

Replacing Traditional Brick Kiln, a Culprit of Air Pollution by Introducing Sustainable Green Brick Technology in Bangladesh

Khairul Islam Taj¹

Abstract: The present global movement is ensuring sustainable development in each and every country. This movement is a sole challenge against potential ecological threats like high carbon emission and deleterious impact on environment. Being a developing South-Asian country, the ambient air quality and environment gets deteriorated on account of abundant age-old brick fields. These traditional brick making industry emerges severe use of coal, firewood, grabbing of cropland, farmland, heavy loss of topsoil and unwanted air pollution. A large many brick fields do not have any environment impact assessment and permission from Ministry of Forest and Environment, Bangladesh. Despite the intermingled economic advantage of the old-fashioned brick fields, the threat towards environment particularly the air quality is highly daunting. Time and situation demand alteration or up gradation of such menacing brick making industry. Green Brick technology, being extensively popular in outer world, can be a perfect choice matching with our economic and environmental setup. This new technology is sustainable in nature, less harming, risk free, better in output and ecology conserving. United Nations Development Program, Bangladesh has initiated pilot projects in some rural areas of Dhaka city which produce positive outcome. Our legal framework also complies with this newest trend.

Key Words: *Traditional Brick Field, Environmental Threat, Sustainable Brick Technology, Air and Economic Impact, Legal Framework.*

Introduction

Survival of life in this planet is dependent upon some indispensable components. Among them water, soil, air deserves to be inseparable life particle while trees, forests, floras-faunas, microbes, wildlife, insects are also of equal utility. Hence, air,

¹ Co-researcher and Human Rights Campaigner, Law Mate.

the invisible mechanism, holds the burning life apparatus². Disturbance in normal pace of air ultimately brings the interruption in life, sometimes full-stop on life line. Of late, air contamination has spread out its wing throughout the horizon of earth, including Bangladesh.

Air Pollution stands for contamination of the atmosphere caused by the discharge of a wide range of toxic substances, accidentally or deliberately³. Often the substance released is comparatively high in a certain locality, so the deadly effects are more obvious. Among many other culprit causes, traditional brick kiln/ field has rampant role in resulting severe air pollution. The nature along with air condition of our Greenland Bangladesh is degrading daily for such brick kilns. Ray of hope would peep out when total inclusion of newer technology shall appear in action.

Dimensional Air pollution in Bangladesh

The key sources of air pollution are transportation engines, heat and power rising, industrial processes and the burning of solid waste⁴. Air pollution is known to have adverse impact on lives like human beings, vivid plants, livestock and aquatic ecosystem in the form of acid rain.

The air pollution issue has not yet become a point of thought in rural part of Bangladesh. This is because of lesser motor vehicles and few industries locate there. However, brick kilns and cooking stoves are the foremost sources of emission in rural areas⁵. In villages, wood, coal and biomass are used as sources of energy⁶. As a result, in these areas, the chief air pollutant factors are particulate matters and volatile organic compounds shortly known as (VOCs). In fact, the industrial sources of pollution encompass brick kilns, fertilizer factories, sugar,

² Kiln Efficiency, Mexico based, web link- <http://www.kilnefficiency.com/home/php> (accessed- 23/08/2016)

³ Oxford University Press, Oxford Maritime Thesaurus, edition 2015, p.313

⁴ Department of Geography, Dhaka University, Conference Paper, 3rd Urban Dialogue, Dhaka, Dated: 23-24 August, 2015; p. 27

⁵ Hossain Altab, Environment Threat & Regulatory Law, Dhaka, Bangladesh, 2014, p. 76

⁶ BAPA & BEN, Efficient Environment: A research monologue, 2011, p. 6

paper, jute and textile mills, spinning mills, tanneries, garment, bread and biscuit factories, chemical and pharmaceutical industries, cement production and processing factories, metal workshops and wooden dust from saw mills and dusts from ploughed land, and salt particles from ocean waves near the offshore islands and coastal lands.⁷ This kind of source manufactures massive amount of smoke, fume, gas and dust that turns out the condition as good formation of smoke and fog.

