Normalization of air pollution in Karaganda

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Abstract

Karaganda has a severe air-quality problem. Official measurements from two monitoring stations put its average annual PM2.5 concentration nearly at 40 times the World Health Organization guideline in 2025. And yet, this documented problem has arguably not produced a commensurate and sustained public conversation. This paper examines that muted response as normalization, a process through which smog, dust and industrial emissions have come to be accepted as unavoidable features of urban life. Interviews with residents point to habituation, frustration at the absence of visible progress and doubt that citizens can influence the authorities. This resignation can make people less likely to protect themselves or press officials and industrial operators to reduce emissions.

The paper argues that cleaner air therefore requires not only accessible information, but credible means for residents to act on it. As a corollary, greater public involvement in environmental decisions could give citizens a more direct stake in their communities and encourage civic participation beyond this particular issue.

The problem

Karaganda's air pollution has become part of everyday life. Repeated exposure has dulled the sense that what residents see and smell demands urgent action. Karaganda is located in one of Kazakhstan's major coal-mining, power-generation, and industrial regions. As a result, large factories, coal-fired power plants, and thousands of chimneys that heat homes and businesses pollute the air. The greatest risk comes from PM2.5, a tiny pollutant with the biggest health impact and widely used as a key indicator of air pollution.

According to Kazhydromet, Kazakhstan's national air quality monitoring service, the annual average PM2.5 level in Karaganda is about 190 micrograms per cubic meter of air. This is nearly 40 times higher than the World Health Organization's annual guideline. This means that people living in the city face persistent pollution, but this single number does not fully reveal the extent of the problem, as it masks periods when pollution levels are much higher and how people experience it in real life.

People can access air pollution data through Kazhydromet's AirKZ mobile application, online map, and public hearings. Local media coverage intensifies during heavy smog, adverse weather, the publication of new air-quality rankings, or widespread public complaints. Yet officials and local media rarely explain what steps residents should take to protect their health. They also do not explain where the pollution comes from or what is being done about it. So people have access to many figures, but little help understanding their long-term risk or whether things are improving.

nterviews conducted for this brief suggest that limited public conversation resulted in smog and dust becoming an ordinary part of life:

"Coming home from work in the evening, I close the windows because smoke and fumes seep into the apartment. Outside, a layer of smog hangs just above the rooftops, so near the ground it's not as noticeable and the air seems clean. Still, any walk takes us along busy highways where we inevitably end up breathing in exhaust fumes. But then again, we've already gotten used to it."

The resident moves almost casually from smoke inside the home and smog above the rooftops to the admission that people have "gotten used to it." Closing the windows has become a routine adjustment rather than an exceptional response to hazardous conditions.

Interviewees could identify measures that might reduce emissions while simultaneously treating pollution itself as unavoidable:

"In the city, of course, this is unavoidable, and pollution is bound to exist regardless. However, there are still ways to tackle the issue—for instance, by installing air filtration systems at industrial plants."

The respondent knows factory filters could help, but still thinks pollution is just part of city life. Technical fixes sound possible, but people don't expect them actually to happen. Pollution becomes a condition to accommodate rather than a policy failure that might be challenged.

This acceptance is reinforced by a feeling that authorities will not really help. Residents sometimes submit complaints about particular incidents or violations, but such action can coexist with deep skepticism about the possibility of systemic change. One interviewee said officials would only act if there was a huge protest, potentially destabilizing public reaction:

"I feel like unless there's a public outcry, the government is going to settle everything in their own favor anyway. Without that, they'll just do whatever serves them best, and I don't know if our voices or words will change anything."

Although qualitative interviews cannot show how widely these attitudes are shared across Karaganda, those consulted repeatedly described the same combination of habituation, perceived inevitability.

Normalization in this context is therefore not straightforward ignorance. Residents are not simply unaware. Many know about pollution and possible solutions, but still see both the problem and the lack of government action as things regular people cannot change.

To explore how residents perceive these conditions, the author conducted two focus groups, one in Russian and one in Kazakh, with ten participants aged 18 to 65 recruited through a professional agency.

The author machine-translated the transcripts and then checked them. An environmental expert was also interviewed to help interpret the monitoring evidence.

The risks of normalization

If people see pollution as normal in Karaganda, they may complain during acute episodes. But stop demanding long-term measures once the visible crisis passes. This can reduce pressure on local authorities and major emitters to enforce standards, require effective emissions-control equipment and report publicly on progress.

Research from Brussels suggests that familiarity with smoke, smells and poor visibility has made the danger feel less exceptional and less personally urgent. Residents may consequently feel less need to check air-quality information, limit time outdoors or take other precautions during hazardous periods. Familiarity does not make the pollution less dangerous, but it may change how seriously people respond to it.

When warnings are not followed by visible action, residents may gradually stop paying attention. One person interviewed said new information no longer mattered to them:

"I saw on Instagram that Karaganda is in second place in terms of pollution. But I was not interested in it anymore. Because there are no changes. Why are we surprised if nothing is done for many years? We just keep quiet and watch. And nothing changes from what we say."

