



Operationalizing Political Economy

South Asia Political Economy and Governance Issues Note No. 2

Brick Industry in Bangladesh

There is a large demand for bricks in Bangladesh because the country doesn't have stone aggregate. However, most brick-kilns use traditional, coal-burning technology that is a major contributor of hazardous air pollution in urban centers, and the largest stationary source of CO₂ emissions nationwide. Various reforms and alternative practices have been introduced or proposed to reduce this pollution, including environmental regulation, relocation, shifting to more environmentally friendly technologies and processes, and importing stone aggregates from India; yet these haven't made much headway due to regulatory and behavioral issues. Addressing the issues hindering reform will take actions on many fronts, including coalition building and a good communications strategy.

This note summarizes the results of political economy analysis [1] to understand the brick industry, and addresses three sets of issues:

- 1) **What** are the systemic problems that thwart efforts to improve producer practices?
- 2) **Why** have these ailments persisted?
- 3) **How** can coalition building and a good communications strategy help to address these issues?

The analysis is based mainly on in-depth interviews of key informants, including directors of the regulatory bodies, owners of brick-kilns, leaders of the brick producers' association, individuals involved with raw materials supply and staff/managers and workers of the brick-kilns. A number of focus group discussions were also conducted with owners, managers and workers of the brick-kilns.

Context

Over 5000 brick kilns in Bangladesh produce 15 billion bricks annually, valued at US\$640

million or about 1% of GDP. The industry is expected to grow at nearly 6 % per year over the next decade.

There is a large demand for bricks in Bangladesh because the country doesn't have stone aggregate. Most of the brick kilns around Dhaka belong to small owners on leased low lands with a minimum 2.5-3.5 million taka (US\$36-50,000) initial investment.

Most kilns operate only during the dry season (November-March) on land leased for ten years. Fixed-chimney kilns (FCKs) employ between 200-350 laborers. About five percent of the kilns (e.g. Gas fired Tunnel/Hoffman kilns, Chinese Hoffman kilns) can operate year round. Total employment in all stages of the production and distribution chain is close to one million.

About 50% of brick kiln owners are represented by the Bangladesh Brick Manufacturers & Owners Association (BBMOA). Its achievements include reaching consensus with Government on policy issues, solving local problems with Upazila administrations, and promoting the changeover to more advanced

technologies. In addition, there are in some districts local-level, informal brick owners committees that work with local administrations on taxes or license-related issues. They also try to address labor supply problems, and mitigate disputes between owners, and between labor and owners.

What are the systemic problems?

Local and global pollution

Nearly 1600 kilns are in Dhaka Division, contributing about 10% of the airborne particulate matter (PM) pollution to Dhaka's airshed. Average seasonal particulate concentration varies from 25 to 100 $\mu\text{g}/\text{m}^3$ due to brick kiln emissions; but existence of clusters causes pollution "hotspots" levels as high as 200 $\mu\text{g}/\text{m}^3$. Dhaka's overall PM10 pollution is about 200 $\mu\text{g}/\text{m}^3$, and PM2.5 about 100 $\mu\text{g}/\text{m}^3$ (2007), much higher than the WHO standards of 20 $\mu\text{g}/\text{m}^3$ and 10 $\mu\text{g}/\text{m}^3$ respectively [2]. The density of PM10 worsens during the dry season (December-March) to over 450 $\mu\text{g}/\text{m}^3$, one of the highest levels in the world. This contributes to pulmonary, respiratory and neurological illness, and an estimated 5,000 premature deaths [3].

Brick kilns account for 8.75 million tons of CO_2 emissions each year, the largest stationary source (about 16% of the total from all sources). These CO_2 emissions absorb infrared radiation, and contribute to global warming.

Mostly outdated technology

About three-quarters of the kilns are fixed chimney kilns (FCK), using basic technology. About 1/5 are Bull's Trench Kilns (BTK) which have been banned by the government for environmental reasons. Some mainly large brick-kiln owners have introduced Zigzag, Hoffman, and Vertical Shaft Brick Kilns, which

are less polluting than the FCK. In addition, there are around 30 kilns (mostly Tunnel kilns) using natural gas, which can be the cheapest energy source, and also environmentally friendly.

