

REDD+ Update Report

“Unraveling Calculation of Deforestation in Indonesia”

July 2018

Definition of forest, deforestation and how to measure it remains a contested issue among stakeholders in Indonesia and to date there is no firm consensus at the national level concerning the rate of Indonesian deforestation other than the annual figures published by the government. This lack of widespread consensus is a concern because calculation of deforestation rate is one of the key elements in REDD+ implementation. This paper attempts to compare deforestation numbers issued by the government with data from civil society organizations to see where differences or gaps occur whether in terms of definitions, approaches and methods used as well as in the final results. Data used in this paper are obtained mainly from the Ministry of Environment and Forestry’s annual statistics (previously Ministry of Forestry’s statistics) and the National Development Planning Ministry (Bappenas) when there are gaps in the MoEF data. CSO data used as a comparison are deforestation numbers issued by Forest Watch Indonesia (FWI) dan World Resources Institute (WRI). We hope that this report can serve as a basis for further dialogue to bridge existing differences regarding deforestation calculation so that in the future Indonesia can have a credible figure of deforestation with wider acceptance, both nationally and internationally.

[Official view of deforestation](#)

This section discusses the official view regarding deforestation. We highlight several issues regarding deforestation data published by the government, namely: definition of forest and deforestation, deforestation inside and outside forest area, calculation method, final results, and contradiction in the government’s own data.

Definition of deforestation

- Determining definition of forest and deforestation is the first step in calculating the rate of deforestation. In annual statistics issued by the MoEF starting in 2011, it is mentioned that the government of Indonesia adopts a “net deforestation approach” in calculating deforestation. First, the MoEF calculates “Gross Deforestation” (total forest cover loss) and then subtract it with Reforestation/Afforestation numbers (total forest cover gain).¹ Gross deforestation is defined as “the change of land cover condition from *forested land class* to

¹ The calculation is based on Indonesia National Standard (SNI) No. 8033: 2014 regarding the Method to Calculate Forest Cover Change Based on Interpretation of Remote Sensing Images in Visual Manner issued by the National Standardization Agency in 2014.

non-forested land class."² Such number is then subtracted with the numbers of reforestation/afforestation to get the final net deforestation number. It should be underlined that the MoEF **categorizes timber plantation (HTI) as a part of forested land class**, which means that a change of primary or secondary natural forests to timber plantation over a certain period will eventually not show up as deforestation except during the initial land clearing and harvesting periods when trees are cut down. When the trees grow back, it will show up as reforestation and will therefore reduce the net deforestation number over a certain period. It is therefore important to dissect the official deforestation data to **segregate the loss of primary and secondary (natural) forests from the loss and growth of timber plantation**. In their recent infographics on deforestation (2016-2017), MoEF fails to display the numbers of primary and secondary forest losses. They only display deforestation in each forest function (production forest, protection forest, and conservation forest), which only shows administrative designation of forests and not their actual forest cover.

Different definition of deforestation in FREL for REDD+

- It must be noted here that the definition of deforestation in FREL for REDD+ is different from the abovementioned definition. First, the definition of deforestation used in constructing FREL is a "working definition", which is defined as **one-time conversion of natural forest cover into plantation forest or non-forested lands**.³ Therefore, a change of natural forest (primary or secondary) to timber plantation in a certain period of time is calculated as deforestation. Deforested areas that might regenerate and meet the forest definition were not taken into account a second time in the emission calculation from deforestation.⁴ In other words, in the current FREL for REDD+, the approach used to calculate deforestation is gross deforestation instead of net deforestation. This is because the currently proposed FREL for REDD+ has not involved sustainable forest management (SFM), conservation, and forest carbon enhancement and only includes two REDD+ activities, namely reducing deforestation and reducing forest degradation.

Deforestation inside and outside forest area

- In Indonesia regulations, the notion of forest is different from forest area. Forest area is a political-administrative designation, which does not always correspond with the existence of actual forest cover. Forest area can have no forests and forests can exist in areas other than forest area. Regarding deforestation, it is important to note that the MoEF calculates

² Deforestation Infographics 2016-2017, Directorate of Inventory and Monitoring of Forest Resources, Directorate General of Forestry Planology and Environmental Planning, MoEF, 2018. Forested land classes include primary forests, secondary forests, and timber plantations. Primary and secondary forests are distinguished into dryland, swamp and peat categories.

³ Directorate General of Climate Change Ministry of Environment and Forestry, Submission by Indonesia: National Forest Reference Emission Level for Deforestation and Forest Degradation, 2016, p. 10.

⁴ Ibid.

deforestation **both inside and outside forest area**. This is a good progress, which means that they also calculate deforestation happening in area for other purposes (APL or *Area Penggunaan Lain*) or non-forest area, which administratively does not fall under its purview but under the regional government's or the Ministry of Agraria and Spatial Planning/National Land Agency's. This increases the accuracy regarding the actual number of forest cover loss and is important since there are parties who want deforestation to be calculated only inside forest area and exclude the loss of primary and secondary forests in non-forest area or APL, especially that has been designated as palm oil concessions by claiming that such loss is categorized as a planned deforestation and must happen anyway.⁵

- Based on MoEF's latest statistics (2016, published in 2017), the size of forest area in Indonesia is **120,423,800 hectares** or approximately 60% of Indonesia's total land area. That is why the MoEF (previously the Ministry of Forestry) is considered a very powerful government institution in Indonesia for the very vast land under its control. However, according to MoEF itself, the actual forest cover in Indonesia is only 93.6 million hectares (according to FWI, it is only 82 million hectares in 2013).⁶ Meanwhile, according to FREL document (2016) submitted by the government to the UNFCCC, in 2012 there are approximately 7.48 million hectares of natural forest outside forest area (APL), which can be legally deforested and, in the same year, out of the 15.2 million hectares of forest area allocated as Production Forest for Conversion or HPK (forest area reserved to be released as non-forest area), about 7.24 million hectares still have intact natural forests.⁷

Calculation methods and results

- In calculating the deforestation rate of 2016-2017, the Directorate General of Forestry Planology and Environment Governance of the MoEF overlaid the satellite images of the 2016 land cover with the 2017 land cover and analyzed changes in the land cover condition (parcel per parcel). They calculated gross deforestation (forest cover loss) first and then subtract the number with reforestation/afforestation (forest cover gain) number to come up with the net deforestation number. The government calculates deforestation in the 7 main islands (Sumatra, Kalimantan, Maluku, Sulawesi, Bali-Nusa Tenggara, and Papua).
- Indonesia's official account of 2016-2017 deforestation number is **479,000 hectares** (July 2016- June 2017).⁸ According to deforestation baseline set in NDC, the figure represents an achievement in reducing deforestation up to 441,000 hectares from the projected deforestation number in 2030 based on BAU scenario (920,000 ha/year) used as the FREL

⁵ See <https://sawitindonesia.com/rubrikasi-majalah/berita-terbaru/4-peneliti-sepakat-sawit-penyelamat-kerusakan-hutan/>. Retrieved June 22nd, 2018.

