Inadequacy (lunacy) of forest carbon accounting methodology

International Context

1n 1992 the UNFCCC framework (United Nations Framework Convention on Climate Change) agreement to reduce GHG emissions requires signatories to report on inventories of nominated Green House Gases (GHGs) that account for net emissions from nominated sectors, i.e. energy, transport, industry, land management etc. For developed countries, 1990 emissions were the reference point, the baseline.

In 1997 the Kyoto Protocol established emission reduction targets and market incentives for driving reductions, these being: mechanisms for emissions trading, clean development (CDM) (carbon credits for emissions avoided) and joint implementation (sharing of emission reduction targets across jurisdictions/countries). CDM was aimed at project development in developing countries whereby UN carbon credits would be received for every tonne of CO^2 avoided. Credits could start in 2005 when a treaty would be in place regarding how this would operate.

With regard to emission trading, Kyoto locked in the concept that energy from the combustion of wood is carbon neutral. It was determined that in for the calculation of emissions from the energy sector, where wood rather than fossil fuels was burnt, the emissions generated would not be 'counted' at the point of combustion (i.e. as emissions from the energy sector) but in the land use, land use change and forestry (LULUCF) reporting sector of the country providing the wood.

By 2005 the Kyoto Protocol and the Montreal Accord established (some) monitoring and compliance procedures including for monitoring land use, land use change and forestry (LULUCF).An Article 5.1 would address systems for estimating GHG emissions by sources and **removals by sinks.**

The LULUCF sector calculates emissions from changes in forest cover but a huge problem is that some countries don't even calculate this and if they do, the accounting methodology is not accurate, nor consistent. Effectively this meant that emissions from burning forests for energy in one country will often never be counted because it's the country supplying the wood, (the forest biomass) that is supposed to account for the 'emissions' lost from the carbon carrying capacity of its forests.

The most noteworthy problems with Kyoto approaches to accounting for forest carbon primarily relate to the a) definition of a forest and b) the baseline used for accounting purposes.

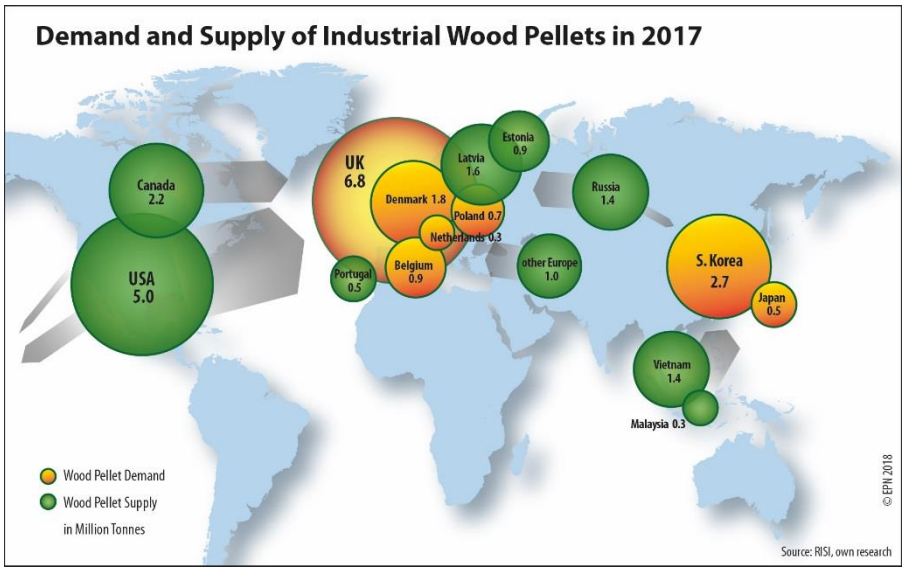
a) Treating old growth forests, natural wood production and plantation forests as equivalent allows logging older forests to be offset by planting mono cultures. This fails to consider the opportunity cost associated with logging native forests instead of allowing previously logged forests to recover their natural carbon carrying capacity. It renders impotent the single most important strategy for increasing forest carbon sequestration and establishing relatively stable forest carbon storage;

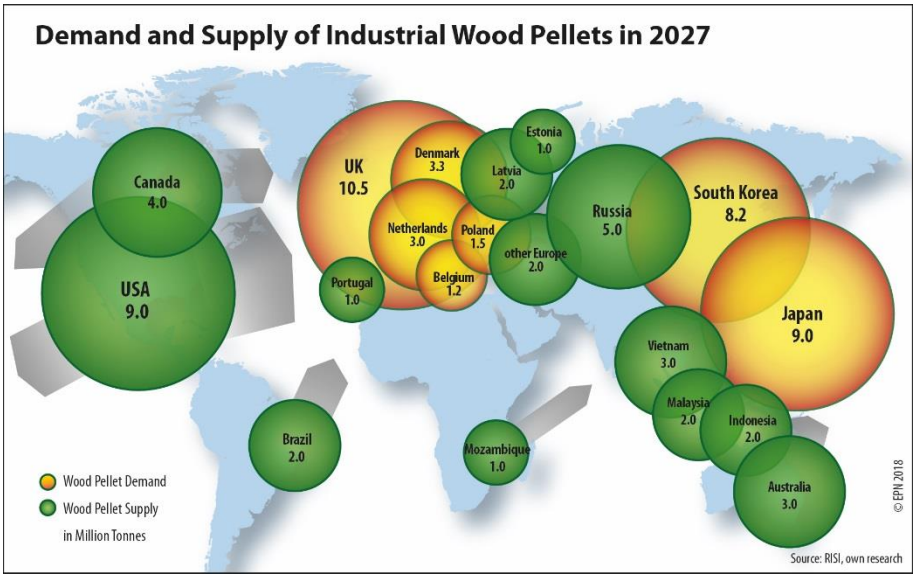
b) Rules that allow countries to use forward looking (rather than actual historic) baselines - that assume increases in emissions due to policy change - provide an opportunity to hide emissions from more intensive management practices including using wood for bioenergy.

