

Assessment of Environmental Laws in Bangladesh: A GIS based case Study on Brickfields of Savar

A Dissertation
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MAGD – 4

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I would feel debt free if this research could play a meaningful role for the intellectual communities and for the betterment of ordinary people, particularly working or associated with pro-environment activities.

Md. Masudur Rahman Bhuiyan

02 March, 2013

Dedications

To the beloved and departed soul of my

*Father
and
Mother*

ABBREVIATIONS

AC(Land)	Assistant Commissioner (Land)
ADC	Additional Deputy Commissioner
BBS	Bangladesh Bureau of Statistics
BSCIC	Bangladesh Small and Cottage Industries Corporation
BSTI	Bangladesh Standards and Testing Institution
BTK	Bull's Trench Kilns
DAP	Detailed Area Plan
DC	Deputy Commissioner
DEPC	Department Of Environmental Pollution Control
DG	Director General
DLRS	Directorate of Land Records and Surveying
DMDP	Dhaka Metropolitan Development Plan
DoE	Department of Environment
DPHE	Directorate of Public Health Engineering
FCK	Fixed Chimney Kilns
GIS	Geographic Information System
H/Q	Headquarters
HYV	High Yielding Variety
HHK	Hybrid Hoffmann Kiln
IGS	Institute of Governance Studies
JL	Jurisdiction List
LGED	Local Government Engineering Department
MAGD	Master of Arts in Governance and Development
MOEF	Ministry of Environment and Forest
MOI	Ministry of Industries
MS	Microsoft
RAJUK	Rajdhani Unnayan Kartipakhkhya
Sq. Km.	Square Kilometer
UNO	Upazila Nirbahi Officer
VSBK	Vertical Shaft Brick Kiln

ABSTRACT

The aim of this research is to assess the environmental laws in Bangladesh, using GIS approaches. The analysis was mainly based on recent census. The upazila is considered in Bangladesh to be the main focal point of government planning, land management, environment and development policies. Savar Upazila has been selected as the study area because of its rapidly changing population density, socioeconomic phenomena and industrial and environmental concerns.

The major sources of data was to study plot to plot survey, taking support from high resolution satellite image available in Google Earth. The Google Earth allows mouza plot survey. Different tools of this software helped analyze data digitally. Literature review and MS office programs of windows utilized to produce this report.

In Savar upazila total 179 brickfields have been established in several unions, in order to fulfill the ever growing demand of mega city Dhaka. Findings shows that violation of environmental laws specifically Brick Burning Acts are very common. Government do/can not enforce the laws and monitor the violation strictly due to her scarcity of resources and willingness. Residents are very much unaware about the rules and regulations. Some entrepreneurs thinking of their profit, having no social responsibility or such mindset. In the recommendation different termed proposals are advised for the betterment of next generation – expecting a green urban environment .

1: INTRODUCTION

Bangladesh is one of the least developed countries with a low resource base, a burgeoning population with a very low land-man ratio, often threatened by both natural and anthropogenic stresses. The vast majority of the population lives almost exclusively on the natural resource base (Anton, 2011).

Like all other nations of the world Bangladesh also acted to the global call for the protection and conservation of natural environment and ecology. Industrial development significantly contributes towards economic growth of a country. It brings along with it a host of environmental problem too. It is increasingly being recognized in Bangladesh as in other part of the world that for development to be meaningful and sustainable over a longer period of time environmental concern must be integrated into all development policies (Anton, 2011).

Integrating environment in all development activities and achieving environmentally sound development planning has immerged as the greatest challenge to the dominant development paradigms all over the world and becomes a more formidable challenge countries such as Bangladesh with resource constraints inherent geomorphologic instabilities along with its vulnerability to natural disaster (Anton, 2011).

The Govt. of Bangladesh through its ministry of environment and forest decided to undertake the national environment management action plan involving a people consultation process as a first step towards drafting environmental laws to regulate the industrial and other ventures which may become a threat to the environment (Anton, 2011).

Bangladesh has some 8,000 traditional kilns making 8.66 billion bricks worth US\$ 450 million annually. The sector grew by over eight per cent during the last decade, but also contributed three million tons of carbon dioxide annually due to "outmoded, inefficient and poorly constructed kilns and the use of substandard fuels such as high sulphur coal, tyres and wood energy in the kilns to fire clay into bricks," a UNDP release said (Islam, 2011).

It is projected to grow by five per cent each year, burning more than a million tons of coal annually and emitting 8.7 million tons of carbon dioxide by 2014 (Islam, 2011).

Bangladesh has very limited supplies of natural stones. About 44% of houses in Dhaka (according to the 1991 census) were built using bricks as the major wall material. Bricks are also widely used, not only for housing construction, but also for construction of roads, pavements, bridges, irrigation structures and as aggregate in concrete mix (World Bank, 2011).

In Bangladesh, for centuries traditional houses have been built using locally available materials. Historically, bamboo has been the most important building material for housing. Even today bamboo is still widely used. As a result of economic growth, construction activity expanded steadily and more houses are nowadays being constructed with brick material (World Bank, 2011).

1.1 Aim of the Research

The aim of this research is to assess and analyze Environmental Laws in Bangladesh. Savar has been selected as a study area because of its rapid population growth and its consequences. Brickfields are mostly vulnerable phenomenon of this pollution. The study will help us to understand the spatial distribution of Brickfield, which may help to assess the future trends. There are only a few studies where social data have been fully integrated with the remote sensing techniques; this research is intended to further explore of integrate of different approaches.

1.2 Objectives

1. To review document/government orders, acts, rules related to environment.
2. To locate brickfields using Google Earth status bar.
3. To evaluate application procedures, monitoring system of establishing brickfield and their post construction environmental effect.
4. To assess the environmental governance based on field experience.

1.3 Research Questions

To accomplish the objectives, it is important to focus on some of the basic issues. These are mainly:

1. What are the Environmental Laws/rules in Bangladesh? How these laws are applying, in fact? What is the existing scenario of brick Technologies in Bangladesh?
2. What is the spatial distribution of brick fields in Savar? How the location became a factor of mismatch between the brick burning act and its application?
3. What is the tool to monitor these laws? What is the post construction environmental effect of brickfields?
4. How much the environmental laws are applying at upazila level and even specifically union level?

1.4 Tasks to be Involved for Achieving Targets of Research

To achieve the aim, objectives and research queries, the following steps will be required as a part of the integrated approach of the thesis:

(1) As Bangladesh is a less developed country, there is almost no data readily available for higher quality research work. So I needed to develop appropriate database which are very time-consuming and complicated and require careful planning and skill prior to start of the fieldwork and analysis. Moreover, what form of data is available, and the quality of them is not always easy to discover. My major work involved here:

(a) Developing GIS database.

(b) Develop an administrative boundary upazila dataset, digitise mauza maps at plot level. I also needed a GPS survey for the Placemark of the brickfield and to locate union and mauza boundaries and plot (Daag) numbers (depending on the availability of data) based on the lowest administrative units using DLRS (Directorate of Land Records and Surveying) and LGED (Local Government Engineering Department) maps.

(2) Population census data and the settlements on the images have direct links. I need to identify the various classes of settlements, their pattern of distribution with respect to local land types and the physical direction of growth. Also I need to mark clearly the extent of settlements in order to enhance the mauza-level census data at a sub-mauza scale.

(3) Calculation and analysis of the by-products of the data/ images based on the tabular primary data for searching a suitable formula so that I can quantify the violating the environmental law.

(4) Carry out a detailed plot level survey of whole upazila using mauza level plot maps and try to assess the impact of Environmental pollution. Though this is a huge task, it will help to understand the reasons behind the violating the environmental laws and to identify the forces relating to violation.

So, the main objectives of the study are to identify and assess environmental governance.

.

1.5 Limitations

There are no specific papers that I have found on assessment of environmental laws and also there is no literature/study of Environmental law violation and what would be the role of large scale maps in this regard. It is assumed that the following gaps of research should be filled in order to reach to the goal of this research.

The current study has focused on how to minimize the gaps when the integrated approaches of various sources of information are required. From the discussion so far in the research, if we can think about the gaps in order to support each other, the broad areas can be identified. The goal is to make them compatible for the law violation study. Lack of in-depth field study to interpret and integrate vast sources of information like remote sensing and population censuses.

1.6 Organization of the Dissertation

Chapter 1 focuses on the primary issues of the study including the aim and objectives of the research. I have highlighted the relevant literature review for the study of environmental law. Also, a primary background of the study upazila is briefly outlined and gaps in the research.

The cornerstone of the thesis is **Chapter 2**. Without organizing and preparation of the databases I could not have performed any further analysis. All essential aspects of the available sources of data and their digital conversion for the analysis are discussed here. The chapter starts with a description and context of the study area.

Chapter 3 briefly outlined various aspect of the methodology. Computer was mostly using during the research. Google Earth software were useful for GPS survey and data collection. To analyze MS Excel helped much. The research were presented through MS Word software. No output in the world is 100% perfect, but I tried my best to produce a perfect research work.

The highlighted of this paper is **Chapter 4**, list of environmental laws were mentioned in this chapter. This chapter describe status of environmental governance in Bangladesh.

Major drawbacks of the Brick Burning Act were mostly describe in **Chapter 5**. This chapter I tried to quantify how the act is violating. Causes and responsibilities of problems or violations are described at this stage.

The Brick burning Act evaluated in entire Savar Upzila was described in **Chapter 6** . This chapter also list out the environmental problems.

Chapter 7 is the important output of the research. In this chapter all the documents are analyzed. The location of the brickfields are discussed before the discussion of monitoring system. The experiences gathered from the field also noted down herewith.

Chapter 8 is the final section of the research, where the concluding remarks have been placed and the overall scenarios of the thesis are discussed briefly, with some recommendations and issues involved with brickfields.

2. STUDY AREA

2.1 Savar Upazila : An Ideal Case Study

Savar is one of the most representable upazila in Bangladesh, showing the status of environmental governance, particularly the brickfields. The demand of this bricks of Dhaka city is mostly satisfy from this upazila. Moreover, it reflects the industrial zone, variation of Land types, growth centre are available in Savar upazila and the surrounding region. It should be mentioned here that the upazila is still considered as a rural area, rather than an urban or peri-urban area but the influence of the industry is rapidly changing with its land use pattern and population density. The EPZ stands in the upazila and the national highway of Bangladesh named the Dhaka-Aricha highway (Rashid, 2003).

2.2 Study Area and Its Context

Savar upazila headquarters is about 30 kilometers away by road from the heart of the Capital and is connected by the Dhaka Aricha National Highway, one of the busiest roads of Bangladesh. The upazila occupies an area of 278 km², including 32 km² of river and 15 Km² of forested area. According to the 1991 census report, the population of Savar upazila was the 378,034. It has a rapidly growing population and has experienced a detroit of environment during the last few decades due to the influences of urbanization from Dhaka Metropolitan Megacity. In fact, Savar came into the limelight during the late 1980s when it became likely that it would be engulfed by the expansion of Dhaka. Since 1995, the study area has come within the jurisdiction of the RAJUK (RAJdhani Unnayan Kartipakhkhya), or Capital Improvement Authority, the plan for which has briefly been discussed at the end of this section) and so its overall development planning and implementation are supposed to be guided by this agency and at least theoretically this gave a special improved pro-urban status to the upazila (Rashid, 2003).

Unionwise Population & Density(Per Sq. Km.)

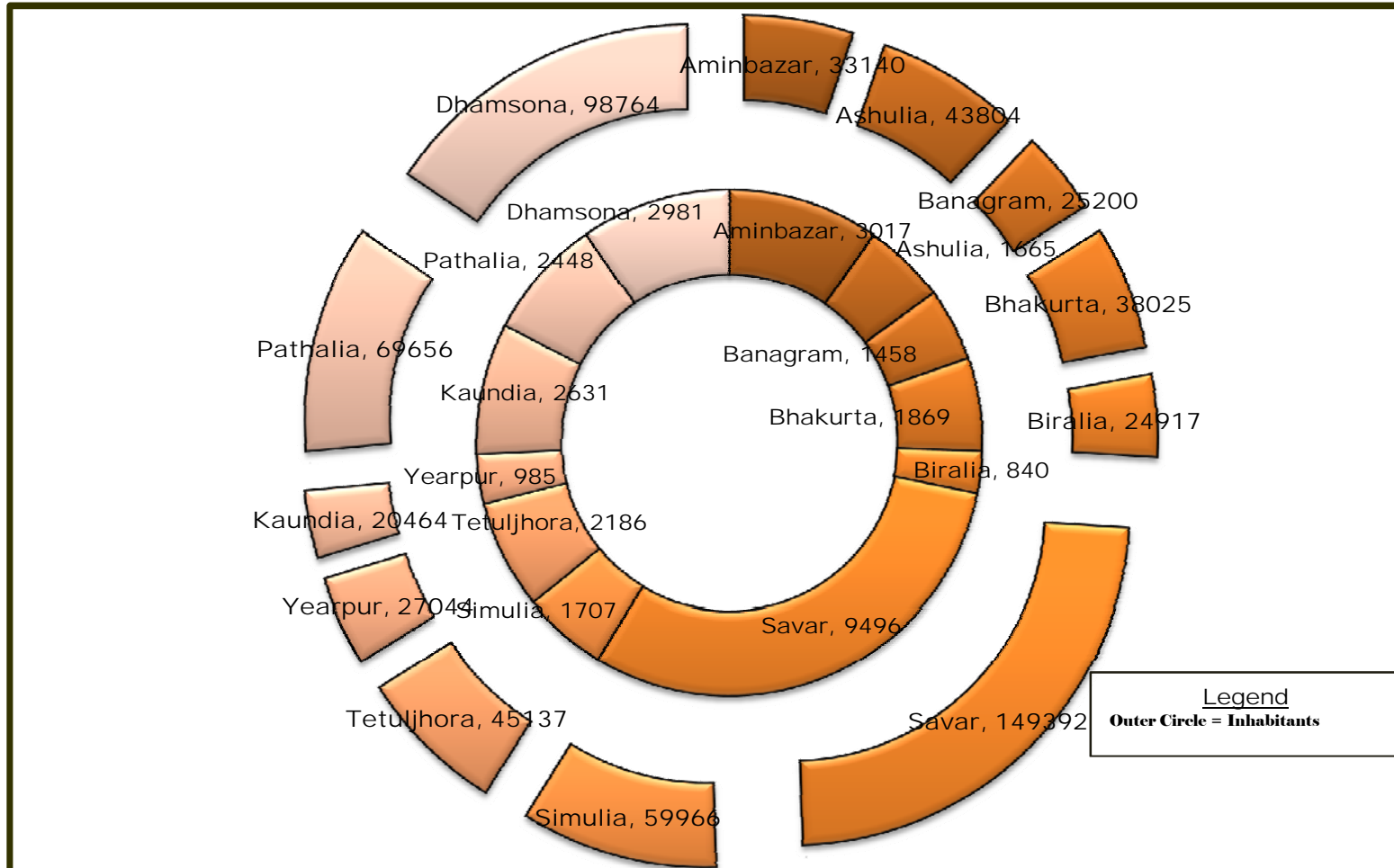


Figure 2-1 : Unionwise Population and Density(Per Sq. km.)

Source : Compiled by the Author, 2013

Unionwise Population & Density(Percentage)

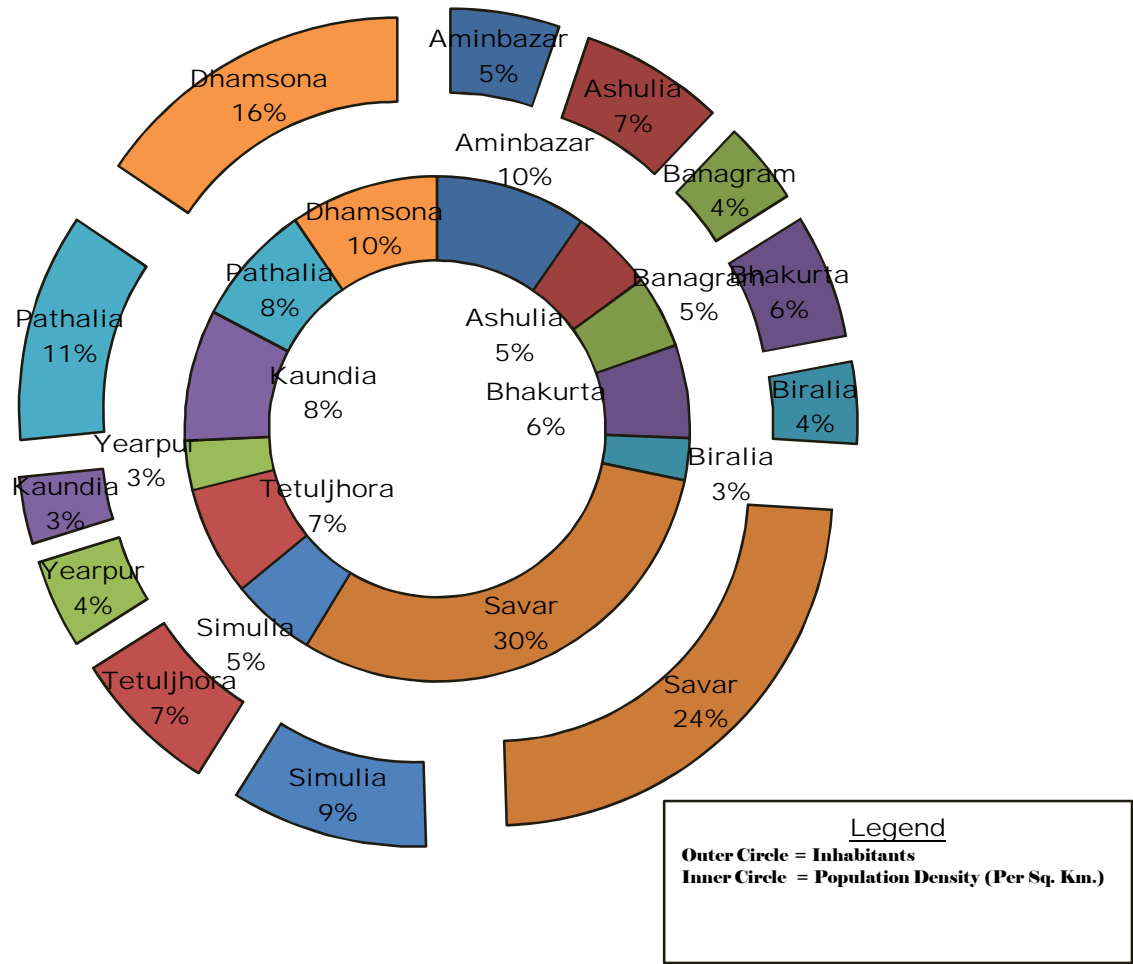


Figure 2-2 : Unionwise Population and Density(Percentage)

Source : Compiled by the Author, 2013

2.2.1 Geographic Setting

Savar is geographically located between 23°44'15.61" and 24°01'37.17" North and between 90°11'08.45" and 90°21'36.70" East. The respective Lambert Conformal Conic (LCC) grid references in metres are 664,108.209N, 696,095.056N, 2,762,060.639E, 2,779,888.394E. The upazila is bounded on the north by Kaliakair and Gazipur Sadar upazilas, on the south by Keraniganj upazila, on the west by Dhamrai and Singair upazilas and on the east by Mirpur and Mohammad thanas of the Dhaka City Corporation. Savar upazila is almost a rectangular shape and it is about 12 kilometres wide and 30 kilometres long with an area of 284.63 km². Savar upazila consists of 12 unions and one paurashava (municipality). In terms of its physical extent, it is an important part of the capital of Bangladesh. Its total area is almost double the size of all 90 wards (135.22 km²) of Dhaka City Corporation. Moreover, its area is approximately equal to that of Dhaka Metropolitan City (304.96 km²). Additionally, according to the jurisdiction/control area (1448.23 km²) of the master plan (1995-2015), RAJUK's total area is 5 times bigger than the size of study upazila (Rashid, 2003).

