

Delays in Almaty CHP-2 gas project open new opportunities for a rethink



Photo: Tatyana Mishchenko via Canva

Background

This issue paper addresses the EBRD's continued support for the conversion of Almaty's coal heat and power plant CHP-2 to gas. The original premise of the project was that gas would reduce air pollution, which is only partially true (see below). In addition, it has been seriously delayed. This opens an opportunity for a rethink: Why are the EBRD and other international financial institutions continuing to support this project instead of funding a clean and potentially cheaper type of heating such as heat pumps?

In Almaty, three combined heat and power (CHP) stations are responsible for generating all the city's heating connected to district heating. The Almaty-2 power station, or CHP-2, has an electrical capacity of 510 megawatt electrical (MWe). The plant depends on coal from the Ekibastuz coal basin in the Pavlodar region of Kazakhstan. It is the primary source of heating in Almaty and contributes heavily to the poor air quality in the city. The CHP-1 plant, which has a production capacity of only 120 MWe, was converted from coal to gas in 2017. CHP-3 is coal-powered and has an installed capacity of 173 MWe. Other than the recent gas conversion of CHP-1, other plants throughout Kazakhstan use outdated equipment dating as far back

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as the 1960s, which violate current technological standards. The CHP-3 plant is already at 77 per cent depreciation and struggles to perform due to severe frosts during the heating season.¹

Since 2017, there have been discussions about a project aimed at modernising and converting the CHP-2 plant from coal to fossil gas. In late 2022, the EBRD approved a EUR 252 million loan to Almaty Power Plants JSC, the company that operates the plant. It also received USD 219 million loan from the Asian Development Bank.² All three of these coal plants are owned by the same company, Samruk-Energy JSC, which is fully owned by the state.



Photo: Tatyana Mishchenko via Canva

Gas is often incorrectly described as a better and healthier alternative to coal-based plants, when the reality is it is also harmful. Fossil gas releases high levels of nitrogen oxides (NO_x), which cause respiratory issues. Moreover, it contributes to poor air quality by reacting with other compounds in the air to create particulate matter.³ According to the EBRD's project summary document, the planned project will manage to bring Almaty's air quality into line with national and EU dust and sulphur dioxide standards, but not nitrous oxides.⁴

¹ Anar Smailov, [Энергетики Алматы бьют тревогу из-за состояния ТЭЦ-3](#), in *Almaty.kz*, 18 April 2023.

² Global Energy Monitor, [Almaty-2 Power Station](#), *Global Energy Monitor*, accessed 25 March 2024.

³ Mark Specht, [No, Natural Gas Power Plants Are Not Clean](#), *Union of Concerned Scientists*, 9 November 2018.

⁴ European Bank for Reconstruction and Development, [GrCF2 W2 Almaty CHP Modernisation](#), accessed 25 April 2024.

Compounding matters, it is still unclear where Kazakhstan will obtain its gas from if demand spikes. The state can support small-scale use of gas for heating, but if there is a significant increase in consumption, questions related to energy security will be raised.

Across the border in Uzbekistan, as demand has grown Kazakhstan's neighbour has struggled to remain self-sufficient. Unable to rely on its own gas supply, the country has now turned to Russia to grow its gas imports.⁵

Transitions, scapegoats, and the remnants of Nazarbayev's legacy

Discussions about converting CHP-2 from coal to gas began in 2017 following an official decree by former president Nursultan Nazarbayev to reduce air pollution.⁶ Despite this executive order, the then Minister of Ecology, Magzum Mirzagaliyev and former Akim (mayor) of Almaty made dubious claims about the plant's likely impact. Bauyrzhan Baybek, the former Akim of Almaty from 2015 to 2019, contended that 70 to 80 per cent of harmful emissions originated from private vehicles, and that the CHP was only contributing 11 percent to air pollution in Almaty.⁷

In contrast, Magzum Mirzagaliyev estimated that emissions from CHP-2 and CHP-3 comprised 48 per cent of Almaty's air pollution in 2020,⁸ exposing the conflicting narratives being promoted by the two separate government bodies. In general, all involved have been moving the goalposts, obscuring the multitude of air pollution sources and the action needed to address them.

