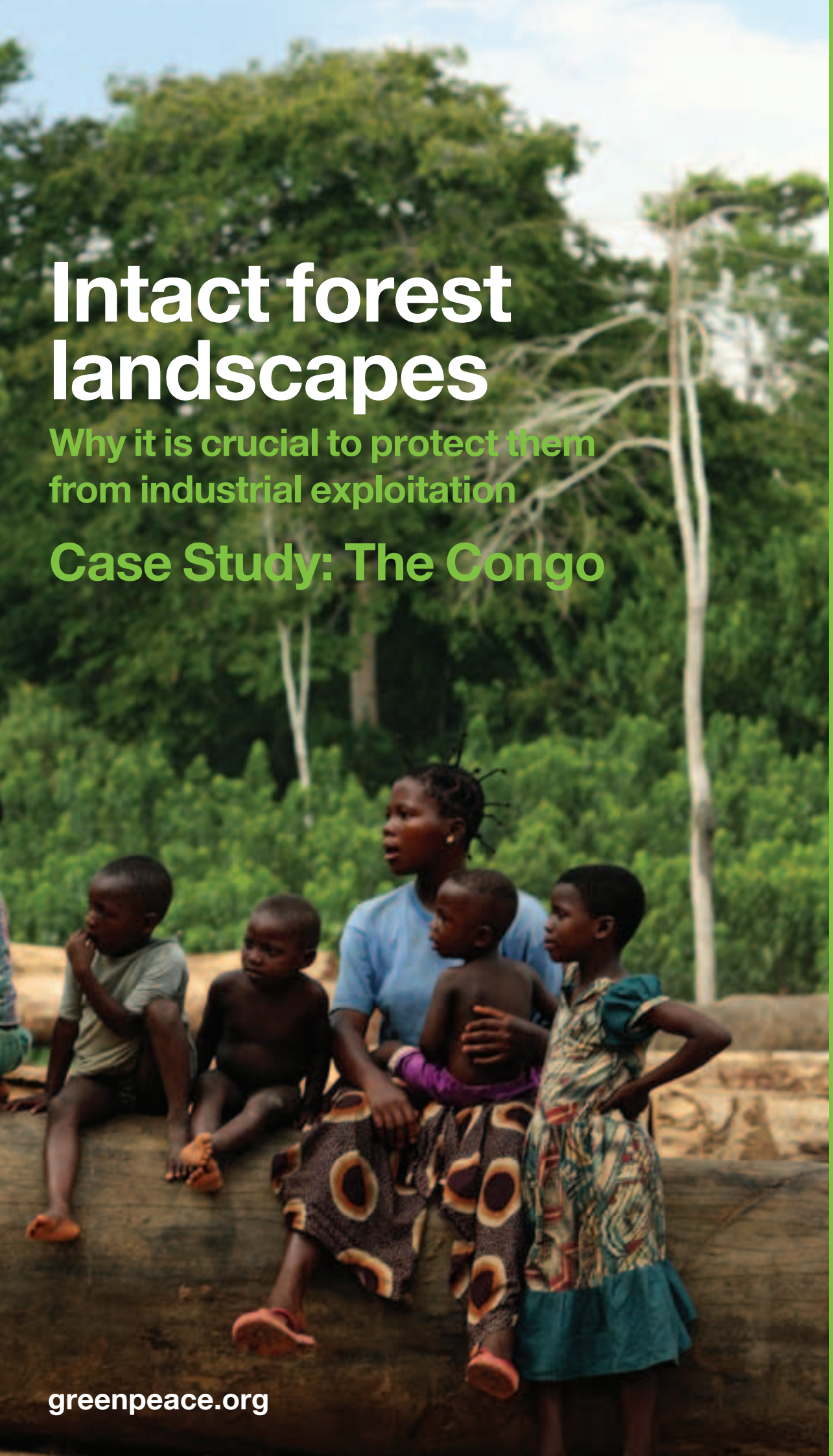

Intact forest landscapes

Why it is crucial to protect them from industrial exploitation

Case Study: The Congo

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Protecting Forests

Contents

Maps: Disclaimer
The maps on pages 9 and 12 were prepared by Greenpeace in September 2011. IFLs were reviewed using high spatial resolution images from Landsat-7, global coverage representing an average date of 2010 (30m spatial resolution images and 60m resolution no-cloud mosaics). For more details on IFLs and methodology see: www.intactforests.org