Brick kilns consume about 2.2 million tons of coal each year, most of which is imported by land from the Indian states of Meghalaya and Assam. In addition, an estimated 1.9 million tons of firewood are consumed. While wood is used to start fires, a ban on using wood is increasingly shifting users to other polluting fuels, including automobile tires, used tukris (basket made of bamboo to carry sand and clay) and fuel oil.

Migratory labor

Owners do not directly recruit labor, but rely on *Sardars* (labor leader/supervisor) for supplying labor. Most laborers come from the poverty stricken areas of greater Pabna, Mymensingh and Rangpur districts. Labor availability is a great concern to owners, since laborers go back to their villages at the end of the production season, usually far from the clusters. Since the return of laborers the next season is uncertain, owners have little incentive to arrange formal training for them.

Governance and Institutional Issues

Before the enactment of the Brick Burn Control Law in 1989, the only legal requirement for establishing a brick-kiln was to obtain a no-objection certificates from one of 4,498 Union Parishads (UP: lowest level of local government), which was routinely granted upon payment of a small fee. With the 1989 law, the UP Chairperson was given inspection authority, and his permission was required for a five-year license. The law also banned burning wood, including date trees. In 1992, the law was amended giving licensing and inspection power

to the Deputy Commissioner (DC) in the relevant one of 64 districts. The punishment for burning wood was specified as six month's imprisonment, a ten thousand taka (US\$143) fine, or both. In 2001, the law was again amended to make the license valid for three years. In addition, brick kilns were prohibited within 3 kilometers of any residential area (minimum 50 families), government structure, municipality, city corporation, Upazila sadar, forest areas (minimum 50 trees) and lands acquired by the government.

With over 5000 brick-kilns in the country, 58% operate without environmental clearance, including 800 traditional BTKs which have been operating illegally since they were banned in the Environmental Conservation Act, 1995 and subsequent revised acts.

Why have these ailments persisted?

Rent seeking and corruption

The brick industry has been slow to adopt environment-friendly practices in part because of the manner in which the above institutional and governance arrangements are enforced. For example, the adoption of the 1989 Brick Burn Control Law gave discretionary power to the UP Chairperson, and led to the need to pay up to five thousand taka (US\$71) along with the legal fees; however, this fee was negotiable since the chairperson was a politician who needed electoral support from local businesses. With the 1992 amendment, shifting responsibility to a non-elected DC, and specifying strict penalties, the normal bribe payment for license renewal increased to five to ten thousand taka for a license renewal. In addition, the stricter enforcement against wood burning led to payments to police/inspectors to overlook such practices. The 2001 amendment to the Law increased the need for bribes even more, since

most brick kilns in the country don't conform to the strict criteria. On top of this, each district committee of the BBMOA makes an annual contribution of one hundred thousand Taka (US\$1430) to the respective DC's Local Resource (LR) Fund. To set up a new brick kiln, one must make a further deposit of one hundred thousand taka to the DC's LR fund through the Nezarat Deputy Collector, and for which no receipt is given. Bribes also need to be paid to the Surveyor and Assistant Commissioner (Land) offices, since relevant reports will be sent to the DC from these offices.

There are many other ways in which the industry is caught in the maws of the regulatory framework and political environment. Bribes of up to one hundred thousand taka are required by Department of Environment (DOE) officials for clearance of an environmental management plan. Since many owners don't know how to prepare one, some DOE officials prepare it for them in exchange for an illicit fee. In addition, owners pay on average up to four hundred thousand taka to the members of the ruling party at the district level. Mafia groups demand "tribute" of one hundred thousand taka annually from owners operating in their area. In remote areas, thugs extort money by beating up laborers and threatening to kill owners. In areas dominated by outlawed political parties such as Chuadanga, Jhenaida and Kushtia, owners have to pay an additional toll to them on a regular basis.

Owners and the BBMOA severely criticize this regulatory framework. They claim that laws and amendments are framed without any consultation with the industry, and enforced by officials that lack specialized knowledge to do their jobs. They feel that laws and procedures are deliberately made complicated to maximize rent seeking opportunities. Policy uncertainty is also an issue. For example, a 2001 act made the

use of 120 foot chimneys mandatory. After brick owners complied at great expense, the government ordered owners to replace the chimneys with a filtration system, disrupting business activities and increasing costs.

