Air quality and health in Central Asia: Air quality standards, air quality assessment and data gaps

United Nations Environment Programme (UNEP)

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## Air Quality and Health in Central Asia

Deaths attributable to air pollution (2019)*

<table>
<thead>
<tr>
<th>Country</th>
<th>Number</th>
<th>Percentage of total deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazakhstan</td>
<td>12,039</td>
<td>9</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>4,159</td>
<td>12</td>
</tr>
<tr>
<td>Tajikistan</td>
<td>7,455</td>
<td>15</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>3,608</td>
<td>11</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>30,096</td>
<td>15</td>
</tr>
</tbody>
</table>

Air Quality Standards in Central Asia

- Maximum Allowable Concentrations (MACs)
- Comprehensive index of atmospheric air pollution (IZA)
- Not in line with the latest science or international accepted standards
Air Quality Index (AQI)

- AQI provides actionable information on air quality
- Based around concentrations of ozone, PM2.5, PM10, CO, SO2, and NO2
- Transitions in Central Asia (Kazakhstan, Kyrgyzstan?, Uzbekistan?)
- Real time monitoring of priority pollutants

<table>
<thead>
<tr>
<th>Daily AQI Color</th>
<th>Levels of Concern</th>
<th>Values of Index</th>
<th>Description of Air Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Good</td>
<td>6 to 50</td>
<td>Air quality is satisfactory, and air pollution poses little or no risk.</td>
</tr>
<tr>
<td>Yellow</td>
<td>Moderate</td>
<td>51 to 100</td>
<td>Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.</td>
</tr>
<tr>
<td>Orange</td>
<td>Unhealthy for Sensitive Groups</td>
<td>101 to 150</td>
<td>Members of sensitive groups may experience health effects. The general public is less likely to be affected.</td>
</tr>
<tr>
<td>Red</td>
<td>Unhealthy</td>
<td>151 to 200</td>
<td>Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.</td>
</tr>
<tr>
<td>Purple</td>
<td>Very Unhealthy</td>
<td>201 to 300</td>
<td>Health alert: The risk of health effects is increased for everyone.</td>
</tr>
<tr>
<td>Maroon</td>
<td>Hazardous</td>
<td>301 and higher</td>
<td>Health warning of emergency conditions: everyone is more likely to be affected.</td>
</tr>
</tbody>
</table>
Low cost sensors...?

- Actionable information
- Indicative information on air quality
- Dense networks provide a map of air quality
- Affordable
Air Quality in Bishkek: Assessment of emission sources and Roadmap for improving air quality management
Air quality in Bishkek

Reducing concentrations of fine particulate matter ($\text{PM}_{2.5}$) is the highest priority.

$\text{PM}_{2.5}$ poses the most severe health risk of all air pollutants.
What causes air pollution in Bishkek?

The most dangerous levels of fine particulate matter (PM2.5) pollution are caused by residential heating with (sulphur-rich) coal during the wintertime exacerbated by poor mixing conditions of the air.
What causes air pollution in Bishkek?

Emissions from the CHP have a limited impact on ground-level air pollution in Bishkek.
What causes air pollution in Bishkek?

Transport is another key source of pollution in Bishkek.

[Diagram showing NOx emissions from different sources over the years from 2000 to 2040.]
What causes air pollution in Bishkek?

Burning waste impacts air quality

- Emissions from the Bishkek landfill
- Emissions from uncontrolled waste burning
What about air pollution emissions in the future?

Emissions of all key pollutants are expected to grow significantly towards 2040 under a ‘business as usual’ scenario.
Thank you!

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