Addendum/Corrigendum by Finland to the revised NFAP containing the recalculated FRL

Finland resubmitted its NFAP in December 2019 where it used a period of 2006 to 2009 for the ex-post calibration. In their examination, the Commission considered this period too short. Therefore, an extension of the calibration period until 2013 was suggested by Finland due to a new Forest Act that has been used since 1.1.2014 that changed the forest management practices. It was also agreed that the calibration is to be done against official GHG inventory reporting, without the modifications to the time series proposed in the NFAP. At the LULUCF Expert Group meeting 26.-27.5.2020 Finland received a paper by two members of the expert group suggesting not to use the year 2013 in the calibration. This approach was agreed in a bilateral meeting with the Commission on 11.6.2020, resulting that the calibration period used is 2006 to 2012. The calibration coefficient is calculated by combining Mela + NFI9 simulations for years 2006-2010 and Mela + NFI11 simulations for years 2011-2012, as proposed by the Commission.

During the FRL calculation and evaluation, it became evident that the MELA model overestimates the natural mortality of trees in the first simulation period. It has also been noticed that this overestimation is limited to the initialization period (first simulation periods) and not brought forward to the period of 2021 to 2025. The overestimation for the period of 2011 to 2015 is 5.0 mill. m^3 per year which equals 7.8 Mt CO_2 per year. This is based on direct comparison of natural mortality between GHG inventory (where natural mortality is based on statistics) and FRL estimation (MELA NFI11) for the period of 2011 to 2015.

The recalculation of natural mortality would also affect the litter input to the soil, but in this time frame it is impossible to conduct the full calculations, including those of soil carbon stock change. The effect of the change in litter input is rather small and will be implemented during following technical corrections.

Finland's approach is simple regarding technical correction, by modifying estimated FRL period of 2011-2015 by the difference of measured and modeled natural mortality, as described above. When calculating the ex-post calibration after the technical correction, Finland will replace the natural mortality produced by MELA for the years 2011 and 2012 by the natural mortality derived from the statistics and converted to biomass, and further to CO_2 as in the GHG inventory. Wildfires are excluded and will be added as a technical correction.

Using the approach described above the FRL will result to **-23 490 244 t CO_2 eq.** without HWP and to **-29 386 695 t CO_2 eq.** with HWP.

Table 1. Time series of forest land remaining forest land according to MELA modelling framework NFI9 (2006-2010) + NFI11 (2011-2012) and GHG inventory of Finland (Statistics Finland 2019) unit being tonnes CO_2 eq. Values have been provided with and without HWP. Table also includes updated ex-post calibration rates and updated FRL for Finnish managed forest land.

		2006	2007	2008	2009	2010	2011	2012	Sum	ex-post	FRL	FRL corr
MELA	FL rem FL	-24 441 870	-23 018 192	-29 718 584	-31 831 144	-30 449 247	-28 395 186*	-28 395 186*	-196 249 408	1.244	-18 883 837	-23 490 244
GHG inventory	FL rem FL	-38 064 285	-28 641 343	-31 355 949	-47 149 556	-31 973 502	-32 007 019	-34 929 627	-244 121 281			
MELA	FL rem FL + HWP	-30 001 708	-26 383 244	-31 423 544	-34 590 088	-33 322 854	-31 820 103*	-31 820 103*	-219 361 643	1.188	-24 729 344	-29 386 695
GHG inventory	FL rem FL + HWP	-42 827 195	-34 251 083	-33 141 199	-45 503 906	-34 168 912	-34 177 939	-36 604 437	-260 674 671			

*MELA + NFI11 modelling as described in the NFAP, but adjusting natural mortality to correspond to statistics as explained in this addendum.