POLICY BRIEF:

Central Asia's Hazardous Air.

How to Solve the Air Pollution Problem?

Air pollution in Central Asia is a peace and security issue because it negatively impacts the health and well-being of the people in the region, the environment, and the economy. The problem is particularly severe in cities and industrial areas, where high levels of pollutants can significantly impact the population's health. The region must prioritize regional cooperation to respond more effectively and sustainably to these challenges. While individual countries can take steps to address air pollution and its contribution to climate change, Central Asian countries must prioritize regional cooperation to achieve a more effective and sustainable response to these challenges. With joint efforts, the states in the region could leave the top positions in the anti-air quality ranking.

What is the Air Quality in the Region?

According to the Swiss monitoring company IQAir, in 2021, Dushanbe ranked fourth, Bishkek ninth, and Tashkent tenth among the world capitals with the highest annual average PM2.5 concentrations per cubic meter in the air.Although air pollution is a problem throughout the year, almost all cities in the region have higher concentrations of PM2.5 particles during the heating season from November through March. Bishkek regularly has the highest levels of air pollution in the world, surpassing even notoriously polluted cities such as New Delhi and Dhaka.

Despite the fact that Almaty is not included in the world rankings of capitals, the problem of clean air is also acute and urgent for the residents of Kazakhstan's largest metropolis. The specific geographical location in the piedmont hollow of this city and Bishkek contributes to the accumulation of fine particles with air circulation disturbed during the cold season due to temperature inversion.

In Tashkent and Dushanbe, the concentration is slightly different from the Kyrgyz and Kazakh dynamics - the air quality in these cities tends to be poor most of the year. This is due to additional sources of pollution, such as dust storms, industrial plants, or incinerators, which produce pollutants regardless of the time of year. Ashgabat has the lowest AQI scores of all five states. However, the capital of Turkmenistan lacks independent air measurement sensors for objective analysis throughout the year.

One gets the impression that this problem is relevant only in the capital cities. Nevertheless, as air quality sensors show, the situation in provincial centers and rural areas is no less safe because of

the widespread reliance on coal, often of poor quality, and even worse because of the poverty of using plastic, rubber, and garbage for heating households.

What is polluting the Air in Central Asia?

Several factors contribute to the high levels of air pollution in Central Asia. Fossil fuel burning, including coal and natural gas, is one of the main sources of air pollution in Central Asia. Many countries in the region rely heavily on coal-fired power plants, which emit pollutants such as sulfur dioxide and nitrogen oxides. Burning fossil fuels for household heating and cooking also contributes to air pollution. For instance, about 70 percent of households in the Kyrgyz Republic, including Bishkek, are heated by coal, which causes the most dangerous concentrations of fine particulate matter, PM2.5. Additionally, power plants in cities also rely heavily on coal, further exacerbating the problem.

Another significant source of air pollution in Central Asia is transportation. The region has a rapidly growing number of cars and trucks on the roads, which emit pollutants such as nitrogen oxides, particulate matter, and carbon monoxide. The lack of proper regulations and enforcement of emission standards also contributes to this problem. Many of the countries in the region have large industrial sectors that dump pollutants into the air. For example, in Kazakhstan, the mining and metallurgical industries are significant sources of air pollution. Similarly, in Uzbekistan, the cotton industry is a significant source of air pollution due to the widespread use of pesticides and fertilizers.

One of the causes of smog and environmental degradation in cities is also the dense and chaotic development of buildings, which often goes against the approved master plan of the municipality. High-rise buildings that stand haphazardly obstruct the circulation of air masses, affecting wind speeds and weather conditions. Long-standing trees and greenery are often cut down to clear the way to construct new buildings and facilities.

Impact on Health and Economy

For safe human life, the average daily level of PM 2.5 in the air, according to WHO recommendations, should not exceed 15-25 micrograms (μg) per cubic meter of air. This rate is often 10-15 times higher in Bishkek. According to a recent UNEP study over the past decade, 13 percent of deaths in Kyrgyzstan may have been caused by air pollution.

