese mining companies and cobalt processors Huayou Cobalt, Hanrui Cobalt, electronic equipment manufacturer Huawei Consumer Business Group and car maker BMW. The International Forest Investment & Trade (InFIT) program, a high-level policy partnership between the United Kingdom and China, supports RCI.

There is a huge understanding gap between the upstream and downstream enterprises of the supply chain.

company and can also create a win-win environment for multiple stakeholders.'

In what ways does CCCMC support Chinese cobalt mining and refining companies to mine and refine cobalt in a responsible way?

Lihui: 'By developing standards, organizing training, conducting due diligence, and providing consultation, CCCMC helps companies to improve the awareness and capabilities of supply chain due diligence, build a complete supply chain management system, and effectively manage supply chain risks.
We strengthen the support to Chinese companies operating in the DRC, enhance the formalization of artisanal and small-scale mining (ASM) in the DRC, create demonstration cases and provide support for remediation and remedial actions of companies in local communities. At the same time, we help companies to strengthen coordination and consultation with upstream and downstream parties and stakeholders, promote joint actions, and improve work efficiency and effectiveness.'

Could you give examples of remediation and remedial actions of companies in local communities?

Lihui: 'RCI has been actively consulting and communicating with the DRC government, NGOs and other relevant parties to develop remediation and remedial projects. Trainings have been conducted to support member companies in the DRC. For example, RCI supports its member company Hanrui Cobalt in improving local living conditions in local communities such as power supply and provision of drinking water, promoting education by building primary and secondary schools and implementing long-term funding plans. Hanrui continuously provides quarterly or monthly supplements of tables and chairs, sports facilities and equipment, subsidies for school supplies and subsidies for students in need, etc., to contribute to the sustainable development of local communities.
Community participation is key for maintaining the positive partnerships with local stakeholders and creating a stable environment for the mining operation. Hanrui Cobalt involves local governments and members of surrounding communities in selection, planning and implementation of community projects, which in their turn could benefit its mining operation.'

What are the main challenges to realize responsible artisanal mining of cobalt on the ground in the DRC?

Lihui, firmly: 'Challenges are complex and diverse, but we will not stop working just because we have difficulties. We are taking action to constantly overcome various challenges:

1. Many foreign governmental departments, brand owners, media, NGOs, etc. have serious misunderstandings and prejudices on artisanal and small-scale mining (ASM) of gold and cobalt in the DRC. They always link "conflict minerals" with cobalt mining, and constantly demand upstream companies in the supply chain to stop buying ASM minerals, causing confusions for upstream companies.
2. The local society in the Democratic Republic of Congo is very poor. Many community residents rely on artisanal mining for their livelihoods, they do not have any other options. If a company simply refuses to purchase such "minerals" merely to avoid its own risks, it will have a more serious negative impact on the fragile livelihood of the local people.
3. Companies and local governments and communities share different cultures, values, languages, religions and even customs, coupled with weak governance of local governments, which have become an obstacle to strengthen cooperation with local stakeholders.
4. External parties always have this ideal and unrealistic hope to quickly eliminate the risks of child labor, safety and health in the ASM sector in the DRC, while ignoring or even weaken the positive improvements and efforts that upstream companies have made. They ignore the principle of "reality-based, continuous improvement, and stepwise progress" in social responsibility work.
5. The demands and objectives of upstream and downstream enterprises in the supply chain cannot be fully agreed on. The downstream companies have been used to shifting their responsibilities to the upstream actors; while the upstream actors are unable to effectively carry out work due to limited governance capacity, funding, and leverage. In other words, there is a huge understanding gap between the upstream and downstream enterprises of the supply chain in terms of "sharing responsibilities, sharing costs, and sharing value".'

PHOTO © FAIRPHONE

Fairphone assembly line at G'hong factory in Chongqing, China.

What do you consider to be key points of the supply chain? Please explain.

Lihui: 'It is essential to deeply understand which stages in the supply chain have serious social risks, and to analyze the root causes of identified risks, and then adopt systematic solutions. For example, widespread child labor is found in the mining sector in the DRC. The root cause is extreme poverty of the local community. Many families are unable to send their children to school. We even found households of which the heads are teenagers. The source of livelihoods of local residents is extremely simple, and most of them rely on mining for their livelihoods. Cobalt mines in many areas of the DRC are particularly suitable for artisanal mining due to the geological conditions, and mechanized mining is not applicable.
In order to solve the problem of child labor in the DRC, it is for this reason that we cannot simply refuse to buy minerals associated with child labor or expel children from the mining area. Otherwise it will further aggravate the already fragile livelihoods and subject them to more severe survival risks. This calls on the international community, upstream and downstream enterprises in the supply chain, and the DRC government to strengthen cooperation, make systemic solutions, standardize artisanal mining, carry out child labor remediation projects, provide funds for education projects, organize training workshops to diversify local community's skills etc., and gradually lift the local communities out of poverty. In this way, the risk of child labor can be fundamentally resolved.'

It is essential to deeply understand which stages in the supply chain have serious social risks, and to analyze the root causes of identified risks, and then adopt systematic solutions.

Since June 2018 you are involved in implementing in what you call a cobalt supply chain due diligence project, mainly focusing on two pilot sites at Kasulu and Kamilobe in southern DRC. Please explain what the project is about. Are there any first results?

Lihui: 'This project is carried out by CDM based in the DRC. CDM's parent company is our member company Zhejiang Huayou Cobalt. Originally, these two mining areas had the following issues: the mining area is overlapped with local communities; unregulated artisanal mining is identified. A report published by Amnesty International in 2016 pointed out the social risks associated with serious child labor and hazardous working conditions in artisanal mining in the DRC; and these two mining areas were involved.
We continue to call for the formulation and implementation of solutions based on "systematic, inclusive, and sustainable" principles to prevent companies from stepping out of the supply chain, which some do in order to reduce supply chain risks. In that case livelihoods of local communities could deteriorate to a large extent.'

Lihui continues: 'We support Huayou CDM to carry out standardized governance of artisanal mining, focusing on the two pilot mining areas of Kasulu and Kamilombe. Specific activities include: relocation of community villages from the mining area, providing basic needs for the community; building schools around the community, and providing teaching materials for schools, as well as lunch for students; building fences around the mining area, introducing safety requirements for mining; providing necessary protective equipment for miners; standardizing trading markets; providing clean water and shower equipment, etc.; implementing label-based management for cobalt mines in the mining area; contracting a professional security company to ensure a safe working environment; and setting up an independent supervision team with multi-stakeholder participation. By implementing the above-mentioned activities, we aim to establish a demonstration artisanal mining project and community livelihood development project in the DRC, in order to better monitor and improve the working conditions of artisanal miners, improve the system and mechanism to prevent child labour, promote the standardized governance of artisanal mining sites, and contribute to the livelihood enhancement of local communities.'

Lihui concludes: 'At present, the environment of the pilot mining area has been gradually improved, and a continuous monitoring mechanism has been established, which has achieved phased outcomes. The project has drawn extensive attention from stakeholders in the global cobalt supply chain. Based on the achievements in 2020, we are actively studying and promoting the industry's consensus on joint actions and regulatory mechanisms for standardized governance of cobalt artisanal mining, and will use this project as a model to extend the practical experience with regard to the project to more local artisanal mining areas and to promote standardized pilot projects elsewhere.'

Do you consider to develop and support ecologically and socially responsible mining in large, industrial mines of cobalt as well?

Lihui: 'Yes, the CCCMC Guidelines for Social Responsibility in Chinese Outbound Mining Investments issued in 2014 mainly aim to provide standards for large-scale mechanized mining. We have also developed a supporting implementation manual and performance assessment system to facilitate companies to conduct self-assessment and third-party audit. We also conduct series of thematic trainings for companies and provide technical support.'

[EN] http://en.cccmc.org.cn
[CN] http://www.cccmc.org.cn
For more information, contact:
Deputy Secretary-General of RCI, ms Rachel Zhou at CCCMC.
Email: rbc@cccmc.org.cn / rachelzhou@global-rci.org

FAIRPHONE IS SETTING THE STANDARD IN THE MOBILE PHONE INDUSTRY

PHOTO © FAIRPHONE

Fairphone 3+.

Fairphone, a Dutch social enterprise producing smartphones, is setting the standard for mobile phones in the future. As a pioneer in circular mobile phone production, Fairphone produces phones with replaceable modules which can be exchanged for upgrades and which also encourage easy repairs. This increases the longevity of the device to a large extent. With an expected scarcity of minerals in the future, reducing the production of the phone's basics and therefore reducing greenhouse gas emissions, Fairphone sets an example in the industry.
Moreover, Fairphone has set out to source the phone's parts in a responsible way, ensuring that miners of minerals required in the batteries receive a fair and decent fee, contributing to safe working conditions and minimizing the environmental impact.
As a partner of the Responsible Cobalt Initiative and co-founder of the Fair Cobalt Alliance, Fairphone contributes to improving conditions in small-scale cobalt mines in the Democratic Republic of Congo. Fairphone is sourcing Fair-trade gold in Peru and is engaged in establishing Fair trade standards in gold mines in Uganda.
By buying a Fairphone, consumers know that they contribute to environmental and social justice in the mining industry and realize Fairphones goals to source conflict-free tin and tungsten from high risk areas, as well as recycled copper.

This is a strong proposition in a market where the call for environmentally sound and socially inclusive products is increasing all the time.

www.fairphone.com

PHOTO © FAIRPHONE

Fairphone – partner of the Responsible Cobalt Initiative and co-founder of the Fair Cobalt Alliance – produces phones with replaceable modules which can be exchanged for upgrades and which also encourage easy repairs.

How to halt illegal wildlife trade

by Meindert Brouwer

Illegal wildlife trade is a huge threat to biodiversity, to forest communities and to the national economies of countries in the Congo Basin. It also poses a risk of the breakout of new pandemics. How does it work and what can be done to halt it? Alain Bernard Ononino, Head of Policy of the Central Africa Wildlife Crime Programme at World Wide Fund for Nature (WWF) tells.

