

The background of the entire page is a photograph of a dense forest. The trees are tall and thin, with a thick canopy of green leaves. The ground is covered with ferns and other forest floor vegetation. The lighting is soft, suggesting a shaded forest environment.

**MADANI'S UPDATE REPORT  
UNDERSTANDING WHAT FREL  
FOR SUBNATIONAL LEVEL MEANS  
FOR FORESTS AT THE PROVINCIAL  
LEVEL  
MAY 2019**

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*This update report interprets what Forest Reference Emission Level (FREL) allocated at subnational (provincial) level means for forests in each province. This is a preliminary analysis based on experts' discussion in Madani'sTalkShop on FREL in May 2019 but the results have not been clarified to the government.*

## Introduction

- Indonesia's FREL for REDD+ (deforestation, forest degradation, and peat decomposition) is 0.568 GtCO<sub>2</sub>e per year. This will be used as a benchmark for evaluating Indonesia's REDD+ performance in 2013-2020. In March 2019, Director General of Climate Change (DGCC) allocated FREL for subnational (provincial) level, which is valid until the end of 2020.<sup>1</sup> The FREL is only for deforestation and forest degradation, leaving out peat decomposition. The allocation has taken into account a buffer so that the sum of FREL at the subnational level for deforestation is 45.52% lower than the national FREL and for forest degradation is 33.42% lower than the national FREL to make sure that subnational emissions do not exceed national emissions.<sup>2</sup>
- Based on the subnational allocation, provinces with the highest FREL for deforestation and forest degradation are **Papua, Central Kalimantan, Central Sulawesi, East Kalimantan, and North Kalimantan**. West Papua's FREL is quite low, even lower than Jambi (see Table 1 below, ranked highest to lowest).

## How was it calculated?

- According to Experts discussion in Madani's TalkShop on FREL in May 2019, the allocation was made based on the following considerations: capacity of the area, biogeophysical condition, carbon stock, and historical emission. Specifically, an index was made, which is called "The Stock-Flow Index." Basically, the allocation was determined by the level of historical emission and the remaining forest carbon stock (from natural forest cover; it does not include timber plantation). Provinces with high level of historical emission from deforestation and forest degradation and low forest carbon stock gets a low FREL and vice versa.<sup>3</sup> It can be interpreted that this means that the current calculation leaves out projected development plan in the regions, which usually plans to clear more forests for development.
- **Emission Risk Index (ERI)**. The government also built an Emission Risk Index (1990-2012). Most provinces in Sumatra and Java island are categorized as having either very very high, very high, or high emission risk index. Papua island is categorized as having low emission risk index (blue) while some areas in Kalimantan are also categorized has having low emission risk index despite Kalimantan being the hotbed of deforestation in recent years. See map in Figure 1.

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<sup>1</sup> Decision Letter of Director General of Climate Change No. 8 Year 2019 on the Allocation of FREL at Subnational (Provincial) Level

<sup>2</sup> Ibid.

<sup>3</sup> Rizaldi Boer, Alokasi Forest Reference Emission Level Provinsi dan Maknanya Bagi Hutan, Pembangunan Daerah, dan Pencapaian Komitmen Iklim, presentation given in Madani's TalkShop: Allocation of FREL and Its Meaning for Forests, Regional Development, and Achievement of Climate Commitment, 22 May 2019.

