

## The Complexities of Climate Governance, by Domenico Siniscalco

The New York City Climate Week 2019 (September 23 to 29) scored a major success in the news, television, Western social media, and beyond. Out of the media spotlight, consensus on climate change is growing among business and financial operators and in the civil society, thanks to the work of scientists and climate activists. Global climate change negotiations however, are not making symmetrical progress and suffer from the usual setbacks: insufficient commitment and the lack of convincing mechanisms even on the part of the signatories of the Paris agreement.

In order to assess this progress rationally, it is worth looking at the climate change debate in a historical perspective in order to understand the main issues at stake.

### *Climate change between space and time*

The modern debate on climate change is about thirty years old. Before then, the issue known as the "greenhouse effect" was only one of the many issues discussed by environmental economists along with acid rain, the hole in the ozone layer, drinkable water and waste. The paradigms for analysing these issues were those related to common property goods and resource economics. As for the greenhouse effect, the uncertainty of its causes and impacts, intergenerational effects, global nature, and the idea that adaptation was relatively inexpensive compared to reducing emissions, placed the climate change issue somewhat far from reality and far down in the priorities of policy makers.

Over the years, climate change has taken center stage with the energy, population and human development issues. Climate change awareness has progressively grown and become acute with the intensification of extreme climate events. Climate change has thus gradually gained importance and has finally become one of the top priorities in the political debate.

The long and non-linear discussion on climate change can be simplified by highlighting some key milestones:

- The Brundtland Report in 1987, *Our Common Future*, that introduced the typically intergenerational notion of sustainable development: growth that maximises the well-being of the present generation without compromising the well-being of future generations. And along with this objective, the symmetrical need to cooperate at a global level to achieve sustainability taking into account demographic dynamics. *Our Common Future* is a steering policy document, but it gave a modern perspective to the climate issue, and more generally clarified its temporal and spatial dimensions.

- The establishment of the Intergovernmental Panel on Climate Change (IPCC) in 1988, under the aegis of UNEP (United Nations Environment Programme) and WMO (World Meteorological Organization). The IPCC does not carry out research, but it brings together the most authoritative researchers in the various countries, and it collects, selects and disseminates climate research in the physical, economic and social fields. The IPCC has played a major role in defeating climate change scepticism and denial, until it was assigned the Nobel Peace Prize in 2007. The IPCC assessment reports, which began in 1990, represent a *summa* of research into climate change.

- The numerous global conferences that have sought to design and reach a global agreement to decarbonize and contain global climate change. Among the many events we can highlight the Conference in Rio de Janeiro in 1990, where denial still prevailed, with the consequent rejection of ceilings for greenhouse gas emissions; the Kyoto conference in 1997 which produced the famous Protocol that proposed the first global agreement for the reduction of CO<sub>2</sub> emissions and greenhouse gases, and the Paris Agreement of 2015.

The problems with these agreements were the partial adhesion of the various countries and the lack of commitment mechanisms. The case of the United States is a striking example. The US signed the Paris Agreement under the Obama administration and rejected it immediately afterwards under the Trump administration. Moreover, because of the global nature of climate change, partial agreements that do not involve key countries such as the United States and China are useless. The temporal dimension of climate change further complicates the structure of the agreements.

In parallel to these events, which were essentially reserved to scientists, economists and policy makers, the broader public all over the world developed a growing awareness of environmental issues and sensitivity. As often happens, the poorest sections of the population were the most severely affected by the changing climate: desertification, floods, extreme events.

#### *Global climate governance?*

Thirty years is a long time to frame the climate issue at a scientific, economic and social level, and to achieve widespread awareness of the determinants and effects of climate change.

It is an even longer time to design a global policy to fight climate change with modest results.

Indeed, in the course of the debate we have learned many lessons. Addressing climate change is a complicated issue to begin with, let alone solving it. This explains the difficulties encountered during the process.

#### *In a nutshell*

- Climate change is a complex system (in a mathematical sense) in which greenhouse gases and endogenous climate movements interact in a non-linear way with the main ecosystems. Today, climate change is well understood in a holistic sense, but it is difficult to predict. According to Popper's definition, climate is a cloud, not a clock.

- Climate change is a global externality. The emissions of a country affect the climate of faraway regions and countries. This triggers a very complex game in countries with very different development levels and needs, making global agreements very difficult.

- Climate change is an intergenerational externality. Today's emissions affect tomorrow's climate, with future generations being unable to participate in today's negotiations.

- Human-induced climate change is linked to CO<sub>2</sub> emissions and greenhouse gases, which in turn are intrinsically linked to energy consumption and to demographic, technological and economic development.