At the time of Nazarbayev's decree, Akhmetzhan Yessimov, his nephew, was chairperson of Samruk-Energy JSC, the energy company responsible for operating the power plant. resigned from Samruk-Energy in 2021, to be replaced by Almasadam Satkaliyev, who had no direct connections with Nazarbayev. Under Yessimov, the conversion of the plant to gas was delayed by eight years from 2017 to 2025 because of a decision to carry out a complete reconstruction. Under his successor, the timeline has been extended to 2026.⁹

The plant has seen a change in direction following Satkaliyev's appointment at Samruk-Energy and Kassym-Jomart Tokayev's assumption of the Kazakh presidency in 2019. In 2021, Tokayev expressed his dissatisfaction with the constant delays while also acknowledging Almaty's growing rate of energy consumption and the need to improve quality-of-life issues,¹⁰ a rare instance of Tokayev indirectly alluding to the air pollution problem.

Under Tokayev's initiative, the plan to modernise the existing plant was scrapped in favour of a completely new unit utilising gas turbines. But despite calling for immediate efforts to convert the plant to gas, there has been little progress on his watch. The price of the project has risen accordingly from KZT 98 billion (EUR

⁵ Catherine Putz, [Russian Gas Supplies to Uzbekistan Set to Grow](#), *The Diplomat*, 7 March 2024.

⁶ Zakon.kz, [Перевод ТЭЦ-2 Алматы на газ: на какой стадии проект](#), *Zakon.kz*, 23 September 2019.

⁷ Yeleusiz Ramazan-Malik, [Страсти по ТЭЦ-2 в Алматы: чего добивается угольная мафия?](#), *ORDA*, 14 October 2022.

⁸ Olga Loginova, [52% составляет вклад автотранспорта в загрязнение воздуха Алматы – Мирзагалиев](#), *Vlast*, 10 June 2020.

⁹ Yeleusiz Ramazan-Malik, [Страсти по ТЭЦ-2 в Алматы: чего добивается угольная мафия?](#), *ORDA*, 14 October 2022.

¹⁰ ORDA, [Tokayev on the transfer of CHPP-2 to gas in Almaty: it is unacceptable to delay](#), *ORDA*, 26 May 2021.

200 million) to KZT 315 billion (EUR 648 million).¹¹ And this more recent plan to rebuild the plant is when the EBRD stepped in to provide a loan.

In 2023, Serik Tutebayev, chairman of Samruk-Energy JSC, warned of a potential 16 per cent cost increase by the 2026 deadline.¹² This predicted rise has added to the ongoing increase in Kazakhstan's communal service charges, stemming in part from the government's policy.¹³ Designed to renovate the power infrastructure, the policy has already begun to put a strain on financially vulnerable citizens.¹⁴

Some suggest that Samruk-Energy, as a state-owned company, should consider its societal obligations in these developments.¹⁵ As for the EBRD, in addition to the environmental impacts of gas and its contribution to the climate emergency, the Bank should also examine its obligation to support solutions that are the most cost-effective and financially viable, including for consumers.

Health risks

Almaty has consistently been rated as one of the worst polluted cities in the world, with no months of the year having consistently 'good' air quality. Properly tracking air pollution in Almaty is problematic due to limited access to air sensors and limited data on levels of coal consumption. Similarly, the accepted levels of pollutants are much higher than levels of the same contaminants accepted in the EU.¹⁶ These elevated levels have led to significant health impacts, including increased risk of ischemic heart disease, stroke, lower respiratory infections, chronic obstructive pulmonary disease, and lung cancer.¹⁷ A study examining the effects of PM_{2.5} on the health of people living in Almaty and Astana estimated that in 2022 it was attributable to between 1,786 and 2,342 premature deaths in Almaty and between 557 and 750 premature deaths in Astana.¹⁸

To date, there has been no official recognition of the effects that air pollution is having on people and no concerted effort to tackle it. Without international institutions like the EBRD leveraging their influence, the situation will continue to deteriorate. As seen in the graphic below, the situation extends beyond Almaty, and is a pressing issue throughout Central Asia.

¹¹ Yeleusiz Ramazan-Malik, [Страсти по ТЭЦ-2 в Алматы: чего добивается угольная мафия?](#), ORDA, 14 October 2022.