The Logging Titles layer is taken from the Interactive Forest Atlas of the Democratic Republic of Congo, published by World Resource Institute (WRI), 2010 (Logging titles: Direction Inventaire et Amenagement – DIAF; Direction Gestion Forestière – DGF).

The forest cover layer is taken from the Forêts d'Afrique centrale évaluées par télédétection (FACET) project, a collaboration of the Observatoire satellital des forêts d'Afrique central (OSFAC), South DakotaState University (SDSU), and the University of Maryland that is supported by the USAID-funded CARPE program, 2010.

Base layers (water, political boundaries) are from Vmap0 - topographic database produced by National Geospatial Intelligence Agency (USA) and Interactive Forest Atlas for Democratic Republic of Congo (WRI), 2010

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Cover image: © Greenpeace / Jiro Ose

JN 390

Published in October 2011
by Greenpeace International
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1) Introduction – What are intact forests landscapes?

Intact Forest Landscapes (IFLs) are the remaining large (at least 500 km^2) unfragmented areas of forests, which are minimally influenced by human economic activity. They cover a little over one-fifth of the global forest vegetation zone[1]. They are large extents of primary forest, or large landscape-level unfragmented forest ecosystems, but they may also contain non-forest ecosystem components, e.g. lakes.

These IFLs contain a disproportionally high amount of global forest carbon and biological diversity, and can continue to do so if they remain protected from fragmentation and subsequent exploitation. IFLs are also large enough to help many plant and animal species to adapt to climate change and contain high social values in regions like the Congo Basin.

The vast majority of IFLs are found in two biomes: humid tropical and boreal forests. Most of the world's intact forest landscapes are concentrated in a small number of countries - 13 countries contain 90% of the total IFL area. In the tropics, the largest IFL areas can be found in the Amazon Basin of South America, the Congo Basin of Central Africa and on the large islands of the Asia Pacific region.

The Democratic Republic of Congo (DRC) contains more than 63 million hectares of IFLs, which is 41% of DRC's total forest cover and 70% of the total IFL area in the Congo Basin (90 million hectares) in 2010.

The United Nation's Convention on Biological Diversity (CBD) has realised the importance of large intact forests and other intact ecosystems (see, for example, CBD AHTEG reports on Biodiversity and Climate Change[2]), as has the German government, which concluded that 'Large, unfragmented forests... have a significant impact on climate and water cycles'[3]. The importance of preserving natural forests – of which IFLs are the backbone – also emerges in the discussions of the UN Framework Convention on Climate Change (UNFCCC) regarding Reducing Emissions from Deforestation and Degradation (REDD) in developing countries.

A recent Greenpeace report[4] describes the importance of IFLs for climate, biodiversity and people. It also highlights the threats of IFL fragmentation by large-scale activities, using industrial selective logging and road building as prime examples, and describes how IFLs can be protected from further fragmentation through precautionary exclusion of industrial-scale activities.

While summarising the main findings of that report, this briefing focuses on the case of the Democratic Republic of Congo and displays the latest updated maps of IFLs in Central Africa and, specifically, the DRC.

2) The importance of intact forest landscapes

IFLs are essential both to biodiversity and to people in a variety of ways. IFLs affect many natural processes at many levels, from local through regional to global.

"In largely intact forest landscapes where there is currently little deforestation and degradation occurring, the conservation of existing forests, especially primary forests, is critical both for preventing future greenhouse gas emissions through loss of carbon stocks and ensuring continued sequestration, and for conserving biodiversity."