As Giulio Sapelli explains in his article<sup>1</sup>, CO<sub>2</sub> emissions and greenhouse gases are basically a dimension of human development, of the hierarchy of countries, and of History.

All these characteristics make it very difficult, if not impossible, to design a global climate policy and governance. Complexity confuses cause-effect outcomes, the impacts and predictability of climate response. Global externalities tempt us not to join climate change efforts, to reap the benefits without paying the costs. This is the well-known problem of free-riding, which would exist even with identical countries, but which is greatly exacerbated by asymmetries between countries. Finally, the intergenerational nature of climate change tempts us to postpone action and to pass on the costs to the future generations that are not represented in the political dynamics: the electoral cycle is too short to address long and very long-term issues.

Faced with the above-described intrinsic difficulties, which are linked to the intertemporal and global nature of climate change, the architecture of international climate agreements has taken on disconcerting aspects. In the midst of the ultra-liberal political cycle that started at the end of the 1980s, a central planning approach was attempted. Quantitative targets were identified, and the aim was to have them adopted by the majority or all of the countries regardless of the different incentives, all tempered, of course, by some national exceptions.

Given the decentralized nature of climate change and the centralized approach that was adopted to counter it, it is not surprising that climate agreements have had little success over the years. Different countries, with very different degrees of development, very different technologies and demographics, and a different role in world politics hardly accept a single, cooperative and convergent development policy.

A central planning scheme could work for problems with limited economic impacts such as the hole in the ozone layer, where it was a matter of banning emissions of gases capable of damaging the ozone layer in the atmosphere, as happened with considerable success in the case of the Montreal Protocol of 1987-89. Applying a similar scheme to climate change, i.e. to human development itself, is a case of hubris, or lack of understanding of the political and economic dimension of the problem, or of the incentives for action. In fact, very little has been achieved in thirty years beyond some limited ratifications of incomplete and non-binding agreements, and not by chance.

*Climate governance* has thus become a myth or a mirage, while climate change has progressed, apparently unchallenged. I believe the situation will not change until this central planning approach prevails and unless different solutions are found to achieve the goal at a decentralized level.

So do we have to resign ourselves and prepare for mere adaptation to climate change? I believe the situation is critical, but there are a number of innovations that represent positive feedback, and that can lead us in the right direction without more or less impossible global agreements.

*Three positive innovations: preferences, technologies and capital*

Undesirable human phenomena often generate positive reactions that adjust them and produce new balances. The best known positive economic feedback is the price mechanism: if a resource is scarce and

---

<sup>1</sup> Sulla decarbonizzazione e oltre, Giulio Sapelli, in *Equilibri* 2/2019, il Mulino, Bologna

risks being depleted, an increase in its price will reduce its use and encourage its replacement. This is the case with many natural resources, both renewable and non renewable.

One problem with climate change is that the price mechanism operates very partially, if at all, because the atmosphere is a public good where emitting greenhouse gases has no cost. Hence the idea of imposing carbon taxes on fuels and high-carbon materials, so as to put a price on emissions and internalise externality. Similar conceptual attempts are made to introduce emission permits.

All these attempts, which concern specific tools, have many advantages over bans (command and control), but in order to be globally effective without distorting competition between countries, a higher degree of international cooperation, similar to that of other agreements, would be required, a very difficult thing to achieve. For the United States, such a tax has always been outright blasphemy. For China, it is a brake on development. And without the United States and China there is no policy against climate change. The problem, moreover, is not the tools themselves, but how to adopt them at a global level.

Yet, in recent months, some relevant factors are emerging that could lead to a change in direction, without impossible planning attempts and with a bottom-up movement that could go a long way. I list three of these factors.

For a variety of reasons related to the increased frequency and violence of extreme events, *preferences* are changing. A greater and unprecedented awareness of the costs associated with climate change is emerging especially among the younger sections of the population, and not only among the more educated. Pope Francis dedicated his encyclical *Laudato Si'* to climate change. The opinion movement headed by Greta Thunberg succeeded in shortening the time horizon, arguing that the climate issue is "here and now", rather than in the distant future. Students in many cities have followed suit and climate strikes have taken place especially in the cities of the Western world. The reaction has been remarkable and has extended to other environmental problems such as the rejection of disposable plastic or the movement against deforestation in the Amazon rainforest. A change in preferences is a truly essential factor, because no reform can be made if it is not felt and adopted by the public at large.

