

УДК 811.111:551.583

Silkou M., Negrusha O. Supervisor Alioshyna N.

Climate Change

Belarusian National Technical University

Minsk, Belarus

Climate is one of the most important aspects of geography. Variations in climate throughout the world affects, tourism and recreation, food production, demand for manufactured goods, energy consumption, patterns of disease, coastal flooding and weather systems.

Increasingly, people are realizing that human activities are affecting global climate. The impacts of global climate change vary from place to place and some regions are more vulnerable than others.

Natural and anthropogenic processes have serious characteristics influence the global energy balance: natural greenhouse effect; incoming short-wave radiation, and outgoing long-wave radiation; global dimming due to volcanic eruption; methane gas release; increase in greenhouse effect due to human activity, economic development.

The greenhouse effect is the process by which certain gases (greenhouse gases) allow short-wave radiation from the Sun to pass through the atmosphere but trap an increasing proportion of outgoing long-wave radiation from the Earth.

The enhanced greenhouse effect is the impact of growing levels of water vapor, carbon dioxide, methane, ozone. And this, in turn, is the result of an increase in human activity. Mainly energy, industry and agriculture.

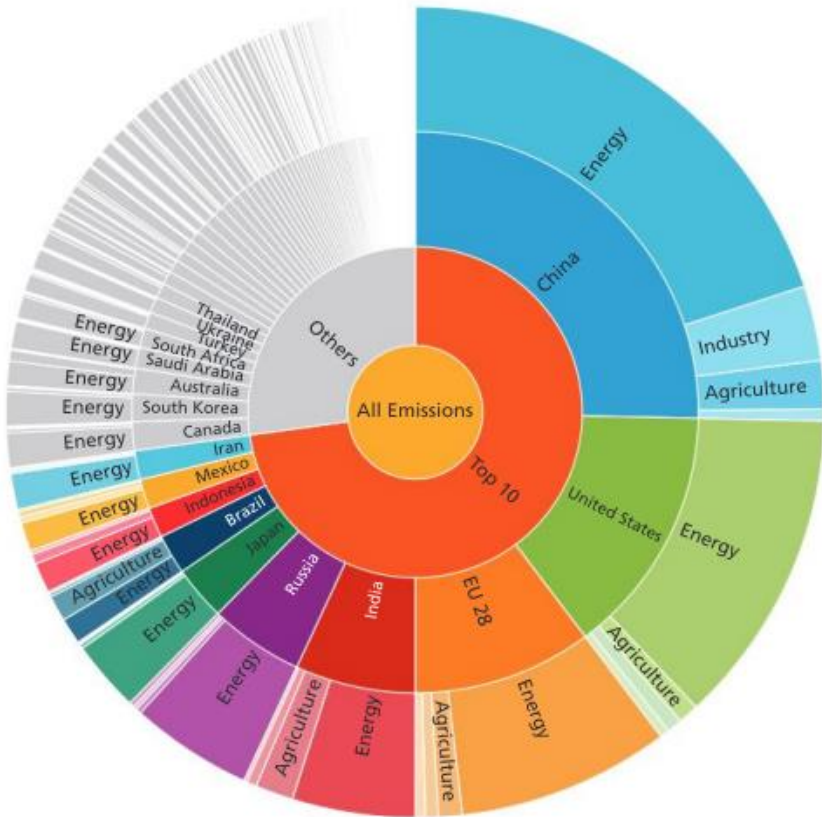


Fig. 1 – Greenhouse gasses emissions chart

As it can be seen in Figure 1, China is the largest emitter of greenhouse gases, followed by the United States. Based on the information in this graph, it can be assumed that China is the biggest contributor to climate change. But in reality, it is not the case. The population of the People's Republic of China is about 1.5 billion, while the population of the United States of America is 330 million. But, at the same time, the United

States of America emit 50% less greenhouse gases. After simple calculations, it turns out that the amount of carbon dioxide emitted per citizen of China is 2 times less than per citizen of the United States of America. Similar values with carbon dioxide emissions will be typical for all countries with a high standard of living.

A change in one component of nature will lead to a mandatory change in all the others, as well as to the change in the standard of living of people. Consider the increase in sea level and temperature.

An increase in sea level will change the distribution of energy. A good example is the largest warm current - the Gulf Stream. It carries a huge amount of energy from the Gulf of Mexico to Northern and Western Europe. Due to the increase in temperature and volume of water off the coast of Europe, the Gulf Stream has already begun to weaken. And this means that the amount of energy transported from the Gulf of Mexico has also decreased. And the large amount of energy that remains in the Gulf of Mexico and off the southern coast of the United States of America turns into tropical storms, which have brought multi-billion dollar losses to the southern states of the United States over the past few decades. Due to tropical storms, there is an uneven distribution of precipitation in the central and southern regions of the country (Texas, New Mexico, Oklahoma, Colorado), and these areas are faced with severe droughts. These are relatively young American prairies that completed their formation about 10,000 years ago from the desert, which makes them lands that may soon be deserted. These territories contain one of the largest wheat belts in the world. More than 90% of the wheat that is grown in the US is grown on the Great Plain. US wheat yields are declining. In 2009, 60 million tons of wheat were harvested, and in 2020, 50 million tons were harvested. Due to the declining yields on the North American prairie, the US will go from being the world's

4th wheat exporter to a major importer. Due to the trade imbalance in wheat, wheat prices will rise in the short term. An increase in wheat prices will reduce demand in countries with low solvency and at the same time make it profitable to sell wheat from local producers. This will lead to a sharp increase in starving people in the poor regions of the planet, which will contribute to the spread of harmful social phenomena (crime, terrorism, and various radical religious movements). Because of this, governments will have to enlarge subsidies for food, and reduce investment in alternative energy sources. Which in turn will not change the amount of greenhouse gases emitted in these countries.

Global warming is not always a negative process. For example, with an increase in temperature on the planet, it will increase the duration of the vegetative period in the northern countries, which in turn can increase the yield of agricultural land. The ability to grow heat-loving crops in areas where it was not possible before.

Nevertheless, the negative effects of global warming outweigh the benefits. After all, there is a threat of a significant disappearance of biodiversity on the planet, which is not able to adapt to changing conditions as quickly as a person. As well as a change in human economic activity, favorable areas for living, and large economic losses.