- (CBD 2009)[5]

2.1 Carbon and climate change

IFLs play an important role in regulating the Earth's atmosphere and climate. They interact with the climate in many ways, including:

- Aiding mitigation of climate change by taking up carbon from the atmosphere and storing vast carbon stocks more securely than other forests or plantations;
- Allowing migration of plant and animal species, enabling adaptation of biodiversity to climate change; and
- Enabling human adaptation to climate change by lessening the impacts of extreme weather and maintaining ecosystems services.

"Because old-growth forests steadily accumulate carbon for centuries, they contain vast quantities of it. They will lose much of this carbon to the atmosphere if they are disturbed, so carbon-accounting rules for forests should give credit for leaving old-growth forest intact."

- (Luyssaert et al. 2008)[6]

"Evidence suggests that intact forests, particularly primary forests, will be more resistant to climate change than second-growth forests and degraded forests."

- (CBD 2009)[7]

"The Congo Basin Forests is a major transboundary natural resource pool and like other forest ecosystems, is likely to be impacted by climate change in various ways."

- (IPCC 2007)[8]

2.2 IFL biodiversity underpins ecosystem services

Biodiversity forms ecosystems, and ecosystems provide services - such as clean air and water supply - both locally and globally. Without biodiversity, or with severely degraded biodiversity, many of the forest ecosystems and the services that we rely upon would probably collapse[9].

Because of their long-standing and lower levels of disturbance, IFLs are typically richer in biodiversity (including within species and genetic diversity) than other types of forest, with a high degree of specialised and co-evolved flora and fauna.

A patchwork of forested areas differs markedly from continuous forest in composition and ecology[10]. Large, roaming animals (such as forest elephants, great apes, bears, wolfs, tigers, jaguars, eagles, deer etc.) especially require intact forest landscapes.

In the context of climate change, IFLs are important as they allow species migration by providing contiguous forest cover, and thus aid adaptation to climate change. **The resilience of IFLs to climate change means that they will also be more likely to retain these vital ecosystem goods and services in the face of climate change than fragmented forest.**

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"Habitat fragmentation affects far more than biodiversity and interactions among species; many ecosystem functions, including hydrology and biochemical cycling, are also being altered. Among the most important of these are fundamental changes in forest biomass and carbon storage."

- (Laurance et al. 2011)[11]

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2.3 People need IFL ecosystem services

IFLs are of value to people in many ways, both directly and indirectly. Aside from intrinsic value, the economic value of an IFL to people is mostly derived from ecosystem services.

A comprehensive international assessment of the economics of ecosystems and biodiversity (TEEB) gave an estimated average value of ecosystem services from tropical forests at $6,120 US dollars per hectare per year, of which only 7% is raw material extraction such as timber[12]. However, as noted by TEEB and other recent studies, the value of the ecosystem services is often inadequately reflected in economic accounting and decision-making.

The fact that indigenous peoples and traditional forest dwellers depend on forests for their livelihoods and their culture is also well known. What is not well known is how much people depend, in particular, on IFLs directly. The best way to estimate this is in terms of the use of ecosystem services, as these are at risk from fragmentation. The Millennium Ecosystem Assessment[13] estimated that 300 million people, most of them very poor, depend substantially on forest ecosystems for their subsistence and survival, with the 60 million indigenous peoples who live in forest areas being especially dependent on forest resources and the health of forest ecosystems. They concluded that, while forest resources alone were generally insufficient to promote poverty alleviation, degradation (which would include fragmentation) has significant negative consequences on human well-being.

