

PROTECTION OF INTACT FOREST LANDSCAPES IN THE BRAZILIAN AMAZON CERTIFIED FOREST MANAGEMENT UNITS: ASSESSMENT OF SHORT AND LONG-TERM IMPACTS OF THE MANAGEMENT AND PROTECTION MEASURES ASSOCIATED WITH THE IMPLEMENTATION OF MOTION 65/2014 ^{1,2}

SUMMARY REPORT

Intact Forest Landscapes (IFLs) are considered as the last remaining large patches of world's forests and other natural ecosystems free of significant human disturbance. IFLs are considered as crucial for biodiversity conservation because such forests are large enough to accommodate large disturbance regimes and, hence, to present higher possibilities in terms of the protection of large-range species populations in the long run³.

Motion 65, enacted in 2014, is a call for action with regards to the development and strengthening of indicators focused on improved IFL protection. This motion advocated for the protection of the 'vast majority' of IFL portions organized in a 'core' area no smaller than 80% of the existing IFLs inside certified enterprises. In the Brazilian context, several discussions and workshops were convened between the membership, certified organizations, Brazilian SDG members and other Latin American representatives since then. Such encounters supported the creation of improved management practices recommendations to be used within IFLs, setting the foundations for the creation of the new indicators for the Brazilian National Forest Stewardship Standard (NFSS). In 2017, in the subsequent FSC General Assembly, Motion 34 was enacted, this time focused on enabling the conduction of regional assessments of the short- and long-term impacts of the management and protection measures associated with the implementation of M65 and the IGIs (international generic indicators). **This report has the objective of summarizing the assessments made in the Brazilian Amazon as a regional response to Motion 34.**

Assessment highlights

- Although IFLs cover 44% of the Brazilian Amazon (~226 million ha in 2019), only 0.6% of the IFLs are within certified FMUs, in a way that the additional effects that FSC can induce in the protection of IFLs are negligible.
- On the other hand, 65% of the IFLs were located in formally protected areas in 2000 (~198 million ha), suggesting that large scale protection of IFLs in the Amazon can be better achieved by improved management effectiveness of Indigenous Territories, parks, natural reserves and other restrictive use lands (IUCN categories I and III).
- Restrictive measures over the operations conducted by certified FMUs, as stated in Motion 65, would likely render FSC certification to become unfeasible and all representatives of certified FMUs producing timber interviewed consider leaving the FSC system in the case of an 80% IFL protection policy.
- The assessment conducted demonstrates that prioritizing IFL protection would provoke great short- and long-term economic impacts and, unless large subsidies or increase in prices for certified timber coming from FMUs preserving IFLs are on the table, certification would become unfeasible for most enterprises.
- From the social perspective, Motion 65 would provoke great long-run impacts since companies withdrawing certification would reduce local employment in forestry. Beyond, a likely loss in the local jobs' quality would be provoked, as well as in the activities and services provided by local suppliers. Loss of rights and engagement by affected and traditional communities would follow, as well as decreasing investments in these communities. Finally, social projects might be neglected as a way to overcome economic losses.
- A better balance between the environmental, economic and social agenda could be achieved with a few extra requirements within certified enterprises regarding the forest management conducted in the IFLs areas. The current draft of the Brazilian NFSS for the management of native forests represents a relatively sound way to do so.

¹ Version delivered to FSC Brazil in September 25th, 2020. This report was generated by a specialized team at GBS ME consulting. Authors: Marco W. Lentini, Mayte B. Rizek, Rodney Salomão, and Julia Campos. The assessment counted with the technical support from the Institute for Forest and Agriculture Management and Certification (IMAFLOA).

² The bibliographical references cited in this summary report can be consulted in the full report.

³ IFLs are also acknowledge for their importance in terms of climate change, since large amounts of carbon are stored in the living and dead biomass and pool soils that could be released during uncontrolled logging operations. This could be especially true in a few tropical forests in which the larger trees, often seem as a priority under an economic point of view, also maintain a disproportionate share of the forest carbon storage (Breukink and Terrana, 2017).

IFL METHODOLOGIC CONSIDERATIONS

IFLs are defined as “an unbroken expanse of natural ecosystems within the zone of current forest extent, showing no signs of significant human activity and large enough that all native biodiversity, including viable populations of wide-ranging species, could be maintained” (<http://www.intactforests.org/>). IFL methodology was published in 2008 in which the identification and mapping of such areas considers undisturbed ecosystems since the average date of 1990. The criteria of a given undisturbed forest to be considered as an IFL are: (a) a total area larger than 50k ha; (b) at least 10 km wide at the broadest portion of the fragment; (c) at least 2 km wide in corridors or appendages to areas that meet these two initial criteria (Potapov 2008; Zhuravleva 2013). To be considered undisturbed, a given IFL needs to be safe over time from significant evidences of human activity, highlighting: (a) settlements; (b) infrastructure used for transportation between settlements or for industrial development of natural resources; (c) agriculture and timber production; and (d) industrial activities during the last 30-70 years, such as logging, mining, oil and gas exploration and extraction, etc. (<http://www.intactforests.org/>). Strict and formal protection are indicated as the solution to protect IFLs, including the creation of IUCN protected areas of categories I-III.

HOW THIS SUBJECT HAS BEEN TREATED WITHIN FSC CERTIFICATION SYSTEM?

Since 2016, FSC has developed an advice note (FSC-DIR-20-007 EN, last version 01/02/2017) stating that, while new standards and indicators are not set in place, the rule is to protect IFLs in certified FMUs. Therefore, management operations in FSC certified operations might continue as long as they (i) do not impact more than 20% of the IFLs within the management unit; (ii) do not reduce any IFLs below the 50,000 ha threshold in the landscape, and (iii) that maps on IFLs should be used as the baseline. The advice, with its validity starting by January 1st, 2017, also stated that non-conformities will result in Corrective Action Requests. In practice, due to the principle of precaution, since that date, certification bodies are considering all forests submitted to logging within IFLs located in certified FMUs to calculate the 80% threshold. That measure has been taken, also, in the interest of avoiding cases in which the termination of the certificate would be advisable.