The high levels of pollutants in the air have been linked to a wide range of health issues, including respiratory problems, heart disease, and cancer. The mortality rate from cardiovascular diseases in Uzbekistan is 724 per 100,000 people, which is 2.7 times higher than the world average. In this country, 18% of deaths from strokes and coronary heart disease are caused by air pollution. In Kazakhstan, air pollution is estimated to cause over 10,000 premature deaths each year. The World Bank 2022 study has analyzed that the annual cost of health damages from PM2.5 exposure in this country represents more than $10.5 billion.

In addition to its impact on health, air pollution affects the region's economy. Environmental hazards reduce labor productivity and increase healthcare costs. People leave cities, valuable human capital is lost, transportation costs are incurred, and time and opportunities are lost. An unfavorable environment discourages potential investors and does not contribute to the development of tourism.

What to Do?

The sources of pollution can be both local and regional, and the effects can be felt far from the point of origin. For example, dust storms originating in the Aral Sea region can travel hundreds of kilometers and affect air quality in multiple countries. This is confirmed by the brown snow that fell in Bishkek in November 2021, which was dust blown in from Uzbekistan and Kazakhstan.

To effectively address air pollution in Central Asia, it is important to involve all relevant stakeholders, including government agencies, industry, and civil society. This will ensure that the efforts to reduce pollution are comprehensive and consider all parties' needs and concerns. Additionally, governments and non-governmental organizations should consider supporting the development of science education and training programs and establishing research centers focused on air pollution in the region.

It is worth emphasizing that states in Central Asia can cooperate to tackle the issue of air pollution, even if it is not exclusively a transboundary problem. One compelling argument for increased cooperation among Central Asian countries to address air pollution and climate change is the availability of diverse resources and solutions within the region.

A comprehensive policy approach is needed to address this issue, including both short-term and long-term measures. Some potential policy options include:

- Promoting energy efficiency and conservation measures to reduce overall energy consumption.
- Replace coal with natural gas: Kazakhstan, Uzbekistan, and Turkmenistan have noteworthy natural gas reserves and are well-positioned to take the lead on this initiative.
- Increasing the use of renewable energy sources, such as solar and wind power, to reduce dependence on fossil fuels. Central Asia has significant potential for solar power due to its abundant sunlight, with some areas receiving over 300 days of sunshine per year. Kazakhstan has good wind power capacities, with wind speeds ranging from 3 to 8 meters per second, and has several large wind power plants in operation. Both Kyrgyzstan and Tajikistan have remarkable possibilities for hydropower, with several major rivers and a mountainous terrain that provides ideal conditions for hydropower development.
- Implementing stricter emissions standards for industry and transportation. Kazakhstan has taken the lead in the region in implementing emissions standards for vehicles, with the country introducing Euro 4 emissions standards in 2014.
- Investing in public transportation infrastructure to reduce the number of vehicles on the road. Uzbekistan and Kazakhstan, which have a growing automobile industry, can provide leadership on this initiative by investing in the production of autogas and electric vehicles and promoting their use.
- Promote sustainable urban development: Central Asian States should promote sustainable urban development that prioritizes the use of green spaces, reduces urban sprawl, and encourages compact development. This will help reduce the number of cars on the road and promote the use of active transportation such as walking and cycling.

It is also important to monitor air quality and provide accurate information to the public about the impacts of air pollution on health. Furthermore, cooperation between the government, private sector, and civil society is crucial to implement effective policies and raising public awareness about the importance of clean air.

Overall, air pollution in Central Asia is a significant peace and security issue that requires urgent attention. Addressing this problem in Central Asia will require a multi-faceted approach and a strong commitment from all sectors of society. However, taking action now to reduce air pollution will ultimately save lives, protect public health and the environment, and promote sustainable development in the long run.