

Environmental Problems of Bangladesh: A Review

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Abstract

Bangladesh is one of the developing countries of Asia which has been facing serious environmental deterioration due to disposal of solid and liquid wastes here and there in the nature without any treatment, gaseous emissions to the atmosphere and exposure to noise. Air, water and noise pollution and disposal of solid wastes are the major environmental problems of Bangladesh. Environment of Bangladesh is mainly polluted due to deficiency of standard waste management system and land use, rapid urbanization, over population, exploitation of natural resources, industrialization and capitalization. It is needed to take necessary preventive measures and actions to polluters to improve the environmental quality for ensuring healthy living of citizens of the country.

Keywords—Environmental Problems and Pollution, Air Pollution, Water Pollution, Disposal of Solid Waste, Noise Pollution.

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1 INTRODUCTION

IN developing countries of Asia, rapid growth of economy, population, urbanization and dependency on vehicles are causing increased risk on environment [1]. Deterioration of environment has most hostile effects on Asian, African and Latin American countries due to poverty than the other countries of the world [2]. As an overpopulated developing country of Asia, the population of Bangladesh will be about 17 crore by the year of 2020 [3]. Environmental condition of the country is deteriorated due to different sources of environmental pollution. Rapid urbanization and industrialization lead the country for major environmental problems. Air, water and soil pollution, disposal of solid waste and exposure to noise are the key problems of environment in Bangladesh. Moreover, Bangladesh is on high risk of climate change and global warming.

The current environmental situation of the country could not be balanced thoroughly because acute environmental pollution are affecting public health, ecosystem and growth of economy [4]. Environmental problems occur in all major cities of the country [5]. Environment is being deteriorated and natural resources are being depleted in this country because of rapid growth of population, poverty, and absence of proper knowledge on environmental conservation [6]. Presence of proper effluent treatment plants has not been found in most of the industrial establishments of Bangladesh so that disposal of industrial effluent pollute the soil and water and cause emissions to the air [7]. Moreover, emissions from motor vehicles, aero planes, trains, industrial establishments, power generation set up, brick fields, uncovered burning, incinerating, solid waste dumping area and particulate matters are causing to atmospheric pollution [8]. Year to year, this country has been enduring deterioration process of environment that is a serious matter of thinking [2]. So environmental problems due to different sources of pollution should be controlled to reduce the effects of environmental pollution and to ensure the healthy environmental condition of the country. Avoidance of the certain limit of deterioration of environment in developmental process is also a subject of argument [9].

The natural environment of Bangladesh has been under continuous pressure due to unplanned urbanization and industrialization [10]. Although environmental rules and regulations are formulated and enforcing in some extent, it is needed to take more necessary steps for improving environmental quality and to prevent deterioration of environment in Bangladesh. People of this country are not also aware that they are polluting the environment because of lack of knowledge and awareness. The effort of this article was to focus on deterioration of environment and to recognize the key concerns of environment of Bangladesh to provide an overall scenario of major environmental problems of the country for improving its environmental situation. However, more emphasis should also be given on environmental improvement for continuing to achieve millennium development goals as well as achieving sustainable development goals. For that reason, effective environmental management system and policy framing can only be the way of preventing and mitigating deterioration of environmental quality.

2 MATERIALS AND METHODS

This review study has been carried out thoroughly based on secondary information. A systematic review of available research studies was carried out for identifying major environmental problems and for giving an outline to address these problems. In Bangladesh, many methodical qualitative and quantitative research works have been carrying out on different perspectives of environmental problems. Many research works were conducted on water quality, air pollution, solid waste management, noise pollution and industrial pollution in the country. In this article, mainly available qualitative and quantitative research works and articles were collected from Internet which are related to air, water, soil and noise pollution of Bangladesh. Collected documents were analyzed to retrieve information and to give an overview of major problems in case of environmental degradation in Bangladesh.