⁶ Forest Watch Indonesia, Deforestasi Tanpa Henti: Potret Deforestasi di Sumatera Utara, Kalimantan Timur, dan Maluku Utara, 2018, fwi.or.id/wp-content/uploads/2018/03/deforestasi_tanpa_henti_2013-2016_lowress.pdf

⁷ Directorate General of Climate Change Ministry of Environment and Forestry, Submission by Indonesia: National Forest Reference Emission Level for Deforestation and Forest Degradation, 2016, p. 68.

⁸ http://ppid.menlhk.go.id/siaran_pers/browse/1025

for deforestation until 2020. The number is still a bit higher than the NDC target of reducing deforestation to only 450,000 ha/year up to 2020 and to reduce it further to only 325,000 ha/year from 2020-2030. By reducing deforestation number to such degree (aside from reducing forest degradation), Indonesia is expected to be able to reduce emissions from forestry by 60% -91% of the BAU scenario in 2030.

- During the period of mid-2016 to mid-2017, the largest number of deforestation occurred in Kalimantan (230,000 ha), followed by Sumatra (127,000 ha), Sulawesi (70,800 ha), and Papua (48,600 ha). Java and Bali regions gained forest cover of approximately 20,000 ha (negative deforestation). However, a more comprehensive analysis (preferably spatial) is required to calculate how much primary and intact secondary forests are lost in this period since the complete forestry statistics of 2017 has not been issued in the time of writing (only deforestation map in JPEG format and an infographic were put on MoEF website). Almost half of the deforestation in this period (44%) occurred in production forest area (either in forest concessions or in open access state forest area) and the second largest (36%) is outside forest area (APL, including palm oil plantations). Sadly, more than 20% of deforestation in this period occurred in conservation and protection forests, which house the bulk of the remaining primary forests of Indonesia. More detailed information can be found in the infographics below.

Picture I. Infographics of 2016-2017 Deforestation Data from MoEF



Source: Directorate of Inventory and Monitoring of Forest Resources, Directorate General of Forestry Planology and Environment Governance, MoEF 2018

How much primary and secondary forests were lost?

- Table 1 below shows the official numbers of deforestation compiled from the official statistics of the MoEF (previously Ministry of Forestry) from 1990 to 2017. The data were extracted from the Forestry Statistics, Forestry and Environment Statistics, Bappenas' Forestry Statistics, and Statistics of Directorate General of Planology. Some data were missing from the annual statistics and in one case the total national deforestation number failed to include the loss of primary forest loss contained in the detailed provincial data. For three periods (1990-1996, 1996-2000, 2000-2003) in which deforestation data were unavailable in forestry statistics⁹, we constructed deforestation numbers from the infographics above without detailed data regarding the loss of primary and secondary forests. In all the statistics published, the MoEF does not segregate the number of deforestation occurring inside and outside concessions.¹⁰

⁹ We have come to the MoEF to ask for deforestation data for these periods, but they said that they did not know where the data were kept and that their previous server “broke down” and “all the data were lost.”

¹⁰ The MoEF only put the numbers of deforestation inside production forest where all forest concessions and some mining concessions are located. Not all deforestation inside production forest, however, are due to concession activities. It is sometimes because of concession inactivity, which creates an open access situation where illegal logging or encroachment thrives. Deforestation inside concessions can also occur outside forest area (APL), especially in palm oil plantations.

Table I. The Official Deforestation Numbers 1990-2017

Period	Deforestation Inside Forest Area	Deforestation Outside Forest Area	Total Deforestation	Deforestation Data from Infographics (1990-2017)	Deforestation Data in FREL Document (1990-2012)	Difference between Infographic and FREL Deforestation Data	Loss of Primary Forest	Loss of Secondary Forest	Loss of Plantation Forest
2016-2017	308,000	171,000	479,000	479,000	N/A	N/A	N/A	N/A	N/A
2015-2016	431,266	188,740	620,006	630,000	N/A	N/A	78,158	570,938	-29,090
2014-2015	940,695	282,858	1,092,182	1,090,000	N/A	N/A	55,612	694,298	473,643
2013-2014	453,876	116,121	397,372	400,000	N/A	N/A	24,573	307,163	236,262
2012-2013	333,382	390,996	724,378	730,000	N/A	N/A	43,467	791,774	-110,863
2011-2012	352,532	260,949	613,481	610,000	786,052	176,052	24,474	604,343	-15,336
2009-2011	660,400	240,900	901,400	900,000	1,101,040	201,040	34,500	752,700	114,200
2006-2009	1,831,128	665,253	2,496,381	2,490,000	2,741,459	251,459	1,203,076	1,054,608	238,697
2003-2006	2,283,592	1,238,612	3,522,204	3,510,000	2,527,909	-982,091	229,223	2,937,879	355,102
2000-2003	N/A	N/A	N/A	3,240,000	1,333,085	-1,906,915	N/A	N/A	N/A
1996-2000	N/A	N/A	N/A	14,040,000	9,020,783	-5,019,217	N/A	N/A	N/A
1990-1996	N/A	N/A	N/A	11,220,000	3,828,973	-7,391,027	N/A	N/A	N/A
TOTAL	7,594,872	3,555,428	10,846,402	39,339,000	21,339,301	-14,670,699	1,693,083	7,713,704	1,262,614

Source: Compiled based on Forestry Statistics, Forestry and Environment Statistics, Statistics from Bappenas RI, and Deforestation Infographics, 2018

Notes:

* The difference between deforestation data on infographics and deforestation data in FREL for REDD + document reflects the difference between the calculation approaches used (net deforestation approach for the former and gross deforestation approach for the latter). However, deforestation figures resulting from net deforestation approach should not be bigger than the figures resulting from gross deforestation approach since the number is obtained by subtracting by the number of gross deforestation with reforestation and / or afforestation number. This is not the case with four periods calculated, which are shown in red.

