
Edit Antal*

Climate Change, Treaties, Science and Technology, . . . and Consciousness

My research topics have gone through an enormous transformation over the last three decades. Here, I illustrate those changes and some of my research findings in that period.

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Today, climate change is on everyone's lips, repeated *ad nauseum* by ordinary people, the media, and politicians. That was not the case 30 years ago, in the mid-1990s, when I began working on an issue that at that time was practically unknown, above all among social scientists. The matter of climate change itself, as well as global warming,

began to take on worldwide importance when the bi-polar era ended, creating an environment in which, given the apparent disappearance of communism, a new enemy was urgently needed.

The Kyoto Protocol

The forum known as the UN Framework Convention on Climate Change was created in 1992 and came into effect in 1994 for the scientific, political, economic, and social study of climate change. At that moment, it was a great innovation thanks to its singular organizational structure, which consisted of intense interaction among different working groups of experts recruited from all over the world who analyzed climate change not only as a meteorological or physical phenomenon, but at the same time took into account its economic, social, and political consequences. This way of approaching a problem would be the equivalent of a simultaneous, interactive translation of a problem from the realm of the hard sciences to the language of politics. This is why the issue has immediately been situated in the terrain of the social study of science and technology. This means that, from the very beginning, what was being studied was what had to be

done to stop or slow the phenomenon, in part caused by human beings, and without a doubt harmful to humanity. This period was a stage of raising awareness in the world about the problem of climate change.

In the first period, from the 1990s to 2005, characterized by the Kyoto Protocol, the study of climate change centered on world actions against it and on the definition of the corresponding responsibilities. At that time, the main actors were the United States and the European Union, whose member countries for the first time acted together on an issue of great importance, which was considered a promising achievement.

After a great deal of discussion about the responsibilities, what won out was the principle of common and differentiated responsibilities, based on the idea of leaning toward charging the industrialized countries with solving the problem and not demanding the developing ones reduce their greenhouse gas emissions. In addition, technological and financial resource transfers were established from the rich to the poor countries. This was due to the assessment that the industrialized world had caused the high greenhouse gas emissions problem, ergo, it was who should pay for the repairs.

Initially, the United States signed the Kyoto Protocol, but it has never ratified it. This turned it into the “black



George Frey / REUTERS

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sheep” of the history of climate change, above all because, at that time, it was by far the largest emitter of greenhouse gases, responsible for one-fourth of total emissions. The United States has also lost prestige worldwide because it has unashamedly shown that it does not want to cooperate with the rest of the planet or help the developing countries. Instead, it has insisted on establishing an international treaty that gives equal treatment to all countries regardless of their capabilities and levels of development. Naturally, this argument of not being obliged to reduce emissions referred basically to the large countries: in the first place, China, but also others like India, Brazil, and South Africa.

In these global negotiations, the European Union undoubtedly turned out to be the world leader for the environment, and the international regime, which has managed to establish obligatory commitments for the industrialized countries, has been widely celebrated and applauded as an excellent instrument for resolving a problem of global dimensions.

With time, enthusiasm for the Kyoto Protocol has waned given its mixed or not entirely satisfactory results in terms of effective reductions and the creation of carbon markets. Regarding carbon markets, I should mention that at the beginning of the negotiations, market mechanisms did not exist and were even considered highly uncertain in terms of being able to offer positive environmental results. For that reason, the Kyoto Protocol has seriously limited their use for reduction, putting more emphasis on direct methods such as the establishment of quotas and carbon taxes.

Canada was also badly perceived: it was the only country that gave itself the luxury of formally abandoning the Kyoto Protocol, thus winning the fury of the world’s environmentalist community.

Later, the United States tried to improve its image and lead the climate change negotiations, particularly during

the Obama administration. By the first decade of the new millennium, the concept of climate change morphed radically, above all in the sense of its economic and political projection. This was due mainly to the fact that China has become the world’s largest producer of greenhouse gases and other large emerging countries —previously classified as developing countries— have also very rapidly increased their emissions.