3 RESULTS AND DISCUSSIONS

As demonstrated in this document, the numbering for sections upper case Arabic numerals, then upper case Arabic numerals, separated by periods. Initial paragraphs after the section title are not indented. Only the initial, introductory paragraph has a drop cap.

3.1 Air Pollution

Air pollution is an issue of significant danger in numerous developing countries which is causing annual loss of life of about 20,00,000 people globally [11]. Polluted air causes respiratory problems, bronchitis, headaches and dizziness, nasal congestion, and renal damage and a lot of emissions also contribute to the greenhouse effect and thus inducing global warming and sea level rise [10]. Air pollution is a great environmental concern for Bangladesh particularly in big metropolitan cities like Dhaka and Chittagong [12]. Ambient levels of Particulate Matter, SO₂ and Pb far exceed the levels of Bangladesh air quality standards and WHO guidelines [8]. Recorded data on air pollution in Dhaka city confirms that the annual mean of PM10 and PM2.5 is highly significant [13]. According to Mahmood [11], the volume of lead concentration in atmosphere of Dhaka city is 463 nanograms per cubic meter which is ten times higher than the permissible limit. Burning of fossil fuels, emissions from brick kiln, industrial emissions and emissions from vehicles are the main causes of atmospheric pollution in Bangladesh [3], [14]. According to Dewan *et al.* [15], "Leather, food, pulp and paper, textile industries around the Dhaka city largely contribute to SO₂, NO₂, CO, PM and Volatile Organic Chemicals (VOC) to the air, for example, the estimated emission of SO₂ by the brick kilns and manufacturing industries is 28.8% and 10%, respectively."

As discussed by DoE [12], there are some remarkable projects for air quality management. These are:

- i. Air Quality Management Project (AQMP) implemented by the DoE with support from the World Bank during 2000-2007.
- ii. Clean Air and Sustainable Environment (CASE) project supported by the World Bank.
- iii. Bangladesh Air Pollution Management (BAPMAN) project.
- iv. A project for implementation of Male Declaration.

In Dhaka city, air quality improvement was found in some extent because of CNG introduction and banning 2-strokes 3 wheelers [14]. Although some initiatives have been taken to prevent air pollution, such initiatives are not sufficient for improving the air quality and more initiatives are needed for controlling and monitoring air emissions from vehicles, industries, brick kilns and other possible sources of air pollution.

3.2 Water Pollution

Bangladesh, located mostly in the flood plains of the Ganges, the Brahmaputra rivers and the Meghna rivers, is one of the largest deltas in the world and crossed by 405 rivers draining an area of 1,750,000 Km² [16]. Water has significant influence in the economy of this country [10]. The reality of water resources in Bangladesh is however a reason for grave concern [17].

Water is crucial for maintaining the quality of life and inevitable source of sustaining existence [2], [18]. But, disposal of urban and medical wastages and hazardous releases of pollutants from industrial establishments degrade the quality of both surface and ground water [4]. In Bangladesh, most of the industries release hazardous wastewater to the surrounding water courses apart from sense of environment [19]. In most of the cases, wastewater are discharged from point sources without any treatment. Moreover, the residential and commercial establishments near the river banks directly discharge wastewater into the rivers or their discharges subsequently find way into the rivers [20]. The main water pollutants in Bangladesh are a) liquid organic and inorganic wastes, b) nutrient substances, c) synthetic compounds, d) inorganic chemicals, e) silt and sediment, f) hot water and i) industrial, municipal and urban wastes [21].

