

To: TAP and CFP

From: Government of Indonesia ERPD Team

Subject: Overview of the Changes in C Emissions and Reference Level from the January 2019 ERPD to the May 2019 ERPD

The purpose of this memo is to provide an overview to the TAP and to the CFP on the different changes in C emissions and Reference Level between the January 2019 version of the ERPD and the May 2019 (Final) version of the ERPD. Although these changes are explained in the ERPD itself, we offer this introduction so that you may more easily understand the net effect of multiple changes between the versions. There have been several changes in the approaches to C accounting from the January ERPD to the May ERPD. These changes have resulted in changes in the estimates of different components of the emissions as well as the total estimate of emissions.

The changes in approach which have led to changes in emission estimates include the following:

1. Removal of accounting for forest degradation emissions associated with logging. This was done at the direction of the CFP.
2. Limiting accounting for fire emissions to stable secondary forest lands. This change was made at the direction of the CFP.
3. A slight adjustment in the map-based estimates of land cover change used to conduct the sample-based estimation of area of forest change. This change was made to address a minor inconsistency in the January 2019 draft ERPD.
4. A change in how the sample-based estimates of area were extrapolated to provide estimates of area change by cover type by year. This change was made to reflect the fact that the sample-based estimation procedure yields an estimate of net cover change, but for purposes of the ERPD Indonesia requires estimates of gross cover change for each time period (i.e. counting only emissions, not removals). The rationale and procedure for this change is explained in Annex 12.1.
5. A change in how annual emissions from peat decomposition are calculated. This change was made in agreement with the CFP.

Taken together, the net result of these changes is an increase in the estimate of annual historical 2006-2016 emissions, from 62,930,885 tCO₂e/yr to 68,342,613 tCO₂e/yr, an increase of 8.60% relative to the January 2019 ERPD. Most of this change is due to inclusion of forest degradation emissions on production forest lands, which were formerly excluded from the accounting in order to avoid double counting with logging. Each of the changes is discussed in more detail below.

CHANGES IN EMISSIONS FROM DEFORESTATION

Draft	Emission from Deforestation				
	Living Biomass	Peat Decomposition	Peat fire in deforested area	Mangrove Soil	TOTAL
January	50,997,003	19,719	33,556	1,119,266	52,169,544
May	49,735,619	34,582	33,556	1,091,581	50,880,475
May - January	(1,261,384)	14,863	-	(27,684)	(1,289,068)
% difference	-2.47%	75.37%	0.00%	-2.47%	-2.47%

1. **Estimates of deforestation emissions from living biomass.** Estimates of deforestation emissions from living biomass changed from 50,997,003 to 49,735,619 tCO₂e/yr, a reduction of 2.47 percent. This is due to a slight decrease in the estimates of Activity Data (area of deforestation by cover type by year). There were no changes in the Emission Factors used to generate emission estimates. There are several reasons for this change:
 - a. The January 2019 ERPD contained a small discrepancy in the initial estimates of area used to generate the sample-based estimates of area and to calculate the emissions. That has been addressed in the May 2019 draft ERPD.
 - b. The January 2019 ERPD used the sample-based estimate of net 2006-2016 deforestation area change to generate area estimates by cover class and year. The May 2019 ERPD uses an estimate of gross change, i.e. excluding changes from nonforest to forest. Annex 12.1 provides more detail on the justification and method for doing this.
2. **Estimates of deforestation emissions peat decomposition.** Estimates of deforestation emissions from peat decomposition increased from 19,719 to 34,582 tCO₂e/yr, an increase of 75.4%. This is due to inclusion of peat emissions from years 2017 and 2018 in estimating annual emissions for peat over the Reference Period. This was a compromise agreed to between the Government of Indonesia and the CFP.
3. **Estimates of deforestation emissions from peat fire in deforested areas.** This estimate is unchanged from the January to May ERPD.
4. **Estimates of deforestation emissions from mangrove soil.** Estimates of deforestation emissions from mangrove soil decreased from 1,119,266 to 1,091,581 tCO₂e/yr, a decrease of 2.47%. This change is due to a slight change in the area of mangrove forest deforestation, for the same reasons as identified in (1) above.