2.2.2 A Brief Physiography

The study area covers the Lower Madhupur Tract and the Lower Brahmaputra Floodplain, which has an undulating topography of both Pleistocene and recent formations, where geomorphological processes are distinctly different and pedological evolution is in different phases of development. Altogether three broad types of landforms can be identified on the basis of drainage, elevation and pedological characteristics. These are locally known as 'Chala /Taan /Tek/ Tenguir' (highland, medium highland), 'Byde' (medium high to medium low land), and 'Naama/Chwak/Chars' (low land and very low land/depressions). The chala lands are normally flood free, relatively less productive for rice but extensively used for vegetable cultivation throughout the year and famous for tree plantations, particularly Jack fruit plantations and Shaal Forests. Also, the Chala land is the first choice for permanent infrastructural developments. However, the chala lands are dissected by the Bydes, which usually remain shallow to deeply flooded for the three to four months between July and November. The Bydes are fertile, rich in clayey soil and mainly used for a single crop, predominantly HYV boro rice. The Naama covers the major agricultural lands where prolonged flood waters from Dhaleshwari, Bansi and Turag rivers affect the area quite

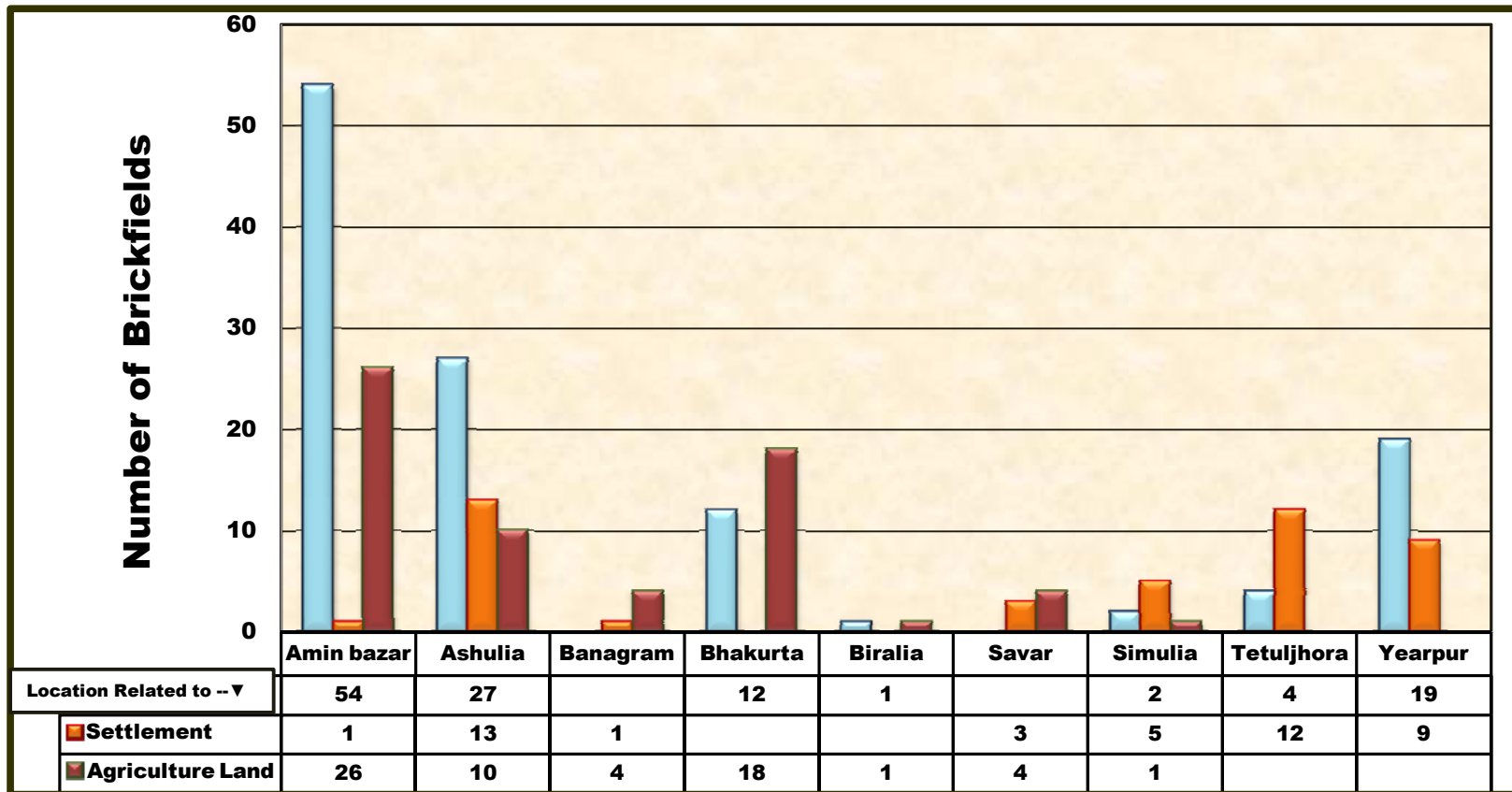


Figure 2-3 : Physical Context of Brickfields, Savar.

Source : Compiled by the Author, 2013

regularly. The seasonal flooding during the monsoon remains for four to five months between June and December. The depressed area is flooded for more than five months and HYV born rice is cultivated here. The back slopes of the floodplain are used for rabi and deep water rice. In general, in the study area, there is 38 percent high land (flood-free), 21 percent medium high land (occasionally flooded), 10 percent medium low land (regularly flooded), 16 percent low land (facing prolonged flooding) and 15 percent very low land (perennial bodies) (Rashid, 2003).

2.2.3 Topography and Relief

Savar upazila comprises the lands of both the recent floodplain and the Pleistocene terraces, the two major geological units of the deltaic Bengal basin. The average elevation of the area gradually decreases from north to south. The highest elevation is about 20 meters above mean sea level (MSL) and the lowest is about 3 meters. The average altitude is within the range of 10-15 metres. The Pleistocene terrace, that is the Madhupur tract in Bangladesh, has a higher elevation and is comprised of elongated and v shaped/rounded hillocks. Savar is located in the eastern part of the greater Madhupur tract, which is locally known as Bhuwal Gaarh. The recent floodplains cover the low lying alluvial flat lands and the extended inundated part during the rainy season (Rashid, 2003).

2.2.4 Soil Type

Basically there are two varied soil types: those of the Pleistocene uplands and recent alluvial flood plains but some parts are a mixture of both. In general, the northern part of the area is dominated by soil originating from the Madhupur clay formation; whereas the southern portion and across the rivers are characterized by recent soils. As the soils of the floodplains go under floodwater every year, these soils are highly reworked and gain fertility from renewed siltation. They are typically dark, very loosely compacted and have high water content and variable but appreciable quantities of organic matter. In contrast, the soils on the uplands (gaarh), that are hardly ever covered by flood-water and have longer periods of exposure to the atmosphere. They are highly oxidized and typically reddish brown and mottled. They commonly contain ferruginous or calcareous nodules. The recent floodplain soils are more fertile for cereal cultivation and seasonal vegetables because of their high water content capacity and rich organic matter, while the terrace soils are the home of the famous and gradually disappearing Shaal forests (Gozari Baan) and permanent trees like jack fruit (Rashid, 2003).

Table2-1 : Land Types of brickfields, Savar.

Sl. No.	Union Name	Land Type				Total
		Chwak	Byde	Char	Chala	
1	Amin bazar	59				59
2	Ashulia	8	26			34
3	Banagram	1		3		4
4	Bhakurta			26		26
5	Biralia	1				1
6	Savar			7		7
7	Simulia			5	3	8
8	Tetuljhora			19		19
9	Yearpur	10	11			21
Total		79	37	60	3	179

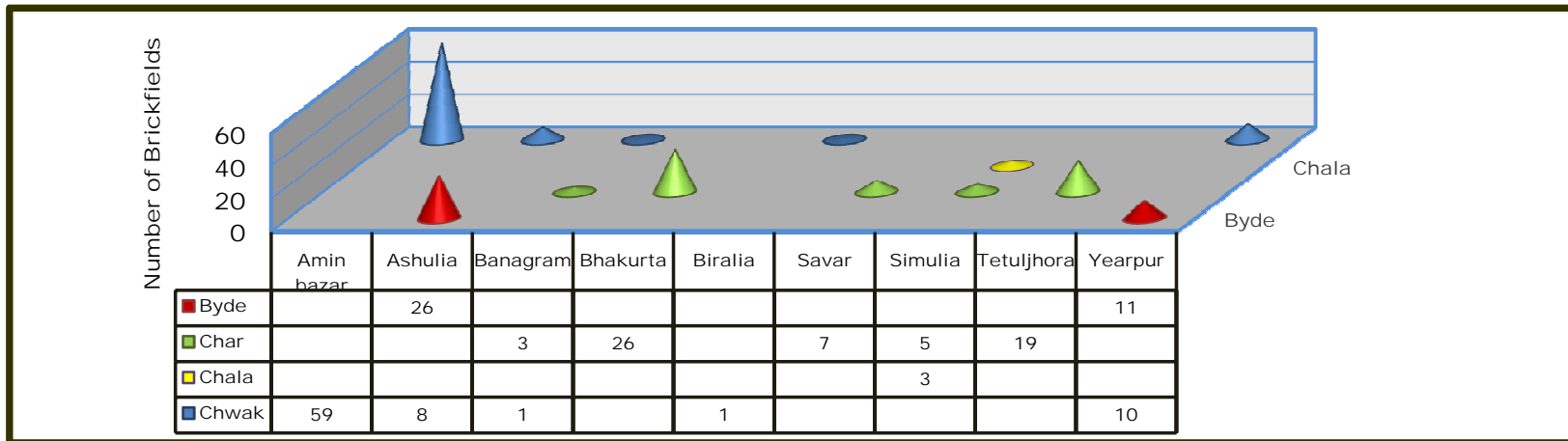


Figure 2-4 : Land Types of brickfields

Source : Compiled by the Author, 2013

2.2.5 Geological Structure and Stratigraphy

Bangladesh is physiographically divisible into three categories: (a) Tertiary hills; (b) Pleistocene terraces and (c) recent floodplains. However, the study area consists of only Pleistocene terraces and recent floodplains. More specifically, it can be considered that the southern study area comprises the Dhaka depression and the northern area is part of the Madhupur uplands. The river Bansi is evidence of the gradual shifting of the Brahmaputra from its ancient course east of Madhupur to its present day course of Jamuna flow. The shifting of the Brahmaputra reflects geological activities in this region. The areas of the recent plains are constantly subsiding, owing to the compaction of recent sediments and possibly to structural downwarp. The Madhupur clay Formation is lying unconformably over the Dupitila Sandstones of the Pliocene Age (Rashid, 2003).

2.2.6 Physiographic Region

The total area of Bangladesh is 144.80 thousand km² of which 22.18K km² is Hilly land, 30.26K km² Terrace Land, 1.22K km² is beels and rivers and rest of the land is mainly floodplain, which is the most dominant land feature in the country. The physical features of Savar upazila can be classified into three broad categories (Rashid, 2003). These are:

- a) Madhupur Tract:* dominant land types are high, medium high, medium low and very low lands;
- b) Brahmaputra Floodplain:* typical land types are between medium high and very low lands; and
- c) Madhupur Fringe:* usual land types are Medium high, medium low and low lands.

(1) Madhupur Tract

This area covers 57 percent area of the total landmass of the Savar upazila. The northern half of Savar upazila is situated in the Madhupur tract. The Madhupur tract spreads over Ward 1, Ward 2, Ward 3, Pathalia, Ashulia, West Biralia, West Yearpur, Dhamsona and east Simulia. Originally this tract was a part of a large Pleistocene terrace within the Bengal Basin with an area of 162 km. This elevated land is the result of the tectonic movements to which the Bengal Basin is being subjected. Here, most of the terraces are almost flat in relief,

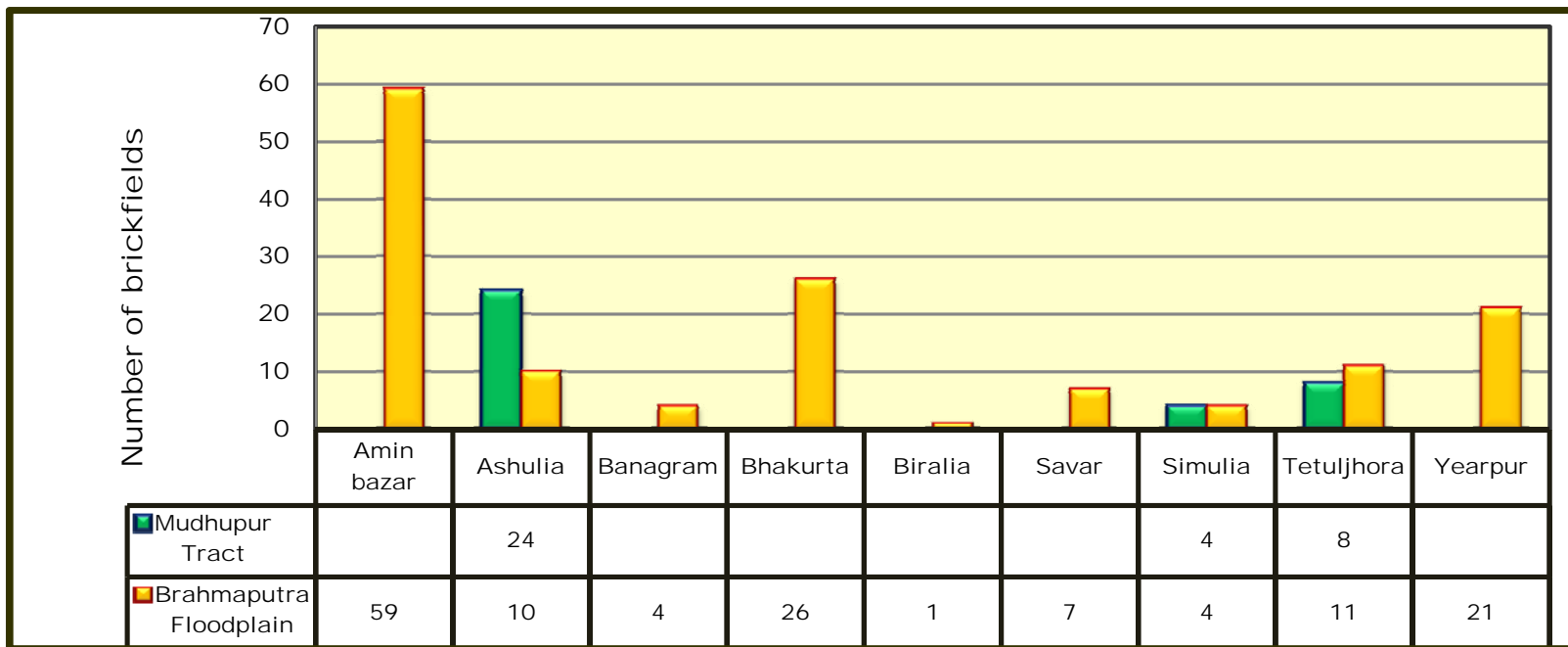


Figure 2-5 : Land Types of brickfields

Source : Compiled by the Author, 2013

except where the Bansi, Karanatoli and Rangamati Rivers have cut across it. Few haors/beels are located here (Rashid, 2003).

According to the inundation conditions, the land can be classified into four further subclasses: high lands, medium high lands, medium low lands, and very low lands. The total area of low land is negligible. The high land covers more than 50 percent of the total Madhupur Tract region, the actual area is 127.36 km². The territory of the other units, medium high land, medium low land and very low land, is 10.20, 14.08 and 9.98 km². The dominant soil series of the high lands are Tejgaon, Gerua, Bhatpara, Noadda and the respective areas occupy 72.50, 18.19, 13.81 and 5.49 km². In the rest of the area, 17.37 km², have been captured by the urban area which is mainly in Savar Paurasava. The soil series of the medium high land are Chandra and Kalma, each of them covering 5.10 km². The Khilgaon (14.08 km²) and Karail (9.98 km²) soil series are found on the medium high and very low land categories (Rashid, 2003).

(2) Brahmaputra Floodplain

This physiographic region is the southern part of the left bank of the lower Brahmaputra floodplain. One third (exactly 30 percent) of the total land mass of Savar upazila is in this flood plain. The lower part of this region is the most backward region of the upazila. All the southern unions, i.e. Kaundia, Amin Bazaar, Bhakurta and Tetuljhora, and the west half of the Simulia and Pathalia unions, are under this land. Only the high/medium high/medium low lands of this area are comparatively advanced. Here the higher areas are better than the lower, particularly the areas locally known as Chala/Tek. The total area covers 84.78 km². The rivers in this region, are the Dhaleshwari, Turag, Karanatoli, Rangamati, Bansi and Buriganga. Except for the Karanatoli and Rangamati, all of which flow around the outer boundaries of Savar upazila. In this physiographic category, three types of land can be identified: medium high, medium low and low lands. 34.22 km² of medium low lands are found and these have most potential in this flood plain. Most of the settlements and seasonal crop lands are located in this region. There are not any large government and semi-government (autonomous) institutions in the Brahmaputra flood plain. Only 19.02 km² of low land is found in this area, which is very good agricultural land. The major characteristic of the southern very low land is the location of several large brick fields (locally known as eater bhata) in the dry season (in general October to July) and earth moving (locally known as mattee-kata) by trucks to meet the existing demand for all types of construction work in

Dhaka Metropolitan City. The total area occupied by the lowland is 31.54 km², with brick fields covering 18.55 km² area. The total riverine area in this floodplain is about 24.82 km² (Rashid, 2003).

The Brahmaputra flood plain is now active in the southern most unions mostly in the form of char lands which are predominantly raw sandy soils and are seasonally deeply flooded. These areas are mostly used for aus or jute on the relatively higher areas and broadcast aman in the lower areas in the monsoon season. In the dry season, a good portion of the land remains barren, with only sparse grasses used for grazing. The main crops are cheena, kaon, groundnut, water-melon, sweet potato and rabi pulses. Boro paddy is locally grown in depressions using traditional devices of irrigation or low lift pumps, if irrigation water is available nearby.