So, posing the issue of climate change from the perspective of rich and poor has lost ground in the global forum since, under current technological conditions, in two decades, the emerging industrializing countries —mainly China— have emitted as much as the biggest industrialized countries did in an entire century. This is why the reputation of these countries as poor and therefore net receivers of resources to alleviate the effects of climate change began to come under serious question.

Despite the fact that the per capita emissions by highly industrialized and emerging countries continued and still continue to be enormous, what is mentioned above has caused a true turn in the political and social formulations about climate change.

Some Figures

North America as a whole produces 18 percent of the world’s carbon dioxide (CO₂) emissions; the U.S. is responsible for 15 percent, Canada for 2 percent, and Mexico for the remaining 1 percent. However, this same figure calculated per capita gives us a very different picture: The United States and Canada produce 16 metric tons per person each, while Mexico only produces 3.8 metric tons. It is also interesting to observe that though China is the largest producer in absolute terms, when measured per capita, it still emits less than the United States or Canada, or 7 metric tons, while India produces even less, only 1.8 metric tons. If we compare these amounts with the European countries, in per capita terms, the United States continues to have the worst record, while on average, the European Union emits 6.38 metric tons, and even the largest producers such as, for example, Germany, are much lower than it, with 9.7 metric tons.

If we look at which countries have increased their emissions the most since the beginning of the global negotiations in 1990, things change considerably: the leaders

PRIVATE SECTOR ACTIONS AGAINST CLIMATE CHANGE IN NORTH AMERICA

Country	Non-State Actors	Cities	Regions or Provinces	Companies	Civil Society Organizations	Private Investors
United States	899	209	16	530	84	59
Canada	156	41	8	88	1	18
Mexico	82	34	3	42	0*	2

Source: United Nations, Global Climate Action, Nazca, 2019, <https://climateaction.unfccc.int/views/about.html>, accessed January 23, 2019.

* NAZCA is a portal created by the United Nations Conference on Climate Change that shows the climate actions taken by cities, regions, investors, companies and civil society organizations. For 2014, the portal had no registered actions by civil society organizations in Mexico.

are China, with 316 percent, and India with 293 percent. In North America, Mexico took the dubious lead in this area with 46 percent, followed by Canada, with 21 percent, and the United States in last place, with 4 percent. At the same time, the European countries as a whole have managed to decrease their emissions by 21 percent, not a small feat.

The levels of fossil fuel-driven energy use in the world continue to be of great concern. In North America in particular, the prospect is by no means encouraging: coal, gas, and oil together still account for 74 percent in Canada, 80 percent in the United States, and —the worst case— 88 percent in Mexico. In large part, this is because despite many speeches and pretty words, subsidies for coal and the fossil fuel industry worldwide continue to be high and, unfortunately, even come to four times more than those given to renewable energy.

The Paris Accord

Given the new panorama of the distribution of emissions worldwide, the United States and China have proposed another kind of global architecture to deal with climate change, diametrically opposed to that of the Kyoto Protocol. In the first place, it is voluntary, and secondly, the goals and instruments for compliance are freely chosen by the parties. The new instrument, known as the Paris

Accord, was created in 2015. From the point of view of the study of international cooperation, it is of course novel, but also much laxer and more flexible than the previous international regime. We can even say that the accord is not a treaty in the strict sense because it neither mandates nor sanctions anything or anyone concretely. It is rather a free forum of exchange of experiences and discussion based on voluntary commitments that meets periodically. Its defenders have called it a new, more democratic architecture than the Kyoto Protocol since in this case every country is free to decide what it can and wants to do and the way it will achieve it. However, for its critics, the Paris Accord has been dubbed a clearly weak, insufficient instrument for achieving positive environmental results.

Despite its flexibility, when Donald Trump took office, even this commitment considered by the environmental community low level and “light” has been thought “too much.” Accordingly, the U.S. government decided not to pay the monies committed to renewable energy projects throughout the world and, a short time later, completely pulled out of the accord.

