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The challenge of our generation

by Federica Bietta

We can jointly and globally achieve both the transition to renewable energy and the slowdown and reversal of deforestation processes. Time is short, but not too short

Inverting the course of climate change is the greatest challenge of our generation. Research from different scientific disciplines agrees on one clear point: we have 10 years, between now and 2030, to limit global temperature increase to 1.5°C. If we fail, it will mean that the world as we know it may undergo transformations[1]. Irreversible

Climate change is already underway. Increasingly frequent super-hurricanes, vast floods, prolonged droughts produced by scorching heat waves... and the list could go on and on: in the past, such extreme phenomena were reported every 500 years, while today they are part of our daily experience.

The global population currently suffering the effects of climate change, in most cases, is not clear on how to solve the problem. The Inter- governmental Panel on Climate Change (IPCC) indicates that carbon emissions from industry in 2050 should be 65-90% lower than in 2010. In practical terms, this means that 82% of known coal deposits, 49% of gas and 33% of oil reserves must remain underground.

[1] IPCC Special Report for 2018.

Although decarbonization seems like a huge task, we know what to do and, more importantly, that it is possible.

What lies ahead?

We have already reached a temperature increase of 1°C. The consequences of exceeding the 1.5°C threshold are serious and will affect not only the global climate but also national economies and the overall geopolitical landscape. Simply put, a global temperature increase of more than 1.5°C would cause:

– an increase, at five-year intervals, of 14 percent in the glo- bal population exposed to abnormal heat waves;
– A 17 percent increase in the frequency of rainfall of extreme violence;
– periods of drought lasting an average of two months.

The above series of events would result in a loss, in terms of global GDP, of 8 percent by 2100.

An even less clement picture presents the crossing of the 2.0°C threshold. An increase of this weight would exacerbate the stresses to which the Planet and its economy are subjected, resulting in a decidedly apocalyptic scenario:

– at five-year intervals, 37 percent of the global population will be exposed to extreme heat waves;
– the increase in the frequency of rainfall of extreme violence on earth will be around 37 percent;
– Periods of drought lasting an average of four months;
– the scenario associated with a 2°C increase in the planet's temperature would result in a 13% drop in global GDP in [2]1002.

[2] See IPCC, Naumann, G, Huang [missing bibliographic data].

What can we expect if we also miss the 2°C target?

With the scenario unchanged, we are already close to crossing the 1.5°C threshold today. Commitments under the Paris Agreement put us on a path to a global temperature increase of 3°C or more.

Consider the following reality:

- periods of drought lasting an average of ten months;
- Increased probability of ice-free Arctic summer each year to 63%;
- 67% of plants lose more than 50% of their climatic range;
- 67% of insects lose more than 50% of their climatic range.

Potentially, climate change reaches a point of no-return. Nor can it be forgotten that many island states such as Tuvalu, the Maldives, Fiji, and the Marshall Islands may disappear forever. Europe has already begun to see climate change refugees arrive, let alone what the 3°C rise may entail.

The great role of forests

Through photosynthesis, forests remove carbon from the atmosphere. When trees are cut down and burned, that carbon returns to the atmosphere. A recent study estimates that one billion hectares replanted to forest could remove 10 years of carbon from the atmosphere! For this to happen, however, we must stop deforestation globally. Forests are not only important because they absorb carbon dioxide from the atmosphere: about 70 percent of terrestrial animals and plants have their "home" in the forest. If we save the forest, we save them too. A UN rap- port made public in May [20193] was very clear: in the

[3] UN, *Nature's Dangerous Decline "Unprecedented"; Species Extinction Rates "Accelerating,"* New York, May 2019.

next decade, about one million species are at risk. The preservation of global biodiversity is one of the many co-benefits of forest conservation. In other words, without the contribution of the global forest we will not be able to avoid a 1.5° or 2°C temperature rise. Forests are the only sector that can halt-and potentially reverse-climate change and, at a reasonable cost, decarbonize the atmosphere.

The forest economy

If forests are so important in the fight against climate change and could protect over a million species over the next decade, why are we burning them? Because for centuries rainforests have been more valuable dead than alive.

From an economic point of view, it is not surprising that forests are being destroyed. There are obvious economic incentives for deforestation: for example, logging frees up land for agriculture and ranching. In tropical countries, forests are generally destroyed to make room for agriculture-whether by *slash and burn* practiced on a small scale mainly in Africa or by large-scale commercial operations, mainly in Latin America and Asia. The main im- pulse to put deforested areas under cultivation is due to global demand for soybeans and palm oil on the one hand and beef on the other.

For landowners, engaging in these productions is profitable. To live, it is necessary to feed oneself, have access to education, and receive medical care. On the other hand, maintaining forests that are still virgin has never been profitable: uncultivated land does not generate income, so there is a clear, albeit perverse, incentive to cut down forests.

As the world's population increases, projected by the United Nations to reach 9.7 billion in 2050, this perverse in- centage will only increase. If structural changes do not take place, the

ral ways of valuing ecosystem services, we can be sure that deforestation will continue to increase. The consequences, however, would be disastrous, because it would lead to an even greater increase in greenhouse gas emissions and a decrease in carbon dioxide removal from the air, along with a devastating loss of forest-dwelling species. In this case, it would surely be impossible to limit climate warming to less than 2°C-a situation that would force future generations to live in a hostile reality. The good news is that these are "incentives" that we - Western societies - have created and can change. The solution is to change them, making it so that maintaining forests in their natural state is more profitable than destroying them.