How widely spread are commercial poaching and illegal wildlife trade (IWT) in the Congo Basin? Which animals are targeted in general?

AO: 'Commercial poaching and IWT are considered to be the most serious and immediate threat to animal species in the Congo Basin. They touch almost all countries and landscapes in the Congo Basin. Commercial poaching and IWT are transnational by nature and Congo Basin is seriously impacted, because it is considered as both a source and transit area. The two animal species most targeted by poachers and traffickers are elephants for ivory and pangolins for scales. Other animals targeted include great apes (gorillas, chimpanzees and bonobos), African grey parrots, cats (lions, leopards etc.) for their skins, and bushmeat species, such as duikers (small antelopes, ed.), monkeys, porcupines and cane rats (rodents of the genus *Thryonomys*. ed.) '

Commercial bushmeat and ivory may have different supply chains. Which actors from inside and outside the Congo Basin do you distinguish in the chains?

AO: 'Concerning the main actors inside and outside the Congo Basin it is important to distinguish between ivory and commercial bushmeat. Main actors in the ivory supply chain include: hunters mostly from indigenous peoples and local communities who are used to enter the forest to kill elephants; middlemen from various profiles including uniformed officers, local business men, local administrative authorities who live mostly in or close to small localities near the forest or along the trafficking routes and who are in charge of providing hunters with the necessary large hunting equipment and collecting back the ivories and ensure they are conveyed to exit areas (airports, seaports, other border areas) of countries. It is important to mention here that certain rebel groups operating on the African continent (Sudan, DRC, Nigeria) who are heavily armed with machine guns are also reported (although this is not sufficiently documented) to be involved in ivory poaching to finance their militias; kingpins found at exit areas who collect products from various middlemen and ensure they leave the supply and transit countries and reach the demand

A stockpile of ivory seized from elephant poachers and illegal ivory dealers is burned in Libreville, the capital of Gabon, in 2012.
© WWF / JAMES MORGAN

Commercial poaching and illegal wildlife trade are considered to be the most serious and immediate threat to animal species in the Congo Basin.

countries, most of which can be found in Asia such as China (despite the China ban in ivory trade), Thailand and Vietnam. It is important to note here that ivory poached today may be turned into legal old, antique ivory sold in antique stores in New York and other major cities.'

AO continues: 'For commercial bushmeat the main actors include hunters from indigenous and local communities, bushmeat sellers mostly women who collect bushmeat products from local hunters and supply restaurants and in urban areas; bushmeat consumers mostly found in urban areas who purchase bushmeat from local or urban markets or consume directly from restaurants. Outside the Congo Basin, bushmeat products are found either in wildlife markets in Asia where they are purchased for in-house consumption or in restaurants in Western cities such as Paris and Brussels, where they are directly consumed mostly by the African diaspora.'

What is the impact of illegal wildlife trade and its criminal activities in local communities in the Congo Basin forests? Can you give an example?
AO: 'Poaching and IWT lead to a rapid depletion of wildlife populations in areas where local communities live and thereby deprive those communities - who depend heavily on these resources for their well-being - from sustainable livelihood. There is also a social impact, local communities used as hunters by middlemen are easily targeted by enforcement agents and since they are usually heads of families when they are arrested and sent to prison, this creates a breach in the family cell and social dependency. Finally, there is a security impact with the proliferation of arms and ammunition used to kill elephants and other large mammals. In the absence of hunting opportunities, these weapons are sometimes used to commit other crimes such as robbery, physical assault or even murder, therefore posing a security threat to human beings and their belongings.'

Illegal commercial hunting may very well have a negative impact on food security for inhabitants of forest villages who depend on hunting for their subsistence. How can this problem be solved?
AO: 'This problem can be solved in three ways: (1) by empowering indigenous and local communities through sensitization and education on the value of wildlife and the need to its sustainable use and therefore to stop poaching and effectively take part in protection efforts; (2) by developing income-generating activities based on indigenous and local communities needs and culture; (3) by tackling all the links of the IWT chain and hunters, but also of middlemen and kingpins.'

What is the impact of commercial poaching on the health of forests, the carrying capacity of ecosystems and perhaps on agriculture in the Congo Basin? Please explain.
AO: 'Because commercial poaching is unsustainable, it empties forests of their emblematic species such as elephants, which play an important role in balancing natural ecosystems. Elephants, for instance, as the largest of all mammals trample forests and dense grasslands, making room for smaller species to co-exist. They also create water holes used by other wildlife as they dig dry riverbeds when rainfall is low and they transport seeds of certain plant species such as moabi.'

Commercial poaching and illegal wildlife trade deprive countries of eco-tourism revenues.

What is the impact of commercial poaching and illegal wildlife trade on the economy of Congo Basin countries? Please explain.
AO: 'Because these activities are illegal, they deprive countries of the taxes and fees they would have collected through the issuance of the various permits and licenses if they had been carried out legally. Because most of the animals targeted by poachers and wildlife traffickers are iconic and therefore attract tourists when they are alive, commercial poaching and IWT also deprive countries from eco-tourism revenues.'

The long-tailed pangolin (Manis tetradactyla) is heavily hunted despite legal protection.

What is necessary to make commercial poachers native to the Congo Basin consider to stop poaching?
AO: 'It is necessary to sensitize and educate them on the ecological and economic value of wildlife, and the fact that they can benefit more from a sustainable use of wildlife resources. It is also important to sensitize them on the risks of unsafe interaction between human and wildlife, which may lead to the emergence of zoonosis that may cause severe epidemics and pandemics such as Ebola and the recent COVID-19. Finally, they must be engaged in income-generating activities that are alternatives to poaching such as fishponds, farming and crafting.'

What has been done and what has to be done to reduce illegal wildlife trade in the Congo Basin: on the ground, on a national level and on an international level?
AO: 'Several efforts have been put together to reduce IWT in the Congo Basin. These include:
On the ground: the creation of protected areas and the assignment of staff and equipment for the management and control of these areas; the organization of anti-poaching activities (patrols and other control operations), awareness-raising and education of indigenous and local communities, the development of income-generating activities as alternatives to poaching:
On a national level: the enactment of wildlife texts, classification of animal species in protection categories, the strengthening of partnership between the wildlife administration and other stakeholders (other enforcement agencies, conservations organizations, other technical and financial partners, donors etc.), sensitization and awareness-raising of key stakeholders such as parliamentarians, the private sector and the public in general;
On an international level: the creation of transboundary areas, the organization of multi-countries field operations in those areas, the inclusion of IWT in the agenda of major international meetings on regional, continental and global levels.
The establishment of the international Wildlife Justice Commission in 2015 to fight transnational organised wildlife crime, based in The Hague, the Netherlands.'

Being a ranger in nature conservation can be dangerous. In Virunga National Park in DR Congo many rangers have been killed by poachers. Poachers get killed too. Do you see opportunities and solutions to curb the violence or is militarization of national park protection inevitable?
AO: 'It is vital to intensify the work in demand countries in order to stop the demand that influences the prices on a

Bushmeat for sale in the Congo Basin.

© RICHARD BARRETT / WWF-UK

Portrait of a male silverback mountain gorilla (*Gorilla beringei beringei*). Virunga National Park, Rwanda.

© MARTIN HARVEY / WWF

Eastern black and white colobus, or Guereza (*Colobus guereza*).

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African forest elephants (*Loxodonta cyclotis*) at sunrise at Dzanga Bai, Dzanga- Sangha Special Reserve, Central African Republic.

Solutions include increased political will and zero-tolerance policy against corruption.

local level in Africa and therefore the appetite of poachers and traffickers including the rebel groups who use heavy weapons to carry out poaching. Because as far as heavy weapons will be used for poaching it will be difficult to curb the violence or militarization of national park protection. This can be combined with sensitization activities at the local level in order to breach the chain between indigenous and local communities and other links of the trafficking chain.'

What are the main challenges to reduce illegal wildlife trade in the Congo Basin?

AO: 'The main challenges include corruption and other related offences (complicity, influence peddling) which undermine all the efforts to reduce IWT.

It is vital to intensify the work in demand countries in order to stop the demand that influences the prices on a local level in Africa.

Other challenges include poverty, which leads locals to engage in poaching for lack of other income-generating activities, insufficient resources (human, financial) to tackle poaching and IWT, the insufficient consideration of the impact and negative consequences of IWT.'

Are there opportunities and solutions which could be helpful to reduce commercial poaching and illegal wildlife trade in the Congo Basin?

AO: 'Few opportunities exist which include:

- The fact that IWT is kept high on the regional and international agenda and continues to attract donor interest;
- The fact that Congo Basin remains a priority eco-region because of its rich biodiversity;
- The existing partnerships between governments and key regional institutions – such as the partnership between the inter-governmental Central African Forest Commission (COMIFAC) and the Economic Community of Central African States (ECCAS) – and partners including conservation organizations;
- The existence of transboundary nature conservation initiatives such as TRIDOM, TNS , Lac Tele-Lac Tumba and GVTC that are necessary to address the transnational nature of IWT.'

(TRIDOM comprises eleven protected areas in three countries including three national parks: Dja in Cameroon, Odzala in the Republic of Congo and Minkébé in Gabon. TNS – Trinational de la Sangha in French – comprises five national parks in Cameroon, the Republic of Congo and Central African Republic. GVTC stands for The Greater Virunga Transboundary Collaboration, referring to the treaty of the same name in 2015 between the Democratic Republic of Congo (DRC), Rwanda and Uganda. Ed.)

AO: 'Solutions include:

- Increased political will, including a zero-tolerance policy against corruption;
- Upholding the rule of law;
- Providing more resources (human and financial) to tackle poaching and IWT;
- Increase inter-agency and cross border collaboration to effectively tackle transboundary IWT;
- Empowering indigenous and local communities to effectively take part in protection efforts.'