STUDY METHODOLOGY

The assessment encompassed a conjunction of methods and instruments to analyze the impacts of the protection measures associated with M65: **(a) FSC forest management public reports**, containing information about the total certified area⁴, set asides, effective management area, number of jobs generated, and other parameters⁵; **(b) Semi-structure questionnaire**, developed to capture qualitative data on the respondents' perceptions about the main environmental, social and economic dimensions, as well as short- and long-term impacts⁶; **(c) financial and economic data case studies** to gather financial and economic data from two certified FMUs in the Amazon⁷, which were used for the assessment of economic impacts from the implementation of Motion 65 and simulations of the relative impact coming from alternative protection scenarios (30% and 50% IFL protection); **(d) consultation to experts** to gather parameters (timber prices, average logging intensity and productivity, timber sale volumes) to be used in economic and financial analysis; **(e) assessments in GIS environment**, including the conduction of remote sensing and geographical information system analysis using geospatial information from several sources⁸, aimed to provide a general characterization of IFLs in the Amazon in different land use and tenure categories, providing an assessment of the certified FMUs and the overlap with IFLs in different mapping periods (2000, 2013 and 2016), and projecting the area of IFLs in 2019 by overlapping the 2016 IFL map with spatial information on deforestation and forest degradation^{9,10}; **(f) validation with key stakeholders** about the major findings of this assessment and better develop the rationale for the discussions and conclusions provided¹¹.

⁴ We established for the analysis of the enterprises the baseline date of January 2019, listing all the FMUs certified in the Amazon by this date (18).

⁵ Last check for new data or updated reports conducted on September 1st, 2020.

⁶ At the end, 19 interviews were conducted, being sampled 10 experts in the IFL, 8 certified FMUs and one FMU in process of certification. The 8 enterprises sampled represent 44% of the area certified by FSC in the Amazon.

⁷ Despite the small sampling, we consider these two cases representative of an important proportion of certified FMUs in the Amazon, being one company operating in public forest concessions and one in private lands.

⁸ The list of the geospatial information sources used in the study is provided in the assessment's full report.

⁹ Satellite imagery (Landsat-7/ETM+ and Landsat-8/OLI) was used for the periods 2000-2019, coming from Google Earth Engine platform.

¹⁰ The Albers - SIRGAS 2000 projection system was used to calculate the areas in GIS environment.

¹¹ In a meeting with key forest staff from IMAFLORA and a meeting with FSC Brazil executive secretariat, and key members of the national and international board (respectively, in September 21st, 2020; and in September 24th, 2020).

GENERAL INFORMATION ABOUT IFLs IN THE AMAZON AND IN THE CERTIFIED FMUS

Total area of **Intact Forest Landscapes (IFLs)** in the Amazon was 246 million hectares in 2000, roughly equivalent to 19% of the total area of IFLs identified in the world by Potapov (2008). It was estimated that, between 2000 and 2019, around 20 million hectares of IFLs were lost, equivalent to 8.2% of the IFL coverage in 2000 (Table 1). Not surprisingly, most IFLs losses were concentrated in the regions closer to the 'arc of deforestation', alongside the major official roads, and new regions considered as recent expansions of the logging frontier, such as western Pará, extreme northwestern Mato Grosso, southern Amazonas, and Acre (Lentini et al. 2019).

Table 1. IFLs development in the Brazilian Amazon since 2000, with a projected loss estimated by 2019.

<i>Intact forest landscapes</i>	<i>Forest cover (ha)</i>	<i>Non forest cover (ha)</i>	<i>Total (ha)</i>	<i>Rate of loss (over 2000 status)</i>
Area in 2000	236,338,680.0	10,008,784.09	246,347,464.14	-
Loss between 2000 - 2013	14,875,686.1	386,351.87	15,262,037.95	6.2%
Loss between 2013 - 2016	3,963,430.4	171,948.43	4,135,378.81	1.7%
Loss between 2016 - 2019	692,642.7	3,972.84	696,615.52	0.3%
Project area in 2019	216,806,920.9	9,446,510.96	226,253,431.85	-

IFL and land tenure. In 2000, around 65% of the IFLs in the Brazilian Amazon were located in protected areas and indigenous territories (161 million ha), around 5% in community lands (settlements and areas of traditional and maroon populations), and 30% in unsettled lands and private lands (Table 2). There is a large difference in the rate of loss of IFLs in different land tenure categories in the period 2000-2016. While the average rate of loss for protected areas and indigenous territories was around 3.4% during these 16 years, in community lands it was equivalent to 20% (achieving almost 25% in rural agricultural settlements), and 32% in private lands.

Table 2. IFLs development in the Brazilian Amazon, 2000-2016, by land tenure category.

<i>Land tenure</i>	<i>Total area (ha)</i>	<i>Development of intact forest landscapes (IFLs)</i>				
		<i>2000</i>	<i>2013</i>	<i>2016</i>	<i>Total loss (2000-16)</i>	<i>Rate of loss (2000-2016)</i>
Protected areas and indigenous lands	197,811,286.6	161,470,503.4	157,140,191.9	156,033,281.4	5,437,222.0	3.4%
Community territories	37,465,673.7	11,607,477.6	9,626,400.1	9,267,842.2	2,339,635.4	20.2%
Unsettled lands	31,041,461.8	29,210,542.5	28,564,939.9	28,206,557.8	1,003,984.7	3.4%
Private lands	121,757,696.6	27,911,711.1	20,434,246.7	18,886,561.1	9,025,150.0	32.3%
Other lands ¹	113,571,781.2	16,147,229.5	15,319,647.6	14,555,804.8	1,591,424.7	9.9%
Total	501,647,899.9	246,347,464.1	231,085,426.2	226,950,047.4	19,397,416.8	7.9%

¹ Lands without a defined tenure status in the geographical databases used, including military lands, state level unsettled lands and private lands non-regularized.