Discrepancy between the official deforestation numbers and deforestation numbers in FREL for REDD+

- Indonesian FREL for REDD+ was submitted to the UNFCCC in 2015 (resubmitted in 2016 after it passed the UNFCCC technical review) only calculates the loss of natural forests (primary and secondary forests) and does not calculate the loss of plantation forests due to different deforestation definition and approach being used. Besides, the FREL definition of deforestation does not take into account forest gained through afforestation and reforestation and therefore adopts the gross deforestation approach as opposed to net deforestation approached used by GOI in its annual deforestation calculation. We found a large discrepancy between deforestation numbers recorded in FREL document (1990-2012), which is used as a baseline to calculate NDC targets, and deforestation numbers recorded in the MoEF's annual statistics, which we found difficult to account for even after considering the different calculation approaches used.
- The numbers we found difficult to understand were shown in red (see Table 1). By the logic of definition of calculation method used, gross deforestation number (used in FREL) should always be higher or at least the same with net deforestation number (used in infographics) because the number has not been subtracted with afforestation/reforestation number. But in this case of four periods (2003-2006, 2000-2003, 1996-2000, and 1990-1996) shown in red, the gross deforestation numbers used in FREL construction are substantially lower than net deforestation numbers recorded in the annual statistics in the same period. It could mean that the gross deforestation numbers used in the construction of FREL for REDD+ are grossly underestimated or the previous net deforestation numbers issued by the government were overestimated. This intergovernment data discrepancy raises questions regarding the accuracy of the annual deforestation data issued by the government.
- In the period of 2006-2012, the gross deforestation numbers in FREL document are higher than net deforestation numbers recorded in MoEF statistics and infographics, but 'only' by 628,551 hectares and it can be assumed that the discrepancy occurs because they did not include reforestation/afforestation numbers in the calculation, which is justified because FREL for REDD+ uses gross deforestation approach. However, this is only an assumption that needs to be clarified.
- According to MoEF infographics issued in 2017, net deforestation occurring in the period of 1990-2012 amounts to 36.01 million hectares. Meanwhile, the gross deforestation figures recorded in FREL document in the same time period 'only' amounts to 21,339,301 hectares. The discrepancy is enormous even after taking into account the different calculation approaches used. The first question that arises is how could it be that the gross deforestation number is lower than the net deforestation number while the net deforestation number is generated from subtracting gross deforestation number with afforestation / reforestation number? Greenpeace Indonesia has published a critical review regarding this issue in

December 2015¹¹ but until the final FREL document was released in 2016, there was no government response to these criticisms.

- We tried to clarify this discrepancy with MoEF officials. Below are explanations that are given to us:¹²
 - The previously published deforestation data may be less accurate because they were based on lower-resolution satellite images in which many areas were covered by clouds, making it hard to determine whether the area had forest cover or not. Prior to 2009, the cost of obtaining satellite images was quite expensive and therefore, deforestation calculations were performed every few years instead of annually (annual deforestation calculation was only started in 2011).
 - Meanwhile, the calculation of deforestation numbers used as a reference for constructing FREL for REDD+ was based on reinterpretation and recalculation of satellite images obtained post-2009 where satellite data can be obtained for free and with higher accuracy level. Both data originated from the Director General of Forestry Planology and Environment Governance.
 - Compared to previously issued deforestation data, deforestation data used to construct FREL for REDD+ are more accurate because the basis for the data have been reinterpreted and recalculated.

How much forest is actually lost?

- If we refer to the official net deforestation data in the form of annual statistics and infographics, which accuracy is questioned, from 1990 to 2017 or in the last 27 years, Indonesia net deforestation amounts to **39.3 million hectares** (after being subtracted with afforestation/reforestation numbers) or 1.45 million hectares/year. Forests lost are classified into three categories, namely: primary forests (dry land, swamp, and mangrove), secondary forests (dry land, swamp, and mangrove), and “plantation forests” or timber plantation and the number has been subtracted with the number of forest cover gained from afforestation/reforestation. However, as stated by the MoEF official in her clarification, this net deforestation figure may not be accurate. If we calculate the gross deforestation data used for FREL for REDD+ from 1990-2012 and add to it the numbers of net deforestation data issued in the period of 2012-2017 (which is assumed to be more accurate as they are calculated annually with better satellite images), the total deforestation result from 1990-2017 is ‘only’ 24.6 million hectares. But this figure cannot be said to be completely accurate because the calculation combines both gross and net approach. The challenge looms larger if we want to know how much natural forests are lost since 1990 not including timber plantation loss and growth.

¹¹ Greenpeace Indonesia, “Indonesia Forest Reference Emission Level: Data Revisions, Omissions and Errors,” 1 Desember 2015.

¹² Communications with Mrs. Belinda Arunawati Margono, Head of Land MRV Sub-Directorate, Directorate General of Climate Change MoEF, 24 May 2018.

- In the most recent infographics published by MoEF, the Ministry issued numbers of forest cover loss in each forest function (production forest, protection forest, conservation forest, area for other purpose) but failed to mention how much was lost in terms of primary and secondary forests, which for us is more important because forest functions are merely an administrative designation. Production forest or area for other purposes can in fact have primary or intact secondary forests. Meanwhile, non-forested lands (including palm oil plantations) can be found within the forest area, even in protected forest and conservation forest although it would be a violation of the law.

