



[Global Health](#)

Ulaanbaatar Is Suffocating in Smog

Air Pollution Causes Serious Health Problems in Mongolia

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Ulaanbaatar in Mongolia is not just the coldest capital city in the world. In 2016, this city of over a million inhabitants also overtook New Delhi and Beijing as the capital with the highest levels of air pollution. Politicians recognise the problem but seem largely powerless to act. The city's residents are becoming increasingly frustrated.

Toxic Air and Its Consequences

It has already been two years since Mongolia's Security Council sounded the alarm. The Council, consisting of the president, prime minister, and parliamentary speaker, declared the problem of air pollution in Ulaanbaatar a national emergency.¹ According to the World Health Organization (WHO), an estimated 3,300 people died in Mongolia due to air pollution in 2016 alone.² Despite the government having adopted a "National Programme for Reducing Air and Environmental Pollution" in 2017, the situation has not improved since. A measurement of air quality carried out in January last year showed that the maximum level of PM_{2.5} recommended by the WHO was exceeded 133 times.³ PM_{2.5} refers to particulate matter consisting of particularly tiny particles that can therefore penetrate deep into the smallest air sacs of the lungs. This particulate matter is associated with serious health problems such as strokes, heart diseases, and respiratory diseases such as asthma.⁴

Between Yurts and Skyscrapers

Ulaanbaatar's air pollution problem is growing with the city, whose population has almost tripled in size since 1990. Today, almost half of Mongolia's population – around 1.5 million people – live in this metropolis that lies in the Tuul River valley. The fact that the city is surrounded by mountains only exacerbates the problem. In the winter months, cold air sinks into the valley and is trapped by a bell jar of warm air. This makes it difficult for the pollutants to escape, so they accumulate in the cold air – with correspondingly disastrous effects on its quality.⁵

The rampant rural exodus and unregulated urban development mean that some 60 per cent of Ulaanbaatar's population now live in the northern yurt quarter, known as the *ger* district. Yurts (Mongolian: *ger*) are traditional nomadic tents covered with felt blankets.

Only a portion of the *ger* district residents has access to running water and electricity. Particularly during the cold winter months, when temperatures regularly drop below minus 30 degrees Celsius at night, they heat their yurts using raw coal. More than 80 per cent of the city's air pollution in winter can be attributed to roughly 600,000 tonnes of raw coal that are burned in the ovens in the *ger* district for heating and cooking between the beginning of November and the end of March.⁶

Another important factor is the increase in traffic. Between 2005 and 2018 alone, the number of vehicles in the capital rose from 75,000 to more than 530,000.⁷ According to the WHO, motor vehicles are responsible for around ten per cent of particulate pollution; with increases that show no signs of slowing down. The Mongolian customs authorities report that 25,571 foreign cars were imported in the first quarter of 2019, which represents a growth of 40 per cent compared to the previous year. This is also problematic concerning the country's air pollution, since 97 per cent are used passenger cars that are at least two years old or older.⁸

The third-largest contributors to air pollution are the municipal coal-fired power plants, which account for around six per cent of the total. These power plants are very outdated, such as the Ulaanbaatar TES-1 power plant which has

been out of commission since 1988. However, a fifth power plant, Ulaanbaatar TES-5, has been in the pipeline for several years. It is supposed to produce heat with a capacity of up to 587 MW through heating water and to generate electricity with a capacity of up to 450 MW. The construction contract was signed in 2015. It is the first new coal-fired power plant to be built in Mongolia since 1984.⁹

Civil Society Protests and the Consequences for Health

The biggest public protests against the increasing air pollution took place in the winter of 2016. They were initiated by Mothers Against Air Pollution, a Mongolian NGO. Thousands of people joined the demonstration on 27 December on the central Sukhbaatar Square in front of the Great State Khural, the Mongolian parliament building.¹⁰ Continually high levels of frustration among the population are reflected by the public support given to B. Bat-Erdene, a resident of Ulaanbaatar, when he instigated an online petition to the United Nations (UN) in December 2018. In the space of just four days, he attracted 58,567 signatures – enough to require the UN to make an official statement. In its response, the UN asserted a willingness to work with all parties, including the government, businesses, and citizens, to make the case for clean air.¹¹

