Panel Discussion on Forests and Climate Change during the 6th Biannual Conference of the Taiga Rescue Network in Winnipeg, Canada, 20-26 September 2002

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In my presentation today I will try to follow the advice of Ricardo Carrere of the World Rainforest Movement, to start at the beginning when we talk about complex and seemingly complicated topics. This, I believe is particularly relevant when we talk about forests, climate change and the role of forests as stores, sinks and sources of carbon.

- Starting at the beginning means remembering and acknowledging that forests are more – much more- than a store that offers carbon.

Forests are libraries, pharmacies and groceries, they are an integral part of a way of life for millions of forest peoples around the world. They are a place where people go to seek guidance, and in many cultures past and present and around the world, women entrusted the umbilical cord of a newborn to a tree deep inside the forest so that that tree would guide and protect the new person through their time on Earth.

Many practices and ways of life have suffered and been destroyed already because a holistic view of what a forest is has been replaced by western values and an economic system, which have reduced the forest to a factory producing a commodity – timber. Of course timber is an important component of a forest ecosystem, but it is only one. The same can be said for carbon – forests are important carbon stores. But before we embrace a new commodity – carbon – which some claim could halt the forest crisis as well as slow climate change, we have to ensure we don't again loose sight of the forest – this time among the 'carbon sink'. This will require a clear understanding of the underlying causes of both climate change and forest loss and a factual analysis of the suitability of proposed carbon credit schemes to tackle these underlying causes.

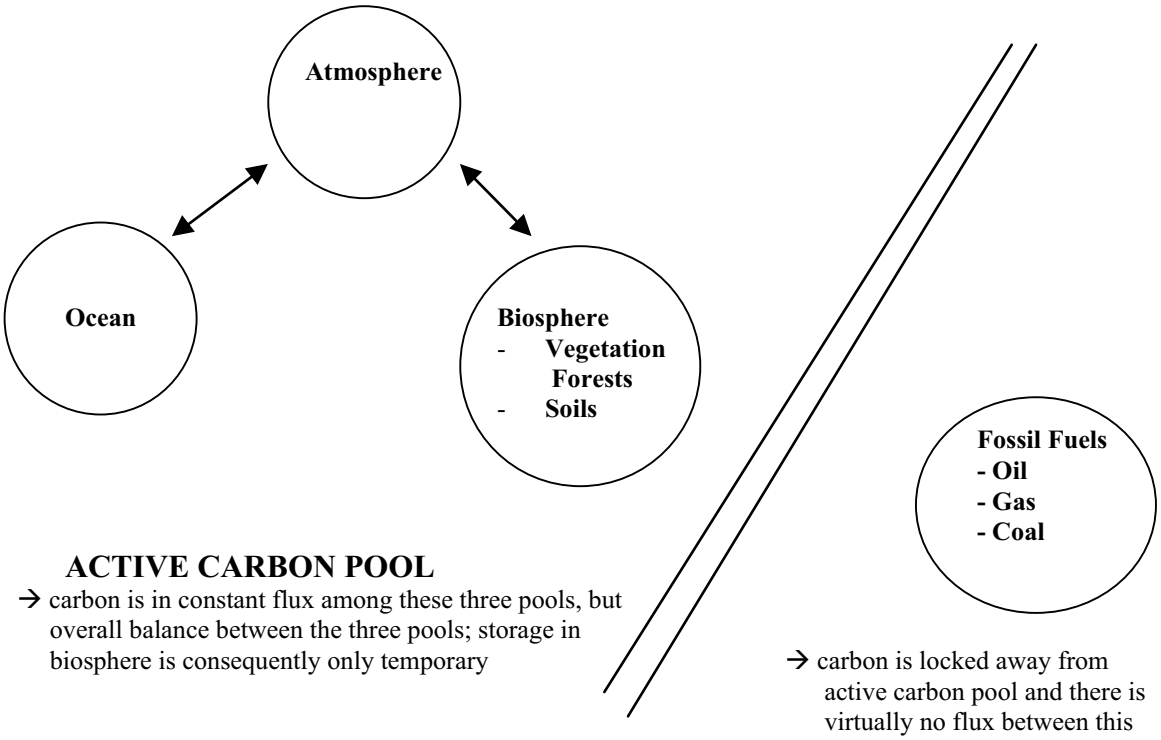
- Let's now have a brief look at why carbon has risen to such popularity in the climate change debate.

