

managing the waste of disposable goods. At the same time, having looked out for the growth profits the companies did not intend to reduce the output of such goods.

Surveys have shown the world generates 2.01 billion tonnes of municipal solid waste annually, with at least 33 percent of that—extremely conservatively—not managed in an environmentally safe manner. Worldwide, waste generated per person per day averages 0.74 kilogram but ranges widely, from 0.11 to 4.54 kilograms. Daily per capita waste generation in high-income countries is projected to increase by 19 percent by 2050, compared to low- and middle-income countries where it is expected to increase by approximately 40 % or more [1, p. 3].

The reasons for environmentally harmful consumption are also the results of companies` marketing communication policy. Every day a consumer is subjected to thousands of advertisements per day that convince a consumer that he (or she) will be happier, and society will consider him (or her) successful with a new car, a modern refrigerator, fashionable jeans, or the latest model of a mobile smartphone.

For example, it is common knowledge that the use of paper products leads to large emissions of greenhouse gases from production to waste disposal. The negative impact on climate from this production covers the destruction of carbon capture trees and biodegradation in landfills.

Recycling the packaging of goods by consumers does not solve the problem of plastic waste and does not stop climate change quickly. Indeed, under the influence of solar radiation, plastic packaging emits impurities of greenhouse gases methane and ethylene, and over time, the volume of emissions grows, which leads global warming.

Companies face a major challenge in transforming marketing strategies and creating innovative products and their packaging aimed at the safe production, consumption, and disposal of waste to end the destructive impact on climate change.

References

1. Kaza, Silpa; Yao, Lisa C.; Bhada-Tata, Perinaz; Van Woerden, Frank (2018). What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050. Urban Development;. Washington, DC: World Bank. // [Electronic resource]. Retrieved from <https://openknowledge.worldbank.org/handle/10986/30317>

THE ECOLOGICAL PROBLEM OF CLIMATE CHANGE IN SLOVAKIA

*Didijer K., Mag., Lekus D., Prof.,
University of Niš, Niš, Slovak Republic
uniuni@ni.ac.rs*

During recent decades, there have been going on notable changes in the global and European climate. Temperature has been rising, precipitation in many parts of Europe has been changing and weather extremes show an increasing frequency in

some regions. Human induced climate change is expected to continue in the coming decades, with considerable effects on the environment. Consequences of climate change include an increased risk of floods and droughts, losses of biodiversity and damage to economic sectors such as forestry and agriculture.

Slovakia belongs to the northern moderate climatic zone. There are four seasons during the year – spring, summer, fall and winter. The topography of Slovakia is very diverse and the altitude is an important factor affecting the precipitation.

A relatively small area of the Slovak Carpathians exhibits substantial differences in climate associated mainly with the complex orographic conditions and varied conditions of air circulation in the individual regions. The maritime influence on climate, both from the Atlantic and the Mediterranean Sea, decreases from the west towards the east. Cyclones fuelled by the warm Mediterranean air bring abundant precipitation, particularly to the southwestern and southern parts of the Slovak Carpathians, while cyclones of the Atlantic origin influence mostly their northwestern and northern parts. Due to greater continentality of the Eastern Carpathians, the winter air temperatures in this area are somewhat lower than in the western part of the Western Carpathians. In some mountain valleys and depressions (e.g. the Spišská Depression) with weak mean wind speed, the winter temperatures are lower by 2–4°C as a result of the frequent occurrence of inversions.

Temperature is the one of the most important climatic parameters and one of the most important ecological factors. The temperature conditions are one of the basic factors of the complex assessment of the territory. In the landscape, air temperature is the most influenced by geographical location, i.e. latitude determining insolation conditions, altitude, but also orographic conditions, continental or maritimity indicating distance from the sea and others.

Temperature is a state variable and is determined by the average kinetic energy value of the disordered motion of molecules of a given substance (air), calculated per one molecule. From a biometeorological point of view, it is one of the plants living conditions, because it determines and influences their basic vital functions. The following temperature characteristics are most commonly used in relation to the living organisms:

- The biological minimum temperature is the minimum temperature at which active vegetation begins in spring or a certain growth phase begins. At this temperature in autumn, the plant stops growing. For most crops, this is approximately 5.0°C. However, during the vegetation its value differs for different growth phases. They also differ according to the plant type and variety.

- The active temperature is the air temperature that exceeds the biological minimum temperature. It is also referred to as the air temperature, which limits the spread of certain species of plants on the Earth.

- The effective temperature is the air temperature reduced by the biological minimum value.

- The critical temperature is the extreme temperature (maximum or minimum) at which plant organs or even whole plants are damaged or destroyed.

- Lethal temperature is fatal temperature at which the whole organism dies.

The temperature conditions of Slovakia are characterized by the exceptional diversity caused mainly by the territory orographic division. Mountain chains such as Carpathians, Beskydy, High and Low Tatras and others, form the climatic dams, which have a significant impact on the Slovak climate character and hence its temperature regime. Moreover, the overall weather situation regime has a significant influence on the temporal and spatial Slovakia temperatures distribution.

The average annual vertical temperature gradient in Slovakia is 0.61 °C per 100 m height. However, in the summer months, its value increases up to 0.76 °C and in the winter months it decreases to 0.33 °C. Extreme temperatures can rank among the characteristics limiting the production process of field and garden crops, and thus often the agricultural production. In Slovakia, the absolute temperature maximum was measured on July 2017 in Hurbanovo: 40.3 °C and the absolute temperature minimum on February.1929 in Vígľaš-Pstruša: 41.0 °C.

So, temperature changes are indicators of climate changes in region and it can influence at the structure and function of ecosystems in region.

Following trends were observed from 1881 to 2010:

- increase of mean annual air temperature by about 1.7 °C;
- decrease of annual precipitation totals by about 0.5 % (mainly in the south of Slovakia - up to 10 %, small increase in precipitation totals is only at the northern border of Slovakia – about 3 %);
- decrease of all snow cover characteristics by altitude 1000 m a. s. l.; increase of snow cover days and depths was recorded only in higher mountains;
- increase of potential evapotranspiration and decrease of soil humidity – southern Slovakia gradually dries out which is visible on the characteristics of evapotranspiration, soil humidity and solar radiation;
- the amount of extreme daily precipitation increased within the last 15 years, this caused the growth of the risk of local floods.

General conclusions to the further climate change (change of air temperature) in Slovakia:

- in comparison to the period between 1951 and 1980 the average air temperature may gradually increase by from 2° C to 4° C – the so-far inter-annual and interseasonal weather fluctuation may remain;
- the decrease of the average daily air temperature amplitude is caused by the faster growth of the daily minimum air temperature in comparison with daily maximum air temperature;
- the projections do not assume influential change in the annual air temperature cycle; lower air temperature increase may be measured in autumn in comparison with the air temperature increase measured in spring, summer and winter.

So, total warming has been recorded during the last 30 years. The expected warming will also significantly affect the current regionalisation of agricultural production and the distribution pattern of field and horticultural crops. This will enable shifting of the temperature-intensive crops from the lower regions to the higher regions of Slovakia.