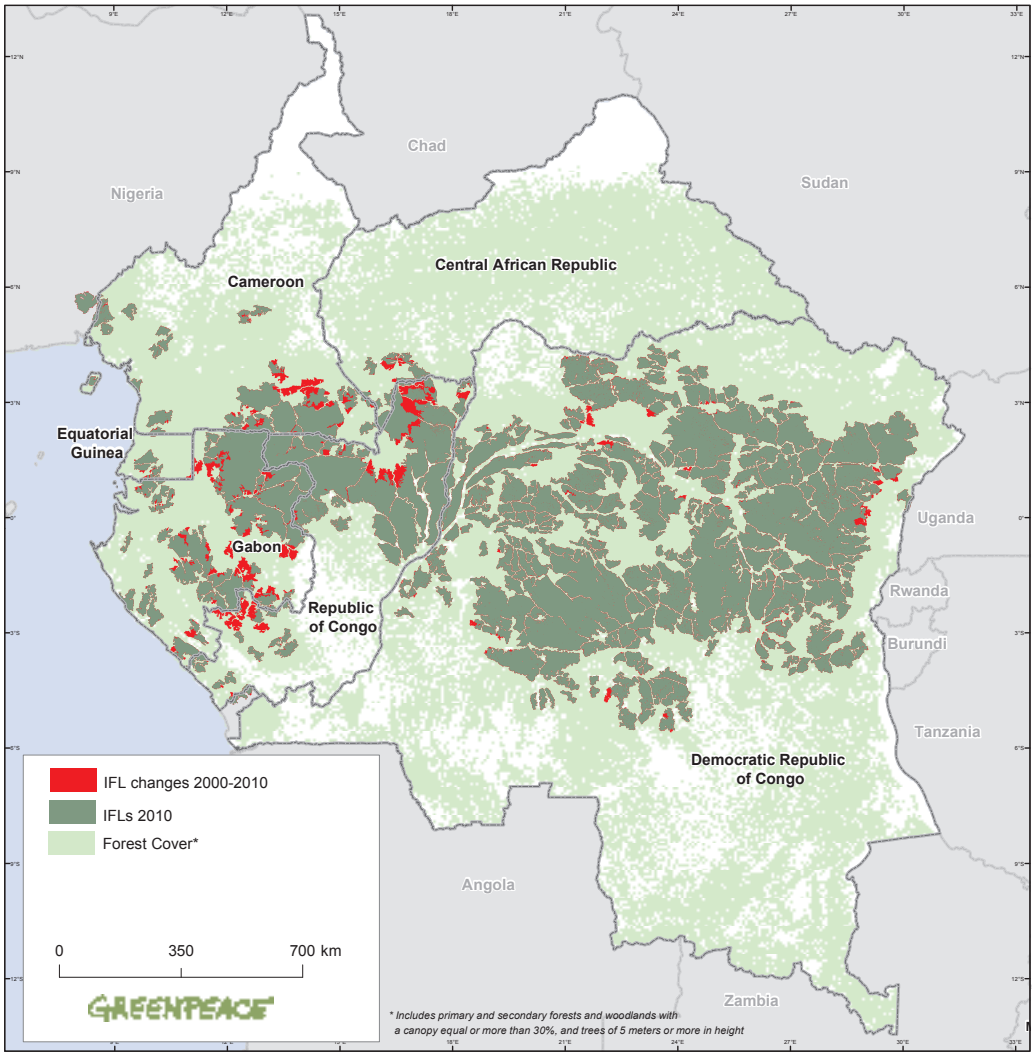
In DRC, about 40 million rural Congolese depend on the forests for their food, income, energy, shelter, medicines and cultural needs. Indigenous groups rely almost entirely on the forests[14].

3) IFLs in the Congo Basin: Threats and consequences

IFL monitoring analyses have shown that IFL loss, mostly through fragmentation, is significant in the Congo Basin. Fragmentation is the first and often overlooked step in the chain of forest destruction. An intact forest is being cut into pieces facilitating access, and thus further degradation, through logging, poaching, fires etc. The degraded forest in turn has an increased likelihood of being subject to total deforestation to make space for agriculture, settlements etc. Fragmentation attracts further forest degradation and forest degradation attracts deforestation.

