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ORIGINAL ARTICLE

Climate change and public health – past, present, future

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Abstract: *The evolution of the planet's climate is multifactorial influenced and has a dynamic over time. Many scientists have approached this controversial field, and each relies on objective but divergent statistics.*

Geographers have established that planet Earth is in a period of slight slow cooling, not at the level of the four prehistoric ice ages, but only at the level of the Little Ice Age from the Middle Ages which probably caused the great migration of peoples from Asia to Europe. This slow cooling is only slowed down and may even be partially reversed by anthropogenic activities. The industry produces large amounts of carbon dioxide from burning fossil fuels and other greenhouse gases. Animals produce carbon dioxide through respiration and digestion, some also methane. The waste degradation, fires, volcanic eruptions, swamps, and thawing of permafrost release carbon dioxide, methane, and other greenhouse gases into the atmosphere.

Climate change exit and has always existed, but there is no scientific evidence for global warming or for climate risks other than those we already know. Public health is already facing danger, directly and indirectly, for multiple reasons, to which „climate change" is added.

Keywords: *global warming, climate change, public health, greenhouse effect, ecology, climate warfare*

INTRODUCTION

Towards the end of the twentieth century, the written and audiovisual media bombarded us with alarmist information about „global warming", but this did not come true. At the beginning of this century, the same media informs us about „climate change", the shortcomings it creates and the risks we will be exposed to. But as American writer and journalist Mark Twain humorously wrote, „If you don't read the newspaper, you're uninformed. If you read the newspaper, you're misinformed"

Is the climate changing?

It is known that the evolution of the climate on the planet is multifactorial influenced and has a dynamic over time, from one geological era to another, from one age to another, from one geographical region to another, from one year to another, according to the season, the circadian cycle and even from one moment to the next. Many scholars have approached this controversial field, some for, some against or simply trying to be impartial. Each relied on objective statistics, those mathematical tools about which the Germans say only half-jokingly: „Statistics is a science that can prove anything, absolutely anything...".

In our country, the geographer Prof. Elena Teodoreanu, who was also a scientific researcher in medical geography, tried to answer this question, systematizing the knowledge in the field in her book entitled „Is the climate changing? A question at the beginning of the millennium" [1]. She stated: „It is strange how a simple look at the climates of the Middle Ages shows us the existence of calamities in past centuries as well – droughts, floods, destructive frosts – and yet, nowadays, a certain state of unrest about climate anomalies, is made felt in almost all countries. It is obvious that the possibilities of information today are far superior to those of the historical past, which allows knowledge in the shortest time, of events of all kinds around the globe and especially of those that attract attention, disturbance, fear."

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Other scientists, some of our own, have asked the same question. Thus, the physicist Ştefan Hepites, who founded in 1884 the Romanian Meteorological Institute, published in 1898 the article „Has the climate changed?" in which it is well documented that it has not. Another head of this institution, the meteorologist Nicolae Topor, published in 1967 the article „Is the climate changing?" in which he demonstrates that the climate does not change and concludes that: „what we are commenting on today are aspects of the same climate, which can change only partially in millennia, and only after millions of years."

CLIMATE WARFARE

The great catastrophes in Earth's history have not caused human casualties, because humans had not yet appeared on the planet. But the small local catastrophes that ensued left millions or even billions of human casualties in total: dead, wounded, sick, and refugees. In addition, man has created a series of anthropic or even artificial catastrophes: wars, revolutions, attacks, collective or mass accidents, changes in the environment, and much more...

At the time, Walter Orr Roberts, president of the American Association for the Advancement of Science, said: „We aim to put the entire globe under constant observation of the weather until 1970 with reasonable expenses. We assume that we will be able to obtain incomparably better forecasts on storms, frosts, droughts, and smog and we will be able to avoid disasters. But behind these advantages that science brings us lies the danger of a potentially terrible weapon of war - the deliberate manipulation of the weather in favor of a small number of people in power, to the detriment of the enemy and perhaps those who stand aside." [1]. This conclusion does nothing but reminds us of the threats made by the heads of the Great Powers, Stalin and Bush jr., summarized in the expression: „He who is not with us is against us."

