NUS National University of Singapore | ISAS Institute of South Asian Studies

ISAS Insights
No. 576 – 8 August 2019

Bangladesh: Growth at the Cost of the Environment?

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Summary

Bangladesh is moving ahead in terms of economic growth. It is being projected that with the current rate of growth, by 2030, Bangladeshis will be richer than the average Indian in terms of per capita income. However, the environment remains a concern for the country. Air pollution is high, waste generation is increasing, and most of the available water is polluted.

In the first decade of the 21st century, for successive years, Bangladesh has been able to maintain the Gross Domestic Product (GDP) growth rate of between 6-7 per cent and recorded 7.3 per cent in 2018. According to a report by Standard Chartered Bank, which was published on 14 May 2019, by 2030 the average Bangladeshi will be richer than his Indian counterpart in terms of per capita income.[1]

Unfortunately, this growth comes at the cost of environmental degradation. This paper looks at the growing pollution in Bangladesh and its pitfalls. It also underlines the issues of water pollution and encroachment of river beds.

Air Pollution

According to the *IQ Air Visual* report of 2019, Dhaka has the 17th worst air quality among cities in the world.[2] A study released in 2019 by the Health Effects Institute and the Institute for Health Metrics and Evaluation says that at least 123,000 people died in Bangladesh in 2017 due to outdoor and indoor air pollution.[3] Major sources of the outdoor air pollution in Bangladesh are industrial emissions and vehicular emissions. The former includes brick kilns, fertilizer factories, sugar, paper, jute and textile mills, spinning mills, tanneries, garment, bread and biscuit factories, chemical and pharmaceutical industries, cement production and processing factories, metal workshops, wooden dust from saw mills and dusts from ploughed land, and salt particles from ocean waves near coastal lands.[4] More than others, the brick kilns are major sources of pollution in

[1] "Bangladeshis will be richer than Indians by 2030: StanChart", *The Daily Star* (15 May 2019), https://www.thedailystar.net/business/news/bangladeshis-will-be-richer-indians-2030-stanchart-1743808. Accessed on 20 May 2019.
[2] "World Most Polluted Cities in 2018 (PM 2.5)", *IQ Air Visual*, https://www.airvisual.com/world-most-polluted-cities. Accessed on 29 April 2019.
[3] "Report: Air pollution killed 123,000 people in Bangladesh in 2017", *Dhaka Tribune* (4 April 2019), https://www.dhakatribune.com/bangladesh/nation/2019/04/04/report-air-pollution-killed-123-000-people-in-bangladesh-in-2017. Accessed on 18 May 2019.
[4] Muhamad Mahadi, "Air Pollution in Dhaka City", https://www.bangladeshenvironment.com/index.php/polution-s/air-polution/291-air-pollution-in-dhaka-city. Accessed on 14 May 2019.

Bangladesh. It is estimated that there are more than 8,000 traditional brick kilns active in Bangladesh.[5]

Increasing urbanization and the rise of the middle class have increased the number of vehicles in the country. Most of the vehicles do not comply with environmental laws and emit large-scale pollution.[6] According to a study carried out in 2012 by the Bangladesh's Department of Environment (DOE), vehicles were the second largest air polluter after brick kilns and were expected to take the top spot.[7] It was estimated that there had been an almost 135 per cent increase in the number of vehicles in Bangladesh between 2003 and 2012. Based on its study, the department devised separate emission standards for vehicles powered by diesel, petrol and compressed natural gas (CNG). [8]

Earlier in 2005, for the first time, the government set detailed and comprehensive emission standards to improve the air quality in Bangladesh. The standards allowed a petrol-run vehicle to emit 4.5 per cent carbon monoxide and 1,200 parts per million (ppm) of hydrocarbon.[9] In 2012, new proposals were made to check the emission of vehicles. It has reset emissions of carbon monoxide for a petrol-run vehicle at 0.5 per cent. However, the proposed emissions for vehicles running on CNG remain unchanged at 3 per cent.[10] Thus problems remain.

The degree of indoor air pollution depends on the use of fuels for cooking, location and the structure of households. In Bangladesh there is widespread use of gas, electricity, kerosene, firewood, cow dung, rice husks, straw, jute sticks, bagasse and sawdust as fuel.[1112] To reduce indoor pollution, the government has distributed around 20 lakh (2 million) improved cook stoves to the users. This, as Ziaul Haque, Director of Air Quality at DOE, said in 2018, will cut down the indoor pollution by 50 per cent "very soon".[13]

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[5] Mohammad Al-Masum Molla, "Air Pollution in Bangladesh: Steep rise continues", *The Daily Star* (19 April 2018), https://www.thedailystar.net/backpage/air-pollution-bangladesh-steep-rise-continues-1564513. Accessed on 26 April 2018.

