

In search of lotus in the cow dung

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HAZARIBAGH tanneries, although contributing steadily and immensely to the national economy for decades, have been ill-reputed for the environmental degradation it caused to the area. One usually associates foul odour, ungainly sights and toxicity with Hazaribagh, but simultaneously thousands of residents have been compelled to adopt the area as their home. Clearly the worst victims have to be the children, robbed of their babyhood by unsympathetic surroundings, devoid of fresh air, daylight and greenery.

Architecture graduate Mohammad Al-Mamun's exercise at Khulna University, albeit routine in any school of architecture, is an eye-opener for such dilapidated areas, and dare we say there are quite a number of them in any of our large cities.

To achieve anything worthy you need to have a vision, based on the past, founded on the present and ascending into the future. Without even commenting on the design of the individual buildings of the proposed revamped Hazaribagh, as elaborated in his paper, 'Redevelopment of Hazaribagh Toxic Grounds', Mamun's perceptiveness for the future of a long suffering people and area is a heart warmer and commendable.

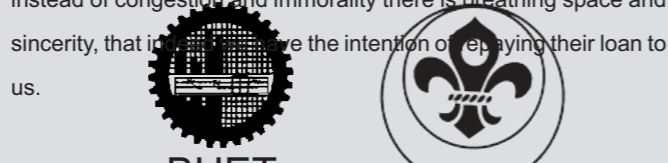
The next time we don a pair of leather shoes, or hang a fancy bag on our shoulder, let us commemorate the sacrifice of a labour force in anguish, not only for their personal health and hygiene but for the future of their progeny. These polluting factories need to be relocated immediately to save the workers who live of it and the people who live on it. We have lost too much time, and who knows, perhaps

life, as not many are aware that illness can be gotten from the working environment. The area has to be upgraded to make it suitable for human habitation.

Hazaribagh is a forgotten land. Misplaced is the multilateral agreement for relocation of the factories and refurbishment of the vacated land. Lost is the government's commitment to resuscitate the people of the area and its periphery. Self-seekers must have overridden the good intentions of those in favour of relocating the fetid industries.

All is never lost. Yet there is scope to bail out the people of such putrefying areas. Yet there is time to let the children know that instead of darkness and pollution there is brightness and purity, instead of congestion and immorality there is breathing space and sincerity, that it is time to pay the intention of repaying their loan to us.

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Satellite image of the site

Redevelopment of Hazaribagh toxic grounds

MOHAMMAD AL-MAMUN

"Treat the Earth well. It was not given to you by your parents. It was loaned to you by your children."
-Kenyan proverb

WE make the cities for our own longing without giving thought about the coming generations. It is the root problem in most rapidly growing cities such as Dhaka. Unplanned developments sometimes wipe out living environments. Most of the citizens often even do not know that they live in a hazardous environment.

Hazaribagh area is one of the most significant examples of unplanned areas where the leather processing industrial zone was developed since the 1950s. The rapidly expanding tannery industries discharge untreated toxic pollutants into the surrounding, causing health hazards besides seriously degrading the quality of the living environment. The soil condition of this area is such that even the fruits contain the contamination absorbing it from the ground.

Leather is the fourth largest export sector in Bangladesh in terms of earning foreign currency and ranked third in generation of pollution. Presently there are 196 tanneries in the Hazaribagh area. But neither the workers nor the owners have any complete knowledge about the legal requirements of keeping the environment free from pollution.

The current situation in the area, also a densely populated residential area, is critical due to years of neglect and lack of initiatives for improving the quality of the living environment. The government has formulated a policy to relocate the tannery industries. On 23rd October 2003 a trilateral agreement was signed between BSCIC (Bangladesh Small & Cottage Industries Corporation), BFLLFE (Bangladesh Finished Leather, Leather Goods and Footwear Exporters) and BTA (Bangladesh Tanners Association) to relocate the tannery industries from Hazaribagh to Savar and Keraniganj. Due to procrastination at different levels the redevelopment plan has not yet been prepared. The vacant land that will emerge from the relocation can be developed. Facilities based on public demand and local area needs for the betterment of the community as well as the living environment can be provided.

