Cut from Congo

Industrial logging and the loss of intact forest landscapes in the Congo Basin

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Cover photo: timber from Olam's Republic of Congo CIB concession in a port in Europe © Greenpeace

Abbreviations & symbols

AFD	Agence Française de Développement
ATIBT	Association Technique Internationale des Bois Tropicaux
CMR	Cameroon
COC	Chain of Custody
COMIFAC	Central African Forests Commission
DRC	Democratic Republic of Congo
FM	Forest Management
FMU	Forest Management Unit
FSC	Forest Stewardship Council
GAB	Gabon
GIS	Geographic Information System
HCV	High Conservation Value
HCV-RWG	High Conservation Values Regional Working Group
IFL	Intact Forest Landscape
IFO	Industrie Forestière d'Oeusso
IUCN	International Union for Conservation of Nature
PIPC	Permanent Indigenous People Committee
PPECF	Programme for the Promotion of Certified Logging
REDD+	Reduced Emissions from Deforestation and Degradation and the role of conservation, sustainable management of forests and enhancement of carbon stocks in developing countries
ROC	Republic of Congo
SFM	Sustainable Forest Management
UNFCCC	United Nations Framework Convention on Climate Change
WWF	World Wide Fund for Nature

Tree in Essam, Molongo, Cameroon.
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Summary

From 2000 to 2013, the global area of intact forest landscapes (IFLs) decreased by 7.2%, a reduction of 90 million hectares, with industrial timber extraction as the lead driver behind this fragmentation and degradation globally. In Africa, selective logging is the dominant cause of IFL loss.

New logging road in east Cameroon. © Greenpeace / Filip Verbelen

In 2014 the Forest Stewardship Council (FSC), adopted Motion 65 to protect the vast majority of IFLs inside FSC-certified forests. The FSC issued an advice note in December 2016 that requires forest management operations to not impact more than 20% of IFLs within the Forest Management Unit (FMU) and not reduce any IFLs below the 50,000 hectares threshold in the landscape, until final standards have been developed on a national or regional level.

Since its start, implementation of Motion 65 in the Congo Basin has been undermined by the logging industry. The industry questions the relevance of the IFL concept in the region and claims that with the introduction of additional forest management techniques, the IFLs' "integrity" will be preserved.

Up until today, the FSC's regional working group did not reach a consensus. However, the IFL protection level threshold the working group was discussing, was as low as 20%, making a joke of Motion 65's requirement to protect the "vast majority" of IFLs in certified concessions. The industry has proposed 2 motions for the 2017 FSC general assembly. Motion 24 requires certificate holders to only use intact forest landscape conservation strategies that have been endorsed through national regulatory frameworks. This sets the precedent for social and environmental criteria to be overturned if governments don't agree with the approach, and could set FSC down a dangerous path towards the legal minimum, not consistent with consumer's expectations. Motion 32 calls for the widely accepted and recognized methodology for identifying IFLs

Logs from Wijma and Pallisco in a port in Europe © Greenpeace

to be thrown out, so the companies only have to comply with other High Conservation Value requirements.

Greenpeace' analysis of IFL loss in current FSC certified logging concessions shows that certification of logging concessions had a negligible impact on slowing IFL fragmentation in the Congo Basin:

- Almost half of the area currently FSC-certified qualified as IFL in 2000, but by 2013, that share had dropped to a mere 23 %.
- More than half of the IFL area was lost, amounting to 1.3 million hectares.
- The percentage of IFL loss in FSC certified concessions was twice the percentage of IFL loss in uncertified concessions and more than ten times the percentage of IFL loss outside logging concessions.
- If the currently discussed 20% threshold for IFL protection is approved, FSC certified operations in the Congo Basin alone would be permitted to destroy around one million hectares of IFLs. Timber produced from this destruction would be sold to consumers under FSC's label of responsible forestry. This is an unacceptable outcome and would amount to greenwash.

A detailed analysis by Greenpeace researchers of 13 concessions managed by four companies, together accounting for 75% of the IFL loss in concessions currently FSC certified, shows that:

- since FSC certification, these companies have destroyed close to half a million hectares of IFLs in their concessions;
- in Danzer's IFO concession in the Republic of Congo, an average 2,900 ha of IFL have been destroyed per month since certification - double the monthly average between 2000 and the certification date.

Long-term research of logging roads in the Congo Basin refutes the claim of the logging industry that logging roads disappear within a couple of years. While less than 80% of logging roads in the region remained permanently open, abandoned logging roads remained accessible for motorbikes up to ten years after closure and accessibility of footpaths continued even longer.

The additional management measures proposed by the industry that should ensure that logging areas become inaccessible after exploitation, as well as anti-poaching programs, require active management over a long period of time and entail additional costs for logging companies. Considering these additional

economic costs, the frequent changes of ownership and the experience that poaching is very difficult to control, there is little guarantee that logging companies are able to successfully introduce all these extra measures, while there is no certainty that these measures would even suffice to keep IFLs as intact as they still are.

The intactness of the IFL simply cannot be guaranteed if it is logged. Many of the long-term ecological impacts of the current selective logging practices remain unknown. Already the Congo Basin populations of forest elephant are endangered and if road expansion continues in the Congo Basin, they are predicted to collapse. Chimpanzees and bonobos are impacted by fragmentation too. Scientists warn that the loss of wildlife will result in a disastrous spiral of forest degradation that will reduce the storage of carbon and the resilience of rainforests to climate change.

If FSC wants to remain the gold standard for responsible forest management, it must insist on robust implementation of Motion 65.

Recommendation to the Congo Basin HCV regional working group, responsible for developing indicators for IFL protection

Since 2000 already half of all IFLs in currently certified logging concessions have been lost. This fact could justify even stricter implementation than the 80% protection indicator required by the advice note that currently applies. The regional working group therefore needs to adopt a precautionary and restrictive approach towards further logging in IFLs. The discussed threshold of 20% IFL protection must be rejected.

Recommendation to FSC members attending the FSC GA

Motion 24 and 32 not only undermine FSC's commitment on IFLs, but also threaten to undermine the entire FSC system. To protect FSC as a credible system consumers can trust, these motions must be rejected.

Recommendation to governments and donors

Strategies to protect IFLs need to be developed at the landscape level and need to focus on avoiding further industrial development within them. This requires policy changes in regional and national land-use planning processes that should ultimately be adopted by governments. Newly evolving strategies to protect forests in the Congo Basin, such as REDD+, could mitigate the primary financial implications of increased IFL protection.

A local girl carries forest produce, Konye, Cameroon © John Novis

What are intact forest landscapes and why are they important?

What are IFLs?

Intact forest landscapes (IFLs) are the remaining large undeveloped areas in the global forest zone. Scientists have defined IFLs as *"[…] a seamless mosaic of forests and associated natural treeless ecosystems that exhibit no remotely detected signs of human activity or habitat fragmentation and are large enough to maintain all native biological diversity, including viable populations of wide-ranging species."*[1] While all IFLs are within the forest zone, some may include naturally treeless areas such as swamps, lakes, grasslands, ice and others.

To qualify as an IFL, an area should be at least 50,000 ha, at least 10 km wide at the broadest place and at least 2 km wide in corridors or appendages to it.[2] Moreover, it should be free from remotely detectable (i.e. visible on satellite images) disturbances such as larger settlements, roads, railways, navigable rivers, pipelines and power transmission lines.[3] Naturally, areas significantly influenced by industrial development (e.g. agriculture, logging, mining and the consequences of anthropogenic fires) are excluded too.

IFLs are not 'untouched' by humankind. People are living in these landscapes and in many cases, rely on them for their livelihoods. IFLs include areas affected by low-intensity and historic human activities, such as small-scale shifting cultivation, pre-industrial selective logging and grazing. These do not compromise their status as IFLs. In fact, Indigenous Peoples have lived in, shaped and conserved IFLs for centuries.

A baseline global IFL map was developed for the year 2000. The IFL mapping team, a collaboration between the University of Maryland, Global Forest Watch, Transparent World, WWF Russia and Greenpeace, first defined the global extent of forest ecosystems, i.e. the forest zone. Then, using a combination of Geographic Information System (GIS) datasets and visual interpretation of freely available satellite images, it applied the abovementioned criteria to the forest zone in order to identify IFLs. The global IFL map was updated in 2013.

The IFL concept was defined to map the large unfragmented tracts of primary forests and support policies that concern landscape-scale changes at global and regional levels like REDD+ or forest certification.

Why do IFLs need to be protected?

IFLs are critical for harbouring biodiversity, stabilizing terrestrial carbon storage, regulating hydrological regimes and providing other ecosystem functions. To maintain these ecosystem functions, the size of forest areas is of great importance. Fragmentation – chopping up forest areas into smaller patches (e.g. by creating roads) – and degradation (e.g. by logging activities) alter the forest structure and diversity and change the functioning of the entire forest ecosystem. These are changes that are harmful and extremely difficult to reverse.[4]

Most of the world's IFLs are found in two biomes: tropical and boreal forests. Globally, IFLs comprised 1.28 billion hectares in the year 2000, of which nearly half was located in the tropics. In absolute numbers Russia, Brazil and Canada are IFL champions, accounting for almost two thirds of all IFLs. The Democratic Republic of Congo (DRC) comes next, with 5% of the global IFL area.[5] From 2000 to 2013, the global IFL area decreased by 7.2%, a reduction of 90 million hectares, an area about the size of Nigeria. Tropical regions were responsible for 60% of the total reduction of IFL area and the Congo Basin for about 10%.[6]

Industrial timber extraction is the leading driver behind IFL fragmentation and conversion globally (37.0% of global IFL area reduction between 2000 and 2013), followed by agricultural expansion (27.7%), and wildfire spread from infrastructure and logging sites (21.2%).[7] In Africa and Southeast Asia selective logging is the dominant IFL loss cause, while clear-cutting was the main IFL loss cause in the temperate zone and southern boreal regions of North America and Eurasia.[8]

International recognition that IFLs need protection

The need to protect IFLs has gained increasing international recognition. In 2014 the Forest Stewardship Council's (FSC)* general assembly approved with an overwhelming majority Policy Motion 65, aiming to protect the vast majority of IFLs inside FSC-certified forest management units.[9]

In November 2016, the IUCN World Conservation Congress passed a motion calling for the protection of primary forests, including IFLs. The motion recognizes *"the critical role that primary forests, including intact forest landscapes, play in maintaining biodiversity, providing ecosystem goods and services on which human society depends, and contributing to national development and advancement of the goals of the Convention on Biological Diversity (CBD), the Paris Agreement and the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs)."*[10]

"As highly significant sinks and reservoirs of carbon, conservation of IFLs will be critical for stabilizing terrestrial carbon storage over the long-term."