[6] Muhamad Mahadi, "Air Pollution in Dhaka City", https://www.bangladeshenvironment.com/index.php/polution-s/air-polution/291-air-pollution-in-dhaka-city. Accessed on 14 May 2019.

[7] Kamran Reza Chowdhury, "Will Bangladesh's new vehicle emissions standards be enforced?", *thethirdpole.net* (8 June 2017), https://www.thethirdpole.net/en/2017/06/08/will-bangladeshs-new-vehicle-emissions-standards-be-enforced/. Accessed on 13 June 2019.

[8] Ibid.

[9] Ibid.

[10] Ibid.

[11] Susmita Dasgupta, Mainul Haq, M Khaliquzzaman, Kiran Pandey and David Wheeler (2006) "Who suffers from indoor air pollution? Evidence from Bangladesh", https://pdfs.semanticscholar.org/d314/22f097e0232324cf80489463f22ce2c13d1b.pdf Accessed on 18 June 2019.

[12] Ibid.

[13] Mohammad Al-Masum Molla, "Air Pollution in Bangladesh: Steep rise continues", *The Daily Star* (19 April 2018), https://www.thedailystar.net/backpage/air-pollution-bangladesh-steep-rise-continues-1564513. Accessed on 26 April 2018.

Hazardous Wastes in the Cities

In their study, Md. Anwarul Abedin and Mohammad Jahiruddin have estimated that around 7,960 tons of municipal solid waste is generated daily from the six major cities of Bangladesh - Dhaka, Chittagong, Khulna, Rajshahi, Barisal and Sylhet. Of them, Dhaka contributes 69 per cent of the total waste.[14]

In 2010, 26 per cent of the Bangladeshi population lived in urban centres. This is likely to go up to 31.1 per cent by 2030. This increase in population has also contributed to the increase in solid waste generation, which has increased from 13,330 tons per day in 2005 to 23,688 tons in 2014. This is estimated to be around 47,000 tons of waste per day by 2025, when the country will have an urban population around 78.44 million.[15]

The increase in waste indicates an increase in consumption, which is possible only when there is a rise in average incomes. It has been found that while there has been an increase in the per capita per day generation of waste, the GDP too has experienced growth. For example, during the years from 2005 to 2014, as the waste generation increased, the GDP also witnessed growth. [16] However, the waste has an adverse impact on people's health and demands the government's extra expenditure to maintain public health.

The total electronic waste generated in 2018 in Bangladesh was around 400,000 tonnes, and it is expected to exceed 4.62 million tonnes by 2035. Of it, only about 3 per cent is properly collected. The e-waste contains mercury and lead, which are hazardous to human health.[17] For the first time in 2019, the DOE, with the support of the UN Development Programme and technical assistance by the United Nations Institute for Training and Research, has estimated mercury emission in Bangladesh. This study has used the UN Environment's "Toolkit for Identification and Quantification of Mercury Releases" to identify the sources of emission and release as well as to determine the amount emitted from or released by the various sources.[18] According to the study, Bangladesh releases approximately 32,660 kilograms of mercury every year. Of the total, "44 per cent comes from waste incineration and open waste burning, 20 per cent from use and disposal of products like thermometers, paints with mercury preservatives or pigments, laboratory and medical equipment, polyurethane produced with mercury catalysts, and switches; 8 per cent from informal dumping of general waste and other sources".[19] Most of the mercury, 55 per cent of

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[14] Md. Anwarul Abedin and Mohammad Jahiruddin, "Waste generation and management in Bangladesh: An overview", *Asian Journal of Medical and Biological Research*, 2015, 1 (1), pp 114-120.

[15] "Survey of Waste Management Industry in Bangladesh - Taking Dhaka City as an Example", *Huatai Environmental Engineering* (December 2017), p 13, http://www.cnhtee.com/News/Industry_News/2017/1213/134.html. Accessed on 16 June 2019.

[16] "Bangladesh Waste Database 2014 Waste Concern Technical Report Series", *Waste Concern* (2014), http://wasteconcern.org/wp-content/uploads/2016/05/Waste-Data-Base_2014_Draft-Final.pdf. Accessed on 25 June 2019.