The second important factor is progress in *technology*. Finally, after many years of research and innovation, engineers and the media are saying that decarbonization technologies are available at competitive prices. The change starts with the decarbonization of electricity generation, which is now an advanced process. For example, Enel<sup>2</sup> now produces 47 percent of its energy from renewable sources and aims at 55 percent by 2021. As electricity production is gradually decarbonized, we should electrify all we can: heating, transport, industry. The use of fossil fuels would thus be limited to air transport and some heavy industries, from cement to part of the steel industry, but their use would amount to a fraction of current consumption. One could argue that electrification is possible only in the more advanced countries. To prove the contrary, it is enough to consider that China is far ahead of all other countries in transport electrification: cars, motorcycles, buses. A trip to Shanghai or Beijing today offers unthinkable experiences. All this should be combined with continuous energy saving through innovation. This is happening in the digital sector thanks to a better architecture of systems and networks.

---

<sup>2</sup> Enel S.p.A., or the Enel Group, is an Italian multinational energy company that is active in the sectors of electricity generation and distribution, as well as in the distribution of natural gas. Enel was first established as a public body at the end of 1962, and then transformed into a limited company in 1992.

The latest change concerns finance and the *capital* market, which today strongly reward products and processes that are climate- and environmental-friendly. In the equity market, green company shares are exchanged at a premium on traditional companies. One can observe, for example, the multiples and prices of producers of electricity from renewable sources compared to traditional utilities. In the bonds market, bonds linked to sustainability (so-called ESG and SDG bonds) are issued at interest rates significantly lower than normal bonds. This is on the supply side.

On the demand side, banks and investors are creating funds and products aimed at buying sustainable companies and bonds. This is a bottom-up process without incentives, in the shared belief that only green companies will survive over the years and that environmental liabilities will obviously be penalized by regulators and the market. A capital market that rewards sustainable companies and products (and conversely penalises less sustainable companies) acts as an incentive or a tax, to which policy measures can obviously be added.

At this point, the rationale behind my argument should be clear: *preferences*, *technologies* and *capital*, which are the fundamentals of economic analysis, strongly push in the desired direction against climate change, and they are doing so in all the main areas of the world: Europe, Asia including China, the United States.

If this is true, the fight against climate change can and must be promoted by policies, without relying solely on "central planners" and without binding agreements that are invariably rejected or not applied by the various countries. Such agreements obviously remain very useful for setting quantitative targets and recording progress, but they cannot represent the only mechanism when the war against climate change must be waged, and perhaps essentially so, at a decentralized level. With changes in *preferences*, *technologies* and *capital markets*, this change now seems easier to achieve.

In the energy transition process, the hierarchy of countries and regions will continue to change. As always, there will be winners and losers with tensions and upheavals in the world order. But it will be a bottom-up process with market mechanisms, without unrealistic utopias. And it will happen without marginalizing our country<sup>3</sup>, which has specializations and production chains consistent with this model of development.

I would like to wrap up by mentioning the research of Fondazione Eni Enrico Mattei that has followed the climate change debate since its foundation at the end of the 1980s. At the various stages of the debate, some of us participated in the main global conferences, from Rio de Janeiro to Kyoto and finally in Paris and New York, with all the intermediate steps. Over the years Fondazione Eni Enrico Mattei has offered its expertise to the Italian government, the European Commission (which has also financed a large part of FEEM research), the Chinese and Saudi Governments.

Three of us (Carlo Carraro<sup>4</sup>, Alessandro Lanza<sup>5</sup> and myself) were Lead Authors of the IPCC report, winner of the 2007 Nobel Peace Prize. In terms of research we have made contributions to environmental accounting at national and corporate level (with Ignazio Musu). We have worked a lot on the rationale of environmental agreements, and we were among the first to show that global climate agreements including all major countries are impossible (see the numerous articles written with Carlo Carraro since 1990). Today

---

<sup>3</sup> Italy

<sup>4</sup> Former FEEM Scientific Director

<sup>5</sup> Former FEEM Executive Director

we have extended our research to technology and finance, producing a roadmap for nations to decarbonize by mid-century. We are working on Africa. We have established important networks of researchers by founding the European Association of Environmental and Resource Economists (EAERE), that two of us have chaired over the years. We have trained many young researchers who have occupied key positions in universities, research bodies, companies, governments and international agencies.

All this has been possible only thanks to the constant and convinced support of our founder Eni. Fondazione Eni Enrico Mattei was founded when Franco Reviglio was President of the Group. FEEM has received unfailing support from Eni, and for this we are most sincerely grateful. I believe that what we have done is an example of collaboration between the spheres of research, business and the world of public choices at national and international level. But this work, as we all know, never ends.

*Domenico Siniscalco, Chairman of the Scientific Advisory Board of Fondazione Eni Enrico Mattei and former FEEM Executive Director*