Likewise, in May 2017 a group of NGOs pleaded for the inclusion of the IFL concept in UNFCCC processes and for additional funding to develop effective policy frameworks to protect IFLs. They reiterated that IFL conservation is a critical component to meeting the Paris Agreement climate goals stating: *"As highly significant sinks and reservoirs of carbon, conservation of IFLs will be critical for stabilizing terrestrial carbon storage over the long-term."*[11]

Greenpeace strongly believes that a halt to deforestation globally, a massively reduced degradation of forests (prioritizing IFLs) and the restoration of forests worldwide is crucial to keep global temperature change below the internationally agreed 1.5°C, complementing efforts to phase out fossil fuel emissions by 2050.

* The Forest Stewardship Council (FSC) was created in 1993 by a group of timber producers and traders, working alongside environmental and human rights organisations, to establish international criteria for responsibly managed forestry. Greenpeace is a founding member of the FSC.

IFLs in the Congo Basin

Importance of IFLs in the Congo Basin

The table below presents key numbers for IFLs in the Congo Basin. The region accounted for 86.2 million hectares, an area more than three times the size of the United Kingdom, or 7.3% of the global IFL area 2013. This represents more than 95% of all IFLs on the African continent.

Table 1: IFL area in the Congo Basin 2000-2013 (based on Potapov et al., 2017)

Country name	IFL 2000 area (ha)	IFL proportion of the forest zone in 2000 (%)	IFL proportion of global IFL area in 2000 (%)	IFL 2013 area (ha)	IFL proportion of global IFL area in 2013 (%)	IFL area reduction 2000-2013 (ha)	IFL area reduction 2000-2013 (%)
Cameroon	5,280,000	13.4	0.4	3,950,000	0.3	1,330,000	25.2
Central African Republic	870,000	1.5	0.1	570,000	0.0	300,000	34.4
Democratic Republic of the Congo	64,390,000	27.7	5.0	61,690,000	5.2	2,700,000	4.2
Equatorial Guinea	420,000	15.8	0.03	230,000	0.0	190,000	45.2
Gabon	10,880,000	41.2	0.8	8,390,000	0.7	2,490,000	22.9
Republic of Congo	13,870,000	40.7	1.1	11,420,000	1.0	2,450,000	17.7
Total Congo Basin	95,710,000		7.43	86,240,000	7.3	9,470,000	9.9

Tens of millions of people live in or in the vicinity of the Congo Basin forest and depend upon it for their livelihoods.[12] Indigenous Peoples and other traditional forest dwellers have acted as forest guardians for centuries and have strong cultural, social and economic ties to the forest. Administrative units where indigenous peoples are present in the DRC, for example, hold 31% of total national aboveground forest carbon and many of them overlap with IFLs.[13] "Pygmy" territories are strongly related to tropical forest habitats and lack of human disturbance, especially roads.[14] Indigenous Peoples are often further marginalized, pushed out of forests to roadside areas or worse when intact forests are opened up for industrial logging.[15]

Many wildlife species in the Congo Basin depend on IFLs to maintain viable populations. The distribution of the African forest elephant (Loxodonta cyclotis) is determined overwhelmingly by road infrastructure while large remote forest cores are a crucial habitat need.[16] Also chimpanzees (Pan troglodytes) show a clear preference for unlogged forests.[17] The nests of bonobos (Pan paniscus), another endangered great ape species, which is endemic to the DRC,[18] are found farther from agriculture areas and in areas with lower edge density.[19]

Looking below ground, recent research suggests that the relatively undisturbed swamp forests of the Cuvette Centrale, extending on both sides of the Congo-DRC border, harbour the most extensive peatland complex in the tropics. Storing an estimated 30 Gt of carbon, this is one of the most carbon rich ecosystems in the world.[20] However, the Cuvette Centrale peatland is under threat from a changing climate, agricultural development and industrial logging.[21] The maintenance and protection

Forest in Cameroon © John Novis

of this potential 'carbon bomb' is considered an important contribution to climate change mitigation.[22]

In brief, the Congo Basin remains one of the last IFL strongholds in the tropics, and decisive action must be taken to ensure it remains that way.

IFL loss in the Congo Basin

IFL loss in the Congo Basin has reached a crisis level. Between 2000 and 2013, 9.5 million hectares of IFLs, an area the size of Hungary, were lost in the Congo Basin. Assuming that the destruction of IFLs continues at the average rate of this 13 year-period, Equatorial Guinea will lose its entire IFL area during the next 20 years. The Republic of the Congo, Gabon and Cameroon will lose all IFLs within a 60-year period.[23]

Logging is the dominant cause of IFL loss in the Congo Basin. With an approximate 50 million hectares of forest under logging concession - almost one third of the region's lowland dense forest - the "footprint" of industrial logging is huge.[24] Potapov et al. estimated that 77% of all IFL loss in Africa between 2000 and 2013 was caused by selective logging.[25] A new analysis performed by Greenpeace as part of this briefer, looking specifically at the Congo Basin, shows that in this period 67% of IFL loss took place inside industrial logging concessions (see Appendix I: methodology of the mapping analysis).

Regarding the effect of FSC-certification on IFL loss in the region, Potapov et al. conclude that the certification of logging concessions under responsible management had a negligible impact on slowing IFL fragmentation in the Congo Basin. In fact, certified concessions *"[…] had the same or higher proportion of IFL area reduction than non-certified concessions […]"*, they write. In Cameroon, IFL reduction in FSC concessions over the period was a staggering 84.5%.[26]

Given the ambition of Congo Basin governments to expand industrial logging under the banner of "sustainable forest management", the importance of the FSC's commitment to protect the vast majority of IFLs cannot be underestimated. If implemented properly, it may well become a crucial measure to protect IFLs in the Congo Basin.

Forest loss in the DRC: IFLs at the frontier

The forests in the DRC represent over half of all remaining forests of the Congo Basin. They are of global significance for the conservation of biological diversity and harbour a globally important carbon stock that needs to be preserved.[27] The scale of deforestation in the DRC alone reflects the current forest crisis and the failure of governments and the private sector to turn the tide. The country ranks amongst the top ten countries with the largest absolute forest loss* in the world. An average of 570,000 hectares per year was lost from 2000 to 2014, and the rate of forest loss increased by a factor of 2.5 between 2011 and 2014.** Vast areas in DRC were emerging as new hot spots of forest loss. Unsurprisingly, these hot spots are found along the countries road network and in areas of civil unrest and strong population growth. But equally alarmingly, many hotspots intersect with intact forest landscapes and national parks that are meant to protect the country's megafauna.[28]

In 2002, the DRC imposed a moratorium on the allocation of new industrial logging concessions.[29] Its purpose was to give a pause in what threatened to become a post-war free-for-all in the exploitation and destruction of the country's huge forests. With World Bank guidance and financial support, the country was to embark on a path whereby forest management would become a sustainable industry, generating billions of dollars of revenues and tens of thousands of jobs, whilst supposedly conserving the forest.[30] The moratorium was immediately violated, as scores of logging concessions were issued in a flood of illegal and corrupt allocations.[31] However, a 2005 presidential decree reinforced the 2002 moratorium decision and a "legal review" of all existing industrial titles was carried out.[32] Unfortunately, 15 illegal titles cancelled in 2009 were reinstated by the Ministry in 2011.[33] In the end, the "legal review" resulted in the cancellation of only dormant titles, entrenching the status quo.

Some 10 million hectares of DRC's forests are currently allocated in industrial logging concessions and half of these areas are IFLs. The DRC government and the French Development Agency (AFD) have been advocating the need for a rapid lifting of the moratorium.[34] If this happens this will result in the gradual allocation of more and more logging concessions, many of which are likely to be overlapping with IFLs. Some of the largest logging concessionaires in the DRC have already expressed interest in FSC-certification, which is so far absent from the DRC. The recognition of IFLs by the FSC and protection of these IFLs in accordance with Motion 65 will likely also be an important future safeguard for IFLs in the DRC.

A scene on the River Lukenie in the Democratic Republic of Congo. Expansion of logging into remaining areas of intact forests in the Democratic Republic of Congo will destroy globally critical carbon reserves and impact biodiversity. © Kate Davison

* Forest loss is defined as a stand-replacement disturbance, meaning the removal or significant reduction of tree cover at the scale of a Landsat pixel. It can result from various factors and does not always equate to deforestation. While deforestation dominates the forest loss dynamic in the DRC, there is some uncertainty about how much of the forest loss exactly corresponds to deforestation. The official annual net forest area loss figure reported by the DRC government as part of the FAO's Forest Resource Assessment is 311,400 hectares.

** Part of this increase is explained by the use of a new change detection model with a higher sensitivity and the use of additional remote sensing data, resulting in improved detection of loss for the period 2011-2014. The years preceding 2011 have not been reprocessed using this new model.

Response of the FSC to its role in IFL loss

Global response: adoption of Motion 65

For many years FSC members, including Greenpeace, have been asking for better protection of IFLs in FSC-certified logging concession. They argue that this is needed in order for FSC to live up to its mission to *"[…] promote environmentally appropriate, socially beneficial and economically viable management of the world's forests"*.[35]

During its 2014 general assembly, the FSC acknowledged the need for IFL protection, when Motion 65 was passed with an overwhelming majority. The motion calls upon the FSC to develop, within its standards, indicators that aim to protect the vast majority of IFLs.[36] IFL "cores" must be identified and protected. Outside of "cores", certificate holders need to manage IFLs for intactness, in areas within their control. The motion requires that the right to Free, Prior and Informed Consent of indigenous peoples, traditional peoples and forest dependent communities be upheld. The motion also stated that the implementation process should take into consideration IFL-degradation in FSC FMUs since 2000. Should the FSC fail to implement a relevant standard by the end of 2016, a default clause would enter into force that mandates the full protection of core IFL areas in certified logging concessions. What exactly are "IFL cores" and by which criteria they are identified, was not defined in the motion. However, for the purpose of the default clause, the core area of an IFL was defined as an area of forest comprising at least 80% of the IFL falling within the FMU.