In the past 10 years, the Congo Basin lost an IFL area of about 5.2 million hectares, while the DRC lost about 1.2 million hectares of its IFLs.

IFL losses in the Congo Basin – 2000-2010



For the past decade, Cameroon, Gabon and the Republic of Congo have lost higher percentages of their IFL areas compared to the DRC. This is mostly due to fragmentation caused by the logging industry. In the DRC, despite the extensive area awarded to the logging industry, there has been relatively little actual operation taking place in this timeframe, due to the political instability and lack of infrastructure. Therefore, the relative loss of IFL has remained rather limited altogether and mostly concentrated alongside the most populous areas. Being a conflict zone, the Eastern Congo has also been affected by illegal mining and logging, as well as massive internal displacement of population.

Renewed logging activity in the DRC in coming years will, however, significantly increase the pace of IFL loss, as has been shown to be the case in the aforementioned countries during the past 10 years.

3.1 Fragmentation, a major threat to biodiversity, including large mammals

Fragmentation of IFLs particularly affects large mammals and can induce far-reaching changes in the ecology of the forest. Large mammals require blocks of habitat that are thousands, if not tens of thousands, of square kilometres in size[15]. Species with a wide home range are vulnerable to fragmentation[16], not because they become genetically isolated, but because fragmentation also restricts their ability to roam in search of food.

The increase of commercial poaching, as a result of road opening and truck traffic further significantly affects the population of large mammals[17].

"Throughout Central Africa, roads are considered deleterious for wildlife. Road construction limits the physical movement of some species and is accompanied by increased hunting, unplanned colonisation, and deforestation or forest degradation."

- (Clark et al. 2009)[18]

"These roads form barriers that for wildlife are often uncrossable, splitting the original population in several sub-populations. For some species this barrier effect may result in the formation of metapopulations, a collection of isolated subpopulations that are individually more sensitive to decline and extinction than the original population was. Although genetic isolation is not a realistic threat, local extinction of cut-off populations is."

- (Van der Hoeven et al. 2009)[19]

Many large mammals that depend on forests are endangered in the Congo Basin, including some of the great apes (gorillas, chimpanzees and bonobos) and species of elephants. Fragmentation of forests has been identified as a key threat to the region's gorillas, which according to a UN report may disappear from most of their present range in the next 10 to 15 years[20].

3.2 Selective logging, fragmentation and carbon losses

There are several agents of fragmentation and most involve the building of roads or otherwise generating access to previously inaccessible and intact areas of forest. In Central Africa, selective logging is arguably the most important factor, especially in the deep heart of the dense, sparsely-populated rainforest. In the periphery of the forest higher human density, urban population growth and subsequent increasing demand for agricultural products, energy and building material also contribute significantly to IFL losses.

"Currently more than 600,000 km^2 (30%) of forest are under logging concessions, whereas just 12% is protected. Logging-related disturbance in the region alters ecosystem composition and biodiversity, opens remote areas to poaching, and modifies numerous functional attributes of the ecosystem."

- (Laporte et al. 2007)[21]

To facilitate industrial logging, wide roads are built to accommodate the large logging trucks. In 2007, it was conservatively estimated that logging roads accounted for 38% of all roads in the forested region of Central Africa[22]. While some logging roads are subsequently converted to public roads when human density is high, this is not the original purpose behind their construction. Road construction that fragments IFLs if for the sole purpose of short-term timber extraction. With the opening of logging roads in previously inaccessible or remote areas come undesirable consequences such as poaching and changes in agricultural patterns and local needs, leading to increased deforestation and biodiversity loss[23].

"The opening of forests to logging sets off a domino effect of road construction, immigration of job seekers, and an escalation of commercial hunting and trade."