Non-agricultural land-use is isolated or on small raised platforms (vita), often surrounded by banana trees or permanent crops. All of the developing activities receiving low priority in this region are due to its physical barriers and it is also a backward region of Savar upazila in all aspects.

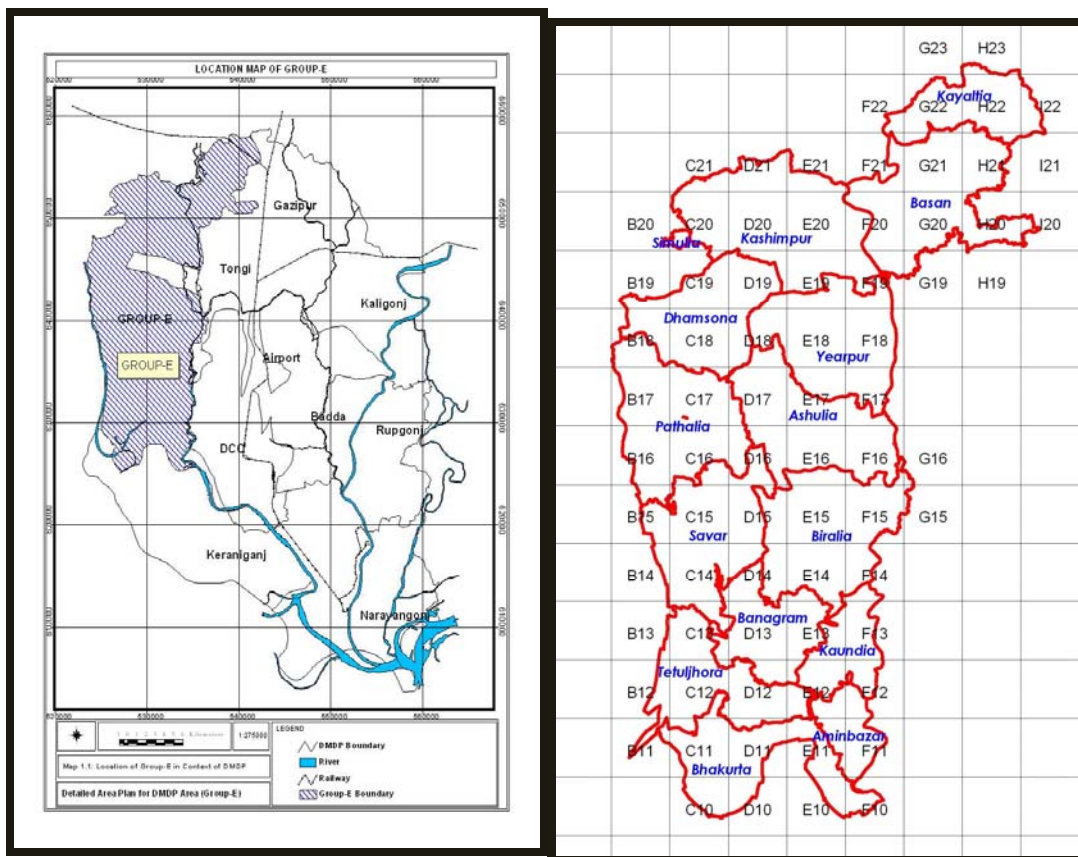
(3) Madhupur Fringe

This area includes the lower valley of the Turag and surrounding areas of Rangamati rivers. Most areas of the Turag valley are seasonally deeply flooded and extensive areas remain wet throughout the dry season. Deep water aman or local boro is the traditional agricultural land use in this area. Capturing fish in the dry season is another important economic activity. This area is a mixed zone where both the Madhupur tract and Brahmaputra flood plain land use are visible.

The Madhupur fringe covers 35.18 km² area in Savar upazila (Rashid, 2003). This long and narrow sub-region follows the course of the Turag, Karanatoli and Rangamati rivers and has a relief of irregular ridges and of depressions. The ridges can be classified as medium high and the depression is very low land. The biggest part of the Madhupur fringe extends over the eastern boundary of Savar upazila. The major agricultural limitations of the Madhupur fringe are rapid permeability, low moisture holding capacity and low soil fertility. The medium highlands of closely dissected areas have high erodibility and steep slopes on the rounded hillocks. These areas are not suitable for large scale irrigation. The main feature of the non-agricultural land use in this area is the rural settlements.

2.3 Detailed Area Plan (DAP)

RAJUK initiated the Dhaka Metropolitan Development Plan (DMDP) project in early '90s. The project was originally designed to prepare a set of three hierarchical plans- Structure Plan, Urban Area Plan and Detailed Area Plans. The DMDP Structure Plan sets a 20 year (1995-2015) long term development strategy for metro-Dhaka sub-region of 1528 sq. km. of RAJUK area. Detailed Area Plan is a vital part of the DMDP as far as spatial development and development control is concerned. Absence of Detailed Area Plans not only hampered undertaking development projects by RAJUK but also led to uncontrolled and unwanted spatial development in the private sector (RAJUK, 2010).



Map 2-1: Location map of Group-E,DAP

Map 2-2 : Index map of Group-E,DAP

Source : RAJUK, 2010

Source : RAJUK, 2010

The present detailed area plan is a part of the DMDP plan package prepared under the banner 'Master Plan' as envisaged in Section 73(1) of the Town Improvement Act 1953. RAJdhani Unnayan Kartripakkha(RAJUK) is the custodian of the 'Master Plan' and as such it will be the custodian of the detailed area plan as well and responsible for execution of the development control and development proposals prepared under the plan. The development proposals can be implemented either by RAJUK itself or through any other development agency, public or private. Execution of many of the development proposals will rest on other public development agencies, but it will be the responsibility of RAJUK to take initiatives to get work done by those agencies through the Ministry of Housing and Public Works. RAJUK will take action against whoever violates the provisions of the approved DAP proposals and development control provisions. The current Detailed Area Plan (DAP) shall remain valid till the validity of the Structure Plan that is 2015 (RAJUK, 2010).

The current Planning area of Group – E encompasses 10 unions of Savar Upazila in full and one in part, Savar Cantonment Union, Savar Pourashava and other Urban Areas declared by BBS 2001. The planning area also includes three unions of Gazipur Sadar Upazila. According to BBS 2001 the total planning area comes to 87,654 acres or 35487.45 ha (according to Structure Plan the area is 72,237 acres, while according to consultant's GIS estimation the area is 75,111.63 acres). In 1991 the total population of the planning area was about 4,16,682 that rose to about 6,42,320 in 2001, with an increase of about 54.15%. Projection for the year 2010 shows population as 948208, about 47.62% increase from 2001. The projection shows 11, 77,272 populations in the year 2015 that will be almost 24% increase over 2010. The planning area is inhabited by a cross section of income earners like, service holder, businessman, working class and farmer. The total open space (including the civic centre) stands at 204.48 acres that gives 4.29 acres per 25000 populations in the year 2015 (RAJUK, 2010).

The DAP for Group–E area proposes 348.82 km of road network comprising secondary and tertiary roads that includes STP proposed roads as well. Proposals have also been made for widening of number of narrow roads and establish missing links. Service roads have been proposed on major thoroughfares for local traffic movement and to keep the highway traffic free. DAP also supported the proposed circular waterway around Dhaka, a part of which passes by the eastern periphery of Group–E area (RAJUK, 2010).

3. METHODOLOGY

3.1 Literature Review

Collect and review the existing laws related to Environment in Bangladesh. Analyze the Brick Burning (Control)(Amendment) Act, 2001, The Brick Burning (Control) Rules, 1989 and major laws, regulations Government Orders, in environment sector. Also collect and review the papers, research work, editorial, report of different journals related to brick burning.

3.2 Gazette Notifications

Gazette notification is the most important tool to review the legal aspects. Any laws cannot be effective without gazette notification. All government orders, act, rules are published by gazette. That means government informs to the people by this gazette notifications. To analyze this topic we had to analyze different gazettes.

3.3 Field Visit

Physically interaction and contact with different offices like UNO, Savar, DC, Dhaka, Department of Environment. Physically and directly observe different brickfield, their locations and surrounding environment.

3.4 Web Browsing

3.4.1 GPS Survey through *website*.

3.4.2 Google Earth Platform.

3.4.2.1 Adding **PlaceMark** to point out the brickfields.

3.4.2.2 **Polygon** to get the perimeter, area of each brickfield.

3.4.2.3 Using **Circle** tools to get the radius/area/ circumference for identify the vulnerable area of each brickfield.

I got the population data and area of each union from BBS. Circle the 1/2/3 km. radius of each brickfield. Inside of this circle is vulnerable. Polygon the inside area, take a measurement. Density of population were multiplied by the area and get the population under vulnerable condition of that union.

3.4.2.4 Photo : Take a image of each brickfield individually from a certain eye altitude.

3.4.2.5 Image Overlay : Analyze the images of DAP, Block-E, RAJUK, identify the brickfields, place mark in the image and mark the plot (Dag) number and block wise map from image overlay.

3.4.2.6 Graticular Location : Latitude and Longitude location of each brickfield are identified through the Status Bar of Google Earth. Sometimes when Dag number is large in size of any field, then the field can identified/locate accurately by graticule.

3.4.2.7 Elevation : Identify the elevation of each brickfields using the elevation of Status Bar in Google Earth. Classify the land types through this tool, elevation from mean sea level. Major land types are classified regional based through literature review. After classify the location wise major classification of land each place mark of brickfields are measure with elevation and divided into more sub classes like medium high land (elevation 12m+), medium low land (elevation 7–11m), very low land (elevation up to 6m).

3.4.2.8. Physical Context : Observe the area of each brickfield and its surrounding context of each brickfield, which will give us a result of physical context of each brickfield.

3.4.3 MS Excel : Data analyze and present the number of brickfields, Union wise area, population, density, distance wise vulnerable population through Pie chart, Bubble chart, Bar, Pyramid diagram.

4. KEY FEATURES OF ENVIRONMENTAL LAWS IN BANGLADESH

Environmental laws existed in Bangladesh right from the 19th century, although they remained either unenforced to a large extent or were vaguely known to the people and the responsible public agencies. Ministry of Environment and Forest compiles 30 Act/Rules/Ordinance as environmental laws in their web site (Appendix-A). The compilation is divided into five parts. Those are compiled environment conservation, policy, Government Order, Public notice etc. Among them I got the Burning of Bricks (Control) Act, 1989 (Appendix-B). This law was amended two times- 1992 & 2001. The rules of this act, The Brick Burning (Control) Rules, 1989 (Appendix-C) was issued in 1992. No new amendment of rules were declared yet, but a few Government Orders (Appendix-F,G). The key features of the act/rules are described below:

4.1. Environment Policy

Official concern for the state of the environment in Bangladesh can be traced back to at least independence in 1971 & the passing of the water pollution contract in 1971. Under this act a small unit was established in the directorate of public health Engineering (DPHE) to monitor pollution control of ground water & surface water. In order to expand the scope of environmental management & to strengthen the powers for achieving it, the Govt. issued the environmental pollution control ordinance in 1977 (Anton, 2011).

The ordinance provided for the establishment of an environmental pollution control board, which was charged with formulation policies & proposing measures for their implementation. In 1982 the board was transferred to the Department of Environmental Pollution Control (DEPC). Four divisional DEPC offices with laboratories were established in Dhaka, Chittagong, Khulna & Bogra. In August 1989 a special presidential order renamed DEPC to the Dept. of Environment (DoE) & placed in order the newly formed Ministry of Environment & Forest (MoEF) (Anton, 2011).

A great bulk of these environmental legislation were existent in the country right from the nineteenth century although they remained either unenforced to a large extent due to several

factors or vaguely known to the responsible public agencies. The traditional practices prevailing in the legal regime were no much conducive to reading the law with new ideas like environmental protection or conservation of resources etc. Moreover, lack of consciousness amongst the implementers and the general public as to the very existence and scope of these laws rendered them ineffective functionally. Some laws have also become redundant since the situation by which they were enacted do not exist any more (Anton, 2011).

A research in the regulatory regime shows that there are about 185 laws that have bearing on environment, directly, indirectly and causally (Anton, 2011). These laws -

- a. Provide measures relevant for environment conservation,
- b. Offer protection against various environmental offenses,
- c. Prescribe or prohibit certain activities,
- d. Lay down rights and duties.

In 1989, the Ministry of Environment and Forest was established to address environment-related issues. A law was enacted in 1974 to control pollution of water. That law was replaced by an ordinance in 1977.

The Burning of Bricks (Control) Act, 1989 requires a license from the district commissioner for brick burning. The use of any plant in a brick kiln has been prohibited, and any violation may lead to cancellation of the license, in addition to a fine of fifty thousand taka or six months imprisonment.

4.2 The Burning of Bricks (Control) Act, 1989

The Burning of Bricks (Control) Act, 1989, Act no. 08 of 1989 were activate from July 01, 1989 (Appendix-B). The act overriding her effect in section 03. Government first time prohibit brick burning without license, by this act (section-4(1)). This section also shows the procedure to collect license, in sub-section (2). Government holds her power to cancel any license, without any excuse. The act prohibited the use of firewood during brick burning, by

section 5. Only a few designated officials can inspect any brickfield without warrant, according to section 6. Section 7 states the violation shall be an independent offence for which one will be liable to be sentenced to an imprisonment not exceeding 6(six) months or to a fine not exceeding 10(ten) thousand taka or to both. For carrying out the purposes of this Act, the Government may, by notification in the Official Gazette, make rules (section-9).

4.3 The Brick Burning (Control) Rules, 1989

At the end of that running year, government delivered the Brick Burning (Control) Rules, 1989(Appendix-C). Application for license and the brick burning license-two scheduled were attached. According to rules characteristics, the procedure of the application of act was detailed here within 03 steps (Appendix-H).

4.4 The Brick Kiln (Control) (Amendment) Act, 1992

Government first time amend Brick burning act after 03years of its execution(Appendix-D). This amendment first exclude the ‘dead roots’ of bamboo from the definition of ‘firewood’, in section 2(a). By dissolve the upazila parishad, as there was no more chairman, this amendment replaced Deputy Commissioner instead of Chairman, Upazila Parishad, in section 3. Inspection power of Chairman, Upazila Parishad also seized and transferred to Deputy Commissioner. The amendment increase the power of inspection officer to seize, if found any violation of firewood, by adding subsection 6(2). After 03 years, for the devaluation of money, monetary penalty was extended up to fifty thousand taka (Section-6). This section empowered the court to confiscate the bricks or fuel, if seized. Section 7 freeze the power of Chairman, Upazila Parishad and transferred to Deputy Commissioner. This section declares the offences cognizable.

4.5 The Brick Burning (Control)(Amendment) Act, 2001

After nine years of amendment, it is essential to government to change some section(Appendix-E). In this amendment, the definition of brickfield was included in section 2(a). Section 2(aa) add date wood as fire wood. The word ‘installation of brickfield’ were replaced instead of ‘brick burning’. After 12 years of effecting brick burning act, a committee was formed to verify the application of license (section 3(d)). This section detail stated the

submission of inquiry report and process of issue license. Subsection uoa(e) reduce the duration of license in three years. Most significantly subsection (f) restricted to establish any brick field within 03 kilometer radius of upazila headquarter, conservative forest, acquisition land, city corporation , municipality, residential area, fruit garden. Government will define a time limit by gazette and the licensee will move their field beyond this restriction, if any. This subsection defines residential area, where fifty family lives and a cluster of fifty fruit or medicated trees were treated as fruit garden The word 'fire wood' was replaced by 'fuel' in 1992. In 2001, 'fire wood' again come back instead of 'fuel' (section-4). Section-5 mention a list of officials, who can inspect without notice. Sentenced to an imprisonment was enhanced up to one year instead of six months, remaining the monetary penalty unchanged up to fifty thousand taka. Section 6 restricted the cognizance of the offence without written allegation from some listed officials (Appendix-J).

4.6 Government Orders on Brick Kiln

Government is very much anxious about the environment. That's why government encouraged brick kiln to install latest technology like Hybrid Hoffman Kiln, zigzag kiln, vertical shaft kiln etc. Existing 120 feet height chimney are stimulated to replace by latest technology (Appendix-F,G). Government obliged entrepreneurs to collect clearance from DG, DoE and concerned DC.

4.6.1 Existing Brick Technologies Bangladesh

six **types** of kiln technologies. Bull's Trench Kiln, Fixed Chimney Kiln, Zigzag Kiln Hybrid Hoffman Kiln, Vertical Shaft Brick Kiln, and Tunnel Kiln. The Fixed Chimney Kilns (FCKs) and the Bull's Trench Kilns (BTKs), which form more than 90 percent of kilns, are very polluting and relatively inefficient.

4.6.1.1 The Bull's trench kiln

The kiln can be made circular or elliptical in shape. It is constructed on dry land, by digging a trench, 6-9 m wide, 2-2.5 m deep, and 100-150 m long. An alternative method is to build up the sides of the kiln with bricks, especially where drainage is a problem. Gaps are left in the

outer wall for easy access to the trench during setting and drawing of bricks. The trench contains 200-300,000 bricks at a time (Norsker, 1995).

Chimneys, 6-10m high, made of sheet metal, are placed on top of the brick setting (Norsker, 1995). They are moved around as the firing progresses and they have to be light, so that the firing crew can carry them. Small circular Bull's trench kilns use only one chimney, whereas the larger elliptical kilns need two chimneys.

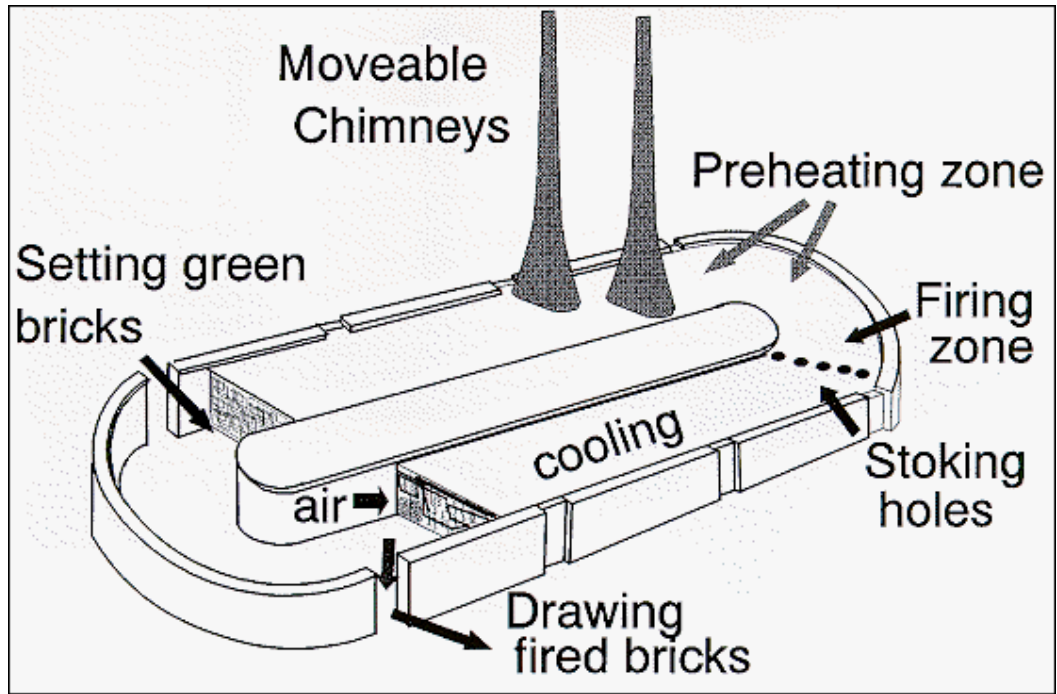


Figure 4-1 : Design of a Bulls trench kiln

Source : Norsker, 1995

The firing in a Bull's trench kiln is continuous, day and night. Green bricks are loaded and finished bricks are drawn all the time. The fuel saving is achieved by reusing part of the energy that is otherwise lost in periodic kilns. The cooling bricks transfer their heat to the combustion air, pre-heating it before it enters the firing zone. After combustion, the hot exhaust gases pass through the yet unfired bricks on their way to the chimneys. This pre-heats the bricks, so less fuel is needed to bring the bricks to the maximum temperature. Once every 24 hours the chimneys are moved forward 5 to 7m. Daily output is 15-25,000 bricks (Norsker, 1995).