Deforestation in the moratorium period

- In the three periods of moratorium policy (2011-2013, 2013-2015, and 2015-2017), MoEF's net deforestation number amounts to **3.94 million hectares** with the loss of primary forest from 2011 to 2016 being **260,784 hectares** while the bulk of deforestation happened in secondary forest, which is **unprotected by the moratorium**, with the size of **3.7 million hectares**. This finding proves the importance of protecting secondary forests to strengthen the moratorium policy and to achieve emission reduction target in forestry sector within the NDC. The moratorium policy currently protects **66,327,000¹³** hectares of primary forest and peatland from clearings based on new licenses. However, this policy is undermined by the many exemptions mentioned in the non-legally binding policy, including development of oil and gas, geothermal, rice fields, sugarcane, corn, sago, and soy plantations to bolster national food security (the number of exemptions ironically increased in the last Presidential Instruction issued in 2017).¹⁴

The Minister's take on zero deforestation and the moratorium

- The Minister of Environment and Forestry, Siti Nurbaya Bakar, made a statement in one media that extending the moratorium to secondary forests would undermine the country's economic development and is therefore regarded as a secondary priority. The government's main priority for now is assessing which lands that may be licensed for development.¹⁵
- She also said in her keynote speech in International Workshop on Forest and Deforestation in 29 January 2018 that using the term '**Zero Deforestation**' for an activity by an entity is possible, but it cannot be applied to development inside a jurisdiction (provincial, district, the nation) because deforestation is still needed to build roads, electricity, alleviate isolation of villages, etc. She also said that the term 'deforestation' implies pressure from the international community and becomes restrictions for Indonesia. On another hand, the Minister encourages shared

¹³ Press Release of PPID by Ministry of Environment and Forestry, "MOEF Terbitkan PIPPIB Revisi XIII," cited from http://ppid.menlhk.go.id/siaran_pers/browse/951. Retrieved June 25th, 2018.

¹⁴ Instruction of the President of Republic of Indonesia No. 6 of 2017 on Moratorium and Improvement of New Permit for Primary Forest and Peatland, Second Dictum.

¹⁵ <https://www.reuters.com/article/us-rainforest-summit-siti/indonesia-environment-minister-rebuffs-groups-who-want-more-forest-preserved-idUSKBN1HU1HM>

understanding among local, national, and international actors with regards to definition of forest and deforestation and stated that controlling deforestation is one of the priority agenda for the MoEF. Madani wants to capitalize on the Minister's encouragement to initiate a constructive dialogue to calculate and monitor deforestation in Indonesia.

Indonesia's plan to control deforestation

Many people are questioning how Indonesia will reach its NDC targets in the forestry sector, which constitutes 17.2% of emissions reduction out of the 29% target from BAU scenario by 2030. Below are the plans mentioned by the government:¹⁶

- **Moratorium of new licenses on primary forest and peatland.** The Minister of Environment and Forestry believes that the current moratorium policy can in fact reduce deforestation and fulfill NDC targets, which by many is seen as too optimistic. The moratorium policy is not applicable to proposed licenses that have been approved by the Minister of Environment and Forestry before May 2011, extension of existing licenses, oil and gas, geothermal, and food crop plantations to bolster national food security (rice fields, sugarcane, sago, corn and soy). Thus, there are still too many loopholes to exploit primary forest and peatland purported to be protected by this policy. This policy also fails to protect Indonesia's secondary natural forests, which in 2016 was recorded at 43,827,600 hectares.¹⁷ In her statement to the media, The Minister refused to extend the moratorium to secondary forests since they can still be allocated for non-forestry development purposes. In the last policy text (Presidential Instruction) issued in 2017, the moratorium oversight currently rests on the Secretary Cabinet but aside from periodic revision of the moratorium map or PIPPIB, which is based on discussions between the MoEF, Ministry of Home Affairs, Ministry of Agriculture, Ministry of Agrarian and Spatial Planning, Geospatial Information Agency, and undisclosed inputs from the public, there is no comprehensive periodic public report on the monitoring or evaluation process and result regarding the moratorium, which includes governance improvement measures that are being taken.
- **Palm oil moratorium.** This policy, if it ever sees the light of day, has a big potential to reduce deforestation from expansion of palm oil plantations in forest area. However, this policy has been held hostage for more than 2 years since President Joko Widodo issued an oral statement regarding this plan in April 2016.¹⁸ The Minister said that the policy is currently in "mature discussion" with the Coordinating Ministry of Economic Affairs. The policy will have three focus, namely controlling palm oil licenses in forest area, controlling palm oil licenses at the regional level (license review) and improving the productivity of smallholder plantations as well as building the downstream

¹⁶ Social Forestry, TORA and Forest Area Evolution, presentation by Minister Siti Nurbaya Bakar, April 3rd, 2018.

¹⁷Ministry of Environment and Forestry, "Statistik Lingkungan Hidup dan Kehutanan Tahun 2016," published on Desember 2017, downloaded from www.menlhk.go.id/downlot.php?file=Statistik_MOEF_2016.pdf. Retrieved June 25th, 2018.

¹⁸

<https://nasional.kompas.com/read/2016/04/14/16062001/Jokowi.Akan.Keluarkan.Moratorium.Lahan.Sawit.dan.Tambang>. Retrieved June 25th, 2018.

industry.¹⁹ CSOs are very keen to see the policy issued as this policy can greatly assist Indonesia in achieving its emissions reduction targets in the forestry sector and in improving the governance of the palm oil sector, which is significant for the economy.

