

A Bretton Woods of low carbon in the era of financialisation



Alfredo Sirkis

Executive director of
Centro Brasil no Clima,
journalist and writer.

Tackling climate changes cannot be the exclusive responsibility of governments, almost all of which are indebted and running high deficits. A portion of the \$220 trillion circulating in the international financial system must be drawn to the productive investments required for building low-carbon economies. It is already possible to establish economically-valid unit value for carbon reduction. This can generate a new monetary standard that reconciles environmental protection with strengthening of the global economy.

Recently, the conservative Time magazine chose as its cover story a striking critique of what it defined as the financialisation of contemporary capitalism. In other words, this means an economy where the financial capital fails to adequately supply the productive sector and circulates primarily in a world apart, one of the multiple forms of speculation. This situation contributes to the stagnation of the world economy, with mediocre growth and the constant risk of recession, despite low interest rates and inflation (Brazil is an extreme case: recession with inflation and high interest rates). Globally, financialisation contributes, among other factors, to the structural unemployment, poor growth, income concentration, indebtedness and public deficit, which have incited austerity measures that tend to generate vicious circles.

At the same time, climate change has become a major challenge for humanity in this century. Its consequences are already clearly visible: larger and more frequent floods and inundations; accelerated melting of glaciers at the poles and in mountain ranges; rising and acidification of oceans – which have come with the alarming scientific predictions of heat waves, droughts, forest fires, huge losses in agriculture and food production, repeated damage to urban health, transport and communications infrastructure, as well as new risks of new pests and diseases, migrations, tension and conflicts. The civil war in Syria was preceded by five years of drought, a collapse in agriculture and mass migration to urban peripheries.

As a consequence of the increasingly intense and frequent climate change, there are mounting losses for the world economy, with entire segments increasingly exposed, such as the insurance and reinsurance sectors. It is clear that the process of climate change will lead to growing economic losses, which have already been partially quantified and greatly exceed the investments necessary to tackle the problem, keeping global warming of the planet below two degrees over the century.

There is therefore a double historical necessity: restore growth and productivity in the global economy and finance the transition to low carbon economies. Both are deeply linked. The solution depends on the capacity to mobilize at least part of the “locked” capital in the global financial sector, bringing it to the productive sector and, within it, to investments in low-carbon economies and, in the future, carbon-neutral.

Countries no longer have the resources available to them in the past. Most of the world’s money is not in their hands, even if they

charge taxes or take ownership of oil export earnings. They still have much power, but it is decreasing. Any realistic analysis of public financial resources and internal political circumstances of the governments of the United States, the European Union, Japan and most other developed countries will reveal that they would have extreme difficulty in financing this process.

In fact, it will be difficult for them to be able to faithfully comply even with the commitment has already pledged – an annual contributing of US\$100 billion for the Green Climate Fund for mitigation and adaptation actions as of 2020. Some kind of accommodation in this disbursement will inevitably be negotiated, which increases after 2025. It is said that a large part of it can come from an AAA Fund, capable of capturing resources on the financial market. Governments of developed countries would offer guarantees for the fund. However, this debate still has not happened in the Standing Committee on Finance of the United Nations Framework Con-

vention on Climate Change (UNFCCC), where there seems to be a dialogue among the deaf: explicit accusations on the one hand, implicit denials and delays on the other. Even if the US\$ 100 billion were materialized, the problem would not be solved. It is estimated that the annual demand for mitigation actions consistent with the 2oC trajectory is approximately US\$ 3 trillion per year (US\$ 1 trillion only for the energy transition).

It is an illusion to imagine that governments will be able to promote mitigation and adaptation through public investment, as occurred during the Marshall Plan after the war. This investment continues to be strategic both to finance the transition to low-carbon/neutral-carbon economies and to accelerate the pace of the world economy. The question is: How can this be done? What kind of public investment? What would it be directed to? This investment can play a catalytic role in scientific and technological research, which is essential to the desired transition, which, among other things, in-

volves abandoning fossil fuels. In addition, it can offer guarantees to new financial mechanisms created to leverage the transition to low carbon/neutral carbon economies. Along with a civilizing pressure of world public opinion and civil societies mobilized against the financialisation of the global economy, governments need to create new mechanisms to encourage and guarantee investments that require large initial outlays and have a slower return. Today, these types of finance are typical of development banks, including the multilateral ones, such as the BIRD, BID and in the future the development bank of the BRICS and the Asian bank. That's not enough.