[17] "Annual e-waste generation stands at 400,000 tons", *Dhaka Tribune* (4 October 2018), https://www.dhakatribune.com/bangladesh/environment/2018/10/04/annual-e-waste-generation-stands-at-400-000-tons.

Mohammad Al- Masum Molla, "Mercury pollution poses big threat", *The Daily Star* (16 July 2019), https://www.thedailystar.net/frontpage/news/mercury-pollution-poses-big-threat-1772053. Accessed on 16 July 2019.

[19] Ibid.

the total, is released into the air, 13 per cent is released into water, 12 per cent is mixed with soil, 12 per cent becomes a part of general waste, 5 per cent are in the form of sector specific waste treatment/disposal and 2 per cent are by products and impurities.[20]

Polluted Waters

A study prepared for Partners for Water by Light Castle Partners, and published in 2018 under the title *Bangladesh Water Sector Network Study*, projected that in 2030 there will be an increase of about 109 per cent in industrial water demand, domestic water demand by 75 per cent, and agricultural water demand by 43 per cent.[21] Though the country has sufficient amounts of water, it has little control over its major rivers. Bangladesh shares water from 54 of the main rivers with India and of three rivers with Myanmar. The sheet anchor of the Bangladesh's economy is agriculture. This sector contributes around 14 per cent of the country's GDP and employs about 40 per cent of Bangladesh's workforce. In the future, a growing population will require more food and industrial goods to consume, which in turn will require more water for their production. At present, due to the lack of seeds technology, in Bangladesh it takes about 3300 litres of water to produce one kilogram of rice.[22] Mainly, the irrigation is carried out from tube-wells installed by the Bangladesh Agricultural Development Corporation (BADC), the Barind Multipurpose Development Authority, and privately-owned tube-wells. It is estimated that there are "over 36,000 deep tube-wells, nearly 1.4 million shallow ones, and over 1.6 million hydraulic machines of the state and the private sector".[23] Farmers in Bangladesh cultivate 8.4 million hectares of land that includes 4.7 million hectares for the Boro (season for rice crop) variety, 1.1 million hectares for Aus (season for rice crop), 5.5 million hectares for Aman (season for rice crop), and the rest for wheat cultivation.[24] On such land, 19.5 million metric tons of rice is being produced in a year.[25] This means billions of gallons of water is needed. The BADC survey shows that farmers draw only 25 per cent of water from the surface while 75 per cent is groundwater pumped by tube-wells. [26]

Besides, most of the surface water bodies and ground waters are heavily polluted. Bangladesh's textile industry, which contributes about 82 per cent to the country's total export revenue, is one of the leading polluters of river waters. A study found that, if the textile industries continue using conventional dyeing practices, by 2021, waste water released by this industry will be around 349 million cubic metres. The study found that the industrial wastes and effluents containing heavy metals such as vanadium, molybdenum, zinc, nickel, mercury, lead, copper, chromium, cadmium, and arsenic are being released in the vicinity of the industrial areas and this polluted river water is being used for irrigation

[20] Ibid.
[21] "Bangladesh Water Sector Network Study: Final Report", *Light Castle Partners* (31 October 2018), https://www.netherlandswaterpartnership.com/sites/nwp_corp/files/2019-01/bangladesh_water_sector_network_studyreport.pdf.
[22] "Farmers waste 800 litres of water to grow a kg of paddy", *Dhaka Tribune* (13 January 2019), https://www.dhakatribune.com/bangladesh/agriculture/2019/01/13/farmers-waste-800-litres-of-water-to-grow-a-kg-of-paddy.
[23] Ibid.
[24] Ibid.
[25] Ibid.
[26] Ibid.

purposes in paddy and vegetable (spinach, tomato, and cauliflower) cultivation fields near industrial areas in Gazipur and Keraniganj.[27] The study also shows the presence of textile dyes in fruit and vegetable samples collected from the sub-districts of Dhaka - Savar, Dhamrai, and Tongi. Penetration of such chemicals in the human body through the food chain is dangerous to health.[28]

Even a large quantity of the supplied water for domestic consumption is not safe. On 16 May 2019, in its report submitted to the High Court, the Dhaka Water Supply and Sewerage Authority accepted that the water supplied by it to 57 areas of its 10 zones are polluted.[29] A high quantity of arsenic is found in the Bangladesh's ground waters. According to Saima Hedrick, arsenic in water affects an estimated 30 to 35 million of Bangladeshis. Arsenic causes cancer and exposure to it has been a reason for death of 1 out of every 5 people in Bangladesh.[30]

