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FREEZING NEWS:

POLAR BEARS' HABITAT IS ENDANGERED!



GOALS:
 - to show the negative impact of climate change, resulted from human activities, on polar life;
 - to seek and suggest ways of preventing further environmental damage.

METHODS: Survey and internet research, graphical representation, analysis and comparison.

Polar bears are a **symbol** of global warming. They inhabit the North Pole as well as the frozen shores of Siberia, Norway, Greenland, Canada and the USA. These places are strongly affected by the rise of temperatures.

Global warming harms native species in many ways by slowly destroying their habitat. Bears' dependence on sea ice makes them highly vulnerable to climate change. They rely on the sea ice environment for travelling, hunting, mating, resting and raising their offspring. Their prey is also heavily dependent on the state of ice, seals being an example. Low birth rates limit the species' ability to adapt. Polar bears are at the top of the food chain and play an important role in the overall health of the marine environment. Their protection is important for maintaining balance in the Arctic world.



GLOBAL WARMING: OUR NEW REALITY



GLOBAL WARMING

Global warming is the gradual rise in the overall temperature. It is caused by the increased concentration of greenhouse gases in the atmosphere.

The greenhouse effect is a process that occurs when gases in the atmosphere trap heat from the sun, that would otherwise be reflected back into space.

Human activities cause an increase in the concentration of greenhouse gases. They trap solar radiation in the atmosphere, which leads to warming.

CAUSES

Carbon dioxide (CO_2) is a greenhouse gas that comes from the extraction and burning of fossil fuels, from forest fires and from natural processes. *Figure №1* provides information about atmospheric CO_2 levels measured at the Mauna Loa Observatory, Hawaii, in recent years, taking seasonal changes into account. Between 2005 and 2022, there is a relatively steady increase in air pollution levels. There are mainly ups and some downs. In recent years, growth alternates with decline, which subsequently catches up. The graph shows no signs of change in the trend.

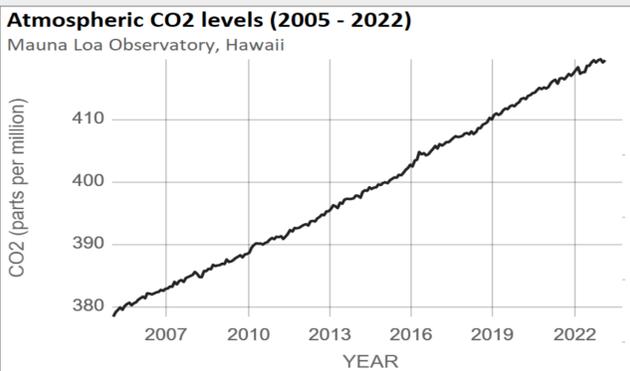


Figure №1 Source: climate.nasa.gov

Figure №2 shows the effect of human activities on the amount of greenhouse gases in recent years. People have increased the concentration of CO_2 in the atmosphere by 50% in less than two centuries. Pollution is most pronounced in the energy sector (about ¾), followed by agriculture and forestry - 19%. A smaller share, but still significant, has industry (cement, chemicals and petrochemicals) - 5%, and waste (wastewater and landfills) - 3.2%.

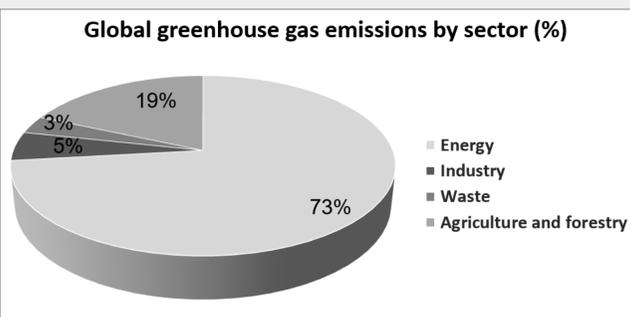


Figure №2 Source: ourworldindata.org

CONSEQUENCES

Figure №3 illustrates the change in global surface temperature between 1880 and 2022. There is an alternation of decrease and rise, with the data pointing to a long-term warming trend. 2020 and 2016 are the hottest years on record since recordkeeping began in 1880.

