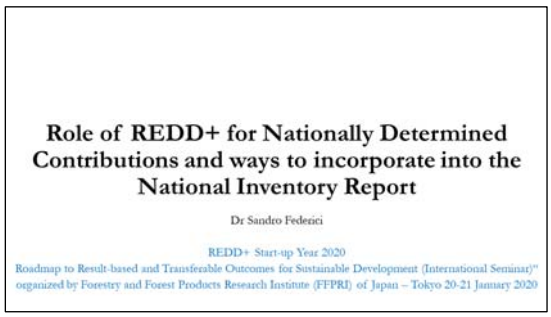
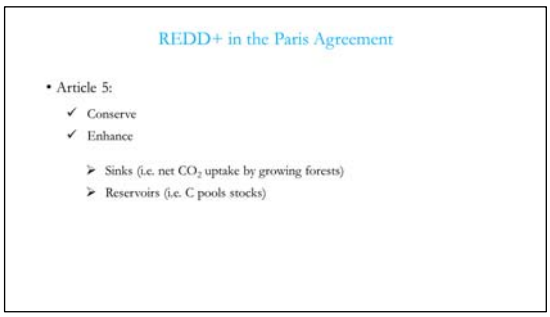
Role of REDD-plus for Nationally Determined Contributions and ways to incorporate to National Inventory Report

Sandro Federici (Intergovernmental Panel on Climate Change（IPCC））

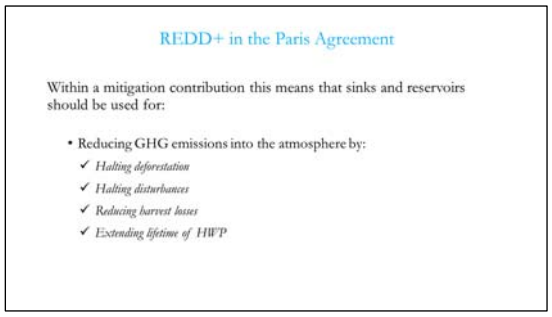
My presentation stems from the need to integrate REDD+ with the new framework, which is the Paris Agreement. Under the Paris Agreement, we have a new enhanced transparency framework with its rules and requirements, which is basically based on the National Green House Gas Inventory.

REDD+ in the Paris Agreement



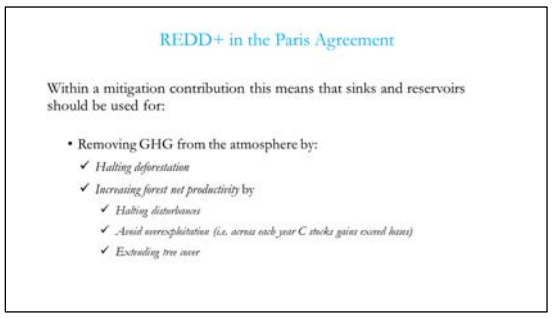


For REDD, we already have all the measuring, reporting, and verification (MRV) procedures, the monitoring system as the National Forest Monitoring system. How can these two reporting framework be integrated, and why? Article 5 of the Paris Agreement requires countries to take action with sinks and reservoirs in order to conserve and enhance them. A sink is a process that removes CO_2, so forest land is the most important sink at the moment. A reservoir is a carbon stock and a carbon pool that must be preserved since we not only need to remove carbon from the atmosphere but also to store it across time. We need the sink activity, but we must also avoid emissions, so we need to conserve the carbon in the pools.



What this means is, within a mitigation contribution, sinks and reservoirs should be used in two ways. One is reducing emissions, which means halting deforestation and disturbances. These include all natural impacts, but also anthropogenic impacts that are not planned, so excluding illegal logging, and whatever else is within the disturbances. Reducing harvest losses; since we may harvest in different way and we need to harvest

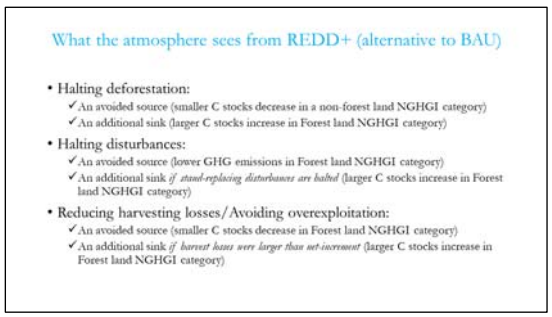
sustainably. Extending the lifetime of harvested products, so to move the carbon from the forest is a way to increase the amount of carbon stored through forest beyond the physical limit of the forest land and possibly for a longer time than if it was in the forest.