Could setting up cattle farming and keeping pigs, goats, sheep and chicken help to reduce hunting?

AO: 'Cattle farming, keeping of pigs, goats, sheep and chicken have produced balanced results. In forest areas those activities didn't really help to reduce hunting because of the age-old cultures and traditions of consuming bushmeat, which is considered in those areas as a delicacy. Results

Local commercial poachers must be engaged in income-generating activities that are alternatives to poaching, such as fishponds, farming and crafting.

are better in savannah areas (Northern part of Cameroon) where communities don't really feel strongly about the culture of eating bushmeat.'

What could be incentives for restaurants in the Congo Basin to refrain from serving bushmeat?

AO: 'Incentives can come from sensitization and education of owners of these restaurants, consumers and the public in general, explaining that the economy would benefit more and continuously from wildlife alive, because wildlife species could attract tourists who would in their turn be customers of these restaurants. Other incentives could come from effective enforcement of wildlife regulations which provide deterrent penalties (imprisonment terms and fines) for those involved in IWT.'

Could you give an example of a case in the Congo Basin in which commercial poaching has been reduced or perhaps stopped successfully? Please explain.

AO: 'Without consistent data it is difficult to say if commercial poaching has been reduced or stopped. However some signs of poaching reduction have been

Illegal wildlife trade may cause a new pandemic in the future.

observed in Dzanga Sangha protected areas in Central African Republic in recent years, at least since 2016. These include a reduction in poaching signs such as animal carcasses, poaching camps observed in the forest, a reduction in ivory and weapons seizures and a reduction in the number of poachers arrested.'

What is your message to inhabitants of forest villages in the Congo Basin?

AO: 'Commercial poaching is a very lucrative illegal activity from which outsiders profit mostly and by which indigenous and local communities are affected mostly. It is vital to protect and conserve wildlife resources for sustainable livelihood and for income that could be generated from eco-tourism.'

What is your message to national governments of Congo Basin countries?

AO: 'Commercial poaching is a transnational organized crime which is very lucrative and deprives governments of economic resources from taxes and eco-tourism revenues. It is vital to provide front-line staff with adequate resources to tackle this plague, to establish conditions for inter-agency collaboration and to better involve indigenous and local communities in protection efforts.'

What is your message to governments of countries elsewhere in the world which are destinations of illegal wildlife trade products?

AO: 'Commercial poaching empties forests and deeply affects populations in source countries, especially indigenous and local communities. It is vital to close down wildlife local markets, strengthen controls in border areas and increase collaboration and cooperation through information exchange between source countries, transit countries and demand countries. Illegal wildlife trade poses a risk of unsafe interaction between human and wildlife, which may lead to the emergence of zoonosis that has caused the recent COVID-19 pandemic and may cause a new pandemic in the future.'

CONTACT INFORMATION

www.wwf-congobasin.org
Zero poaching toolkit: www.zeropoaching.com

For more information, contact:
Alain Ononino
Email: aononino@wwfcam.org
alainononino@yahoo.fr

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A chimpanzee (*Pan troglodytes*) from the Ngamba Island Chimpanzee Sanctuary in Uganda.

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African forest elephant (*Loxodonta cyclotis*), Loango NP, Gabon. The elephants of Loango NP are known to cross rivers and lagoons and forage on the beach.

Wildlife Justice Commission

Intelligence is a force multiplier

by Olivia Swaak-Goldman*, Executive Director of the Wildlife Justice Commission

Transnational criminal networks are a major factor in illegal wildlife trade. The application of intelligence analysis and advanced investigative techniques, along with international collaboration and coordination, are crucial to effectively disrupt criminal networks to secure the protection of elephants and other wildlife in the long-term.

Intelligence analysis is an incredibly important force multiplier when resources are low and the problem is vast, as it allows for investigations to remain focussed on the greatest criminal threat. Therefore, intelligence must form part of any overarching strategy to tackle wildlife crime. The lack of both technical and human capacity is currently a major obstacle to the widespread use of intelligence analysis. Moreover, the wildlife crime global intelligence picture suffers from major gaps as a result of this lack of intelligence analysis. Tackling these lacunas is essential in ensuring the protection of Central African ecosystems. The Wildlife Justice Commission has vast experience in the use of intelligence to address wildlife crime and its experience may be instructive for others.

* Olivia Swaak-Goldman has twenty-five years experience in international justice and diplomacy. She has served as Head of the International Relations Task Force of the Office of the Prosecutor of the International Criminal Court.

IDU The Wildlife Justice Commission has made intelligence analysis key to its strategy and created the infrastructure to facilitate this. The Wildlife Justice Commission's Intelligence Development Unit (IDU) is a fully functional team of criminal intelligence analysts with law enforcement backgrounds and is currently the largest team of analysts working on wildlife crime in any not-for-profit organisation. The IDU is internationally recognised for its high-quality data and analytical efforts. It intends to be a centre of excellence not only for intelligence analysis relating to wildlife crime, but also for upskilling external analysts and, through the outputs it produces, professionalising and promoting the use of intelligence and analysis to scale up its impact in this sector.

Over the last five years, the IDU has built up a wealth of information relevant to the current wildlife trafficking problem, which has a great value for both conservation and law enforcement circles. The Wildlife Justice Commission has invested in the acquisition and retention of such data in its comprehensive intelligence database. This database, along with its dedicated data analysts, means that the Wildlife Justice Commission is in a unique position to generate meaningful insights on a regular basis and is frequently relied upon for its expertise.

Furthermore, the way the Wildlife Justice Commission operates puts it in a unique position to understand wildlife trafficking. It works in many countries that play an important role in the global trafficking of wildlife. The organisation currently has 24 active operations in Africa, Asia, and Latin America, many of which are interconnected. The links between these operations could not have been discovered without the use of intelligence. While law enforcement agencies' jurisdictions often stop at their country's borders, crime does not. The IDU analyses crime on a transnational level to fill this intelligence gap, which is a necessary approach currently not undertaken by other relevant actors.
Through the Wildlife Justice Commission's experience in supporting law enforcement

WILDLIFE JUSTICE COMMISSION

The Wildlife Justice Commission was established in 2015 at the height of the African poaching crisis with the intention of holding criminals, and if need be governments, accountable for killing and selling wildlife. In an environment where intelligence was lacking, corruption was rife and where governments failed to cooperate, the Wildlife Justice Commission tasked itself with collecting actionable evidence with the view of convicting high level traffickers. In the first five years of its existence, the Wildlife Justice Commission helped to get more than 124 perpetrators arrested and stopped an untold number of elephants, pangolins, rhinos, tigers, turtles and other endangered species from being killed, maimed and trafficked. These successes are results of the Wildlife Justice Commission's approach. It conducts intelligence-led investigations based on law enforcement methodology. The Wildlife Justice Commission shares intelligence reports, presents compelling evidence, builds law enforcement capabilities, and encourages further action in order to have governments do what is necessary to stop these crimes. The Wildlife Justice Commission can assist governments and other organisations in educating intelligence officers in the field of illegal wildlife trade.

Wildlife Justice Commission's headquarters are based in The Hague, The Netherlands
www.wildlifejustice.org

Intelligence must form part of any overarching strategy to tackle wildlife crime.

Wildlife Justice Commission

agencies, it became evident that intelligence analysis is necessary, yet a desperately under-resourced area in efforts to address wildlife crime. This has resulted in significant missed opportunities and a misallocation of resources. The ability of both law enforcement agencies and NGOs to meaningfully tackle wildlife crime is greatly limited without the use of intelligence. It is through this lens that wildlife trafficking in Central Africa should be tackled.

CHINA As Africa's largest trading partner, China's dominant influence in the Congo Basin and throughout Africa is undeniable. For decades, China has also been one of the main destinations of wildlife products from Africa. China's role in fighting the global illegal wildlife trade has a direct impact on preserving the biodiversity, forest communities and national economies of the countries in the Congo Basin.

China has long been one of the world's largest markets for ivory, however the domestic ivory trade within China officially came to an end as of 31 December 2017.[1] The country's total ban on the ivory trade is a milestone achievement in the history of elephant protection.

Right after the outbreak of Covid-19 in February 2020, China's legislature issued a resolution banning the nationwide sale and the consumption of all wild animals.[2] Since November 2020 China's Wildlife Protection Law has been under review, with public suggestions and comments being sought on its latest amendments. It is expected to come into effect in 2021.[3]

A series of legislative reforms are not the only measures China has taken. It is followed up and supported by effective, coordinated and intelligence-led law enforcement actions in China. In the first nine months of 2020, China prosecuted 15,154 people for wildlife-related crimes, up 66.2% from 2019, and of which 3,280 individuals were charged with illegal purchasing, selling, transporting, or smuggling endangered wild animals and the products made thereof.[4] A profound legislative basis combined with effective law enforcement is assessed to have had an impact on the criminal dynamics of illegal ivory trade. Indications of this include direct references from wildlife traffickers and traders now reluctant to trade raw ivory, and who are consequently stockpiling ivory in key countries along the supply chain, causing a steep decline in its street value.

EQUATORIAL GUINEA Taking a closer look at these law enforcement actions in China shows an interesting picture. Equatorial Guinea, one of the smallest nations in Africa, borders key source countries of elephant ivory and pangolins in the Congo Basin region. However, the country itself is rarely considered as a traditional source country of wildlife exportation from Africa to Asia. Previously, there have been minimal seizure data or criminal intelligence related to the illegal wildlife trade in Equatorial Guinea known to the Wildlife Justice Commission. However, an analysis on the database of Chinese courts judgements surprisingly revealed a rather consistent crime pattern, where Chinese nationals (often overseas workers) would smuggle pangolin scales and ivory products from Equatorial Guinea back to China. Between 2015 to 2020, 19 individuals who departed from Equatorial Guinea were arrested carrying approximately 570kg of pangolin scales and 25kg of ivory at various airports in China. All those 19 individuals boarded Ethiopian Airlines flights and transited in Addis Ababa.