Table 1 FREL Allocation at Subnational Level

No	Province	Deforestation (tonCO <sub>2</sub> e)	Degradation (tonCO <sub>2</sub> e)	Total (tonCO <sub>2</sub> e)
1	Papua	21,817,505	10,530,808	32,348,313
2	Central Kalimantan	22,318,952	1,631,368	23,950,320
3	Central Sulawesi	12,357,058	3,875,879	16,232,937
4	East Kalimantan	9,515,630	2,461,839	11,977,469
5	North Kalimantan	9,908,485	1,831,977	11,740,462
6	Aceh	7,921,193	1,373,985	9,295,178
7	West Kalimantan	7,541,222	800,278	8,341,500
8	Jambi	7,149,518	40,118	7,189,636
9	West Papua	1,773,044	4,797,818	6,570,862
10	Southeast Sulawesi	5,780,204	731,095	6,511,299
11	North Maluku	4,688,193	805,616	5,493,809
12	Riau	4,927,035	519,213	5,446,248
13	North Sumatra	5,330,266	76,149	5,406,415
14	Bengkulu	4,776,961	530,048	5,307,009
15	South Sumatra	4,833,693	283,458	5,117,151
16	West Sumatra	4,907,962	28,801	4,936,763
17	East Nusa Tenggara	3,573,263	470,231	4,043,494
18	South Sulawesi	2,115,448	1,674,736	3,790,184
19	West Sulawesi	2,635,853	1,124,937	3,760,790
20	Maluku	3,255,535	171,872	3,427,407
21	Gorontalo	2,394,338	320,770	2,715,108
22	West Nusa Tenggara	1,640,558	1,006,815	2,647,373
23	South Kalimantan	1,469,285	817,873	2,287,158
24	North Sulawesi	1,466,299	784,264	2,250,563
25	East Java	1,156,278	1,079,979	2,236,257
26	Central Java	1,115,533	49,171	1,164,704
27	Lampung	932,636	165,066	1,097,702
28	Bali	235,960	595,146	831,106
29	Bangka Belitung	809,427	3,531	812,958
30	Kep. Riau	782,214	2,287	784,501
31	West Java	553,959	13,122	567,081
32	Banten	30,861	19,522	50,383
33	Yogyakarta	15,397		15,397
34	Jakarta	-		-
	<b>TOTAL</b>	<b>159,729,765*</b>	<b>38,617,772</b>	<b>198,347,537</b>

Source: Decision Letter of DGCC No. 8/2019

\*there is a discrepancy of 3 points from calculation in the Decision Letter, which is 159,729,762