- (Clark et al. 2009)[24]

In addition, many trees are inadvertently damaged, even during selective logging, leading to edge effects and loss of biomass carbon. A study undertaken in a CIB concession in the Republic of Congo, although managed using reduced impact logging techniques, estimates significant carbon losses of **10.2 tonnes per hectare (over 37 tonnes CO_2eq)[26].**

IFL loss 2000-2010 in a logging area (Democratic Republic of Congo)

IFL boundaries 2000

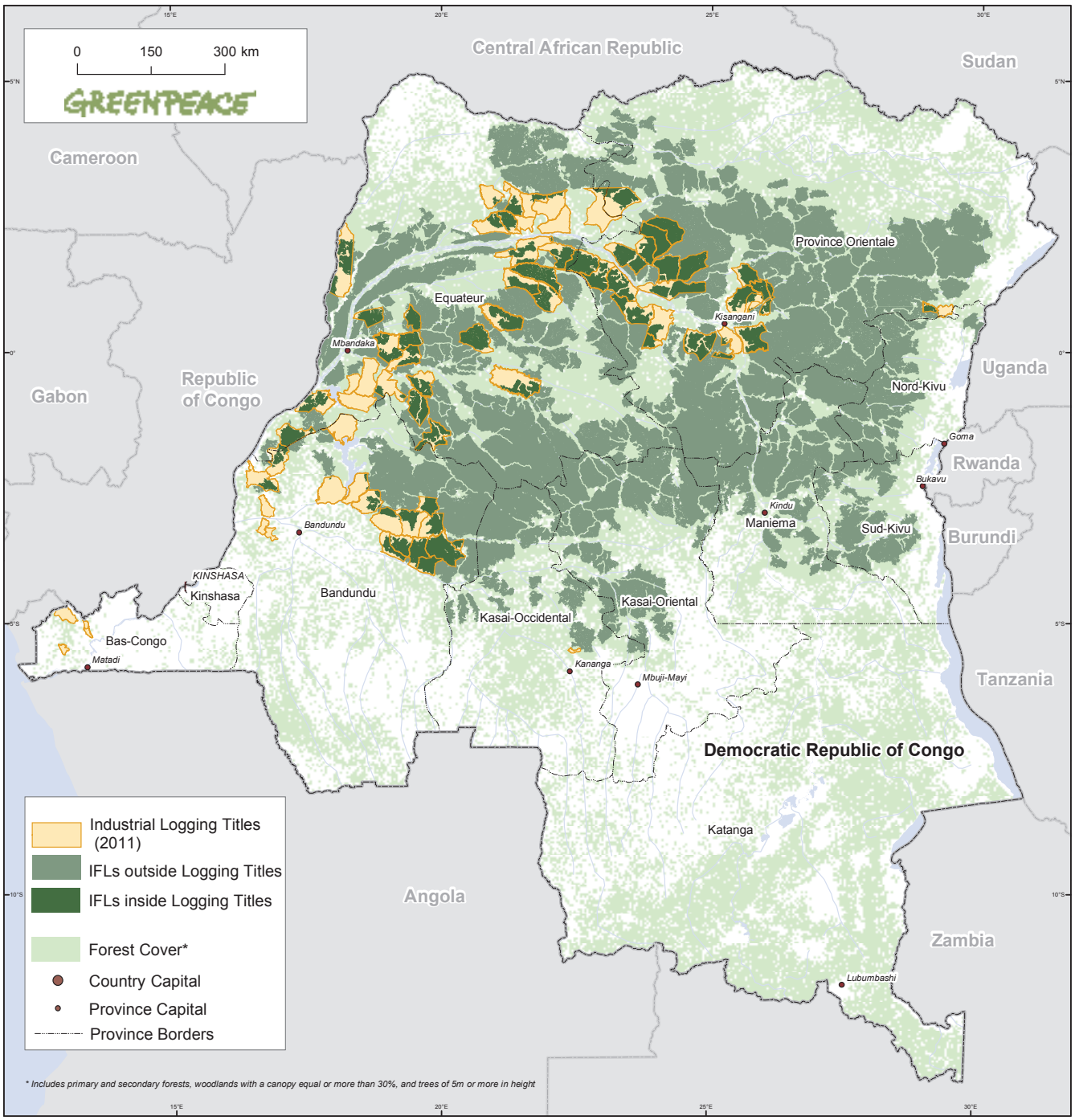
IFL boundaries 2010

IFL loss 2000-2010

Landsat-7 no-cloud mosaics 2000, 2010 (spatial resolution 60m)