Despite its small size, Equatorial Guinea tops all its neighbouring countries in terms of the total number of arrests concerning importing wildlife products to China between 2015 to 2020, in comparison with 13 cases from Nigeria, six cases from DR Congo, four cases from Rwanda, two cases from the Republic of Congo and one case from Cameroon. It is encouraging that Chinese law enforcements are taking effective actions to prevent wildlife being smuggled into the country from the Congo Basin region, especially Equatorial Guinea. Meanwhile, the central question is yet to be answered: how can China's determination in fighting the illegal wildlife trade and the positive results garnered so far be translated into the preservation of the Central African forest and biodiversity?

AFRICA MAJOR HUB WILDLIFE TRAFFICKING

Our planet's wildlife is being decimated. According to a 2019 IPBES report on threats to biodiversity, the planet is at risk of losing more than one million species in the coming decade. Wildlife trafficking plays a major role in this destruction, driving many species towards extinction, as well as threatening global security and public health. Estimated to be worth between USD 7 - 23 billion[5] per year, it is a very lucrative form of crime. Wildlife trafficking also entails serious economic consequences. The World Bank estimates that the financial and economic consequences of transnational organised wildlife crime can amount to as much as USD 1 - 2 trillion per year.[6] Current efforts are not adequate to slow this down.

Africa is a major hub for such trafficking and many African countries are losing their national heritage at an alarming rate. Many species are endangered due to deforestation, habitat loss and poaching, amongst others. This concerns iconic species such as the African elephant and great apes, as well as lesser-known species such as the pangolins and endemic birds. This is very much the reality of Central African ecosystems.

© WWF / JAMES MORGAN

Seized shipment of illegal African elephant tusks, Thailand, 2012.

The Intelligence Development Unit (IDU) of the Wildlife Justice Commission also upskills external analysts.

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Gorilla tourism in Moukalaba-Doudou

Text and photos Meindert Brouwer

In the Moukalaba-Doudou national park in the southwest of Gabon, a small NGO called PROGRAM offers tours to tourists to see gorillas, forest elephants and other wildlife. Ecotourism from which nature conservation and local communities benefit.

PROGRAM stands for Protection of the Great Apes in Moukalaba. There are many great apes in the national park, both gorillas and chimpanzees. Their total is estimated to amount to 4,500.

This is in sharp contrast with the forests of Minkebe National Park in the northeast of Gabon. There poachers have slaughtered most elephants and decimated the population of gorillas, which had already suffered greatly from the outbreak of Ebola in the year 2000.

To help to protect the still untouched populations of gorillas and chimpanzees in the wildlife paradise of Moukalaba-Doudou, a Gabonese group of great ape lovers established the NGO PROGRAM in 2004. The founders were not only motivated by love for the great apes, but also by solidarity with the people living in the area, who are often poor and jobless.

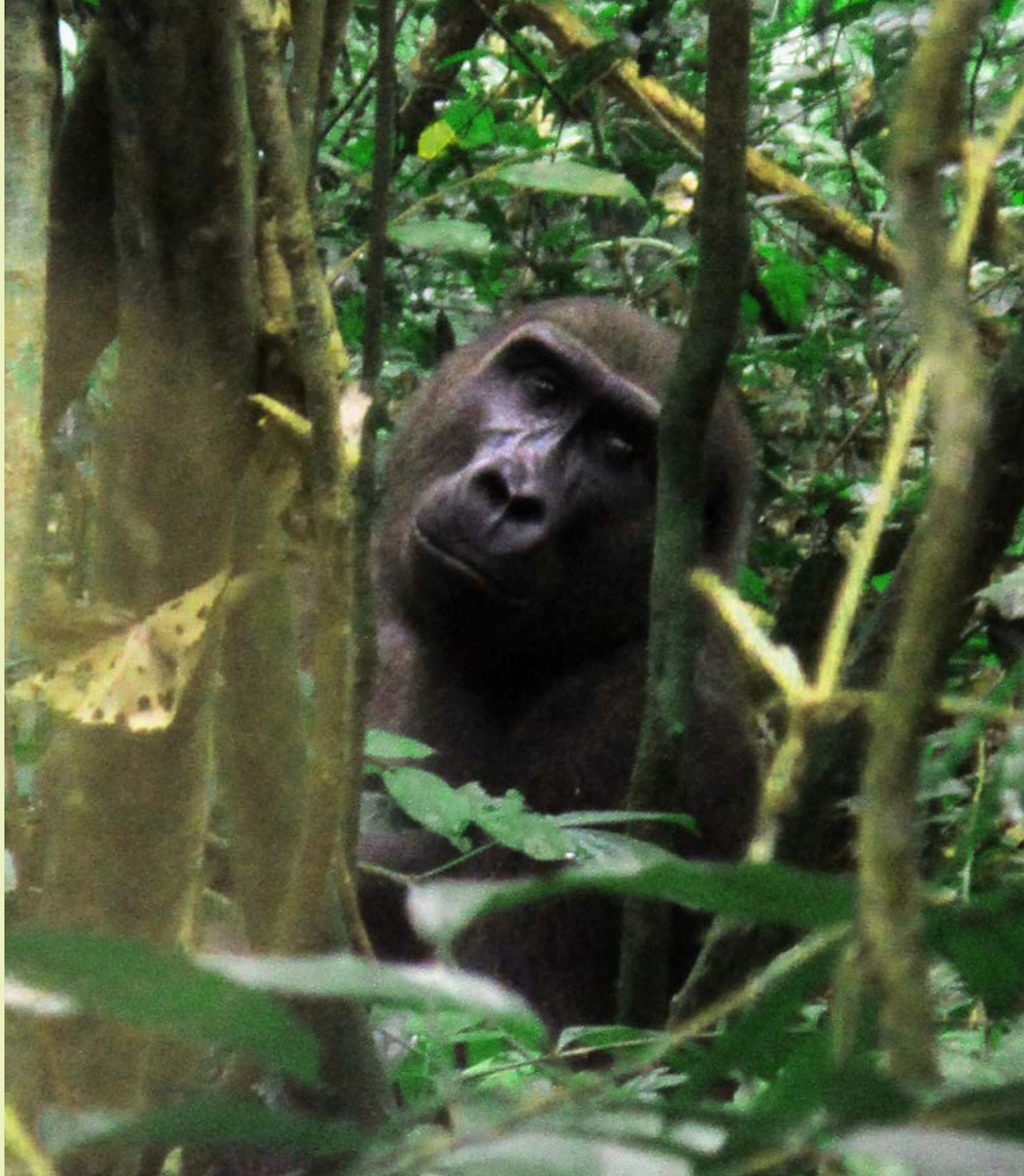
The combination of compassion and a good sense of reality were the basis to establish ecotourism as a tool of nature conservation and local development. Without support of the local population conservation of biodiversity is impossible.

NGO PROGRAM is habituating a group of gorillas inside the Moukalaba-Doudou national park. Habituating means making gorillas get used to the presence of humans, so they will not run away or charge when humans approach them. The gorillas remain wild and trackers and tourists have to stay careful, but it is easy to trace and observe them when they are well habituated.

I still remember very well how I set out to visit the area at the end of September 2015 to try to see my cousin, this big great ape whose ancient ancestors are the same as mine, in the wild. Tourist guide Ghislain Bouassa and wildlife tracker Pie Evrard Nziengui – called Pie – were my companions.

TCHIBANGA, SOUTHERN GABON, SATURDAY SEPTEMBER 26, 2015

It is around 15.30 in the afternoon when we leave the city of Tchibanga and head for the village of Doussala on the border of the Moukalaba-Doudou national park. The open platform of the van is full of people, supplies and medicines for the pharmacy of the village. Outside the city the dark asphalt of the road soon comes to an end and we continue on a yellow-red dirt road. The sun is shining over a varying landscape with savannahs and forests. We are on our way!



White-fronted Bee-eater (Merops bullockoides).

We pass small villages. The houses are made of wooden boards, with corrugated iron roofs and sometimes the whole house is made of corrugated iron, with only one opening to go in and out. People sit together in front of the houses or walk around.
On the savannah at the left side of the road we see a group of grey waterbucks, their necks bent down, enjoying the soft, green grass. A big male with antlers looks up and stares in our direction. At this time of the year the savannahs are set on fire to generate new grass for wildlife to feed on. The fires also serve two other purposes. People can then find and collect mushrooms which pop up in the fields and feel safer because the tall grass around the villages is burned down, so they see can see further.

BEE-EATERS When the car stops for a moment, I notice around thirty birds sitting on an electricity line across the road. They fly up off and on, turn back and settle on the line again. Bee-eaters! Their bellies are deep pink, there is a white stripe beneath the eye, a black stripe across the eye and their head and back are greenish-grey, beautiful! I look at them moving my binoculars from right to left. I am excited. Then, to my big surprise and joy, I discover two different looking bee-eaters sitting next to the pink ones. These two have a striking white forehead, white chin, pink throat, yellow belly, blue lower underparts and a light-green back. I am thrilled, seeing these colourful birds make the whole trip worthwhile already! Later I see a big tree without leaves. In the late afternoon light, the barren branches above the thick trunk form a huge circle full of black veins which are decorated with over a hundred pink gems: rosy bee-eaters who may have chosen the tree to spend the night.

