

Supplementary explanation on “Harvested Wood Products Accounting” for the post Kyoto Protocol period

In the Conference of the Parties, thirteenth session (COP13), held in Bali in 2007, the Parties agreed to decide the reduction framework for the second commitment period from 2013 by COP15, which will be held in Copenhagen in 2009.

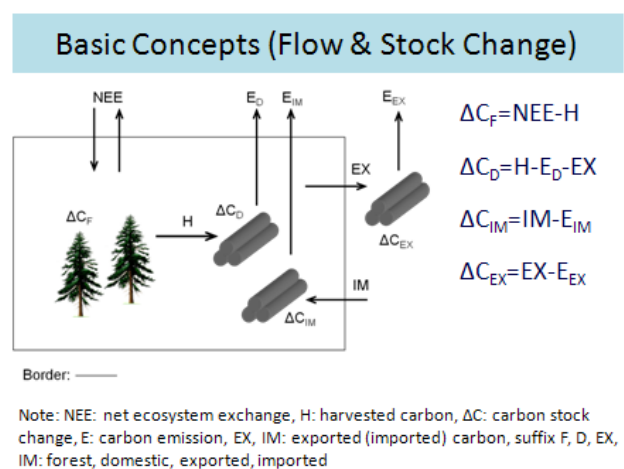
Two special working groups were also newly established. One of the groups, the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP), has discussed carbon absorption by forests including assessment of harvested wood products. The Forestry Agency and the Ministry of the Environment have sent delegates to AWG-KP sessions for international discussions. The Subsidiary Bodies for Scientific and Technological Advice (SBSTA) will investigate and compare technologies for assessing harvested wood products.

To reduce carbon dioxide, whose atmospheric concentration is only 0.04%, the most economic, feasible and efficient method is to increase the amount of carbon fixed in forests and wood by expanding forests and restoring degraded forests.

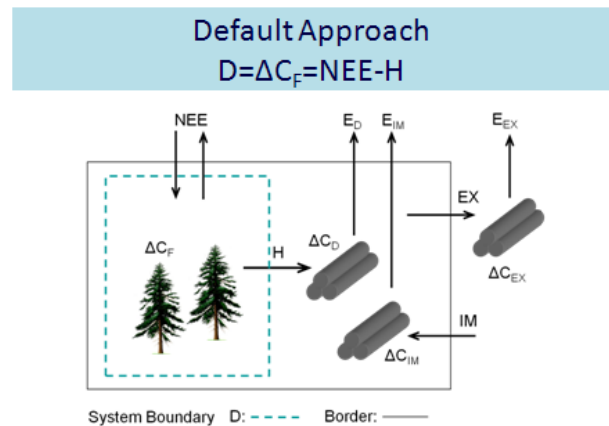
When forests are left without harvest (H), the absorption and emission of carbon dioxide reach an equilibrium, and the carbon stock in the forests levels off ($\Delta C_F = 0$), resulting in the forests losing their ability to reduce atmospheric carbon dioxide ($NEE = 0$). Under sustainable forestry, which involves harvesting less than the growth, the carbon stock in the forest does not decrease ($\Delta C_F \geq 0$), and the forest continues reducing atmospheric carbon dioxide and producing wood ($H > 0$). Increasing wood products so produced ($\Delta C_D + \Delta C_{IM}$ or $\Delta C_{EX} > 0$) results in isolating carbon produced by human society and reducing the concentration of atmospheric carbon dioxide.

Therefore, the maximum reduction of the atmospheric carbon dioxide concentration can be achieved by maximizing the amount of carbon fixed in forests and wood products ($C_F + C_D + C_{IM}$ or C_{EX}). Increases in carbon stock in forests and increases in wood products should be mutually balanced. Of the carbon fixed in trees, about 30% is used in long-life products. Thus, wood products should be used for a long time, and wood should be appropriately recycled in addition to increasing its usage.

Wood produced from sustainable forestry is carbon neutral, and burning wood instead of fossil fuels reduces emissions. Another effective way to reduce emissions is to use wood products, which can be produced with little energy, instead of products that require much energy to produce. To maximize the effects, the cycle of using wood resources should be promoted worldwide, in other words, the demand for wood products needs to be increased. This increase of wood products would substitute for alternative materials, and increased demand for wood would increase the wooden residuals that can be used as fuel.



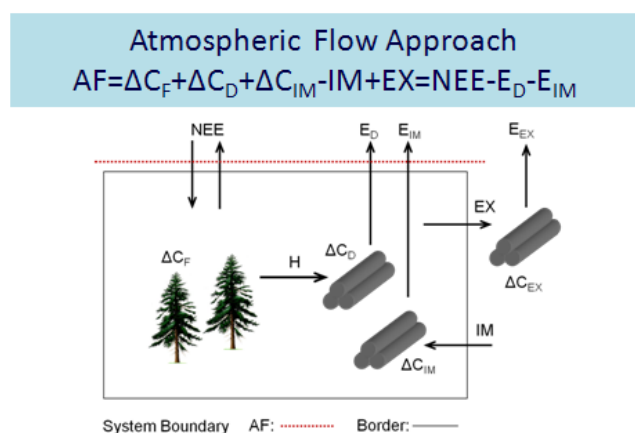
The default approach used in the first commitment period assumes that the amount of carbon in trees harvested during one year is equivalent to the amount of carbon emitted to the atmosphere by disposing of wood products ($H = E_D + E_{EX}$), and does not consider the effects of increasing wood products on carbon stock ($\Delta C_D + C_{IM}$ or $\Delta C_{EX} = 0$). Therefore, it gives no incentives for expanding the amount of carbon stored in long-life wood products such as buildings. Only the use of wood as an energy source has been promoted because burning wood instead of fossil fuel is considered to reduce emissions. Wood recycling is not promoted even though it is highly effective in saving resources and prolonging the storage cycle of carbon. Contributions by sustainable forestry are not considered either, although the changes in carbon stock in forests are approaching zero ($\Delta C_F = 0$) in the steady state, but wood is continuously produced.