According to the Institute of Environment and Development Studies [22], "about 900 polluting industries in Bangladesh dispose their untreated industrial wastes directly into the rivers, although the effluent contain 10 to 100 times higher than the allowable permissible limits." It was found that the rivers around the Dhaka Metropolitan City were highly polluted in the months from January to May [16]. Seven thousands industries situated near the rivers discharge daily 15,00,000 m³ of wastewater into the Buriganga, the Shitalakhya, the Balu and the Turag rivers of Dhaka city and other 5,00,000 m³ of wastewater come into these rivers from different non-industrial origins [10]. Halder and Islam [23] found, "the maximum concentration of turbidity, BOD, hardness,

TDS and COD of Turag river of Dhaka is much higher than the acceptable limits." Study revealed that the concentration of DO and BOD has exceeded beyond the standard limits in cases of the Buriganga and the Shitalakhya rivers during 2000 to 2010 [10]. The Karnaphuli is the main river of commercial capital Chittagong district of Bangladesh where the river is polluted in several ways particularly through industrial and sewerage disposals and municipal wastes from different drainage systems without any treatment [24] [25]. Quality of riverine water is polluting day by day [17]. From 1990 and onwards, the Government of Bangladesh has been pushing the industrial proponents towards pollution abatement measures and installations of Effluent Treatment Plants (ETPs) at their premises [10]. Although industries are installing ETPs, structure of ETPs should be improved more for tertiary treatment along with primary and secondary treatments. Moreover, it is needed to take necessary steps to treat municipal sewerage and domestic wastewater before final disposal to the water bodies.

Arsenic is another problem regarding ground water pollution in Bangladesh. This utmost serious issue is caused by the deterioration of environment [4]. Numerous tubewells has found polluted with arsenic in ninety's decade [6]. According to World Bank [10], "about 35 million of Bangladesh population are affected by the arsenic contamination." According to UNICEF [26], "nationwide, approximately 20 per cent of shallow tubewells are contaminated and in more than 8,000 villages where 80 per cent of all tube wells are contaminated; about 20 million people in Bangladesh are using tube wells with more than 50ppb of Arsenic." Hence, it is needed to focus more to mitigate water pollution from different sources of pollutants along with Arsenic contamination of ground water.

3.3 Disposal of Solid Waste

Unsanitary situation of solid waste is terrible in Bangladesh and this situation will be worst with rapid growth of population in municipal area [27]. Consumption as well as production patterns are changing rapidly causing an increasing quantity of wastes [10]. About 4000 to 4500 tons of solid waste are generated daily and this waste generation is accomplished with dispersing on roadways, spillage, obstructing water courses, indiscriminating disposal in empty areas and create degradation of environment [4]. Per capita waste generation rate is 0.41 kg/day in the municipal area of Bangladesh although in total waste collection situation is not very satisfactory [3]. In Dhaka city, each day over 3000 tons of household waste is being produced, but Dhaka City Corporation collects less than half of it [28]. Enayetullah *et al.* [29] mentioned, "existing infrastructure for waste management shows that waste collection efficiency in different urban areas varies from 37% to 77% with an average of 55%."

Waste management is a serious environmental concern for Bangladesh, although waste could be transformed in resources [10]. From decomposition of solid waste, methane emission occurs in the atmosphere which is one of the main gases of greenhouse effect. Bad odor and smell also cause serious threat to the urban environment due to mismanagement of solid waste. Spread of communicable diseases is one of the major effect of mismanagement of municipal waste and poorly managed wastes cause air-, water- and land-pollution, damage of ecosystems, decrease of soil fertility and loss of aesthetic beauty [10]. It is extremely needed to take more initiatives like 3Rs (Reduce, Reuse and Recycle) and 4Rs (Recover, Reduce, Reuse and Recycle) for management and policy formulation of solid wastes, which ultimately improve the environment.

3.4 Noise Pollution

Noise is undoubtedly a source of atmospheric pollution [30]. Excessive noise pollution has become one of the major concerns of urban life in Bangladesh [31]. Due to industrial and urban growth, noise pollution is increasing in municipal areas of the country [32]. It was found from study that some selected residential areas of Dhaka have maximal sound pollution than the standard sound level prescribed by the Department of Environment (DoE) of Bangladesh [33]. As mentioned by Ahmed and Rahman [30], "noise level of busy streets in Dhaka city has been estimated 60 to 80 dB, with the sound of vehicles being 95 dB, loud speakers 90 to 100 dB, mills and factories 80 to 90 dB, restaurants and cinema halls 75 to 90 dB, scooter or motorbike 87 to 92 dB, trucks and buses 92 to 94 dB. However, the desired sound level is 25 dB in the bedroom, 40 dB in the dining or drawing room, 35-40 dB in the office, 30-40 dB in the classroom, 35-40 dB in the library, 20-35 dB in hospital, 40-60 dB in a restaurant and 45 dB in the city at night."