Brick Field/Kiln: A Silent Slayer

Bricks are considered to be the elegant material of finest building. But when bricks become the source of pollution, replace of such is a must and demand of time. In fact, the production process is culprit, because what is made is not source of contamination, how is made is source of contamination.⁸

Brick Making is Indispensable for Bangladesh's Economy

A notion of cutting off the brick production may appear as it is extremely detrimental for natural atmosphere. Brick making industry is one of the fastest growing sectors in Bangladesh. Total brick production here is estimated to be over 8.66 billion⁹ annually. Though not formally recognized as an industry, brick-making is a significant economic activity in Bangladesh.¹⁰ We have almost 8000¹¹ registered and unregistered brick kilns. Brick making is one of the largest sources of greenhouse gas emissions in Bangladesh estimated to be on the order of 6 million tons of CO₂ annually.¹² 90% of existing brick kilns is based on 150 year old technology that is highly energy intensive and emits huge carbon. So, the sustainable co-position is really demandable. The country's overwhelming reliance on bricks is due to scanty in quantity of different shape and size of bricks or other materials at affordable cost for building establishment.

⁷ ESMAP, Climate Change & Energy Efficient Technology, Report no. 60155-BD, 2011, p. 54

⁸ ESMAP, Assessment on probability of Green, Report- 60156- BD, 2012, p. 3

⁹ Gomez & Hossain, BUET field work, 2010, World Bank, 2011s, p. 44

¹⁰ Ministry of Industries, Bangladesh, annual report, 2013.

¹¹ Government of Bangladesh, annual economic statistics, July, 2014.

¹² UNDP, Green Brick Project handout, Vol 4, Dec, 2015, p. 88.

Image of Brick Field and its Role in Bangladesh

Box estimates show that 33 % fuel is sourced from wood. South East part of our country Cox’s Bazar supplies 100% energy baring forests and woodland. Traditional brick industry is also wielding untenable burden on farmland because of widespread exploitation of top soil.¹³

The following table¹⁴ summarizes the main characteristics of the brick sector in Bangladesh:

| Parameter | Value |
|--|-----------------------------------|
| Estimated total number of coal-fired kilns | 5,000 |
| Number of natural gas fired kilns | 20 |
| Annual brick production | 17.2 billion |
| Value of output | TK83 billion (~US\$1.2 billion)* |
| Contribution to GDP | ~1% |
| Coal consumption | 3.5 million tons |
| Value of imported coal | TK22.6 billion (~US\$322 million) |
| Firewood consumption | 1.9 million tons |
| Emissions CO ₂ | 9.8 million tons |
| Clay consumption | 45 million tons |
| Total employment (incl. supply of clay and coal, transport of bricks) | ~1 million people |
| Growth rate of the construction industry (1995-2005) | 5.6% |
| Estimated future growth rate of the brick sector over the next ten years | 2-3% |

Figure- The rampant operation of brick field¹⁵

The brick industry contributes in three major ways to the problems identified in the Bangladesh Common Country Assessment (CCA) as a matter of serious environmental concern- a) major source of urban and rural (of late) air pollution, b) contributes to land degradation, c) significant cause of deforestation.

Traditional brick making technology is a drastic demon which severely threatens the environment particularly the air¹⁶. Such

¹³ Compilation on Environmental Laws, 2002, p. 18, pp. 257-263, 315- 316

¹⁴ Gomez & Hossain, BUET field work 2014, World Bank, 2015s, p. 29, chart 2

¹⁵ ESMAP, Rampant brick field operations, Report- 60158- BD, 2014, p. 6, table box A

¹⁶ Dr. Henry, editor, Utility of Green Brick, German online magazine, p. 9

technology is one of the largest sources of greenhouse gas emission that is immensely contributing to air pollution across the country Bangladesh which produces around 6.0 million tons of carbon dioxide annually¹⁷. High carbon emission level is increased by the out dated technology and substandard fuels such as high sulphur coal, tires and wood energy in kilns. In Bangladesh it takes about 23 tons of coal to produce 100,000 bricks whereas in other country it takes only 7.8 to 8 tons¹⁸. Visual observations reveal that feeding coal produces a thick black smoke, which progressively becomes little dense and white in color eventually. Usually, coal feeding takes every 20-30 minutes. If feeding goes in a slow process (every 10 minutes) pollution can be reduced substantially¹⁹.

Environmental and Energy-efficiency Issues

A study²⁰ conducted by the Bangladesh University of Engineering and Technology (BUET) shows that the country has more than 6000 traditional brick kilns and they emit 8.75 million tons of carbon dioxide a year, which can be halved to 4.16 million tons by adopting clean brick-burning technology. A traditional brick kiln consumes 24 tons of coal a year and emits some 1500 tons of CO₂, making it one of the worst greenhouse gas emitters in the country. Most brick kilns in Bangladesh are highly polluting since they use crude technology and low quality coal for fuel.