- **Prevention and control of forest and land fires.** Currently, this agenda is at the top of the government's list. The concern of the government is reducing the number of hotspots and land burnt. Peatland management becomes the key in this policy, including restoration of 2.6 million hectares of burnt peat, of which 1.4 million hectares are located within companies' concessions.
- **Sustainable forest management,** including timber certification, but with more focus on enforcing regulations regarding production forest, is cited as one of the strategies to reduce deforestation. CSOs have proposed many 'zero deforestation' instruments such as HCS and HCV but the Minister said that those concepts cannot yet be contextualized in Indonesia's regulations. However, Indonesia's regulations have other nomenclatures such as local protected area, livelihood plants zone, river protected area, mangrove protected area, etc. The Minister stated that these nomenclatures should be reviewed and regulations about this must be enforced, including FLEGT.²⁰
- **Law enforcement.** MoEF is applying a multidoor approach to law enforcement, bringing together various laws at once to prosecute forestry-related crimes. In the period of 2015-2017, the MoEF claims to have secured 7 million hectares of forest through law enforcement actions, including revoking 3 licenses, suspending 16 licenses, forcing 31 companies to comply, and monitoring 262 other companies. They are also processing 44 criminal cases, bringing to court 174 cases of illegal logging and 66 cases of encroachment, the result of which is still unknown.²¹
- **Social forestry and agrarian reform.** Aside from allocating 12.7-13.4 million hectares for social forestry (including customary forest), the MoEF has also allocated **4.1-4.8 million hectares** of forest area to be released to the people as a part of agrarian reform program (released here means that the areas will cease to become forest area and can be cleared). Most of the allocated area is Forest Area for Conversion (HPK) with the size of 2.1 million hectares. Until February 2018, the Ministry has released 387,995 hectares of forest area for agrarian reform with 20% being forest area for palm oil plantation and 390,627 hectares being rice fields and other lands already managed by communities. The plan is to release 1.8 million hectares of forest land (HPK) for agrarian reform in 2018 and 2019.²² We have not analyzed how much of these 1.8 million hectares are actual forest cover.
 - **PIAPS.** According to the Indicative Map for Social Forestry (PIAPS) first revision of 25 September 2017, the size of forest area allocated for social forestry is 13,887,069 hectares, consisting of: protection forest (2.5 million hectares), production forest (4.3 million hectares), Production Forest for Conversion (1.6 million hectares), Limited Production Forest (4.4 million hectares), and customary forest (8.7 million hectares). The target until 2019 is giving 4.38

¹⁹ Social Forestry, TORA and Forest Area Evolution, presentation by Minister Siti Nurbaya Bakar, April 3rd, 2018.

²⁰ Ibid.

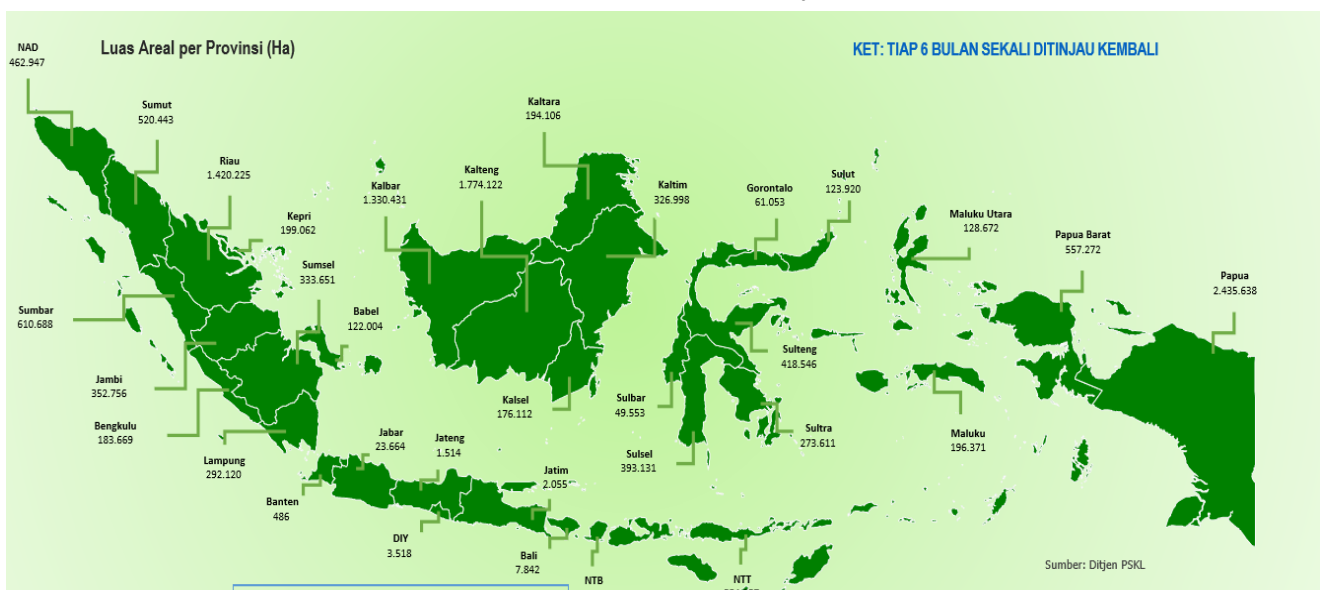
²¹ Ibid.

²² Ibid.

million hectares to the people in the form of social forestry licenses (meaning that it will still be kept as forests). Until March 2018, the total realization of social forestry is 1.5 million hectares. This means that to reach the 2019 target, the government must issue 2.8 million hectares of social forestry licenses in 2018 and 2019.

- **Customary forest.** The total proposed areas for customary forest in March 2018 that are currently being processed amounts to 1.3 million hectares and other social forestry licenses 623,000 hectares.²³ Customary forests that have been returned to indigenous people only amounts to **24,378.34 hectares** (23 units) at the time being, involving 10,319 households. The main obstacle of customary forest recognition is lack of legal basis for IPs that become the subjects of recognition, namely Regional Regulation, Head of District/Mayor decision, conflicts with concessions, and lack of map of IP territories recognized by the government. Until January 2018, 2.2 million hectares of customary forests have been proposed to the government, but only 107,203 hectares are ready for verification and validation.²⁴

Picture 2. Indicative Area for Social Forestry (PIAPS) Revision I



Source: Presentation of the Minister of Environment and Forestry, “Evolution of TORA and Forest Area,” 2018

- **KLHS.** Applying Strategic Environmental Assessment (KLHS) to spatial planning related to the plan to use forest area is also cited as one of the measures in place to reduce deforestation.

²³ Ibid.

²⁴ Ibid.

