

EDITORIAL

FROM KYOTO TO PARIS: SEARCHING THE SUSTAINABILITY

The United Nations Framework Convention on Climate Change (UNFCCC), signed in 1992 in Rio de Janeiro, has laid the groundwork in pursuit of common objectives for the reduction of atmospheric concentrations of greenhouse gases to prevent dangerous anthropogenic interference with the climate system on Earth. The treaty, which is still in force, did not establish mandatory limits, but it has delegated the definition of them to the same protocols (COP). The Kyoto Protocol (COP 3) was adopted in 1997 and entered into force on 16/02/2005. For the first time, it established quantitative parameters, according to

which the industrialised countries and the countries with Economies-in-Transition (EIT) undertook to reduce, in the period of 2008-2012, greenhouse emissions by 5.2% compared to the levels present in 1990 (article 3), considered as year zero. Although signed by 160 countries, the Protocol foresaw a concrete commitment from only 39 countries listed in Annex I. The reason lies in the principle of common but differentiated responsibility, which is an environmental principle of international law according to the principles of equity and cooperation, under which industrialised countries have major responsibilities in the current pollution situation. For this principle, the developing of the developing countries should not be limited, allowing them greater leeway. The United States never ratified

April 2016 L-OTI(°C) Anomaly vs 1951-1980 1.11

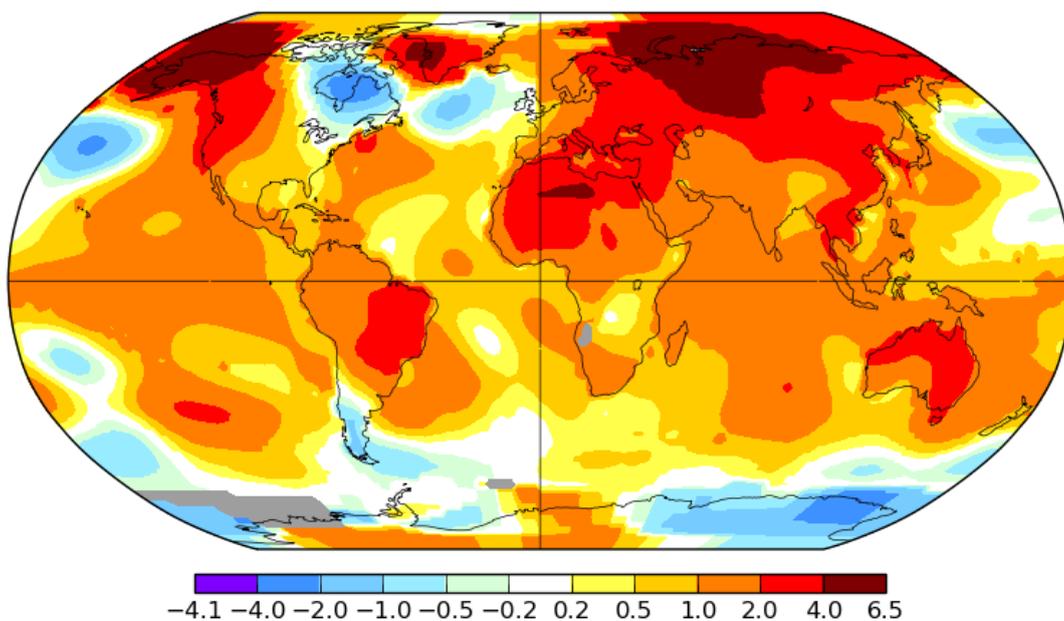


Figure 1.

April 2016 - NASA-GISS
Surface Temperature Analysis
(source: <http://data.giss.nasa.gov/gistemp/maps/>)

the Protocol. Major national emitters such as China, Mexico, South Korea and India ratified; however, they were not required to reduce emissions.

The Protocol additionally provided for flexibility mechanisms (emission trading- article 3, joint implementation – article 6 and clean development mechanism – article 12) conceived with the objective to promote cooperation between countries to achieve common objectives, and also with the aim to economically penalise polluting countries. Such mechanisms have led to the creation of a market for environmental credits, which help to free polluting countries from their "responsibility to pollute." Moreover, countries not listed in Annex I have been able to break into this market in an uncontrolled manner, not having to account in terms of the quantity of pollution produced. Under the premise of necessary and unstoppable "development" and in the name of the principle of equity between countries, a justification to the commodification of pollution was found. However, this idea ignores both the economic and environmental repercussions that the pollution produces. Such an investment should produce a profit, not a loss.

The flexibility mechanisms and the "commercialisation of CO₂" also seem to forget that every country is part of a larger complex system called Earth, and that moving a problem within the same system does not represent a solution, but provides only a partial vision that apparently shows a problematic course of solution. Despite the objectives of energy efficiency, promotion of sustainable agriculture and reduction in transport emissions, the Kyoto Protocol in many cases did not allow for the planned reduction involving states with minimal impact on the overall percentage of global emissions and did not produce the desired global effects. In the second commitment period of the Kyoto Protocol (2013-2020), which falls under the Doha Amendment (COP 18), developed nations pledged to reduce emissions by 20% compared to 1990 levels. It is an important objective, however, the countries involved make up only 14% of total global emissions.