Following table summarizes information on estimated emission levels of pollutants, based on secondary data²¹-

¹⁷ Gomez & Hossain, BUET field work, World Bank, 2013s, p. 5

¹⁸ New Technology, assessed by Scottish environmentalists, Wikihow, 2015, p. 12

¹⁹ UNDP, Green Brick Project Handout, 18/12/2015, pp. 14-16

²⁰ Chowdhury, Sifatul Quader, Chief Conductor, BUET, study on Brick Field Observatory and Action, 2014

²¹ Green Brick, USA, web- <http://www.greenbrick.com/en/technical/php>, accessed- 11.02.16

| Kiln type | Coal per 100,000 bricks (t) | Particulates (mg/m ³) | CO ₂ emitted per 100,000 bricks (t) | Reduction in CO ₂ emissions (%) |
|------------------------|-----------------------------|-----------------------------------|--|--|
| FCK | 20–22 ^a | 1,000 + | 50 | n.a. |
| Zigzag ^b | 16–20 | 500-1000 + | 40–45 | 10–20 |
| Hoffmann (natural gas) | 16,000 m ³ | < 100 | 30 | 40 |

In terms of pollutants, the Hoffmann kiln, fired by natural gas, is considerably superior to all coal-burning kilns²². Owing to natural gas supply constraints, unfortunately the expansion of the technology halted and existing kilns are being closed down.

Deleterious Impacts on Environment

By the way, traditional brick fields continuously endanger the entire environment. The core ecological impacts of functioning brick kilns, which are particularly evident for the FCKs that causes the worst health problems due to the highest level of particulate emissions. Let us concentrate on the following menaces:

Poor Energy Efficiency and Co2 Emissions

Burning coal discharges CO₂ which causes global warming and climate change. Additionally, below standard coal is energy incompetent and further gives birth to CO emissions. Similarly, poor insulation and heat losses require additional coal, whose use leads to further CO emissions²³.

Crop Yields Decline

Air pollution in the areas where brick kilns are located contributes to the decline of agricultural yields. Indication of abridged crops from orchards and crops due to air pollution is well documented²⁴. Dust deposition on leaves of plants hinders photosynthesis, which reduces productivity. Acid deposition

²² Michigan Legislature, Michigan, USA, web-
[http://www.legislature.mi.gov/\(S\(4xzukoa5zy01ng1jyf3u5op2\)\)/mileg.aspx?page=getObject&objectName=mcl-Act-276-of-1999](http://www.legislature.mi.gov/(S(4xzukoa5zy01ng1jyf3u5op2))/mileg.aspx?page=getObject&objectName=mcl-Act-276-of-1999), PA 1999

²³ UNDP, Handout of green brick project, Green Energy Fund, p. 33

²⁴ Naqvi, Annual Report on brick affability, 2015, p.56

from the SO and NO_x emissions from brick kilns also causes damage to plant tissues, with a harmful upshot on agricultural productivity²⁵.

Topsoil Land Filth

Topsoil containing organic matter and other nutrients is the mainstay for sustainable agriculture. While making bricks, use of topsoil leads to land ruin. In India, the use of topsoil for brick-making has been restricted by its forest and environment department. Regrettably, in Bangladesh, the raw ingredients for such an alternative action are unattainable in any practical capacity.

Deforestation

Although the use of firewood is banned in Bangladesh, anecdotal evidence²⁶ suggests that a significant volume of firewood is still castoff for brick-production. This can lead to deforestation or forest degradation, with loss of environmental services and biodiversity.

Coal Necessity results in load shedding²⁷

Gases and coals are undoubtedly necessary for brick production. However, Bangladesh runs after up to 1,800 MW of Load Shedding. According to the latest data²⁸ from the Power Division of the Ministry of Power, Energy, and Mineral Resources, the country's production capacity is about 3,800– 4,300 MW, with a peak demand of about 5,500–5,800 MW.

Brick is produced from power plants based on natural gas. The reserve of natural gas is inadequate, and national production is expected to peak soon if new reserves cannot be explored. Our Power plants and other sectors of industry, as example- steel and fertilizer industries strive for the limited natural gas supply.