The global economic and financial system has flows and their dynamics that historically go in the opposite direction to what would be necessary: the so-called "markets" still bet heavily on fossil fuels. The auspicious information is that a process of "disinvestment" is in motion that already strongly affects coal. Sovereign wealth funds, such as Norway's, pension funds, major universities and even families with large fortunes are beginning to withdraw their investments in coal and, in some cases, oil. The recent drop in oil prices is a two-edged sword: it inhibits large investments that increase future emissions, but, to some extent, hinders clean energies, especially in the transportation sector, making the electric car less competitive, for instance.

Some rightly say that the Stone Age did not end for lack of stones, but because our ancestors learned

to make tools and weapons with metals. So must the era of fossil fuels to be replaced by the clean energies. However, a push from politics and the new signs in the economic game will be necessary.

Economics is intended to be an exact science, but it results from circumstances and human historical needs. Today, a central issue is climate change, with its announced catastrophe and its tendency to exacerbate many other problems. A new economic and financial order is needed so that we can tackle the great challenge of the era in which we live. Its cornerstone is the recognition of the social, environmental, economic and financial value of decarbonisation.

New realities in the economy often have as their starting point international political and diplomatic arrangements that relate to some pressing historical necessity. This was the case of the contemporary economic system, structured in 1944, at the end of World War II with the Bretton Woods agreement that created the World Bank and the International Monetary Fund. The gold standard was also instituted, serving as the financial backing for the dollar in relation to most other national currencies. This gold standard was different from the one previous to World War I, because it was much more comprehensive. In 1971, in the Richard Nixon administration, facing the risk of a significant decline in reserves, abandoned gold as collateral. The dollar remained the currency-standard, but dissociated from gold. This was good for the

We need a new economic order capable of promoting the transition from carbon-intensive to low-carbon economies, in order to prevent the climate changes underway from becoming catastrophic.

United States, but not necessarily for the rest of the world.

John Maynard Keynes had proposed in Breton Woods a new international currency, the "Bancor", but the proposal was not accepted by the United States. Although the gold standard/dollar mode and many of the suggestions on foreign exchange and international trade have not survived, the Bretton Woods conference structured relations of the world economy for the post-war. It was completed a few years later by the Marshall Plan, a huge package of outright American public investments, to rebuild war-torn Europe with remarkable success.

Gradually, the idea has been suggested that the era of the climate change and the global eco-

conomic stagnation should be a kind of “Bretton Woods of low carbon”, i.e., a new economic order to promote the transition from financialisation to a new cycle of the productive economy: from the carbon-intensive era to a low-carbon/carbon-neutral one in order to prevent climate change from becoming catastrophic – and which comes with the extra perks of combating local air pollution, job creation, reduced health spending, technological development etc.

What can we do to make the issue of climate change no longer just a matter of governments, but also a matter of economics? Negotiations at the UNFCCC as-

sume that governments may impose rules that require a cut of gas emissions large enough to stabilize climate. However, for this to be possible, low-carbon productive investments must be lured from the world economy, at least a portion of this huge mass of money circulating today through financial markets – which is outside the control of governments.

The current effort is insufficient

After the Climate Change Conference held in Paris in December 2015 (COP-21) Conference, the glass may be fuller, but it is still half empty. How empty or

full is the object of a debate that will not end anytime soon. There was a breakthrough with regard to the outline of an instrumental action plan that, if objectified and accelerated, will be able to help the next conferences on climate. The political, diplomatic and cultural context for a civilizing turnabout is being created that can produce something exponential, especially in the economic field.