Taken together, there is a net emission decrease from 52,169,544 to 50,880,475 tCO₂e/yr, a reduction of 2.47% from the January ERPD.

CHANGES IN EMISSIONS FRO FOREST DEGRADATION

	Emission from Forest Degradation				
	Living Biomass PF-SF	Peat Decomposition	Fire- AGB_Stable_SF	Logging in SF	TOTAL
January	3,988,212	955,904	1,871,242	3,945,984	10,761,341
May	14,701,508	955,904	1,804,726	-	17,462,138
May - January	10,713,296	-	(66,516)	(3,945,984)	6,700,797
%	268.62%	0.00%	-3.55%	-100.00%	62.27%

5. **Estimates of degradation emissions from living biomass.** Estimates of degradation emissions from living biomass increased from 3,988,212 to 14,701,508 tCO₂e/yr, an increase of 268%. This is due to a net increase in the estimates of Activity Data (area of degradation by cover type by year). There were no changes in the Emission Factors used to generate emission estimates. There are two reasons for this change:
 - a. The major reason for the change is that, in the January 2019 ERP, forest degradation emissions were not counted on production forest lands so as to avoid double counting with emissions from logging. In the May 2019 ERP, with the elimination of consideration of logging, we are now including forest degradation associated with land cover changes from primary to secondary forest within production forest lands. Production forest accounts for over 1/2 of the forest land in East Kalimantan, so including forest degradation on production forest lands leads to a sizable increase in the area of forest degradation, and therefore an increase in emissions.
 - b. The same changes in data and procedures for deriving the sample-based estimates of forest area, as discussed in (1) above, apply as well to estimating the area of forest degradation.
6. **Estimates of degradation emissions from peat decomposition.** This estimate is unchanged from the January to May ERP.
7. **Estimates of degradation emissions from fire in secondary forest.** Estimates of degradation emissions from fire in secondary forest have decreased from 1,871,242 to 1,804,726 tCO₂e/yr, a reduction of 3.55%. This change is due to limiting consideration of fire emissions to lands which were classed as secondary forest in 2006 and in 2016, i.e. stable secondary forest lands. The January 2019 ERP counted emissions from fire on all secondary forest lands. This change was made to avoid double counting in cases where secondary first was first burned, then subsequently was deforested.

8. **Estimates of emissions from logging in secondary forest.** The ERPD no longer accounts for emissions from logging in secondary forests, hence the estimate of emissions has decreased from 3,945,984 to 0, a reduction of 100%.

Taken together, the estimated annual emissions from forest degradation, all sources, has increased from 10,761,341 to 17,462,138 tCO₂e/yr, an increase of 62.3% due primarily to the elimination of logging emissions and the subsequent inclusion of forest degradation emissions on production forest lands.

And as noted earlier, the net result of all of these changes in deforestation and degradation is an increase in the estimate of annual historical 2006-2016 emissions from all sources, from 62,930,885 tCO₂e/yr to 68,342,613 tCO₂e/yr, an increase of 8.6% relative to the January 2019 ERPD.

For consistency with the above technical revisions, several parts of section 4 and respective annexes were edited as follows:

1. A footnote was added to explain the difference between the deforestation numbers in the new FREL and in the drivers of deforestation analysis.
2. The text was updated to account for the revised approach to monitoring degradation in secondary forests, which now does not include logging data related to RIL activities. Activities related to RIL were broadened to cover SFM policies in general. A paragraph describing these policies was added.
3. The data for IUPHHKs in East Kalimantan with SFM certificates was updated to 19 from 11 – 17 previously.
4. The annexes with the program indicators were revised to reflect the shift from RIL to SFM (Indicator 3.3, in Annex 4.1., 4.2., 4.2.a).
5. Information on “Regulations related Reduced Impact Logging (RIL) and Sustainable Forest Management in natural forests” was added to Annex 4.3.