²⁵ Glenry, Mr., R rating, Sussex, United Kingdom, web-
<http://www.glenrybrick.co.uk/ratings/>, accessed- 12.02.2016

²⁶ Kapita auto bricks, manual, Bangladesh, 2015, p. 20, 23

²⁷ Bangladesh, Ministry of energy and power, annual data, GOB 2015

²⁸ *ibid*

As supply shortages of natural gas are likely to breed in the forthcoming days, more coal might be required for power generation and industrial sectors. So, brick field and load shedding are synonymous nowadays.

Health

The Bangladesh Country Environmental Analysis reports that poor air quality in Dhaka city (due to all polluting sources, including brick kilns, transport, road dust, metal smelters, and other causes) contributes to an estimated 3,500 premature deaths per year²⁹. While the 1,200 brick kilns north of Dhaka are an important contributor to air pollution, volume of health impact of these has not been calculated. This analysis is limited to estimating the health impacts of the North Dhaka cluster (530 kilns) in terms of PM 10 and PM pollution only. Despite these limitations, the analysis³⁰ shows that PM pollution from these 530 kilns currently leads to 750 premature deaths per year, accounting for 20 percent of total premature deaths due to poor air quality³¹.

New Technology is Demand of Time

It is high time; the concerned have to find out alternative technology to reduce carbon emission to protect environment and bio-diversity. So the years old brick making process require a standard alternative that can assist the sustainability and less pollution of air- environment.

Bangladesh's brick sector is categorized by old-fashioned technologies with little energy proficiency and high radiations; little systematization percentage; supremacy of minimal brick kilns with restricted pecuniary volume; and domination of single raw ingredients (clay) and product (solid clay brick)³². Adopting

²⁹ Iqbal Harun, Load Shedding Exaggeration, op-ed article, The Daily Financial Express, 23/4/2016, p. 4

³⁰ BCAS, A Guide to EC Conservation Act & Rules, 1999, pp. 31-32

³¹ World Bank, Annual Report publication, Environmental Threat, Bangladesh Chapter, 2015. p. 22

³² Definition, web- <http://www.traditionaloven.com/2801/solid-clay-bricks-instead-firebricks>

gas built cleaner technologies is hampered by serious energy shortage and land scarcity. Present scenario is no how sustainable. Therefore, Bangladesh has every single reason to utilize and upgrade its vast brick sector with a view to saving precious natural resources, reducing air pollution level and increasing energy efficiency. Our Government has by this time promulgated regulations that put injunction to the use of fuel wood and FCKs. It has also reconsidered the location and height of brick kiln chimneys. Nevertheless, transformative growth of the brick industry is hitherto transpire. Here remains the paramount position of new technology, so popularly called “Green Brick Technology”, that was termed by United Nation Development Program under Green Energy project back in 2011.

Environmental Affability of New Technology

The inventor of Green Brick technology, ³³Dr Henry Liu, has found a way to convert this waste produce into fly-ash bricks that are eco-friendlier than their clay counterparts³⁴.

- The ‘Green Brick’ is green because not for its colour green, but it is made from the pressurized bi-products of coal-power plants saving energy and diminishing pollutants. Instead of bi-products getting released into atmosphere, or disposed of via costly means, they are recycled into bricks.
- These bricks need not to be fired in kilns unlike clay bricks burning fossil fuels. This refers to least dependency on natural resources and little polluting emissions. Hence, the procedure is eco-friendlier and the brick production cost has abridged ominously.
- The brick is prepared with clean fly ash without having any mix of any cement, sand, aggregates, binder or clay. Fly ash mixes with an aeration agent and water followed by compactness. Generally, bricks conserve energy as

³³ Biography can be found in <http://www.unep.org/bio/henry>

³⁴ Green Brick Co. UK, web-
<http://www.greenbrickcompany.co.uk/environment.html>

they are cooled at room temperature so to boost the environmental condition.

- Such new technology can largely minimize the energy consumed and can delete the emission of pollutants and greenhouse gas connected with clay brick production.
- Eradicates the waste removal of fly ash and protects on landfill place.
- Widespread commercial use of the Green Bricks will significantly benefit the world in terms of reduced air pollution and reduced global warming.
- Production techniques that reduce carbon emissions use less energy thereby limiting pollution and using natural resources more effectively.
- The most environmental affable technology, so far proved is Hybrid Hoffman Kiln (HHK)³⁵.