The FSC issued an advice note in December 2016 that requires forest management operations, including harvesting and roadbuilding, to not impact more than 20% of IFLs within the FMU and not reduce any IFLs below the 50,000 hectares threshold in the landscape, until final standards have been developed on a national or regional level. This advice note was included in a 2 January 2017 updated version of the FSC directive on FSC Forest Management Evaluation.[37] The baseline is the widely recognized Global Forest Watch IFL map.[38] Certification bodies will assess certificate holders against this requirement, and can suspend certificates in case of violation.

Congo Basin Regional process to implement Motion 65

In the Congo Basin, discussions within the HCV-Regional Working Group for Congo Basin Forests (HCV-RWG) kicked off after the motion's adoption but have been complicated. Although a large majority of the FSC's economic chamber approved Motion 65, the Congo Basin logging industry and its allies are now organizing a concerted lobby to weaken its implementation, in order to minimize the changes to their current logging practices. Given the organized resistance by the logging industry and its dominance in the processes, there is a real risk of a weak outcome sacrificing environmental and social values for short term business interests.

The Forest Stewardship Council (FSC) label

From the onset of the IFL standard setting process, the economic chamber has rejected the goal of Motion 65 in the Congo Basin rather than worked towards its implementation. In April 2017, the regional working group unanimously agreed that it was impossible to reach a consensus during the meeting. The economic and the environmental chamber disagreed about the definition of "IFL cores" and what activities could still be allowed in those areas.[39]

In August 2017, the members of the working group (HCV RWG) failed again to find consensus about

regional indicators for the protection of IFLs. The direction of the discussion however is alarming: the economic chamber's position is that companies are already protecting high conservation value forests accounting to up to 10% of the concession, in accordance with existing HCV criteria, and claim this is sufficient as an IFL protection measure. The chamber also claims that selective logging as conducted in the Congo Basin may already meet the definition of Motion 65's "low impact forest management", because it is a relatively low-impact selective operation, the intensity of the operation is lower than in other tropical forest basins and certification induces a reduction in impacts, in particular with the adoption of reduced impact logging (RIL) practices.[40] The social and environmental chambers did not accept this, but are under immense pressure to compromise and accept a level of protection as low as 20%, which is not consistent with the Motion 65 requirement to protect the "vast majority" of IFLs.[41]

Besides resisting and blocking due implementation of Motion 65 in the region, the Congo Basin logging companies, represented by the industry organization ATIBT, also submitted two motions, Motions 24 and 32 for adoption at the FSC general assembly. Motion 24 requires certificate holders to only use Intact Forest Landscape conservation strategies that comply with national regulatory frameworks.[42] This would not only mean zero protection for IFLs in many parts of the world, but would also set a dangerous precedent for FSC whereby social and environmental criteria would be overturned if governments did not agree with the approach. Motion 32 calls for the widely accepted and recognized methodology for identifying IFLs to be thrown out, because economic chamber members do not want to have to protect IFLs in their concessions, and are thereby trying to change the definition.[43]

Logs from Congo basin at Coplac sawmill in Erembodegem, Belgium.
© Greenpeace / Philip Reynaers

Road construction in the rainforest of Gabon.
© Markus Mauthe / Greenpeace

Will IFLs be safe in the future in Congo Basin FSC certified operations?

Greenpeace analyzed IFL loss in logging concessions in the Congo Basin for the period 2000-2013. Motion 65 requires FSC to take into account IFL degradation in certified FMUs since the year 2000 when developing indicators for IFL protection. Therefore, here we publish how much IFL was destroyed in each FSC FMU. We also calculated how much more IFL area is likely to disappear if the currently debated proposal to protect only 20% would be accepted. For a selection of FSC-certified concessions, a detailed analysis was done to check whether certification has had any mitigating effect on IFL loss.

The methodology used as well as the detailed results* of the data analysis can be found in Appendix I: methodology of the mapping analysis.

IFL loss 2000-2013 and potential future IFL loss based on possible outcome regional working group

There are currently 11 valid FSC Forest Management (FM) - Chain of Custody (CoC) certificates in the (Switzerland), Wijma (the Netherlands) and Joubert (France). In September 2017, the certified area was 5.7 million hectares.[44] All FSC-certified concessions in the region are located in Cameroon, Gabon and the Republic of Congo. There are none in the DRC, the Central African Republic and Equatorial Guinea. An overview of the FSC-certificates, certificate holders and concessions, is available in Appendix II: FSC-certified logging concessions in the Congo Basin.

Table 2 presents the IFL loss in FSC-certified concessions 2000-2013, grouped by company and listed in descending order of IFL area loss. The results are alarming: in 2000, almost half of the area that is currently FSC-certified qualified as IFL. By 2013, that share had dropped to a mere 23%, meaning more than half of the IFL area was lost, amounting to 1.3 million hectares, about five times the size of Luxembourg. The percentage of IFL loss in certified concessions was twice the percentage of IFL loss in uncertified concessions and ten times the percentage of IFL loss outside logging concessions. While areas currently covered by FSC certified concessions accounted for only 3% of the Congo Basin's 2000 IFL, 14% of the region's IFL reduction between 2000 and 2013 took place inside them.

* The results of Greenpeace analysis have been sent to companies to offer them a right to reply. Four companies have responded, 3 of them, OLAM,Danzer and Precious Woods, say the Greenpeace findings differ from theirs, without further sharing of data. Greenpeace would welcome seeing their results.

Table 2: IFL & IFL change 2000-2013 in FSC certified concessions (own calculations – method in Appendix I)

Country	Group	Concession name	IFL 2000 (ha)	IFL 2000 (% of concession area)	IFL 2013 (ha)	IFL 2013 (% of concession area)	IFL change 2000-2013 (ha)	IFL change 2000-2013 (% of the year 2000 IFL area)	Area at risk in case of 20% protection of 2013 IFL (ha)
ROC	Danzer	Ngombé	955,065	79	587,281	49	367,784	39	469,825
	Danzer TOTAL		955,065	79	587,281	49	367,784	39	469,825
ROC	Olam	Loundoun-gou-Toukou-laka	404,335	72	226,216	40	178,119	44	180,973
ROC	Olam	Pokola	170,458	32	65,776	12	104,682	61	52,621
ROC	Olam	Kabo	75,580	26	52,577	18	23,003	30	42,061
	Olam TOTAL		650,373	47	344,568	25	305,804	47	275,655
CMR	Pasquet	10-030	59,969	77	0	0	59,969	100	0
CMR	Pasquet	10-041	41,396	63	0	0	41,396	100	0
CMR	Pasquet	10-031	38,421	95	0	0	38,421	100	0
CMR	Pasquet	10-039	38,275	80	0	0	38,275	100	0
CMR	Pasquet	10-044	33,108	50	0	0	33,108	100	0
CMR	Pasquet	10-042	13,739	31	0	0	13,739	100	0
	Pasquet TOTAL		224,908	66	0	0	224,908	100	0
CMR	Rougier	10-038	76,017	51	0	0	76,017	100	0
GAB	Rougier	Moyabi	147,332	75	87,551	45	59,782	41	70,041
GAB	Rougier	Ogooué Ivindo	65,396	23	10,669	4	54,728	84	8,535
GAB	Rougier	Haut Abanga	22,551	8	15,765	5	6,786	30	12,612
CMR	Rougier	10-054	0	0	0	0	0	0	0
CMR	Rougier	10-056	0	0	0	0	0	0	0
GAB	Rougier	Léké	0	0	0	0	0	0	0
	Rougier TOTAL		311,297	27	113,984	10	197,313	63	91,187
GAB	Precious Woods	Precious Woods Ga-bon/CEB	207,190	34	68,782	11	138,407	67	55,026
	Precious Woods TOTAL		207,190	34	68,782	11	138,407	67	55,026
CMR	Wijma	09-024	56,821	75	0	0	56,821	100	0
CMR	Wijma	11-005	59,432	85	46,109	66	13,323	22	36,887
CMR	Wijma	09-021	17,483	48	8,951	24	8,531	49	7,161
CMR	Wijma	09-022	0	0	0	0	0	0	0
CMR	Wijma	09-025	1,533	2	1,533	2	0	0	1,227
CMR	Wijma	00-003	0	0	0	0	0	0	0
	Wijma TOTAL		135,270	39	56,594	16	78,676	58	45,275
GAB	Joubert	CBG Gamba	112,315	52	91,776	42	20,539	18	73,421
GAB	Joubert	CBG Mandji	50,724	14	33,474	10	17,251	34	26,779
	Joubert TOTAL		163,039	29	125,250	22,07	37,789	23	100,200
	TOTAL FSC		2,647,140	47	1,296,459	23	1,350,680	51	1,037,167

The last column of Table 2 shows the IFL area likely to be lost as a result of logging in case the currently debated 20% set aside would be accepted. The calculations are based on the IFL area in 2013, the most recent year for which an IFL layer is publicly available.* The results show that more than one million hectares of IFL would be allocated to logging and therefore lost. Timber resulting from this destruction would be sold to consumers under FSC's label of responsible forestry. This is an unacceptable outcome and would amount to greenwash.