In 2004, the French writer Jouzel Debroise published the book „Climate – a dangerous game". The following year, the „Final Report, Air University of the US Air Force, AF 2025", is published, stating: „Climate change will become part of domestic and international security and can be done unilaterally. The ability to generate rain, fog, hurricanes and to change or produce certain weather conditions is part of the same set of technologies that can weaken the opponent and allow access to domination, wealth and power." [2]

It is estimated that the enemy's combat actions, logistics, and transport may be hampered, food crises may be created to starvation, the outbreak and spread of natural or biological-induced epidemics may be favored, and medical countermeasures may no longer act effectively. It seems that the United States and Russia already have the capacity for climate warfare, and politicians are interfering in climate research. In 2009, General Emil Străinu published the book „Geophysical Warfare. Techniques for modifying the environment for military purposes" [3] which draws attention to the risk following attempts to change the weather and presents some situations of alleged climate attack on some countries, including Romania.

Geophysical warfare, which also includes climate change or climate catastrophes, would also be a major challenge for military medicine and public health in general. New problems of pathology and epidemiology, diagnosis, treatment and prophylaxis, health logistics would appear, specialized forces and means would be needed, and in their absence, the situation could quickly degenerate into a biological crisis.

THE PHENOMENON OF „GLOBAL WARMING"

Although the natural change of the climate is imperceptible and the anthropic change is very discreet, the observation of seemingly frequent catastrophic consequences has launched the hypothesis of global warming, which should be stopped. It seems that initially, the fight against „global warming" was an attempt initiated by the US to slow down the boom of the Chinese R.P. economy, whose energy was based on coal. The Chinese have large deposits of coal, but no oil and gas, which they are currently looking for in the South China Sea. However, in the meantime, China has become the world's second-largest economic power, and the expansion of the fight against carbon dioxide (greenhouse gas) produced by burning fossil fuels (including oil and gas) is also hitting the US economy, largest producer and consumer of energy. As a result, Donald Trump, as US president, no longer supported scientific research on „global warming" and the United States withdrew from international organizations that oppose this controversial phenomenon. But at the same time, NASA publishes alarming studies showing that global warming tends to become irreversible, with serious consequences, including Arctic ice melting, rising sea levels, and flooding areas, with the cities of London, New York, Sydney, etc. [4]. The areas populated by „natives" did not get the attention of these world science leaders.

If we think about the planet's distant past, the atmosphere was much different: more oxygen, much more carbon dioxide than now, excess water vapor and heat, all in one place favoring the giant Carboniferous plants and the giant Jurassic animals. But even today the richest fauna and microfauna, as well as the richest flora and microflora are

found in the equatorial jungles. So we can think that the danger is not so much for the thriving biosphere as for the business world that will have to adapt to the new conditions.

Due to the lack of scientific evidence on global warming (it can neither be clearly shown that it exists nor that it does not) another paradigm has been used: climate change. For now, specialists in the field are reluctant and do not express firm opinions, whatever is possible, in the near or distant future.

WHAT IS REALLY HAPPENING?

Geographers have established that planet Earth is in a period of slight slow cooling, not at the level of the four prehistoric ice ages, but only at the level of the Little Ice Age from the Middle Ages (when, in one winter, the Nile froze) which probably caused the great migration of peoples from Asia to Europe. This slow cooling is only slowed down and may even be partially reversed by anthropogenic activities. The industry produces large amounts of carbon dioxide from burning fossil fuels, as well as other greenhouse gases. Animals produce carbon dioxide through respiration and digestion, some also methane. The waste degradation, fires, volcanic eruptions, swamps, and thawing of permafrost release carbon dioxide, methane, and other greenhouse gases into the atmosphere. All this contributes to slight heating, especially in the most industrialized or zoo-intensive areas.

Meteorologists' measurements are very accurate, their thermometers measure air and water temperatures by tenths of a degree Celsius, and the records and reports are very rigorous, at least in recent centuries. But the place of measurement, the location of the weather station, remained in place although the anthropic area (housing and industry) is constantly expanding and warming the environment. As an example, the first Romanian weather station was in Bucharest, on Filaret Hill, where the Astronomical Observatory was located. As the area became more and more populated, and the station was now in the city, a second weather station was set up, in Băneasa, outside the city, in the North-West direction, where the predominant wind comes from. So the weather in the city could be compared with the weather outside the city. In the beginning, the recorded temperature differences were about 2°C, but now they are on average about approx. 1°C, due to the expansion of urbanization in this area as well. Almost all weather stations are currently included in urban areas, so they report very accurately measured temperatures, but with systematic error in addition to the respective geographical area, an involuntary falsehood.