Utility of Hybrid Hoffman Kiln (HHK)³⁶

| Technologies | Coal consumption (t/100,000 bricks) | Particulates (SPM) (mg/m ³) | CO ₂ emissions (t/100,000 bricks) | CO ₂ emission reduction (%) |
|---|-------------------------------------|---|--|--|
| Baseline technology | | | | |
| FCK | 20-22 | 1,000 | 50 | n.a |
| Retrofitted | | | | |
| IFCK (internal fuel, gravity settling chamber and other ⁽⁶⁰⁾) | 16-18 | < 500 | 40 | 20 |
| Zigzag (SD + good management) | 16-18 | 270-300 ^a | 40 | 20 |
| New technologies | | | | |
| HHK | 12-14 ^d | 20.3 ^b | 30 | 40 |
| VS BK | 10-12 (11-16) ^c | 78 -187 ^c | 25 | 50 |

The above chart assembles the utmost utility of HHK technology. Almost 80% of the total energy required is injected into the bricks and only about 20% is fed externally into the firing chamber. Most of the fuel mixed into the bricks, over 95%

³⁵ HHK, term <http://www.greenbrickcompany.co.uk>, accessed- 1/8/2016

³⁶ Ibid

is completely burnt during firing. This technique enables better thermal bonding and reduces fuel usage and hence CO₂³⁷.

Traditional Brick Kiln: Vulnerability of Dhaka City

Of the 530 kilns³⁸ in the North Dhaka cluster, those located at 5–30 km distances from the city centre have the most severe effect on Dhaka's air pollution owing to prevalent wind conditions during brick-burning session. Against this backdrop of huge carbon emission by traditional brick kiln, the UNDP has introduced a project titled 'Improving Kiln Efficiency in the Brick Making Industry' to reduce carbon emission significantly while making brick. The Green Brick Company (GBC) which is registered in Scotland and has office in UK can help them achieve these objectives with the Greenest Brick, created in a biologically liable manner supplying substantial benefits to the coal industry, building industry, the user and vitally our planet. Currently, the building industry is using orthodox clay-fired bricks and cement that need vast amount of heat and electricity at production time. This practice also results in a profound effect on the environment.

In Dhaka, there are around 4,500 brick kilns in operation, producing about 9.0 billion bricks per year³⁹. The largest brick-making zone is on the north of Dhaka city. Air pollution worsens during winter when the wind blows from the north. Of the 4,500 kilns, around 4,000 are Bull's Trench type kilns which use extremely crude technology to bake bricks⁴⁰. Besides, there are about 400 fixed chimney kilns, 15 zigzag kilns, 25 Hoffman kilns and five modern tunnel-type kilns⁴¹. Majority of traditional brick kilns use firewood and coal containing high level of sulphur.

³⁷ Glengery Brick, Alternative Technology Article, web-
<http://www.glengerybrick.com/specification>, accessed- 3/8/2016

³⁸ Henry, Dr., Utility of Green Brick, German Magazine, p. 20

³⁹ Hasan, Rizwana, Dhaka, BELA, featured write up, The Daily Star, web-
<http://www.dailystar.net/editorial>, accessed- 23/5/2016

⁴⁰ Isramat, Blog site, web- <http://www.isramart.blogspot.com/2015/12/isramart-important-tool-in-global.html>, accessed- 25/8/2016

⁴¹ Ibid

The above stated chart initials the increasing position of different mega cities, among which Dhaka occupies 2nd position in air pollution⁴². Age old kilns are solely liable for acute air pollution in Dhaka city. People alive around the brickfields undergo tremendous problems, diseases like asthma and inflammation of eyes. Brick kilns also rescind fertility of the soil. Sorry to quote, most of the brick kilns were established without any sort of environment impact assessment.

Advancement of Bangladesh in the Regard

A short story seeming dialogue can be outlined in proving the plans of Bangladesh in recent future and remote future. Such question-answer style conversation was featured by a journalist named Baki Abdullah from (BASS) Bangladesh songbad Songstha, focused to our forest and environment state minister.

