

1) Intact Forest Landscapes – Democratic Republic of Congo as an example

Forests are invaluable as a treasure trove of biodiversity, containing an estimated two-thirds of the world's terrestrial species. Forests are also invaluable for the ecosystem services they provide: food, water regulation and filtration, rainfall regulation. One particular ecosystem service, carbon storage, has been increasingly recognised as important recently. Intact forests act as a brake on further acceleration of climate change by serving as a vast carbon reserve.

Fragmentation of forests and selective logging cause carbon losses and degrade the forest, leaving it vulnerable to further degradation and climatic changes. Using the example of the Democratic Republic of Congo (DRC), we demonstrate that these losses of carbon are significant and that there is an urgent need to protect Intact Forest Landscapes (IFL), not only for their biodiversity, but also for their carbon stocks.

Fig. 1 Intact forest landscapes are invaluable for biodiversity, but also provide many ecosystem services, including carbon storage



2) Fragmentation and degradation caused by selective logging result in carbon emissions

It is not only the direct effects of deforestation that causes losses of forest carbon to the atmosphere: indirect effects are also important. When forests are completely cleared – for instance, to make way for agriculture plantations or grazing – up to half the carbon they held may be emitted into the atmosphere (Houghton, 2005). Even selective logging, as generally practised in the DRC and elsewhere in Central Africa, can have a serious carbon impact.

Roads built for selective logging cause deforestation. But the roads also cause fragmentation of intact forest landscapes. Trees on the edges of such fragments are vulnerable to drought, wind and fire (Laurance, 2005), all of which can result in death and the release of stored carbon. In addition, roads can precipitate further logging, leading to complete deforestation.

Selective logging also causes damage to surrounding trees, which can be significant. Only a small fraction of cut wood ends up stored in houses or other long-lasting structures which store carbon; the majority of carbon is lost to the atmosphere through the decay or burning of waste (Houghton 2005). It has been estimated for the Republic of the Congo, adjacent to the DRC, that 0.46 tonnes of carbon are emitted per cubic metre of timber extracted (Brown et al. 2005). The combined indirect effects of selective logging (roads, fragmentation and incidental damage) are highly important as the direct impacts, both in terms of biodiversity and carbon.

Using satellite data, Greenpeace has conservatively predicted the overall carbon emissions from an area of the DRC that has been selectively logged. The potential emissions from forest fragmentation as a result of this infrastructure were nearly 2.5 times greater than, and in addition to, those created by actually extracting the commercial logs. This suggests a significant impact when scaled up across the whole of DRC. Similar losses can be expected in other tropical forests.



Fig. 2 Roads built for industrial selective logging cause fragmentation of intact forest landscapes. Selective logging also damages surrounding trees.

3) Intact forest landscapes should be protected

At present, the global figures used by the Intergovernmental Panel on Climate Change (IPCC) and United Nations Framework Convention on Climate Change (UNFCCC) exclude emissions resulting from the fragmentation of vast areas of intact forests into smaller areas – for example by logging roads (see, e.g. IPCC, 2000). However, as these calculations show, these indirect effects are even more important than the timber actually removed. Therefore, they should be included in estimates of carbon lost from land-use change calculations. In particular, these indirect effects should also be considered in light of the discussions on Reducing Emissions from Deforestation in Developing Countries within UNFCCC.

Greenpeace has recently published maps of Intact Forest Landscapes of the world (www.intactforests.org). Less than one fourth of the forest zone of the Earth forest zone remains as Intact Forest Landscapes. That is only 8.8% of the Earth's land surface. Only fourteen countries, including Canada, Brazil, Russia, Papua New Guinea, Democratic Republic of the Congo, and Indonesia control 92% of the world's remaining Intact Forest Landscapes. However, overall, only 7.9% of all Intact Forest Landscapes lie in strictly protected areas (IUCN categories I - III). Conservation of Intact Forest Landscapes is a robust and cost-effective way to conserve biological diversity and carbon. The remoteness and large size of these areas provide the best guarantee of continued intactness, secure carbon stocks and resilience to climate change.

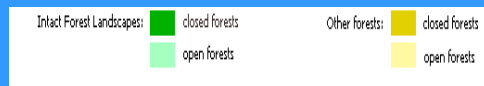
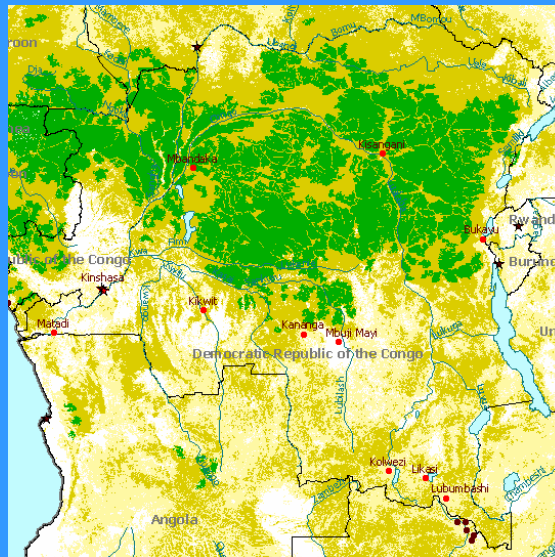


Fig. 3 Greenpeace has produced maps of intact forest landscapes such as that in DRC. These need strict protection from industrial activities to conserve both their biodiversity and carbon.

4) Conclusion

Selective logging causes significant carbon losses 2.5 times greater than, and in addition to, those created by actually extracting the commercial logs in the DRC. Similar results can be expected from other tropical forests. These losses of carbon need to be included in estimates of carbon lost from land-use change calculations. Protection of Intact Forest Landscapes from logging, including selective logging is the best method to conserve biodiversity, secure carbon stocks and increase adaptability and resilience of forest ecosystems to climate change.

References

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View Greenpeace's maps of Intact Forest Landscapes at www.intactforests.org