- **Mainstreaming climate change in the Government Work Plan (RKP) 2018.** This 'mainstreaming' is cited as one of the measures to reduce deforestation. However, from information we obtained from the Ministry of National Planning, mainstreaming an issue in RKP means that the issue is not yet the main priority. The important thing is to make the issue part of national priorities (PN), priority programs (PP), or priority activities (KP) in the RKP. Until now, climate change has not been explicitly regarded as a part of PN, PP, KP, or indicators in the RKP.
- **Development of Forest Management Unit (KPH).** Until now, the government has established 434 units of FMU out of the 600 units set as target. KPH is important but its implementation faces many challenges, including institutional challenges (personnel, staffing, capacity), budgeting, and lack of authority.
- **Controlling forest area release.** According to the data from the Minister, under her administration and Jokowi leadership, forest area release to non-forest area has been minimized to only 305,984 hectares with 232,810 hectares already approved in principal in the previous administration (President Susilo Bambang Yudhoyono or SBY). Under the previous administration (SBY) that lasted two periods (2005-2014), the government released forest area with the size of 2.2 million hectares.²⁵
- **Controlling timber plantation and logging licenses.** Still according to the data from the Minister, in her administration, the number of timber plantation licenses issued was 'only' 796,949 hectares while under SBY administration, the number reached 4.7 million hectares. As for logging licenses, the administration 'only' issued new logging licenses with the size of 138,554 hectares while the SBY administration issued licenses with the size more than 10.2 million hectares in the period of 10 years (2005-2014).²⁶

Deforestation according to civil society organizations

The following section explores deforestation data issued by two CSOs that focus on forest and deforestation monitoring, Forest Watch Indonesia (FWI) and World Resources Institute (WRI). Both use different definitions of forest and deforestation than the ones used by the government.

Forest Watch Indonesia

- FWI is one of Indonesian civil society organizations with a focus on monitoring Indonesian forests and deforestation. FWI defines deforestation as a change of forested area to non-forested area (same definition with the MoEF). However, by forest, FWI only means natural forests excluding timber plantation (this is where they differ from the MoEF). Just like the MoEF, FWI measures deforestation both inside and outside forest area. FWI's account of deforestation is consistently higher than the MoEF's. However, it is difficult to compare their data in an apple to apple manner because they use different periods (and locus) in calculating the deforestation.

²⁵ Ibid.

²⁶ Ibid.

- In the 1980s, FWI records a rate of deforestation of 1 million hectares/year. This number increased during the early 1990s up to 1.7 million hectares/year and escalated significantly in 1996 to 2 million hectares/year. However, this number has been declining gradually to 1.5 million hectares/year during 2000-2009 and further to 1.1 million hectares/year in the period of 2009-2013.²⁷ It is difficult to compare the deforestation data between MoEF and FWI because FWI's data are average deforestation number calculated per period, not per year. Roughly speaking, however, we can see a significant discrepancy between the two institutions where the MoEF stated that deforestation rate during 2000-2013 is 11.48 million hectares while FWI's data in the same period show a higher number of 17.9 million hectares for the same period.²⁸
- In 2016, FWI conducted an analysis of deforestation in 8 provinces (Aceh, Riau, South Sumatra, West Kalimantan, East Kalimantan, North Kalimantan, Central Sulawesi) in the period of 2009-2016 that shows the loss of **natural forests** with the size of 1.8 million hectares and this number still has not taken into account deforestation in Papua and Papua Barat.²⁹ In the same period, data from MoEF show that the deforestation rate reached **2.1 million hectares** nationwide and it is a net amount after subtracted by afforestation and reforestation number (see Table I). Discrepancy between MoEF and FWI data are not really significant in the more recent periods (compared to the previous periods). Moreover, data analysis in that period shows that deforestation in Indonesia is heading east although Sumatera and Kalimantan are still the loci of the largest number of deforestation in 2017.
- **Deforestation inside concessions.** According to FWI, in the period of 2009-2016, deforestation inside concessions amounts to 1.04 million hectares, larger than deforestation outside concessions. The highest rate of deforestation in the period of 2013-2016 occurred in East Kalimantan, West Kalimantan, and North Kalimantan, making Kalimantan the main island of deforestation in Indonesia at the time being.³⁰
- **Natural forests inside concession.** FWI issued interesting data in 2016, namely distribution of natural forests inside concessions, for which the threat is imminent and many think inevitable because the government has "given" the forests to clear for the concessions. According to FWI, more than half of the remaining natural forests in Indonesia is located inside concessions (FWI, 2018). The distribution of natural forests inside concessions can be seen in Picture 3.
- From the chart below, we can see that the largest natural forests inside concessions are found in logging concessions (3.9 million hectares), followed by forests in overlapping licenses (2.7 million hectares), mining concessions (2.2 million hectares), timber plantations (873 thousand hectares) and palm oil plantations (666,649 hectares).³¹

²⁷ <https://nasional.sindonews.com/read/1298416/18/perusakan-hutan-dan-sanksi-korporasi-1523921111>

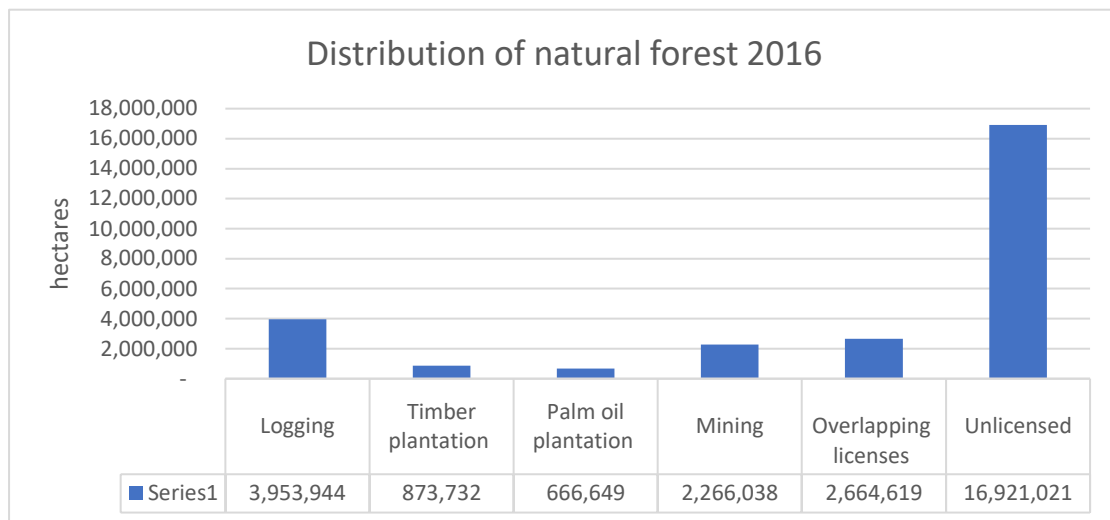
²⁸ <http://fwi.or.id/publikasi/silang-sengkarut-pengelolaan-hutan-indonesia/>

²⁹ FWI, Silang Sengkarut Pengelolaan Hutan dan Lahan di Indonesia, December 2017, http://fwi.or.id/wp-content/uploads/2017/12/executivesummary8des17_final.pdf

³⁰ Ibid.