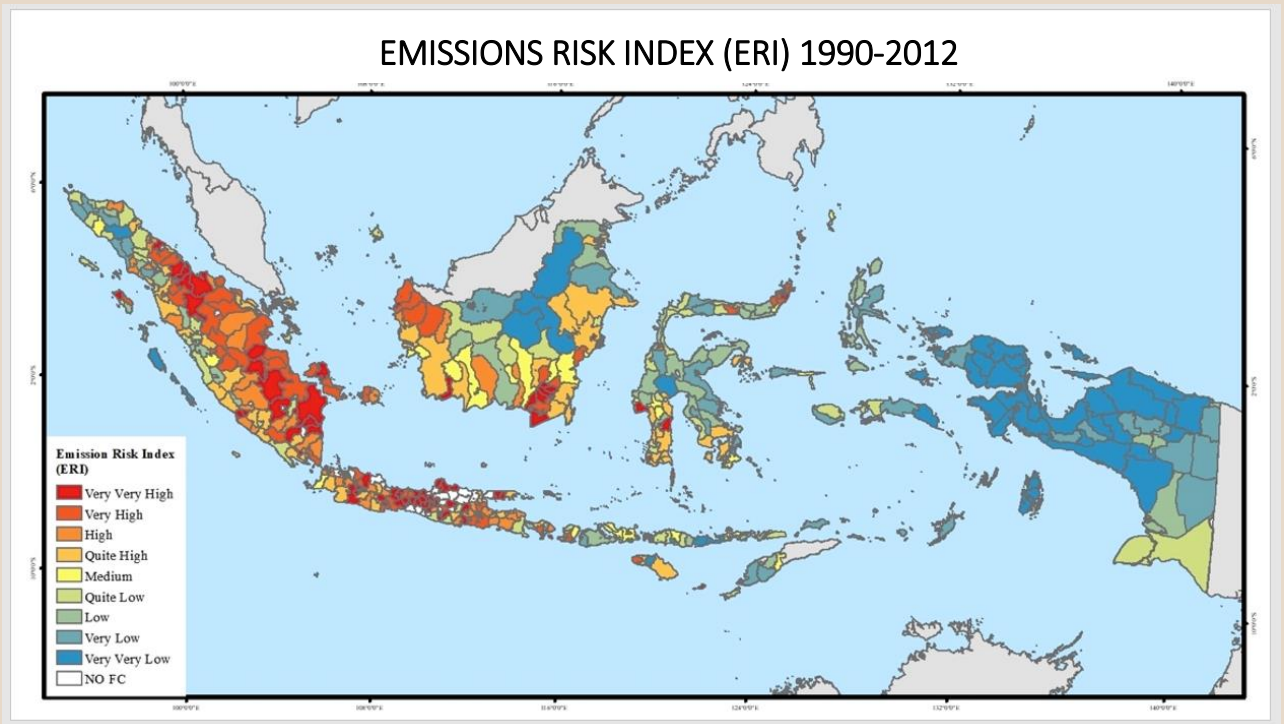


Figure 1 Emission Risk Index Map  
 Source: MoEF 2018 in Boer, 2019

- Provinces with high emission risk index gets low FREL allocation, which means that the province's chance to convert forests in the future is low. To make it fairer, for provinces with the same ERI, FREL allocation is further determined by the rate of historical emission of each province. This national allocation of FREL at the subnational level may not be the same with subnational FRELs that have been formulated, which could be lower or higher. For example, national allocation of FREL for East Kalimantan is significantly lower than East Kalimantan's FREL constructed merely based on its historical emission. However, the national allocation can increase by reducing buffer by 50% and should the subnational level ask although it increases uncertainty and risk.<sup>4</sup>

## What does it mean for forests?

- FREL is neither a plan or policy to deforest or degrade forests or keep forests standing. However, it can indicate the maximum deforestation and forest degradation level a province is allowed to obtain REDD+ incentives from the national level. Lower FREL at the provincial level can mean more push for keeping deforestation and degradation low in the province assuming that REDD+ incentives matter for provincial government. However, it can also mean more work and costs for provincial development to be able to get REDD+ incentives (and hence less attractive), especially if those incentives are only in the form of results-based performance and not incentives to get there. Therefore, it will be better if REDD+ incentives are also given ex-ante to keep deforestation and degradation low at the provincial level and not just as results-based payment.

<sup>4</sup> Ibid.

## Interpretation of FREL at subnational level.

- Table 2 below calculates what FREL for subnational level means for deforestation (maximum forests that can be cleared for each province to be able to get REDD+ incentives from the national level) and for forest degradation (maximum forests that can be degraded for each province to be able to get REDD+ incentives) based on estimate values of Above Ground Mass (AGB) for primary and secondary dryland forest in Indonesia's the 2015 FREL document.