Carbon – more precisely carbon dioxide – together with a number of other greenhouse gases, plays a key role in trapping just enough heat from the sun to make this planet inhabitable. Too little carbon dioxide would mean too much heat were lost through the atmosphere, which would leave the Earth too cold a place to sustain life. Too much carbon means too much heat is trapped, the atmosphere acts like the roof of a greenhouse and the result is global warming. Hence carbon dioxide is also referred to as greenhouse gas.

Nature has devised a very intricate and complex system of checks and balances to keep the concentration of these greenhouse gases at just the right levels. Because carbon dioxide is the most abundant of the greenhouse gases, because it can be traced

more easily than the other gases, and because carbon is also a key component of vegetation and soils, it has taken center stage in the climate change debate.

The following diagram shows the four major carbon pools that are involved in shaping our climate, and the interactions between them:



ACTIVE CARBON POOL

→ carbon is in constant flux among these three pools, but overall balance between the three pools; storage in biosphere is consequently only temporary

→ carbon is locked away from active carbon pool and there is virtually no flux between this carbon pool and the other three *unless* humans decide to release carbon from fossil fuels through exploitation of oil, gas, coal

The atmosphere contains currently about 750 billion tonnes of carbon in the form of carbon dioxide. Forests contain about 2,000 billion tonnes of carbon, roughly 500 billion tonnes of carbon is stored in trees and shrubs and 1,500 billion tonnes as peat bog, soil and forest litter. Each year, about 5% of this amount, or 100 billion tonnes, is cycled through the atmosphere. This cycle is in rough balance (though deforestation destabilizes it), with about 100 billion tonnes carbon absorbed through photosynthesis, 60 billion tonnes released by decomposition and 40 billion tonnes released by respiration. [note that all three of these processes are very sensitive to temperature changes and will thus change with a changing climate – most likely in a way that accelerates the release of carbon and slows down uptake]. Similar carbon fluxes occur between the atmosphere and the oceanic carbon pool. However, there is no such interaction between the fossil fuel carbon pool and these other three pools of carbon (which taken together are also called the active carbon pool), the only time carbon from the fossil fuel carbon pool enters the atmosphere

is when we choose to extract and burn fossil fuels. There is no reverse flow back into that carbon pool – at least not in the time scales relevant for this discussion. Consequently, release of carbon from fossil fuels will inevitably lead to an increase in carbon concentrations in the active carbon pool.

- The carbon in the active carbon pool and in fossil fuels may be the same chemically, but it has a different quality: Carbon stored in fossil fuels naturally does not interact with the carbon in the atmosphere, it is locked away safely from the active carbon pool and is stored permanently in fossil fuels – unless we choose to burn fossil fuels

- Carbon stored in forests is stored only temporarily, it is in constant exchange with carbon in the atmosphere and can be released into the atmosphere quite easily through fires, decomposition, respiration of plants.

Starting at the beginning, we also see from the diagram that there are two underlying causes for increased levels of carbon dioxide in the atmosphere:

- Emissions from burning fossil fuels contribute 75% of current annual carbon dioxide emissions to the atmosphere

- Emissions from forest loss upset the natural carbon balance in the active carbon pool and are the source of about 25% of annual carbon dioxide emissions

Both of these underlying causes need to be addresses if we want to halt or at least slow down climate change.

- Increasingly, governments, industry, intergovernmental institutions and some NGOs are looking to the Kyoto Protocol to address both these underlying causes of climate change. More specifically, the option to achieve emission reduction commitments by generating and trading carbon credits has emerged as a lucrative means to avoid drastic emission cuts at source. In the last part of my presentation I would like to explore with you the dangers that such an approach poses.