4.6.1.2 Fixed Chimney Kiln

FCK is the mainstay technology for the brick sector in Bangladesh. It is very polluting, energy intensive and requires relatively low-cost investment operate for 5-6 months a year. The FCK emitting black smoke because of incomplete combustion of coal. The FCK is based on the traditional BTK technology, which dates back to the 19th century. While the BTK uses two 30 feet (ft) high moveable chimneys, the FCK has a fixed chimney of about 120-130ft height. The tall chimney provides a faster and better dispersion of the flue gas and its pollutants, compared to the BTK. The FCK has an elliptical shape and measures about 250ft long and 60ft wide. It is constructed mostly in open fields either over ground or partially underground. The bottom and the sidewalls are lined with bricks. The FCK uses green bricks that are manually produced from mud processed in pug mills (World Bank, 2011).

4.6.1.3 Zigzag Kiln.

A Zigzag kiln is rectangular and typically measures about 250ft long and 80ft wide. It has a 55ft high fixed chimney located on one side of the kiln. An induced draft fan located at the bottom of the chimney draws the flue gas from the kiln and discharges it into the atmosphere. The induced draft fan ensures a well-controlled airflow through the kiln. The kiln is divided into 44 to 52 chambers, separated from each other by green bricks in a way that the hot gas moves in a zigzag path through small openings. The long travel path of bricks in a zigzag pattern and the contact of hot gas from the firing zone with bricks in the preheating zone contribute to the transfer of more heat in the preheating zone (World Bank, 2011).

4.6.1.4 Hybrid Hoffmann Kiln (HHK)

Main features. Unlike the gas-based Hoffmann kiln, the HHK uses coal as fuel. The HHK combines fuel injection and external firing in highly insulated kilns, leading to lower energy use, high-quality bricks, and reduced pollution (World Bank, 2011).

The HHK, like traditional technologies, does not require a tall chimney. The back process (i.e., coal crushing, coal-clay mixing, plugging, and brick forming by extrusion) is mechanized and rail-mounted trolleys carry the green bricks during most of the process. These mechanizations reduce physical labor and alleviate the problem of labor shortage (World Bank, 2011).

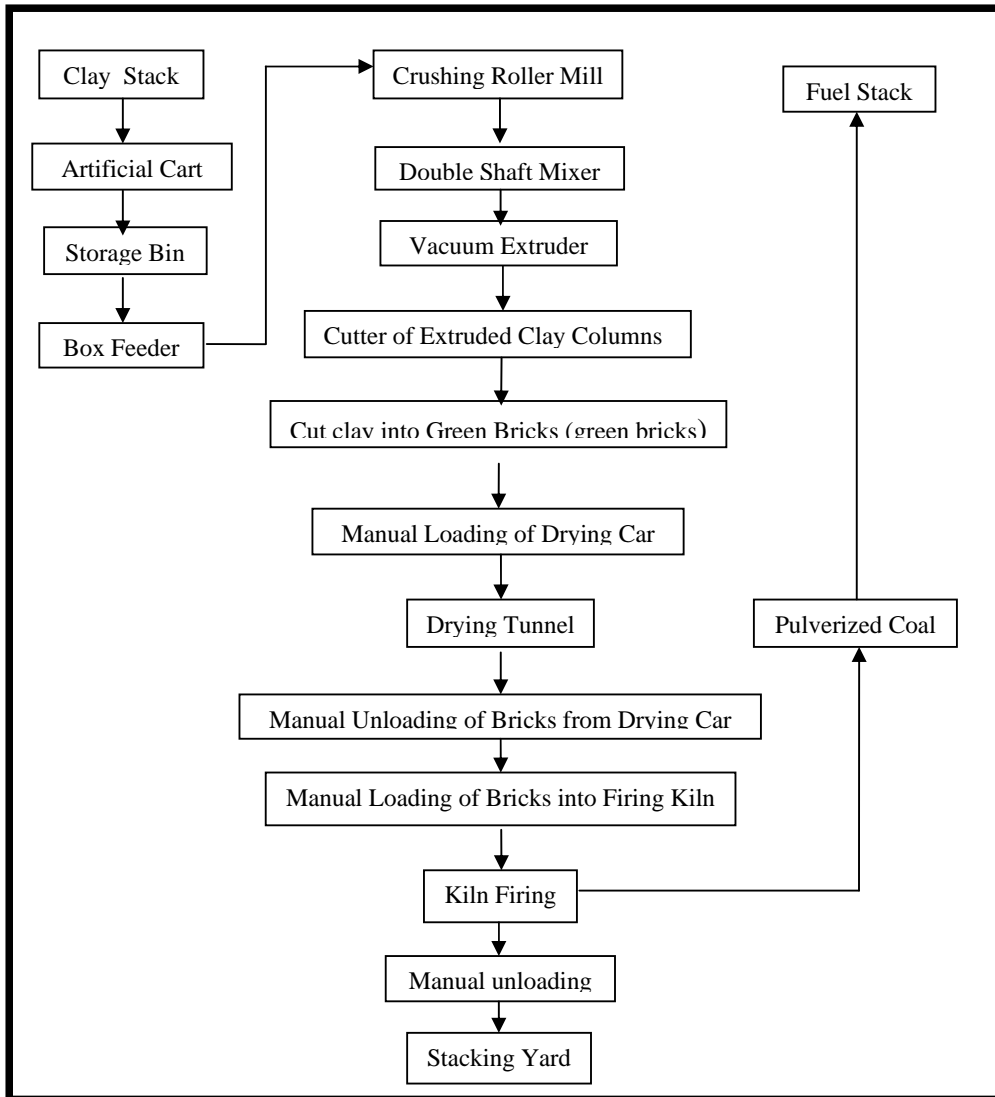


Figure 4-2 : Flow Chart of HHK Brick Production Process. Source : CDM, 2006

In addition, the HHK has a roof which makes it possible for the plant to operate even during the rainy season. The inside roof of the kiln is arched and has a firebrick lining on the inside surface. The thick walls provide good insulation that minimizes heat loss. The chimney is about 80-100 ft high with an induced draft fan at the bottom. The flue gas is conveyed towards the chimney through a network of channels just below the kiln. The fire is controlled by merely adjusting the gas flow rate and by opening and closing the dampers located at selected points in the flue gas network. Green bricks are stacked in the kiln in the same way as in FCKs. The bricks are fired from the top by introducing the natural gas into the combustion zone through pipe-type burners. This firing practice is identical for all types of

kilns in Bangladesh, except that in the other kilns, coal particles are manually charged every 20-30 minutes from stoking holes located at the top of the kiln. The gas burners operate in a steady state. When the bricks from the firing zone are sufficiently burnt, they are moved to the next section. During the firing process, the burnt bricks are unloaded at the back, while green bricks are stacked in front of the firing zone. In Bangladesh, use of the traditional FCK is profitable for the entrepreneur, but highly polluting for society (World Bank, 2011).

Summing up, the HHK is the most profitable technology for the entrepreneur, while the returns from the FCK, IFCK, and VSBK are lower. Despite the higher net returns, adopting the HHK is difficult for two major reasons (i) HHKs operate on high land, which is scarce and expensive and (ii) the adoption requires a substantial investment (TK60 million), which is unaffordable for most FCK owners, who operate on rented land that cannot be used as collateral (World Bank, 2011).

4.6.1.5 .Vertical Shaft Brick Kiln (VSBK)

VSBK is a small-scale technology that operates year-round in highland areas. Compared to

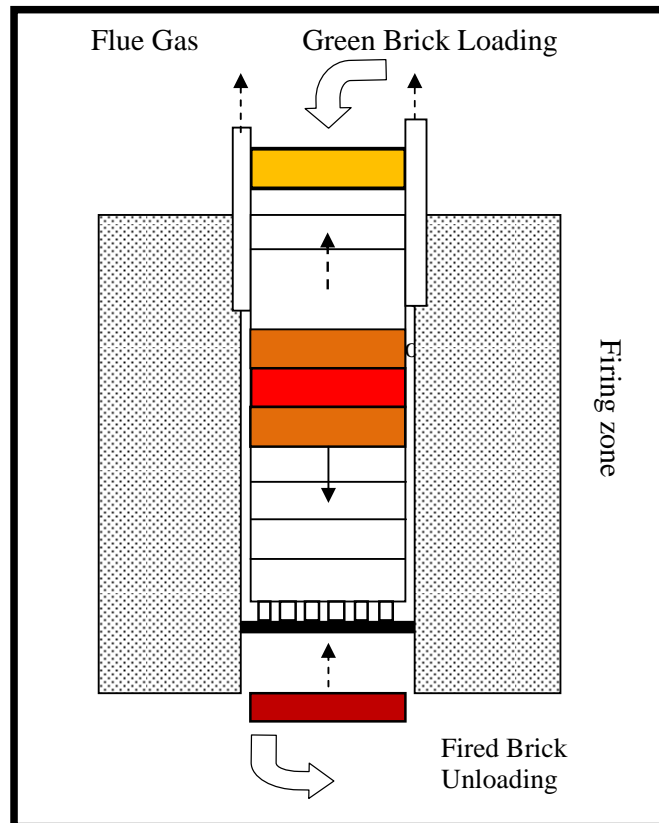


Figure 4-3 : Schematic of VSBK. Source : Maithe1, 2012

FCK, VSBK uses less energy and emits considerably fewer emissions. Other key advantages include more modest capital and land requirements, as illustrated in the subsequent presentation of the pilot VSBK in Dhaka. A standard VSBK consists of two shafts, which produce 8,000–10,000 bricks per day. A larger production facility can be built by adding more shafts. Green bricks are usually carried to the top of the kiln by a conveyor belt and stacked at the top platform. A feedstock of green bricks remains on the platform for several days to guard against supply shortfall due to inclement weather when green bricks cannot be moved. Fired bricks are unloaded at the bottom 24 hours after loading at the top (World Bank, 2011).

4.6.1.6 Tunnel Kiln

Invented Germany 1877. Most common in developed countries, since their invention tunnel kilns have now become highly automated and are for large brick production. Bricks move mechanically through a long stationary fire zone. They have minimal labor requirements but a very high capital cost. They must be operated in continuous mode and require a guaranteed electricity supply (Habla, 2013).

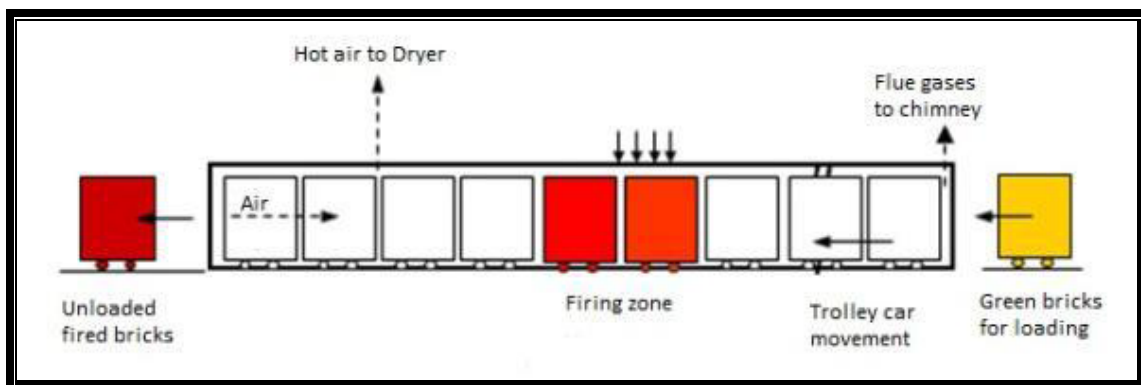


Figure 4-4: Schematic of a Tunnel Kiln

Source : Maithel, 2012

4.7 Reviewing And Assessing Legal Aspects

After analysis of these acts I got some observations. Those are stated below;

1. In the Brick Burning (Control)(Amendment) Act, 2001 inclusion of a committee, to verify the application of license (section 3(Gha)), was headed by an Additional Deputy Commissioner. In Office of the Deputy Commissioner an ADC is really a busy officer. To verify the ins and out of an application and its premises may be more fruitful, if concerned AC(Land) is replaced. AC(Land) works in the upazila level and he is more familiar in the grass root level. So if the Deputy Commissioner send the application to the AC(Land), then he can verify it with other member of the committee.
2. In the Brick Burning (Control)(Amendment) Act, 2001 Fruit garden was included in 3(cha)/(f). I want to replace 'agriculture land' instead of 'fruit garden'.
3. To include Upazila Agriculture Officer or Agriculture Extension Officer in this verify committee is my another suggestion. He will identify, if there is any brickfield developing on agriculture land.
4. Disposal of the confiscated bricks or firewood is not clear in section 6 of Brick Burning (Control) (Amendment) Act, 2001, I think. If the court feels profitable, he can sell the confiscated bricks or firewood, on the spot, and deposit properly to treasury.
5. New installment of brickfield must not set up without uncultivated land.
6. The owner of the brickfield must ensure the health or welfare activities of labors, like medical allowance, risk allowance, fire protection etc.
7. Every brickfield must ensure first aid, firefighting equipment and training.
8. I undoubtedly support empower Deputy Commissioner instead of Chairman, Upazila Parishad. Because he may be biased for his voter.
9. In Bangladesh, brick kiln does using new technology, due to lack of capital and law enforcement. I think government can open new window for loan to install new technology. New technology can save our energy stock.

5. APPLYING OF ENVIRONMENTAL LAWS AT UNION LEVEL

5.1. Savar Union

Savar is about to the nearest upazila of Dhaka city. Among other union Savar is seems to urban area. I got 07 brickfields in this union. All the brickfield are located only in Genda, out of 54 Mouzas, whose JL number is 196. Three blocks of DAP, RAJUK cover these area. Total area of this union is 27.48 sq.km. Total population is 149,392 in 2001, which is about quarter of whole upazila. Density was 9,496 per sq. km.

Table 5-2: Location of brickfields in Savar Union.

Sl. no.	Mouza Name & JL No.	DAP Block No.	Plot(Dag) No	Location		Land Type	
				Latitude	Longitude		Sub Class
01.	Genda - 196	C13	1457	23.818224°	90.270596°	The Brahmaputra Flood plain	Medium Low Lands
02.		D13	457	23.820901°	90.276587°		Very Low Land
03.		C13	454	23.820800°	90.275126°		Medium Low Land
04.			431	23.821660°	90.273426°		
05.			559	23.823935°	90.271765°		
06.			626	23.824901°	90.267015°		
07.		C14	647	23.825438°	90.265230°		

Source : Compiled by the Author, 2013

According to the section 3(f) of Brick Burning (Control) (Amendment) Act, 2001, no brick field can be set up within the three kilometers radius of any residential area. The act define residential area as such area, where 50 family reside. From the other angle, we can say that there must not be any residential area within 03 km radius of any brickfield. But from the analysis I got 11.84 sq. km area is somehow under 03 km radius of any brickfield. Where 112,433 people is under vulnerable position. Though this union does not achieve highest vulnerable area, it achieves highest vulnerable population, for its highest density, among

Table 5-2 : Distance wise Vulnerable Population

Sl. NO.	Union Name	Number of Brickfields	Area (Sq. Km.)	House hold 2001	Population 2001		Vulnerable Population					
							Radius 03 Km./Area 28.33 Km./ Circumference 18.85 Km		Radius 02 Km./Area 12.59 Km./ Circumference 12.57 Km..		Radius 01 Km./Area 3.14 Km./ Circumference 6.28 Km..	
							Total	Density (Per Sq. Km)	Area (Sq. Km)	Population (G×H)	Area (Sq. Km)	Population (G×J)
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
1	Aminbazar	59	10.99	7,112	33,140	3,017	Total Area and thus all 33,140 People are Vulnerable.				10.82	32,644
2	Ashulia	34	26.31	11,206	43,804	1,665	17.53	29,187	12.3	20,480	8.81	14,669
3	Banagram	4	17.28	5,242	25,200	1,458	Total Area and thus all 25,200 People are Vulnerable				7.61	11,095
4	Bhakurta	26	20.35	7,583	38,025	1,869	18.26	34,128	12.5	23,363	8.43	15,756
5	Biralia	1	29.67	5,136	24,917	840	22.17	18,623	9.66	8,114	3.21	2,696
6	Savar	7	27.48	34,228	149,392	9,496	11.84	112,433	7.06	67,042	3.51	33,331
7	Simulia	8	35.12	10,867	59,966	1,707	34.8	59,404	33.01	56,348	13.22	22,567
8	Tetuljhora	19	20.65	9,608	45,137	2,186	Total Area and thus all 45,137 People are Vulnerable.				19.61	42,868
9	Yearpur	21	27.44	5,985	27,044	985	20.84	20,527	9,338	16,086	9.48	9,338
10	Kaundia	0	7.78	4,321	20,464	2631	Total Area and thus all 20,464 People are Vulnerable.				3.28	8,630
11	Pathalia	0	28.45	14,791	69,656	2448	Total Area is <i>safely distant</i> from the Brickfields.					
12	Dhamsona	0	33.13	19,622	98,764	2981	1.85	5,515	Total Area is <i>safely distant</i> from the Brickfields.			
Grand Total		179	284.65	135,700	635,508	2,233	172.43	403,758	140.19	315,374	99.12	193,594

Source : Compiled by the Author, 2013

Distancewise Vulnerable Population.