Therein lies the hope of our species, which is has been paving the way to extinction, like the dinosaurs, which can still avoid this tragic fate. The climate negotiations in the UNFCCC join 196 governments with equal sta-



Global warming is very serious. However, to face it and keep it under control, it is not necessary that 196 countries cut their emissions significantly: a much smaller group of nations can take this decision.

tus, from the United States to Maldives, from China to Tuvalu. This is attractive from the point of view of the high ideals that inspired the creation of the UN, but does not reflect the power (of destruction and change) that each country has on the climate. In fact, to achieve the “2 degrees and 450 parts per million” paradigm, it would not be necessary that 196 countries cut their emissions significantly: it would be enough that a much more restricted group did so.

In 2011, the ten largest emitters, in descending order, were China, the United States, the European Union, India, Russia, Indonesia, Brazil, Japan, Canada and Mexico. This becomes important when we think of “closing the account”, surpassing what was voluntarily committed by all the countries during the COP-21 process. Considering all of the goals presented in 2015 and

assuming that it will be fulfilled by 2030, we will have exceeded the global emission required to put the planet on a two-degree trajectory by 15 gigatons (billion tons of equivalent CO₂).

China, United States and the European Union are responsible for more than half of the emissions. But if we look to the future, decades ahead, we realize that other countries may have a much greater weight than the current in GHG emissions. The most obvious case is that of India itself, which now exceeds China in GDP growth and is installing more coal plants (although, in parallel, it also expands the supply of solar energy). Other Asian, African and the Middle East countries will play a bigger role in the future. Thus it is necessary to identify trends and act proactively, especially in relation to coal. Each new coal plant emits for thirty years at least.

Here appears another problem: in the final analysis, governments are responsible for the emissions that occur in their territories, but their ability to drastically and efficiently impose reductions to third parties (companies, energy providers, drivers, farmers, consumers) depends on a series of political, governance (government run quality) and governability (ability of a government to enforce public policies) factors. We talk a lot of emissions of countries, but in fact, they are not emissions of nation-states, except in cases of state enterprises. The emitters are companies, human conglomerates and consumers in general,



and the control of governments on these processes is relative. Even where the economy is still largely state-controlled, as in China, the central government no longer controls everything. In the provincial and local levels there is a strong obstruction to a drastic reduction in the use of coal, for example.

In the democracies, the process of “command and control” over the economy and its externalities is complex. Therefore, as we shall see, one cannot imagine that governments will solve the problem by themselves. Many companies emit more greenhouse gases than several countries together. They need to be directly engaged and charged, participating in the various business forums on decarbonisation and associating themselves to the negotiating process. This has been one of the limitations of the process led by the UN.

This process has two features that are unlikely to be changed: (a) the responsibility of emissions is given in the place of emission and not where the products are consumed and (b) the so-called parties of the negotiating process are just national governments. Thus, China – where Japan’s, Europe’s and the United States’ industries were “relocated” and from where products are exported to consumers from these markets – is solely responsible for its emissions. Even if investors and consumers are across the sea, the onus is only assigned to the country where emissions occur. On the other hand, national governments negotiate decisions that must be later implemented by pri-

vate companies or regional and local governments that fail in following the process.

To put the planet on a path under the two-degree objective, it will be necessary to diversify ways and multiply consultations beyond the UNFCCC. We have already seen that in 2030, in an optimistic hypothesis, 15 gigatons will be needed – equivalent to one and a half China of emissions – to achieve a trajectory compatible with two degrees.

The Intergovernmental Panel on Climate Change (IPCC) still conducts studies to estimate the possibility of achieving something close to 1.5 degrees, but this seems to be an impossible goal without geo-engineering solutions.

To make possible the path “of less than two degrees” it will be necessary to reach carbon-neutral societies sometime between 2055 and 2070. In order to approach the 1.5 degree mentioned in the Paris Agreement it will be necessary to obtain greater decarbonisation of the economy. In addition to the geopolitical, cultural and political difficulties, inherent in many countries, there is a fundamental question in common: the transition to low-carbon economies requires relatively high levels of investment, of approximately US\$ 3 trillion per year, which makes the US\$ 100 billion of north-south transfer mentioned derisory, although it is in the discussion and debates in the UNFCCC.

