# Climate change: a consequence of the Anthropocene and a huge future challenge for the society

At the beginning of the new millennium, during a meeting of the International Geosphere-Biosphere Programme (IGBP) in Cuernavaca (Mexico), Nobel prize Paul J. Crutzen first suggest the end of the Holocene and the beginning of a new geological era called Anthropocene. The idea which human could influence nature in a large scale was not new, already in 1873 the Italian geologist Antonio Stoppani spoked about an "Anthropozoic Era" in which humans' activity had become as strong as natural forces, but as described in the later article written by Crutzen and Stoermer, in Anthropocene human activity has reach geological proportion. The influence of human activity is not only confined in climate change, in fact, but are also producing significant alteration of biogeochemical cycles such as nitrogen, phosphorous, sulphur and carbon as well as the water cycle. Although all these modifications are in progress, it is consolidated that the main cause of the today effects is to by implied to the use of fossil fuels and the input in atmosphere of large amount of GHGs. The beginning of Anthropocene is, according to the developers of the theory, almost coincident with the beginning of the industrial revolution, in which human kind start to largely utilize the stocked energy inside fossil fuels to begin a revolution that, in less than 200 years, had deeply change our society. Together with industrial revolution, drastic change in the society had been made after the second world war, between 1945 to 2000 in the period called "The Great Acceleration" when becomes clear how many important parameters (such as biodiversity, GHGs emission, or surface temperature) drastically shifted further than the usual variability of the Holocene by the means of human activity. The society benefits from the Great Acceleration, initially, overcome the environmental issues which did not had a widespread attention until the 90s, when the environmental problems start to became considered more important[1]. Nowadays, the Great Acceleration seems to had shift from developed countries to developing countries. A proof of the shift can be found looking into the cumulative emission per country. Even

[1] Steffen et al., "The Anthropocene: Conceptual and Historical Perspectives."

if developing countries had almost 80% world population in 2010 they accounted for less than half of the total emitted GHGs. Although, today the leading country for emission is China, and India is the third[2]. In the western country, after the 90s public opinion had shifted towards a more environmental protection mentality. However, seems clearer, especially in the last years, that cause and solution of climate change has not to be found only in science, but is also and especially on social dynamics and economical patterns which had promote not sustainable habits which mostly relies on the human attitude for the convenience and comfort. It is now widely agreed that since climate change is a product of the actual system of consumption and lifestyle, the solution has to be found in a deep change in the form of living and working in the actual society. Such changes have to be undertaken by social sciences of which these topics are of common debate, and some theories on how behaviour can be changed are present. Some attempts were made in order to induct a change in behaviour using the ABC approach, in which is thought that social changes are made upon values and attitudes (A) which are believed to drive the kinds of behaviour (the B) that individuals choose (the C) to adopt[3]. An example of attend is the "Framework for pro-environmental behaviours" produced by the Department for Environment, Food and Rural Areas (DEFRA) in UK, with the purpose to introduce in the citizen pro-environmental attitudes. In this attempt it has become clear that the number of drivers factors toward the goal and barriers against it are not only a very large amount in both the parts, but also could often be arbitrary driver or barrier, depending on the single person's history (e.g. interpersonal influences, monetary incentives, etc.). Such result reflects the complexity of the problem, and how deep climate change requires a modification of the actual society models. Recently a more innovative approach has been proposed which may help to achieve the transition towards a reorganization of the social practices to make them more pro-environment. It has been proposed, in fact, that such complex challenge will not be faced and solved by policy makers which persuade people to make sacrifice for a just cause, but could be achieved by the introduction in the society of new technologies, know how, new markets, and awareness of the environmental problems inside the daily

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[2] US EPA, "Global Greenhouse Gas Emissions Data."

[3] Shove, "Beyond the ABC: Climate Change Policy and Theories of Social Change."

life[4]. On the other hand, from a political point of view, the difficulty to address this topic can be found, in part, on the fact that the effects of climate changes are expected to manifest in the next decades and not in the proximal future, and also the only markets cannot face such global problem, so that from a political point of view, promoting the solutions to climate change is a strategy that could receive more blame than credit [5]. Consequentially, the public debate on climate change is affected by a mechanism of self-protection due to the necessity of politician to attract consents and carry the interest of industries which, for now, have no convenience to reduce the consumption of fossil fuels. In fact it is recognised in the field of social science, that political point of view has strong influence on the public opinion, so that even if science has very good argumentation, a sceptical political opinion can easily overcome the fact, fuelling contrary opinions. As a result, survey about climate change highlight, in fact, an inverse correlation between public concern about this topic and the carbon emission of a country. Another important factor is that politicians make more difficult to have a unique position about climate change. In fact, even if scientists are compact on the evidence of the human influence on alteration of climate, is common to find states where there is still a political debate on the reliability of such scientific evidence. Moreover, even among the ones which do recognise the existence of an actual climate change, a part denies the correlation with human activity and blame natural causes Thus, became even more difficult to introduce in the society the daily debate on how our habits can influence and drive the climate change, and also push consumers toward more sustainable chooses.

Anyway, depside the internal policy of a State, it's clear that climate change is not a matter of a single authority, but a delicate international topic. In recent years the concern about a possible climate action failure, extreme weather and biodiversity loss have become the main threat for the people, according to the report on the Global Risk of the World Economic Forum[6]. Such attention of the public opinion had moved the climate topic in the centre of the international politics in the last years, and could play

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[4] Shove.

[5] Egan and Mullin, "Climate Change: US Public Opinion."

[6] World Economic Forum, "Global Risk Report 2022."

a role as important as security and economic interest between different states in the close future[7]. In the future different states will have to face the arguments and find solution to allow each part to grow within the reduction of emission. Moreover, many important topics related to climate change will have to be discussed between nation: how to support poor countries which will mostly be affected by the consequence of the changing climate, even if their contribution to GHGs emission in the last centuries was negligible? How nations will face the expected migration caused by climate change? What will happen to the sovereignty of a nation upon lands which will be submerged or uninhabitable? In other words, what is now assumed as fixed and reference point in international affairs, with climate change, will no longer be so[8]. Such question requires the ability to start new international relations between countries and the development of new tools in international relations, but unfortunately, depside the increased interest, climate change is not yet a trend topic inside the young students of international relationship which will have, in the future, to face the inadequacy between the actual international relationship and the future which will require different strategies and an innovative approach. Not only students of this field are not trained for this topic, but also researchers are not giving importance to climate change, and only 0,76% of the papers published in the journals speck about climate change[9]. It's so clear that we are far from the solution to this global challenge, which to be effective in long term, will probably have to pass through a rethink of the actual society, a more interdisciplinary dialog and cooperation between scientific experts, politics, and especially social science.

Anthropocene concept before, and climate change evidence after, could drive our society in a profound transformation, and provide a shock to the actual mentality of the societies. As wrote by Steffen et Al. [10] , such concepts can somehow be compared to the shook that the Darwin's theory provide in the past, but with a very significant

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[7] Sending and Overland, "Climate Change and International Relations : A Five-Pronged Ole Jacob Sending , Indra Øverland , and Thomas Boe Hornburg."

[8] Sending and Overland.

[9] Sending and Overland.

[10] Steffen et al., "The Anthropocene: Conceptual and Historical Perspectives."

difference: Darwin's theory provoked outrage, anger and disbelief, but did not threaten the material existence of the society of the time. On the other hand, climate change must be faced in the next three decades, unless we could have severed consequence for our spices and the hole biodiversity.

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