The disadvantage of this approach is that the use of first order decay models tend to overestimate emissions, but the multiple time decay constant approach (e.g. Row and Phelps, 1996) can be used. Another disadvantage is that the accounting of emissions of manufactured product is done in years subsequent to production and these emissions increase as the HWP pool increases. Another disadvantage is related to when company has a new owner (which should continue the account for previous owner emissions) or start new accounting (when "start-up effect" is strong).

A.7.3.2.4. Comparisons and conclusions

In conclusion, all of the outlined methods have problems from an accounting perspective and do not accurately reflect emission reductions perspective and true atmospheric effect. If future emissions are accounted in advance (e.g. the landfill and 100-year approach), the company is in effect paying a C tax in advance. On the other hand, if emissions are accounted when they occur in subsequent years then all emissions and removals are not accounted in the year and the company may be prone to legacy risks in the future.

Comparison of the potential outcomes on implementing a HWP accounting method for the three HWP is summarised in Table A.5.

Table A.5: A comparison between the landfill carbon remaining approach (LCA), CCAR and 100 year approaches for accounting emissions and removals for paper production in a hypothetical mill (assuming production of 200 000tC/year based on the mass flow principle). The effect of using different half-lives and life-cycle retention values (FLC96 or FR). Retention fraction (FR) values are calculated using corresponding half-life values in the same row. The 2 year half-life (highlighted in red) is the current IPCC default for paper, and the FLC96 of 0.74 (highlighted in green) is the suggested value for paper based on an average of the data from Skog and Nicholson (1998) (see Table A.4).

S_{HWP} with landfill factor 96 year		S_{HWP} CCAR approach (using IPCC half-life) Year 1 of accounting		S_{HWP} 100 year approach Row and Phelps decay curve (FR are calculated at half-lives of 1 -10)	
FLC96	t CO_2 /yr	Half life (yr)	t CO_2 /yr	FR	t CO_2 /yr
0.74	**542 667**	1	366 667	0.05	35 911
0.8	586 667	**2**	**518 548**	0.06	41 553
0.85	623 333	3	582 050	0.06	45 758
0.9	660 000	4	616 661	0.07	49 298
0.95	696 667	5	638 407	0.07	52 445
1	733 333	10	684 228	0.09	65 416

As seen in Table A.5, the application of the landfill carbon remaining approach (LCA) approach, compared to the CCAR and 100-year method, offers a large advantage to the paper industry. It should be noted that the CCAR approach has a high "start-up value" but this will decline sharply regardless of future production outputs (Figure A.3).