Not surprisingly, the Achilles’ heel of the COP-21 and the UNFCCC is the issue of financing the

transition to the low-carbon economy and the adaptation. The Standing Committee on Finance is the epicentre of this paralysis. Since the beginning of the process, the idea that developed countries should finance the mitigation and adaptation processes in the developing countries has predominated. It comes from the notion of “historical responsibilities” in the greenhouse gas accumulation in the atmosphere, which creates an obligation by the “polluter-payer” principle. Although this notion has never been officially recognized by the developed countries and has given rise to significant caveats, an obligation in the UNFCCC was set up since the Convention that developed countries should contribute in a larger scale to tackle global problems, notably those related to climate change, although this has never been clearly analysed.

Leaving mitigation exclusively in the hands of developed countries, as understood in the paradigm of the Kyoto Protocol, means giving up any chance of achieving a two-degree trajectory, since the developing world emissions are today higher than the developed one’s: China is responsible for 1/4 of global emissions and India has become the third largest emitter (if we consider the countries of the European Union separately) or the fourth (if we consider the European Union as a country).

The greater involvement of developed countries in financing mitigation and adaptation actions has been accepted and consecrated when the Green Climate Fund

was established. They are expected to contribute from public, private, multilateral and bilateral sources with US\$ 100 billion annually from 2020 onwards. Just before COP-21, only US\$ 10 billion had been effectively allocated, although there were mentions to US\$ 60 billion which had been “promised”.

Currently, most observers think that the US\$ 100 billion will be collected in 2020, but only a small part will be directly available to the Green Climate Fund. Most of it will probably come in the form of guarantees to leverage private funding. A good start would be to redirect spending directly or indirectly, subsidizing fossil fuels. In a 2013 study, the IMF calculated the cost of subsidies at US\$ 480 billion, and the overhead costs, including externalities costs, at US\$ 1.9 trillion. The elimination of these subsidies would release resources that could be invested directly in clean energies and energy efficiency, improving the competitiveness of other sources instead of fossil fuels, now subsidized. In some countries, however, the end of these subsidies is a very delicate political process, which will require compensatory measures for population groups affected by possible inflationary effects on basic products. Anyway, the best time to tackle the issue of subsidies for fossil fuels is the current one, when oil prices are low.

The elimination of these subsidies is just a transition component. It will be necessary to do something even more ambitious:

what is conventionally called “new international financial order” or metaphorically a “Bretton Woods of low carbon”. Today, the central problem of humanity is climate change, with its promised disaster and its tendency to aggravate all the other problems. A new economic and financial order is necessary in order to face the problems of the era in which we live. Its cornerstone is the recognition of “the social, environmental, economic and financial value of decarbonisation”.

New economic mechanisms for decarbonisation

In addition to direct public contribution and the elimination of subsidies to fossil fuels, there are roughly three families of possible economic mechanisms: the carbon credit markets, the real pricing and the so-called positive pricing.

I) The carbon credit markets were created following the Kyoto Protocol of 1997, they consist of enabling an agent to fulfil their goals by “buying” the reduction of emissions from another. It is a mechanism that after all is quite limited and subject to misuse, to double counting, to speculative operations and frauds in certain situations.

COP-21 created an alternative to this “market” after a competent negotiation, the two main agents of which were Brazil and the European Union. Found in Article 6 of the Paris Agreement, this is a “voluntary cooperation”

involving “the use of mitigation results transferred internationally to nationally determined contributions.”

We face the challenge of updating the “carbon markets” to the context inaugurated by COP-21, in which all countries have their Intended Nationally Determined Contributions (INDC), with a vehement decision of halting the “double counting” and sanitizing these markets from their previous sins. Can this mechanism operate in this new context? At first glance, the interest in it would be lower than it seemed in the early days of the carbon credit market, which financed many important projects of mitigation in several countries, including China and, to a lesser extent, Brazil. It was hard to avoid double counting, when developing countries did not have any internationally registered target for mitigation and there were many gaps in secondary markets of such credits. One cannot say that the carbon credit market has been useless, becoming a speculative deception. Despite distortions and stumbles, it played a positive role.