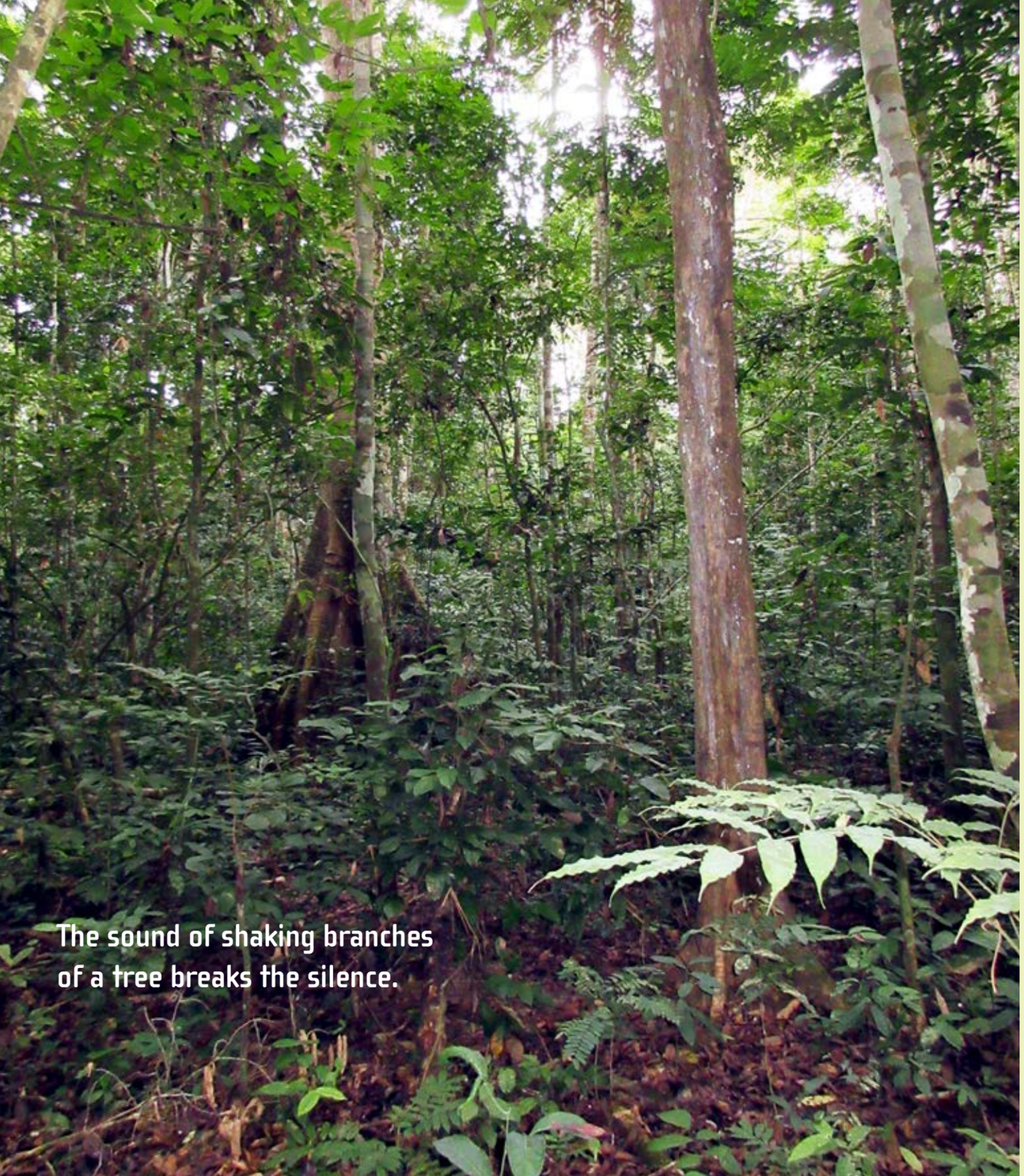
We arrive at our destination, the village of Doussala, which is located along the Moukalaba river, and on the other side is the Moukalaba-Doudou national park. Doussala is small with wooden houses on each side of the road, like the villages we have seen before. Less than hundred people live here. Ghislain gets out of the car and looks for the head of the village, it is customary to first inform the

TREASURE TROVE OF BIODIVERSITY

There are not many places in Africa where tourists can see gorillas in the wild. However, in the southwest of Gabon, in the forest near the village of Doussala just outside Moukalaba-Doudou national park, tourists have a fair chance to see gorillas, especially in the right season when the trees carry fruits. NGO PROGRAM organizes trips to go there. You stay in a simple ecolodge and local trackers, employed by PROGRAM, take you in the forest. PROGRAM also runs a fine but simple campsite inside the national park, called Mbani. The food is great. There are also so many other animals and birds to enjoy and beautiful trees as well, especially in the primary forests surrounding Mbani camp. The savannahs and rainforests of Moukalaba are the home of gorillas, chimpanzees, other species of monkeys, forest elephants, buffalos, hippos, red river hogs, antelopes, leopards and more than 300 species of birds, many of them very colourful. Big butterflies swirl through the forest and three species of crocodile can be found in the rivers.

Nziengui Pie Evrard is wildlife tracker. In the past he used to hunt. 'Taking tourists and watching how they love animals made me understand that animals are really important and should be protected. If my children would want to see a duiker (a small deer, ed.) when they are grown up and it would not be there anymore, I would be ashamed, so I want to protect the animals.'

Tourist guide **Ghislain Bouassa:** 'Nature gives us everything. When nature is healthy, I am healthy. When something goes wrong with nature, I am affected.'



The sound of shaking branches of a tree breaks the silence.

head personally when you arrive. In Doussala the head is a woman, Marie, she is small, looks forty and is sitting on a stool, peeling cassava.

We stay in Case Madre, the ecolodge of PROGRAM outside the village. It is built on a hill at the edge of the forest and overlooks the savannah for many kilometres, until the land rises into the forested Doudou mountain range. Case Madre is the former house of the director of the local timber concession of timber company Compagnie Equatoriale des Bois du Gabon (CEB), which in the past exploited the forest in what is now the southern part of Moukalaba-Doudou national park. CEB left in 1989, but some buildings have remained.

ROMANTIC The lodge is simple, but romantic. There is no electricity, when it gets dark oil lamps are lit and shadows are cast on the wooden walls. The rooms are spacy. There is no streaming water, the bathrooms have big buckets filled with water of the river. Plastic bottles from the store in the city provide drinking water. The kitchen stove works on a gas cylinder. Housekeeper and cook Mamina from the village

We walk on narrow trails of forest elephants.

has a free evening, so Pie and Ghislain prepare dinner – rice, vegetable sauce, baked bananas and deliciously baked fish –, while I write in my notebook on the veranda, listening to the chirping sounds of cicadas and mysterious screams of unknown creatures in the forest behind the lodge.

SUNDAY SEPTEMBER 27, 2015 What will the day bring, will we see a gorilla?! In the morning tracker Pie had heard a gorilla shouting very near the lodge! It is around 10.30 when we enter the forest looking for him. Pie walks up front, I am behind him and Ghislain walks at the back. I feel very safe with them. We walk on narrow trails of forest elephants, we come across their dung from time to time. Somewhere in the forest the Guinea Turaco calls. It does so roughly every half hour and local people refer to the bird as the African watch, Ghislain tells me. Pie points at gorilla shit, which is green-brownish, more or less the size of a baseball, orange-brown seeds stick out. They are seeds of the fruit of the Musanga tree, which gorillas love.

RESIN While Pie focusses on finding more traces of the gorillas, Ghislain sheds light on what the forest has to offer to humans. He points at a tall tree, the Okoumé tree, *Aucoumea klaineana*, the most popular hardwood tree in Gabon. At the foot of the trunk there is a white mass, it is very sticky resin, which can be used for different purposes, Ghislain explains. Indigenous people make torches of the resin, to light up ceremonies. The resin is an effective mosquito repellent and also used to close a gap in a pirogue. And, when you put a tiny piece of resin in a bottle of drinking water, the water will taste better after three days.

Pie notices pieces of a stem of an Aframomum brush lying on the ground next to the trail. The stem has been split up across its length. Pie explains that this was done by a gorilla. Gorillas like the spherical first part of the inside of the stems. I ask Pie whether I can eat it as well. Yes, he says and breaks another stem, splits it and hands the inside over to me. It tastes like ginger and it is kind of sweet, and really good! It is a kick to eat the same food as gorillas eat!

JOINT EFFORTS

In the region of Moukalaba-Doudou four organisations cooperate to protect biodiversity: the Gabonese National Park Agency ANPN, Gabonese ngo PROGRAM, Kyoto University (and other universities in Japan) and Gabonese Research Institute for Tropical Ecology IRET. The local population participates through their committee CCGL (Comité Consultative de Gestion Local). US Fish and Wildlife Services and Worldwide Fund for Nature WWF are major donors of PROGRAM which also receives financial support from the French Embassy in Gabon, French Fund for the Global Environment FFEM and the US Embassy in Gabon. PROGRAM receives technical support from ANPN, Kyoto University, CBG timber company, Ecologic (ngo in Japan) and Ibonga (ngo in Gabon).

Trees and animals help each other, Ghislain explains as we continue our way. Trees help animals with food such as leaves, fruits, bark and roots. Animals in their turn help trees to multiply by shitting the seeds of their fruits in other parts of the forest. Seeds of fruits which lie at the foot of a tree are not likely to germinate: they have to be transported. The seeds of odika fruits even get enriched in the stomach of the forest elephant. Thanks to the gastric juices of the elephant the odika seeds have a better chance to germinate. Sauce of odika seeds is very popular in Gabon. Without elephants no odika sauce!

We keep following their trails and notice how the elephants have torn down trees with their trunks. Occasionally Pie stands still and listens as if he is hearing something. When we cross a small stream, there is some noise in the bushes and in small open space, a red capped mangabey appears, a light coloured monkey, violet red on top of his head, a rather dignified appearance. He looks at us and continues on his way. It is hot, my shirt is soaked. Pie cuts a large piece of liana hanging down from a tree with his machete. While we hold the liana almost straight above us, moving our head backwards and opening our mouth, the liana releases drops of water from its inside and quenches our thirst.