Horns from vehicles, aeroplanes, railway stocks, vans, public transport facilities and other means of transports all producing excessive noise and because of exposure to excessive noise, numerous health problems are happened [34]. Because of noise pollution, impairment of hearing ability and malfunctioning of other body systems is more frequent [35]. Khan [30] mentioned, "exposure to noise pollution on a regular basis at a high decibel level causes deafness, memory loss, nausea, peptic ulcer, blood pressure, heart ailments and mental and physical disorders of children."

3.5 International Emphasis on Environment

First step for pollution prevention was taken by the Water Boundary Treaty in 1909 which was an intermediation between the United States and Canada. In 1972, first international conference focusing on environment named by the 'United Nations Conference on Human Environment' initiated steps for preventing human impact on environment [37]. After this conference, some international pacts were signed: (i) Geneva Convention on Transboundary Air Pollution in 1979, (ii) Vienna Convention for the Protection of the Ozone Layer in 1985, (iii) Montreal Protocol on Substances that Deplete the Ozone Layer in 1987, (iv) Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal in 1989, (v) UN Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil in 1992 which is also known as 'Earth Summit', (vi) Agenda 21 - a

platform for sustainable development and (vii) United Nations Framework Convention on Climate Change (UNFCCC) in 1995 [37], [38], [39].

In 2001, Stockholm Convention on Persistent Organic Pollutants (POPs) banned specific chemicals and intercept the usage of other chemicals and also prescribed disposal and management of chemicals in environmental friendly procedures [39]. The United Nations Climate Change Conferences (UNFCCC) has been held annually from 1995 that lead to establish 'Kyoto Protocol' in 1997 for protecting the world from global warming through cut down of emissions of greenhouse gases and the last effort of UNFCCC was 'Paris Agreement' in 2015 for bounding earth temperature beneath 2 or 1.5 degree Celsius [40].

3.6 Steps for Protecting Environment and Mitigating Environmental Problem in Bangladesh

In Bangladesh, policies, rules and laws concerning environmental problems have been formulated. Some important steps were taken to protect environment like adoption of National Environment Policy in 1992, initiation of National Environment Management Action Plan (NEMAP), enactment of the Environmental Conservation Act 1995 and obtaining environmental clearance for operation of each and every industrial units and projects [10]. Major environmental policies, rules and laws of Bangladesh are given below:

- a. The Motor Vehicles Rules, 1940 (Extracts)
- b. The Building Construction Act, 1952
- c. Water Pollution Control Ordinance, 1970 [Repealed by Ord. XIII of 1977]
- d. Environmental Pollution Control Ordinance, 1977 [Repealed by Act I of 1995]
- e. Motor Vehicles Ordinance, 1983 (Extracts)
- f. Industrial Policy, 1991
- g. Bangladesh National Environmental Policy, 1992
- h. National Conservation Strategy, 1992
- i. National Environmental Management Action Plan (NEMAP), 1995
- j. Bangladesh Environmental Conservation Act, 1995 [Act I of 1995]
- k. Bangladesh Environmental Conservation Rules, 1997
- l. National Policy for Safe Water Supply and Sanitation, 1998
- m. The National Water Policy, 1999
- n. Bangladesh Environmental Court Act, 2000
- o. Bangladesh Environmental Conservation (Amendment) Act, 2000
- p. Bangladesh Environmental Conservation (Amendment) Act, 2002
- q. Bangladesh Environmental Court (Amendment) Act, 2002
- r. Ozone Depleting Substance (Control) Rules, 2004
- s. National Energy Policy, 2004
- t. Sound Pollution Rules, 2006
- u. Building Construction Rules, 2006
- v. Medical Waste (Management and Handling) Rules, 2008
- w. Mobile Court Act, 2009
- x. Bangladesh Environmental Conservation (Amendment) Act, 2010
- y. Bangladesh Environmental Conservation (Amendment) Rules, 2010
- z. Bangladesh Environmental Court Act, 2010
- aa. National Urban Sector Policy, 2011
- bb. Hazardous Waste and Ship Breaking Waste Management Rules, 2011
- cc. Bangladesh Water Act, 2013 [41]

