Changes relating to HWP value in „Submission of information on forest management reference levels by Lithuania"

Table 1 should be replaced by the following table:

Table 1. Value of proposed reference levels (Gg CO_2eq).

Reference level*	
(A)	**(B)**
-4447	-4034

* The reported values are averages of the projected FM data series for the period 2013-2020, taking account of policies implemented before April 2009.
(A) with emissions/removals from HWP using the first order decay functions;
(B) assuming instant oxidation (provided for transparency reasons only)

Section "5 (e) Harvested wood products" should be replaced by the following text:

The contribution of HWP to the reference level of Lithuania amounts to **-0,413** Mt CO2.

It was calculated using the C-HWP-Model, which estimates delayed emissions on the basis of the annual stock change of semi-finished wood products as outlined in the 2006 GL (Rüter, 2011). The estimation uses the product categories, half lives and methodologies as suggested in para 27, page 31 of FCCC/KP/AWG/2010/CRP.4/Rev.4.

The activity data (production and trade of sawnwood, wood based panels and paper and paperboard) is derived from the TIMBER database (UNECE 2011) (time series 1993-2009).

In order to achieve accurate results, the HWP numbers have been calculated applying the sub-categories of sawnwood, wood based panels and paper and paperboard as specified in Table 12. Sawnwood includes the Items 1632 and 1633, wood based panels comprising of Items 1634, 1640, 1646, 1647, 1648, 1649 and 1650, and paper and paperboard corresponds to Item 1876.

Following conversion factors have been used:

Table 12: Conversion factors of considered commodities*

Classification		Description of commodity	Air dry density	C conv. factor	Source
FAO	UNECE		[g/cm³]	[Gg C/1000m³]	
1866	1.2.C	Industrial roundwood, coniferous	0,450	2,250E-01	Kollmann (1982), (oak, beech)
1867	1.2.NC	Industrial roundwood, non-coniferous	0,670	3,350E-01	Kollmann (1982), (oak, beech)
1632	5.C	Sawnwood, coniferous	0,450	2,250E-01	Kollmann (1982), (oak, beech)
1633	5.NC	Sawnwood, non-coniferous	0,670	3,350E-01	Kollmann (1982), (oak, beech)
1634	6.1	Veneer sheets	0,590	2,950E-01	IPCC (2003)

1640	6.2	Plywood	0,480	2,402E-01	IPCC (2003)
1646	6.3	Particle board	0,630	2,898E-01	Hasch (2002), Barbu (2011)
1647	6.4.1	Hardboard	0,850	4,165E-01	Kollmann (1982), Barbu (2011)
1648	6.4.2	Medium density fibreboard	0,725	3,190E-01	Hasch (2002), Barbu (2011)
1649	6.4.x	Fibreboard, compressed	0,788	3,504E-01	(50 % hardboard / 50 % medium density fibreboard)
1650	6.4.3	Other board (Insulating board)	0,270	1,148E-01	Kollmann (1982), Barbu (2011)
1876	10	Paper and paperboard	0,900**	4,500E-01**	IPCC (2006)

* Items 1866 and 1867 are needed for methodological reasons only (see following section), ** in [g/g] and [Gg C/1000t]

In order to only estimate emissions from HWP removed from forests which are accounted for by Lithuania under Article 3, in a first step, the annual share of carbon in HWP coming from domestic forests has been calculated.

Following equations were used as industrial roundwood is assumed to serve as raw material for the production of HWP.

(1)

$$ratio_{INDRW\ consumption\ from\ dom\ harvest} = \frac{(Production_{INDRW} - Export_{INDRW})}{(Production_{INDRW} + Import_{INDRW} - Export_{INDRW})}$$

(2)

$$Production_{HWP\ from\ dom\ harvest} = Production_{HWP} \bullet ratio_{INDRW\ consumption\ from\ domestic\ harvest}$$

The ratio (Equation 1) was calculated both for coniferous and non-coniferous industrial roundwood (INDRW, Items 1866 and 1867). For coniferous sawnwood and paper and paperboard, the ratio for coniferous industrial roundwood was applied. For non-coniferous sawnwood the ratio for non-coniferous industrial roundwood was applied. For the other HWP, the ratio of the annual mass weighted average of coniferous and non-coniferous industrial roundwood was applied.

As a result, this share of HWP produced from domestically harvested timber is presented as a percentage in Table 13.

The presented approach follows the initial assumption that all forests in Lithuania are managed, and in order to simplify matters,

it is presumed that all harvest is allocated to forest management. This assumption is to be verified and corrected where necessary. The final allocation of carbon in HWP to forests which are accounted for under Article 3 shall be part of a technical correction as suggested in para 15 quater, page 27 of FCCC/KP/AWG/2010/CRP.4/Rev.4.

Table 13: Historic time series of amounts and share of accountable carbon Inflow to the HWP pool [in 1000t C and %]

1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
237	248	298	424	381	371	350	417	407	447	502	506	504	518	526	510	461
100,0%	99,5%	99,7%	99,6%	96,5%	96,7%	97,1%	98,0%	96,5%	97,0%	97,9%	94,3%	93,8%	95,1%	91,0%	95,0%	94,9%

The annual carbon Inflow (= carbon in produced HWP) to the HWP pool prior to the year 1993 (first year for which activity data from TIMBER database (UNECE 2011) is available for Lithuania) has been calculated from the 5 years average from 1993 to 1997 and was assumed to be the constant carbon pool Inflow for the time period 1900-1992.

In order to provide a projection for the development of the HWP pool consistent with the assumptions on the future harvest, the rates of change of the Projected harvest (EC JRC, 2011) as compared to the last 5 years average of historic harvest, for which up-to-date data is available, was calculated (cf Table 14).

These projected growth rates as cp. to the average of the years 2003-2007 for Lithuania were applied to the same 5 years average of historic carbon Inflow to the HWP pool in order to receive the future Inflow to the HWP pool.

Table 14: Projection of carbon Inflow to the HWP pool

Average of historic harvest (2003-2007) [in 1000m3]	6.925										
Average HWP pool Inflow* (2003-2007) [in 1000t C]	511										
years	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Projected harvest rate [in 1000m3]	6702,29	6657,75	6613,2	6568,65	6524,11	6479,56	6435	6390	6346	6301	6256,82
Change as cp to historic harvest (2003-2007) [in %]	-3,22%	-3,86%	-4,50%	-5,15%	-5,79%	-6,43%	-7,08%	-7,72%	-8,36%	-9,01%	-9,65%
Projected carbon Inflow to HWP pool [in 1000t C]	494,777	491,488	488,2	484,911	481,623	478,334	475,046	471,757	468,468	465,18	461,891

*a similar approach was chosen by Kangas and Baudin (2003): ECE/TIM/DP/30

For calculating the pool of HWP in use, three half-lifes for application in the first order decay function have been used as suggested by para 7, page 31 of FCCC/KP/AWG/2010/CRP.4/Rev.4.

• Sawnwood: 35 years
• Wood based panels: 25 years
• Paper and paperboard: 2 years

The projected net-emissions are calculated from the annual stock change estimates following the calculation method provided in IPCC 2006, Vol.4, Ch. 12 (Equation 12.1).

Table 15: Historic (up to 2009) and projected net-emissions from HWP pool [in 1000t CO_2]

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
-162	-159	-156	135	86	-92	-539	-369	-329	-251	-491	-436	-562	-736	-721	-686	-710

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
-711	-624	-868	-553	-532	-510	-488	-466	-444	-422	-401	-380	-360	-340