³¹ Ibid.

Picture 3. Distribution of Natural Forests Inside Concessions 2016



Source: Forest Watch Indonesia, 2018 (processed)

- From the government’s point of view, deforestation inside concessions is something that the government cannot and will not stop because it is considered as “planned deforestation” and is something that is supposed to happen anyway. The main creed of the government, and this seems to be the consensus among the MoEF, Ministry of Finance, and the President is this: “state income from the forestry sector cannot ever go down.” The government’s policies, plans, and programs to address deforestation inside the concessions in the framework of NDC implementation is called “sustainable forest management” and is part of the REDD+ scheme (with lack of baselines, however). Such programs, policies and plans are geared towards making logging and timber plantation more sustainable by adhering to Indonesia’s sustainable timber production standards, which, in practice, are based more on legality rather than sustainability. Voluntary sustainable commitments of large companies such as NDPE (No Deforestation, No Peat, No Exploitation) is currently the only instrument available to stop deforestation inside concessions. However, there is one policy instrument that has the potential to ‘save’ natural forests inside palm oil concession, namely the palm oil moratorium policy plan. The draft policy includes a mandate for the MoEF to evaluate existing palm oil plantation licenses and see whether there are plantations that still have ‘productive forests.’ Those will be evaluated and there is, at least in theory, an opportunity to reclassify them as forest area (although this is still debatable at the implementation level).

World Resources Institute

- **Deforestation of primary forests inside and outside concessions.** In 2017, WRI published a number of **primary forests** lost in Indonesia in the period of 2000 to 2015 and found that 55% or more than 4.5 million hectares happened inside concessions

(logging and timber plantations, palm oil plantations, and mining concessions).³² Meanwhile, the loss of primary forests outside concessions in the same period was 'only' 3.6 million hectares. The numbers are fantastic especially regarding to primary forests lost, but the definition of 'primary forests' used in this study refers both to "intact natural forests" and "degraded natural forests."³³ It means that the definition of primary forests used by WRI in the study differs from that used by the MoEF in its statistics, which refers only to intact natural forests that have not shown traces of logging.³⁴ Due to the differences, the number of primary forests lost in WRI's study cannot be compared to the one published by the MoEF for the same period. Another factor that makes comparison difficult is the lack of deforestation numbers in the period of 2000-2003 in the statistics of MoEF. However, if we compare WRI's number with the government's number of primary and secondary forests lost, the discrepancy is significantly smaller as shown in Table 2 below.

Table 2. Comparison between Deforestation Numbers of WRI and MoEF

Period	WRI's Deforestation Number (Primary Forests) (ha)	Period	MoEF's Deforestation Number (Primary Forests) (ha)	MoEF's Deforestation Number (Primary and Secondary Forests) (ha)
2000-2015	8,100,000	2003-2015	1,614,925	8,757,690

- If we compare WRI's number of primary forests lost in the period of 2000-2015 with the government's number of primary forests lost in the period of 2003-2015, the discrepancy we find is very large (8.1 million hectares compared to 1.6 million hectares). However, if we compare the former with the number of primary and secondary forests lost according to MoEF data (net approach), the discrepancy becomes significantly smaller (8.1 million hectares compared to 8.75 million hectares). As we can see in Table 2 above, the deforestation numbers of the government (comprising primary and secondary forests) are higher than the number of forest cover lost according to WRI and the numbers have not incorporated the loss of primary and secondary forests in the period of 2000-2003, which data are missing from the statistics we obtained.
- The study also found that palm oil and timber plantations are the two largest contributors to the loss of primary forest in Indonesia. Around 1.6 million hectares of primary forest were converted to palm oil plantation and 1.5 million hectares to timber plantation. In 2015, the loss of primary forests within logging concessions in Kalimantan and Papua was higher than the loss of forests in palm oil plantation. This finding indicates clear law violation because the companies are supposed to employ selective, not total clearing. The study found that deforestation was caused by the

³² <https://wri-indonesia.org/id/blog/satu-dekade-deforestasi-di-indonesia-di-dalam-dan-di-luar-area-konsesi>

³³ Personal communications with Arief Wijaya, Climate and Forests Senior Manager, WRI Indonesia, 25 June 2018.

³⁴ As used in Forest Resources Monitoring and Inventory by Directorate of Inventory and Monitoring of Forest Resources, Directorate General of Forestry Planology and Environmental Planning, MoEF, Indonesia Forest Resources Monitoring 2015.

following: illegal land clearing by palm oil companies (clearing outside their concessions), excessive logging, and clearing by palm oil smallholders.³⁵

Conclusion

- From the abovementioned data and analyses, we can conclude that comparing deforestation data of the government with those of civil society organizations is not a simple task and often cannot be done because of the differences in forest definition, deforestation definition, and calculation methods used as well as in the final results. In addition, discrepancy in the government's own data also raises questions regarding the accuracy of annual deforestation data issued by the government.
- In the meantime, deforestation data published by civil society organizations are often based on different analytical periods and approaches, making it difficult to compare directly with the government's data to criticize or invalidate them. An apple to apple analysis using the same data basis and periods under analysis by different parties is needed to point out irregularities or discrepancies in the government's own data and increase accuracy of the national deforestation data.
- To increase the accuracy of the national deforestation data, we recommend the following for the government: 1) improve disclosure of forestry and deforestation data, including by making it possible, easy, and inexpensive for CSOs to analyze the same forestry data basis to calculate deforestation, 2) display numbers or data regarding the loss of natural forests in a segregated manner from the loss and growth of timber plantation, not only in the annual statistics, but also in more user friendly infographics, 3) segregate the number of deforestation occurring inside and outside concessions in the annual statistics as well as infographics, and 4) continue fostering healthy debates and constructive dialogue with academicians as well as CSOs to arrive at better definitions, approaches, and methods in calculating deforestation and to attempt to arrive at a national consensus.
- Meanwhile, for civil society organizations, our recommendations are as follows: 1) publishing annual deforestation numbers instead of per period so that the numbers can be compared directly with the government's data and/or 2) publish the data with more explicit explanations regarding the differences between the definitions/approaches/methods used and those used by the government to ease comparison, and 3) use the same data basis or periods under analysis to point out discrepancy or irregularities in the government's calculation of deforestation.