Table 2 Interpretation of subnational FREL for forests

No	Province	Deforestation (tonCO <sub>2</sub> e)	Degradation (tonCO <sub>2</sub> e)	Total (tonCO <sub>2</sub> e)	Max Deforestation (ha) in primary forest	Max Deforestasi (ha) in secondary forest	Max Degradasi (ha)
1	Papua	21,817,505	10,530,808	32,348,313	52,903.75	70,107.66	103,956.64
2	Central Kalimantan	22,318,952	1,631,368	23,950,320	48,028.73	63,641.15	14,310.25
3	Central Sulawesi	12,357,058	3,875,879	16,232,937	26,031.30	34,691.35	32,707.84
4	East Kalimantan	9,515,630	2,461,839	11,977,469	20,476.93	27,133.25	21,595.08
5	North Kalimantan	9,908,485	1,831,977	11,740,462	21,322.33	28,253.45	16,069.97
6	Aceh	7,921,193	1,373,985	9,295,178	17,097.33	25,202.65	9,221.38
7	West Kalimantan	7,541,222	800,278	8,341,500	16,228.15	21,503.34	7,019.98
8	Jambi	7,149,518	40,118	7,189,636	15,431.72	22,747.43	269.25
9	West Papua	1,773,044	4,797,818	6,570,862	4,299.33	5,697.44	47,362.47
10	Southeast Sulawesi	5,780,204	731,095	6,511,299	12,176.54	16,227.41	6,169.58
11	North Maluku	4,688,193	805,616	5,493,809	9,017.49	12,237.52	5,889.01
12	Riau	4,927,035	519,213	5,446,248	10,634.65	15,676.22	3,484.65
13	North Sumatra	5,330,266	76,149	5,406,415	11,505.00	16,959.17	3,484.65
14	Bengkulu	4,776,961	530,048	5,307,009	10,310.73	15,198.73	3,557.37
15	South Sumatra	4,833,693	283,458	5,117,151	10,433.18	15,379.23	1,902.40
16	West Sumatra	4,907,962	28,801	4,936,763	10,593.49	15,615.53	193.30
17	East Nusa Tenggara	3,573,263	470,231	4,043,494	7,549.68	12,734.37	2,440.22
18	South Sulawesi	2,115,448	1,674,736	3,790,184	4,456.39	5,938.93	14,132.79
19	West Sulawesi	2,635,853	1,124,937	3,760,790	5,552.67	7,399.92	9,493.14
20	Maluku	3,255,535	171,872	3,427,407	6,261.85	8,497.87	1,256.37
21	Gorontalo	2,394,338	320,770	2,715,108	5,043.90	6,721.89	2,706.92
22	West Nusa Tenggara	1,640,558	1,006,815	2,647,373	3,466.21	5,846.61	5,224.78
23	South Kalimantan	1,469,285	817,873	2,287,158	3,161.79	4,189.58	8,831.71
24	North Sulawesi	1,466,299	784,264	2,250,563	3,088.90	4,116.50	6,618.26
25	East Java	1,156,278	1,079,979	2,236,257	4,346.91	6,781.69	11,308.68
26	Central Java	1,115,533	49,171	1,164,704	4,193.73	6,542.72	514.88
27	Lampung	932,636	165,066	1,097,702	2,013.03	2,967.34	1,107.83
28	Bali	235,960	595,146	831,106	498.54	840.91	3,088.46
29	Bangka Belitung	809,427	3,531	812,958	1,747.09	2,575.33	23.70
30	Kep. Riau	782,214	2,287	784,501	1,688.35	2,488.75	15.35
31	West Java	553,959	13,122	567,081	2,082.55	3,249.03	137.40
32	Banten	30,861	19,522	50,383	116.02	181.00	204.42
33	Yogyakarta	15,397	-	15,397	57.88	90.30	-
34	Jakarta	-	-	-	-	-	-

	<b>TOTAL</b>	<b>159,729,765</b>	<b>38,617,772</b>	<b>198,347,537</b>	<b>351,816</b>	<b>487,434</b>	<b>344,299</b>
					<b>348,446</b>	<b>468,824</b>	<b>328,093</b>

*\*calculates based on the sum of provincial level numbers*

*\*\*calculates based on average national AGB for primary and secondary dryland forests*

## FREL at subnational level interpretation

- Based on the calculation, the maximum deforestation level at the national level based on FREL allocation at the national level may reach 352,152 or 348,446 hectares for primary forest or 487,434 or 468,824 hectares for secondary forests. Meanwhile, the maximum degradation level at the national level may be 344,299 hectares or 328,093 hectares. It should be noted that the primary forests are officially protected by the moratorium policy, which will end in July if not extended. Therefore, there should ideally be no deforestation in primary forests although in reality things could be very different on the ground.
- The maximum deforestation level for secondary forests still exceeds the maximum deforestation level mentioned in the NDC document, which is 450,000 hectares per year up to 2020 to reach the NDC target. The calculation of buffer with the size of 45.52% for deforestation and 33.42% for forest degradation must also be clarified.
- According to experts, FREL analysis at more detailed level (KPH or Forest Management Unit) is needed to determine REDD+ implementation strategy, including where, who, when, what, and how. This is because WPK (REDD+ Performance Measurement Area) gives no specific indication on where drivers of deforestation and forest degradation are, how urgent they are, what are actions taken on the ground and how they are implemented.<sup>5</sup>