For some, the mild winters of recent years, through early February, would be evidence of „global warming". But I could give some examples from personal memories: after the winter of 1971-1972, when the Black Sea froze on the shore and seaports including Mangalia were blocked (river ports are the ones blocked every year), the old sailors said they had never seen anything like it since they were young. But in the winter of 1973-1974, it was spring-like weather; on February 11th (my birthday) I went for a walk along the seafront wearing just a suit. And ten years ago, when my niece was born, on February 9th, 2009, I went to the maternity ward in a suit, in spring-like weather. But that hasn't stopped the Black Sea from freezing again in 2011 as well as in other, more recent years. All this means that the climate is neither heating nor cooling, but that it is only a random variation between certain limits, a statistical dynamic with a sawtooth pattern. And the slightly ascending „regression line" could just be the result of the systematic error I pointed out before, or it could be the „sawtooth" pattern of statistics applied to another time scale.

ASSUMPTIONS AND EVIDENCE

Many see as objective evidence the partial melting of mountain glaciers and polar caps, especially in the Arctic, and the rising of the worldwide ocean levels. Anyways, every summer the polar caps fragment on the edges and partially melt, and during the polar winter they grow back. The phenomenon is so repeatable that nautical charts mark the minimum and maximum limits of the polar ice caps. If the alarm is real, major potential hazards arise from this. If the mountain glaciers would melt completely (the most important being in the Himalayas), the rivers and streams in Asia will no longer be supplied with water and there will be a shortage of freshwater, which will affect billions of people. This phenomenon could lead to water wars involving billions of people.

If the polar caps melt in time, the level of the Planetary Ocean will increase by approx. 10 m due to the Arctic and approx. 80 m because of Antarctica. [5]. It is believed that if all the solidified water on the planet melted, the sea level could reach almost +100 m isobaths, and the land area would be reduced by about a third. The land surface will be reduced from almost 30% to less than 20% of the globe's surface. But these major changes, which would take thousands of years, are hypothetical, just some apocalyptic scenarios imagined by some journalists (who want the public's attention) and some politicians (who want to show that their country could save the planet) or by others as such, which are not seriously taken by scientists.

For now, we see that the partial melting of the Arctic polar

cap allows ships from the far North to move, during the boreal summer, on the Arctic Ocean (Northern Frozen Ocean), both through the East Passage, between the Atlantic to the West and the Pacific to the East north of Europe and Asia, as well as through the Western Passage, between the Pacific to the West and the Atlantic to the East (North of Canada). These new sea routes shorten freight routes and favor the great maritime powers (USA, Russia, China, etc.). Unfortunately, Romania, which was the 11th maritime power in the world Knowledge Horizons – Economics, no longer has many ships, so it will not be able to benefit from this opportunity [6].

The thawing in Northern Canada, Greenland, and Siberia also facilitates mining, oil, gas, etc., thus favoring economic development. But this is where the serious problem arises. The thawing of the Siberian permafrost (swamps frozen for thousands of years or still frozen since the last glaciation) allows the slow emanation of methane in the soil (natural biogas) and it has a greenhouse effect [7]. The complex industrial pollution in the area of the North Polar Circle, in continuous development, reduces the snow's albedo, which instead of reflecting most of the solar radiation, absorbs it and melts rapidly.

At present, this phenomenon may be intentionally potentiated by humans. The US military's High-Frequency Active Auroral Research Program (HAARP) aims to bombard the ionosphere with strong radio waves, heat it, and reflect it to the ground, causing heat and devastating phenomena. If this biophysical weapon becomes operational, it may also be used for peaceful purposes, for the benefit of the Arctic industry but aggravating the phenomenon of melting ice. It may not be a coincidence that specific US facilities are located in Alaska, Greenland, and Norway, and the Russian ones in Siberia [8, 9].

At the same time, it is observed that on the contrary, the Antarctic cap is not reduced there is an increase in area and thickness. And the Great Powers are already disputing the division of Antarctica to begin mining for minerals under the ice cap. Political, economic, financial, and military forces, state and supranational, as well as large multinationals, are repositioning themselves for the new negotiations on the Law of the Sea, the polar caps, and the outer space. The multipolar world is complex, unpredictable, and dangerous, especially for the little ones. As the poet Gr. Alexandrescu said: „We want equality, but not for puppies".