Mechanisms and policies in place to protect IFLs. It is clear from the estimates presented on Table 2 that the most promising mechanism to protect IFLs in the Amazon is through improved protection and management of protected areas such as Indigenous Territories, parks, natural reserves and other restrict use protected lands (IUCN categories I and III). From the protected areas categories, non-ratified indigenous territories are still the areas suffering the great rate of loss due to forest degradation and deforestation. As a matter of fact, recent studies have shown the growing pressure and increased rates of deforestation being experienced over protected areas in the Amazon in the last few years (e.g., Souza Jr. et al. 2019). The same rationale is valid for the unsettled lands in the Brazilian Amazon (~30 million hectares)¹² which concentrates a large portion of IFLs in public lands and are losing such features due to land grabbing and forest degradation. Ordering those territories and signing a formal destination to these lands would guarantee additional protection for IFLs located in these areas.

¹² A recent study published by Azevedo-Ramos and Moutinho (2018) estimated 70 million hectares of public unsettled lands in the Amazon. That work should serve as a reference in terms of what is indeed considered as unsettled lands segregated from the categories such as 'private lands' and 'other lands' presented in Table 3. Since the process to assign areas to private owners in the Amazon is still largely auto-declaratory, significant differences in the estimates presented by different sources is expected.

Figure 1. Location of FSC certified FMUs in the Brazilian Amazon and overlap with IFLs, 2019.

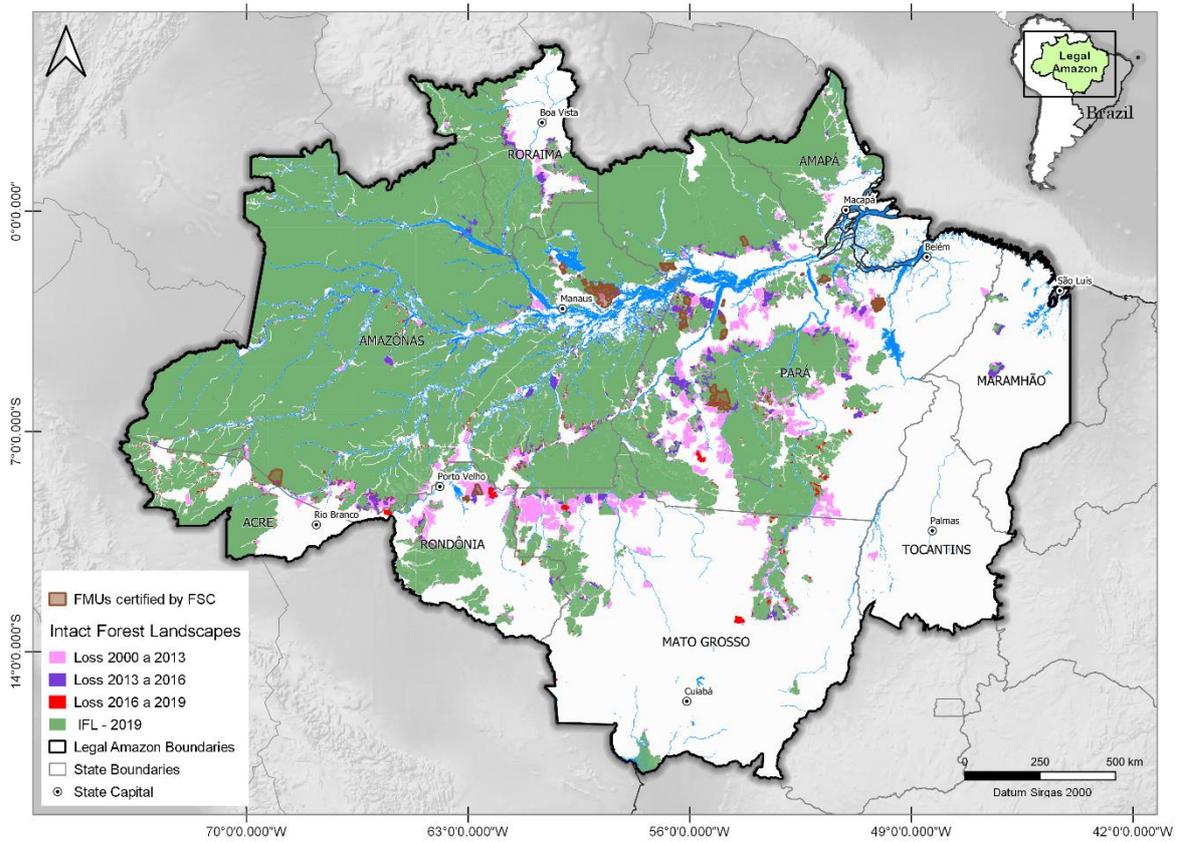
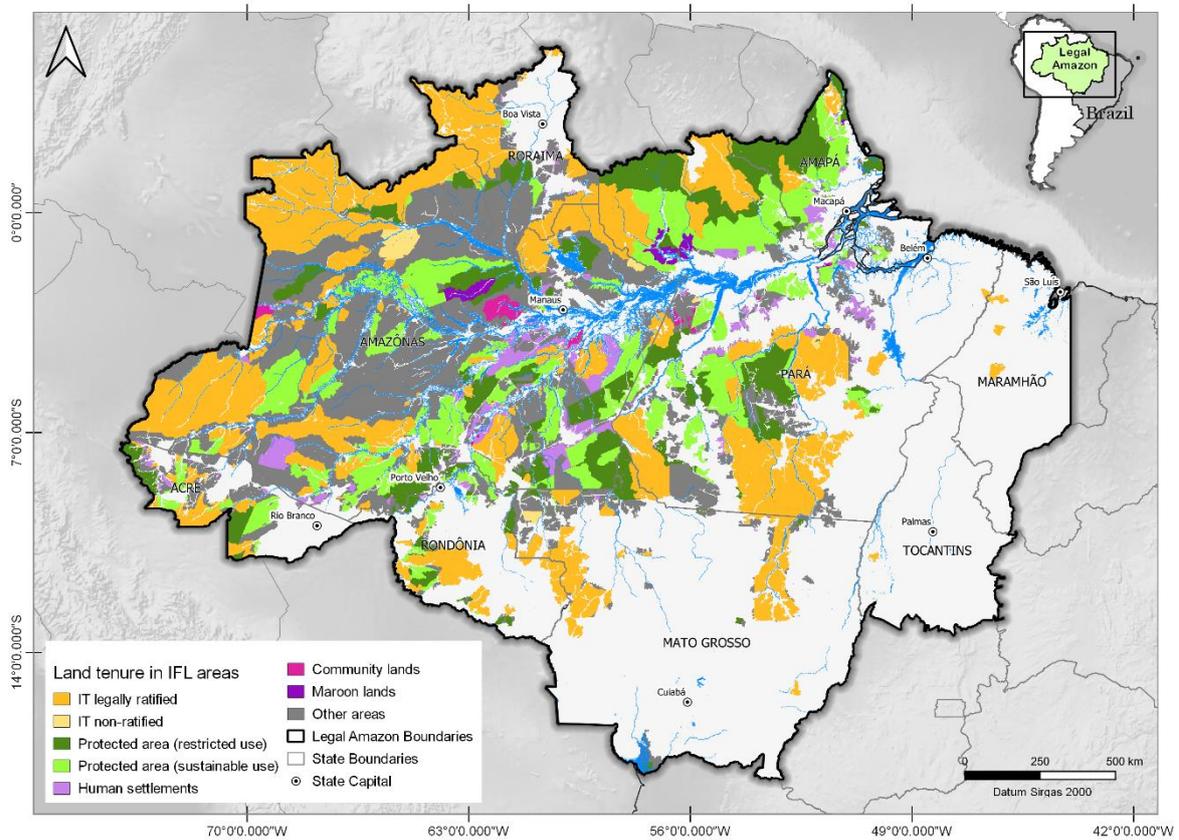
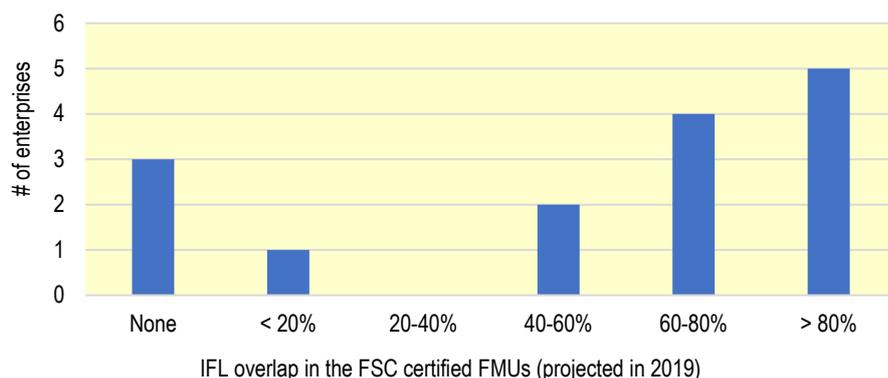