The satellite image depicts IFL loss between 2000 and 2010 in a portion of Siforco logging area 002/83, Bas Uele district, Province Orientale, DRC. Most of the loss is due to fragmentation as a direct consequence of logging activities, such as roads. Settlements linked to logging companies' infrastructures and camps may also attract significant numbers of people (workers and family members) into areas that were formerly sparsely populated[25].

INTACT FOREST LANDSCAPES (IFL) AND INDUSTRIAL LOGGING TITLES IN THE DEMOCRATIC REPUBLIC OF CONGO (STATUS 2011)



In the DRC, half of the total area awarded to logging companies (i.e. 15 million hectares) is located in IFLs. Consequently, as much as 12% of the country's IFLs could be lost as a direct result of subsequent logging activities, even if the current moratorium on logging titles were to be maintained over the next three decades.

4) Conserving and protecting intact forest landscapes

4.1 How much intact forest landscape should be protected to maintain biodiversity?

At its 10th Conference of the Parties (CBD-COP10) in Nagoya in 2010, the UN CBD adopted a plan to increase the formally protected land areas from the current 12.9% to 17% in 2020[27]. This is a short-term minimum target and discussions at CBD-COP10 showed that, after 2020, this figure would need to continue rising significantly to over 28%, and a large part of this expansion would need to be bio-diverse and/or carbon rich forests[28]. This translates into a mid-term need to expand forest protected areas to well over 30% of global forest cover, inevitably including most - if not all – IFLs, since the protection of IFLs should be a priority because of their value to biodiversity and human beings.

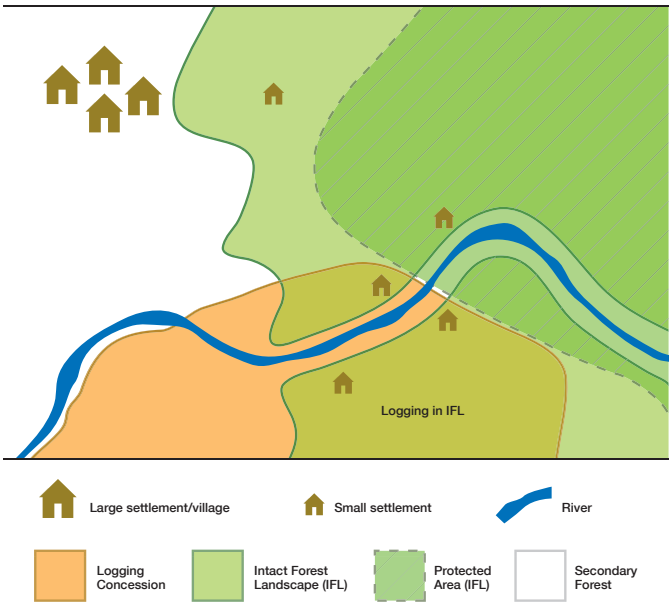
4.2 Participatory land-use and conservation planning

Essential to the long-term protection and conservation of IFLs is a land-use and conservation planning process that is inclusive of key stakeholders, in particular those who are affected the most by land use decisions and are often marginalised, such as indigenous peoples and local communities. To be successful in terms of maintenance of biodiversity and carbon, beneficial and equitable to all parties, and enduring, there are several key principles and process requirements.