The other way is removing carbon from the atmosphere. This is now paramount according to the IPCC's latest report on 1.5°C. The next one, the Sixth Assessment Report[1], will be published in 2022. It is not enough to arrive to net-zero emissions. We need to go negative. It means that we need to have a sink. Again, at the moment, the only sink at scale that we have are forests.

However, I am very concerned about the impact of climate change on forests because now we are in a very lucky situation that forests are absorbing around one-third of our CO_2 emissions. In the future, if the forests are hit by climate change, we risk losing this natural sink. For removing, again, we need to alt deforestation, because when we lose a forest, we lose also a sink, so we need to keep the sink. We need to increase the forest's net productivity. Halting disturbances is a way, and avoiding the overexploitation of forests is another way. Also, extending the tree cover, so making new forest areas. These are the ways to mitigate.

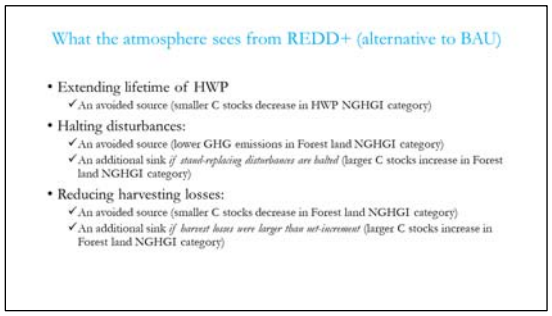
What the atmosphere sees from REDD+



We need to mitigate. Mitigation means that the atmosphere sees a decrease in its greenhouse gas concentration. The Green House Gas Inventory reports what the atmosphere sees as a result of human activity. The point of view is the atmosphere. We measure whatever goes into the atmosphere or is removed from the atmosphere.

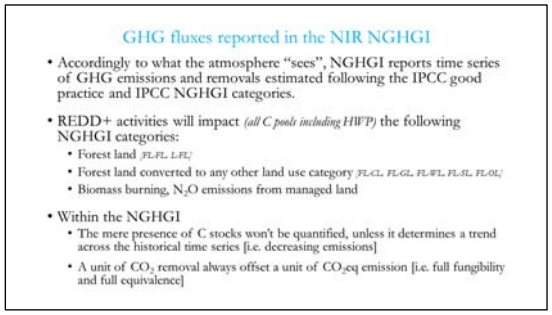
[1] https://www.ipcc.ch/assessment-report/ar6/

Halting deforestation means avoiding source of emissions, and having an additional sink through saving the forest. The same goes for halting the disturbances and for reducing harvesting losses. We have always the double aspect. We avoid the emissions, but very often there is also an additional sink that is associated. So there are activities that have not only a single plus, but have a double plus. They mitigate in both directions by avoiding emissions and also allowing for the sink to be there.



Extending the lifetime of harvested products, although it just delays such source, is very important because it may increase in practice the overall C stock associated with a forest. Carbon pools are limited, as any physical variable has a limit, and therefore we cannot store carbon indefinitely in the forest, but thanks to harvested products, the total carbon stock stored byf forests can be extended much more than just that stored within the physical limits of the forest.

GHG fluxes reported in the NIR NGHGI



According to what the atmosphere "sees", all emissions and removals associated with these activities are reported in the National Green House Gas Inventory, although categorized according to sources, and in the land sector, by land-use categories, that can be either a source or a sink according to the net GHG flux that originates from each of those. In practice, all the impacts that we have discussed in this presentation, in terms of reducing emissions because of halting deforestation, halting forest degradation, and so on, will result in our reporting of time series of GHG emissions and removals within those greenhouse gas inventory categories. Forest land includes sub-categories such as forest land remaining forest land, and land converted to forest land which is afforestation. In the deforestation areas, we do not have an activity or a category called deforestation in the inventory. We have several categories as forest land converted to crop land, forest land converted to

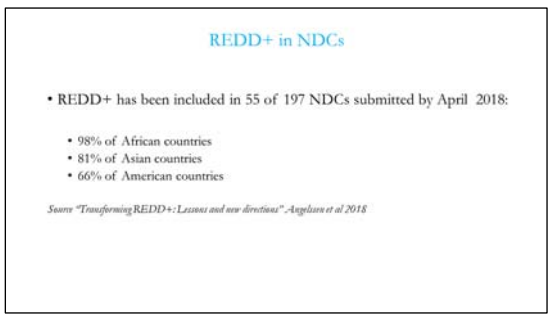
grassland, and so on. In all these categories, we will see a decrease in the source across time if we reduce the deforestation.

Then, we have biomass burning, which is a source category for non-CO_2 emissions. N_2O emissions from soil in managed land since when you have mineralization of soil organic matter, you release CO_2, but also N_2O.