The importance of winning the fight against air pollution is underlined by a recent report from UNICEF, the UN Children’s Fund. After all, especially children and pregnant women are those most afflicted by the repercussions of air pollution. Children living in a highly affected district of Ulaanbaatar were found to have an up to 40 per cent lower lung volume than children living in rural Mongolia.¹² Air pollution results in more miscarriages and premature births in Ulaanbaatar and many babies have a lower birth weight. According to UNICEF, approximately 435 children in Ulaanbaatar died of pneumonia in 2015 alone.¹³ With regard to Mongolia as a whole, a country with a population of around three million inhabitants, the WHO estimates that 3,300 people died in 2016 from diseases

linked to air pollution. UNICEF estimates the costs of air pollution in 2016 – mainly medical expenses as a direct result of air pollution – to be 18.4 billion tugrik, or more than 6.2 million euros.¹⁴

Political Measures

In March 2017, the Mongolian government adopted a national action plan aiming at an 80 per cent reduction in air pollution by 2025.¹⁵ The government’s original plan was to tackle the problem through a targeted resettlement policy. It intended to move as many inhabitants of the *ger* district as possible into apartments with proper heating systems. Yet, very few people were able to afford the apartments because the banks did not view them as creditworthy.¹⁶

Improving living conditions within the *ger* district is part of the action plan to combat air pollution.

Hence, the government is now focusing on steps to improve living conditions in the city’s slum. For example, since the beginning of the year, parts of the *ger* district that are connected to the electricity grid have been offered electricity free of charge during the night; however, the long-term effects are still hard to predict because only a few families own electric heaters. Air filters and electric heaters have now been made exempt from taxes in a bid to make them accessible to more people in the future. The burning of raw coal in private households was banned on 15 May 2019. The only exception is for municipal coal-fired power plants. The next winter will demonstrate what alternatives the government can offer people in place of the comparatively cheap raw coal, and whether the project can be successfully implemented. At the Mongolian Ecology Forum last October, Daniela Gasparikova, Deputy Resident Representative of the United Nations Development Programme (UNDP) in Mongolia, pointed out



the importance of securing production capacities for cleaner fuels before imposing the ban.¹⁷ The government is currently turning its attention to the expansion of the *Tavan Tolgoi* factory.

This year, the latter's capacity to produce cleaner coal briquettes is supposed to be increased from 200,000 tonnes to 600,000 tonnes.¹⁸



Impoverished areas lacking electricity and water: About 60 per cent of the population of Ulaanbaatar lives in the yurt district (also known as ger district) situated in the north of the city. [Source: © Bazarsukh. Rentsendorj, Reuters.](#)

Mongolia's President Khaltmaa Battulga, a member of the opposition Democratic Party, who was directly elected by the people in 2017, is especially promoting another plan to take the pressure off

Ulaanbaatar and improve its air quality. He is a long-standing supporter of constructing a new eco-city named Mairdar City close to Ulaanbaatar. Cologne-based architect Stefan Schmitz, who has

been working on the project since 2012, carried out its design. The first 90,000 inhabitants are to move into their apartments in the city as early as 2030.¹⁹ Clean air will be ensured by focusing on a power supply that uses renewable energy sources.²⁰ However, no buildings have been erected to date and there seems to be a lack of investors. Hence, doubts prevail about whether the project will ever be realised.

Growing Scepticism towards Politicians

In the wake of the revolution in 1990, a stable democracy with a multiparty system, free elections, and separation of powers has established itself. However, this positive development has been marked by constant changes of government and numerous corruption scandals. The growing scepticism towards responsible politicians is also reflected in the fight against air pollution. The government's actions have not achieved the hoped-for results, leading many citizens and political commentators to suspect that this is due to vested interests, nepotism, and fraud. *The UB Post* reported that in 2018, 489.6 million tugrik (more than 170,000 euros) were earmarked in the budget for planting one million trees in Ulaanbaatar. The problem? The money is gone, but nobody can locate the trees.²¹

Public concern and resistance to short-term and costly measures have led to many of them failing.