PUBLIC HEALTH CONSEQUENCES

Overall, the prosperity of a nation and its bio-psycho-social health are climate-dependent. The World Health Organization has defined the concept of human health as „physical, mental, intellectual and social well-being", or all these are interdependent and multifactorial conditioned. Holistically speaking, everything around us and everything that happens to us is reflected, directly or indirectly, in public health, in the broadest sense [10].

It is considered that it would be possible that if the average temperature increased by 4°C, the level of the Planetary Ocean would increase by 9 m. The areas with the largest population and the most developed economy would be flooded; all beaches, all low plains, all ocean and sea ports, most islands, and even entire countries such as the Netherlands, Bangladesh, and others would disappear. This hypothetical global catastrophe would lead to a population exodus of billions of people, with poverty, epidemics, and wars [11]. In our country, too, major changes would occur: the Romanian coast, as we know it, would disappear and return to its former form, the Danube Delta will once again be a bay of the Black Sea, and the Danube would flow into the sea through a long estuary from Calarasi to Galati, and northern Dobrogea could be an island or a peninsula. In this unlikely situation, the land area of Romania would be reduced to only approx. 200,000 km2 but the water area would increase [12].

If this global catastrophe were to occur in the coming centuries, the consequences for public health would be particularly serious for all states and all nations. It is already believed that climate change, with warming in some regions, such as Europe, favors the emergence of exotic and tropical diseases, which although at the beginning, only „import diseases", will spread and could become endemic diseases or epidemics in the temperate zone, so in populations that do not have natural protection against new pathogens. This creates a pandemic potential for exotic and tropical infectious diseases. Examples can be found permanently in the epidemiological communiqués of the World Health Organization (WHO), Center for Diseases Control, USA (CDC), European Center for Disease Control (ECDC), Ministries of Health (MoH), etc. and we will not insist on them. We know and sometimes we even face these diseases. But we will have to reconsider the entire public health monitoring system to deal, at least conceptually, with any present or future situation [13].

It should also be mentioned that if our Roman ancestors were afraid of the heat (heat wave – dog weather), we Romanians are afraid of the cold (dog weather), and jokers say that our Dacian ancestors, "the bravest of the Thracians", were not afraid of anything, only of draught and that's why they walked around wearing little hats covering their ears both in winter and during summer. Anyway, the

Romanian expressions “to stay warm”, “tucked up nice and warm”, and “someplace warm” express the preferences of Romanians, unlike those of Americans for whom being “cool” is a good thing. Let's not forget that the Romanian greeting formula “salut” comes from the Latin greeting of health (salus), which, as the Romanian people say, "there is nothing more important than good health". And the Romanian rulers used to welcome their equals and subjects with the greeting: "May all those present be healthy!" a wish that we also address to our readers. The international importance of climatic change for public health shows over 35 000 scientific articles indexed on the Web of Science [14].

A very special issue in this context, and which can become a global threat to humanity, is posed by biological agents of war and those of bioterrorism. Biological warfare was formally banned, meaning „with proper documents”. But this is only a formality. The Convention on the Prohibition of Biological Weapons, launched by the United Nations (UN) in Geneva (BTWC 1972) follows other conventions that prohibited, implicitly or explicitly, the use of biological weapons. But there are still no real control mechanisms and biological agents have been used repeatedly for biological attacks. The convention was accepted by approx. 90% of the countries of the world (including all the states of the European Union), which seems to be a very good situation. But the remaining 10%, who have not signed or ratified the Convention, represent about 20 states with about a quarter of the world's population [15].

Moreover, the Great Powers do not allow international control over their territory or military bases. On the contrary, Iraq, which had biological weapons but also destroyed them, was accused of possessing biological weapons, was attacked and invaded, almost destroyed, but no biological weapons were confirmed. The foreign invasion troops (peacemaking) were replaced by occupation troops (peacekeeping) and did not leave completely even after 17 years. Currently, Iraq is considered by the international community as one of the "failed states" but no guilt has been established so far and the "international community" and "public opinion" have not been effectively involved in resolving this critical situation.