## What does it mean for Papua and West Papua ?

- To be able to obtain REDD+ incentives, from now until 2020, Papua Province must reduce deforestation to only 52,948.81 hectares (primary forests) or 70,177.22 hectares (secondary forests) and suppress degradation below 104,100.86 hectares. According to WRI's analysis, despite reduced deforestation at the national level in the last three years, forest cover in Papua keeps declining. Proximate drivers of forest loss in Papua in the period of 1990-2016 are interesting because many forests cleared are abandoned. According to WRI, the largest driver of forest loss (7%) is forest clearance and then the land is abandoned, followed by palm oil estate (6%), fire (4%), smallholder (4%), road (3%), and other (2%). The largest destruction to forests in Papua, however, is in the form of degradation. The largest portion of forest degradation is due to selective logging activities (39%), nearby clearing (28%), and fire (7%). See pie chart below.<sup>6</sup>
- **Forest cover dynamics in Papua Province.** According to WRI, 370.5 thousand hectares of forests were lost in Papua Province from 2001 to 2016. More forests were lost in non-forest area than in forest area (thirty-three percent occurred in Production Forest (HP) and thirty-seven (37%) in Non-Forest Area). If the subnational interpretation is correct, it means that the deforestation allowed in Papua Province up to 2020 to obtain REDD+ incentives exceeds the historical deforestation in 2001-2016 or the last 15 years (about 24,700 hectares per year). Papua Province still has about 84.2% of natural intact and degraded forests in 2016, covering the area of 26 million hectares with 9% forests on peatland. If forest cover loss continues to

<sup>5</sup> Ibid.

<sup>6</sup> Arief Wijaya, Understanding Forest Reference Emission Level and the Implications to Forest Management, Regional Development and Climate Actions in Indonesia, presentation given in Madani's TalkShop: Allocation of FREL and Its Meaning for Forests, Regional Development, and Achievement of Climate Commitment, 22 May 2019.

reach only 70% of the total forest cover, about 2.24 GtCO<sub>2</sub>e will be released to atmosphere and it will overshoot the 38%, 29%, and even BAU emission in 2030.<sup>7</sup> See Figure 3 below.

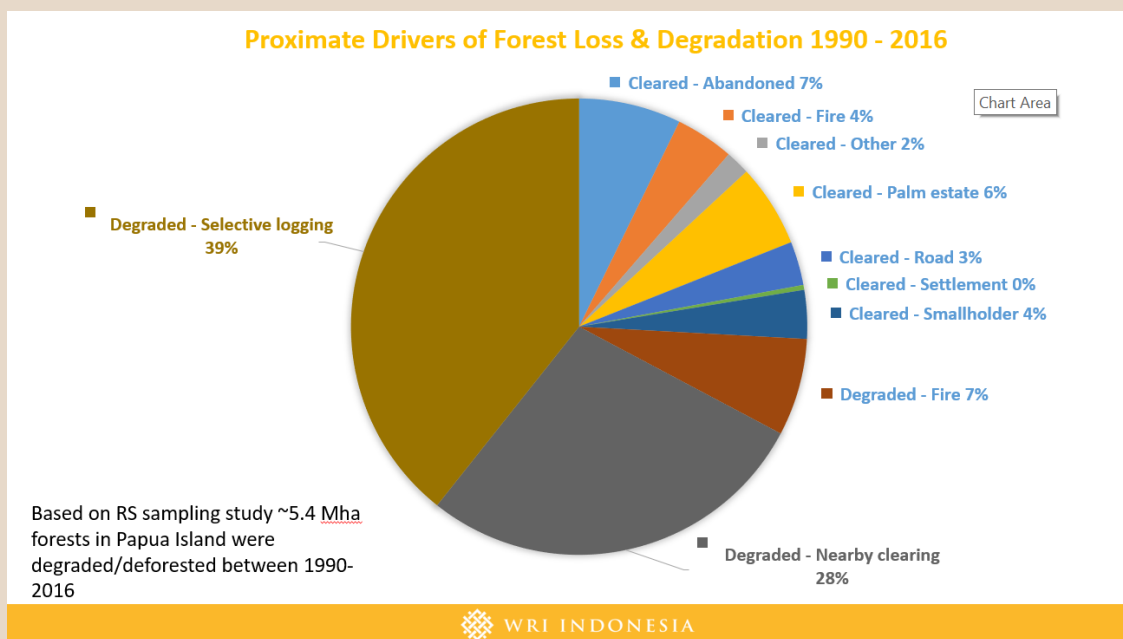


Figure 2 Proximate Drivers of Forest Loss and Degradation in Papua 1990-2016  
 Source: WRI, 2019