The public's concerns about short-term and costly measures have intensified to such an extent that many have recently failed or been prematurely discontinued due to public resistance. In October 2018, when the newly appointed Environment Minister N. Tserenbat suggested the installation of chimney filters in the *ger* district, he quickly had to withdraw his proposal in the face of fierce criticism in social media and the press.²² Just a few weeks later, the same fate awaited a government plan to

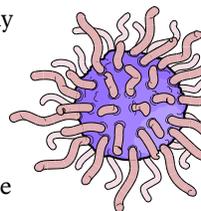
fund winter breaks over a period of five days for pregnant women and mothers with children under the age of five at a health resort outside Ulaanbaatar. A government study concluded that around 10,600 pregnant women, 35,000 mothers, and 65,000 children would be eligible to participate in the programme, and that it would cost about eight billion tugrik (approx. 2.7 million euros). Public resistance to it was so strong that the government had no choice but to immediately drop this idea, too.²³

A recurring argument propounded by critics is that the money could be more effectively spent on the construction of housing. According to calculations made by journalist T. Bayarbat, between 2008 and 2016 alone, the state, the city of Ulaanbaatar, and foreign donors spent 557.2 billion tugrik (almost 200 million euros) on combating air pollution. This would have been enough money to build more than 17,000 36 square meter apartments.²⁴ He contended that providing residents of the *ger* district with these apartments free of charge would have significantly improved the overall situation.

President Battulga recently joined in the criticism. He called for a General Inquiry Hearing at the State Palace, where a representative read out his speech. In it, he criticised the current government under the Mongolian People's Party for its lack of progress in combating air pollution and for squandering public funds. He claimed it had spent a fortune on advertising, websites, and staff in lieu of dealing with problems on the ground. The speech also referred to an individual responsible for the Clean Air Fund – who is still at large – who embezzled the money to buy himself a luxury car and expensive shoes.²⁵

International Efforts and Projects

Sandwiched between the Russian bear and the Chinese dragon, sparsely populated Mongolia seeks to maintain a balanced relationship with its two neighbours. Yet at the same time, this landlocked country is striving to build closer ties with the highly developed democracies of the West, particularly the EU, Japan, and the



US, through its so-called third neighbour policy. These good relations are also reflected in the plethora of projects, both large and small, that foreign states and donor organisations are promoting in order to improve air quality in Ulaanbaatar.

For example, the state-owned Japanese development authority, Japan International Cooperation Agency (JICA), is involved in a number of projects. In January this year, the Agency signed an agreement with the Mongolian government with the aim of testing the production and use of less harmful briquettes for heating in the *ger* district.²⁶ As early as November of the previous year, there were media reports about a pilot project run by JICA involving an initial installation of 25 exhaust filters for public buses. Since late 2018, the Swiss Agency for Development and Cooperation joined forces with UNICEF and the Mongolian government to work on a project aiming to decrease the occurrence of pneumonia in children under the age of five and to reduce the risks to pregnant women posed by air pollution. Within the framework of the project, which is initially set to run until 2021, the two organisations will help the Mongolian government to raise public awareness, improve indoor air quality in kindergartens, and expand medical care and services in the winter months.²⁷ Meanwhile, the “Energy Efficient Building Refurbishment in Mongolia” project, set up by the German Corporation for International Cooperation (GIZ), aims to reduce energy consumption in public institutions and companies.

Even a cursory glance at some of the current initiatives reveals how Ulaanbaatar’s air pollution plays a prominent role in development cooperation, too. According to the President’s office, between 2008 and 2019, foreign donors spent 104.7 million US dollars on aid and loans in an effort to combat air pollution.²⁸ However, the experts of the UNDP claim that there is a lack of foreign direct investment in the private sector in this area. In reality, the country has enormous potential for generating solar and wind energy: With 270 days of sunshine a year and an area the size of Greece that is suitable for

generating wind energy, it would seem to have the ideal conditions.²⁹ In spite of this, investors are holding back because past experience dictates that politicians no longer feel bound by previous agreements when there is a change of government. For instance, direct investment plummeted from just under 2.1 billion US dollars in 2012 to a mere 110 million US dollars in 2015.³⁰ Providing credible legal certainty in this area could be a decisive step towards securing long-term improvements in the quality of life for Ulaanbaatar’s residents.