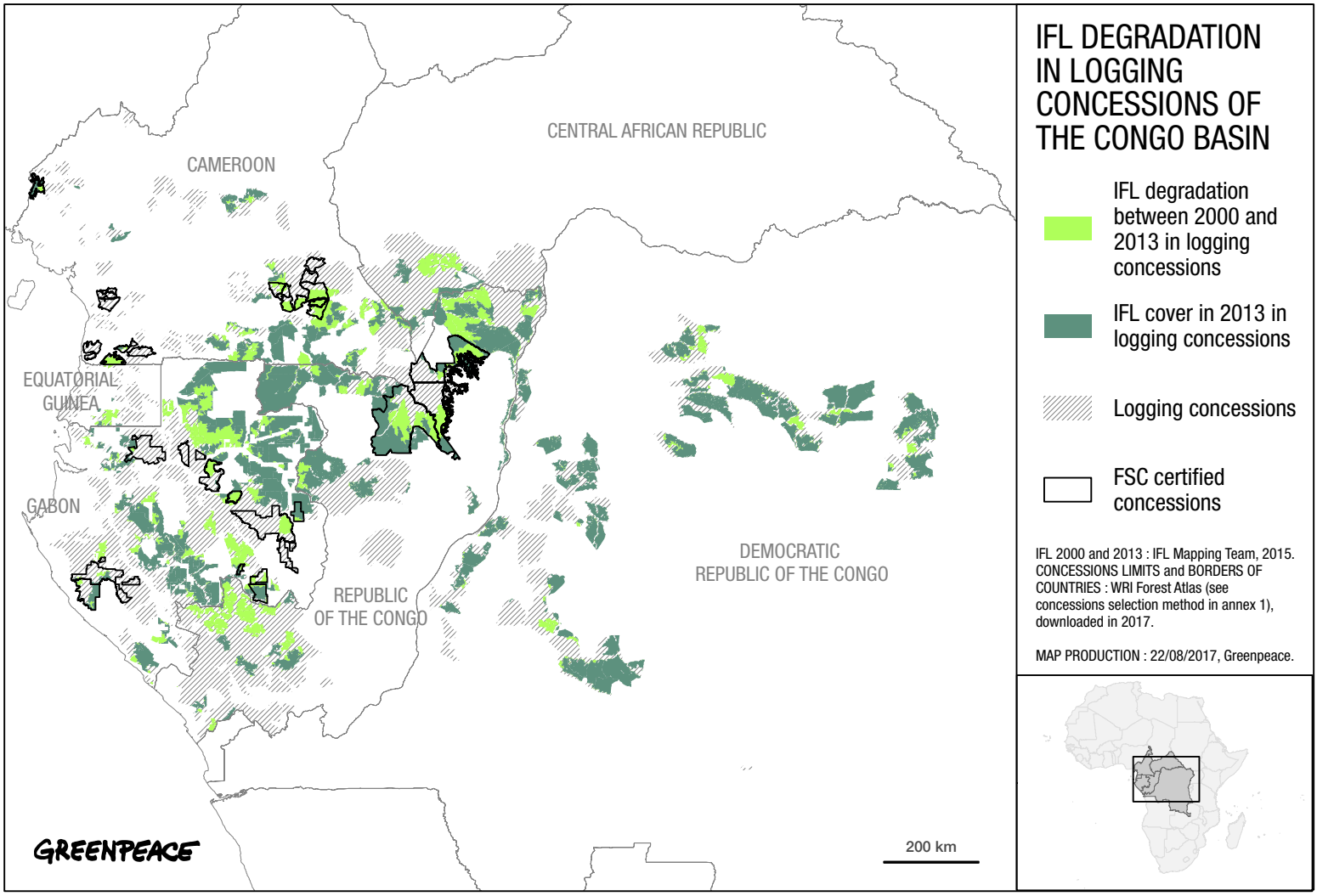
Ongoing IFL loss after certification

Our observation that IFL loss in FSC certified concessions was equal or higher than in non-certified concessions is in line with the findings of Potapov et al. and with an analysis commissioned by WWF US and the FSC in 2016,[45] but does not yet take into account the initial date of certification. Loggers in the Congo Basin only started to obtain FSC certificates from 2005 onwards, far into the study period.

A more detailed analysis of losses before and after certification can show if FSC certification prevented IFL loss or not. While protecting IFLs up until now has not been part of FSC standards, the industry claims that logging as practiced by certified companies in the Congo Basin *"[…] may already meet the definition of Motion 65's "low impact forest management" because it is a relatively low-impact selective operation and certification, in particular with the adoption of RIL practices, induces a reduction in impacts"*.[46]

We took a closer look at IFL loss before and after the certification date in the concessions currently managed by Danzer and Olam in the Republic of Congo, Pasquet in Cameroon and Rougier in Gabon. These groups correspond to the top four in Table 2. Together these concessions account for 75% of the IFL loss in concessions currently FSC certified.

* In the absence of publicly available geographical data on existing set-asides in the concessions included in the analysis, we were unable to calculate to what extent these existing set-asides would affect this figure

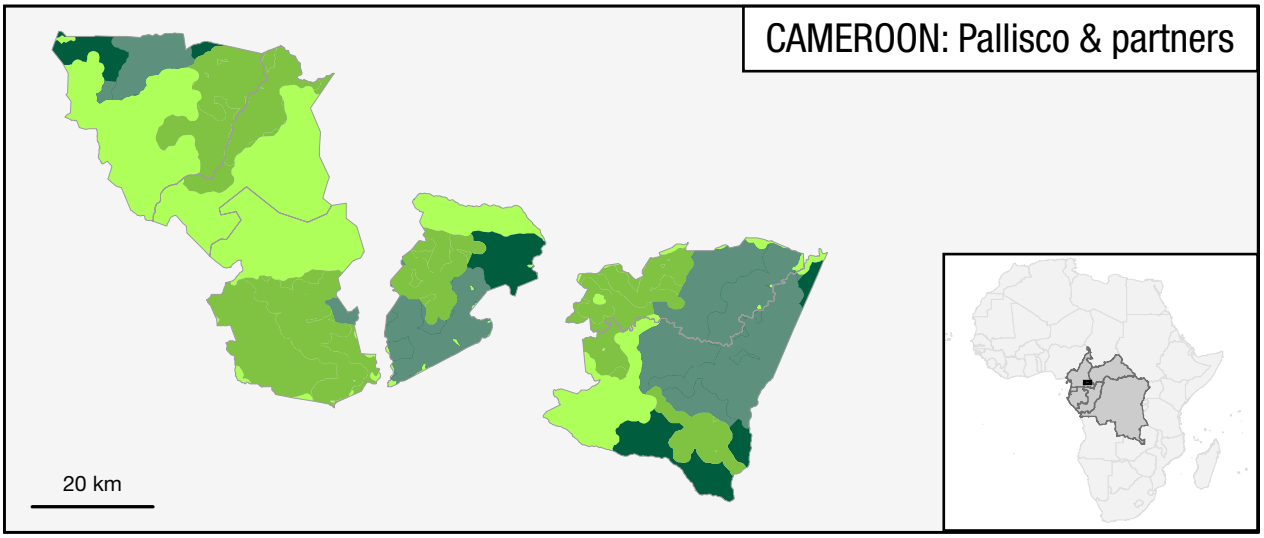


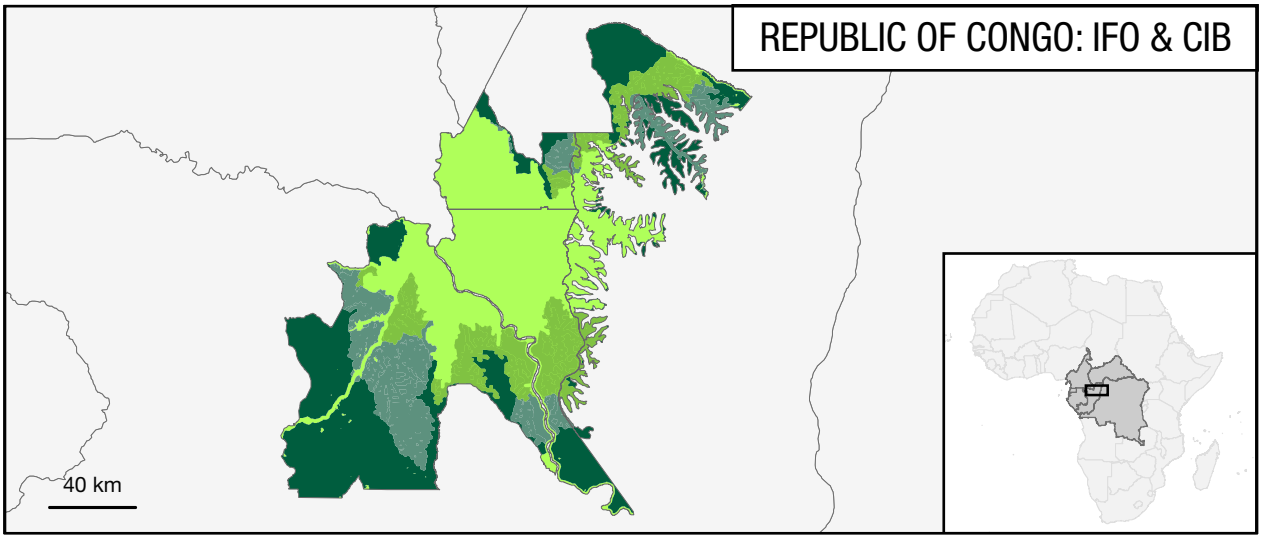
The results are presented in Table 3. Some variation in the results of study 1 (the global analysis) and study 2 (IFL degradation caused by FSC certified concessions) comes from the fact that method of calculation is slightly different. In the first study, we consider all IFL losses in the whole Congo Basin. In the second study, the objective is to identify solely the impact of logging operation on the IFL area inside the concession. All the elements of degradation located out of the selected FSC concessions are not included in the analysis and cannot affect the IFL area located inside the same concessions.

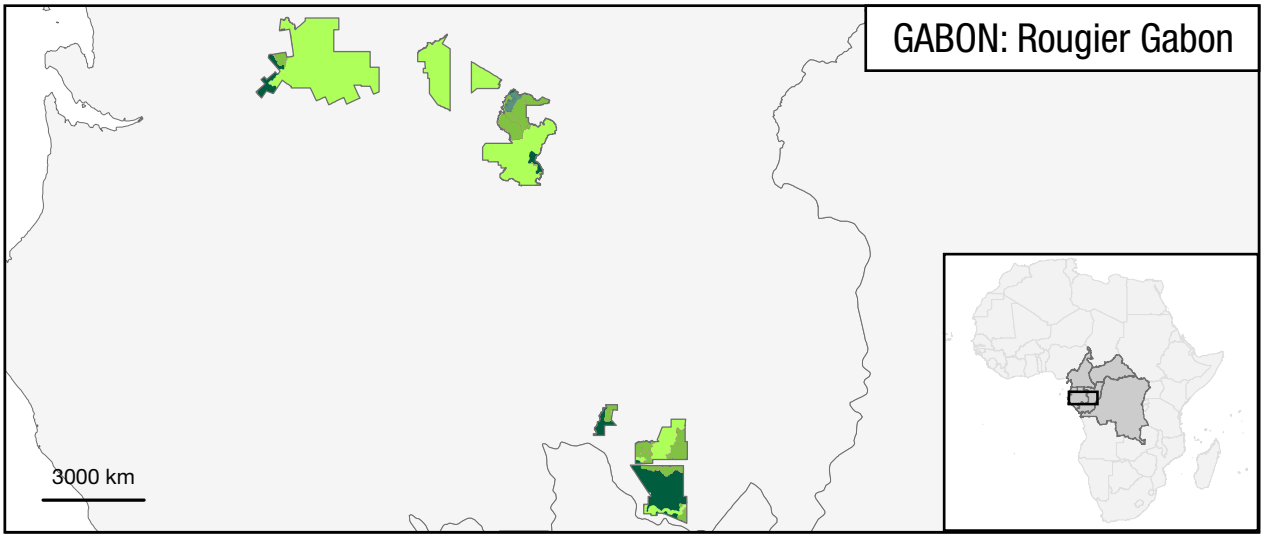
The results of this analysis show that FSC certification did not halt IFL loss in logging concessions. To the contrary, close to half a million hectares of IFLs have been lost in these FSC certified concessions between their date of certification and 2017. Almost 280,000 hectares of IFL were destroyed in Danzer's IFO concession since FSC certification, over 110,000 hectares in Olam's CIB concessions, 83,901 hectares in the concessions managed by Pasquet's Pallisco and its partners and 8,553 hectares in the concessions of Rougier Gabon. In the case of Danzer's IFO concession in the Republic of Congo, the average IFL loss per month doubled after certification: the concession's IFLs are being destroyed at a rate of 2,900 hectares per month. These results show that the current FSC standard, including the obligation to set aside HCV forests in certified concessions, does not provide protection for IFLs. Without robust regional indicators as required by Motion 65, there is no reason to believe IFLs will receive due protection in FSC concessions.