It is urgent need to enforce and implement effectively the above mentioned rules, laws and policy for protecting deterioration of environmental condition. The Ministry of Environment and Forest (MoEF) is in charge of devising appropriate policies, plans and programs and to coordinate the activities for protection and improvement of the environment and the Department of Environment (DoE) under the MoEF is the regulatory body and technical wing of the government responsible for enforcing environmental laws to ensure environmental conservation and sustainable development [10]. Moreover, strong monitoring is also necessary to observe violation of legislation by different industries, brick kilns, establishments and vehicles.

4 CONCLUSION

Sound environmental condition plays an important role for fulfilling basic requirements of living of people [2]. Bangladesh is the 8th biggest populous and 6th most densely populated country of the world [10]. Air, water and soil are the major abiotic parts of environment which are needed to consider for any development of the country. But by ignoring the environmental components, Bangladesh is facing serious environmental degradation because of pollution problems with rapid growth of population and industrialization. Deterioration of environment is in dreadful situation over the current periods of time [2]. Environment pollution has adverse effect on healthy living, prosperity and survival of people [9].

Although initiatives were taken by the government as well as by the policy making and enforcing Department of Environment

(DoE), but more initiatives should be taken to abate environmental pollution. Sector wise management system and implication of legislation to reduce air, water and soil pollution and to ensure proper management of solid waste shall be effective in such case. Policy makers are also needed to be more active and aware about environmental problems for effective decision making. We should adhere the message of the United Nations Research Institute for Social Development [9]: "Environmental problems must be understood as part of the larger social framework, as an integral part of social integration, and must be addressed from this perspective." Without proper implementation of legislation and enforcement of law, it is impossible to reduce environmental problems. As the people of this country are not fully aware about the importance of conserving environment, so environmental awareness programs are needed for the people. Engagement of civil society in creating environmental awareness and for taking part in environmental development is also essential in this respect. Moreover, as a low lying country, Bangladesh is one of the vulnerable countries for global warming, climate change and sea level rise and also natural and man-made disasters. Environmental deterioration has also been leading the possibility of more disastrous situations for the country. So it is the demand of time to take necessary steps (preventive, precautionary and corrective measures) to improve the environmental quality of Bangladesh.