Figure 2. Intact forest landscapes by land tenure/land use category in 2000.



IFLs in the certified FMUs. By early 2019, according to information gathered in public reports, there were 18 FSC certified FMUs in the Brazilian Amazon (Figure 1), composing a total certified area of 1.6 million hectares. Most of the enterprises (15 out of the 18) were certified for timber harvesting, and the other three for the management of non-timber forest products (NTFPs). Six FMUs¹³ are considered as community forest management enterprises. Also, by early 2019, was estimated that from the 15 certified FMUs for timber extraction there were 12 with some overlap with IFLs. Four FMUs have a total IFL coverage between 60-80%, and five with a coverage above 80% (Figure 3). As it will be further discussed in this report, FMUs with a large proportion of overlap with IFLs would certainly suffer larger impacts from the implementation of M65.

Figure 3. Histogram of the number of FSC certified FMUs for timber extraction in 2019 in the Amazon region and the proportion of overlapping with IFLs in these forest areas (estimated in 2019) (n=15).



IFLs reduced in size in the certified FMUs. There were 1.4 million hectares of IFLs in the FSC certified enterprises in the Brazilian Amazon in 2000, the equivalent to 0.6% of the total IFL area in the region. By 2019, within the approximately 1.6 million hectares of certified forests in 19 FMUs, it was projected 418k hectares (26%) of IFLs reduced in size. Although management practices have influenced in the trajectory of IFL polygons, no fragmentation or total elimination of such polygons was observed¹⁴. Reductions were relatively low in FMUs operating in forest concessions in comparison to FMUs operating in private lands (17% against 38% in the period 2000-2019), which was expected, due to the fact that forest management in private lands have being certified for a longer period¹⁵.

SHORT AND LONG-TERM IMPACTS FROM THE IMPLEMENTATION OF MOTION 65

In order to provide a better visualization on the expected benefits (positive impacts) and risks (negative impacts) that would be provoked by M65 and, when simulated, alternative IFL protection scenarios (50% and 30%), we present the short- and long-term assessments conducted in Tables 3 and 4¹⁶.

Table 3. Summary of expected benefits (positive impacts) from the implementation of M65 and alternative protection scenarios (50% and 30%), 2020.

Short-term	Long-term
Environmental¹⁷ positive impacts or benefits	
Larger likelihood that certified FMUs can maintain IFLs unaltered in further mapping of IFLs in the near future.	Protecting 866k ha of IFLs (80% scenario), 541 k ha (50%) or 324k ha (30%) (baseline 2016) Smaller changes in biodiversity, forest composition and carbon storage in certified forests over time.

¹³ Coomflona, Cooperar, Amazonbai, Garah Itxa, Arimum, and Soenama.