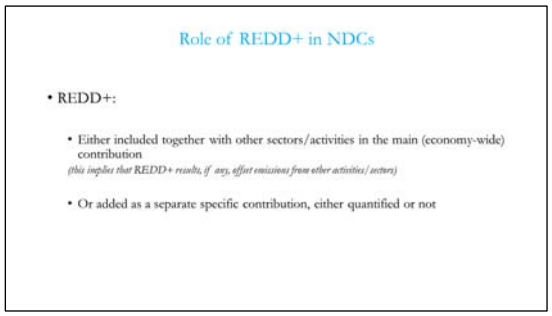
Another important aspect is that within the National Green House Gas Inventory, the mere presence of carbon stock is not quantified. If you keep the carbon stock in the forest, you will not see it in the inventory. Only if you reduce the emissions or have CO_2 removals, you see those. So whatever activity you wish to report that does not impact emissions or removals, but keeps an equilibrium situation in the inventory, you will not see it. This is very important because the inventory in the Paris Agreement Framework is the instrument also for reporting on the NDC progress. The NDC reporting framework is based on the inventory plus some additional information to track progress because you need information such as the action implemented on finance and technology, on capacity building, or on adaptation if any. However, the information on emissions and removals came from the inventory, so either you build activities that actually reduce emissions or add removals, or you will not be capable to integrate those activities within the greenhouse gas inventory.

Another very important thing is that in the greenhouse gas inventory, it does not matter from where emissions or removals occurred. Each source/sink is fully fungible with others, there is full equivalence. In the national total of Japan for instance, you have all the emissions from energy, from industrial processes, and from agriculture. Fomr those, you subtract all the removals from forest. Then, what matters for mitigation is the trend of the net balance across time, whether it is increasing or decreasing.

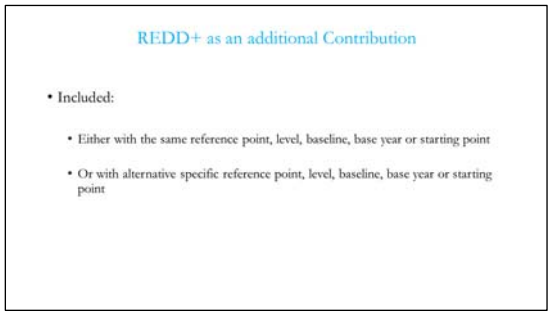
REDD+ in NDCs



In this is relevant publication from Angelssen et a, the share of REDD+ present in the NDCs of countries is reported. You can see that for African, Asian, and South American countries, it is quite present, but it has not always been included as a mitigation option.

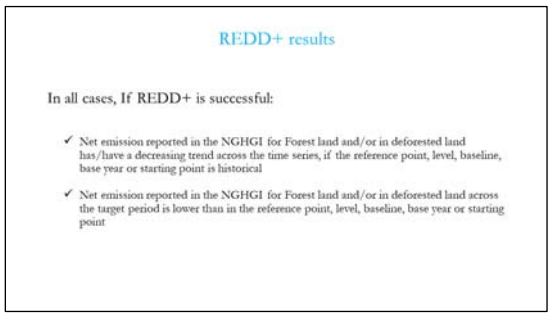


It has been sometimes put just for adaptation without reference to mitigation, so that is all different. In some cases, it is integrated in the NDCs, together with the other sectors. In other cases, it is a specific contribution and separate. It could be quantified in terms of carbon emissions and removals or just without any quantification in the case of adaptation for instance.



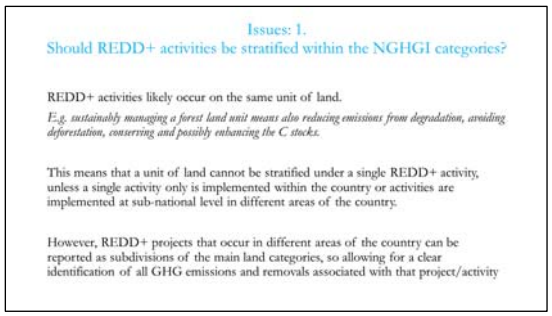
When it is included: In some cases, the reference point or baseline level is the same of the NDC. In most cases, it has a different reference point/baseline level than the NDC. In the inventory, you will look at whatever is the reference point for the entire country or sector, and then account accordingly. If the reference level and baseline for REDD+ is different than that of the NDC, the two numbers will not be equal. This is particularly relevant for those countries that have forest land within the NDC, plus REDD+ separated as an additional contribution or activity to achieve that contribution, but with a different accounting system.