An architect having environmental and socio-cultural awareness, technical know-how, historical knowledge and design ability can contribute to visualizing the 3-D redevelopment appropriate for the people. The architect's main concern should be to give the community a healthy living environment maintaining the unique socio-cultural fabric of the area. The proposal presented here focuses on realizing the goals for the Hazaribagh area.

The major objectives of redevelopment strategy are
 ● Redevelopment of the vacant land of the relocated tanneries with appropriate planning principles and development tools
 ● Propose future land-use plan of the study area to minimize and remove

- contamination from the land
- Maximize the green space to promote eco friendly environment
- Improvement of accessibility to these areas by providing a sustainable living environment
- Revitalize the living standard and improve the social awareness of the people in the area
- Identify social infrastructure and environmental condition of the area to minimize those problems providing adequate space
- Reuse and renovate some of the existing buildings for community needs
- Transform the area into an attractive urban community space which would be a hub linking the old and the new parts of Dhaka city

The development strategy
 Detail analysis reveals several needs, such as urban spaces, public amenities, housing etc. which may be provided in phases. As the area is large (core area about 112 acres, study area about 334 acres) and complicated (related directly with the existing community), people's participation is essential. Major redevelopment stages would be public notification, relocation, area selection and demarcation, acquisition, and removal of contamination, followed by preparation of the development plan, implementation and maintenance scheme.

Relocation will be ensured by the HTRP (Hazaribagh Tannery Relocation Project), which has to bear the responsibility of ensuring financial support committed by the government to the stakeholders, many having bank loan. Due to unplanned dumping of waste some 33 acres of land has become highly contaminated, that would be demarcated and detoxicated in a planned manner.

In the planning and design phase detail land redevelopment plan is to be prepared for the vacant space of relocated tanneries. Public demand and need would be the basis for providing different facilities. Proposals for site development will mainly comprise of different amenities, accessibility and improvement of urban living environment. The sector-wise redevelopment strategy is discussed below:

Master plan
 A detail master plan would include a detail layout of the land-use plan and location of different facilities in the site. Facilities and housing areas are proposed with adequate buffer and access roads. Commercial activities like shopping centers have been proposed. Between the commercial zone and hospital, for example, a buffer of greenery, plaza and open space has been proposed. Public amenities like hospital and cultural zone have been included. The compact core area is surrounded by existing housing. Pedestrian ways, street lighting, and segregated motorized and non-motorized traffic lane are part of the plan. Parking space is proposed in relation to the height and use of adjacent buildings. Being an ecologically critical area and having many long enduring problems, different measures, not always going by standards, is required.

Housing
 The study area is already overpopulated, so, the provision of housing schemes in the area would be in a slow pace. Most of the land would be used for providing amenities and other essential services to fulfil the necessity of the inhabitants of the area. Housing will be automatically developed in any area with the increasing demand. But, for rehabilitation of the urban poor living in the squatter settlements multi-storied accommodation may be provided. To maintain the quality of indoor and outdoor environment of the residential scheme the area would be detoxicated. Recommended open-built area ratio will be maintained for healthy living.

Building height
 Proposed building height of the study area will not follow the BNBC (Bangladesh National Building Code 1993), which allows unlimited height for buildings in plots with 23m-wide access road. The study proposes to restrict building height to six stories because of the soil quality and contamination. Moreover BNBC was formulated on the basis of limited parameters, but the study area is a mixed-use neighbourhood outside the CBD (Central Business District) and therefore required a separate set of rules. A six-storied skyline is expected to generate an eco-friendly environment.