- Forest cover dynamics in West Papua Province.** According to WRI, 145.6 thousand hectares of forest in West Papua were lost in the period of 2001-2016. More forests were lost inside forest area than in non-forest area. Fifty-three (53%) of forest loss were in Production Forest (HP) and 31% in Non-Forest Area (APL). This can be interpreted that more forests were lost to forestry licenses than non-forestry licenses in West Papua. If the subnational FREL interpretation is correct, it means that the maximum deforestation in West Papua up to 2020 to obtain REDD+ incentives is lower than the historical deforestation from 2001 to 2016 or the last 15 years (about 7,707 hectares per year). West Papua province still has about 91.4% of natural intact and degraded forests by 2016, covering an area of 9 million hectares (10% forests are on peatland). If forest cover loss continues to reach 70% of total forest cover, about 1.27 GtCO<sub>2</sub>e will be released to atmosphere.<sup>8</sup> Therefore, maintaining forest cover in Papua and West Papua is paramount to achieving Indonesia's NDC target.

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.



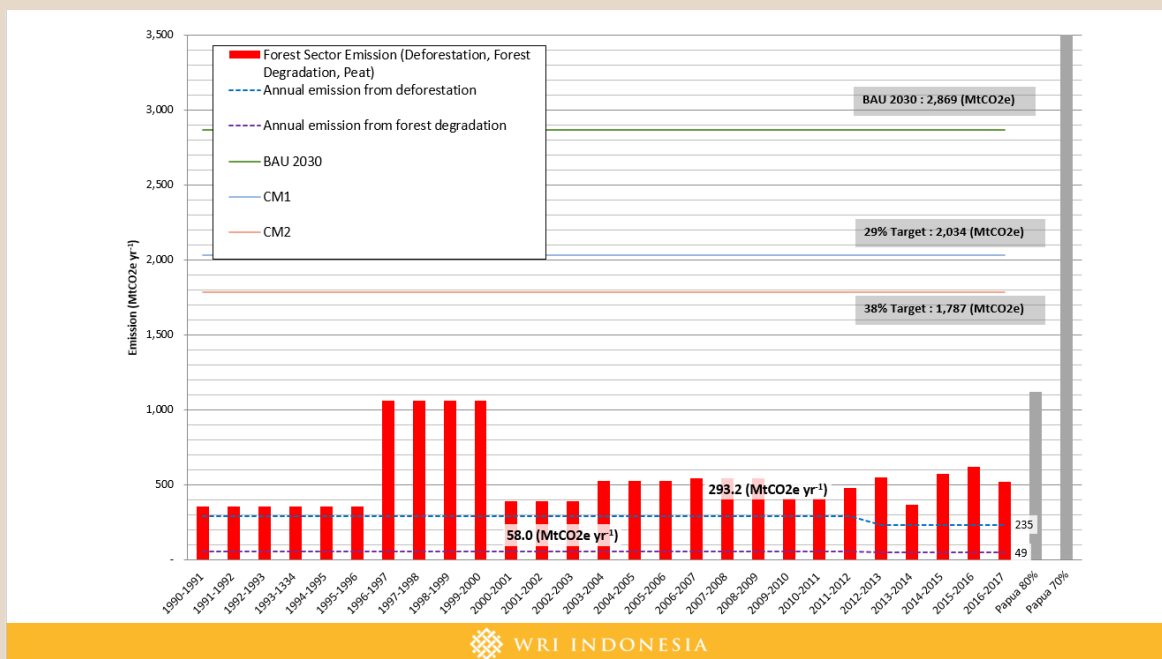


Figure 3 Projected Emissions from Forest Loss in Papua  
 Source: WRI, 2019

## Conclusion

From the interpretation above, we can see that forests that are still allowed to be cleared or degraded to be able to obtain REDD+ incentives until 2020 still exceeds the maximum level of deforestation target mentioned in the NDC for pre-2020 period, namely 450,000 hectares. And, this has not taken into account the regional development plan that each province has already formulated, which usually involves more forest clearance for development.