SOUND Then we hear a vague, flaring sound far away in the forest, I can hardly hear it, but Pie recognizes the sound immediately. It is a gorilla beating its chest with his hand! My mind and body instantly focus, I feel my heart beating faster. Will it really happen during my very first walk in the forest, will I really see a gorilla so soon?

Pie walks in the direction of the sound. It starts getting hillier. Pie leaves the elephant trail and goes down a slope very slowly. I follow him, Ghislain is behind me. There are many dry leaves on the ground, they crackle enormously. Grey stones lie loose and may slide when you step on them, where can I put my feet without making a noise?!

After moving down exasperatingly slow, Pie signals us to stand still and wait. We are still on the slope, about ten metres above the floor of the narrow ravine in front of us. It is pretty steep, I try not to fall and grab the small stem of a young tree, growing straight up towards the spots of light in the green canopy. Silence surrounds us and we wait, my eyes move from the left to the centre to the right and back, to not miss anything. The sound of shaking branches of a tree breaks the silence. Leaves and branches in front of us are moving fiercely. A very young black gorilla with a round baby face appears between two white, big branches of a huge Musanga tree. He sits still for a few seconds, looks around and then goes down quietly back into the leafy mass. I have seen a gorilla in the wild! The first one in my life! We keeping waiting for hopefully more things to happen. A few minutes later, another but older young gorilla climbs one of the big white branches. I can see him very clearly. He walks up fast and through my binoculars I can see enthusiasm on his black face, he is looking forward to the yellow-green fruit hanging above him. Stretching an arm, he takes the fruit and enjoys eating it. Then he spots us. He looks sharply and goes down quickly, disappearing in the green foliage.

HUGE Suddenly a very loud shout can be heard, from very near, from the darkness of the ravine floor in front of us. I am terror-stricken. Waiting for the gorillas I had already seen something huge and black moving in our direction and then sitting against a big grey rock. I had wondered if it might be a big gorilla, but I could not see it very well and, besides, the young gorillas had taken all my attention. Now the huge and black body started to move again up the slope on the other side of the ravine, to the left and then showed himself to us in full glory, twenty metres away, the silverback, the big leader of the group! Standing on the slope on his feet and hands in downwards position, his piercing eyes looked at us with great suspicion. I smelled his strong scent. Two hundred kilos of clenched strength, black, silver grey on the legs, red brown on top of his head. Pie made reassuring sounds with his tongue. The silverback kept looking for perhaps a minute, then turned around, showing the silver grey of the bottom part of his back and disappeared.

Western lowland gorilla (Gorilla gorilla gorilla).

COMMUNITY-BASED TOURISM: TOURISTS CONTRIBUTE TO POVERTY ALLEVIATION AND NATURE CONSERVATION

There is much unemployment and poverty in the region. PROGRAM involves local people in its ecotourism activities. By engaging PROGRAM, tourists contribute to poverty alleviation and community development. Local people earn money by assisting in the transport of tourists, by tracking gorillas and other wildlife in the forest, by cooking for the tourists, housekeeping in the ecolodge and through cultural festivities such as performing Bwiti dances. The village of Doussala as a whole receives funds from PROGRAM as well. All together, 50% of the turnover of PROGRAM's ecotourism activities goes to the local population, PROGRAM states.

PROGRAM has done more, they tell me. They have repaired roads and bridges in the region and have brought electricity to the village of Doussala by installing a diesel engine. PROGRAM has also set up production of handicrafts and organic honey which add to generating income for the villagers.

PROGRAM raises awareness among the local people about the importance of protecting biodiversity, despite the fact that forest elephants often ruin the crops of their plantations, which is a big problem. They try to convince the villagers that they must be proud of their natural heritage, which is of such great value to the whole world. The bottom line however is that people need to eat and need money to buy clothing and send their children to school. A job in ecotourism enables them to do that. They then do not have to go hunting to sell commercial bushmeat, one of the big threats to wildlife and biodiversity in Africa. Instead they will protect nature, since it is their source of income.

PROGRAM contactpersons:
Dikenane Kombila, General Secretary
Email: d.kombila@association-program.com
Sidonie Evralde Zang Obame
Email: r.zang@association-program.com
Website: https://association-program.com
Facebook: https://www.facebook.com/ong.program/

King Kong is a peaceful vegetarian

The movie poster with the image of a huge, aggressive King Kong rising high above the city of New York is well known. Japanese PhD-student Keiko Tsubokawa, who has studied gorillas in Moukalaba-Doudou, tells that the real character of a gorilla is the opposite: 'Gorillas live a very calm and peaceful life.'

Keiko Tsubokawa from Kyoto University in Japan has studied gorillas in Moukalaba-Doudou. 'My personal objective is to know more about human evolution. I want to compare communication among humans and among gorillas and other great apes. It is a kind of dream to know our common ancestors, how they may have lived and how they may have communicated.'

Keiko: 'Gorillas have different characters, as is the case with humans. They have the same emotions, they can be angry, depressed, satisfied and cheerful. Silverbacks, the dominant males, may fight with each other over females, but normally they avoid that. When silverbacks meet each other, they beat on their chests, but actually they do this to avoid fatal violence.' Cheerful and angry. Yes, silverbacks can become very angry. What do you have to do when a silverback makes a charge? Primatologist Juan Ortega told me: 'Don't run, stand still and avoid eye contact.
The silverback may charge but not attack.' Never go alone, that's for sure. One time Ortega got really scared. He was facing a charging gorilla together with a companion, but he was able to use his walkie-talkie and reach two other members of his team. When the silverback saw them coming, he went away.

The gorilla is the largest of the great apes and has a strong appeal on humans. Not only on the movie poster. In Central Africa a gorilla may be killed because people want to obtain his power. A gorilla hand may be put in a soup for that reason. Hunting gorillas for meat is not a treat, Ghislain tells. 'The meat of a gorilla is comparable with bush pig, it's not special.'

ANCESTORS Tracker Pie is a former hunter. He told me that he could never shoot a gorilla or a chimpanzee: 'I love chimpanzees and gorillas because they behave like humans. We are similar, we have same habits, we have common ancestors. Our traditional belief says that when you eat a chimpanzee or a gorilla, it's like you are eating a human, you would be a cannibal.'

There are other animals that are forbidden to eat, Pie says: 'For a woman it's completely forbidden to eat snakes or animals with fur, like monkeys, cats and mangoestes.' Some clans have an animal as totem. Obviously you cannot kill your totem. The totem of Pie's clan is the leopard.

‘I love chimpanzees and gorillas because they behave like humans.’

Gorillas are vegetarians. They eat fruits of trees, leaves, stems of plants, flowers, bark, roots and dead wood. The only ‘meat’ they eat are ants and termites. The silverback may weigh 150 – 180 kilos, females around 80 – 100 kilos. The gorilla species which lives in Gabon is the western lowland gorilla. In the zoo western lowland gorillas may reach the age of 50 years or more. How old they get in the wild is not known.

Western lowland gorillas live in groups of 7 to 10 members on average. The dominant male, the silverback, is the boss. There are several females and sons and daughters of different ages. How do gorillas spend their day? Keiko: ‘Their daily routine is to get up around sunrise, 6.00 a.m. or before, and have breakfast. At 09.00 a.m. they take a nap during 30 to 60 minutes. Then they eat again. At noon they take another nap during 30 to 60 minutes. After that they move to search for food. Around 02.00 p.m. they once more take a nap of 30 to 60 minutes. It depends on the day,’ Keiko adds, ‘if they have interaction with another group, the day may be spent differently.’

At the end of the afternoon, towards sunset, gorillas make a bed of leaves in a tree or on the ground to spend the night. During the night they sleep. In this part of the world it gets dark at around 6.30 p.m., so gorillas sleep long! Keiko: ‘If there has been very much rain in the night and the gorillas have not slept well, they may have a big sleep in the morning.’

COMMUNICATION Young males between the age of 10 and 12 start to keep distance from other members of the group and at some stage leave the group and become solitary males. Later they will seduce females of another group and start a group of their own. Keiko wants to specialize in communication and vocalisation among gorillas. She tells that western gorillas and eastern gorillas speak different dialects. Very interesting, I had never thought of that!

Wildlife trackers Doukaga Guy-Roger (left) and Moukagni Jean-René assist gorilla researcher Keiko Tsubokawa.

Spanish primatologist Juan Salvador Ortega habituates gorillas. The goal of habituation is that gorillas become indifferent towards the presence of humans.

How do you habituate gorillas?

Ngo PROGRAM is habituating a group of gorillas inside the Moukalaba-Doudou national park. Habituating means making gorillas get used to the presence of humans, so they will not run away or charge when humans approach them. The gorillas remain wild and trackers and tourists have to stay careful, but it is easy to trace and observe them when they are well habituated.

Gorillas run away when they spot or smell you. How do you habituate them so they do not run away? It starts with the identification of a group, Spanish primatologist Juan Salvador Ortega explains. He has habituated gorillas for PROGRAM in Moukalaba-Doudou national park. The first step in identification is to get to know the number of the group and recognize the features of its leader, the silverback. After identification, Ortega distinguishes four phases: ‘Phase 1 is increasing the contact with the group of gorillas, you try to see them every day. This phase is characterised by fear and aggression among the gorillas. Once you have reached a good frequency of contacts, there is a greater tolerance among them, this is phase 2. The gorillas avoid you and there is still some degree of aggression. You keep the contact very brief though. You spot them and you move out.’

Ortega continues: ‘Phase 3 is increasing the length of contacts. The silverback can be aggressive. He has less fear and wants you to stop following the group. Then the silverback allows his kids who are curious to look at you. The females avoid contact. Phase 4 implies full tolerance among the gorillas. The silverback and therefore the rest of the group gets fed up with you and ignores you. You find them every day and you can follow them the whole day through. Indifference is the goal of habituation. Females are the last to get habituated.’

The process of habituation takes five to eight years on average. Imagine, going into the forest with trackers most of the days for so many years. That takes much patience and perseverance.