Encroachment of River Beds

The urbanisation and internal movement of people from rural to urban areas needs more space in the already congested Bangladeshi cities. To provide them space, river beds are being encroached. In May 2019 the Bangladesh's High Court found that several powerful individuals, businesses and government offices were engaged in such encroachment activities. Months before the Court's observation, officials from the Bangladesh Inland Water Transport Authority started a massive eviction drive along the banks of the rivers around Dhaka. In that drive, around 4,000 illegal establishments have been demolished and 77 hectares of land have been recovered till date. [31]

Later, to save the country's rivers, in its 2 July 2019 judgement, the High Court Division of the Supreme Court granted rights and status of "legal person" or "living entity" to the river Turag in Dhaka.[32] Due to encroachment and industrial pollution, the river is virtually dead. [33] Focusing on this issue, the Court said that "Killing a river is virtually a collective suicide".[34] As a remedy to the existing problem, the Court has ordered the National River Conservation Commission to act as the legal guardian of all waterways in Bangladesh and directed the

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[27] Maiko Sakamoto, Tofayel Ahmed, Salma Begum, and Hamidul Huq, "Water Pollution and the Textile Industry in Bangladesh: Flawed Corporate Practices or Restrictive Opportunities?" *Sustainability* 2019, 11(7). https://www.mdpi.com/2071-1050/11/7/1951. Accessed on 5 July 2019.

[28] Ibid.

[29] Saima Hedrick, "Water in Crisis: Spotlight on Bangladesh" *The Water Project.* https://thewaterproject.org/water-crisis/water-in-crisis-bangladesh. Accessed on 12 July 2019.

[30] Ibid.

[31] "Bangladesh High Court Declares Country's Rivers 'Legal Persons'", *NDTV India* (3 July 2019), https://www.ndtv.com/world-news/bangladesh-high-court-declares-countrys-rivers-legal-persons-2063061. Accessed on 3 July 2019.

[32] "Bangladesh Grants Its Rivers Status of 'Living Entities' to Protect Them from Encroachers", *News 18* (2 July 2019), https://www.news18.com/news/world/bangladesh-becomes-4th-nation-to-grant-its-rivers-status-of-living-entities-to-protect-them-from-encroachers-2214475.html. Accessed on 2 July 2019.

[33] Tawfique Ali " Time to Declare Turag Dead", *The Daily Star* (6 November 2016), https://www.thedailystar.net/frontpage/time-declare-turag-dead-1310182. Accessed on 15 July 2019.

[34] Tawfique Ali and Ashutosh Sarkar, "River Grabbing a criminal offence", *The Daily Star* (2 July 2019), https://www.thedailystar.net/frontpage/bangladesh-river-grabbing-criminal-offence-1765408. Accessed on 15 July 2019.

other agencies of the state to fully assist it.[35] Further, the Court directed the Election Commission to take steps to disqualify the people responsible for river grabbing and pollution from running in elections to union *parishads* (council), *upazila parishads* (sub-district councils), municipalities, city corporations and parliament.[36] It also said that the river grabbers and polluters would also not be able get bank loans.[37] To educate the public about the importance of the rivers, the Court asked the Bangladesh's education ministry to initiate a program such as an hour-long class every two months at all public and private academic institutions, including schools, madrasas, colleges, and universities. This, it says, is needed to build awareness about the importance of rivers.[38]

Conclusion

If it remains business-as-usual in Bangladesh then growing pollution, untreated waste, encroachment of the river beds and the phenomenon of climate change may diminish the country's growth. To overcome such challenges, the Bangladeshi government needs to take steps such as ensuring that the emission rules are properly followed, waste are properly treated and managed, and invent or import technologies to treat polluted water.

[35] "Bangladesh Grants Its Rivers Status of 'Living Entities' to Protect Them from Encroachers", *News 18* (2 July 2019), https://www.news18.com/news/world/bangladesh-becomes-4th-nation-to-grant-its-rivers-status-of-living-entities-to-protect-them-from-encroachers-2214475.html. Accessed on 2 July 2019.
[36] Tawfique Ali and Ashutosh Sarkar, "River Grabbing a criminal offence", *The Daily Star* (2 July 2019.) https://www.thedailystar.net/frontpage/bangladesh-river-grabbing-criminal-offence-1765408. Accessed on 15 July 2019.
[37] Ibid.
[38] Ibid.