Building density
 Housing demand generated by poor rural immigrants has generated added pressure for housing in the area. The buildings are haphazardly developed without the needed open space. With the increase of popula-

Table: 01. Major redevelopment issues and probable solutions

Major Issues	Probable Solution
Relocation	Actual relocation
Contamination	Cost effective, Following guideline, Treat as Brownfield
Existing Structure	Minimum demolishing, Renovation and regeneration
Land development	Acquisition
Demand of surrounding area	Respect demand
Finance	Government financed
Programme	Urban interactive space, Green or open space Housing

Table: 02. Major proposed functions and their occupied areas

Major Proposed Function	Area in Acres	(%) age
Open & Green	24.16403	21.62
Mixed-Use	21.25804	19.02
Community and Cultural Facilities	15.33242	13.71
Shopping	7.877326	7.01
Housing	1.725993	1.54
Educational Institute	4.690998	4.197
Health Facilities	2.684885	2.4
Utilities	1.398423	1.39
Religious	0.6302582	0.56
Road and Transportation Facilities	32.00415	28.63
Total	111.766	100

tion, irregular and unplanned buildings have come up. Regulations would be formulated to control the organic development besides creating new units to accommodate the immigrants.

Accessibility
 From visual survey it was found that accessibility status of the area is not satisfactory. Roads are narrow with visual obstruction due to curvatures and unauthorized constructions. There is inadequate pedestrian linkage though people have to walk a long distance to reach destinations. Unauthorized structures may be removed to widen the road and to provide adequate pedestrian paths. In some roads there is either no street light or most of them are out of order. In some places lampposts are situated a few feet within a road. These should be removed to the side to increase the effective road width. Obstruction to visibility at the intersection should be removed and node correction should be carried out. Furthermore in some zones certain restrictions should be imposed for the movement of large vehicles.

Drainage and sanitation
 In some areas there are kutchra drains of very poor quality. Due to the regular liquid toxic discharge of the tannery industries the conditions of drains have become very poor. Some of the drains flow into River Buriganga. All kutchra drains should be amade pucca maintaining the natural slope. All drains should be well connected with the final outlet. Existing waste disposal system is poor. Although the amount of hazardous waste will decrease in these areas after the relocation of the leather factories, nevertheless a well-managed waste disposal system needs to be developed for regular waste collection.

Health care
 Most of the people in the area belong to low- or middle-income group. They have almost no health care facilities in the area. Most of them can't afford the cost of private clinics either. So a well-equipped government hospital may be constructed in the area. The hospital should provide out-patient facilities with low charges. The hospital may be situated on an area easily accessible from all sides.

Market facility
 Market or shopping centre may be located on the basis of market analysis and economic condition of the residents. In some zones higher income group resides while in some other zones concentration of poor or low-income group is observed. Well-furnished shopping centres may be located at zones of higher income, while in case of low-income dominated zones adequate shopping facilities should be provided by which they can meet their requirements locally.

Parking space
 Parking space within and outside the building is very much essential to discourage illegal parking and to reduce traffic congestion. Parking spaces must be provided beside shopping centres and commercial zones. Outdoor parking may be provided adjacent to open and public spaces. Parking space for rickshaws and taxi cabs may also be provided at major nodes.

Educational institution
 New schools at low fee should be provided so that children from low-income families may afford education. Institutions may be provided in such locations where other institutes are already established to avail of existing infrastructural facilities walking distance.

Breathing space and playground
 Open space may be provided between residential and commercial areas. Open space or resting space may also be provided in commercial areas. Some cultural facilities and community clubs should be provided to meet local needs. To prevent cattle grazing and to discourage illegal occupants, fencing is required but that must not cut visibility.

Recreational centre
 Higher income people can afford and enjoy recreational facilities far from the area. But the lower income people are deprived of this. Different recreational facilities like cinema hall, exhibition space, temporary museum and fair may be located in the cultural zone.

Vegetation

Vegetation is essential for improving the living environment of any area. But since it is a contaminated site and the toxic pollutants may get into the plants and fruits by bioaccumulation, the plantation of edible fruit trees should be restricted in the ecologically critical areas. Vegetation should be improved by greeneries and pollution free species.