Barriers to adopting new technology

Adopting new technology can lead to other forms of official harassment. Some owners have switched from fixed chimney to Zig-zag technology, which is relatively cleaner as well as affordable. Zig-zag kilns look larger than fixed chimney ones, so tax officials may impose higher taxes, assuming that production has increased, although it may not have. In addition, DOE officials may harass such owners for not complying with the 120 foot requirement on chimneys, even though the limit doesn't apply to Zig-zag technology.

These and other perverse aspects of the regulatory framework hold back adoption of environmentally friendly technology, despite the awareness among stakeholders that existing technologies cause serious air pollution leading to health hazards. Another factor adding to the risk aversion of brick kiln owners is a low awareness of more efficient technologies that are currently available in Bangladesh and other countries. Even if they are aware of alternative technology, most operate on a small scale, and prefer low-tech solutions that they already understand, backed by readily available, low-cost human labor. One reason for this is that more advanced technology needs to be operated year-round to be cost effective; yet the basic raw materials of coal and clay are imported on a seasonal basis, and are only available at other times of the year at a higher cost. The labor cost structure would also go up in shifting from seasonal to permanent staff. The non-availability of high land above flood level is also a major barrier for move to year-round operations.

The use of stone aggregate / chips as an input to cement blocks which can replace clay would be environmentally friendly, both by eliminating air pollution and preserving top soil. It would also help comply with the government's decision that clay cannot be used for producing bricks after 2010 (which well-placed stakeholders believe is impractical, and possibly resulted from undue influence from stone block producers). However, there are problems in this as seen by the brick industry, and/or by their real estate developer clients:

- Cement blocks currently don't come in standard sizes like bricks, don't allow for nails and hooks to be inserted into walls made of them, and require more complex construction methods (e.g. electricity and sanitary connections need to be made simultaneously);
- Hollow cement blocks absorb moisture; to prevent this, walls have to be painted with emulsion paints at least every five years, adding to costs.
- Checking the quality of cement blocks is more difficult; while any lay person can check clay bricks by looking at the color and sound of hitting one brick with another, in the case of cement blocks one needs to know the exact ratio of cement and sand, which requires expensive assistance from experts and use of laboratories.
- Inputs like stone chips and clinkers have to be imported, and electricity is needed for the production process.

Despite these challenges, cement blocks can be manufactured for the same or less cost than clay bricks, and are more durable.

Resistance from Sardars and workers

Sardars and workers also resist technological change. For example, *porai mistri*, or firemen, oppose technology upgrading due to a fear of losing their job. They also worry about losing the flexibility they currently have of working simultaneously in different kilns; new technologies require more concentration in work, restricting firemen's mobility. To resist change, firemen reportedly spread rumors that new firing technology is inefficient and produces low quality bricks. Owners of upgraded brick-kilns can suffer reputational loss from such rumors, and consequently become reluctant to further adopt new technologies.

Lack of financing and collateral

Lack of available financing is an additional challenge. Bank financing is hard to obtain because of the seasonal nature of the business, the lack of collateral, and generally weak management and financial skills of brick owners. Brick kilns aren't a government recognized industry qualifying for financing benefits such as tax holiday, reduced interest rates, or extended loan repayment schedule.

Challenges in switching to natural gas

Although use of natural gas would be environmentally friendly, there are many factors hindering its adoption:

- Government policy does not encourage the use of gas for brick kilns; because of their informal and seasonal nature, lack of classification as industry and due to current gas scarcity;
- Gas connections are not available throughout the country, and when available, gas supply lines are located next to highways, and don't reach the

low-lying areas where brick kilns are located; customers have to pay for the installation costs of their supply line;

- Brick producers are charged commercial rates (like restaurants), which are much higher than industrial rates;
- Gas pressure isn't uniform, and may not meet the minimum required for brick kilns, especially those with advanced technology;
- Owners want credible assurance from the government on how long gas supplies would be assured; there are rumors that gas supply will be reduced nationally starting in 2011 if new gas fields are not found;
- The Titas Gas Company requires large security deposits (as much as the cost of a small kiln), of which only 40% can come from a Bank guarantee; the rest must be paid in cash, and does not generate interest among owners.

How can these issues be addressed?

Addressing the issues hindering reform will be challenging, and take actions on many fronts. For example, relocation of brick kilns from Dhaka City and its adjacent areas would help reduce pollution in the city, but will be difficult to pull off because:

- Brick kilns tend to locate in clusters to provide access to raw materials and markets, and to provide security from extortion and related risks;
- Suitable sites well linked to road infrastructure and availability of clay may not be available;

- Owners may not be capable of abandoning their existing FCKs and building new ones, without technical and financial support;
- Forced relocation in the Savar zone and other areas may create political repercussions, where a few powerful transport owners linked to the major political parties are also involved in brick production.