In North America, the current federal governments do not present a very encouraging prospect regarding climate change. In the United States, President Trump does not believe that it is a real danger; Mexico’s López Obrador seems convinced that it is worthwhile to sacrifice the environment in order to develop a country with high poverty and inequality rates; and in Canada, despite its environmentalist discourses, in the face of the profit-hungry business interests, Justin Trudeau’s Liberal government has not been able to defend nature as much as was hoped.

However, not all is lost. Fortunately, other actors, sub-national governments, companies, and civil society have

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been very active on this issue. Despite a generally negative attitude from the U.S. federal government, we have to recognize that the country has reduced its emissions faster than, for example, Germany or Canada, precisely thanks to those other, non-governmental actors.

Radicalization of Society and the Media

Meanwhile, worldwide, above all in the mass media, the idea has gained ground that there is no way to move ahead on the issue of climate change except by a radical lifestyle transformation to achieve a society that in the short term can slash greenhouse gas emissions. This new vision that is currently spreading has become more and more apocalyptic. This includes proposals such as no longer traveling in airplanes, stopping the consumption of meat, and even stopping having children on a planet that is destined to disappear. This kind of end-of-world narrative is also gaining ground in literature: cli-fi (climate fiction) has become a new literary genre dealing with themes involving climate change and global warming. This perception contradicts the belief preferred by the world of companies and businesses that the solution is to be found in new technologies both to help the world adapt to climate change and to foster and accelerate energy transition.

On the other hand, discussion continues about the responsibility for paying the high costs of the struggle against climate change, in an attempt to achieve environmental and climate justice: Who should pay for the weighty effects of decarbonizing the world? And, how can we ensure that environmental laws are applied in all spheres of society, among and within every country equally? The issue of climate change justice originated mainly from the fact that the regions of the world most affected by climate change damage are not the ones that pollute the most and emit the most greenhouse gases. We know, for example, that half the population of the world is responsible for only one-tenth of total emissions.

With regard to the different levels of enforcement of the law and the differing degrees of vulnerability to climate change in the world, other new lines of research have also emerged such as, for example, climate migration. Climate migration, estimated at 18 million people, is usually initially internal, but has the potential to be-

come worldwide. An estimated 1.7 million of today's migrants head for the United States, and 195 000 migrate toward Mexico from the dry triangle of northern Central America. By 2050, an estimated 143 million people could become climate migrants, 3.9 million of whom would head for Mexico and Central America.

Other expanding research areas are those that study the social movements of workers protesting against having to pay the heavy costs of decarbonization and the scope of the social movements of younger generations vehemently demanding a more inhabitable world for their future.

According to the UN's Intergovernmental Panel on Climate Change, the current situation is a climate emergency; that is, the policies adopted today will determine the future of the planet and humanity. Human inhabitability of the planet is increasingly an artificial rather than a natural category. This is why new research areas are opening up about the planet's inhabitability, which is dangerously decreasing, above all in certain regions, as well as the social phenomena associated with it, such as poverty, inequality, and more and more common social clashes.

From the point of view of the planet's inhabitability, it is important to remember that science and technology as human activities during the 1990s created more scientific knowledge than in all of human history, and it is estimated that that knowledge doubles every 10 years. At the same time, these advances have contributed to improving society's comfort, wealth, and living standards, increasingly distancing human beings from nature.

A broad discussion is also taking place about the point to which the solution to climate change is to be found in science and technology or rather should be sought in a radical change in our way of life, moving toward a less consumerist, wasteful society. This dilemma is being discussed more and more; in fact, it is an entire area of research in the field of climate change. Clearly, it is imperative that we accept the fact that, generally speaking,

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our unbridled consumption is behind the climate and environmental problem. This undoubtedly suggests that the solution does not lie exclusively in new technologies, but in our lifestyle. Changing that is no small task and will

depend on the consciousness of the main actors, such as governments, companies, and social groups. And, in that vein, questioning and research cannot and must not stop. ■■■