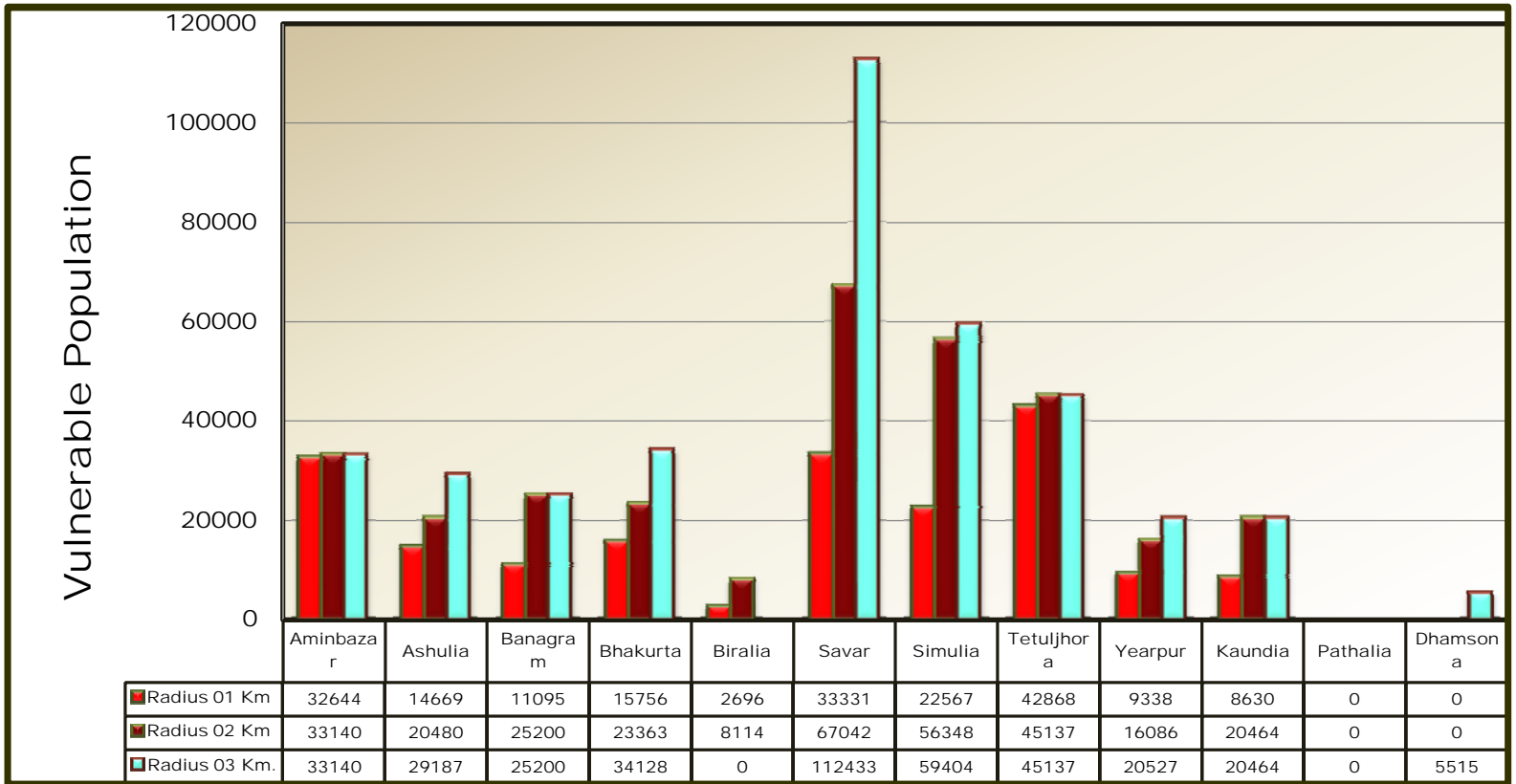


Figure 5-1 : Distancewise vulnerable Population

Source : Compiled by the Author, 2013

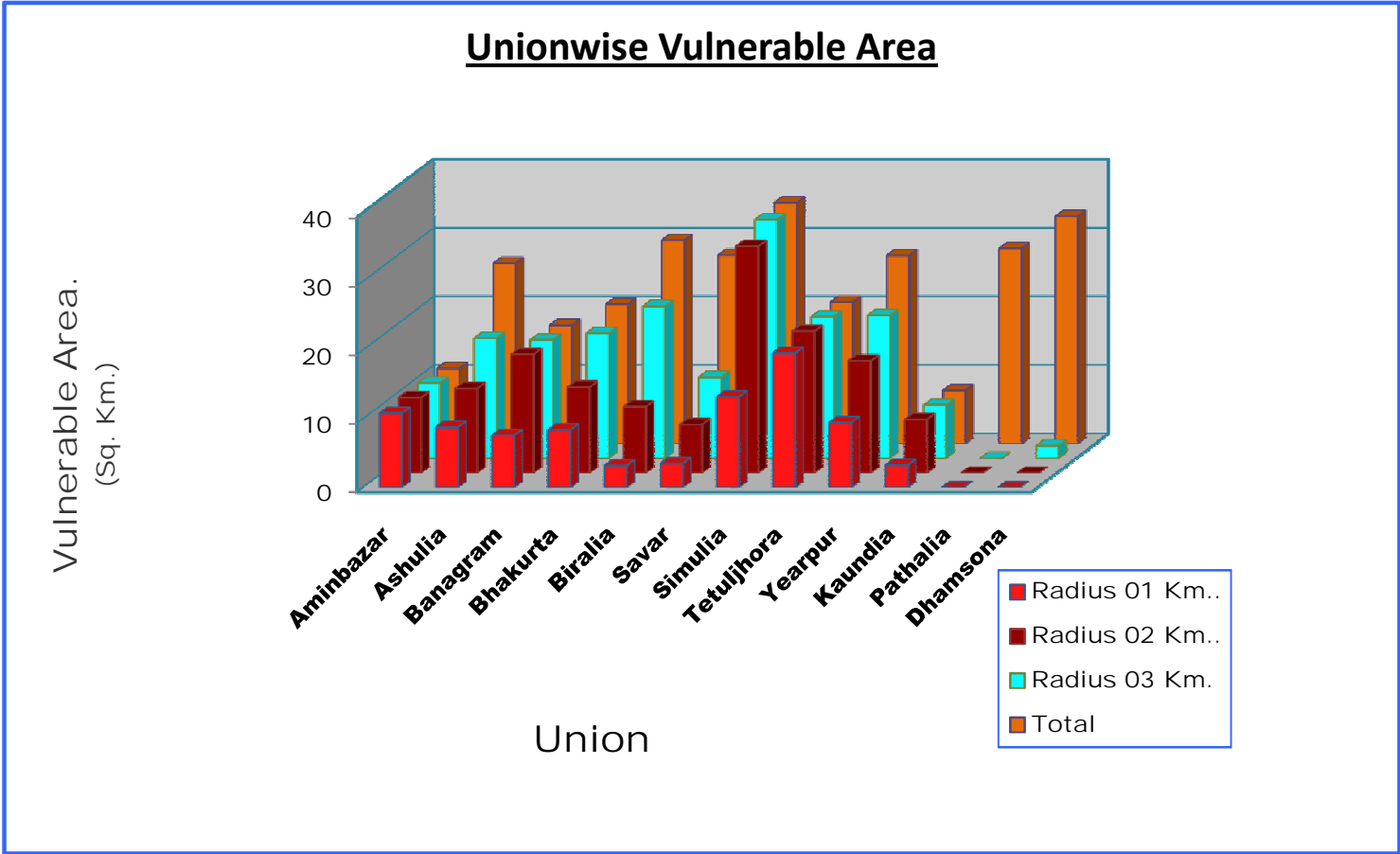
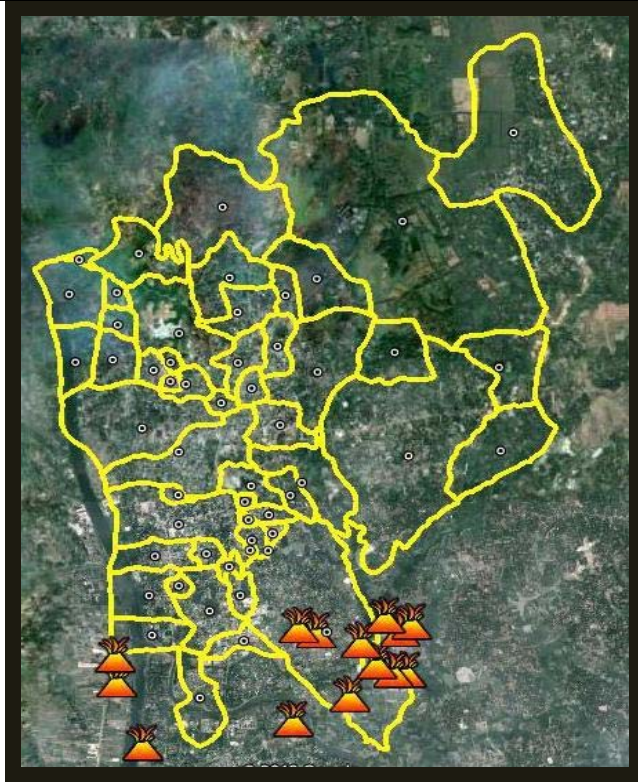
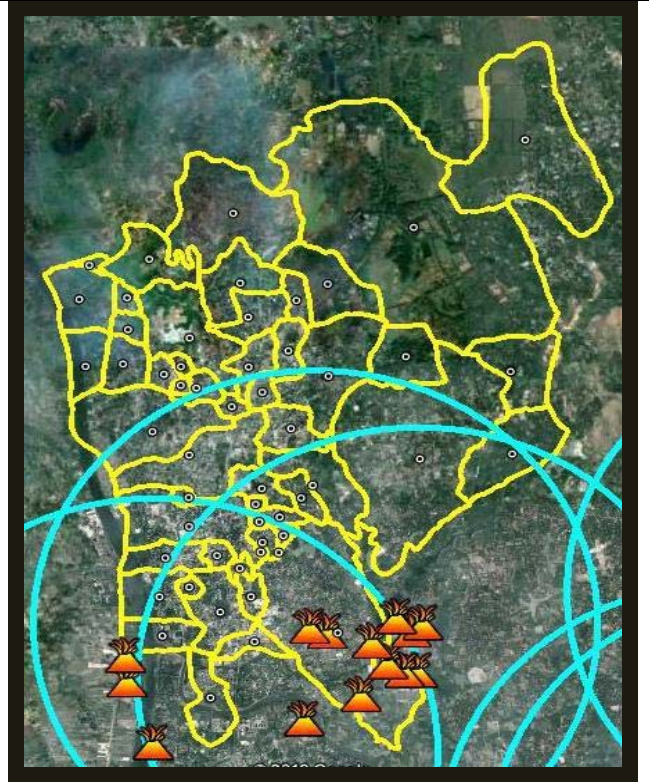


Figure 5-2 : Unionwise vulnerable Area

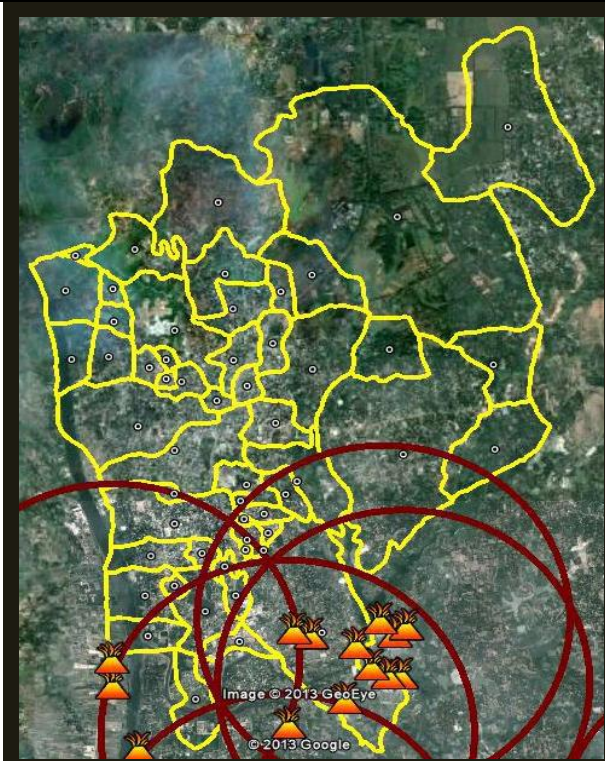
Source : Compiled by the Author, 2013



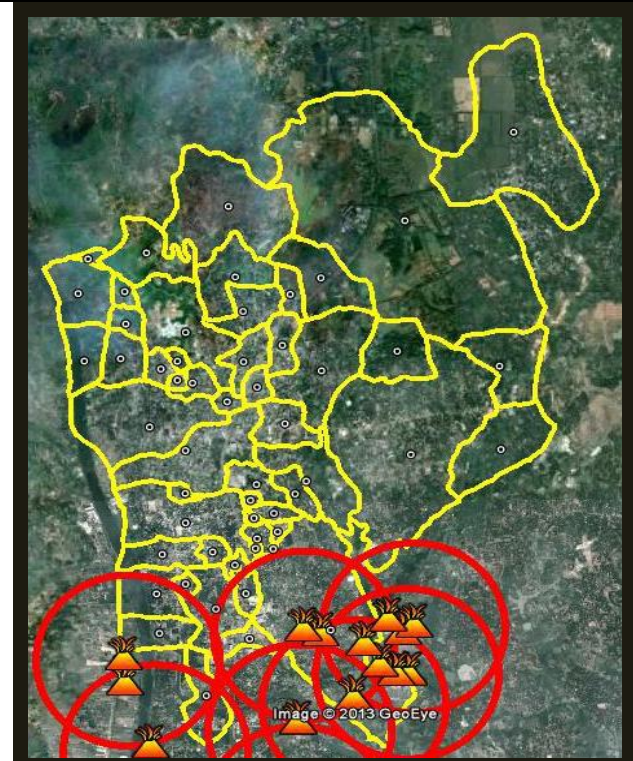
Map 5-1: Location of brickfields in Savar Union.



Map 5-2: Vulnerable area under 03 km radius in Savar Union.



Map 5-3: Vulnerable area under 02 km radius in Savar Union.



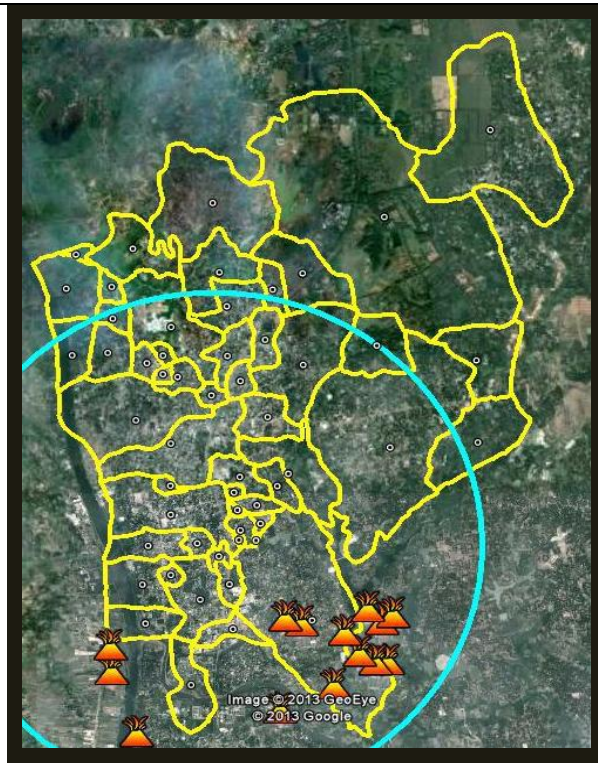
Map 5-4: Vulnerable area under 01 km radius in Savar Union.

Source : Compiled by the Author, 2013

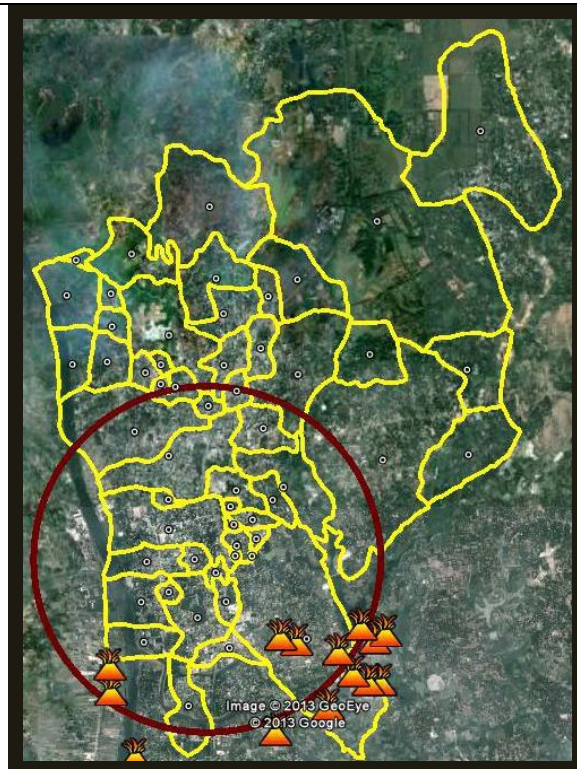
other unions. This union conceived about quarter of the total vulnerable population, in respect to 03 km radius. I got 7.06 sq. km vulnerable area under 02 km radius of any brickfield, where 67,042 people is under such position. Thus, this union again holds her highest vulnerable position among other unions. 33,331 people are living under 01 km radius of any brickfield, in 3.51 sq. km area. Only 15.6 sq. km area of northern part of this union is safely distant from any brickfield.

All brickfields of Savar union is situated on Brahmaputra Floodplain. Among them only two is in Very Low Land. Another five is in Medium low Land. I did not get any brickfield in Medium High land.

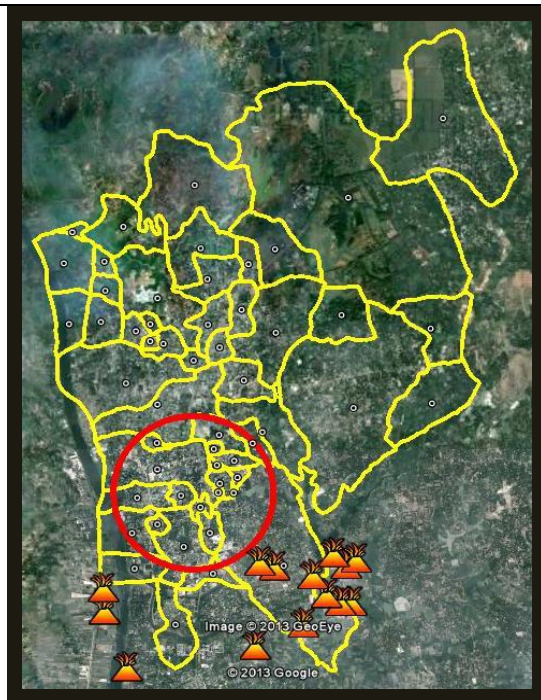
According to the section 3(f) of Brick Burning (Control) (Amendment) Act, 2001, no brickfield can be set up within the three kilometers radius from Upazila headquarter/municipality. But from the analysis we got that, there are 14 brickfields already exists within the 03 kilometers radius from upazila headquarters. Even we got 06 brickfields within 02 km. from Upazila HQ. 50% of those are of Savar Union only. 03 km. radius from the Upazila H/Q we got some area of Tetuljhora union. 04 brickfields are situated within this radius. Among them even 02 fields are within 02 km. radius from Upazila H/Q. We got 03 brickfields out of 04 of Banagram Union, within this 03 km radius from Upazila H/Q. Fortunately, no brickfield is exists within 01 km radius from Upazila H/Q.