Biological warfare agents (BWA) are living microorganisms (bacteria and viruses) and toxins obtained from living organisms, which are disseminated with the help of biological weapons: aircraft or spray aerosolization, explosive munitions such as missiles, air bombs, and artillery shells, or diversionary agents. In a broad sense, the disease itself, usually infectious-contagious and/or zooanthroponotic caused by biological agents is considered a biological weapon. Officially, 7 bacterial species, 3 groups of viruses, and 5 toxins are listed. This list is exhaustive due to the characteristics required for effective military use. In contrast, bioterrorists can also use any other pathogens for humans, animals, and/or plants (bacteria, viruses, prions, fungi, parasites, etc.) to make people sick, reduce agricultural or animal production, to create food crises. It should be noted that biological warfare viruses are not listed as species, but only as groups, which means that in hemorrhagic fevers, for example, Ebola, Marburg, and many more are implicitly included. This will technically (not legally) allow the use of exotic and tropical viruses in areas affected by global warming and explain the medical-military interest of some states for medical intervention in these epidemics [16].

THE NEW EUROPEAN UNION POLICY FOR ENVIRONMENTAL PROTECTION

The current President of the European Commission (EC), a kind of Prime Minister of the Government of the European Union (EU), and the former German Minister of Defense (Bundeswehr), Ursula von der Leyen, is a doctor by profession. In 2019, at the moment of her election, she published the document “A Union that strives for more. My agenda for Europe” in which she stated that “for the generation of my children, Europe is the only aspiration” [17]. Of the six priority goals she has proposed for the next 5 years, the first is A European Green Deal (an ecological Europe) and she said “I want Europe to strive for more by being the first climate-neutral continent”, partly by 2030 and partly by 2050. This requires investment in innovation and research, redesigning the economy, updating industrial policy, and a new industrial strategy. Some complied and immediately found a "minimum method" of application, without investment: they take some extra money from drivers and other small polluters, and that's about all for now [18].

But the new ecological conception was already rooted in the world for many years. We pay more for electricity because we also use more expensive, unprofitable, but environmentally friendly technologies. Electric cars are in vogue, since 1905 exceeded the speed of 100 km/h, but they were not imposed for technical and cost reasons, but there are fears that they will become mandatory. For the emotional awareness of the public opinion, at the end of 2019, an ecological skit was broadcast, in which the filmmakers did not shy away from using an autistic teenager. Was that politically correct? And maybe some were wondering, „What's next?” This was followed on February 1st, 2020 by the World Economic Forum (WEF) in Davos (Switzerland), with the main theme of the year:

„Stakeholders for a Cohesive and Sustainable World" (united shareholders for a sustainable and cohesive world), under the slogan „How to Save the Planet". 3,000 delegates from the largest private companies participated. Work has been conducted to prepare for the massive reorientation of global capital flows, through which financial giants, including the World Bank and the European Central Bank, are repositioning themselves to maximize their profits. As an example, only the promoter of this initiative, the BlackRock investment fund, has to invest over 7 trillion dollars (i.e. thousands of billions), more than the annual budget of most countries. The Davos Forum has been strongly involved in the Climate Change Agenda. Although it is acknowledged that it is impossible to answer the question: „when will climate risk have an impact on the planet's economy?". It is considered that climate risk is also a risk for investments and that there will be a massive reallocation of capital through the Green Finance Initiative. Thousands of billions of dollars of investment funds will be channeled to „green" projects, so funding is not for everything and especially not for everyone. But in the meantime, the outbreak of the Covid-19 pandemic partially canceled the old plans, replacing them with the Great Reset of the world economy for the benefit of the Great Powers, the world's great finances, and multinationals. The US has an ambivalent position [19].

It seems that the „climate change" paradigm will be imposed to become the „new religion" of the 21st century, with a God whom, although we do not perceive, His priests are threatening us in His name. There is a risk that money, not work, will become the engine of progress and well-being, including the source of public health. But the investment will be directed at „rule of law" states that stand upright in the face of great global finance. However, we have the advantage that we are members of the European Union, we shall rise with it and, God forbid, we will fall with it [20].

In 2019 the „international community" says that the present situation is a „climate emergency" and in 2020 Roumanian Academy publish a „point of view" about climate change [21].

CONCLUSIONS

Climate change exists and has always existed, but there is no scientific evidence for global warming or for climate risks other than those we already know. But we find them better and faster, and the damage is greater because the population is larger and the human environment is more extensive, including in risk areas. Public health is already facing danger, directly and indirectly, for multiple reasons, to which "climate change" is added. It seems that the problem is mainly political, with economic and financial implications, and will be used as financial leverage at the global level, for global interests. For now, let's remain optimistic, but also prepared and vigilant.

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