The stock change approach, the production approach (including the simple decay approach), and the atmospheric flow approach are now proposed to assess the effects of increasing harvested wood products on carbon stock. Unlike the default approach, these approaches assess the carbon stock in harvested wood products. The approaches differ in terms of which country receives the credit for emissions reduction for traded wood materials; the approaches are the same when wood produced in one country is used within that country. For the entire globe, they yield the same evaluation results.

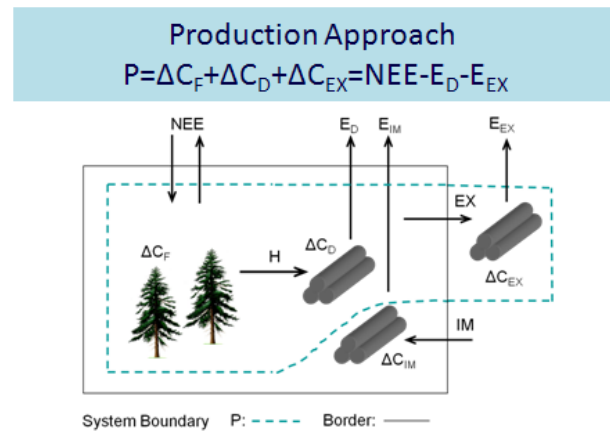
To assess the effects of carbon stock in wood, it is necessary to decide to whether to assess wood in solid waste disposal sites on the same footing as wood in use for buildings. Land filling is cheaper and easier than energy or material recycling but does not reduce the consumption of fossil fuels or resources. Thus, it does not suit the spirit of the Kyoto Protocol, which states that efforts should be correctly evaluated, and increases in carbon stock by land filling should be not treated as emissions reduction.

The atmospheric flow approach assigns the carbon absorption score to the country where the forest grows. Thus, it assumes that the carbon emitted by using wood, which is carbon neutral, is the same as that from fossil fuels, which is not carbon neutral. Thus, carbon emissions are smaller from fossil fuels than from wood because the latter is less energy efficient than the former. Because increases in carbon stock by importing wood cannot exceed the amount of imported wood ($IM > \Delta C_{IM}$), the approach does not give people incentives to use imported wood. Importing sawn wood and paper is more advantageous than importing raw timber because emissions from residuals and black liquor are assigned to the exporting country. The timber industry,

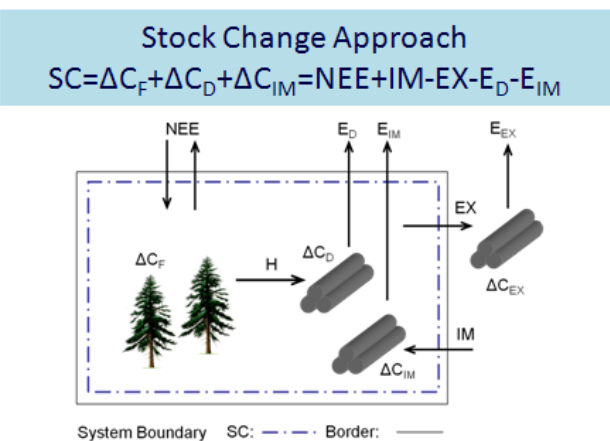


which imports timber and produces residuals, is considered to emit carbon. Because exporting timber counts as carbon absorption, the approach may encourage countries to destroy forests for exporting timber.

The production approach does not count changes in carbon stock from imported wood. Thus, it gives no incentives to countries having few forest resources to increase the use of wood and does not lead to greater worldwide use of wood. It is difficult to separate imported wood from domestic kind in the data used as the basis of reporting. The usage of wood is unknown and the results of calculations are not reliable. Exporting countries cannot control the use of wood in imported countries, and there is no relationship between the political responsibility of a country and assessment received. The approach does not meet the spirit of the Kyoto Protocol, which mentions that efforts should be correctly evaluated, because the person who most contributes to increasing the carbon stock should be the final user who selects wood products. Some consider that carbon is absorbed in the country that exports wood, but the idea of using wood resources is that consumption of wood promotes production of wood. It is important to understand that forests that are not used for wood production will someday mature and will no longer absorb any carbon. Because points for increasing carbon stock are assigned to exporting countries, the approach does not prevent forest destruction for timber production.



The stock change approach gives incentives to countries that have few forest resources and should import wood to actively use wood and increase carbon stock in the form of wood products. It encourages the trading of wood and gives economic benefits to countries that have forest resources. Increasing the economic value of forestry will suppress forest destruction, leading to increases in forest area. Expansion of sustainable forestry will also reduce the pressure for cutting natural forests, which must be protected. On the other hand, it may accelerate excessive cutting of forests in developing



countries that are not bound by reduction commitments today, and thus policies are needed to ensure appropriate forest management for long-term benefit, such as a forest authentication system in a broad sense. Of the proposed three approaches, the stock change approach results in the smallest gap in assessment scores among parties and conveys a positive message to both wood industries and consumers who select wood products that they are helping to mitigate global warming. Because the assessment focuses on changes in stock, the use of wood as fuel is still carbon neutral. There will be an appropriate competitive relationship between recycling wood, which helps to conserve resources and to maintain the carbon stock, and using wood as fuel, and the two processes are expected to be in balance.