This response shows that another alarming statistic can actually make people tired of the problem instead of making them act. So, more facts and figures do not always mean more awareness, especially when people believe nothing will change.

A self-reinforcing cycle may result: prolonged exposure makes pollution familiar; limited visible improvement produces resignation; resignation reduces public pressure; and weaker pressure allows limited action to continue. That continued inaction then confirms the original belief that neither public discussion nor individual participation can change anything.

How engagement can break normalization

Engagement can help change the idea that pollution is normal. But it works only if people have safe ways to speak up and can clearly see the government and factories responding.

A national experiment in China shows how making pollution data public can help enforcement. Researchers identified factories that had broken pollution rules.Volunteers reported violations privately to regulators, some shared them openly on a social media platform, and others took no action.

After eight months, firms that received public appeals committed 60% fewer subsequent violations than comparable firms that received no appeal. Private complaints were also less effective.

The conclusion is that information may change something when a resident can follow the path from a report to an official action. For example, if someone reports a violation. The regulator then publishes what it found and what it required the factory to do. However, the study did not test this entire cycle of participation, but it shows why institutional follow-through is essential.

Beyond public appeals, one practical form of participation could be citizen-led monitoring. In a 2022 review of community projects to improve air quality, monitoring was the most common approach. Residents helped select sensor locations, collect data, and interpret results, building community skills and sometimes influencing institutional policy. However, evidence of lasting improvements in air quality or health remained limited.

Challenges and pitfalls

There are obstacles that can prevent engagement from producing results. Some are specific to Karaganda, while others apply more broadly across Kazakhstan's industrial cities, where air pollution often reflects entrenched patterns of domestic heating, industrial production and slow infrastructure change.

Practical barriers. If information about pollution is too technical or only in one language, many people cannot take part. Some people may not have the time, internet, or equipment to join in. Setting up community monitoring needs money, experts, and good equipment. If these are missing, people might lose interest because it is too hard to keep going.

Institutional barriers. Residents may gather evidence and organize together. But their efforts will eventually increase frustration if authorities and industrial operators fail to respond.

Participation may also carry personal risk. A 2021 CABAR.asia report documented cases in which environmental activists in Kazakhstan were portrayed as political opponents and subjected to police investigations, prosecution or fines.

A focus-group participant in Karaganda expressed a similar fear:

"The more videos you make about the inaction of the authorities, the more problems you will have with these authorities later."

This suggests that some residents may see public environmental advocacy as ineffective, socially contentious or personally dangerous. Any attempt to expand participation therefore needs safe and accessible ways for people to take part. It also needs credible route through which residents' evidence can elicit an institutional response.

These constraints do not mean that Kazakhstan entirely lacks formal mechanisms for public participation. The Environmental Code gives residents and environmental organisations routes to submit evidence, receive reasoned responses, participate in environmental assessments, conduct public environmental reviews and obtain information about confirmed violations.

Kazakhstan also requires major Category I facilities, industrial sites with significant environmental impact, to install automated monitors at their main fixed emission points, such as smokestacks. These systems measure the pollutants released by the facility and transmit the results in real time to the national environmental monitoring system. In principle, this allows regulators to detect emissions above permitted levels and decide whether an inspection or other enforcement action is required.

However, this system captures only part of the problem. It measures emissions from selected industrial sources. It does not measure the air people breathe across the city. Which includes emissions from household heating, traffic and other dispersed sources.

The more important question is whether these rights produce visible consequences in practice. Unless residents can see that their contributions have influenced a decision, prompted enforcement or secured corrective action, formal participation may become another ritual that reinforces resignation rather than disrupting it.

Policy Recommendations

1. Environmental organisations and local universities, working with Karaganda's city authorities should establish a community-monitoring programme with residents participation. So they could choose sensor locations, host equipment and discuss findings. Technical partners must calibrate the sensors, explain their limitations and publish data openly. Karaganda Medical University and public-health specialists could help translate the measurements into reliable health guidance.
2. Environmental organisations should seek an agreement with 2GIS, a widely used mapping application that already displays temperature, so as to make pollution levels easily accessible to the public in real time.
3. The city administration and environmental regulator should create a public response protocol for pollution reports. Every submission should receive an acknowledgement, an explanation of whether it will be investigated and a record of any resulting action. A public dashboard could track complaints, investigations, decisions and corrective measures. Residents who fear public exposure should be able to submit evidence through trusted organisations or confidential channels.
4. Major industrial operators should hold regular dialogues with residents, scientists, journalists and environmental groups. Meetings should produce public minutes, named commitments and deadlines. They must complement regulatory oversight rather than become a public-relations substitute for it.
5. The city should adopt measurable pollution-reduction targets with a clear baseline, timetable and responsible institutions. Annual reports should state what measures were completed, whether pollution fell and why any targets were missed. Visible progress, or at least an honest account of failure, is essential if participation is to overcome the belief that nothing residents do can make a difference.

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