The need for smart road planning

by William F. Laurance[1], Mahmoud I. Mahmoud[2], Fritz Kleinschroth[3]

The tropical forests of Central Africa sustain exceptionally high biodiversity and environmental services such as forest hydrology and carbon storage. Large-scale infrastructure projects, if not planned well, pose a huge threat to important wildlife habitats, protected areas, and environmental services. William F. Laurance, Mahmoud I. Mahmoud and Fritz Kleinschroth propose smart linear infrastructure planning guided by spatial planning concepts to reduce negative environmental impacts and maximize socioeconomic benefits.

[1] Distinguished Research Professor at James Cook University in Cairns, Queensland, Australia. Director of Centre for Tropical Environmental and Sustainability Science (TESS) at James Cook University. E-mail : bill.laurance@jcu.edu.au
Director of the Alliance of Leading Environmental Researchers & Thinkers (ALERT) www.ALERT-conservation.org

[2] PhD degree in Climate Change and Land Use and postdoctoral fellow with the Centre for Tropical Environmental and Sustainability Science (TESS) at James Cook University in Australia. Member of the Alliance of Leading Environmental Researchers & Thinkers (ALERT)

[3] Dual PhD degree in Ecology and Biodiversity from AgroParisTech, France and Forestry from Bangor University, Wales. Currently a postdoctoral researcher at the Ecosystem Management group at the Swiss Federal Institute of Technology in Zürich (ETHZ), Switzerland.

Across Africa, infrastructure projects are expanding at an unprecedented pace. These projects include a large number of industrial mining projects; over 50,000 km of proposed 'development corridors' that would crisscross much of the continent; the world's largest hydropower dam complex, at Inga Falls on the Congo River; ambitious plans to increase industrial and smallholder agriculture; widespread industrial logging; and a variety of other transportation, energy, and mining ventures.

Although African infrastructure expansion is largely driven by foreign investments to exploit natural resources such as minerals, timber, and fossil fuels, major infrastructure projects are also being advocated because of concerns about Africa's booming population, which is projected roughly to quadruple this century. This creates serious concerns about food security and human-development challenges, and broader anxieties about the potential for social and political instability.

AFRICAN DEVELOPMENT CORRIDORS A true game-changer for African nature conservation is at least 33 ongoing and proposed "development corridors" that will crisscross sub-Saharan Africa. If completed in their entirety, the corridors would collectively span more than 53,000 km in length.

The development corridors would have a range of environmental effects, including major impacts on existing protected areas. First, they could bisect reserves, fragmenting them and opening them up to illegal

Rainforest clearing for a Chinese-operated road-construction camp in the northwest of the Republic of Congo.
PHOTO © WILLIAM LAURANCE

Development corridors could affect approximately 2,200 protected areas in Central Africa.

encroachment and poaching. Second, by promoting colonization, habitat loss, and intensified land uses around reserves, they could decrease the ecological connectivity of the reserves to other nearby habitats. Finally, environmental changes in the lands immediately surrounding a nature reserve tend to infiltrate into the reserve itself. So, for example, a reserve with extensive logging and hunting in its surrounding lands and weak reserve management will also tend to have those same threats occurring, to some degree, within the reserve itself. A detailed analysis of the proposed and ongoing development corridors suggests that (1) many corridors as planned would occur in areas that have high environmental values and are only sparsely populated by people (Fig. 1); (2) as presently planned, the corridors would bisect over 400 existing nature reserves; and (3) assuming that land-use changes intensify only within a 25 km-wide zone around each corridor, more than 1,800 additional reserves could experience deterioration in their ecological integrity and connectivity as well as increased human encroachment.

In total, the 33 development corridors could bisect or degrade about one third of all existing protected areas in sub-Saharan Africa. Furthermore, the 23 corridors that are still in the early planning or upgrading phases would be in particular dangerous for nature. If completed, these corridors would bisect a higher proportion of high-priority reserves, such as World Heritage Sites, Ramsar Wetlands, and UNESCO Man and Biosphere Reserves, than existing development corridors. Collectively, the 23 planned corridors would slice through more than 3,600 km of protected-area habitat.

A number of the approximately 2,200 African protected areas that could be affected by development corridors are located in Central Africa. For example, two epicentres of bisected reserves – located in the mineral-rich belt spanning southern Cameroon and the northern Republic of Congo, and the Great Lakes region of East Africa – harbour vital habitats for wildlife, including great apes. There would also be considerable losses and deterioration of important habitats outside of protected areas. The World Bank projects that expanding roads and transportation infrastructure will be the biggest drivers of deforestation in Central Africa in the next 1-2 decades.

PHOTO: MAHMOUD I. MAHMOUD

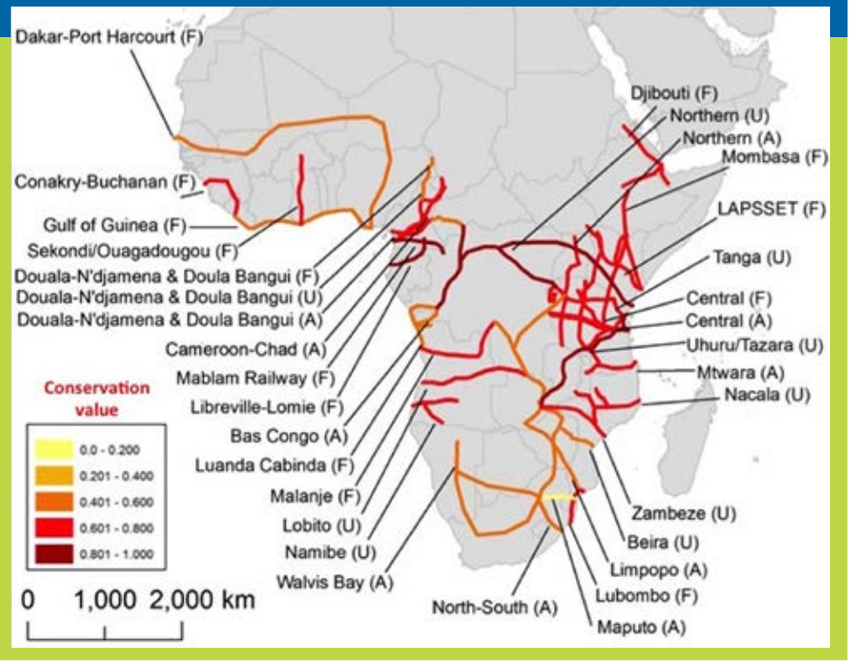
Bill Laurance with the skull of a forest elephant, slaughtered by poachers for its valuable tusks in Nouabale-Ndoki National Park in the Republic of Congo.

Mahmoud I. Mahmoud

Fritz Kleinschroth

FIGURE 1

Estimated conservation values (based on biodiversity, threatened species, critical ecosystems, wilderness attributes, and environmental services) of habitats within a 25 km-wide buffer zone around 33 proposed or existing development corridors in sub-Saharan Africa. © William Laurance and Sean Sloan.



THE CROSS RIVER SUPERHIGHWAY One example of the large-scale infrastructure being planned for Central Africa is the Cross River Superhighway in Nigeria. This 260 km-long highway would run from the country's far south-eastern coast to Abuja, the national capital. As planned initially and rerouted, the highway will cut through the most important forested regions in the country and skirt the border of Cross River National Park, which has, amongst others, the highest numbers of primate species in the world as well as Nigeria's greatest plant and animal biodiversity.

The superhighway project has raised widespread alarm, both nationally and internationally because Cross River National Park sustains two-thirds of Nigeria's surviving tropical rainforest – about 90 percent of which has previously been destroyed. In this context, Cross River National Park is irreplaceable. It sustains 18 species of primate, which is amongst the highest primate diversity in the world. Among these is the critically endangered and locally endemic Cross River Gorilla (Gorilla gorilla diehli), which like other primates in the region is highly sensitive to hunting. It also sustains a great plant diversity and a variety of other imperiled wildlife species, such as forest elephants and leopards.

In addition to its major environmental effects, the Cross River Superhighway would have serious social and economic consequences. Traditional land titles have been revoked within a 20 km-wide zone around the highway, affecting at least 42 forest communities within 13 Local Government Areas, especially of the Ekuri people. Leases to these traditional lands and wildlife habitats are being auctioned off by the Cross River State government, whose present governor, Ben Ayade, is a key proponent of the highway and has gone ahead to build based on the provisional approval of the revised Environmental Impact Assessment (EIA) submitted. Most leases are reportedly being sold to foreign timber and mining firms, in what have been described as abuses of Nigerian land-use laws.

If completed in their entirety, the development corridors would collectively span more than 53,000 km in length.

Already, millions of trees have been bulldozed along the proposed road route. The EIA conducted for the project has been widely derided, challenged by a lawsuit from nongovernmental groups in Nigeria, who claimed the EIA was farcical, which led to the temporary halt of the superhighway project by the then federal Minister for Environment, Amina Mohammed. Independent review revealed that the re-submitted EIA and Biodiversity Action Plan documents lacked sound scientific basis, contained significant errors and were assessed fallacious. Therefore, the chosen recommended route by the State Government still threatens critical biodiversity habitat in Cross River State and Equatorial Africa at large. Meanwhile the Federal Government of Nigeria already budgeted funding for upgrading the existing highway as suggested by authors of this article. We proposed alternative routes to the Superhighway to limit damage to rare ecosystems and wildlife based on cost-benefit analysis of building a new road as opposed to upgrading the existing highway.