¹⁴ However, in the period of 2000-19, two FMUs had the areas of IFLs eliminated from their management areas, as a result from the conjunction of practices carried out inside the FMU and in the adjacent areas

¹⁵ We have further investigated in remote sensing environment what were the main reasons why certified FMUs are decreasing IFL polygons in size. We concluded that the main (if not the only) reason for this loss is due to the construction of infrastructure, essentially logging primary (principal) roads, camps and log concentration yards. We could not see clear signals that areas closer to the logging operation (with more subtle opening of the forest and less invasive infrastructure) have being responsible for the declassification of the IFL status in the period of observation.

¹⁶ The complete description of these assessments, as well as the caveats and assumptions behind the results, are presented in the study's full report.

¹⁷ It assumes that current certified FMUs would remain certified after the implementation of policies ruling for larger protection of IFLs. We find this unlikely to happen. All the interviewed representatives from FMUs with timber production were positive that the enterprise would give up the FSC certification system if the M65 is implemented.

Short-term	Long-term
Economic positive impacts or benefits	
No direct, indirect or intangible economic benefits are foreseeing by the actors and experts interviewed due to the implementation of M65.	Around 37% of the interviewed stakeholders acknowledge that increasing protection of IFLs might lead to decreasing impacts from forestry in a way to augment the set of areas available for NTFP harvesting ¹⁸ .
Social positive impacts or benefits	
<p>Expected impacts for indigenous peoples. Interviewees recognized more benefitting aspects than disadvantaging ones. The most highlighted argument was the lower level of dispute over the use of NTFPs and other natural resources, followed by better conservation of natural resources.</p> <p>Traditional knowledge. It was not identified potential impacts from the M65 implementation.</p> <p>Expected impacts on recreation. Only one interviewee pondered that the IFL protection against logging could generate incentives for other alternative uses, such as tourism.</p>	<p>Expected impacts over local NGOs. It was mentioned that most NGOs are preservationists, so they would tend to welcome the logging prohibition in IFLs.</p> <p>Community forestry. The positive perspective most cited regards the lower dispute over the use of NTFPs¹⁸ and other natural resources and the better conservation of natural resources, which could help to increase interest in community forestry.</p>

Table 4. Summary of expected risks (negative impacts) from the implementation of M65 and alternative protection scenarios (50% and 30%), 2020.

Short-term	Long-term
Environmental negative impacts or risks	
<p>Especially for certified FMUs operating in private lands, the decision of dropping certification would decrease radically the need/interest to comply with good standards for forest management, including logging impacts, planning of infrastructure, monitoring, conservation of rare tree species, and even protective measures in HCVs. There is a consensus that dropping certification will lead to an increased rate of IFL loss.</p> <p>Hunting, poaching, low scale mining, and land grabbing will likely to thrive within FMUs dropping certification, especially in the ones located in private lands (~900 k ha).</p>	<p>84% of the stakeholders highlighted that the added benefits from M65 could be easily outweighed by the larger exposition of the FMU to predatory logging and deforestation if the decision is to drop certification as consequence of M65. Illegal logging will be incentivized especially in geographies in which certified FMUs are operating with easy access to forestlands (and IFLs) located in public lands.</p> <p>The significant decrease in areas considered as benchmark in terms of forest management in native forests could start a vicious cycle in which sound practices will be unlikely to prevail.</p>
Economic negative impacts or risks	
<p>Harvestable area. Measures to protect 80% of the IFL would induce a decrease in 50% in the total harvestable area (1.4 million ha to 686 k ha). By simulating alternative scenarios of 50% protection and 30% protection, annually effective harvestable area would fall, respectively, in 28% (from 5.1 k ha to 3.7 k ha) and in 14% (to 4.4 k ha)</p> <p>Production and log sales. Under the scenarios of increased IFL protection, for the simulations of 80%, 50% and 30% protection, the volumes produced, and the revenues generated would decrease in, respectively, 52-53%, 30-31%, and by 16%^{19,20}.</p> <p>Financial performance and cashflows. Any scenario increasing the area of setting asides would impose some economic burden over the certified enterprises. In the case of 30% protection, the</p>	<p>Investment stability. According to the experts, adding large proportions of IFL protection without a clear plan on how to financially compensate for the additional risks and losses coming from this measure might create a business environment in which certification becomes an endeavor unlikely to be considered by new enterprises²³. This could be truth even for FMUs improving their practices due to the requirements imposed by forest concessions, which in theory could facilitate such FMUs to have a minimum performance towards acquiring certification.</p> <p>Economic long-term feasibility of FSC certificates. 80% of the interviewed actors believe to be likely that certified FMUs will become economically unviable due to M65. That, according to 42% of the interviewees, could encourage land grabbing and deforestation in the areas currently certified. The precisely same</p>

¹⁸ On the other hand, one of the interviewees stated that decreasing the area of the FMU available for logging would produce in the short run an increased interest in compensate for losses by harvesting NTFPs, and hence competing with the surrounding community for the economic use of such resources.

¹⁹ In 2019, the estimated total production of certified logs in the Amazon in roughly 850 k m³ per year, which would be equivalent to 8% of the total production of the region– with a possible variation until an upper limit of 958 k m³ per year. However, is unlikely that every one of the 15 FMUs certified would be able to perform in its maximum productive capacity in the same calendar year.

²⁰ Log sale considering average market prices would generate revenues that would vary between USD 70-75 million yearly depending in the specific set of species and market destinations.