From 30 November 2015 to 11 December 2015 in Paris, a new conference was held (COP21), which gave rise to a new agreement on climate change. The first significant difference with the Kyoto Protocol is represented by the recipients. It eliminates the distinction between developed and developing countries. The Paris Protocol is directed equally to all signatory states and establishes the following common objectives (article 2): keep the increase in the global average temperature to well below 2 °C above pre-industrial levels; pursue efforts to limit the temperature increase to 1.5 °C; increase the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production and the adequacy of finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development. Unlike the Kyoto Protocol, which unevenly established reduction burdens (conditioning of industrial development, income and levels of efficiency) and referred to a specific time frame, in Paris common objectives are given without a specific period to reach them. In addition, greater importance is given to the adequacy of financial flows. The participatory factor of individual countries is further expanded through the "Intended Nationally Determined Contributions" (INDCs). The countries shall establish their voluntary action plan to mitigate climate change. The INDCs have to be reported to the United Nations and subsequently formalised, which represents a specific commitment and bearer of the peculiarities of each nation. It is a bottom up approach, different from the top- down approach of the Kyoto Protocol.

Forms of control are implemented. Every five years the countries need to identify a goal and inform the UNFCCC Secretary while also providing all the necessary information for transparency and understanding (article 4). In addition, every five years starting in 2023, the global stocktake must be shared, evaluated and updated (article 14). The active participation of countries that have ratified the

identification of common guidelines established a system of monitoring and verification of the actions taken (arts. 4, 7, 13).

The Paris agreement does not have the goal of achieving zero emissions, but it appeals to the principle of compensation of flows: the pollutant emission rate must not exceed the capacity of the atmosphere, water and soil to absorb and transform these substances (article 4). The concept is consistent with the principles developed in the Aalborg Charter (Charter of European Cities & Towns Towards Sustainability) of 1994. The Charter, in addition to indicating strategies for a sustainable urban model, reiterates that sustainability is a local and creative process. It states, "environmental sustainability means maintaining the natural capital. It demands from us that the rate at which we consume renewable material, water, and energy resources does not exceed the rate at which the natural systems can replenish them, and that the rate at which we consume non-renewable resources does not exceed the rate at which sustainable renewable resources are replaced" (Aalborg Charter, 1994).

While not making a distinction between developed and developing countries, the principle of equity is invoked (article 4 c.1) and it aims to not hinder the development of poor countries. The recognition of the damage caused by the development of industrialised countries must include a choice to define alternate modes of development that are truly sustainable and related to the characteristics of the place. The INDCs have the task to not fall into the deception where the name of respect for the principle of equity is legitimised by repeating past mistakes.

The agreement is dynamic, as it assumes the mutability of needs and a progressive development. It also includes the ability to review objectives and introduces the concept of "ambition." For this concept, the five-year objectives have to address increasingly complex challenges (article 4). The importance of biodiversity and the protection of forests are also underlined (article 5). The importance of the protection of man and nature is also confirmed in the goal of adaptation

(article 7), which is to increase the adaptive capacity (meaning the ability to resist change), resilience (the ability to bounce back from a shock) and the reduction of vulnerability to climate change (understood as the capacity to reduce the fragility and the conditioning of a system before an event).

With regard to market mechanisms, the Paris Agreement (article 6) stands in continuity with the Kyoto Protocol, but tries to overcome the limits and confirms a cooperative approach. A different mechanism is introduced to help achieve national mitigation targets. Interventions must reduce overall emissions as well as designed mechanisms to avoid a double counting of emission reductions.

Finally, the role of cooperation in innovation and technology transfer is strengthened consequently in the increase of resilience and in the reduction of greenhouse gas emissions (article 10). It is a clear reference to all technologies that allow the exploitation of renewable energy sources.

Presently, the Paris agreement was signed by 177 countries. However, it will go into effect and be enforced on the thirtieth day after the date on which at least 55 parties to the Convention have deposited their instruments of ratification, acceptance, approval or accession and account for at least an estimated 55 per cent of the total global greenhouse gas emissions (article 21).

The Paris agreement seems to have a dynamic, concrete and specific aspect and seems to be on point in overcoming some of the problems encountered in the Kyoto Protocol, but borrowing the words of Carole Dieschbourg: "...Let us not forget that Paris is just the beginning of a long journey. Together with all stakeholders-NGOs, the business community, and every citizen-we will now have the responsibility to translate the agreement into action." So what are the concrete actions that the construction sector, specifically in the field of architectural technology, can implement in pursuit of the objectives of the Paris Agreement? It is possible to locate the nourishment for thought and leave the realization of actions to the

insight of specific research sectors?

Therefore, to control and prevent the environmental crisis means paying attention to the compensation between incoming and outgoing flows, which result in closed cycles, where the "waste" of a cycle feeds a different cycle within the same macro-system (Bevilacqua, 2006). This is according to a complex pattern found in nature, where every action has a balanced reaction to it (Latouche, 2006). As detectable by air, it is the only way to safeguard the fundamental resources for survival and offer protection to our climate, water and food, as classified by a function of time during which we can live without (Friedman, 2003). The categories of climate protection and food also imply the protection of soil.

Mobility, water and sanitation, clean energy, food and health, soil and densification, urban dimension, local government capacity and renewable resources are some of the fields of action which stress the decisive role of the city in contrast to the environmental crisis. The construction industry specifically holds significance due to the heavy impact it has in terms of land use, natural resource consumption (energy and materials), emissions and waste production (Butera, 2007).

It is therefore necessary to redefine the relationship between city land, the production system and building materials (Donolo C., 2007). In conclusion, starting from a large point of view until it zones into minute detail, it is possible to distinguish three systems of action, which have their own specificity but are closely related:

- urban-territorial system: we need actions of soil conservation and regeneration of networks related to flows of mobility, water and wastewater, energy and the rapid exchange of information and knowledge;
- building system: we need actions of valorisation, recovery, rehabilitation and energy efficiency of the buildings and to also improve the environmental comfort;
- construction and material system: we need actions of technological implementation aimed at promoting flexible, maintainable, and reversible building systems and materials with a low environmental impact resulting from local supply chains, which ensure adequate performance on the intended use.

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