REFERENCES

- [1] HEI Scientific Oversight Committee, "Outdoor air pollution and health in developing countries of Asia: a comprehensive review," Special Report 18, Health Effects Institute, Boston, MA, Nov. 2010.
- [2] M. Jahan, "The impact of environmental degradation on women in Bangladesh: an overview," *Asian Affairs*, vol.30, no. 2, pp.5-15, 2008.
- [3] K.M. Bahauddin, M.H. Uddin, "Prospect of solid waste situation and an approach of Environmental Management Measures (EMM) model for sustainable solid waste management: case study of Dhaka city," *Journal of Environmental Science and Natural Resources*, vol. 5, no. 1, pp. 99-111, 2012.
- [4] G.M.J. Alam, "Environmental pollution of Bangladesh – its effect and control," *Proc. of the International Conference on Mechanical Engineering 2009 (ICME2009)*, Dhaka Bangladesh, 26-28 Dec. 2009.
- [5] M.M. Karim, "Status of air quality and State-of-art control measures in Dhaka, Bangladesh," 94th Annual Conference and Exhibition of Air and Waste Management Association, 24-28 June 2001.
- [6] Discovery Bangladesh, "Bangladesh: environmental issues," http://www.discoverybangladesh.com/meetbangladesh/env_issue.html. 2016.
- [7] A.F.M.A. Satter (Ed.), "Environmental pollution and health hazards: present and future perspective of Bangladesh," *Journal of Current and Advance Medical Research*, vol. 1, no. 1, pp. 1-2, 2014.
- [8] M.H. Rahman and A. Al-Muyeed, "Urban air pollution: a Bangladesh perspective," *WIT Transactions on Ecology and the Environment*, vol. 82, pp. 605-614, 2005.
- [9] United Nations Research Institute for Social Development, "Environmental degradation and social integration," UNRISD Briefing Paper No. 3, World Summit for Social Development, Nov. 1994.
- [10] DoE, "Bangladesh environment and climate change outlook," Department of Environment, Dhaka, Bangladesh, June 2013.
- [11] S.A.I. Mahmood, "Air pollution kills at least 15,000 Bangladeshis each year: the role of public administration and government integrity," *Journal of Public Administration and Policy Research*. vol. 3, no. 4, pp. 129-140, 2011.
- [12] Department of Environment (DoE), "Air pollution reduction strategy of Bangladesh," Final Report, Department of Environment, Dhaka, Bangladesh, Dec. 2012.
- [13] M.A. Motalib, and R.D. Lasco, "Assessing air quality in Dhaka city," *International Journal of Science and Research*, vol. 4, no. 12, pp. 1908-1912, 2015.
- [14] K.M.T. Ahmed, and D.A. Begum, "Air pollution aspects of Dhaka city," *Proc. of International Conference on Environmental Aspects of Bangladesh*, Japan, Sep. 2010.
- [15] A.M. Dewan, M.H. Kabir, K. Nahar and M.Z. Rahman, "Urbanization and degradation in Dhaka Metropolitan Area of Bangladesh," *Int. J. Environment and Sustainable Development*, vol. 1, no. 2, pp.118-147, 2012.
- [16] Anon, "Report on the national stakeholder consultation on water supporting the post-2015 development agenda," The Post 2015 Water Thematic Consultation, Dhaka, 30 Mar. 2013.
- [17] M.I. Sarwar, A.K. Majumder and M.N. Islam, "Water quality parameters: a case study of Karnaphuli river Chittagong, Bangladesh," *Bangladesh Journal of Scientific and Industrial Research*, vol. 45, no. 2, pp.177-181, 2010.
- [18] M.N. Uddin, M.S. Alam, M.A. Mobin, and M.A. Miah, "An assessment of the river water quality parameters: a case study of Jamuna river" *Journal of Environmental Science and Natural Resources*, vol. 7, no. 1, pp. 249-256, 2014.
- [19] N. Ivy, M.K. Hossain and M.L. Hossain, "Effects of industrial effluents on germination and early growth of selected agricultural crops," *Journal of Agronomy*, vol. 14, no. 1, pp. 43-48, 2015.
- [20] M.A. Rahman, and D.A. Bakri, "A study of selected water quality parameters along the river Buriganga, Bangladesh," *Iranica Journal of Energy and Environment*, vol. 1, no. 2, pp. 89-92, 2010.
- [21] C. Chakraborty, M.M. Huq, S. Ahmed, T. Tabassum and M.R. Miah, "Analysis of the causes and impact of water pollution of Buriganga river: a critical study," *International Journal of Scientific and Technology Research*, vol. 2, no. 9, pp. 245-252, 2013.
- [22] Institute of Environment and Development Studies, "Aquatic ecology and dangerous substances: Bangladesh perspectives," *Diffuse Pollution Conference*, Dublin, 2003.
- [23] J. N. Halder and M.N. Islam, "Water pollution and its impact on the human health," *Journal of Environment and Human*, vol. 2, no. 1, pp. 36-46, 2015.
- [24] S. Dey, J. Das, and M.A. Manchur, "Studies on heavy metal pollution of Karnaphuli river, Chittagong, Bangladesh," *IOSR Journal of Environmental Science, Toxicology and Food Technology*, vol. 9, no. 8, pp.79-83, 2015.
- [25] B. Das, Y.S.A. Khan, and M.A.K. Sarkar, "Trace metal concentration in water of the Karnaphuli river estuary of the Bay of Bengal" *Pakistan Journal of Biological Sciences*, vol. 5, pp. 5, pp. 607-608, 2002.
- [26] UNICEF, "Arsenic Mitigation in Bangladesh" Available online, <http://www.unicef.org/bangladesh/Arsenic.pdf>, Accessed on 3 January 2016.