²³ It is also worthy to mention that FMUs working in forest management in the Amazon are already exposed to a large level of uncertainty and instability that renders relatively high risks for the forestry business. In the opinion of the experts interviewed, factors such as market instabilities, a certain degree of uncertainty about the future timber stocks in the FMU, a regulatory framework and official control systems in constant change, and the large competition with the timber illegally generated contributes a lot for this situation

Short-term	Long-term
<p>FMU is still capable of operating in a financially feasible range, despite losses in terms of financial competitiveness²¹. In both cases, however, increasing the IFL protection to 50% and 80% would make the related financial parameters to become unbearable. The same is valid in relation to the expected cashflow. In the standard scenario and in the 30% scenario, after large initial investments, FMUs can yield positive cashflows since the first year of operation. The scenarios of 50% and 80% protection would induce negative results during most of the simulated period, equal to 30 years.</p> <p>Possible subsidies to compensate for economic losses²². 42% of the interviewed find it unrealistic to think in any type of subsidies and compensations. Also, 52% revealed that it is not pragmatic to expect that markets will move to compensate such eventual losses, and a third of them believe there is not any possibilities of finding alternatives in terms of markets and finances.</p>	<p>proportion of 42% of the interviewed stakeholders also stated that a likely possibility is that the currently FMUs certified by FSC would simply switch to PEFC/CERFLOR certification scheme without further concerns about how to implement M65 and related IFL protection scenarios.</p> <p>Alternative land use economic choices. Private lands usually are used to maintain economic activities rather than preservation activities. In the absence of certification, such former FMUs might be controlled by investors and anonymous societies more interested in ranching or soybean cultivation due to the unfeasibility of certified harvesting.</p>
Social negative impacts or risks	
<p>Jobs. Simulations suggest that the number of jobs would fall slightly (<5%), related to professionals hired due to the FMU's certification. If the FMUs choose to leave FSC, it would imply in an emptying of its social staff and the FMUs would no longer be encouraged to use local labor, affecting also the training offered to surrounding communities. Jobs' quality loss will likely to be affected since certified FMUs have to follow the current occupational health and safety laws and rules, often going beyond national regulations²⁴.</p> <p>Local opportunities. Is expected that companies obliged to implement M65 will attempt to decrease their variable operational costs by decreasing the number of employees in the short run.</p> <p>Affected communities. Loss of rights by affected communities, reduced investments in the communities by the FMU, and a lower level of dialogue with these communities. All 'supra' legal requirements commonly used to minimize impacts from certified FMUs on the affected communities²⁵ are potential losses due to M65.</p> <p>Local market. The main impact would be in the collection of taxes and foreign exchange, followed by the decrease of local jobs and local income²⁶.</p> <p>Local governments. Losses in the collection of taxes and foreign exchange, followed by increase in illegal and informal activities, hence rural conflicts.</p>	<p>Jobs. In the long run leaving certification would provoke unemployment in the local economies, dependent on the certified enterprises and a likely loss in the quality of the jobs provided.</p> <p>Social movements. Certified FMUs need to demonstrate their right to land use and ownership, as well as a fair compensation procedure for loss and damage, and a conflict resolution process. Certified FMUs are required to run a socioeconomic diagnosis of the communities in their influence area in a way to propose mitigating and preventive actions. Such practices would likely to disappear.</p> <p>Local NGOs. IFL protection can indirectly change the local economic matrix, increasing illegality and decreasing local governance (this jeopardizing NGO initiatives). Also, authors' experience suggests that certified FMUs usually support local NGOs in partnership with community organization entities – practices that could be lost due to M65.</p> <p>Wood consumers and buyers. According to the interviewees, restrictions on production could lead to a decrease in the supply of legal and sustainable wood. That would increase the supply from illegal sources, including IFLs illegally harvested in public lands.</p> <p>Communities' forestry. For certified communities, the logging productive area reduction leads to a decrease in the number of members, income, and investments in infrastructure. For non-certified projects of communities' forestry, the impact would be a larger difficulty or fewer incentives for certifying.</p>

²¹ In the first case study the payback, for example, increased from 8 to 13 years, and in the second, from ~5 to 6 years. The second case study, indeed, demonstrated a relatively mild economic impact in a 30% protection scenario in comparison to the first case.

²² Based on the two economic case studies at hand, simulation of the level of financial subsidies necessary to compensate for eventual losses due to the increase in the area destined to IFL protection. For the 30% protection scenario, if prices for certified timber coming from FMUs with larger IFL protection could rise in a level between 1%-9%, this compensation would be possible. Prices would need, however, to increase substantially in the scenarios of 50% and 80% protection if the intent was to drive such FMUs to the same level of financial performance as experienced in the standard scenario, going towards near a 62% increase in the worst scenario. Maintaining the same prices but adding economic benefits for the FMUs to achieve the same target would imply in relatively high subsidies to be paid for IFL protection in comparison to the estimated NPVs, in a way to argue that such subsidies would be unrealistic.

²⁴ According to the authors' expertise, some examples of extra-legal requirements met by FSC certified FMUs would include: (i) the existence of mechanisms for dialogue and resolution of workers complaints, including the representation formally recognized by workers; (ii) the existence of health workers from neighboring communities with opportunities to participate in training on the rescue plan and first aid courses; (iii) salaries for the same functions are not differentiated between genders; (iv) support for the professional reorientation being offered in case of substantial employment reduction; (v) a continuous effort to reduce differences between self-employed and contractors' workers; (vi) internal procedures to ensure that service providers comply with labor legislation and the agreements established with local unions or the recognized workers' representation.

²⁵ FSC standard currently requires an effective communication identifying the impacts caused by forestry activities, and ensuring answers to questions and the execution of what is possible and pertinent, including investments in social services as the maintenance of roads, actions with school communities, support for community organizations, health care campaigns, among others. The certified FMU communication also includes the dissemination of the forest management public summary, the diagnosis of HCV and communities' customary used areas, and the dissemination of trainings and job opportunities

²⁶ The FSC standard requires that whenever possible and available, the purchase of products and services should preferably be from local sources, generating income and local development as a mitigating action for the socioeconomic impacts of forest management. In addition to generating economic opportunities, the certified FMUs overall shall require and monitor legal aspects on its product and service providers, thus it is not rare cases in which FMUs provide training and support for local market legalization and formalization, implying a virtuous circle that promotes more structured local production chains.