Accounting in forests hides a multitude of problems that have yet to be addressed by the Paris Agreement. The problems are particularly egregious in regard to forest bioenergy/fuels.

a) Wood combustion per unit of energy generates more GHG than coal. There is NO immediate emission reduction benefit; rather there is an immediate emission increase.
b) Timeframes necessary for forests to recapture atmospheric carbon released during the combustion are not considered. Assuming no increase in forest area, whatever age a forest was when logged is the minimum age required to regain carbon lost when burned. Burning wood for bioenergy even from purpose planted forests established in 2020 and then burned every 10 years will make little or no contribution to climate mitigation by 2030 or 2050 – the milestones that will determine success or failure in limiting warming to 1.5-2 degrees.
c) The potential loss of the 'sink' capacity with premature logging for combustion is ignored; the fact that unlogged forests can store exponentially more carbon as they age is disregarded and unaccounted for.
d) Differences in approaches to accounting between non Kyoto and Kyoto signatories creates further loopholes. Kyoto signatories do not account for emissions from wood when burned assuming that they have been fully accounted when forests were logged and regardless of the coverage and quality of accounting in different countries – many of which are inadequate.

Substitution of wood for coal has increased exponentially over 10 years, as have global emissions. There is no international agreement to end this – yet.





The 2016 Paris Climate Agreement, (21ST Conference of Parties - CoP 21)

Signatories agreed to attempt to **limit** global warming to 1.5^{0} above pre-industrial levels, but to **commit** to no more than a 2^{0} rise. **Nationally Determined Commitments (NDCs)** to emission reduction could be met through a co-operative approach whereby countries could share emission reduction across jurisdictions by means of carbon trading and accounting. The NDCs would be reported on in 5 yearly intervals. The CoP's Article 6 set out how to implement market- and non-market-based approaches to mitigating climate change. Success would depend on sound carbon accounting methodology, a 'rulebook' yet to be established.

Progress or little progress in subsequent Conferences of Parties (CoPs)

Unresolved tensions around the 'flexible mechanisms' of the Kyoto Protocol, i.e. The Clean Development Mechanism and Article 6 of the Paris Agreement underpinned any attempt to finalise the "Paris Rulebook" at subsequent CoPs:

CoP 22 (Marrakech, 2016)
CoP 23 (Bonn, 2017)
CoP 24 (Katowice, 2018)

Carbon offsetting and trading provided for under the Kyoto Clean Development (CDM) mechanism was to come into effect after a 2005 treaty, but the scheme collapsed but not only because of the global financial crisis; the carbon trading price - unit per tonne of C emission avoided - had dropped from US $20 to $3. There is a plan to revivify this under another name.

Specifics of LULUCF Sector accounting:

The LULUCF reporting of a country's terrestrial carbon pools (carbon stores) and fluxes (processes by which carbon is transferred to and from the pools) is still not established. There are inconsistencies and gaps.

There is a lack of consensus on the application of Forest Reference Levels (FRLs): this approach considers country-specific forest characteristics and the age-related forest dynamics. Changes in carbon sink can depend on the age-class legacy resulting from past management and natural

disturbances, and the continuation of historical forest management activities, which may result in increase or decrease in harvest volumes.
In consequence, countries are not "penalized" if more harvest takes place in the future purely as a result of continuation of the historical forest management practices.

The European Union has revised its LULUCF accounting methodology allowing member countries to apply FRLs *at their own discretion*.[i]

It allows member states to increase their future harvest beyond that modelled in the FRL without directly penalizing their accounts, under certain conditions and up to certain limits.

This is a critical accounting issue. If reference levels are not set on genuine historic emission levels but on levels that will be 'adaptive' to future policy change with assumed increases in future emissions, emission increases will be hidden, unaccounted for and/or unpenalised. So far reference levels have been allowed to take into account 'assumed' future emission levels. There is a push back on this in Europe.

The approach taken in Australia

In 2012, a Federal Labor/Green agreement tried to close an aspect of Kyoto emission accounting by **not allowing native forest biomass** to be regarded as a carbon neutral fossil fuel substitute, thereby rendering it in eligible as a 'renewable' feedstock for large scale renewable energy credits (RECS).

In 2015 the Coalition government amended the Australian Renewable Energy Target (RET) and re-introduced native forest biomass into energy trading by re-defining t it as a renewable component of bioenergy/fuel, thereby eligible for subsidy.

Since then incentive funding programmes across Australia have facilitated burning and processing of native forest biomass for energy and fuel, which of course produces and incentive to continue native forest logging.

Also of note is that during the Madrid CoP, Australia lobbied heavily for previous 'left over' credits it had from the Kyoto protocol to be able to be counted towards meeting its Paris targets.[ii] In other words its Paris emission targets would in reality be less than they appeared.

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[i] EU, 2018. Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU (Text with EEA relevance).
[ii] https://www.smh.com.au/environment/climate-change/here-in-madrid-the-view-of-australia-s-tricky-tactics-is-not-pretty-20191206-p53hhi.html