Dublin and Launceston as Role Models?

The example of Ireland shows that there are successful ways of dealing with air pollution. The Irish Smoky Coal Ban was introduced in 1990, which prohibited the marketing, sale, and distribution of bituminous coal in Low Smoke Zones, including Dublin.³¹ This led to a significant decline in fine particulate air pollution in the affected areas. In Dublin alone, the death rate fell by 5.7 per cent in the following 72 months and significantly fewer people suffered from respiratory and cardiovascular diseases.³²

In 1994, the city of Launceston, Tasmania, began to counteract the increasing problem of fine particulate air pollution caused by burning wood via extensive information campaigns as well as the promotion of electricity for heating. According to the Launceston Wood Heater Replacement Program, a comprehensive government intervention programme, the number of wood-burning stoves used for heating private households in the city fell from 66 per cent to merely 30 per cent between 2001 and 2004. Here too, fine particulate air pollution was reduced and the number of deaths from respiratory and cardiovascular diseases fell significantly.³³

However, it becomes immediately clear that it is not possible to simply transfer the experiences of Dublin and Launceston to Ulaanbaatar. In addition to the poverty of the *ger* district, Ulaanbaatar’s inadequate infrastructure is also a key factor, as only part of the *ger* district has access



to electricity and could therefore use electric heaters. On top of this, the flood of people from rural regions in Mongolia continues unabated. The concentration of economic development in the capital, the lack of infrastructure in the provinces, and the desertification of the country due to climate change and natural disasters pose major challenges to the rural population. UN-Habitat, the United Nations Human

Settlements Programme, predicts that the population of Ulaanbaatar will increase by roughly 900,000 to 2.4 million by 2040 should the rural exodus continue.³⁴

Outlook

Two years after the Mongolian Security Council declared Ulaanbaatar's air pollution to be a



Clad in fog: More than 80 per cent of the winter air pollution of Ulaanbaatar is attributed to around 600,000 tonnes of raw coal used for heating and cooking. Source: © Bazarsukh Rentsendorj, Reuters.

though, will depend on whether it is possible to provide the population with cheap alternatives to dirty raw coal. Alongside the financial aspect, another key issue when it comes to electric heating is the expansion of the electricity grid in the *ger* district.

Over the medium term, improving the public transport system and renewing or modernising the municipal coal-fired power stations could provide further relief. In the long run, the expansion of renewable energies, in particular wind and solar power, seems to be a real alternative to coal in Mongolia; however, this is heavily dependent on foreign investment. If Mongolia's politicians could credibly guarantee investment security and combat rampant corruption, this would not only benefit the economy. It could be another milestone towards ensuring that Ulaanbaatar and its residents no longer have to spend their winters suffocating in smog.

-translated from German-

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national emergency, the government presents a mixed record. Plans to relocate the residents of the *ger* district to urban apartments have foundered, along with the widespread installation of chimney filters. Nevertheless, the government has taken the first bold steps in the right direction by banning the burning of raw coal and offering tax incentives for electric heating systems. The success of these projects,

