For urban Raipur, average PM$_{2.5}$ concentration was 82.3 ± 21.8 μg/m$^3$. This is more than twice the national standard (40) and 8 times the WHO guideline (10).

Air monitoring infrastructure
Raipur has 0 Continuous Air Monitoring Station (CAMS) reporting data for all the criteria pollutants and 2 manual stations reporting data on PM$_{10}$, SO$_2$, and NO$_2$. There should be at least 19 CAMS in the city for efficient reporting.

Annual averages from the national ambient monitoring program (2011-2015) μg/m$^3$

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Average</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM$_{10}$</td>
<td>275.2 ± 81.0</td>
<td></td>
</tr>
<tr>
<td>NO$_2$</td>
<td>35.3 ± 13.3</td>
<td></td>
</tr>
<tr>
<td>SO$_2$</td>
<td>12.9 ± 5.0</td>
<td></td>
</tr>
</tbody>
</table>

Trend in PM$_{2.5}$ concentrations, based on satellite observations and global model simulations (1998-2014) μg/m$^3$

Designing an effective Air Quality Management (AQM) plan for a city requires robust data on levels of pollution, affected areas, source contributors, peaking trends and possible control mechanisms.

The Air Pollution Knowledge Assessment (APnA) City Program seeks to make this database available and also serve as a starting point for understanding air pollution.

The program, implemented by Urban Emissions and facilitated by Shakti Sustainable Energy Foundation, seeks to create a comprehensive, city-specific information pool by pulling together data from disparate sources, surveys, mapping and atmospheric modeling.

Policy options based on this information, and their implementation, would be the effective next steps in improving the air quality of our cities.

Raipur
The city is growing richer but not it’s air quality. The PM$_{2.5}$ level is already twice the national standard.

For detailed information on Raipur Air Quality, visit www.urbanemissions.info/india-apna
The modeled source contributions highlight the heavy industries (mostly steel), transport (including on road dust), domestic cooking and heating, industries, open waste burning, and influence of outside sources as the key air pollution sources in the urban area.

In 2015, an estimated 26% of the ambient annual PM$_{2.5}$ pollution originated outside the urban airshed, which suggests that some regional interventions could reduce the pollution loads. This main contributors were coal-fired power plants, large (metal and non-metal processing) industries, and brick kilns.

The city needs to aggressively promote public and non-motorized transport and improve road infrastructure to reduce on-road dust re-suspension.

By 2030, the vehicle exhaust emissions are expected to remain constant, if and only if, Bharat 6 fuel standards are introduced nationally in 2020, as recommended by the Auto Fuel Policy.

By 2030, the share of emissions from residential cooking and lighting is expected to decrease due to increase in LPG, residential electrification and urbanization. However due to the abundance of biomass and coal, its use is expected to continue, unless an aggressive program is in place a 100% technology shift to cleaner options.

The 115 brick kilns in the urban airshed are are fueled mostly by coal and agri-waste. These kilns can become more energy efficient by upgrading to (for example) zig-zag and fixed-chimney kilns. Coal-fired power plants also need to adhere to stricter environmental standards for all the criteria pollutants.

Open waste burning is dispersed across the city and requires stricter regulations to address the issue.