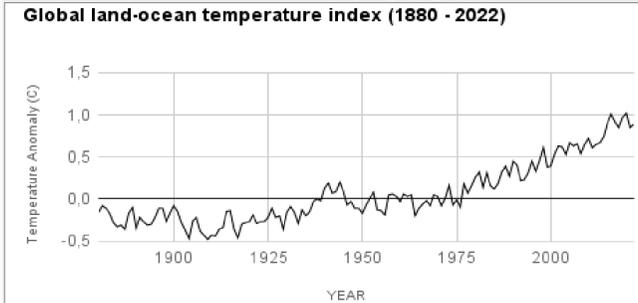


Figure №3 Source: climate.nasa.gov

The Northern Hemisphere is not the only one affected by this problem. To the south, Antarctica is losing ice mass at an average rate of about 150 billion tons per year, contributing to sea level rise.

The data from *Figure №4* shows that the ice sheets in Antarctica have been gradually losing mass since 2002. They store about 2/3 of Earth's fresh water. Meltwater is responsible for about 1/3 of the average global sea level rise since 1993.

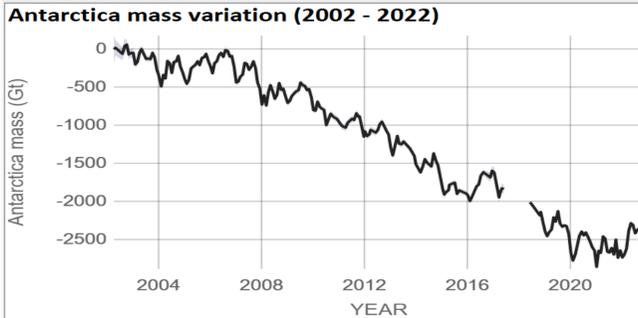


Figure №4 Source: climate.nasa.gov

Global sea levels are rising as a result of global warming, with recent levels being unprecedented in the past 2,500 years.

Sea level rise has mainly two reasons - melting ice and expansion of seawater as it warms.

Figure №5 traces the change in global sea level since 1993. The gradual rise is steady and there are no signs of change.



Figure №5 Source: climate.nasa.gov

SOLUTIONS

Renewable energies - replacing fossil fuels with solar, wind and geothermal energy;

Sustainable infrastructure - building new low-energy buildings and renovating the existing constructions;

Energy & water efficiency - using more efficient devices (e.g. LED bulbs);

Sustainable agriculture & forest management - encouraging better use of natural resources and stopping massive deforestation;

Adapting **responsible consumption & recycling habits** (food, clothing, cosmetics);

Sustainable transportation - promoting public transport and carpooling.

SURVEY

We surveyed 50 people, who live in our neighbourhood, from 20th to 25th January 2023. The aim is to determine the familiarity with energy efficiency and study the use of light bulbs in people's homes. The pie charts illustrate respondents' answers.

The answers to the first question (*Figure №6*) show that the majority of people are familiar with the topic, but there is a need for further informing.

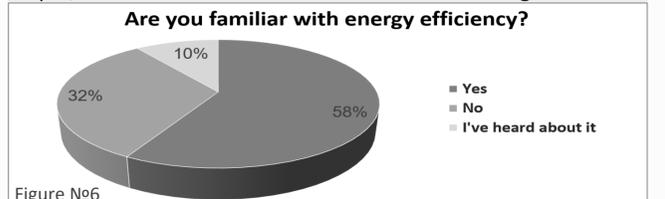


Figure №6

Figure №7 shows that 52% of respondents use ordinary light bulbs, and only 28% - LED bulbs, which are effective devices to reduce the effect of the energy industry on the planet.

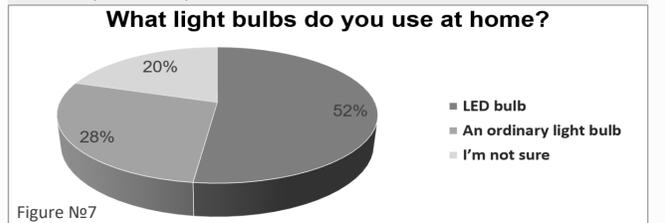


Figure №7

CONCLUSION

Polar bears' home is threatened by the melting ice. The rise in temperatures (global warming), caused mainly by human activities, is the reason for that. The research indicates an increase in the amount of CO_2 in the atmosphere and as a result - a rise in temperatures and sea level. The damage has already been done, but there are ways to prevent further consequences.

The survey we conducted shows us that people are becoming more aware of the seriousness of the problem related to global warming, and are taking trouble to prevent it. We believe that society should be more informed about environmental matters in order to protect Earth - our home.