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- 2 Cf. Cousins, Sophie 2019: Air Pollution in Mongolia, Bulletin of the World Health Organization 2019: 97, pp.79–80, here: p.79, in: <https://bit.ly/2WpIsTq> [22 May 2019].
- 3 Cf. Gheorghe, Adrian / Ankhbayar, Batbayar / van Nieuwenhuyzen, Henlo / de Sa, Rogerio 2018: Mongolia's air pollution crisis: A call to action to protect children's health, UNICEF, Feb 2018, p.15, in: <https://uni.cf/2LElFtR> [22 May 2019].
- 4 Cf. Landesamt für Natur, Umwelt und Verbraucherschutz Nordrhein-Westfalen 2010: Gesundheitliche Wirkungen von Feinstaub und Stickstoffdioxid im Zusammenhang mit der Luftreinhalteplanung, p.5, in: <https://bit.ly/2MfTtCX> [22 May 2019].
- 5 Cf. Müller, Matthias 2019: Die Mongolen ringen nach Atem, Neue Zürcher Zeitung, 15 Mar 2019, in: <https://nzz.ch/ld.1459796> [22 May 2019].
- 6 Cf. Cousins 2019, n.2, p.79.
- 7 Cf. Bold, B. 2018: 958,000 vehicles were registered at national level, Montsame, 13 Dec 2018, in: <https://montsame.mn/mn/read/174239> [22 May 2019].
- 8 Cf. Dulguun, B. 2019: Passenger Car Import Up 40 %, in: The UB Post, 10 May 2019.
- 9 Cf. Tsolmon, Battulga 2019: Contract signed for construction of "Thermal Power Plant 5", Barilga.mn, 29 Jul 2015, in: <https://bit.ly/2YD5P9a> [22 May 2019].
- 10 Cf. Batmandach, G. 2016: Twenty thousand parents to demonstrate against air pollution, NewsMN, 23 Dec 2016, in: <https://bit.ly/30DkD9C> [22 May 2019].
- 11 Cf. The UB Post 2018, n.1.
- 12 Cf. UNICEF 2018: Mongolia's air pollution is a child health crisis, 21 Feb 2018, in: <https://uni.cf/30AGv5O> [22 May 2019].
- 13 Cf. Gheorghe et al. 2018, n.3, p.16.
- 14 Cf. *ibid.*, pp.25 f.
- 15 Cf. WHO 2018: Air Pollution in Mongolia: Policy Brief, 28 Feb 2018, in: <https://bit.ly/2Y0dge7> [22 May 2019].
- 16 Cf. Tugchin, K. 2018: Raising Children amid Pollution, in: The UB Post, 16 Nov 2018, p.2.
- 17 Cf. Gasparikova, Daniela 2018: Keynote speech at Mongolian Ecology Forum 2018, UNDP, 19 Oct 2018, in: <https://bit.ly/2Radk3W> [22 May 2019].
- 18 Cf. Misheel, B. 2019: Improved fuel factories operating 24/7, Montsame, 12 Feb 2019, in: <https://montsame.mn/en/read/179767> [22 May 2019].
- 19 Cf. Jeppesen, Helle 2018: Städte für die Zukunft, Deutsche Welle, 7 Feb 2018, in: <https://p.dw.com/p/2sF4a> [22 May 2019].
- 20 Cf. Damm, Andreas 2014: Metropole Mairdar City Kölner Architekt entwirft eine Metropole in der Mongolei, Kölner Stadt-Anzeiger, 24 Nov 2014, in: <https://ksta.de/563890> [22 May 2019].
- 21 Cf. Bayarbat, T. 2018: Air pollution business swallows 557.2 billion MNT, in: The UB Post, 7 Nov 2018.
- 22 Cf. Tugchin 2018, n.16, p.2.
- 23 Cf. Turmunkh, R. 2018: Should [sic!] waste 8 billion MNT in the name of air pollution reduction?, in: The UB Post, 21 Dec 2018.
- 24 Cf. Bayarbat 2018, n.21.
- 25 Cf. Unurzul, M. 2019: President attends General Inquiry Hearing on Air Pollution, Montsame, 31 Jan 2019, in: <https://montsame.mn/en/read/179138> [22 May 2019].
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- 27 Cf. Swiss Confederation 2018: UNICEF and SDC Join Efforts for the Children of Mongolia, 17 Dec 2018, in: <https://bit.ly/2Jzk8rU> [22 May 2019].
- 28 Cf. Unurzul 2019, n.25.
- 29 Cf. Gasparikova 2018, n.17.
- 30 Cf. Federal Foreign Office 2019: Mongolei: Wirtschaft, Länderinformationen, in: <https://bit.ly/2JTRQYE> [22 May 2019].
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- 33 Cf. Johnston, Fay / Hanigan, Iva / Henderson, Sarah / Morgan, Geoffrey 2013: Evaluation of interventions to reduce air pollution from biomass smoke on mortality in Launceston, Australia: retrospective analysis of daily mortality, 1994–2007, *thebmj*, 346: 7890, 8 Jan 2013, in: <https://bit.ly/2HKCLG7> [22 May 2019].
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