In recent years, the hotbed of deforestation in Indonesia is in Kalimantan. In 2016-2017, deforestation in Kalimantan was 229.8 thousand hectares or 48 percent of the national deforestation.<sup>9</sup> Based on the FREL allocation, to be able to obtain REDD+ incentives, deforestation in Kalimantan must be reduced to only 144.863 hectares up to 2020.

Papua and West Papua have a low level of deforestation historically but the trend is increasing. To be able to obtain REDD+ incentives, Papua and West Papua Province can actually increase its deforestation level to 75.880 hectares (secondary forests) or 57.251 hectares (primary forests), up to 2020, which is higher than the 2016-2017 deforestation level in Papua island of 48.600 hectares.<sup>10</sup>

FREL allocation is not a plan to deforest or keep forest intact, but a benchmark to distribute REDD+ incentives to the subnational level. Assuming that such incentives are attractive enough for regional government, lower FREL could mean more push for regional governments to protect forests. However, setting the bar low could also make REDD+ more unattractive if there are no ex-ante incentives given to regional governments to help them to lower deforestation and forest degradation in their jurisdiction because it will simply mean more work and costs to get the promised incentives.

<sup>9</sup> Directorate of Forest Resources Inventory and Monitoring, Directorate General of Forestry Planology and Environment Governance, Ministry of Environment and Forestry, 2018.

<sup>10</sup> Ibid.

Reception of regional governments of the subnational FREL allocation is not yet clear. The government must clarify these numbers to the public as well as regional governments, especially its implications for forests that can actually be cleared or degraded, and which regional development plans must be adjusted to achieve it.

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## Annex

### Emissions Factors of Deforestation and Forest Degradation

Forest Classes	Emission Factors of Deforestation (tCO <sub>2</sub> -e)						
	JAWA	KALIMANTAN	MALUKU	NUSABALI	PAPUA	SULAWESI	SUMATERA
Primary Dryland Forest	458,8	464,7	519,9	473,3	412,4	474,7	463,3
Secondary Dryland Forest	294,1	350,7	383,1	280,6	311,2	356,2	314,3
Primary Mangrove Forest	455,2	455,2	455,2	455,2	455,2	455,2	455,2
Primay Swamp Forest	332,5	474,0	332,5	332,5	308,4	369,8	380,9
Secondary Mangrove Forest	348,0	348,0	348,0	348,0	348,0	348,0	348,0
Secondary Swamp Forest	274,8	294,1	274,8	274,8	251,3	221,3	261,1

Note : If not available data for the emission factor by island, used National Average

ForestClasses	Emission Factors of Forest Degradation (tCO <sub>2</sub> -e)						
	JAWA	KALIMANTAN	MALUKU	NUSABALI	PAPUA	SULAWESI	SUMATERA
Primary Dryland Forest	164,7	114,0	136,8	192,7	101,3	118,5	149,0
Secondary Dryland Forest	107,3	107,3	107,3	107,3	107,3	107,3	107,3
Primary Mangrove Forest	57,7	179,9	57,7	57,7	57,1	148,5	119,7


Note : If not available data for the emission factor by island, used National Average


**Source:** Directorate General of Climate Change, Ministry of Environment and Forestry, Emissions Reduction Report for the Indonesia-Norway Partnership, 2019.




Yayasan Madani Berkelanjutan is a non-profit institution that has bridged relationships between stakeholders (government, private sector, and civil society) to achieve innovative solutions related to forest and land governance.

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