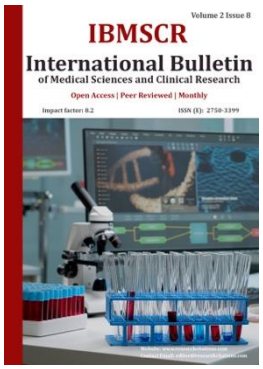

ENVIRONMENTAL CHALLENGES IN UZBEKISTAN: A GROWING CONCERN OVER WORSENING AIR QUALITY AND ITS IMPACTS ON PUBLIC HEALTH AND SUSTAINABILITY

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Overview

Article is concerned over the poor quality of air, especially in the capital city Tashkent, increased level of pollution, and its impact to both urban and rural areas. Starting with brief flashback to the past air condition in one of the most historical countries over the globe — Uzbekistan, and ending with solutions to the given issue that are eligible to any other country suffering with the same or similar issues.

Key words: 1. Eco-friendly, 2. Public transportation, 3. Electric vehicles, 4. Renewable energy, 5. Emissions, 6. Greenhouse gases, 7. Infrastructure, 8. Sustainability, 9. Air pollution, 10. Renewable fuels

It used to be different.

Uzbekistan is a country that is situated in central Asia, bordering other central Asian countries such as Kazakhstan, Kyrgyzstan, Tajikistan, Afghanistan, and Turkmenistan. Since prehistoric times, Uzbekistan has been well-known for its deep insight into culture, tradition, and customs, and it is now one of the biggest tourist attractions. In the first millennium BC, the first people recorded in Central Asia were Scythians, who were originally from the northern grassland known as Uzbekistan. At that moment, they had little or no issues with the quality of the air, for our ancestors used to initialize agriculture, cultivation, and planting as the farming that made Uzbekistan flourish and stabilize its natural resources that provided inhabitants with better food supplies and fresh air.

However, it has changed a lot since then. For the first time in Uzbekistan's history, it reached an international level with an unrepeatable ranking for the most pollutant city in 2024: Tashkent, the capital and one of the largest cities of Uzbekistan. Surely, it's nothing to be proud of, but unless we take immediate action, we will see potential consequences soon enough.

What do statistics say?

Statistically, Uzbekistan was introduced to IQAir in 2019 with a PM2.5 reading of 41.20 µg/m2 as its yearly average. This sustainable high rating placed it at the higher end of the 'unhealthy for sensitive groups' bracket, which required a PM2.5 reading of anywhere between 35.5 and 55.4 µg/m2 to be classified as such. PM2.5 refers to particulate matter that is 2.5 micrometers or less in diameter, in some cases going down to sizes as small as 0.001 microns and beyond. Due to its extremely small size, it has a host of severe health effects when respired, and as such, it is used as one of the major components in calculating the overall air quality rating.

How did it happen?

- Extensive vehicle use: gasoline-based cars, including Chevrolet, which has been dominating the car market with 65.4% of the market share since March 2008, and BMW,

along with BYD and Hyundai, has contaminated the atmosphere adversely. Since the main greenhouse gas produced by vehicles is carbon dioxide (CO2), they also produce nitrous oxide and methane, which cause residents to suffer from severe diseases such as stroke, chronic obstructive pulmonary disease, trachea, bronchitis, and lung cancer, aggravating asthma and lowering respiratory infections.

- Infrastructure and manufacturing: now Uzbekistan is more concentrated on manufacturing goods, fabricating raw materials, and providing more manual job opportunities for those who have quit. The majority of construction machinery and vehicles run on diesel fuel, which releases carbon monoxide, carbon dioxide, nitrogen oxide, and hydrocarbons into the air. Because of this, not only people but also the environment itself is getting damaged, affecting negatively crops and tree growth, leading to reductions in agricultural crop and commercial yield and increased susceptibility to disease, pests, and other environmental stresses.

What do we do now?

Reminder!

Air pollution is not only a problem in Uzbekistan, which means solutions are universal.

- Introducing eco-friendly public transportation: First, fully electric vehicles (EVs) release no harmful greenhouse gas emissions as their motor and battery will be charged electrically. EVs are a much cleaner version of traditional transport than their petrol and diesel counterparts, and they can also minimize air pollution. Secondly, public transport usage can contribute to a decrease in the number of vehicles on the road, which leads to a reduction in emissions and pollutants being released into the atmosphere.
- Replacing toxic infrastructure functioning sources with renewable fuel: by stopping the use of fossil fuels in fabrics, construction, and infrastructure and replacing them with a more environmentally friendly version, which is renewable energy-based fuels, we can eliminate exhaust fumes that are being released relentlessly by those production organizations.

Electricity supply in Uzbekistan faces challenges – particularly, in the rural areas where 60 percent of the population live. The modernization and rationalization of power stations, transmission and distribution networks are priorities for national industrial development as well as for the improving living standards of the citizens. The development of renewable energy would free many remote locations from grid connectivity, ensuring reliable supplies while also reducing the significant transmission losses. Currently, the only renewable with some share in the energy balance of Uzbekistan is hydropower. Despite their potential, the other renewables presently make an insignificant contribution.

- Increasing green spaces: Sustainable, climate-smart urban development is a global challenge. Population growth in Central Asia's cities puts more strain on the city's basic infrastructure, especially in the transport and energy sectors.

Globally, cities emit 70% of greenhouse gases, consume 75% of energy, and use only 1% of land resources. According to experts, by 2050, the population of cities will grow by 68%.

For Uzbekistan's cities, air pollution and the loss of green spaces, which negatively affect the environment and public health, are serious problems.

Despite the lack of experience in sustainable urban planning, the country is trying to solve these problems successfully with the support of international organizations. For example, the Yashil Makon (Green Space) initiative aims to increase green spaces in Uzbekistan's cities by 30% by 2030. This year, the country established the Green Central Asian University, which

will not only train young specialists but also offer science-based solutions on climate-resilient practices and technologies aimed at adapting to climate change in Uzbekistan and Central Asian countries.

Uzbekistan is planning to launch a project of the "Ethnoecological Research Center", which will propose optimal solutions for traditional architecture adapted to local conditions, allowing to combine the rich cultural history of local ethnic design with the principles of sustainable urban development.

What did we learn about the air quality in Uzbekistan?

By concluding, I can say that it is not only the determination of the government to take bigger steps; it is US that can reshape the future and create a more sustainable one for upcoming generations and, of course, ourselves.

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