Govt. Imposing New Technology on Brick Kilns

At a workshop on Sunday, Hasan Mahmud said all the brick-making factories will be made to use environmentally friendly Hybrid Hoffmann Kilns (HHK) technology within Sep 2016. He said the traditional brick-making system had a bad impact on the environment. The Fixed Chimney Kilns (FCK) system required high-coal consumption to operate, which also released a huge quantity of carbon dioxide, he added. "According to a latest study, it was established that 35 percent of air pollution in Dhaka and adjacent areas are happening because of these brick kilns with fixed chimneys." He said HHK was the cleanest and most-used technology now, which China introduced in 1994. Last year, Bangladesh introduced Vertical Shaft Kilns (VSK) which pollutes environment 40 percent less than the traditional FCK technology. The state minister said the proposed HHK technology was more effective than the VSK technology and could reduce carbon emission more than 55 percent. In a nutshell, the above mentioned lines were the assessed extract⁴³. By the way, Bangladesh is planning to replace all traditional brick kilns by the year 2016 with modern and environment

⁴² Anonymous data, web- <http://www.authorstream.com>, accessed- 8/9/2015

⁴³ Staff report, web- <http://www.bdnews24.com>, accessed- 15/8/2016

friendly technologies. To this effect, the Department of Environment (DoE) has been instructed not to renew the environmental clearance certificates of the traditional brick kilns after 2010. There is no denying that introducing modern technology is very important in brick kilns but the transition would not be that easy.

Important to note, in October 2002, the government made it mandatory for the brickfield owners to build 120 feet high chimneys to reduce air pollution⁴⁴.

Role of Law: Statutory Act, Policies and Others

Pollution Policy

BUET has been conducting ambient air quality surveys since 1995. The first regulation related to environment in Bangladesh was the Factory Act of 1965, which came out from the essence of earliest Environmental Protection Act, commonly known as the Water Pollution Control Ordinance, 1970. Amazingly, these ordinances did not incorporate problems of air pollution. With the passage of time, the ordinances got modified. Additionally, a new piece called the Environmental Pollution Control Ordinance (EPC), 1977 was promulgated. Although the order passed under the EPC 1977 was legally in place, implementation of environmental laws never took place⁴⁵. Neither have we any unique law related only to air pollution control.

Following rapid industrialization, the environmental scenario in Bangladesh transformed radically. In 1989, the ministry of Environment and Forest and the department of environment were created. The Environment Policy of 1992 was introduced too. Additionally, the Environmental Conservation Act of 1995 along with Rules of 1997 came in action in order to restricting and mitigating ever-growing environmental complications in the country.

⁴⁴ Direction, Bangladesh, Department of Environment, publication, 2002

⁴⁵ Islam, Khairul, article, Daily Observer, Bangladesh, Traditional Brick Kiln and die away technology, web-www.observerbd.com/2016/01/07/129704.php, accessed 21/9/2016

The Government of Bangladesh (GOB) has verified grave obligation regulating the brick industry through a series of legal measures-

- *1989*, The Brick Burning (Regulation) Act, 1989; it is Bangladesh's first brick-making law, that forbidden the use of firewood for brick manufacturing and announced licensing for brick kilns.
- *2001*, The immediate prior Act as amended for regulating the locations for brick kilns. Newly inserted provisions required that brick kilns not to be established within 3km of upazilla or district center, municipal areas, residential areas, gardens and reserved forests marked by Government. Notwithstanding this amendment, the locality requirements have not been applied, and use of firewood still lingers in narrow scale.
- *October 2002*, Bangladeshi Government introduced a rule that made obligatory the use of 120-ft chimneys for brick kiln compulsory⁴⁶. This condition was fruitfully applied, particularly in the neighbourhood of municipal areas, and most of the Bull's Trench Kilns (BTKs) were developed to FCK technology.
- *March 2007*, The GOB issued notification that environmental clearance certificates would not be renewed unless the owners shift to alternative fuel and improved technology by 2010. Nonetheless, this regulation has not been executed subsequently little on-the-ground action happened to expedite the adjustment.
- *July 2010*, a brand new notification was allotted prohibiting entire FCK operation three years from this date under the Govt. project of **"Think green, clean air and sustainable environment"**.

⁴⁶ Anonymous article, web-
http://www.dspace.bracu.ac.bd/jspui/bitstream/10361/5450/1/13364079_MBA.pdf, accessed- 4/8/2016

Precedent/ Cases against Brick Field

Here go 4 leading cases⁴⁷ framed by BELA regarding the brick field and its hazard to environment. Though two of them require further hearing, it is absolutely evident, the legal border bars the objected brick fields and law is active in its goal.