Short-term	Long-term
<p>Indigenous peoples. Less investments in communities and potential increase in illegal activity and rural conflicts, with losses of the communities' rights. Although these rights are protected by Law, Amazon has historically been a field of political disputes with perverse incentives to ignore such rights.</p> <p>Traditional knowledge. Data collected jointly with the communities must be used towards the reduction of forestry impacts. This mapping of social interest attributes, the impacts monitoring, and the mitigation actions would likely to be lost.</p>	<p>Local NTFP projects. Reduction on the investments made in communities by certified FMUs is likely to happen.</p> <p>Recreation. It is important to emphasize private lands without certification could be, over time, more exposed to deforestation and forest degradation, and then losing completely the potential for recreation initiatives.</p>

THE NEW BRAZILIAN STANDARD PROPOSED BY THE SDG

How the indicators proposed by the Brazilian SDG contribute to minimize the social and economic burden in relation to IFL protection? We presented to the set of stakeholders and experts consulted the list of proposed indicators by the SDG, which focused on finding a compromise between the full protection of IFLs as stated by M65 and the partial management of such areas. In the case of the management practices, most directives are suggested in the 'Appendix G' of the new standard²⁷. 42% of the respondents think that, under an environmental point of view, the new indicators and directives from Appendix G do a good job in conserving IFLs in certified FMUs over time²⁸. With regards to the potential social losses that could be promoted by the implementation of the M65, in a consistent way, 37% of the interviewees feel that the new indicators are also sound. However, 37% of the interviewees stated that the new standard addresses only partially the competitiveness that would be lost with the implementation of M65. Surprisingly, 50% of the consulted FMU representatives certified for timber harvesting feel that the decision of the enterprise would still be leaving the FSC certification system with the new standard in place.

Improved reduced impact logging can avoid IFL fragmentation? At the end, we are afraid that a straight answer for this question will remain as inconclusive. However, most decreases in size in the IFL polygons observed in two periods of time available (2013 and 2016) occurred due to practices in the FMUs related essentially to the allocation of relatively large infrastructure - primary roads, yards and camps, as examples. *Ceteris paribus*, without significant changes in the methodology to generate new IFL maps, it would be reasonable to say that conducting reduced impact logging, with special concerns with regards to road specification and allocation, and decreasing openings in the forest, should not interfere in the trajectory of IFL polygons allocated inside the FMUs.

Perhaps one of the more remarkable characteristics of the FSC system is precisely the ability to offer a fair balance between environmental, social and economic dimensions directed to forest management and conservation, having in mind that interests related to these dimensions are often different, if not conflicting. So, in our point of view, M65 or a restrict IFL protection policy are measures that could cause an unbalance, benefiting in a disproportional way the environmental concerns. It is worthwhile to mention that there is extensive literature demonstrating that forest management practices, although altering the composition of forests over time (e.g., Pioniot et al. 2019), are able to maintain most of the biodiversity and ecological services provided by these forests (Naves et al. 2020, Breukink and Terrana 2017, Gonçalves & Santos 2008, Braz et al. 2014, Carvalho 2002, Miller et al. 2011, West 2014), including fauna and key animals species (Laufer 2015, Bicknell, 2015, Ramos 2006)²⁹. Then, based on the authors' experience during this assessment, interviews with key experts in the sector, results collected since the 'IFL workshop' in São Paulo in 2017, and interaction with the Brazilian SDG, we could argue that the draft of the Brazilian NFSS for the management of native forests represents a sound effort in the direction of reconciling the protection of IFLs and the need for balance (economic, environmental, and social dimensions) in certified FMUs³⁰.

²⁷ Translated and presented in the Appendices of the full report.

²⁸ An important caveat is that, beyond directives suggested in the 'Appendix G', the new standard establish a minimum of 10% of the IFLs inside the certified FMUs to be set aside, as part of the conservation areas network and representing the "core area" of the IFL.

²⁹ The bibliographical references cited in this summary can be consulted in the full report for the assessment.

³⁰ Also coming from these discussions, we compiled in the full report some major recommendations with regards to forest management within IFLs and/or in FMUs having a portion of the area covered by IFLs.

FINAL REMARKS AND RECOMMENDATIONS

Although IFLs are crucial for biodiversity conservation, especially in the remaining tropical forests in the globe, we advocate, based on the major findings of this report, that **the prohibition of logging in a large proportion of these areas within FSC certified enterprises in the Brazilian Amazon is ineffective and counterproductive**, at least due to three main reasons.

- (a) IFLs cover a significant proportion of the Brazilian Amazon, totaling 226 million ha (projected area in 2019), equivalent to 44% of the territorial extent of the region. However, to date, roughly 0.6% of the IFLs are within FSC certified FMUs. On the other hand, 65% of the IFLs in the Amazon are in formally protected areas. Hence, the more effective way of protecting IFLs in the Amazon is through improved protection and management of Indigenous Territories, parks, natural reserves and other restrictive use protected lands (correspondent to IUCN categories I and III).
- (b) Restrictive measures for the forest management being conducted by certified FMUs, as stated in Motion 65, would likely turn FSC certification to be unfeasible in the region. All representatives of certified FMUs interviewed during this assessment consider leaving FSC system in the case of an 80% IFL protection policy. That would imply in 1.5 million hectares of FSC certificates lost. It would also imply, for the forest sector in the Amazon, a decrease in 60% of the area under proven responsible forestry³¹. The implications of having this large decrease in the supply of legal timber could open new opportunities for illegal logging competing for the same markets. For example, it is expected that the intention of increasing protection of the IFLs within certified FMUs (~418k ha by 2019), with subsequent loss of the certificates, could incentivize illegal logging to thrive by impoverishing other surrounding IFLs.
- (c) Since making FSC certification to be unbearable for the current forest sector will also reflect in the prospects of new community-level and private forest management enterprises to be supported, although well intentioned, this measure leads FSC to the opposite side from the discussions being carried out in this moment with regards to its new global strategy. In our view, the principle of '*hectares with meaning*' was intended to prioritize tropical forestry and community forest management, which will be highly compromised by M65 or by largely restrictive policies within certified FMUs.