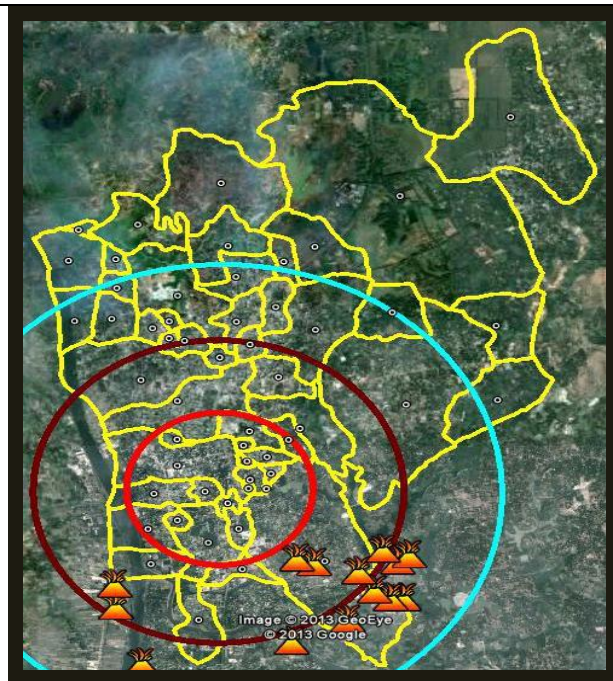
Map 5-5 : Vulnerable area under 03 km. radius from Upazila H/Q, Savar.



Map 5-6 : Vulnerable area under 02 km. radius from Upazila H/Q, Savar.



Map 5-7 : Vulnerable area under 01 km. radius from Upazila H/Q, Savar.



Map 5-8 : Vulnerable area under 03/02/01 km radius from Upazila H/Q, Savar.

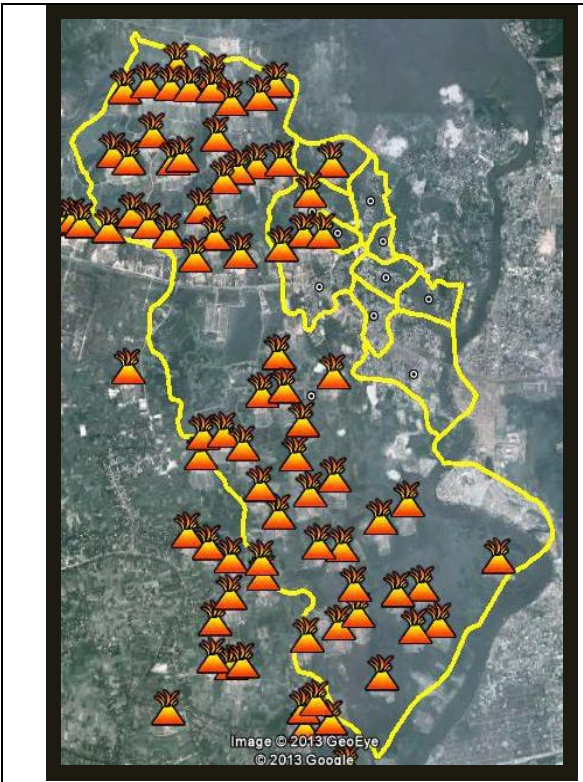
Source : Compiled by the Author, 2013

5.2. Amin bazar Union

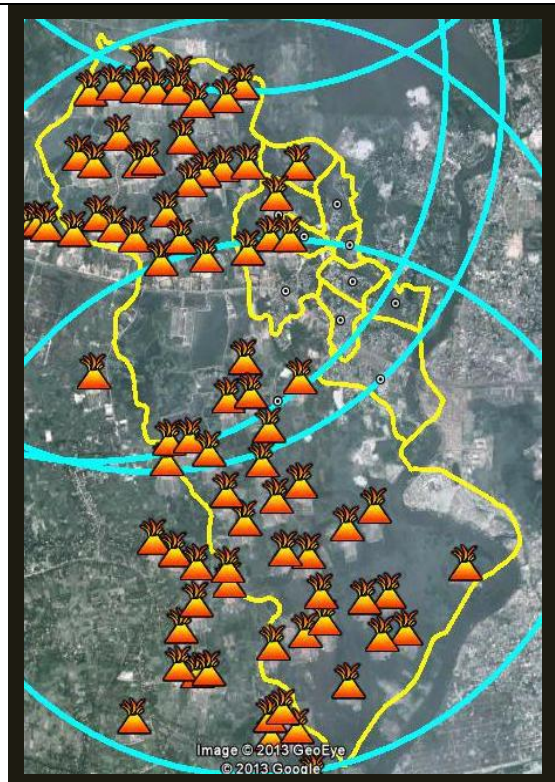
Aminbazar is just adjacent to the Dhaka Metropolitan City. Unfortunately, entire union is mostly suffering of pollution for large number of brickfields. This union produces highest number of brickfields among other union. 59 brickfields staying over only on 10.99 sq. km area of this union. Census 2001 informed, total 33,140 people of Aminbazar lived in 7,112 households. The density of this nearest union of Dhaka city is 3,017 people per sq. km. 54 brickfields out of 59 place in Bara Baradeshi (Chandpur) mouza. All brickfields are established on 04 unions. Group E of DAP, RAJUK covers these unions by 04 blocks.

Total area and thus all 33,140 people are affected by somehow under 03 km radius of some brickfields. These people also fell into distress under 02 km radius of some brickfields. Only 496 people lives out of 01 km radius in 0.17 sq. km area.

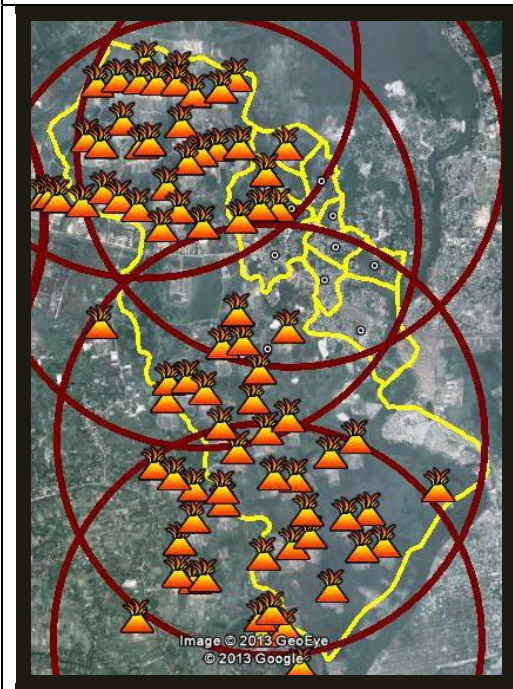
Physical context of the brickfields showing uniformity, by the location of very low land of Brahmaputra Floodplain. Maximum brickfields are very adjacent to the water bodies or agriculture lands.



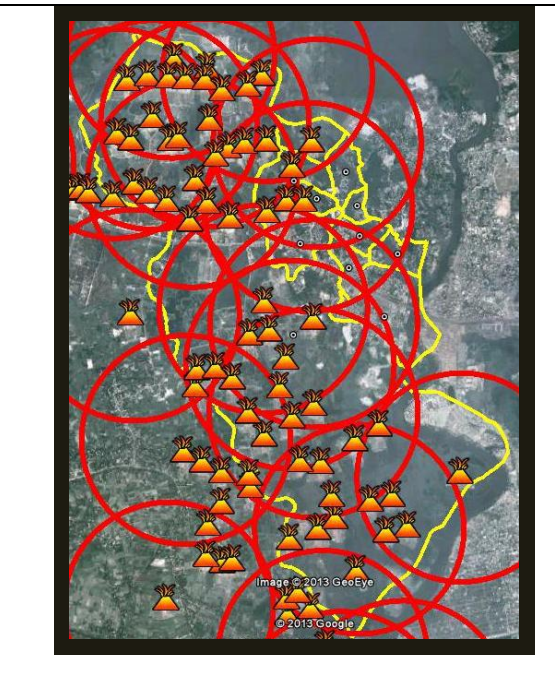
Map 5-9 : Location of brickfields in Amin bazar Union.



Map 5-10 : Vulnerable area under 03 km. radius in Amin bazar Union.



Map 5-11 : Vulnerable area under 02 km. radius in Amin bazar Union.



Map 5-12 : Vulnerable area under 01 km. radius in Amin bazar Union.

Source : Compiled by the Author, 2013

Table 5-3 : Location of brickfields in Amin bazar Union.

Sl. No.	Mouza Name & JL. No	DAP Block No.	Plot(Dag) No.	Location		Land Type	
				Latitude	Longitude		Sub Class
01	Bara Baradeshi (Chandpur) 250	F 11	3583	23.760762°	90.329619°	The Brahmaputra Flood Plain	Very Low Land
02		E11	324	23.763174°	90.324797°		
03			2552	23.763918°	90.324676°		
04		F 11	3494	23.765288°	90.328179°		
05			3517	23.764074°	90.332846°		
06			3522	23.764694°	90.334670°		
07			3393	23.766754°	90.331288°		
08		3399	23.767135°	90.333849°			
09		E11	2530	23.765615°	90.324898°		
10		F 11	3437	23.769292°	90.339504°		
11			3375	23.767518°	90.327986°		
12			2426	23.770013°	90.327228°		
13			3238	23.772099°	90.330053°		
14		E11	2380	23.770339°	90.324719°		
15			3212	23.773376°	90.331816°		
16			2253	23.772354°	90.321471°		
17			2393	23.774024°	90.324204°		
18			1251	23.775046°	90.326041°		
19			501	23.774456°	90.319810°		
20			549	23.776691°	90.322909°		
21		439	23.777549°	90.318511°			
22		E12	345	23.778423°	90.316881°		
23			382,388	23.779111°	90.323434°		
24			288	23.781450°	90.320299°		
25			281	23.781487°	90.321926°		
26			829	23.782943°	90.325960°		
27			135,136	23.783855°	90.321237°		
28			6198	23.791112°	90.317594°		
29			6230	23.791073°	90.314551°		
30			6213	23.792796°	90.315631°		
31			6239,6240	23.792863°	90.312253°		
32			6031	23.793906°	90.310764°		
33			6009	23.794194°	90.310177°		
34			6050	23.794349°	90.314865°		
35			6067	23.796631°	90.316963°		
36			2957	23.797172°	90.317657°		
37			2970	23.797593°	90.319510°		
38			2998	23.797805°	90.321381°		
39			2923	23.799716°	90.314896°		
40				23.798238°	90.313527°		

Sl. No.	Mouza Name & JL. No	DAP Block No.	Plot(Dag) No.	Location		Land Type	
				Latitude	Longitude		Sub Class
41	Bara Baradeshi (Chandpur) 250	E12	2897	23.798049°	90.308998°	The Brahmaputra Flood Plain	Very Low Land
42			2888	23.798590°	90.307536°		
43			2745	23.799738°	90.316304°		
44			2902	23.799998°	90.310922°		
45		E13	422	23.803034°	90.308591°		
46			2826	23.803542°	90.310483°		
47			2822	23.803382°	90.312594°		
48			2811	23.803355°	90.313950°		
49			2801	23.803252°	90.315743°		
50			2776	23.802141°	90.317771°		
51			2754	23.802643°	90.320027°		
52			2660,2661	23.803616°	90.320765°		
53			2644	23.803950°	90.315935°		
54			2635	23.804972°	90.313130°		
55	Binodbari	E12	3042	23.797816°	90.325718°		
56	Dhoborai		6122	23.795605°	90.323482°		
57	Salipur-249		6164	23.791432°	90.323019°		
58			6146	23.792739°	90.322141°		
59			6135	23.792510°	90.324278°		

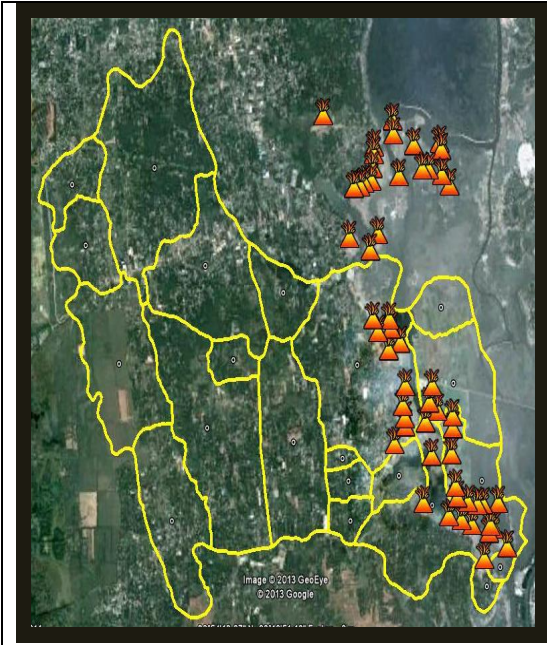
Source : Compiled by the Author, 2013

5.3. Ashulia Union

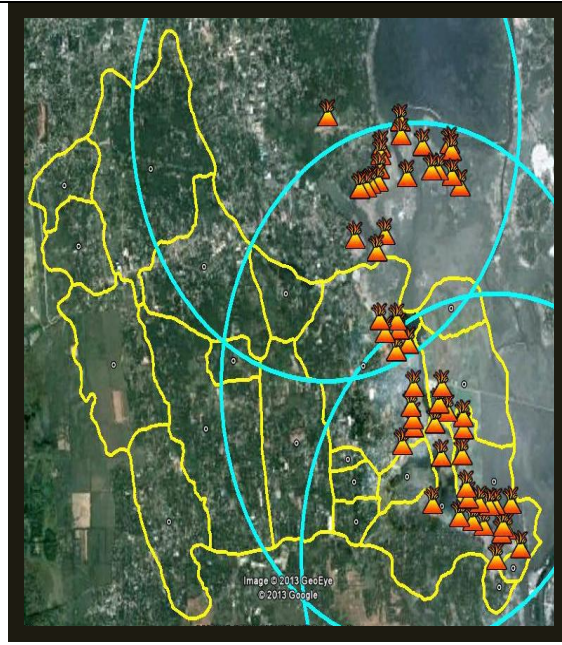
Ashulia union is becoming new urban area, through the extension of Dhaka city. Located beside Dhaka, it contains second highest number of brickfields, 34. Total 11,206 households lives in 26.31 sq. km area of this union. Number of population were 43, 804 in census, 2001. Density were 1,665 people per sq. km.

In 17.53 sq. km. 29,187 people is in difficult situation by somehow under 03 km radius of some brickfields. This is about two-third of her total population. Under 02 km radius of some brickfields, 20,840 people in 12.3 sq. km area are displeased with pollution. 14,669 people in 8.81 sq. km area are caught under vulnerable situation by 01 km radius of some brickfields. Western part of this union is comparatively safe from other area.

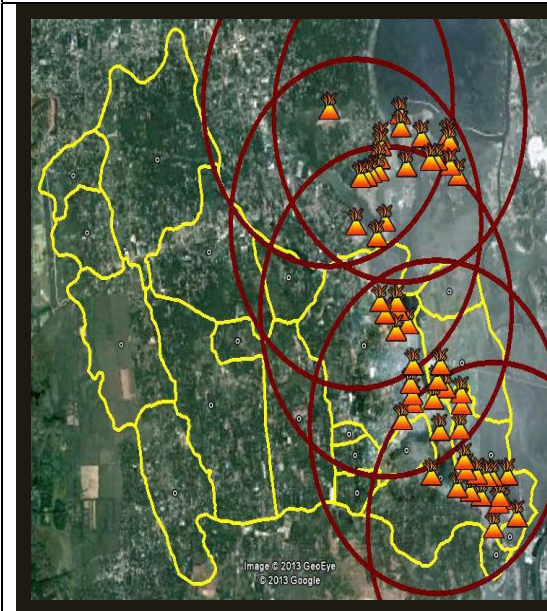
Modhupur Tract conceives 24 brickfields of this union. Among them 05 are in Medium Low Land and others are on very low land. Another 10 brickfields are developed on Very Low Land of Brahmaputra Floodplain.



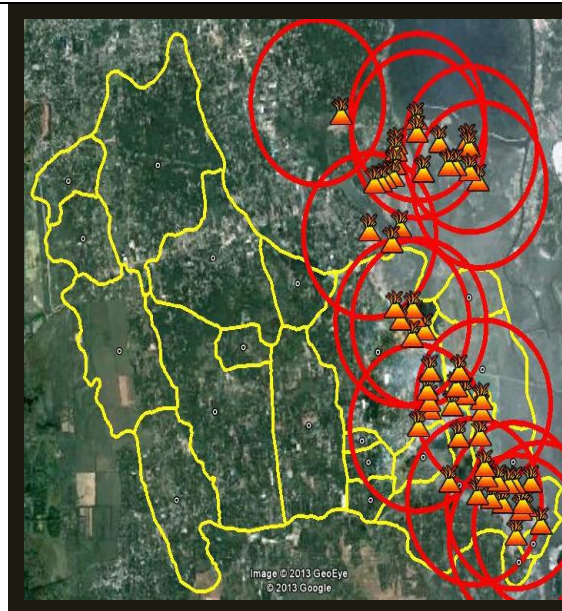
Map 5-13 : Location of brickfields in Ashulia Union.



Map 5-14 : Vulnerable area under 03 km. radius in Ashulia Union.



Map 5-15 : Vulnerable area under 02 km. radius in Ashulia Union.



Map 5-16 : Vulnerable area under 01 km. radius in Ashulia Union.

Source : Compiled by the Author, 2013

Table 5-4 : Location of brickfields in Ashulia Union.