¹² Zhuman Kiikov, [Повышение тарифов для казахстанцев не поможет модернизировать ТЭЦ](#), Press.kz, 23 February 2024.

¹³ Ibid.

¹⁴ Ekaterina Tikhonova, [Мы посчитаем, те подсчитают - как это часто не совпадает...](#) Time.kz, 24 April 2023.

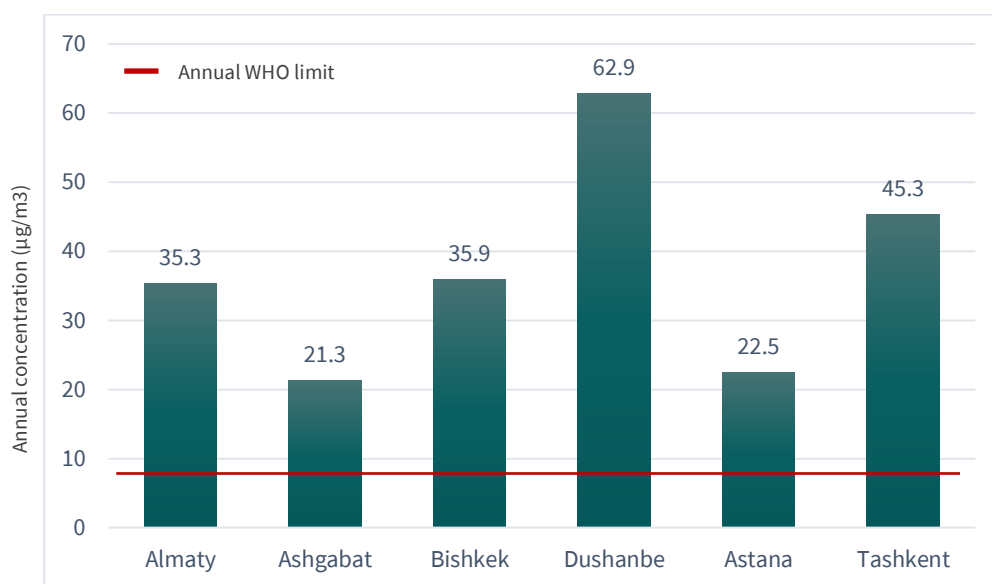
¹⁵ Ibid.

¹⁶ Adilet.zan.kz, [Об утверждении Гигиенических нормативов к атмосферному воздуху в городских и сельских населенных пунктах](#), Adilet.zan.kz, 28 February 2015.

¹⁷ Aiyngul Kerimay, Daulet Assanov, Bulat Kenessov, Ferhat Karaca, [Trends and health impacts of major urban air pollutants in Kazakhstan](#), *Journal of the Air and Waste Management Association*, 16 September 2020.

¹⁸ Ravkat Mukhtarov, et al., [An episode-based assessment for the adverse effects of air mass trajectories on PM_{2.5} levels in Astana and Almaty, Kazakhstan](#), *Urban Climate*, May 2023.

PM_{2.5} levels in Central Asia cities exceeded the WHO annual limit (5 µg/m³) by 4-13 times



Annual PM_{2.5} concentrations data from US Embassy (BAM – 1020) from 2018 to 2021

8134 premature adult deaths per year from PM_{2.5} from 2015–2017

8 per 100,000

Sample of 21 cities in Kazakhstan

The leading causes are:

Ischemic heart disease	4080
Stroke	1613
Lower respiratory infections	662
Chronic obstructive pulmonary disease	434
Lung cancer	33

Source: Kerimray, A., et al., Trends and health impacts of major urban air pollutants in Kazakhstan, *Journal of the Air & Waste Management Association*, 1148-1164, 2020.

Heating alternatives

Pushing this project ahead in its current form is unacceptable. Instead of giving in to further delays, the EBRD should exert its influence to push for renewables as a more streamlined and cost-efficient alternative to the CHP-2 gas conversion. Gasification, which should in no way be considered a viable option for tackling the issue of air pollution in Almaty, would only serve to further delay the city’s pathway to carbon neutrality. Demand-side solutions, such as heat pumps and energy efficiency improvements – policies recommended by local environmental researchers¹⁹ – are far more effective and immediate ways of addressing this issue.