The diagram above makes quite clear that we need to drastically reduce greenhouse gas emissions from fossil fuel burning to prevent rising levels of greenhouse gases in the atmosphere. And we also need to reduce drastically the emissions from deforestation and forest degradation. Planting trees seems an obvious choice – BUT there is at least one[1] big problem:

[1] There are more problems with this approach, for example that fact that a tree can be planted but not a forests and that more than planting trees is needed to halt the forest crisis. More detailed discussions on this issue can be found at the WRM website www.wrm.org.uy and also at the FERN website www.fern.org

- Under the rules of the Kyoto Protocol, for every tonne of carbon that is stored in a tree, an equivalent tonne of carbon from fossil fuels can be released into the atmosphere. This in turn means that the amount of carbon in the active carbon pool is still rising with every carbon sink credit. While in the books such a transaction of 'release one tonne and sequester one tonne and you're carbon-neutral' might appear as a contribution to slowing down climate change, in reality it does not, because such a transaction still INCREASES the amount of carbon in the active carbon pool. And that increase will mean that over time the concentration of carbon in the atmosphere will rise in reaction to the overall increase in the active carbon pool – even if for some time that overall increase is not apparent because the carbon is temporarily stored in a tree.

The idea of using carbon sink credits to halt climate change is based on the faulty assumption that 'carbon is carbon', an assumption that ignores the different interactions of the carbon store with the atmosphere, depending on where the carbon is stored. The idea also does not address the problem of excessive fossil fuel consumption at its root as long as it allows people to feel they can just render carbon-neutral their emissions from a quick flight to the Caribbean by commissioning a consultancy or charity to plant the required number of trees for them.

In addition to these basic fallacies, there are further problems with this approach once we look more closely at the Kyoto Protocol itself:

- The Kyoto Protocol gives the wrong incentives: The focuses is on carbon sequestration, hence more credits can be gained the faster a tree can grow , which in turn leads to an incentive for large-scale tree plantations. Examples of this perverse incentive are already evident[2]. Besides not addressing the root cause of climate change such projects are also at risk of furthering the forest crisis, where often the establishment of large-scale industrial tree plantations causes forest destruction.
- There are no safeguards that projects sequestering carbon at one place will not initiate carbon emissions elsewhere though displacing people for plantation establishment, changing market prices for timber [carbon credits as a potential subsidy], or displacing emitting activities outside project boundaries.
- The Kyoto Protocol ignores timescales of the global carbon cycle: A forest that is a carbon sink 'today' may well develop into a carbon source 'tomorrow', and may have been a carbon source in the past. Thus if a country claims carbon credits for forests on its territory sequestering more carbon than they release during the present time, they ignore that in the past the original forests on these lands may have been cleared, and released huge amounts of carbon into the atmosphere. Such is the case for the 'forests' in Europe and the US, which act as carbon sinks today. The fact that the release of carbon from destroying the primary forests in these areas happened before carbon accounting was in vogue does not matter for the atmosphere, but allows those countries to continue to emit more carbon from

[2] See Friends of the Earth, WRM, FERN (2000): Tree Trouble. www.fern.org

fossil fuel than they would if the Kyoto Protocol did not allow for carbon sink credits.

- Assessments of the amount of carbon stored and sequestered in forests can vary hugely, depending on the methodologies used, the assumptions made, and the carbon pools within a forests that are taken into consideration or ignored [e.g. soil, litter, below ground biomass]; Differences in assessments for Russia, Canada and Australia vary by as much as 565 million t C/ year among different assessments. These variations are bigger than the reduction target under the Kyoto Protocol, which is 200 million tC.
- The carbon credit approach may trigger a new wave of colonialism – CO2lonialism by increasing the historical carbon debt and superimposing that inequality onto the land: The more carbon a person / company in a northern country emits the more land it will be entitled to make up for its carbon emissions.

Finally I would like to stress that forests *are* important stores of carbon, and forests will be severely affected by climate change. Forests also undoubtedly have an important role to play in protecting local environments against weather extremes that we will experience in the wake of climate change. But for forests to fulfill that role effectively, we need to move beyond carbon credits and the faulty concept that a tonne of carbon sequestered in a tree can neutralize and justify the release of a tonne of carbon from fossil fuels. It cannot, and assuming it does - against well documented scientific evidence to the contrary will neither contribute to halting climate change nor to slowing down the global forest crisis. To achieve that we will have to

- significantly and drastically reduce greenhouse gas emissions at source,
- move to economies based on renewable energies
- address the root causes of forest loss.

In the context of the Kyoto Protocol the latter will not be achieved by a few carbon credit generating projects. Instead, shifting the focus of discussion to the role of forests as an important safeguard against weather extremes would lead to considering policies and measures that hold the potential to address root causes and ensure forests can fulfill their role in buffering weather extremes in the future.