Even reviewed and supposedly worthy of interest, which is not correct, the carbon credit markets are structurally limited in their scope. They are essentially a mechanism to streamline the fulfilment of established goals. In a situation where all countries already have their voluntary emissions targets, it tends to be even more limited. The “carbon markets” are not able to trigger and guarantee the exponential process required to make the



global transition to low-carbon economies, producing a dramatic decarbonisation in the second half of the century. For this purpose, trillions of dollars per year must be invested. To mobilize resources on such a scale, it is necessary to price carbon in the two aforementioned modes, the “real pricing” (essentially a tax reform, country by country) and the “positive pricing” (the carbon reduction, for which the COP-21 produced an effective action in the 108 paragraph of the Paris Agreement).

2) Real pricing for carbon taxation would be the backbone for a more robust and global mitigation action, since it allows the incorporation of usually ignored externalities: inputs, processes,

products, services and technology, according to the carbon intensity – including the cost of damage caused by their contribution to the climate change and local pollution. Thus, fossil fuels would receive a reality shock. There are frequent complaints that clean energies such as the solar and wind ones are still too expensive (although their cost has fallen spectacularly), so that coal and oil are the most recommendable from an economic point of view. However, the numerous subsidies, direct and indirect, given by governments to fossil fuels are not included in this amount.

Externalities resulting from burning of these fuels are also not included. What does that mean? An externality is a direct

or indirect negative consequence, but with a clear cause-effect relationship. Let's imagine a coal plant near a city like Beijing or a steel mill in Santa Cruz, in Rio de Janeiro. As local effect polluting agents, they cause a large amount of respiratory diseases. This requires a strong increase in the expenses of the health systems. In cities like Beijing or New Delhi, these emissions are horrible. According to the World Health Organization, there are annual 7 million premature deaths from exposure to air pollution. In addition, greenhouse gases reinforce the climate changes, floods and droughts, the economic cost of which is also not perceived. Of course, the consequences of global pollution of greenhouse gases are more dif-

fuse than the toxic fog that smothers New Delhi: we must consider the increasing of floods, droughts, losses in agriculture, heat waves, damage to infrastructure etc.

These and other externalities are not included in the calculation of the price of coal or gasoline. It is time to do it, and taxation is the way. This precise calculation is not trivial, but the reality is clear: fossil fuels imply global and local externalities that need to be incorporated into prices. The best way to do this is taxing carbon, incorporating to its price the damage it causes to society in medical costs, environmental damage and others.

Some claim that coal is good for India because it is cheap, plentiful and easy to obtain. Do these

people consider the costs to air pollution in the cities, spending with health and accidents in the mines, in addition to the global climatic effect? Local air pollution causes public health costs of up to 43 billion euro in the European Union – even with all its technological capacity. It is possible to imagine the situation in China and India, where coal causes almost apocalyptic consequences. Once externalities are incorporated, things that were cheap become expensive.

The carbon taxation also enables the clean and renewable energy sources to compete equally. So far, however, it has not significantly evolved. Participants of the Kyoto Conference in 1997 chose the path of “carbon credit markets” instead of the carbon

taxation. Australia adopted it in the following election, but the Conservatives abolished it when they retook government. Voters did not like the price increase in the electricity rates.

This real pricing makes the intensive carbon more costly, helping to improve the competitiveness among clean energies and technologies. It raises an additional amount to be invested in the low-carbon economy and helps to establish a more socially fair tax system. This should be done without increasing in the tax burden, replacing taxes on labour and the investment by taxation according to the carbon intensity.

This is a battle to be fought in each country, since the tax systems and subsidies are nation-



al. At the global level, a positive sign from the UNFCCC to all the countries is a possibility. There is not the necessary consensus yet. In the Paris Agreement there was only an oblique reference to carbon pricing, in a section which deals with non-governmental contributions. It appears in the fifth part, which deals with “non-party partners,” at the end of paragraph 136: “[the decision] also recognizes the important role of providing incentives for emission reduction activities, including instruments such as domestic policies and carbon pricing”. This real pricing, however, is already being practiced by many national and sub-national governments, besides companies, including major energy companies, such as Shell.