Market forces can help

BBMOA leaders argue that in the next few years, clusters in and adjacent to Dhaka city will move away due to market driven processes; indeed there are clear indications that brick kilns in areas such as Demra-Shyampur and Rayer Bazar have started relocating as the price of land has gone up, making it economically attractive for owners to transfer land to real estate developers. Thus, while Government may incentivize the process, it should not force relocation, which might risk introducing pathologies seen in other regulatory efforts in the sector. However, market forces alone will not bring about many other needed reforms.

Politicians unlikely to block changes

Powerful politicians are less interested in the brick sector (than other sectors, such as transport) because potential rents are smaller and political actors are largely small time local level leaders. Associations are largely apolitical; party politics is a factor in getting contracts for public works, but these contractors have little stake in technological reforms of the brick sector.

Pro reform groups

The driving force to promote reform could come from the small group of large FCK owners that tend to be more open to and financially capable

of investing in new technologies. These large owners tend to provide leadership in the BBMOA. Others that might come together in a pro reform coalition include owners of environmental friendly technologies (Hoffman, Zig-zag, Gas Burner), large developers using high grade/fancy bricks and cement blocks, environmental groups such as Bangladesh Poribesh Andolon (BAPA), and like-minded policy makers of DOE. Skilled laborers should also be pro-reform, as new technologies would require relatively more of their time, and less unskilled, migrant labor.

Tackling resistance to reform

The major resistance to technological change will come from middle- and small-sized owners, who are less educated, less financially capable, and more risk averse. The pro-reform group needs to convince these skeptics by demonstrating the new technologies functioning in Bangladesh in an economically viable manner. They could initiate piloting of new technologies, and organize training for owners and workers (with new technologies and around-the-year production, training of workers would become economically viable). They could lobby the government to formulate policies to make investment less risky for the medium- and small-sized owners, and to support research and development on new technologies, and on alternative products such as cement blocks, hollow blocks, perforated bricks, light weight bricks and fly ash bricks, drawing on knowledge in other countries. They could work with government on designing an effective process for finding alternatives to clay brick production, and on disseminating information on the advantages of these alternatives. They could also lobby government to provide incentives to encourage clusters to develop far away from the city and/or with a set standard of emission; owners could be selected through a screening

process to ensure, *inter alia*, valid documents to operate a business.

The BBMOA could take the lead in these areas. It would be more credible in doing so if it could be made more representative, and its technical/logistical capacity increased so it could provide more credible and efficient leadership.

DOE support for reforms will be mixed. Senior policy officials will support reforms that will enhance the Department's reputation, gain appreciation from city dwellers, and help pacify organized environmental groups. Middle- and low-ranking DOE officials will oppose the loss of rent seeking opportunities, and may collude with officials of local government and administration (e.g. DCs, UNOs) to invest time and effort in blocking changes. DOE's technical capacity could be improved by using specialized cadres for higher level positions, rather than using staff from the generalist civil service who lack technical knowledge, and are subject to regular transfers.

A present constraint is that pro-reform groups are little known, hardly know each other, have no capacity for collective action nor collective platforms to facilitate their networking. To address this, the media could facilitate roundtable discussions among stakeholders.

DOE, with the support of the Bank and other international partners, could help to develop the collective action capacity of pro-reform groups, and communication strategies to improve networking among the groups.

Although not facing the extent of high level political resistance to reform as in other sectors, brick industry reform will be constrained by resistance from perceived losers, and a complex operating environment requiring coordinated actions by multiple players unaccustomed to working together. Yet with determined leadership from BBMOA and other pro-reform stakeholders, progress is possible.

References

1. "Political Economy Analyses of Two Key Industry Sectors in Dhaka, Part B: Brick Sector", report for the South Asia Social, Environment, and Water Resources Department, The World Bank, 2008.
2. "Bangladesh Clean Air and Sustainable Environment Project". Project Appraisal Document. Washington, D.C.: World Bank, 2009.
3. "Bangladesh: Country Environmental Analysis" Bangladesh Development Series Paper No. 12, The World Bank, 2006.

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