Quality of living environment
 Quality of both indoor and outdoor environment may be improved. Appropriate waste management would provide an odourless and visually pleasing environment. A well spaced residential environment is ensured with proper wind flow and availability of sunlight. If the pollution is managed to a permissible level after relocating the tannery industries a better living environment will be ensured in the area.

Pollution control
 Any type of industrial activity should be regulated or discouraged in the area to prevent water and air pollution. Movement of heavy vehicles should be controlled to reduce noise pollution and to reduce discharge of air pollutant in the ambient air. Wastewater treatment plant should be provided in the area for treatment before final disposal. Adequate amount of greeneries with appropriate plants may be provided in the site which will absorb pollutants and keep it to a permissible level.

Utility services
 Different type of utility services may be provided on the basis of public demand and threshold population. The services should be provided equitably as per the population concentration. Utility services comprising of fire service, police station post office etc. may be provided.

Land development
 Hazaribagh tannery industrial area is now a contaminated brown field. After reducing the contaminants to a permissible limit the area should be elevated by earth filling. Some plots are small and roads very narrow. After acquisition of land, readjustment of the plots and roads may be done. The plot boundaries of the entire site may be demolished and new plots may be laid out in accordance with the space requirement of different uses. A prototype land readjustment plan has been developed.

- Basic steps in land readjustment/replotting process:
- Preliminary survey of the project site
 - Implementation plan
 - Consensus of all stakeholders (landowners, developer, public agencies, etc.)
 - Approval of the project
 - Detailed topographic, building, land use, utilities survey
 - Replotting design
 - Detail design of all aspects
 - Consensus of landowners regarding replotting
 - Approval of the replotting design
 - Consensus making for compensation
 - Removal of existing properties, estimation and payment of compensation
 - Land development
 - Laying of roads, parks and other public facilities
 - Laying of utilities
 - Community consensus on construction works
 - Finalizing replotted land parcels
 - Replotting plan
 - Community consensus on replotting plan
 - Enforcement of replotting
 - Transfer of public facilities
 - Registration of replotted parcels
 - Payment and collection of equity
 - According to national housing policy Government is responsible for promoting housing by different types of assistance through rules and regulations.
 - Building reuse

Some buildings have been identified for reuse by altering their function. Such kind of decision has been taken to make the development work cost effective. Again these buildings will act as the landmark for the area, besides maintaining a link with the past.

Conclusion
 The study reveals that Hazaribagh tannery industrial zone is seriously contaminated posing health risk to the local inhabitants. As the tannery industry is important for Bangladesh's economy they cannot be shut down but definitely can be relocated to some low risk areas. After relocation the available land may be used for public good. According to the public demand analysis citizens suffer from shortage of adequate urban service facilities. It has also been found that relocation of the tanneries would open up various options of redevelopment process. Based on demand analysis some proposals for development and implementation strategy have been made. The concerned authorities may take note of this and take adequate steps to immediately relocate the tannery industries and consider the proposed master plan for greater public interest.

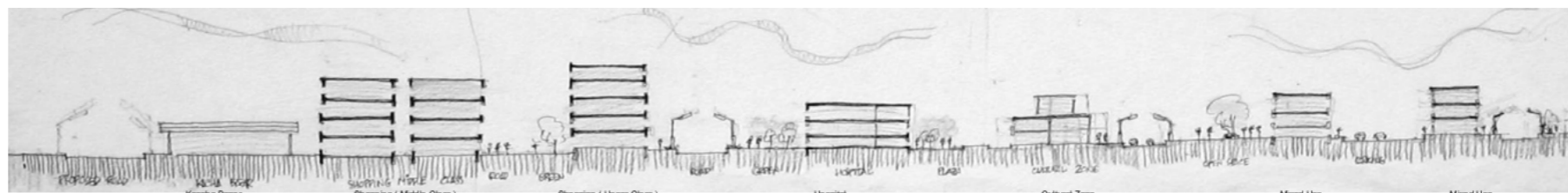
The author is an Architecture graduate, Khulna University and the paper is based on his final year thesis project



Study area



Proposed Master Plan hooked up with existing neighborhood fabric



Proposed Master Plan section