Table 3: IFL loss in selected FSC-certified concessions, before and after certification (own calculations - method in Annex)

Group	Concession name	Certification date	IFL degraded since certification date (ha)	IFL 2017 (ha)
Danzer	Ngombé	26/02/09	279,651	515,500
Danzer total			279,651	
Olam	Loundoungou-Touk-oulaka	10/02/11	70,788	194,708
Olam	Pokola	19/05/08	15,678	65,388
Olam	Kabo	22/05/06	24,051	36,179
Olam total			110,517	
Pasquet	10-030	09/10/08	33,465	13,372
Pasquet	10-041	09/10/08	1,310	0
Pasquet	10-031	09/10/08	22,858	0
Pasquet	10-039	09/10/08	16,836	8,500
Pasquet	10-044	09/10/08	9,432	5,665
Pasquet	10-042	09/10/08	0	0
Pasquet total			83,901	
Rougier	Moyabi	04/10/13	0	89,938
Rougier	Ogooué Ivindo	09/10/08	8,553	7,910
Rougier	Haut Abanga	09/10/08	0	15,771
Rougier total			8,553	







IFL LOSS BEFORE AND AFTER CERTIFICATION IN SELECTED FSC CONCESSIONS

- IFL loss between date of certification and 2017
- IFL remaining in 2017
- IFL loss between 2000 and date of certification
- Pre-2000 non-IFL area

IFL 2017, IFL IOSS : Greenpeace, 2017, based on IFL2000 (IFL Mapping team, 2015) and image satellite interpretation. CONCESSIONS LIMITS AND BORDERS OF COUNTRIES : WRI Forest Atlas (see concessions selection method in annex 1), Downloaded in 2017. MAP PRODUCTION : 22/08/2017, Greenpeace.

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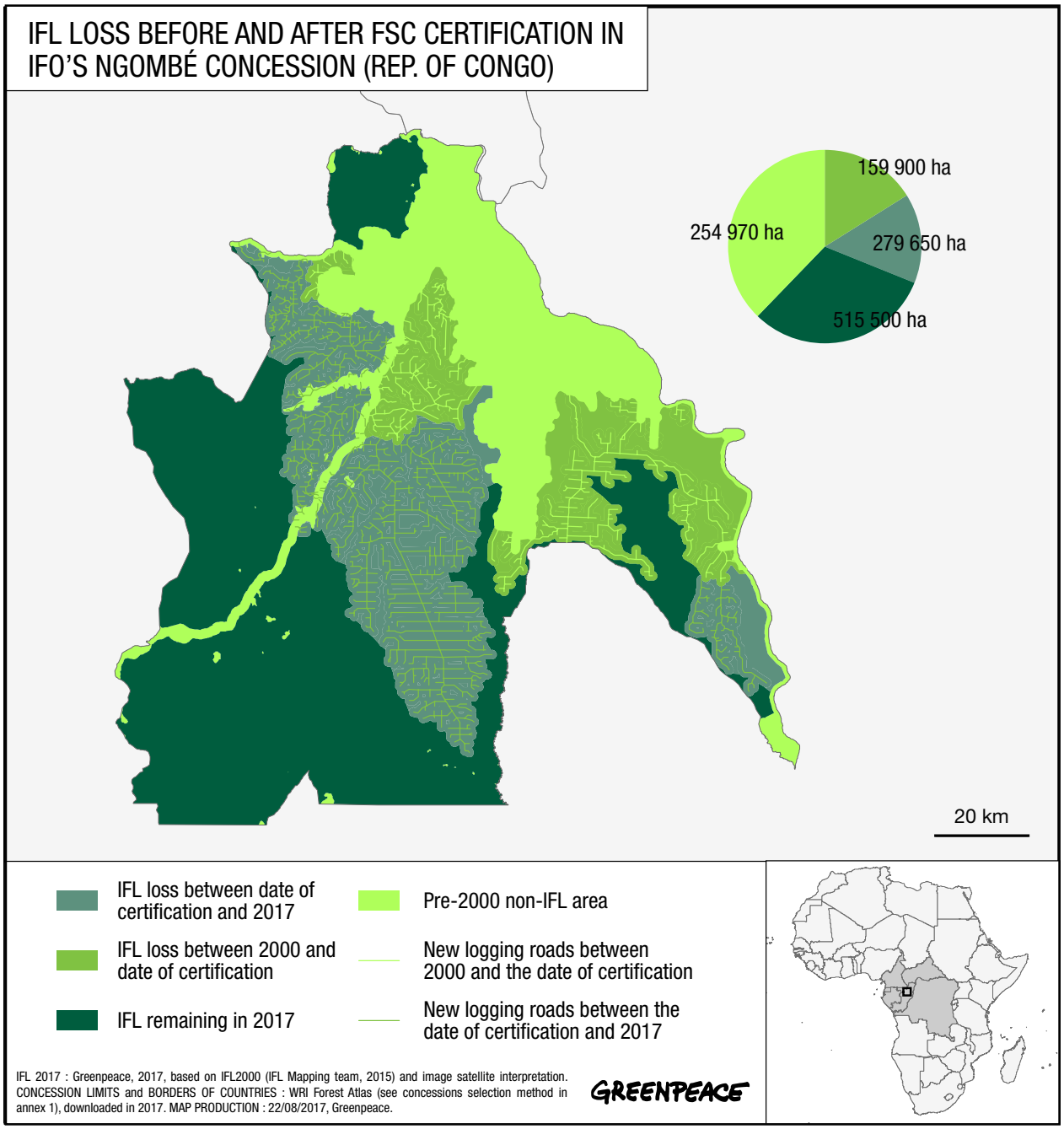
Why adapted management won't prevent further IFL loss

From the onset of the IFL standard setting process, industry players and related institutions as well as representatives of the Congo Basin countries' forestry ministries have rejected the goal of Motion 65 in the region. Instead, the sector tries to undermine the motion by questioning the IFL concept and methodology and claiming that with a few additional and adapted management techniques, the IFLs will remain intact. Greenpeace believes that these arguments are misleading. Here are some of the arguments used to undermine IFL protection and block implementation of Motion 65:

The IFL concept is irrelevant in the Congo Basin and the methodology to detect IFLs is not correct

The logging sector tries to seriously downplay the concept of IFLs and the use of the Global Forest Watch maps questioning the accuracy of the maps and request the possibility to redefine intactness.[47] They claim that due to ancient human impact, the IFLs throughout the Congo Basin are disturbed and that the criteria in the IFL definition are not always relevant to the context of Congo basin forests.[48] Widespread historical hunting and loss of wildlife in



many IFLs in the DRC are the activities they give as an example.

The logging sector suggests that FSC should focus on ecosystem integrity instead of forest intactness. The result of this approach would be to adhere to the current FSC standard and the current criteria to protect HCV forest but to not set aside any IFLs in their concessions. This position is also reflected in Motion 32 submitted by ATIBT for the FSC general assembly.[49]

However, historic, small scale disturbances are part of the IFL definition.[50] Nearly all IFLs show these disturbances. This does not make the Congo Basin distinct from other regions, and so this is no reason to reject the IFL concept.

While Greenpeace agrees that HCV mapping should be used when making decisions about IFL core areas to set aside, we believe it is irresponsible to reject the current IFL methodology. The IFL concept is increasingly accepted, has been used by global organizations such as the IUCN World Conservation Congress and has been incorporated into company fiber procurement policies.[51]

Also, a focus on biodiversity alone ignores equally important functions of IFLs, in particular their crucial role as carbon sinks. IFLs are a huge carbon sink and in order to maintain that function, their intactness and size need to be preserved. The economic chamber purposely ignores this which enables them to question the methodology in an attempt to undermine the motion's intention.

Motion 65 overrules governmental regulation and constitutes excessive requirements for governments

The logging sector argues that no changes are possible in concessions that have already approved management plans. They stress that these plans have legal status in their respective countries and that the governments of Cameroon and the Republic of Congo would oppose measures to reduce the forest surface destined for timber production within the concession. Another argument being brought forward by the sector is the financial implications of setting aside IFLs.[52] Also the Central African Forest Commission (COMIFAC) asks for adaption because it is *"[…] difficult/impossible to apply the concept without taking into account the socio-political, legal and environmental circumstances in each country."*[53]

These positions are reflected in Motion 24 submitted by ATIBT which requires certificate holders to only use IFL conservation strategies that are in line with national regulatory frameworks.[54] Applying this motion would mean zero protection for IFLs in many parts of the world, which would seriously undermine FSC's credibility. Even worse, this would set a dangerous precedent for FSC whereby social and environmental criteria would be overturned if governments did not agree with the approach. The whole concept of a voluntary market-based mechanism like FSC is to exceed legal requirements under national law and provide extra safeguards of sustainability. Also, the idea of the FSC is to facilitate a balance between environmental, social and economic needs. It is made useless if the economic interests overrule all others. If FSC opens the door to this kind of limitation, it could quickly cease to become a standard for responsible forestry.