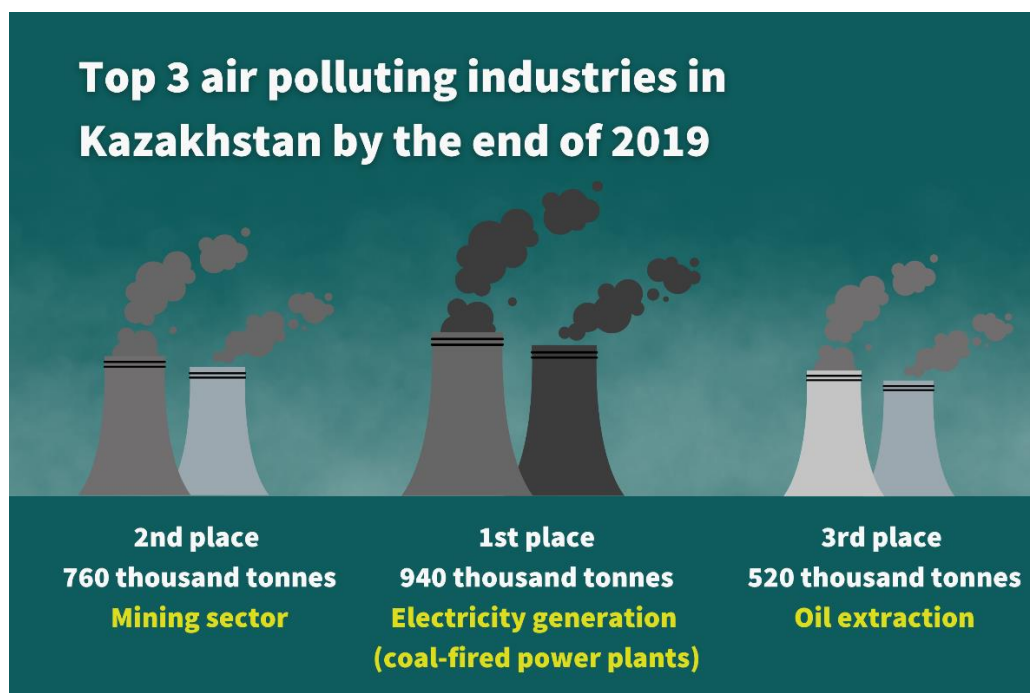
¹⁹ AUA Group, [Доказано: ТЭЦ загрязняют воздух Алматы во много раз больше, чем транспорт. Акимат об этом знает.](#), AUA Group, 24 November 2019.

Additionally, Almaty’s relatively moderate climate is favourable for large-scale implementation of heat pumps.

There are a growing number of renewable projects in Kazakhstan, but most are executed on a small scale and located in regions far from the heavily populated cities. Kazakhstan’s entire energy system is outdated and needs to be modernised. The work required goes far beyond simply replacing the country’s coal plants. Almost all the coal-based power plants throughout the country were built between the 1960s and the 1980s and have either outmoded or no pollution reduction systems, with an average wear and tear of 66 per cent.²⁰ Updating the energy infrastructure to support the use of renewables for energy and heating throughout the country should be prioritised and actively promoted by the EBRD at the earliest opportunity.

Moving forward, the EBRD needs to reassess its support for the reconstruction of CHP-2 in view of the ongoing delays and examine alternatives based on renewable energy sources. It is unacceptable that the people of Almaty should continue to be exposed to worsening air quality, as the city and population grow. As a matter of urgency, the EBRD needs to:

- immediately assess the timeline and real cost for the gasification of CHP-2;
- freeze the disbursement of the loan;
- carry out a comparative assessment of renewables as an alternative to gas for CHP-2, including heat pumps;
- organise meaningful public consultations with affected and interested stakeholders on issues such as viable alternatives, sanitary zone changes, and the affordability concerns of household consumers.



Source: Ecomuseum, Источники загрязнения воздуха, *Ecomuseum*, accessed 22 April 2024.

²⁰ Global News, [Замерзающий Казахстан: карта всех аварий страны на ТЭЦ](#), *Global News*, 30 November 2022.