The expectation is that the carbon price allocation advances in countries at national, regional and local levels, and on businesses. An increasing number of companies are already setting up a shadow price in its operations, related to the emission intensity at different stages of production of their product or service.

Tax reforms, taxing carbon instead of other taxes and eliminating fossil fuel subsidies, will help to create a more favourable economic environment for the transition. They will occur gradually, country by country, reaching the companies. They will hardly result from a global agreement, although UNFCCC can gradually create a more favourable environment for national, sub-national and corporate advances.

3) Positive pricing. The carbon taxation is the “truncation”, while the positive pricing is the “carrot”. We assign in it a price not directly related to carbon, but to its reduction or removal (by the so-called “mitigation activities”). It is a process still under construction, whose first step was taken at COP-21 with the recognition of the “social and economic value” of mitigation actions. The genesis of this positive pricing of carbon reduction is in paragraph 108 of the Paris Agreement, which “recognizes the social, economic and environmental value of voluntary mitigation actions and co-benefits for adaptation, health and sustainable development.” Like so many others, this formulation and its location in the text were the result of commitments with different types of objectors. It was a bit of a baroque negotiation, but it preserved the basic device, i.e. the recognition that the carbon reduction (mitigation actions) means value. Those that reduce greenhouse gas emissions will generate an intrinsic economic value. A form of pricing different from carbon pricing was thereby established. They are not opposed, since each one has its own usefulness.

Future mechanisms to apply this recognition and boost low-carbon investments, “mobilizing the trillions,” will only tangentially pass by UNFCCC. The essence of this construction will probably happen through a “climate club”, to be composed by interested governments, central banks, development banks, mul-

With the G20 support, national and sub-national governments, central banks, development banks and multilateral agencies can constitute a “climate club” to boost investments.

tilateral agencies and possibly sub-national governments. At some point, it will require a G-20 push. It depends on the UNFCCC system to certify emission reductions, which should relate to the successor mechanism of carbon credits. Its currency will be the “emission reduction/removal certificates”, guaranteed by governments and operated by a system of accredited institutions.

Which driving mechanisms of investment may come from “positive pricing”? Initially we can think of two of them. The first one would consist of carbon reduction certificates – guaranteed by a number of governments, central banks, development banks and multilateral agencies – with which decarbonisation certified projects could pay part of their debt. Companies, governments and civil so-

ciety organizations could partially reimburse funding for these projects. Such certificates would be absorbed by an international fund, guaranteed by governments or by a pool of institutions that would accept converting them into currency for the project financing bank. These certificates could generate a private secondary market, the green bond type. Instead of being tied to specific projects, they would keep the dynamics of the increasing demand for reduction/removal of carbon, to the extent that the Intended Nationally Determined Contributions of the countries were reviewed in an increasingly ambitious way, according to the Paris Agreement.

The second one would be a specific mechanism to compensate the “early actions” of mitigation, completed ahead of schedule and/or the “additional” actions, the ones beyond the target set in the Intended Nationally Determined Contributions of the intermediate country. They would be remunerated with a “climate currency”, which would be exclusively used to acquire products, services and technology, leading to a subsequent reduction of emissions and generating a virtuous cycle.

A Bretton Woods of the low carbon

Before even putting into practice any of the aforementioned mechanisms, another one already in full operation would need to be redirected. This is the “quantitative easing”, by which central

banks – previously the American “Fed”, currently the European Central Bank – inject liquidity into the economy by buying a wide range of government securities, companies and financial markets. This indiscriminate purchase, including dubious titles – the so-called “junk bonds” – provides resources that could go to the production system, but are often put back by banks in the speculative wheel. The great solution would be directing a substantial part of this quantitative easing explicitly to the transition to low-carbon economies, by acquiring or offering guarantees to emission reduction/removal certificates and bonds (or climate currency) linked to the remuneration of these “anticipated” or “additional” mitigation actions.