Management technique can reduce the persistence of fragmentation as a result of logging roads

A key argument being used to not adhere to implementation of Motion 65 is the claim that the current IFL concept is wrong to identify forestry roads as fragmentation, because this fragmentation is a temporary situation of five to six years after logging operations.[55] The economic chamber proposes to introduce a set of additional measures to ensure logging areas become inaccessible after exploitation (like destruction of log ponds, closure of logging roads etc.). The economic chamber claims with the introduction of these additional measures that the impact of roads (fragmentation of the IFLs negatively impacting species and access of the forest area for poachers) can be mitigated.[56]

A study of logging roads in the Congo Basin covering a period of 30 years, concluded that less than 20% of logging roads in the region remained permanently open. However, abandoned logging roads remained accessible for motorbikes up to ten years after closure and accessibility of footpaths continued even longer, facilitating poaching and other illegal activities (e.g. illegal logging). While canopy cover reached

Commercial poaching of bushmeat is a serious problem in the Congo Basin, and seriously exacerbated by logging roads © Kate Davison

a level comparable to surrounding forests after approximately 25 years, biomass recovery in road tracks turned out to be a very slow process.[57]

A study on the effect of logging on roadless space in the Republic of Congo found that IFLs are on the frontier of roadbuilding and suffered from dramatic decreases in roadless space since 2000. Only national parks were able to stay relatively roadless. FSC certified concessions – contrary to the hypothesis of the researchers – were the only management category where a net loss of roadless space was measured since 2007.[58]

Additional management measures ensuring that logging areas become inaccessible after exploitation requires active management over a long period of time and entails additional costs for logging companies. Considering these additional economic costs, the frequent changes of ownership and chances that companies go out of business altogether, there is little guarantee that logging companies can ensure and manage the restricted access to the forests they have opened op with their logging roads.

On top of commercial logging facilitating increased hunting through road access, it also generates an influx of people that represent new markets for commercial bushmeat. Poaching in logging concessions is very hard to control, even in logging concessions certified by FSC. Scientists warn that *"the loss of wildlife [in Central African rainforests] will result in a disastrous spiral of forest degradation that will reduce the storage of carbon and the resilience of rainforests to climate change".*[59]

Controlling it requires sustained monitoring and law enforcement efforts as well as programs to provide alternative protein supplies to the concession workers and surrounding villages - yet such program are expensive and seldom properly implemented over the long term. As a result, many forest areas are rapidly losing their large (edible) animals and show signs of the "empty forest syndrome".[60]

Also, longer term conservation of those species is impeded because populations reduce their home range size, get isolated and good habitat availability reduces in the smaller fragments of once intact forests. Already the Congo Basin populations of forest elephant are endangered[61] and were found to decline by 62% between 2002 and 2011.[62] Logging roads, even when they are controlled by anti-poaching measures have a negative impact on forest elephants' distribution in the Republic of Congo. Chimpanzees (Pan troglodytes) showed a clear preference for unlogged forests.[63] The nests of bonobos (Pan paniscus), another endangered Great Ape species which is endemic to the Democratic Republic of Congo,[64] are found farther from agriculture areas and in areas with lower edge density.[65]

The effects of fragmentation and degradation on biodiversity are well documented. They lead to

a local loss of species of all kinds of organisms. Species that are sparsely or patchily distributed, very specialized and intolerant of the vegetation around forest fragments are particularly prone to local extinction.[66] Isolated forest fragments gradually suffer from reduced species richness. Also, smaller fragments have fewer species than large fragments, as is shown for understory birds, tree seedlings, palms, primates and larger herbivorous animals like forest elephant in the Congo Basin.[67] These and other large species require vast areas of undisturbed forest for their habitat. A synthesis based on experimental field work around the world found that habitat fragmentation reduces biodiversity by 13 to 75%.[68] Fragmentation and loss of natural habitats by human activities are the main driving forces behind the current biodiversity loss.[69] Fragmentation also threatens biodiversity by increasing forests' vulnerability to invasive species and overhunting.[70] Recent research emphasizes that new large scale conservation efforts to protect intact forests are necessary to slow deforestation and to avert a new wave of global extinction.[71]

Why the proposed additional measures are no guarantee for preserving intactness

Degradation and fire

Even with additional measures as being proposed by the economic chamber such as closing of roads, the intactness of the IFL can simply not be guaranteed. Many of the long-term ecological impacts of the current selective logging practices remain unknown. While logging operations that respect their management plans help reduce the negative impacts on the forest ecosystem, they do however still degrade the forest ecosystem. In a recent briefer on IFLs, WWF warns that even FSC-certified operations may require further adaptive management to reduce the impact.[72]

Evidence from the Amazon and Indonesia shows how degraded tropical forests are much more vulnerable to forest fires than undisturbed forests.[73] Hitherto large-scale forest fires have been a rare phenomenon in the Congo Basin. But climate change could increasingly cause periods of longer drought in the region, which would increase the risk of large scale forest fires. Between January and

Forest Elephant in Central African Republic. The Congo Basin populations of forest elephant are endangered[and were found to decline by 62% between 2002 and 2011© Filip Verbelen

March 2016, large forest fires were detected along logging roads and forest clearings inside the FSC-certified concession of Industrie Forestière d'Ouesso (IFO) in the Republic of Congo.[74] This is a warning sign that a precautionary approach toward IFL protection is necessary.

Degradation and CO2 emissions

Degradation plays a significant role in CO2 emissions. The average carbon density in IFLs is 3.7 times higher than in the rest of the tropical forest zone in Africa.[75] The total biomass carbon pool in the tropical forest zone was estimated 243 Gigatonne around the year 2000, of which IFLs stored 40%, despite comprising only 20% of the tropical forest area.[76] Aboveground carbon loss within intact forests accounts for 11% of the pan-tropical total from 2000 to 2012.[77]

Primary forests contain substantially more carbon above and belowground than the carbon stored in logged or otherwise degraded forests. This happens because most of the aboveground carbon (the carbon in vegetation, forest litter, rather than in the soil) is stored in large, old trees, which usually are the first to be removed by logging operations.[78] Targeting of the biggest trees of a relatively small number of commercially valuable species is a common approach in FSC-certified logging operations in the tropics.

In general, carbon emissions from forest degradation have long been underestimated. One study in the Amazon modelled that selective logging, beyond the one-off removal of large amounts of carbon stored in logs for trade, led to continued net carbon emissions over a period of 20 to 30 years, causing emissions equivalent to up to 19% of those of deforestation. It takes centuries before selectively logged forests have recovered their original living biomass and hence carbon stocks.[79] A study in 74 developing countries showed that 25% (i.e. 2.1 Gigatonnes of CO2) of the total 2005-2010 emissions from tropical deforestation and forest degradation came from degradation. More than half of the degradation was caused by logging.

The DRC ranks amongst the top ten countries with the highest annual forest degradation emissions, with fire as the first cause and logging as the second.[80]

Trees and dense forestry in Cameroon. The Congo forests are of global significance for biodiversity conservation and of critical importance in climate regulation. © Greenpeace / Kate Davison

Area of natural beauty within concession area in the coastal rainforest of Cameroon.
© Greenpeace / Alex Yallop

Conclusion and recommendations

Conclusions

Greenpeace analysis of IFL loss in current FSC certified logging concessions concludes that certification of logging concessions had a negligible impact on slowing IFL fragmentation in the Congo Basin:

- Almost half of the area currently FSC-certified qualified as IFL in 2000, but by 2013, that share had dropped to a mere 23 %.
- More than half of the IFL area was lost, amounting to 1.3 million hectares.
- The percentage of IFL loss in FSC certified concessions was twice the percentage of IFL loss in uncertified concessions and more than ten times the percentage of IFL loss outside logging concessions.
- If the currently discussed 20% threshold for IFL protection would be approved, FSC certified operations in the Congo Basin alone would be permitted to destroy around one million hectares of IFLs. Timber produced from this destruction would be sold to consumers under FSC's label of responsible forestry. This is an unacceptable outcome and would amount to greenwash.

A detailed analysis of 13 concessions managed by four companies, together accounting for 75% of the IFL loss in concessions currently FSC certified, shows that:

- since FSC certification these companies have destroyed close to half a million hectares of IFLs in their concessions;
- in Danzer's IFO concession in the Republic of Congo, an average 2,900 ha of IFL are destroyed per month since certification - double the monthly average between 2000 and the certification date.

The claim of the logging industry that logging roads disappear within a couple of years is unfounded; Long-term research of logging roads in the Congo Basin concludes that while less than 80% of logging roads in the region remained permanently open, abandoned logging roads remained accessible for motorbikes up to ten years after closure and accessibility of footpaths continued even longer.

The ability to successfully introduce the proposed additional management measures ensuring that logging areas become inaccessible after exploitation, on top of already existing anti-poaching programs is highly questionable as it, require active management over a long period of time, entail additional costs for logging companies and are difficult to implement. On top of this, there is no certainty that these additional measures would even suffice to keep IFLs as intact as they still are.

Baka (pygmy) people, indigenous forest tribes of Cameroon. A young boy holds a knife. © Kate Davison

Considering the huge IFL loss in the Congo Basin, including in FSC certified concessions, the additional IFL loss if a threshold as low as 20% protection is adopted is unacceptable. Because of the uncertainty that companies will be able to successfully introduce additional management measures, and the lack of evidence that these additional measures will guarantee the intactness of IFL's, leads to the overall conclusion that it is imperative that FSC insist on robust implementation of Motion 65.

Recommendations

to HCV-Regional Working Group for Congo Basin Forests

Since 2000 already half of all IFLs in currently certified logging concessions have been lost. The SDG in the Congo Basin therefore needs to adopt a precautionary and restrictive approach towards further logging in IFLs and resist pressure aimed at maintaining the status quo in existing logging operations for primarily economic reasons. The discussed threshold of 20% IFL protection in any given concession in no way reflects the spirit and intention of Motion 65, and must be rejected.

to FSC members attending the FSC GA

Whether or not FSC maintains its commitment to protecting IFLs will be determined at the next general assembly (October 2017, Vancouver). New motions that undermine IFL protection, in particular Motion 24 and 32, have been proposed. Not only do these undermine FSC's commitment on IFLs, but also threaten to undermine the entire FSC system. To protect FSC as a credible system consumers can trust, these motions must be rejected.

to governments and donors

Protection of IFLs in the Congo Basin is a challenge that goes beyond the scope of what a voluntary system such as the FSC can achieve. Strategies to protect IFLs need to be developed at the landscape level and need to focus on avoiding further industrial development within them. This requires policy changes in regional and national land-use planning processes that should ultimately be adopted by governments. FSC should help advocate such required policy changes. Newly evolving strategies to protect forests in the Congo Basin, such as REDD+, could mitigate the primary financial implications of increased IFL protection.