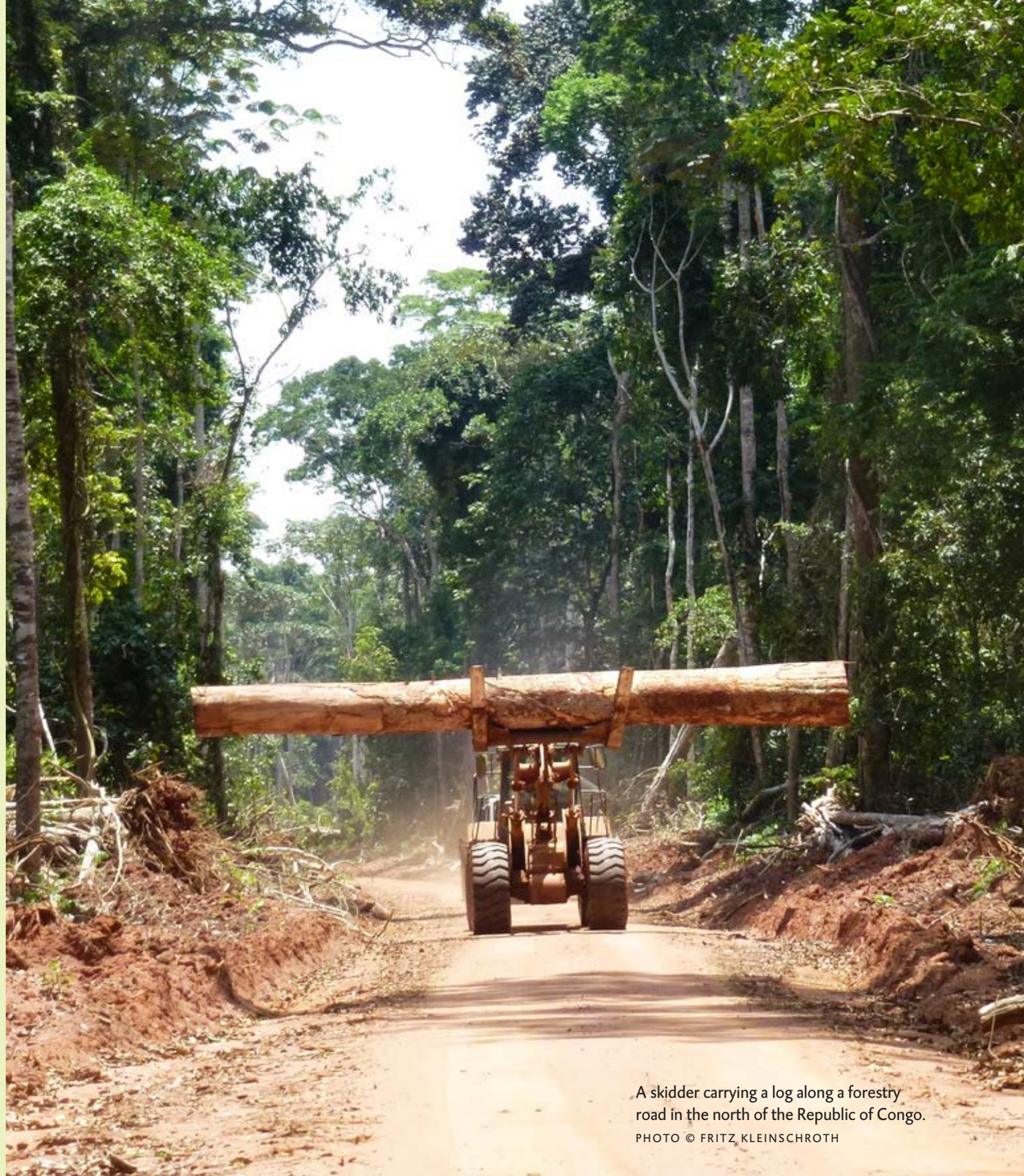
We propose a smart linear infrastructure planning guided by spatial planning concepts as a plausible solution to overcome the challenge of ill planned roads in the Congo Basin. Our proposed concept is a hybrid approach that uses spatio-temporal analytics, maps and processing (STAMP) techniques in combination with cost-benefit reasoning to optimize linear infrastructure and land use planning. The suggested smart solution is the foundation needed to promote reduced negative environmental impacts and maximize socioeconomic benefits in the context of achieving Sustainable Development Goals (SDG's) through smart infrastructure provisioning and sustainable land-use management for regional conservation economy.

EXPANSION OF CONGO LOGGING An expanding network of large-scale African development corridors, such as the Ouesso-Bangui-N'Djamena, Libreville-Lomie, Cameroon-Chad, and Northern Upgrade, will soon traverse large areas of Central Africa. These development corridors will span parts of Cameroon, Gabon, Republic of Congo, the Democratic Republic of Congo and Central African Republic. At present, many forests in these nations are still remote and only partially accessible through logging roads and existing timber concessions. Unless environmental safeguards are rapidly implemented, the spate of new infrastructure projects will open up large tracts of Central Africa to further pressures, such as mining, hunting and deforestation for agriculture. A key priority is retaining the large areas of the region affected by selective logging as native forests for biodiversity and ecosystem services, rather than seeing them cleared or depleted of wildlife by commercial and subsistence hunting and ivory poaching.

In temperate forests, a permanently accessible and maintained road network is usually considered an essential part of sustainable forestry to enable timber harvesting, ecological monitoring, hunting, and recreation. In the tropics, however, road networks built for selective logging are considered a high risk for native forests by opening the door for uncontrolled land use, forest degradation and wildlife exploitation.

ACCESS Human encroachment into unexploited rainforests generally follows a trajectory of land uses. Logging companies are often the first to build new frontier roads into continuous blocks of intact forests to access commercial timber. After abandonment, former logging roads – at least in Cameroon and the Republic of Congo – are frequently used by hunters to access an extensive network of footpaths and motorcycle routes. Such access allows market-oriented hunting, leading to severely reduced wildlife populations, even to the extent of depleting the forest of many species. Motorcycle paths required for commercial hunting activities can only be found on logging roads abandoned less than 10 years ago. That means rapid forest recovery impedes access after a while and hunters move on to more recently logged areas.

Some of the hunting camps may serve as nuclei for more permanent settlements, predominantly using slash-and-burn agriculture. This shifting cultivation on a small scale



A skidder carrying a log along a forestry road in the north of the Republic of Congo.
PHOTO © FRITZ KLEINSCHROTH

PHOTO © WILLIAM LAURANCE

A pangolin for sale as bushmeat along a highway in south-central Cameroon.

has taken place in tropical forests for millennia without causing permanent damage. However, once connections are established from these settlements to main roads and markets, they can sustain growing human populations, potentially exhausting timber supplies and other forest values. As such areas become increasingly accessible and their forests depleted of economic value, decision makers often find it increasingly difficult to resist the allure of foreign and domestic investors or land speculators. Such changes can drive large-scale forest clearing for intensive uses such as oil palm and rubber plantations.

Not all of the immense number of logging roads in Central Africa follow this same fate. In the northern Congo Basin, less than 20 percent of all logging roads actually remain permanently open. However, if local population pressures or lax law enforcement permit the commercial bushmeat trade to thrive, then logging roads and the poaching they facilitate can be highly detrimental to forest ecosystems and wildlife. Limiting the number and spatial footprint of permanent forest roads constructed for timber-harvest operations, and closing roads after harvests are completed, are vital priorities.

CONCLUSIONS Clearly, those seeking to manage the forests of Central Africa sustainably must grapple with serious and immediate challenges regarding (1) effectively designing, assessing, and mitigating new infrastructure projects to limit their environmental and social impacts, (2) providing good governance for nations experiencing unprecedented foreign investments for infrastructure and natural-resource extraction, and (3) managing the economic and social instabilities that can plague nations largely reliant on just a few natural resources or commodities for export income, avoiding the so-called "natural-resource curse" or "Dutch Disease".

An array of solutions is needed to meet these serious challenges, ranging from an increased focus on proactive land-use planning, sustainable agriculture, and forest management; to improving environmental impact assessments for new infrastructure projects, to better managing protected areas, and finally to addressing deficiencies in forest governance and law enforcement. None of these goals will be easy to advance, but the fate of Central Africa's forests and societies will suffer even more if we fail to try.

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For more information, contact:

- *Dr Mahmoud Ibrahim Mahmoud*
  National Oil Spill Detection and Response Agency (NOSDRA), Abuja, Nigeria
  Email: salammahmoudiii@gmail.com
- *Alliance of Leading Environmental Researchers & Thinkers (ALERT)*
  www.ALERT-conservation.org

Unless environmental safeguards are rapidly implemented, the spate of new infrastructure projects will open up large tracts of Central Africa to further pressures, such as mining, hunting and deforestation for agriculture.

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CENTRAL AFRICAN FORESTS FOREVER

'It is a masterpiece.'

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Central Africa holds the second largest continuous rainforest in the world after the Amazon: the magic Congo Basin rainforest. It is still relatively intact. But for how long? Illegal, unsustainable logging, conversion of forests to unsustainable small-scale and large-scale agriculture, pressure on wood resources to meet energy needs, international pressure on natural resources, unsustainable infrastructure development are among the major threats. Rapid population growth, widespread poverty, injustice and corruption are major underlying problems.

However, the Congo Basin forests can largely be preserved when countries in Central Africa are able to take the turning to sustainable development, when the people – both men and women – are empowered and their rights are respected, and when companies from outside, which operate in Central Africa, take their responsibility.

Central African Forests Forever offers an inspiring overview of opportunities and solutions to preserve the Congo Basin forests and their megabiodiversity. It is an intriguing mix of eyewitness reports, interviews and opinions of experts, most of them native to Central Africa itself. This book is an eyeopener to everyone who is interested to know more about this exceptional and beautiful part of the world.

China is a major player in Africa. In this second, revised and extended edition, Chinese experts give their view on how Chinese companies that operate in central Africa can do so in a sustainable and responsible way. That makes this edition a special one.

ABOUT THE EDITOR

Meindert Brouwer (1951) is an independent conservationist and writer, based in the Netherlands. He is specialised in the economic value of conservation and sustainable use of nature. His previous books *The Ecosystem Promise* and *Amazon Your Business / Opportunities and solutions in the rainforest* have received excellent reviews and have been distributed all over the world.