Case 1:⁴⁸

The indiscriminate operation of 19 brickfields in Senbag of Noakhali District in violation of applicable legal provisions and circular was brought to the notice of the High Court through the above petition. The petition filed by BELA on behalf of a local group called Senbag Thana Pollution Free Environment Committee accused the local administration for being indifferent towards the environmental havoc created by the brick furnaces. The management of the brickfields were not conducting their business with due regard to the legal provisions mandating in favour of sound environment and health state. Moreover, leasing agricultural land to brick fields in violation of existing land management laws and manual resulted in a tremendous pressure on the available stock of agriculture land, as after a given period the lands do not remain fit for agricultural purposes. Upon hearing the petitioner BELA, the Court issued a Rule Nisi calling upon Secretary, Ministry of Land, Deputy Commissioner, Noakhali and DG, DoE to show cause “as to why the issuance and renewal of licences permitting operations of 19 brick manufacturing kilns in the Senbag Thana under Noakhali District causing threat to the natural environment and health of the neighbouring residents of the area should not be declared to have been done without any lawful authority and be directed to implement the circular.”⁴⁹

⁴⁷ BELA; Bangladesh, case access web- <http://www.belabangla.com.bd>

⁴⁸ Dr. Mohiuddin Farooque v. Bangladesh & others: Writ Petition No. 1252/1997 (Unregulated Operation of Brick Field)

⁴⁹ Monirujjaman Juror, list of PIL, BELA, entire para web- <https://www.scribd.com/doc/161875940/List-of-PIL>, accessed- 17/8/2016

Case 2:⁵⁰

In a writ petition filed by BELA against illegal construction and operation of a brick field, a division bench of the High Court issued a *Rule Nisi* calling upon the respondents to show cause as to why the establishment and operation of the brick manufacturing/kiln namely M/S A.R. Constructions in the village of Naodaboga, Upazilla- Sonatola, District- Bogra should not be declared to have been done unauthorized, illegal and in violation of laws. The Court also directed to take effective and appropriate measures to prevent the illegal activities in operating the said manufacturing/kiln and to remove the same from the prohibited proximity of the said village of Sonatola Upazila as the same is against public interest and in violation of the fundamental rights of the villagers.

Case 3:⁵¹

In a writ petition filed by BELA against illegal establishment and operation of listed brick fields at Lalpur under Natore district, a division bench of the High Court issued a *Rule Nisi* calling upon the respondents to show cause as to why the establishment and operation of the listed brick manufacturing fields/kilns should not be declared to have been done unauthorized, illegal and in violation of laws. The Court also directed to take effective and appropriate measures to prevent the operation of the listed brick manufacturing fields/kilns and to remove the same from the prohibited proximity of the said villages.⁵²

Case 4:⁵³

⁵⁰ Bangladesh Environmental Lawyers Association (BELA) v. Bangladesh and others; Writ Petition No. 4962/05 (Illegal Operation of a Brick Field in Naodaboga, Bogra)

⁵¹ Bangladesh Environmental Lawyers Association (BELA) v. Bangladesh and others; Writ Petition No. 8815/05 (Illegal Operation of Brick Fields in Lalpur, Natore)

⁵² Monirujjaman Juror, list of PIL, BELA, entire para web-<https://www.scribd.com/doc/161875940/List-of-PIL>, accessed- 17/8/2016

⁵³ Bangladesh Environmental Lawyers Association (BELA) v. Bangladesh and others; Writ Petition No. 3456/05 (Brick fields in agricultural land in Barisal)

Challenging the establishment and operation of the listed brick manufacturing fields/kilns in Barisal, BELA filed a writ petition where the Hon'ble Court issued a rule nisi calling upon the respondents to show cause as to why the establishment and operation of the listed brick manufacturing fields/kilns should not be declared to have been done unauthorized and illegal as the same violate the provisions of the Local Government (Union Parishads) Ordinance, 1983, the Bangladesh Environment Conservation Act, 1995 and the Environment Conservation Rules of 1997 made thereunder, the Brick Burning (Control) Act, 1989, the Smoke Nuisance Act, 1905, Penal Code, 1860 and why the respondents should not be directed to take effective and appropriate measures to prevent the operation of the brick manufacturing fields/kilns as the same is against public interest and in violation of the fundamental rights of the villagers guarantee under Articles 27, 31, 32, 40 and 42 of the constitution⁵⁴.

