

## CLIMATE CHANGE EFFECTS ON HEALTH

Report from the Malaga Academy of Sciences

### Summary

The reader has in his hands a technical report from the Malaga Academy of Sciences on the relationship between Climate Change and Health. The report is not exhaustive, and the reader interested in expanding the information can draw on the numerous authority sources and references quoted in the text. It is aimed primarily at the academic world, which is very broad and specialized and does not always know well the consequences of the anthropocene. But also and perhaps mainly, to the authorities and political and administrative decision-makers in whose hands the measures and the great challenges that must allow us to face climate change are. Thirdly, the report is aimed at scientific journalism that has the very important mission of disseminating science by making it available to the entire population, and last but not least, to all those citizens who are committed to the fight for climate change. We hope that in this report you will find a source of authority that will allow you to take on reasons in your committed militancy with the denialists. Because there are still "negationists" of climate change, some with great power, such as the current presidents of Russia, Brazil or the USA.

This is why we have found it necessary to start with an update of the reasons why most of the scientific community recognizes the existence of climate change of anthropic origin, which, already started very slowly in the 19th century with the Industrial development, is experiencing an accelerated growth in the last decades, breaking year after year, the records of planetary average temperature as well as heat waves and climatic anomalies. A climate change that, as we already know today, is related to the discharge into the atmosphere of the so-called greenhouse gases (CO<sup>2</sup> and other GHGs), originating from the burning of energy sources called "fossils". The effects of climate change on the planet's ecology are well studied and known by the general public. The information in this regard is vast and the number of documents available, for example all the reports of the Intergovernmental Panel on Climate Change (IPCC), are mostly accessible via the internet. However, the direct effects of climate change on the health of citizens are only now beginning to be studied, published and known. And this knowledge is of great importance because it must be a very powerful instrument as a wake-up call and as an aid to raising public awareness of the importance of climate change. This report only updates readers and lets them understand the health effects of climate change, emphasizing only those issues for which there is currently some scientific evidence. Today, for example, we start talking about planetary health as a new concept that finally recognizes that it is impossible to talk about the health of citizens independently from planet's health. Planetary health is one of the most important determinants of citizens' health and, like the rest of the determinants or risk factors, it will be impossible to prevent or solve many of the health problems if the true causes are not addressed, in this case climate change.

Before proceeding further, we caution the reader that in this report we will speak lightly about pollution-related health problems. Pollution is also a consequence of the life model of many of today's societies, but while contamination (at least on a certain scale) is a local problem (as seen with the confinement due to the Covid-19 pandemic, which has made pollution disappear from large cities in a very short time), climate change is a global problem, a consequence of the irreversible accumulation of GHGs in the medium term (in fact, despite the almost universal confinement for a quarter, the reduction of GHG in the atmosphere it has been less than 5%).

Among all the effects of climate change on health, some of the least known and that are now being investigated are the major nutritional problems such as obesity, malnutrition, metabolic syndrome, type 2 diabetes mellitus and many of its consequences like cardiovascular diseases. The increased prevalence of these metabolic problems typical of developed or developing societies is associated with climate change with which it has co-causal mechanisms. This is what has led the scientific community to identify as a "global syndemic" a new syndrome that would encompass, together with climate change, nutritional and food problems and obesity, among others. One of the practical consequences of this new way of looking at health and disease is the one that has led international agencies to propose a diet for global health that would be a frugal "flexivegetarian diet", low in animal protein and rich in cereals, legumes, fruits, vegetables and greens, in addition to generating a low carbon footprint. A diet that would have to adapt to the loco-regional cultures, which returns the prominence to the Mediterranean diet, to which this report dedicates a special section within the concept of diet for global health.

Another important chapter is the one that relates climate change with the incidence of many communicable diseases. This is the case of diseases transmitted by ticks and mosquitoes, very sensitive to climatic changes, especially those of temperature and humidity. A matter of special relevance at a time like the one being experienced worldwide with the Covid-19 pandemic that, although the relationship of Covid-19 with climate change is about to be demonstrated, the relationship of other diseases caused by viruses with climate change or its consequences, as for example the Ebola virus with the deforestation of the great forests of Central Africa.

Lastly, the report recalls the relationships of droughts, floods or heat strokes, increasingly frequent, as well as the interactions between pollution and climate change on health or, finally, the cost that consequences of climate change is having and will have in the future for health systems.

Anthropic climate change is the most visible effect of what in some circles is already called anthropocene, that new geoclimatic era, which would come after the Holocene. It is not the first time that humanity faces serious dangers, but it is the first time that it faces a global challenge and at a speed that exceeds the adaptability of nature itself and of technology itself. We are probably facing the most important challenge in modern human history. **Adaptation**

initiatives (generally local and regional) and **mitigation** initiatives (reduce the use of energy by industries and the population, decarbonise the energy supply, and increase terrestrial carbon sinks, all measures that they need in addition to national and international policies), become an ethical requirement and an urgent need if we want to not only meet the Sustainable Development Goals (SDGs) but also guarantee and improve the future of our children and grandchildren and by extension) of the human beings, at least as we conceive it today. .