³⁵ <https://wri-indonesia.org/id/blog/satu-dekade-deforestasi-di-indonesia-di-dalam-dan-di-luar-area-konsesi>.

REFERENCES

- Bappenas RI. Angka Deforestasi Indonesia Tahun 2003 – 2006
- Bappenas RI. Angka Deforestasi Indonesia Tahun 2006 – 2009
- Biro Humas Kementerian Lingkungan Hidup dan Kehutanan RI. (29 Jan 2018). Angka Deforestasi Tahun 2016-2017 Menurun. Dapat diakses dalam http://ppid.menlhk.go.id/siaran_pers/browse/1025
- Directorate General of Climate Change Ministry of Environment and Forestry. (2016). Submission by Indonesia: National Forest Reference Emission Level for Deforestation and Forest Degradation.
- Direktorat Jenderal Planologi Kehutanan dan Tata Lingkungan, Kementerian Lingkungan Hidup dan Kehutanan RI. 2018. Infografis Angka Deforestasi Indonesia Tahun 2016-2017.
- Fabian Januarius Kuwado, "Jokowi akan Keluarkan Moratorium Sawit dan Tambang", diakses dari <https://nasional.kompas.com/read/2016/04/14/16062001/Jokowi.Akan.Keluarkan.Moratorium.Lahan.Sawit.dan.Tambang>. Diakses 25 Juni 2018.
- Forest Watch Indonesia. (2018). Deforestasi Tanpa Henti: Potret Deforestasi di Sumatera Utara, Kalimantan Timur, dan Maluku Utara. Dapat diakses dalam fwi.or.id/wp-content/uploads/2018/03/deforestasi_tanpa_henti_2013-2016_lowress.pdf
- Forest Watch Indonesia. Desember 2017. Silang Sengkarut Pengelolaan Hutan Indonesia. Diakses dalam <http://fwi.or.id/publikasi/silang-sengkarut-pengelolaan-hutan-indonesia/>.
- Greenpeace Indonesia. 1 Desember 2015. Indonesia Forest Reference Emission Level: Data Revisions, Omissions and Errors. Dapat diakses dalam [http://m.greenpeace.nl/Global/nederland/report/2015/Bossen/Indonesia_FREL_Report_GP_Analysis_20151201\(1\).pdf](http://m.greenpeace.nl/Global/nederland/report/2015/Bossen/Indonesia_FREL_Report_GP_Analysis_20151201(1).pdf)
- Instruksi Presiden Republik Indonesia No. 6 Tahun 2017 tentang Penundaan dan Penyempurnaan Tata Kelola Pemberian Izin Baru Hutan Alam Primer dan Lahan Gambut, Diktum Kedua.
- Kementerian Lingkungan Hidup dan Kehutanan RI. 2014. Statistik Deforestasi Tahun 2012-2013.
- Kementerian Lingkungan Hidup dan Kehutanan RI. 2015. Statistik Deforestasi Tahun 2013-2014.
- Kementerian Lingkungan Hidup dan Kehutanan RI. 2016. Statistik Angka Deforestasi Indonesia Tahun 2015 – 2016, Direktorat Jenderal Planologi.
- Kementerian Lingkungan Hidup dan Kehutanan RI. 2017. Statistik Angka Deforestasi Indonesia Tahun 2014 – 2015, Direktorat Jenderal Planologi.

Kementerian Lingkungan Hidup dan Kehutanan, "KLHK Terbitkan PIPPIB Revisi XIII," dikutip dari http://ppid.menlhk.go.id/siaran_pers/browse/951. Diakses 25 Juni 2018.

Kuwado, Fabian Januarius. "Jokowi akan Keluarkan Moratorium Sawit dan Tambang", diakses dari <https://nasional.kompas.com/read/2016/04/14/16062001/Jokowi.Akan.Keluarkan.Moratorium.Lahan.Sawit.dan.Tambang>. Diakses 25 Juni 2018.

Lukmana, Ferrika. "4 Peneliti Sepakati Sawit Penyelamat Kerusakan Hutan" diakses dalam <https://sawitindonesia.com/rubrikasi-majalah/berita-terbaru/4-peneliti-sepakat-sawit-penyelamat-kerusakan-hutan/>. Diakses 22 Juni 2018.

Paparan Menteri Lingkungan Hidup dan Kehutanan RI, Ibu Siti Nurbaya. 3 April 2018. Evolusi Kawasan Hutan, TORA, dan Perhutanan Sosial.

SindoNEWS.com. 17 April 2018. Perusakan Hutan dan Sanksi Korporasi. Dapat diakses dalam <https://nasional.sindonews.com/read/1298416/18/perusakan-hutan-dan-sanksi-korporasi-1523921111>

Taylor, Michael. 23 April 2018. Indonesia Environment Minister Rebuffs Groups Who Want More Forest Preserved. Dapat diakses dalam <https://www.reuters.com/article/us-rainforest-summit-siti/indonesia-environment-minister-rebuffs-groups-who-want-more-forest-preserved-idUSKBN1HU1HM>

Wijaya, Arief et.al. 19 Juli 2017. Satu Dekade Deforestasi di Indonesia, di Dalam dan di Luar Area Konsesi. Dapat diakses dalam <https://wri-indonesia.org/id/blog/satu-dekade-deforestasi-di-indonesia-di-dalam-dan-di-luar-area-konsesi>

Witjaksono, Hadi Djati. (2018). "Angka Deforestasi tahun 2016-2017 Menurun", diakses dari http://ppid.menlhk.go.id/siaran_pers/browse/1025, pada tanggal 22 Juni 2018.

Zik, "Perusakan Hutan dan Sanksi Korporasi", diakses dari <https://nasional.sindonews.com/read/1298416/18/perusakan-hutan-dan-sanksi-korporasi-1523921111>

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