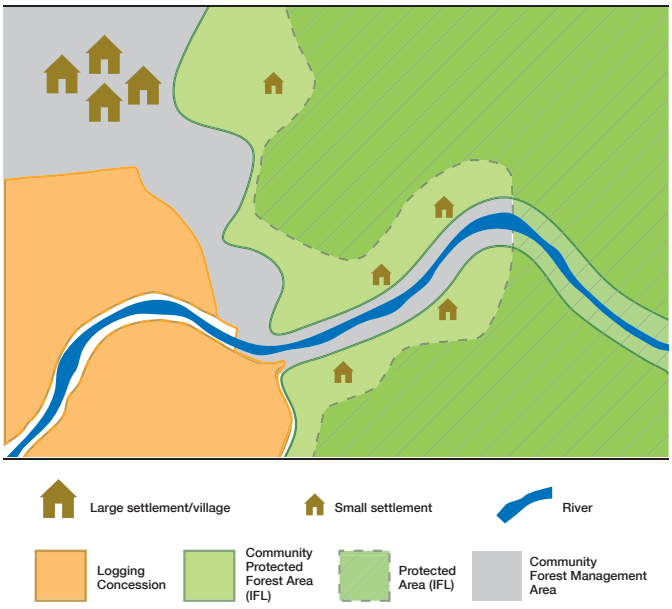
Key principles

- Indigenous peoples and forest-dependent community rights are established and respected.
- Participatory approaches are used to ensure indigenous peoples and forest-dependent communities are central in the process, decision-making and implementation of plans for the use of their traditional lands and resources.
- Planning is carried out at all levels from eco-regional or macro level to community level, and top down macro spatial planning or zoning does not have precedence over local or community level land use planning.
- Infrastructure and transport planning is guided by comprehensive social, economic and environmental assessments that consider indirect impacts such as from forest fragmentation.

Before participatory land use and conservation planning



After participatory land use and conservation planning



4.3 Land use options to protect and conserve IFLs

a) Conservation areas

Following the participatory land-use and conservation planning and mapping, zones for different categories of protected and conservation areas shall be identified including IFL areas. These include core strict protected areas that have a primary focus on maintaining biological values in the landscape. The rights of indigenous peoples and local communities shall be respected in the process of establishing these areas through free prior and informed consent, although human activities in these areas will need to be very low impact and compatible with maintaining biodiversity, and will accommodate subsistence-based forest-dependent peoples.

b) Community low-impact small-scale use

Outside the conservation zones will be zones for community use. These would include, the 'protected forests' category in the Democratic Republic of Congo[29], and more specifically, concessions awarded to local communities ("Forêts des communautés locales")[30]. The community land-use planning process would identify key areas for food collection, hunting and production/harvesting, village areas and sacred sites, etc. that would be delineated. Many of the low-impact and small-scale community uses do not fragment and degrade the forests and are therefore compatible with protection of IFLs. These include non-timber forest product extraction, eco-tourism, and possibly low-impact single-tree portable sawmilling and extraction of timber. Within the forest landscape matrix it will be possible for a range of community management and use options that are compatible with maintaining intact areas, whereas higher impact activities should be planned outside of IFLs and other critical categories of High Conservation Value Forests (HCVF) such as biodiversity hotspots.

There is evidence that larger forest size and greater rule-making autonomy at the local level (community control) are associated with both high carbon storage and livelihood benefits, compared with state control of forest 'commons' that produces lower carbon storage[31]. The combination of forest size and high carbon storage indicate likely high levels of intactness and lower fragmentation through community management and use rather than industrial.

c) Ecosystem services

Payments for ecosystem services (PES) and their maintenance or restoration will play a much bigger role in the future. This includes financial incentives provided for REDD under a future UNFCCC climate agreement for the maintenance or restoration of forest carbon storage together with biodiversity, water and other crucial ecosystem services including those coming from protected areas. Protected area categories include both strict protected areas as well as protected areas with small-scale and low-impact use for community benefits.

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