- [27] N. Ivy, M.M. Uddin and M.K. Hossain, "People's perception on using waste bins in reduce, reuse and recycle (3Rs) process for solid waste management (SWM) in Chittagong, Bangladesh," *International Journal of Applied Science, Technology and Engineering Research*, vol. 2, no. 3, pp. 30-40, 2013.
- [28] T.A. Chowdhury, and S.R. Afza, "Waste management in Dhaka city-a theoretical marketing model" *BRAC University Journal*, vol. 3, no. 2, pp. 101-111, 2006.
- [29] I. Enayetullah, A.H.M.M. Sinha, and S.S.A. Khan, "Urban solid waste management scenario of Bangladesh: problems and prospects," *Waste Concern Technical Documentation, Waste Concern*, 6 June, 2005.
- [30] T. Ahmed, and T. Rahman, "Non-Auditory health hazard vulnerability to noise pollution: assessing public awareness gap," *American Journal of Engineering Research*, vol. 4, no. 4, pp. 143-147, 2015.
- [31] M. Sultan, "Noise pollution: a major concern of urban life," *The Financial Express*, Available online, http://print.thefinancialexpressbd.com/old/more.php?news_id=124351&date=2012-03-23, Accessed on 23 March 2012.
- [32] M.A. Haq, M.M. Islam, M.S. Ali, M.F. Haque and M.M.R. Akhand, "Status of noise pollution in mixed areas of Dhaka city: a GIS approach," *Journal of Environmental Science and Natural Resources*, vol. 5, no. 1, pp. 9-17, 2012.
- [33] A.M. Husain, S. Yusuf, T.H. Rini and M. Hasan, "Noise pollution in major places in Dhaka and proposing a device to keep a data log," *Journal of Modern Science and Technology*, vol. 3, no. 1, pp. 20-30, 2015.
- [34] S. Q. Chowdhury, "Noise pollution," Available online, http://en.banglapedia.org/index.php?title=Noise_Pollution, Accessed on 12 March 2015.
- [35] S.C. Chowdhury, M.M. Razzaque, and M.M. Helali, "Assessment of noise pollution in Dhaka city," *17th International Congress on Sound and Vibration (ICSV17)*, Cairo, Egypt, 18-22 Jul. 2010.
- [36] M.A. Khan, "Noise pollution: the silent killer," Available online, <http://www.reportsbd.com/noise-pollution-the-silent-killer/>, Accessed on 4 January 2016.
- [37] Anon, "Handbook on international environmental agreements: an Indian perspective," *Center for Environmental Law, WWF – India*, 172 – B, Lodi Estate, New Delhi – 110003, pp. 2-4, 2006.
- [38] J. G. Speth, "Environmental pollution: a long term perspective," *World Resource Institute*, 1709 New York Avenue, N.W., Washington, D.C. 20006 USA, pp. 281, 1988.
- [39] D. B. Magraw and J. Gorin, "Laws and Regulations: International," Available online, <http://www.pollutionissues.com/Ho-Li/Laws-and-Regulations-International.html>, Accessed on 5 January 2016.
- [40] "United Nations Framework Convention on Climate Change," Available online, https://en.wikipedia.org/wiki/United_Nations_Framework_Convention_on_Climate_Change, Accessed on 5 January 2016.
- [41] Department of Environment (DoE), Available online: <http://www.doe.gov.bd/>, Accessed on 5 January 2016.

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