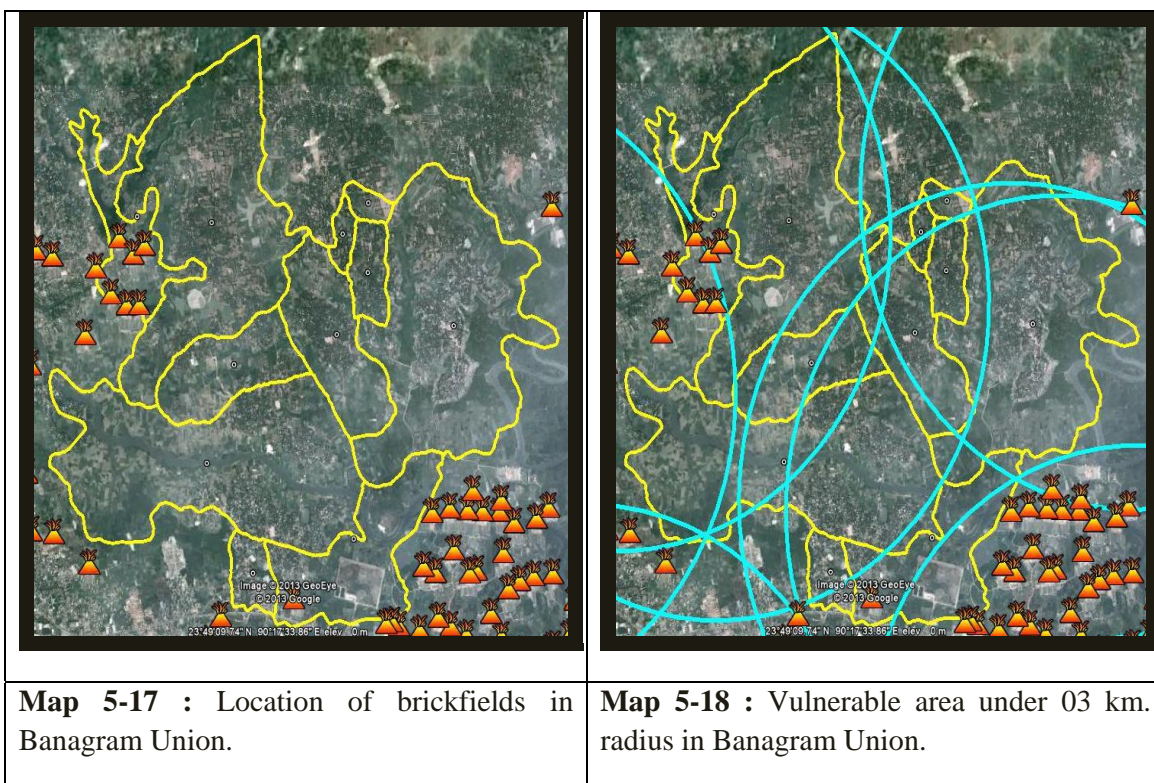
Sl. No.	Mouza Name & JL. No	DAP Block No.	Plot(Dag) No.	Location		Land Type		
				Latitude	Longitude		Sub Class	
01.	Bara Ashulia - 115	F16	1735	23.891121°	90.333409°	The Brahmaputra Flood Plain	Very Low Land	
02.			1742	23.892016°	90.332949°			
03.			1753	23.893079°	90.332186°			
04.			1525	23.894795°	90.332973°			
05.		F17	557	23.899390°	90.327776°			
06.			541	23.899290°	90.332515°			
07.			479	23.900648°	90.331235°			
08.			493	23.900252°	90.329251°			
09.			457	23.901625°	90.329522°			
10.			405	23.901722°	90.328039°			
11.	Bara Paragaon - 127	F16	916	23.879983°	90.346144°	The Madhupur Tract	Very Low Lands	
12.			914	23.880559°	90.346593°			
13.			918	23.880192°	90.347461°			
14.			276	23.882631°	90.345682°			
15.			274	23.882729°	90.344835°			
16.			182	23.882959°	90.342991°			
17.			157	23.883581°	90.341501°			
18.			762	23.880584°	90.342156°			
19.			710	23.881416°	90.341622°		Medium Low Lands	
20.			615	23.881938°	90.340661°		Very Low Lands	
21.			238	23.883166°	90.336270°			
22.			59	23.887595°	90.337911°		Medium Low Lands	
23.			6	23.891415°	90.336970°			
24.			Binodpur	824	23.877087°		90.346165°	Very Low Lands
25.			Chak Basaid 121	3207	23.893216°		90.338839°	
26.				3183	23.893211°		90.338111°	
27.			3169	23.895296°	90.337442°		Medium Low Lands	
28.	Chhota Kakar - 122	327,329	23.883378°	90.348833°				
29.		140	23.885066°	90.341390°				
30.		204	23.885066°	0.341390°				
31.		113	23.890797°	0.341622°				
32.	90	23.892646°	90.341968°	Very Low Lands				
33.	Rustampur - 128	314	23.877867°		90.349380°			
34.	Sadhupara - 123	1697	23.888650°	90.331805°				

Source : Compiled by the Author, 2013

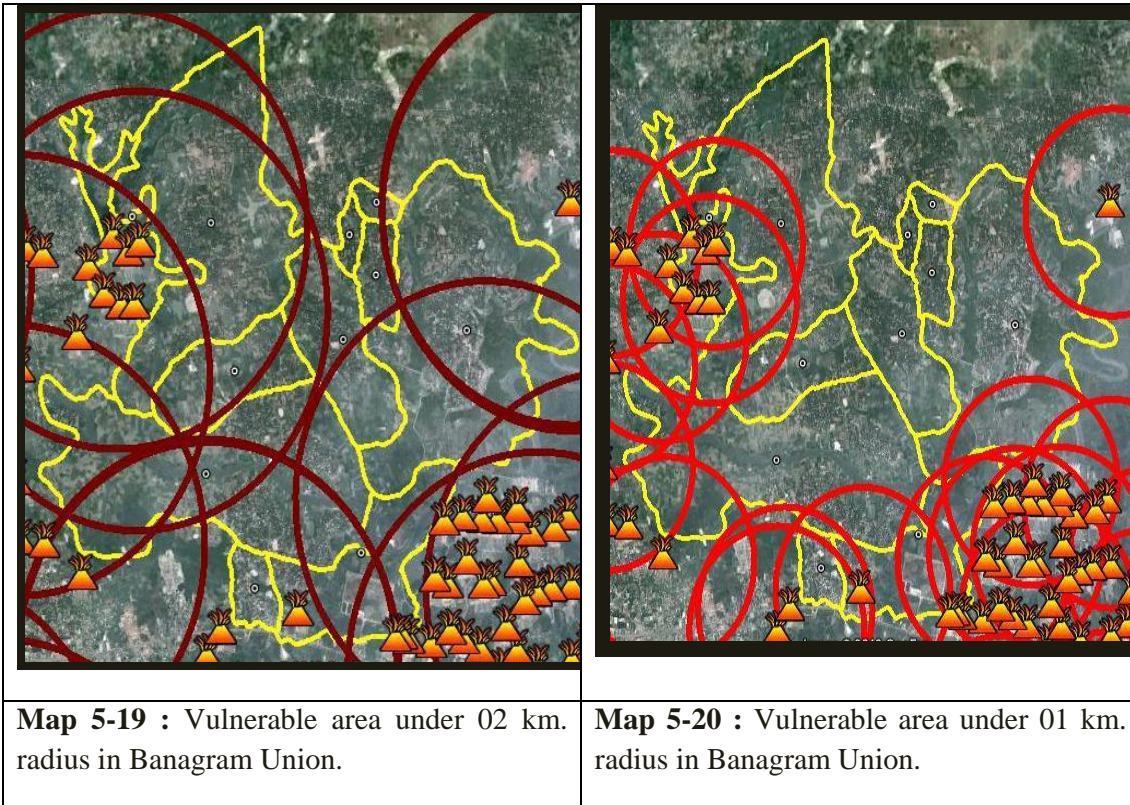
5.4. Banagram Union

Only 04 brickfields exists in 17.28 sq. km area of Banagram union. Total population of this union were 25,200 people. Density were 1,458 person per sq. km, in census 2001. All these brickfields were established on only 02 mouzas of 11. DAP, RAJUK planned 04 blocks in Group-E, in this union.

Entire union is on alarming by 03 km radius of some brickfields. All 25,200 people is not out of 02 km radius of some brickfields. 11,095 people of 7.61 sq. km enjoy the bite of such violation under 01 km radius of some brickfields.



Source : Compiled by the Author, 2013



Source : Compiled by the Author, 2013

All brickfields are set on Medium Low Land of Brahmaputra Floodplain. These are adjacent to agriculture lands.

Table 5-5 :Location of brickfields in Banagram Union.

Sl. No.	Mouza Name & JL. No	DAP Block No.	Plot(Dag) No.	Location		Land Type	
				Latitude	Longitude		Sub Class
01.	Baliarpur 233	D12		23.795817°	90.293060°	The Brahmaputra Flood Plain	Medium Low Land
02.	Bilbaghil - 195	D13	331	23.824892°	90.275952°		
03.		D14	153	23.826367°	90.277023°		
04.		C14	142	23.826891°	90.274517°		

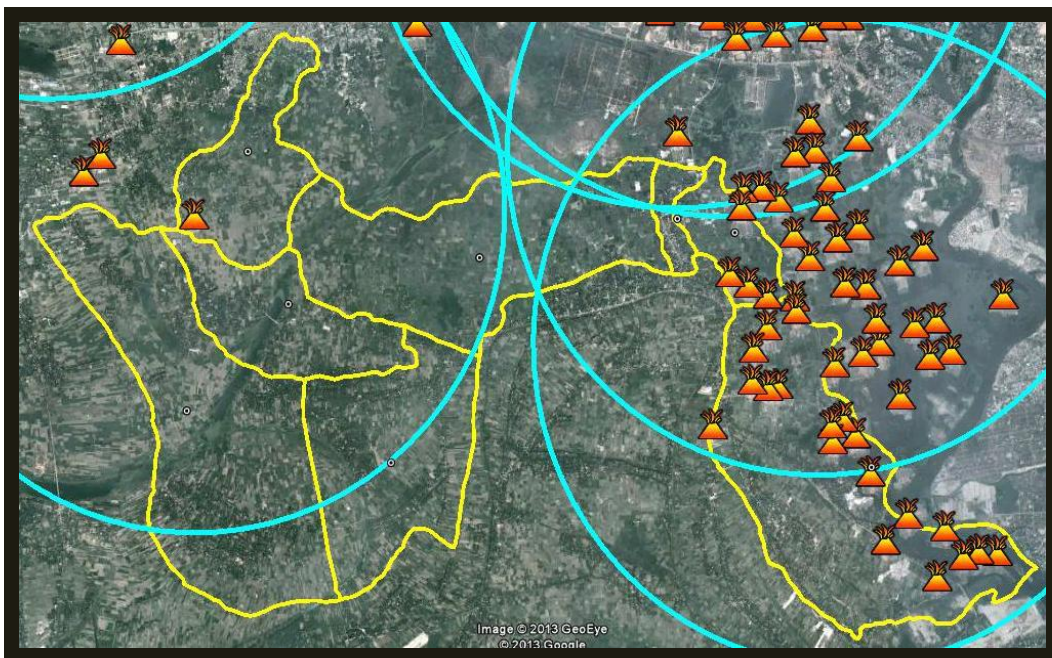
Source : Compiled by the Author, 2013

5.5. Bhakurta Union

Bhakurta contributes 26 brickfields at Savar in her 20.35 sq. km area. Total population of this union were 38,025 people. Census 2001, claims her density were 1,869 people per sq. km. All brickfields are sitting over 03 mouzas only, instead of 08. Similarly, DAP, RAJUK also covers 03 blocks in its Group E plan. Bhakurta is quite insignificant troubled area like a few unions in Savar.

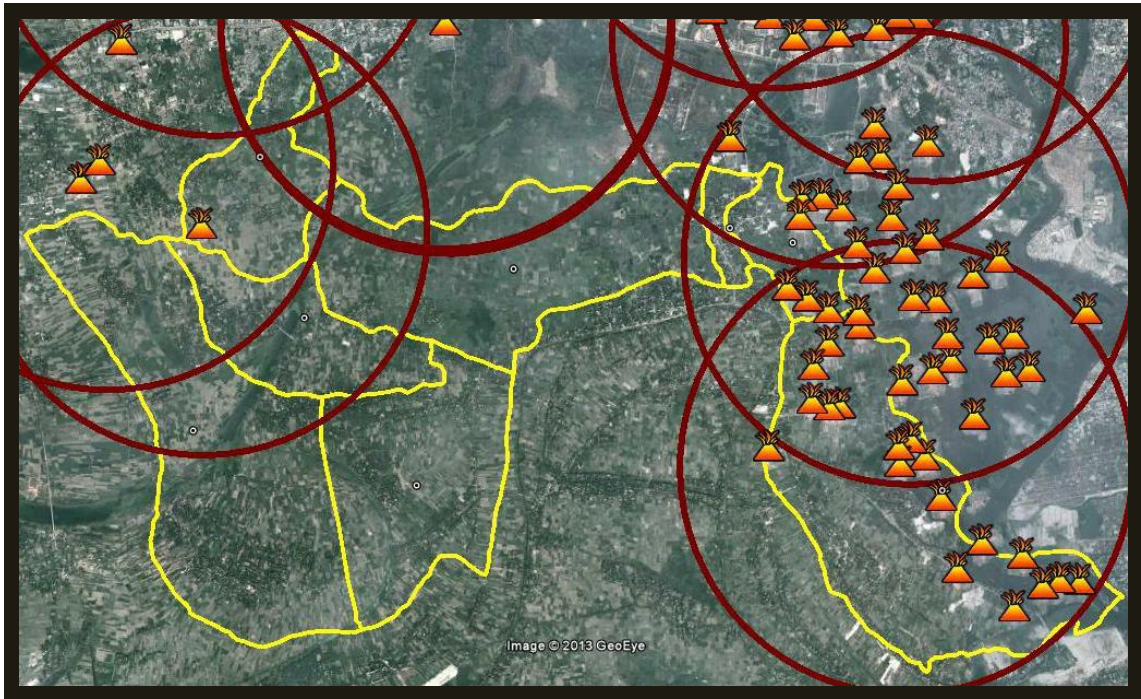
These brickfields spreads their troubles over 34,128 people in 18.26 sq. km, through 03 km radius of some fields. Even 23,363 people could not get rid of 02 km radius of some brickfields. More than half of her total population are enjoying this pains. Under 01 km radius of some brickfield, 15,756 people in 8.43 sq. km, passing the bad days.

07 brickfields are on Medium Low Land and another 19 are on Very Low Land of Brahmaputra Flood plain. These are very much adjacent to the agriculture land and water bodies.



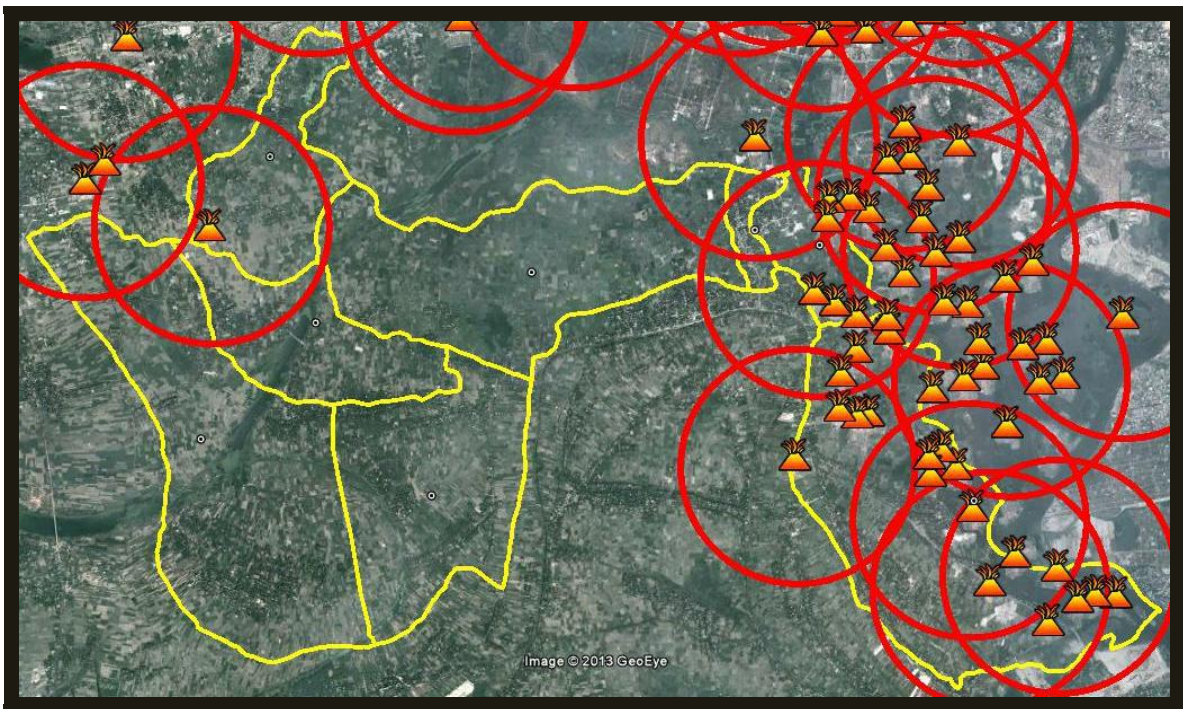
Map 5-21 : Vulnerable area under 03 km. radius in Bhakurta Union.

Source : Compiled by the Author, 2013



Map 5-22 : Vulnerable area under 02 km. radius in Bhakurta Union.

Source : Compiled by the Author, 2013



Map 5-23 : Vulnerable area under 01 km. radius in Bhakurta Union.

Source : Compiled by the Author, 2013

Table 5-6 :Location of brickfields in Bhakurta Union.

Sl. No.	Mouza Name & JL. No	DAP Block No.	Plot(Dag) No.	Location		Land Type	
				Latitude	Longitude		Sub Class
01.	Haruria - 226	C11	436	23.775877°	90.262672°	The Brahmaputra Flood Plain	Medium Low Land
02.	Panchli (Chapra) - 251	E11	400	23.770341°	90.315316°		
03.			323	23.771215°	90.314323°		
04.			608	23.776622°	90.314840°		
05.			340	23.778220°	90.315089°		
06.			Shyamalapur - 252	F10	2160		23.747670°
07.	2150	23.747799°			90.337446°		
08.	2132,2133	23.747356°			90.335975°		
09.	2185	23.745569°			90.333482°		
10.	1821	23.74825°			90.328527°		Medium Low Lands
11.				23.749726°	90.334214°		Very Low Land
12.				23.750798°	90.330680°		
13.	2652			23.750798°	90.330680°		
14.	597			23.757018°	90.323559°		
15.	2614			23.757554°	90.325706°		
16.	2608			23.758354°	90.323443°		Medium Low Land
17.	2605			23.758917°	90.324520°		
18.	809			23.758286°	90.312079°		
19.	271			23.761441°	90.317358°		
20.	264			23.761675°	90.318318°		
21.		E11	190	23.762017°	90.315869°		Medium Low Lands
22.			159	23.764740°	90.316031°		Very Low Lands
23.			122	23.766623°	90.317249°		
24.			2350	23.768058°	90.320078°		
25.			2335	23.769115°	90.319961°		
26.			584	23.769240°	90.317357°		

Source : Compiled by the Author, 2013

5.6. Kaundia Union

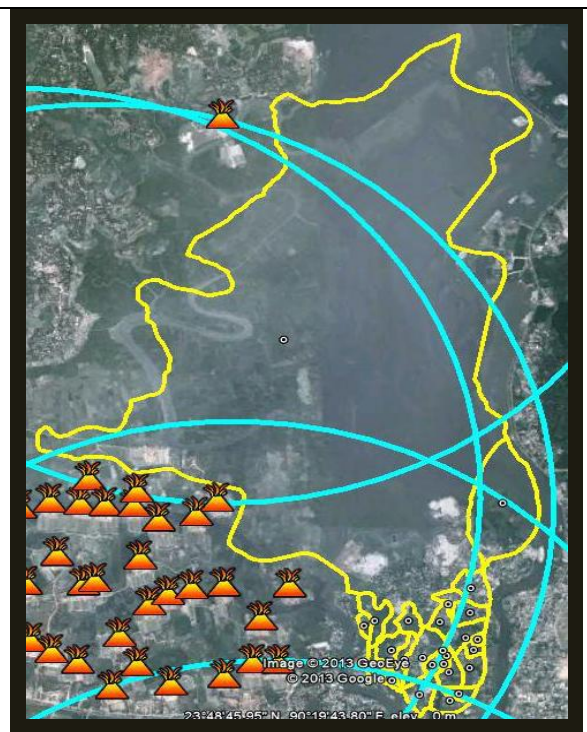
Although there is not a single brickfield in Kaundia, she is one of the noteworthy distressed union of Savar.

