

Abrupt Changes in Weather in Uzbekistan: Causes, Consequences and Ecological Solutions

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Annotation

This article analyzes the sharp changes in weather conditions observed in Uzbekistan, the global and local factors influencing their formation, and the economic, ecological and social consequences of this process. The process of climate change, which is intensifying globally, is having a significant impact on the Central Asian region, in particular Uzbekistan. Such phenomena as increased air temperature, reduced precipitation, water shortages, and increased dust storms are becoming increasingly relevant issues today. The article also proposes practical solutions aimed at increasing the ecological culture of the population, protecting nature, and strengthening advocacy work to ensure ecological sustainability.

Key words: climate, ecology, environment, conservation, awareness.

Introduction

Environmental problems, which have become one of the most pressing issues in recent years, are becoming increasingly serious. This is not just a simple problem; it is one of the factors that make up a large part of our lives. The strongest impact of this global process in Central Asia is felt in Uzbekistan. Although the country's climate is dry and sharply continental, in recent years, a sharp increase in air temperature, an increase in summer heat waves, warming winters, a decrease in precipitation and a decrease in water reserves are creating new environmental problems. Among the main causes of climate change are global warming, an increase in greenhouse gas emissions, industrial development, and the increase in the number of vehicles, as well as local environmental tragedies. This is very sad and harmful to human health. In recent days, our state has been taking the necessary measures. This article presents the main causes of air pollution, solutions, and ideas for promoting nature conservation among the population.

Causes of Air pollution

In recent years, air pollution has become more frequent in Uzbekistan, especially in Tashkent, Fergana, and Termez regions. These days, Tashkent, the capital and largest city, is at the top of the world's bad air rankings. This is a very sad situation, even ahead of India. Let's study the major and minor reasons for this. The main reasons are the large number of cars, the development of industry, the use of coal by the population, construction work, and a number of similar factors. Nowadays, there are too many cars, and this not only pollutes the air through smoke, but also causes traffic jams. For example, if we assume that an average of 40 people can fit in one bus, and if they travel by car, not by transport, then 4 people will go to 1 car and occupy 10 cars, and how long will 10 cars be? And as a result, it causes traffic jams and how much toxic smoke is emitted from those 10 cars. Now, if we take industry, there are currently 10,670 industrial enterprises in Tashkent, 5,885 in Fergana, and 56,567 industrial enterprises in Uzbekistan in total, as of May 1, 2025. Another big reason is the use of coal in heating systems. When coal is burned, smoke PM2.5 and PM10 particles are released, sulfur dioxide(SO₂); nitrogen oxide(NO₂). These particles are invisible to the eye, but they cause lung and heart diseases, lead to climate change and increase air pollution. It is true that it is difficult for the population to survive in the cold without using coal, but there are several ways to do it... It is known that due to the increase in population, our need for housing will increase, but this does not mean that we should build houses and fill the city with dust, or that cutting down trees is not the right thing to do. It is true that new high-rise, multi-storey housing is needed, but it can be built on the outskirts of the city, in my opinion, there are many similar measures. Such air pollution and global warming are becoming very relevant. Of course, if people are dying from bad air every year, who will use all these houses, manufactured goods, and cars? That's why I think we need to take ecology and economy, and especially education, into account.

Anthropogenic causes of air pollution and sustainable reduction strategies

In my opinion, humans are the main culprits of air pollution. Because it is true that small factors can accumulate and cause big problems. For example, many people throw plastic bottles on the sidewalks, and we know that plastics begin to decompose in 100 years or even longer. This is certainly a great harm to nature, including the air. The solution to this is to sell them for money depending on the type of garbage, for

example, a plastic bottle is priced at 100 sums. This benefits everyone, because the seller gets money, and the plastics are recycled or silicone cotton is produced from the garbage. And the harm to nature is reduced. Another solution is to develop electric vehicles instead of old fuel-powered cars. If this is a solution, then public transportation should be increased, and then electric buses should be increased, because as I mentioned above, the number of people who can fit in one bus is equivalent to 10 cars. This will not only help clean the air, but also be a solution to traffic congestion. Factories are considered the most harmful factor, and it is impossible to completely limit them, because they also bring great benefits. However, there are ways to prevent it, even if only partially. The main solution is to install special filtering devices. Creating green gardens acts as a natural filter. Replacing old technologies with modern ones. Another major cause of construction work is the planting of trees and dust-collecting nets around large construction sites. For example, if we take developed countries such as the USA, Dubai, and China, dust-collecting nets are mandatory in the USA, and constant wetting with water is a mandatory rule. Special dust-collecting equipment is used. Concrete mixing is prepared in closed areas. Surveillance cameras and rapid monitoring are installed, and dust from construction is immediately detected. If the norm is exceeded, construction is stopped. Similar measures have been taken in Dubai and China. Almost all use dust nets, cement is prepared in closed areas, and dust-free electrical equipment is used, including regular spraying of the ground surface with water, and the creation of green zones. We will consider solutions for coal that cannot be eliminated but can be replaced by other sources. The use of coal is currently popular in remote villages, because delivering gas to those areas is a problem, but it is necessary to provide gas to villages that can be switched to natural gas as much as possible. Establishing an electric heating system in areas where gas is not generally available, that is, using electric stoves generally does not harm the air. Modernizing stoves, old stoves do not burn coal completely. They emit a lot of smoke, but new model stoves (pyrolysis stoves) burn fuel completely, their thermal efficiency is twice as high, and the smoke emitted into the air is reduced by up to 70%. This method uses less coal and keeps the air clean. Stopping the burning of waste, which has not been stopped so far, will also help a lot. Of course, there are those who burn waste, despite the fact that the state itself imposes fines. In my opinion, anyone who witnesses such an incident and contacts the responsible officials should be rewarded. If we implemented these measures, each of us would have consistently clean air.

Environmental advocacy and public engagement.

Despite numerous warnings from the state, there are still many people who are harming nature. Therefore, it is necessary to promote the need to protect nature to the population in the first place. To do this, widely promote through the media and social networks that nature is our greatest blessing. That is, to attract the population through environmental campaigns, interesting contests on social networks, and hashtags such as #natureisourfriend. Also, to increase environmental literacy through the education system, that is, to establish in-depth teaching of environmental science in schools, kindergartens, and higher education institutions. At the same time, to develop practical classes and laboratory work. To create cartoons, videos, and interactive projects on ecology for children in preschool educational organizations. To make environmental events a tradition. This includes tree planting days, the opportunity for the population to contribute through volunteer programs, green area cleaning events, and organizing environmental festivals in cities and villages. Promote a system of rewards and incentives. Establish a system of giving gifts and specially nominated certificates to individuals, schools and organizations that have contributed to environmental protection. In addition, in every corner of our country, I think it is necessary to actively develop the topic of raising bee(hashar) on a specific day of the week and widely promote it.

Conclusion

The sharp change in Uzbekistan's weather is the result of the interaction of global climate processes and local environmental problems. Rising air temperatures, water shortages, frequent dust storms and reduced precipitation pose a serious threat to the country's economic and environmental stability. The responsibility of the state, society and each citizen is of great importance in eliminating or mitigating this problem. Strengthening awareness-raising activities on nature protection, planting trees, saving water, reducing waste, and improving environmental knowledge and culture is one of the effective ways to combat climate problems. It is also necessary to form the environmental consciousness of young people, strengthen environmental education in schools and universities, and increase attention to environmental topics in the media. In conclusion, the climate and ecological future of Uzbekistan depend on specific measures being taken today and the active participation of the general public. Preserving nature is the duty of every citizen, and understanding this responsibility is the key to a sustainable future.

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