We do not advocate, either, after extensive consultations to experts and stakeholders involved in the FSC system, and based on our own experience, to maintain practices within IFLs unchanged in comparison to what they are right now. Our remarks with regards to what was assessed with respect to this subject are summarized as follows.

- a) The assessments provided in this study showed that prioritizing environmental aspects with regards to the protection of IFLs (scenarios of 80% and 50% protection) would provoke great short- and long-term social and economic impacts. In the economic lenses, unless large subsidies or increase in price for certified timber coming from FMUs preserving large extents of IFLs are on the table, such scenarios would make certification unfeasible for most enterprises. Under these scenarios, all the certified FMU representatives stated that the enterprises would leave FSC certification towards no certification or a PEFC certification.
- b) In a social perspective, the assessments provided in this study showed that prioritizing environmental aspects with regards to the protection of IFLs (scenarios of 80% and 50% protection) would also induce important negative social impacts. Although the number of jobs generated would likely to be marginally affected in the short run (< 5%), in the long run leaving certification would provoke local unemployment in the local economies dependent on the certified enterprises and a likely loss in the quality of the jobs provided. Beyond, all activities and services provided by local suppliers would likely to be disregarded. Loss of rights by affected communities would follow, as well as decreasing FMUs investments in the communities, and a lower level of dialogue with these populations. 'Supra' legal social requirements, such as the mapping of social interest attributes, the impacts monitoring, and the adoption of mitigation actions, not common on business-as-usual enterprises, would not be guaranteed in private lands currently certified.

³¹ We consider as 'proven responsible forest management in the Amazon' the enterprises with forest areas large enough to maintain long-term cutting cycles and some level of third-party verification. In this moment, we have in the Amazon 2.5 million hectares that could be classified in this category, formed by certified enterprises and concessions.

- c) A better balance between the environmental, economic and social agenda could be achieved by managing most of the IFLs located within certified enterprises, with a few extra requirements. Bottom line, the current draft of the Brazilian NFSS for the management of native forests represent a relatively good way to do so. It is important to remember that there is extensive literature demonstrating that forest management practices, although altering the composition of forests over time, can maintain most of the biodiversity and ecological services provided by these forests. In this way, managing these IFLs in the certified enterprises using practices which includes improved management of HCVs, more restrictive measures during harvesting operations (selection of trees, larger harvesting diameters, improved location of infrastructure), a few special measures after harvesting (post-harvesting silvicultural treatments, improved monitoring and closing of harvesting roads), and the partial protection of IFLs extents connected to the FMU's conservation areas network are sound measures in this direction. All these measures, in one way or another, are included in the draft of the Brazilian NFSS for native forests.
- d) There is no guarantee that, even under improved management practices, further IFL mapping conducted by GFW will consider that such IFLs are not fragmented and/or reduced in size due to these harvesting techniques. Our assessments conducted over IFL maps for the Brazilian Amazon in 2013 and 2016 revealed that, up to this point, the portions of harvested forests that were demoted from the status of IFLs had as main reasons for this change the location of main logging roads and infrastructure, and not due to harvesting practices conducted in a more rigorous and careful way, which remained as IFL in this period. Experts have warned, however, that further improvements in the IFL mapping algorithm, the expansion of the temporal windows in which satellite imagery is accessed, or simply relatively small changes in the criteria adopted might result in reduction in the IFL area provoked even by fine-tuning harvesting.
- e) There is no guarantee that, even in a scenario of a more benign rule in relation to the protection of IFLs with regards to economic aspects, as it is the case of the Brazilian NFSS draft, current certified FMUs will continue to be interested in certification. As a matter of fact, in this assessment, 50% of the certified FMU representatives interviewed declared that the enterprise will consider leaving the FSC system with the new standard in place.

Above the sphere of the individual FMUs, FSC might have a role as a convener of discussions on socioenvironmental aspects at landscape level. That would be the proper scale to make a difference in the trajectory of IFLs in the Amazon. It is probably worthwhile to mention one of the recommendations given in a technical article written before the General Assembly in 2017, proposing the creation, through the FSC Brazil governance spheres, of a **technical-scientific committee** in charge of developing a national recommendation for protection and local engagement measures aiming at IFLs conservation (Lentini et al. 2017). This would enable wider participation, the engagement of the main relevant actors, and the creation of clearer rules for local application by forest certification auditors and managers. Probably a better design on how to potentially make this suggestion to become operational could be incepted by the Brazilian and international membership.

We estimate that 2/3 of the loss of IFLs in the Brazilian Amazon in the period of 2000-2016 (10.7 million hectares) was in areas accessible for logging given the current timber prices, infrastructure and costs³². That would mean that, if forestry has an important role to play in the long-term conservation of the Brazilian Amazon, it is urgent to offer tools such as forest certification to a large array of practitioners, arguably future forest concessions and community forest management operators in public lands. Today, there is in the Amazon 50 million hectares of national forests, state forests, sustainable development reserves and extractive reserves in the region, with an average coverage of IFLs of 78%. This area would be enough to produce at least 20 million m³ per year under sound forest management, or twice the demand of timber coming from the Amazon in 2018. We are positive that imposing a restrictive policy towards zoning a large portion of these potential FMUs as inaccessible to harvesting will discourage these enterprises to seek for FSC certification. The opportunities to lead these enterprises to be certified, on the other hand, would include a series of social, economic and environmental extra benefits considering the current Law requirements ('supra' legal benefits). In summary, there is an enormous potential for the expansion of FSC certification in these new potential forest enterprises, if the new standard and the FSC system overall evolves in a way to provide the proper conditions for these enterprises to be certifiable, competitive, and to thrive.

³² The map of economic feasibility for logging was created by IMAZON in 2003 (unpublished), and used by one of the authors of this assessment (M. Lentini) in a M.Sc. thesis aiming to develop optimization models for land allocation for concessions in the Brazilian Amazon, in 2007.