Forests capture and store carbon from the atmosphere, without their owners receiving compensation. Industrial countries have capture and storage technologies that attract substantial funding, to the point that several companies are beginning to provide this service on a commercial basis. Why not find forms of payment to be given to landowners who use their forests as natural struc- tures to capture and store carbon for humanity?

A solution

In 2004, the Coalition of Rainforest Nations, led by Michael Somare, the then Prime Minister of Papua New Guinea, and Oscar Arias, two-time President of Costa Rica and 1987 Nobel Peace Prize winner, highlighted the market failure with regard to forests and sought to reverse the perverse incentives.

Why does a rainforest country like Papua New Guinea feel the urgency to come up with a solution to properly assess rainforest preservation and in a way that contributes to the imminent decarbonization of the atmosphere? Although it has no responsibility in climate crises, Papua New Guinea was the first country in the world

to find themselves in need of relocating an entire village made uninhabitable by rising sea levels. Papua New Guinea and Costa Rica have involved many other rainforest countries making this argument:
"we did not create the problem, but we can be part of the so- luation because we are already suffering from it."

These countries worked together under the United Nations Climate Convention to create the REDD+ mechanism in order to establish forms of payment for rural communities to incentivize them to leave their forests intact and in this way help support global decarbonization efforts. Although the REDD+ mechanism is an important capstone to the work of the Coalition of Rainforest Nations, unfortunately, Article Five of the Paris Agreement among the countries of the United Nations Framework Convention on Climate Change, like many other aspects of the agreement, has been largely ignored by the global community that enthusiastically signed it only four years ago.

What is missing?

How do we reward countries that keep their forests intact or work to expand them? According to the IPCC, one hectare of tropical forest removes approximately four tons of carbon from the air. If we were to pay forest owners, for example, $80 for each ton removed, according to the specia- le report commissioned by French President François Hollande and presented in May 20174 by Nobel laureate Joseph Stiglitz, Sir Nicholas Stern and Professor Geoffrey Heal, they would receive revenue of $320 per hectare each year. This sum is more than the landowner could make from raising livestock or growing soybeans, but pro- bably less than what oil palm plantations would yield. To halt the growth of oil palm plantations, the price

[4] *Report of the High-Level Commission on Carbon Prices*, May 2017.

of carbon should be raised to over $100. A consumer boycott of products that use palm oil grown in deforestation areas and customs duties on the product would also have a positive outcome.

Where to find the money needed to reward forest owners for carbon dioxide removal? One possible source is the Green Climate Fund, which is part of the United Nations Frame- work Convention on Climate Change (UNFCCC). Another could be public funds provided by major developed nations. The limitation of these solutions, however, is that the funds depend on donations from rich countries and can be withdrawn at any time, all it takes is a change of government or the occurrence of an economic turnaround.

A better alternative would be to create the conditions for private financing and allow large corporations in rich countries to pa- compete carbon storage in forests, which they could then claim as matching credits under their countries' emission-limiting policies. For example, they could receive credits to be used in a *cap-and-trade* system or to obtain exemptions from a *carbon tax*.

Grasping the essentials

In recent weeks, the world has been petrified at what the media has presented as the Brazilian Amazonian rainforest fire. Should we believe literally what we have been shown? What lessons can we learn from it?

To begin with, we cannot ignore the positive news that has come from Brazil. For example, the total reduction in deforestation rates achieved in that country since 2006 amounts to 7.2 billion tons of carbon. This is a huge success. In fact, deforestation now affects an area that is half the size it was a decade ago. Second, it must be pre- cised that the rainforest does not burn easily. Most of the

ongoing fires have occurred on already deforested land. This is a *slash and burn* agricultural practice *that has* been practiced for millennia and is intended to make the land more fertile.

Unfortunately, through the REDD+ mechanism, Brazil received payments that covered only about 4 percent of the total cost of this major achievement. To make matters worse, most of this very modest funding went to NGOs and not to farmers and ranchers interested in more sustainable land management.

Because we know what to do, we need to focus on how to overcome market failures and, in particular, avoid middlemen and those who seek annuity positions.

Looking ahead

Decarbonizing the world and saving more than a million species destined for extinction is within our power, as long as we start considering forests as an important part of the solution to the climate crisis.

We all need to work to update outdated economic models that are incapable of valuing natural ecosystem services such as ac- qua filtration, biodiversity preservation, oxygen generation, etc. Human life cannot sustain itself without a healthy environment and forests.

Creating the device to save global forests based on Article Five of the Paris Agreement was the most difficult part. At this point, moving on to implementation should be easier. But, to achieve this goal, both rainforest nations and developed countries must work together.

Although billionaires dream of flying to Mars or other worlds more re- motive, Earth is the only currently habitable Planet in our universe. If we stop and think about it, our current behavior will appear as-

solutely irrational. Earth will survive, but humanity may not.

Fortunately, we have the tools to achieve two processes simultaneously and on a global scale: the transition to renewable energy and action to slow, stop and then reverse deforestation. Yes, time is short, but not too short. As President Obama said, "We are the first generation to feel the impact of climate change and the last generation that can do something about it."

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