This is the case of the most important South American country. It is called economy-wide target within the NDC, with a historic reference level, so it is very clear and easy to count. Then, REDD+ activities are reported to allow to achieve these goals, but the REDD+ reporting and accounting is based on numbers that are different (different baseline different methods applied to estimate GHG emissions/removals). This makes the two systems not capable to talk each other properly, so there is some need of translation. You need to do something additional, to build coherence among the 2 reported set of information.



Whatever the integration is, REDD+ success means that anyhow, across time, the net emissions are reducing. In the inventory, this can be seen or not, because if I put a baseline that is differs from the historical value present in my inventory, I may see in the inventory increasing net emissions even if I claim that REDD+ has been successful, because my baseline reference level target is far above the historical level. Anyhow, if REDD+ is successful, you will see a reduction in total emissions compared to whatever reference level has been set.

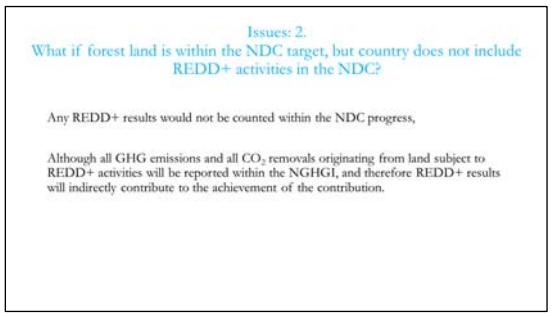
Should REDD+ activities be stratified within the NGHGI categories?



Three short questions and answers. Should REDD+ activities be stratified within the greenhouse gas inventory? This is important. The greenhouse gas inventory people usually say it is land-based. It means that we have land categories each of one over an area. Within this same area of forest, you may have multiple activities. For instance, if I manage a sustainable forest land, this means that: I reduce the emissions on this land because avoiding degradation, I avoid deforestation, and I am also conserving the carbon stock there and possibly also enhancing. So you see five activities occur just in the same piece of land. So I cannot stratify the five different activities into different units of land within the inventory, unless I end up with a totally meaningless result.

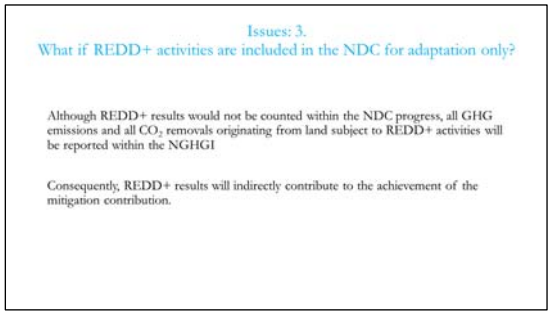
However, in the case of sub-national implementation, it is possible to stratify different activities within the same land sue category in the national GHG inventory. If you have a REDD+ project in a region and another REDD+ project in another region, you may report these two projects as sub-divisions of your forest land area within the inventory. This is very helpful for the stakeholders of both projects because to be reported within the national gas inventory is, in practice, a recognition by the country of the activity and also of the results, since the greenhouse gas inventory is an official, statistical data of the country, so it has a legal value. It is not just reporting.

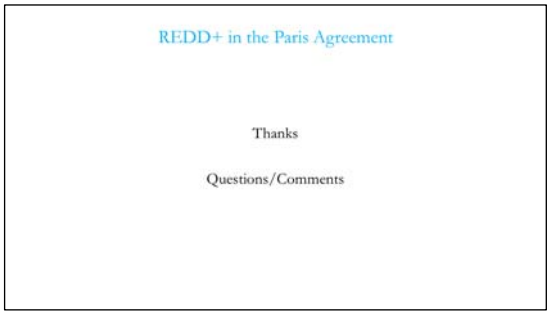
What if forest land is within the NDC target, but the country does not include REDD+ activities in the NDC?



What if forest land is within the NDC target, but the country does not include REDD+? As I said before, you may have a forest land in your NDC, but you could have not included REDD+ activities in the NDC. They are put outside. Sometimes the country did this to be sure that the money that goes to REDD+ is not used for NDCs in order to have double funds in practice. It is fair. It can be done, because there is a lot of need of finance. Of course in this case, REDD+ results are not counted directly within the NDC, but because REDD+ anyhow occurs on forest land, it is a mitigation activity, then in your inventory, you will see a reduction in net emissions, even if you may not capable to distinguish the driver of such change.

What if REDD+ activities are included in the NDC for adaptation only?





What if the REDD-plus activities are included in the NDC for adaptation only? Again, you do not stratify. You do not put those explicitly in your greenhouse gas inventory because they are not there. But again, because REDD+ in the end mitigate climate change, you will see in your inventory the result in terms of reduced emissions and possibly removals.