Recommendatory Words

1. This would allow easier entrance to fiscal resources and better working conditions.
2. New centres are essential to advance consciousness about the profits of cleaner technologies. The centre should: (a) propagate statistics on the *communal profits* delivered by cleaner technologies, new partition ingredients (e.g. perforated and hollow bricks) and substitute raw resources; (b) stimulate pilot schemes of newer technologies with enhanced provisions (e.g., mechanized, higher labor productivity and larger product lines); (c) advance use of prevailing distribution channels (e.g., field visits to pilot plants, video demonstrations of the technologies, use of the Bangla language) and familiarize new channels (e.g., newsletters, industry journals, conferences, and Internet blogs)⁵⁵.

⁵⁴ Islam, Khairul, article, Daily Observer, Bangladesh, Traditional Brick Kiln and die away technology, web-www.observerbdt.com/2016/01/07/129704.php, accessed- 21/9/2016

⁵⁵ Model Tech Centre, web- <http://www.legalexplanations.com>, accessed- 22/8/2016

3. Such agenda aims: (a) exploring alternative raw materials that are locally available, brick diversification, and use of developed level of systematization; (b) steering new readings such as energy consumption studies, land surveys and brick technology surveys.
4. Expedite the accessibility of funded credit lines to account for shorter health impacts from pollution and of other economic incentives supporting the production of ne all materials and use of alternative raw materials such as specific funds and preferential tax policies in Republic of China.
5. Offer admittance to carbon markets, on account of the carbon emission reductions provided by cleaner technologies.
6. Train numerous shareholders with regard to profits of accepting cleaner technologies (e.g. brick owners, workers and the financial sector).
7. Such as the ban of traditional high polluting kilns (FCK & BTK), particularly those located close to large population centres, upstream of the north wind in dry season like November to April.
8. To introduce regulations and policies that encourages adoption of cleaner technologies, such as: (a) review emissions standard for crick kilns under EC rules of 1997 to make them technology independent and to inspire brick diversification. (b) launch suitable emission observing for brick kilns; (c) impose an emission levy depending on “polluter-pay principle⁵⁶”; (d) plan standard rules for whole brick value chain: from raw materials to production processes and equipment and final products to building designs and constructions.

⁵⁶ COP 19, Principle adopted in Climate Change Global Conference, 2013

9. These parks would mean less cost for kiln proprietors, due to the economy of scale achieved by delivering basic infrastructure for all kilns like roads, electricity and water. They would also require less land for kilns establishment compared to the current situation.

In short, the following box⁵⁷ covers the plans with concerned authority to implement:

| Recommendations | Institutions concerned |
|--|--|
| In the short term | |
| 1. Recognize brick kilns as Small and Medium Enterprises (SMEs) | Ministry of Industries (MOI), Department of Environment (DOE), |
| 2. Create a Brick Technology Center | DOE, BBMOA, MOEF |
| 3. Support research and development | DOE, Research and Academic Institutions |
| 4. Facilitate the availability of subsidized credit lines and other economic incentives | MOEF, MOF (Ministry of Finance), Bangladesh Bank, Financing Institutions |
| 5. Provide access to carbon markets | DOE |
| 6. Train several stakeholders with regard to the benefits of adopting cleaner technologies | Brick Technology Center, BBMOA |

Conclusion

The image belongs to safe system of CO₂ emission and ultimate safeguard of brick field arena. Not so far, while we shall possess 100% environment friendly brick fields as we have few right now. Let us cut off all barriers, let us keep transparent the canvas of brick kiln, later pollution bad-mark does not portrait any image.

Rays of hope are peeping in the sky of future Bangladesh. Cluster of pollution rules our environment, not bad if the leading culprit air pollution would depart forever to a large extent. This black technology needs a reasonable replacement as soon as possible for future survival and sustainability with the congenial atmosphere.

What is needed is to alter some technical miscalculation. That is, it.

⁵⁷ Arne Hoel, World Bank; N.Sharmin & M.Shorraf, Bangladesh, Climate & Industrial affability, 2014, p.51

"We have to protect our environment for the sake of next generation and for this reason we have to cutback present carbon emission to this end⁵⁸"

⁵⁸ Islam, Syed Monjurul, Professor of English, Dhaka University, Bangladesh, UNDP Green Brick Handout, UNDP Bangladesh, 1st edition, 18/12/2012