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Appendix I: methodology of the mapping analysis

Most of the cartographic and statistics results of this report are based on two GIS analyses realized by Greenpeace:

- 1. General analysis: IFL loss between 2000 and 2013
- 2. Focus on FSC concessions: IFL loss in FSC concessions before and after the certification date

The first one aims to create an overview of the IFL loss in the six Congo Basin countries (Cameroon, the Central African Republic,the DRC, the Republic of Congo, Equatorial Guinea and Gabon). It allows to describe the evolution of the IFL area inside and outside logging concessions in the whole area.

The second one focuses on the FSC certified concessions in the Congo Basin and aims to define the impact of certification on IFL loss. Are IFLs still disappearing after certification? At which pace? To answer these questions, this study describes the evolution of IFL area before and after certification thanks to diachronic analysis of satellite images.

General study: IFL loss between 2000 and 2013

Data

IFL data

To calculate IFL area and area loss we used the spatial layers "IFL for year 2000" and "IFL for year 2013" provided by the Intact Forest Landscapes website.[81]

Concession limits

The logging concessions data are provided by the interactive forest atlases of the six countries of Congo Basin (an initiative of the World Resources Initiative's (WRI)) and these countries' ministries in charge of forests.[82]

More specifically, the following layers were used:

- Cameroon: http://wri-sites.s3.amazonaws.com/forest-atlas.org/cmr.forest-atlas.org/resources/gdbs/cmr_data_avec_doc_2016.gdb.zip: "forêts de production" with removal of council forests ("forêt communale")
- Central African Republic: http://caf.forest-atlas.org/resources/gdbs/caf_data_2013.zip: "RCA_PEA_2012"
- Democratic Republic of Congo: http://cod-data.forest-atlas.org: "forest_concession_agreement", downloaded 13/02/17
- Republic of Congo: http://cog-data.forest-atlas.org: "concessions", downloaded 13/02/17
- Equatorial Guinea: http://gnq.forest-atlas.org/resources/atlas/gnq_atlas_v1.zip: "GNQ_concessions", downloaded 13/02/17
- Gabon: http://gab.forest-atlas.org/resources/gdbs/gab_data_2013.zip: "GAB_CFAD_2013" & "CPAET"

These layers provide a snapshot of the situation at a certain moment in time. For some countries (e.g. Cameroon) that moment is end 2016, for others (e.g. Gabon) it is 2013. A permanently up to date public dataset for the whole region unfortunately does not exist.

Due to data gaps, changes to the logging concessions in the course of the study period (e.g. award, abrogation, modification of boundaries, etc.) were not taken into account, with the exception of the date of certification for a selection of FSC certified concessions that were submitted to a more thorough analysis of IFL area loss between their date of certification and 2017.

FSC certified concessions were identified using FSC's public certificate database.[83] There are currently 11 FSC Forest Management (FM) certificates in the Congo Basin covering 26 concessions controlled by 7 different groups. These groups are Danzer (Switzerland), Olam (Singapore), Pasquet (France), Rougier (France), Wijma (the Netherlands), Precious Woods (Switzerland) and Joubert (France). The concessions were awarded certificates between December 2005 and October 2017. There are currently no FSC certified concessions in the Democratic Republic of Congo, the Central African Republic and Equatorial Guinea.

Borders of countries

The borders of Congo Basin countries used are available in the WRI Atlas of Cameroon[84] too.

Tools and method

Map projection and spatial accuracy

The cartographic projections used are the WGS84 UTM zone projections corresponding to the Congo Basin area and the studied countries.

Many cartographic projections exist. The characteristics of each projections induce a different accuracy in the calculation of areas, distances or angles. In the article of (Potapov, 2016) dealing with the same topic (evolution of IFL area between 2000 and 2013) but at the world scale, mappers didn't use WGS84 UTM zone but projected their data in Albers Equal Area. This methodological difference explains the variations between the results presented in this study and the results provided by (Potapov, 2016).

As is shown in the table below with the example of DRC (largest country in the Congo Basin), the projections (using the same shape) provide different results. The official area of DRC provided by the Central Intelligence Agency[85] (CIA) is approximately in the middle of these two projections (CIA provides here the sum of land and water areas within international boundaries and coastlines which corresponds to the limits we used for the calculation in Albers Equal and WGS84 UTM).

Table 4: Areas and projections, example of DRC (Greenpeace, 2017)

Area of DRC in ALBERS EQUAL projection	232 798 287 ha
Area of DRC in WGS84 UTM projection	239 161 543 ha
Area of DRC according to CIA	234 485 800 ha

Both UTM and Albers are projections generally recommended for a GIS analysis at the regional and local scale but each one presents its own characteristics and distortions of the real earth's surface. Albers, as an equivalent[86] projection, is recommended for area calculations but the division of the world into 60 north and south zones provided by UTM gives to this projection good results too. So, the scientific literature concerning cartographic projections doesn't allow to define the most adapted projection for this exercise.

To conclude, we suggest the results of this study be considered as an independent package: effective results (in ha) have to be used with all the cautions required while percentages/proportions can be widely disseminated.

Mapping tools

All the geo-processes are operated thanks to the tools available in the ArcGIS software (ESRI©).

Overview of the geoprocesses

Figure 1 : Overview of the first study geoprocesses (Greenpeace, 2017)

In a first step, all the mapping data (IFL 2000, IFL 2013, concessions and borders of countries) in shape format (ESRI©) are gathered in one only shape file (Union in ArcToolBox). Then the general shape file is divided by country. In a third step each country file is projected in WGS84 UTM zone. Finally areas are calculated per country thanks to Arcgis tools.

Results

Global review: IFL losses are mainly located inside logging concessions

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Table 5: IFL change 2000-2013 in FSC certified concessions (Greenpeace, 2017)

Metric	CAF	CMR	COD	COG	GAB	GNQ	CB TOTAL
IFL area 2000 (ha)	871130	5314018	66081377	13952099	10960597	424803	97604024
IFL area 2013 (ha)	570219	3968738	63320858	11441148	8412317	232887	87946167
IFL area reduction 2000-2013 (ha)	300911	1345280	2760519	2510951	2548280	191916	9657857
IFL area reduction 2000-2013 (%)	35	25	4	18	23	45	10
concession area (ha)	3689027	6778435	10969660	15379343	13425799	740121	50982383
concession area currently FSC certified (ha)	0	982618	0	2590557	2067919	0	5641093
share of concession area currently FSC certified (%)	0	14	0	17	15	0	11
IFL area 2000 inside concessions (ha)	639517	2594741	6004944	6944352	6490060	95994	22769607
IFL area 2013 inside concessions (ha)	341443	1457350	5366398	4574531	4581677	19921	16341319
IFL area inside concessions reduction 2000-2013 (ha)	298074	1137391	638547	2369821	1908383	76073	6428288
IFL area inside concessions reduction 2000-2013 (%)	47	44	11	34	29	79	28
IFL area inside concession reduction 2000-2013 proportion of total IFL area reduction 2000-2013 (%)	99	85	23	94	75	40	67
share of IFL area 2000 inside concessions (%)	73	49	9	50	59	23	23
share of IFL area 2013 inside concessions (%)	60	37	8	40	54	9	19
share of concession area that was IFL in 2000 (%)	17	38	55	45	48	13	45
share of concession area that was IFL in 2013 (%)	9	21	49	30	34	3	32
IFL area 2000 inside concessions currently FSC certified (ha)	0	436194	0	1605437	605509	0	2647139
IFL area 2013 inside concessions currently FSC certified (ha)	0	56594	0	931849	308016	0	1296459
share of IFL area 2000 inside concessions currently FSC certified (%)	0	8	0	12	6	0	3
share of IFL area 2013 inside concessions currently FSC certified (%)	0	1	0	8	4	0	1
IFL area inside concessions currently FSC certified reduction 2000-2013 (ha)	0	379600	0	673588	297492	0	1350680
IFL area inside concessions currently FSC certified reduction 2000-2013 (%)	0	87	0	42	49	0	51
IFL area inside concessions currently FSC certified reduction 2000-2013 proportion of total IFL area eduction 2000-2013 (%)	0	28	0	27	12	0	14
IFL area inside concessions currently FSC certified reduction 2000-2013 proportion of IFL area inside concessions reduction 2000-2013 (%)	0	33	0	28	16	0	21
IFL area 2000 outside concessions (ha)	231613	2719277	60076433	7007747	4470537	328809	74834417
IFL area 2013 outside concessions (ha)	228776	2511388	57954460	6866617	3830640	212966	71604848
IFL area outside concessions reduction 2000-2013 (ha) (AC)	2837	207889	2121972	141130	639897	115843	3229569
IFL area outside concessions reduction 2000-2013 (%) (AC)	1	8	4	2	14	35	4
Average portion of IFL area lost inside logging concessions with IFL left in 2000 (%)							36
Average portion of IFL area lost inside logging concessions with IFL left in 2000 that were FSC certified in 2013 (%)							63

FSC concessions analysis: IFL loss in FSC certified concessions was twice the percentage of IFL loss in uncertified concessions

