



**THE SMOGGY LANDSCAPE OF TASHKENT:
REDUCING ENVIRONMENTAL RISKS
THROUGH A TRANSITION TO A GREEN
ECONOMY**

Karimova Sayyora Abdurashid qizi

***Annotation** This article examines the rising air pollution in Tashkent and discusses why a rapid transition to a green economy is essential. It provides an overview of the sources of air pollution, its impacts on public health and the local economy, and the main directions for adopting green economic policies in the city. The paper argues that sustainable transport, renewable energy, and modern environmental management systems are key to improving air quality and ensuring long-term ecological stability.*

***Keywords:** Tashkent, smog, air pollution, environmental threats, green economy, renewable energy, green transport, waste management.*

In recent years, Tashkent has experienced a significant decline in air quality due to fast urbanization, the rapid growth of private vehicles, intensive construction, and outdated industrial technologies. According to international air quality indicators, the level of PM_{2.5} particles in the air often exceeds safe standards. This situation creates serious risks for human health, economic development, and the overall quality of life.

Because of these environmental challenges, the transition to a green economy is becoming not only an ecological necessity but also a strategic opportunity for Tashkent. This paper aims to analyze the main causes of air pollution in the city and present practical solutions that can support a cleaner and more sustainable future.

2. Air Pollution in Tashkent: Causes and Consequences

2.1. Main sources of air pollution

Air pollution in Tashkent is caused by several interacting factors.

1) Road transport

The number of cars in the city has grown sharply and now exceeds 1.5 million.

Many vehicles are old and do not meet modern emission standards.

Low-quality fuel increases the release of harmful gases such as CO, NO_x, SO₂, PM₁₀, and PM_{2.5}.

Transport is estimated to produce up to 60–70% of the city's air pollution.

2) Industrial activity

Factories in metallurgy, energy production, and construction materials release significant amounts of emissions.

Filtration systems in many industrial facilities are outdated or inefficient.

3) Large-scale construction

Continuous construction projects produce large quantities of dust.

Insufficient dust-control measures worsen particulate pollution.

4) Household and heating systems

Some heating boilers use low-quality fuel.

During the winter months, air pollution increases sharply due to temperature inversion.

2.2. Health impacts of poor air quality

The decline in air quality has serious health consequences:
higher risk of asthma and chronic bronchitis;
increased cardiovascular diseases;

greater probability of lung cancer;

slower respiratory development in children;

weakened immune system.

Medical data shows that respiratory infections rise by 25–40% during months with heavy smog.

2.3. Economic impacts

Air pollution creates not only environmental but also economic losses:

rising healthcare costs;

reduced labor productivity;

lower attractiveness for tourism and investment;

depreciation of property value;

increased government spending on environmental management.

According to the World Bank, air pollution may cause economic damage equal to 3–5% of GDP in developing countries.

3. The Need for a Green Economy in Tashkent

3.1. Concept of a green economy

A green economy promotes economic growth while reducing environmental risks. Key principles include:

efficient use of natural resources;

reducing waste and emissions;

energy efficiency;

renewable energy development;

protection of natural ecosystems;

low-carbon production.

3.2. Why the transition is urgent for Tashkent

Air quality indicators exceed safe levels.

Environmental risks threaten long-term public health.

Climate change is expected to intensify regional environmental stress.

Urban expansion continues rapidly.

Industrial infrastructure needs modernization.

4. Main Directions for a Green Transition in Tashkent

4.1. Renewable and clean energy development

1) Solar energy

Uzbekistan has around 300 sunny days per year.

Solar panels on rooftops can reduce electricity consumption by 30–40%.

Tashkent's annual solar radiation level is high enough for large-scale use.

2) Wind energy

Several areas around Tashkent have suitable wind speed for small and medium wind turbines.

3) Energy-efficient technologies

LED lighting systems, energy-saving boilers, and smart heating technologies can reduce emissions by 20–25%.

4.2. Green and sustainable transport

1) Electric vehicles (EVs)

More charging stations are needed across the city.

Tax reductions can encourage the use of EVs.

2) Public transport modernization

Increasing the number of electric buses;

Developing new tram lines;

Creating dedicated bus lanes to reduce traffic jams.

3) Bicycle infrastructure

Building 200–300 km of safe bicycle lanes;

Expanding pedestrian-friendly zones in the city center.

4.3. Urban greening and eco-urban planning

Planting tree species that effectively capture dust (such as maple, acacia, pine, and serbian spruce).

Expanding green belts around the city.

Encouraging green roofs and vertical gardens on commercial buildings.

4.4. Improving environmental monitoring

Installing more automatic air monitoring stations;

Creating a real-time online air-quality map;

Using artificial intelligence for emission prediction;

Introducing differential environmental taxes for polluters.

5. Benefits of a Green Economy for Tashkent

5.1. Social benefits

Better public health;

Higher quality of life;

Improved environmental awareness.

5.2. Economic benefits

Lower energy costs;

New green jobs;

Greater investment attractiveness;

Higher technological efficiency.

5.3. Environmental benefits

Reduced CO₂ emissions;

Improved air quality;

Balanced urban climate.

Conclusion

The environmental situation in Tashkent demonstrates that rapid and systematic reforms are urgently required. Growing air pollution threatens public health, economic stability, and the city's long-term development. A transition to a green economy can help reduce environmental risks, improve living conditions, and create a sustainable and modern urban environment. Successful progress in this direction requires coordinated efforts between government institutions, the private sector, and the citizens of Tashkent.

References :

1. UNEP. (2022). Green Economy Report.
2. WHO. (2023). Air Pollution and Health.
3. OECD. (2020). Green Growth Indicators.
4. World Bank. (2021). Cities and Climate Change.
5. Government of Uzbekistan. (2019). Green Economy Strategy 2030.
6. IEA. (2022). Clean Energy Progress.
7. Asian Development Bank. (2021). Urban Air Quality Management.
8. IPCC. (2023). Climate Change Assessment Report.