It is necessary to establish a “friendly” backdrop in the international financial system for the transition towards the low carbon economy. We have already seen that the global demand for this transition is currently estimated at US\$ 3 trillion per year. In the energy sector alone, it is \$ 1 trillion. This money will not come from governments, almost all of them heavily indebted and with a negative balance. It would not come from the Green Climate Fund of the United Nations either, which so far has only saved US\$ 10 billion, with the promise of another US\$ 60 million. No one believes that it will reach the goal and there are doubts about it being able to spend these savings effectively. Meanwhile, there are around US\$ 220 tril-

It is possible to reconcile the fight against the climate challenge with the productive recovery of the global economy in order to recover from the current stagnation towards a new production cycle.

lion circulating through the various circuits of the financial system in various applications. How is it possible to attract a portion of it for low carbon productive investments?

Although no longer able to directly finance these US\$ 3 trillion annually, the governments would probably be able to collectively provide the necessary guarantees so that these resources could finally leave the large speculative financial circuits and finance a productive low carbon economy, tending to carbon-neutrality.

This, in large part, will probably be articulated outside the UNFCCC, under the G-20 (the group of countries with the twenty largest economies) and the multilateral financial system. Tackling climate change cannot be just an exercise among gov-

ernments. The civil society and the citizens must actively participate. And the actions to reduce emissions need to work not only from the climatic point of view, but also from an economic point of view. This takes on a new meaning if we consider the unit value of carbon reduction, as approved in paragraph 108 of the Paris Agreement.

There is an initial scepticism about financial products and devices to be created from this value recognition. Would it be just a Bitcoin business, simply a virtual currency of the internet and social networks?

We don't think so. We're talking about a real value. The Stern Report, from a working group of leading economists commanded by British Lord Nicholas Stern, calculated in a very detailed way the total damage that climate change caused by the "greenhouse effect" will inflict on the global economy. It calculates between 5% and 20% of GDP, depending on the calculation of various indirect costs.

Let us consider the 5% scenario. If global GDP in 2014, which was US\$ 77.6 trillion, were our basis of calculation, we would have a loss of US\$ 3.8 trillion per year. Obviously, this cost estimate would have to be projected in time (2050? 2010?) and fixed by the governments based on a calculation from experts. Although it cannot be done with precision, this "official number" has been sought several times.

From the moment a number is set that measures the damage

inflicted on the global economy in a given period, it is possible (and even relatively easy) to establish the value of each ton of carbon that is no longer emitted. If we recognize this as a "unit of value", we can even imagine that the carbon reduction would be a new "gold standard". The gold standard had several "lives" in different ways: in the strongly liberal economy of the late nineteenth century, in the years after World War I, between 1944 (Bretton Woods Conference) and 1971, when the United States abandoned it, the dollar itself taking its place in a way, with growing problems and conflicts. The adoption of the gold standard reflected an old monetary practice, but it is in fact a human convention, something established in a negotiating table. It could have been some other metal – silver was considered at some point – or a commodity.

"Value" is something humanly arranged in a given historical context and reflects a human need. Therefore, when it is agreed that the carbon reduction represents a unit of value because it has social, economic and environmental value, as the Paris Agreement has done, a new wind is now blowing in the world economy. If we imagine that the possible consequence is attracting large resources for productive low carbon economy, with investments that can reduce emissions of greenhouse gases, we realize that this may be an important element to "close the account" of 15 gigatons left over

in 2030 – even if all current targets are met.

Here's an idea that needs to be considered: carbon reduced or removed is the new gold! Currently, there is nothing capable of producing a new international financial order, as was the Bretton Woods Conference. The UNFCCC, the International Trade Organization (ITO), the OECD and the Bretton Woods institutions – the World Bank and the International Monetary Fund – or the control circuit of the Basel agreements, act separately, each one in their particular area. Perhaps the G-20 is the body capable of promoting the wide, necessary consultation. If in the future humanity is able to face the challenge of keeping the temperature rise below two degrees (or come close to 1.5), surely the aforementioned mechanisms will play an important role in the coming decades. They will establish the points of intersection between the answers that humanity must give before the emergence of climate changes and the need for global macroeconomic recovery, reversing the process of speculative financialisation with a new development cycle: one of the low-carbon or carbon-neutral economies. There is a consistent convergence between what needs to be done to face the climate challenge and what can facilitate a productive recovery of the global economy to get it from the current speculative stagnation towards a new production cycle. ■