Country	Group	Concession name	IFL 2000 (ha)	IFL 2000 (% of concession area)	IFL 2013 (ha)	IFL 2013 (% of concession area)	IFL change 2000-2013 (ha)	IFL change 2000-2013 (% of the year 2000 IFL area)	Area at risk in case of 20% protection of 2013 IFL (ha)
ROC	Danzer	Ngombé	955,065	79	587,281	49	367,784	39	469,825
	Danzer TOTAL		955,065	79	587,281	49	367,784	39	469,825
ROC	Olam	Loundoun-gou-Toukou-laka	404,335	72	226,216	40	178,119	44	180,973
ROC	Olam	Pokola	170,458	32	65,776	12	104,682	61	52,621
ROC	Olam	Kabo	75,580	26	52,577	18	23,003	30	42,061
	Olam TOTAL		650,373	47	344,568	25	305,804	47	275,655
CMR	Pasquet	10-030	59,969	77	0	0	59,969	100	0
CMR	Pasquet	10-041	41,396	63	0	0	41,396	100	0
CMR	Pasquet	10-031	38,421	95	0	0	38,421	100	0
CMR	Pasquet	10-039	38,275	80	0	0	38,275	100	0
CMR	Pasquet	10-044	33,108	50	0	0	33,108	100	0
CMR	Pasquet	10-042	13,739	31	0	0	13,739	100	0
	Pasquet TOTAL		224,908	66	0	0	224,908	100	0
CMR	Rougier	10-038	76,017	51	0	0	76,017	100	0
GAB	Rougier	Moyabi	147,332	75	87,551	45	59,782	41	70,041
GAB	Rougier	Ogooué Ivindo	65,396	23	10,669	4	54,728	84	8,535
GAB	Rougier	Haut Abanga	22,551	8	15,765	5	6,786	30	12,612
CMR	Rougier	10-054	0	0	0	0	0	0	0
CMR	Rougier	10-056	0	0	0	0	0	0	0
GAB	Rougier	Léké	0	0	0	0	0	0	0
	Rougier TOTAL		311,297	27	113,984	10	197,313	63	91,187
GAB	Precious Woods	Precious Woods Ga-bon/CEB	207,190	34	68,782	11	138,407	67	55,026
	Precious Woods TOTAL		207,190	34	68,782	11	138,407	67	55,026
CMR	Wijma	09-024	56,821	75	0	0	56,821	100	0
CMR	Wijma	11-005	59,432	85	46,109	66	13,323	22	36,887
CMR	Wijma	09-021	17,483	48	8,951	24	8,531	49	7,161
CMR	Wijma	09-022	0	0	0	0	0	0	0
CMR	Wijma	09-025	1,533	2	1,533	2	0	0	1,227
	Wijma TOTAL		135,270	39	56,594	16	78,676	58	45,275
GAB	Joubert	CBG Gamba	112,315	52	91,776	42	20,539	18	73,421
GAB	Joubert	CBG Mandji	50,724	14	33,474	10	17,251	34	26,779
	Joubert TOTAL		163,039	29	125,250	22,07	37,789	23	100,200
	TOTAL FSC		2,647,140	47	1,296,459	23	1,350,680	51	1,037,167

Focus on FSC concessions: IFL loss in FSC concessions before and after the certification dates

The first results presented in part 1 "General Study" are in line with the findings of (Potapov et al., 2016), but they do not take into account the initial date of certification of the current FSC logging concessions. Logging concessions in the Congo Basin only started to obtain FSC certificates from 2005 onwards, far into the study period. Could it be that the alarming amounts of IFL losses observed in many FSC certified concessions overwhelmingly took place before the certification, and stalled or at least significantly slowed down as soon as new, "responsible" logging practices were introduced?

To test this hypothesis, we took a closer look at a representative sample of FSC concessions and focused on the evolution of their IFL area taking into account the date of certification. In that way, the analysis is organized in 2 successive parts:

- Evolution of IFL area from 2000 until the date of FSC certification
- Evolution of IFL area from the date of certification to 2017

Data

IFL 2000, concessions and borders of countries

Same sources as the first general analysis have been used.

Selection a representative sample of FSC concessions in Congo Basin

To obtain a representative sample of FSC concessions, we added up the IFL area reduction of FSC-certified concessions per group in Table 5. (of the first general study) and ranked the groups in descending order of total IFL area reduction. To explore whether certification had any mitigating effect on IFL loss, the FSC-concessions of the top four in this ranking (Danzer, Olam, Pasquet and Rougier) were chosen to operate this additional analysis of IFL loss between 2000 and the initial certification date and between the initial certification date and 2017. Together these concessions account for 75% of the IFL loss in areas currently FSC certified.

Satellite images

The images used come from 3 different satellites:

- Landsat 7 (NASA)
- Landsat 8 (NASA)
- Sentinel 2 (European Space Agency)

Exogenous data

The other data used as a support for satellite image interpretation are the images provided by "Archive" tool of Google Earth©.

Tools and method

Map projection and spatial accuracy

WGS84 UTM zones projections are used in this FSC analysis too.

Mapping tools

All the geo-processes are operated thanks to the tools available in the ArcGIS software (ESRI©).

Overview of geoprocesses

The processes aim to detect the IFL area loss before and after FSC certification thanks to the *Official IFL mapping methodology*[87]. In consequence, the method is divided in 2 main parts : mapping of IFL loss before certification and then mapping of IFL loss after the certification. Both parts are almost similar, the figure and the text below describes in 4 steps the method repeated for each of the 2 parts.

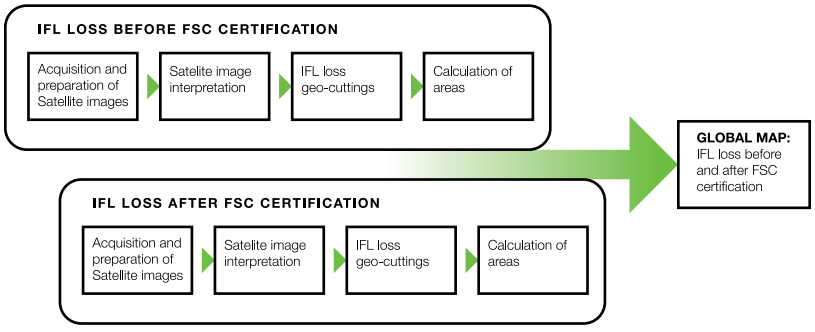

Figure 2 : Geo-processes of FSC IFL analysis (Greenpeace, 2017)

Acquisition and Preparation of satellite Images

A selection of spectral bands of each satellite images are downloaded via usgs[88] web platform then stacked in natural color band combination thanks to ArcGis raster tools. Considering the spatial and spectral resolutions of the satellite images and the speed of the vegetation to recover a logging track (or any kind of degradation linked to logging industry), it was decided to collect one image every two years during the whole period of study and in the whole area of interest. This series of image allows detection of the different elements of IFL degradation.

Satellite image interpretation

The satellite image interpretation phase aims to detect and draw in vector format the different elements of IFL degradation appearing in the satellite images (logging area, cutting areas…) during the study period. This interpretation is done manually using the satellite images collected, the archives of Google Earth© and the vectorization tools of ArcGis to draw the elements of IFL degradations.
N.B.: The objective of the study is to identify the impact of FSC certified logging groups on IFL area. In that way, all the elements of degradation located out of the selected FSC concessions are not included in the analysis and cannot affect the IFL area located inside the same concessions.

IFL loss geo-cuttings

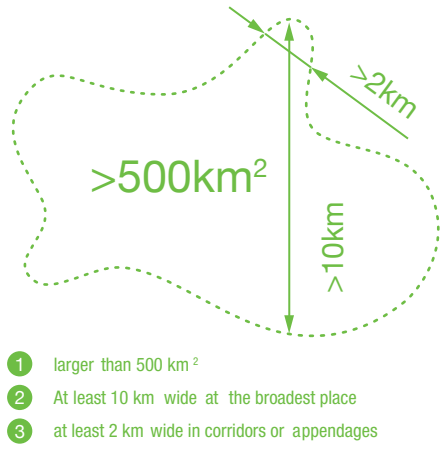

Figure 3 : Geometrical rules defining an IFL area (Potapov, 2008)

After the interpretation phase and monitoring/ vectorization of the elements of IFL degradation (logging roads, cutting areas…), a series of GIS processes are operated to follow the geometrical rules of IFL definition (see Figure 3 above from the official IFL mapping methodology).

A 1 km buffer area is created around the elements of degradation and remove from the 2000 IFL area, then all the areas which doesn't fulfill with the geometrical rules of IFL definition are removed too.

Calculation of areas

Finally, the area calculation of IFL and IFL loss in the selected concession for the study periods are operated thanks to standard mapping tools.

Results

As explained before, we mapped, for each of the selected concessions, the IFL area reduction between:

- 2000 and the date of certification
- the date of certification and 2017

Group	Concession name	Certification date	IFL degraded since certification date (ha)	IFL 2017 (ha)
Danzer	Ngombé	26/02/09	279,651	515,500
Danzer total			279,651	
Olam	Loundoun-gou-Toukoulaka	10/02/11	70,788	194,708
Olam	Pokola	19/05/08	15,678	65,388
Olam	Kabo	22/05/06	24,051	36,179
Olam total			110,517	
Pasquet	10-030	09/10/08	33,465	13,372
Pasquet	10-041	09/10/08	1,310	0
Pasquet	10-031	09/10/08	22,858	0
Pasquet	10-039	09/10/08	16,836	8,500
Pasquet	10-044	09/10/08	9,432	5,665
Pasquet	10-042	09/10/08	0	0
Pasquet total			83,901	
Rougier	Moyabi	04/10/13	0	89,938
Rougier	Ogooué Ivindo	09/10/08	8,553	7,910
Rougier	Haut Abanga	09/10/08	0	15,771
Rougier total			8,553	

Table 2 : IFL loss in selected FSC-certified concessions, before and after certification (Greenpeace, 2017)

Appendix II: FSC-certified logging concessions in the Congo Basin

FSC-certified logging concessions in the Congo Basin September 2017 (source: https://info.fsc.org/certificate.php - concession area: own calculations - the certified area does not always correspond to the full concession area.)

Certificate code	Country	Name of FMU	Organisation	Group	Initial certification date	Concession area (ha)
RA-FM/COC-007088	ROC	Ngombé	IFO	Danzer	26/02/2009	1,210,033
SGS-FM/COC-010641	ROC	Kabo	CIB		22/05/2006	292,341
SGS-FM/COC-004705	ROC	Pokola	CIB	Olam	19/05/2008	528,343
SGS-FM/COC-008483	ROC	Loundoun-gou-Toukoulaka	CIB		10/02/2011	559,839
BV-FM/COC-840169	GAB	Precious Woods Gabon	CEB		09/10/2008	617,213
RA-FM/COC-006347	CMR	10-038	Rougier Gabon		22/03/2013	148,569
		10-054				67,664
		10-056				73,791
RA-FM/COC-006621	GAB	Ogooué Ivindo	SFID	Rougier	09/10/2008	280,746
		Haut Abanga			09/10/2008	288,634
		Moyabi			04/10/2013	195,307
		Léké			09/10/2008	118,514
BV-FM/COC-832214	CMR	10-030	Palisco & partners	Pasquet	09/10/2008	77,385
		10-041				66,114
		10-031				40,330
		10-039				48,001
		10-044				65,823
		10-042				44,229
BV-FM/COC-140380	CMR	11-005	CAFECO		19/03/2010	70,201
BV-FM/COC-051201		09-021	SCIEB	Wijma	08/12/2005	36,581
		09-024	SCIEB			75,436
		09-022	CFK			79,960
		09-025	SCIEB			88,535
		00-003	CFK		14/06/2017	139,409
BV-FM/COC-639590	GAB	Gamba	CBG		02/06/2009	216,938
		Mandji				350,571
Total						5,780,502

87 http://intactforests.org/method.html
88 https://earthexplorer.usgs.gov/