Total 20,464 people lives in 7.78 sq. km area, according to census 2001. The census also proclaimed the density of this union were 2,631 people per sq. km. The union is divided into 26 mouzas for land management.

Giving no birth of any brickfield entire Kaundia inhale bad products of such industry. All 20,464 people could not get 02 km radius exemption from some brickfields. Only about fifty percent people in 3.28 sq. km area are relaxed out of 01km radius of any brickfield. They are mostly from north eastern side. Most of the area is polluted by the adjacent Aminbazar and Biralia.

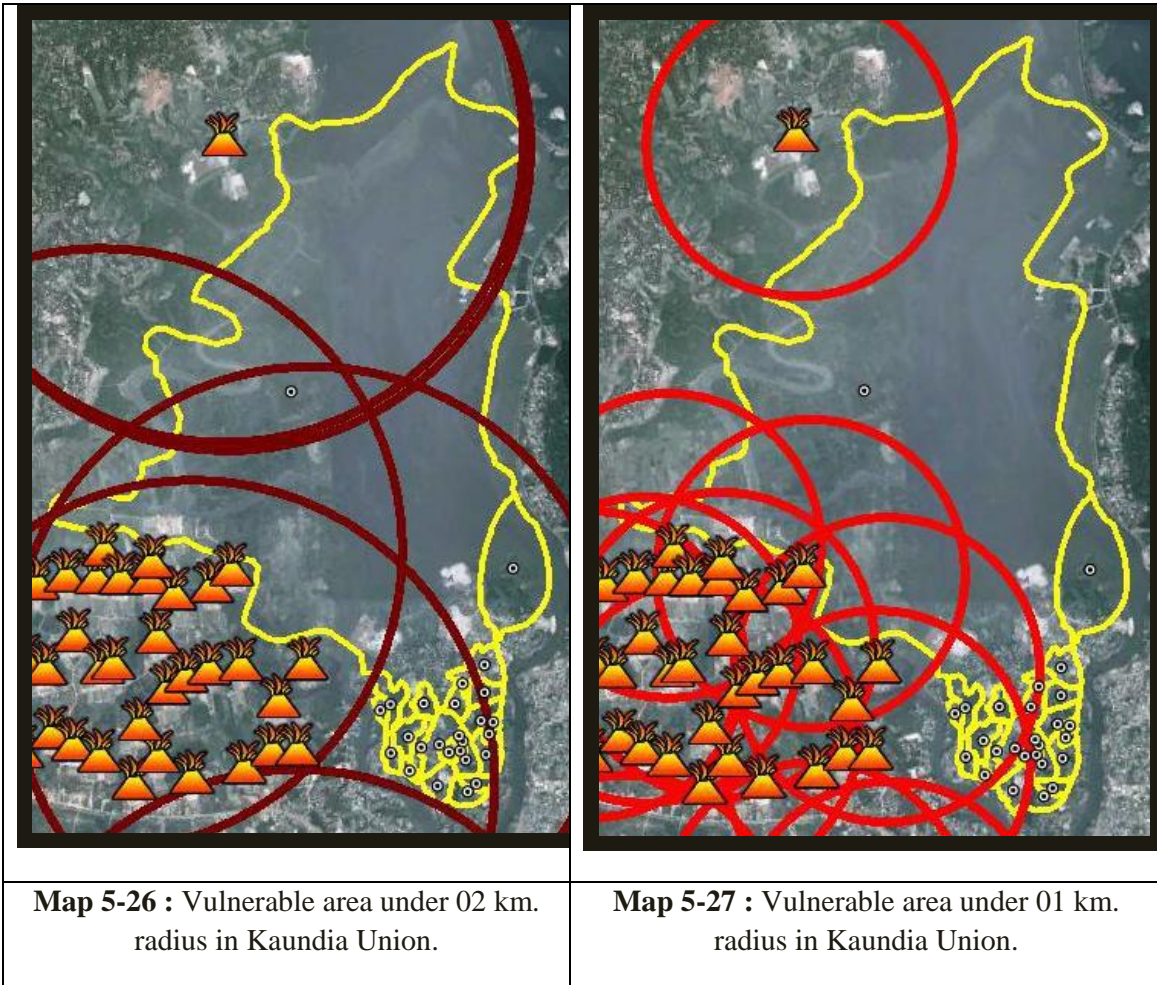


Map 5-24 : Location of brickfields around Kaundia Union.



Map 5-25 : Vulnerable area under 03km. radius in Kaundia Union.

Source : Compiled by the Author, 2013



Source : Compiled by the Author, 2013

5.7. Biralia Union

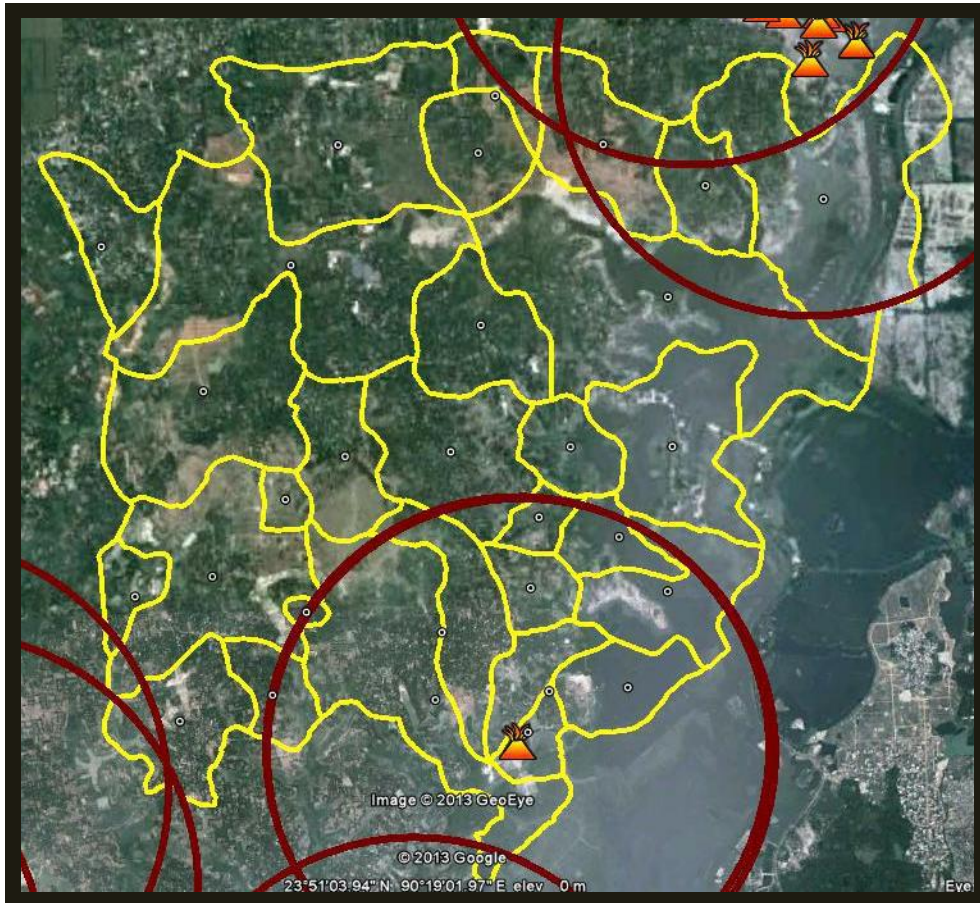
Only one brickfield disgrace Biralia much. Although this union covers 10% area of whole upazila, it conceived 24,917 people on her 29.67 sq. km area. BBS declared the density of this union 840 people per sq. km to her census 2001. Dakshin Ulumora, the only mouza among 30, accommodate the black spot. Block E14 of Group E, DAP, RAJUK cradle the field.

Though the location of this only brickfield is to the south-east corner of the union maximum area of this union became adverse for the brickfields of Ashulia. 18,623 people of 22.17 sq. km became under pollution of 03 km radius by different brickfields. This is the greater portion of her total area. Different brickfields endanger 8,114 people of 9.66 sq. km in Biralia. Under 01 km radius of some brickfields 3.21 sq. km area fell into distressed, where 2,696 people sleep.



Map 5-28: Vulnerable area under 03 km. radius in Biralia Union.

Source : Compiled by the Author, 2013



Map 5-29 : Vulnerable area under 02 km. radius in Biralia Union.

Source : Compiled by the Author, 2013



Map 5-30 : Vulnerable area under 01 km. radius in Biralia Union.

Source : Compiled by the Author, 2013



Map 5-31 : Vulnerable area under 03/02/01 km. radius in Biralia Union.

Source : Compiled by the Author, 2013

The single brickfield is running on Medium Low Land of Brahmaputra Floodplain. This land is also known as Chawk land. It is very much adjacent to Agriculture Land.

Table 5-7 :Location of brickfields in Biralia Union.

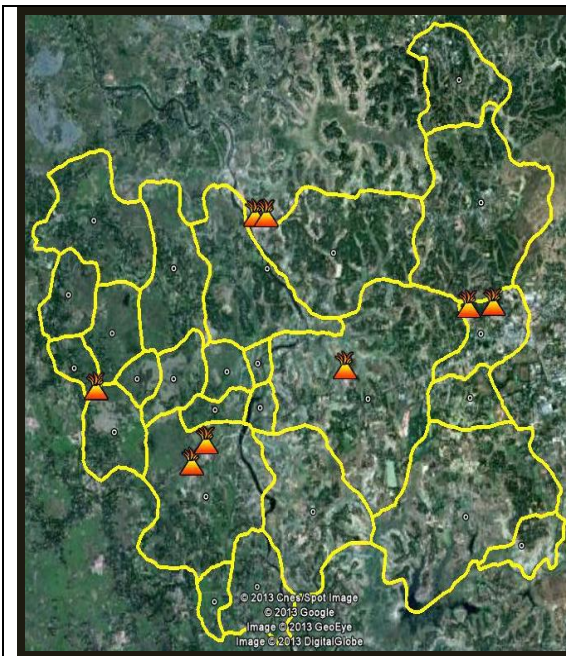
Sl. No.	Mouza Name .	DAP Block No.	Plot(Dag) No	Location		Land Type	
				Latitude	Longitude		Sub Class
01.	Dakshin Ulumora	E14	162	23.829209°	90.321521°	The Brahmaputra Flood Plain	Medium Low Lands

Source : Compiled by the Author, 2013

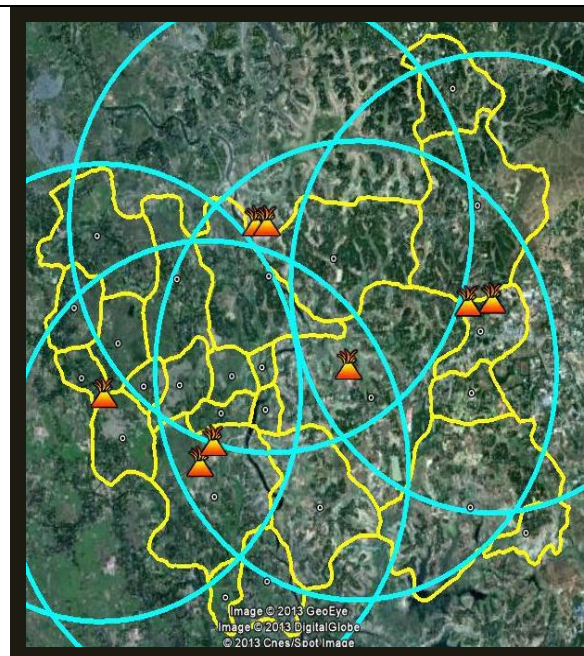
5.8 . Simulia Union

Simulia is seems to be the second highest vulnerable area in Savar Upazila. There are 08 brickfields exist in 35.12 sq. km area of Simulia Union. All brickfields are located in 05 mouzas, out of 25. Simulia is beyond DAP, RAJUK plan. According to 2001 census total population of this union were 59,966 people, when density were 1,707 people per sq.km. The census also shows total number of households were 10,867. From the analysis, I got 34.8 sq km area are, under 03 km radius of some brickfields, where 59,404 people lived. 56,348 people of 33.01 sq. km are living under 02 km radius of some brickfields. From the corner of 02 km radius, this union unaffected its second highest vulnerable position, among other unions. More than 22,000 people lived within 01 km radius in 13.22 sq. km.

In Simulia brickfields are located both Modhupur Tract and Bhramaputra Floodplain equally. Though in Brahmaputra Floodplain all fields are lies on Medium Low land, but in Modhupur Tract only one is in such land, other 03 are on Medium High land. Brickfields on Medium High land is rare in this union.

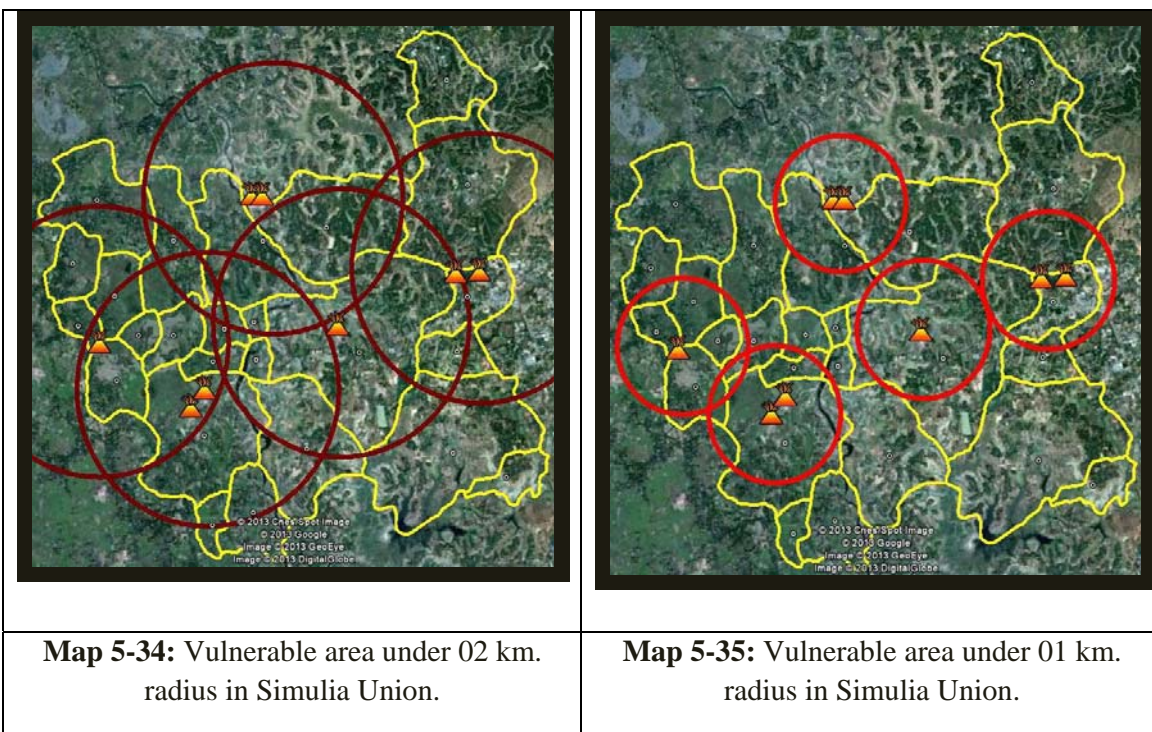


Map 5-32 : Location of brickfields in Simulia Union.



Map 5-33 : Vulnerable area under 03 km. radius in Simulia Union.

Source : Compiled by the Author, 2013



Source : Compiled by the Author, 2013

Table 5-8 : Location of brickfields in Simulia Union.

Sl. No.	Mouza Name & JL No.	DAP Block No.	Plot(Dag) No	Location		Land Type	
				Latitude	Longitude		Sub Class
01.	Baidgaon			24.006734°	90.215003°	The Madhupur Tract	Medium Low Land
02.				24.006738°	90.216628°		Medium High Land
03.	Dakshin Simulia			23.978638°	90.205795°	The Brahmaputra Flood Plain	Medium Low Lands
04.				23.981042°	90.207870°		
05.	Ganak Para			23.987150°	90.191903°		
06.	Gohailbari			23.989517°	90.228090°		
07.	Tenguri			23.996451°	90.246032°	The Madhupur Tract	Medium High Land
08.				23.996726°	90.249606°		

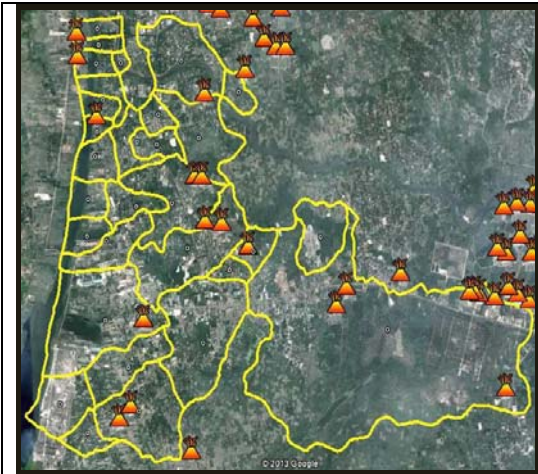
Source : Compiled by the Author, 2013

5.9. Tetuljhora Union

Tetuljhora is seems to the third most vulnerable union in Savar. Here I got 19 brickfields in 20.65 sq. km. Census 2001 declared total population of Tetuljhora were 45,137, when density were 2,165 people per sq. km. Total households were 9,608. Coincidentally, her area/total population/density/households were 7% of whole upazila. There are 30 mouzas in this union. All brickfields lied on 10 mouzas only. Five blocks of DAP, RAJUK cover these area.

Unfortunately, whole union is vulnerable by somehow under 03 km radius for some brickfields. Though Tetuljhora acquired one-fourteenth of the whole upazila, it became one-fifth, during vulnerable area of Savar. All 45,137 people are also vulnerable, under 02 km radius for some brickfields. The union holds her third position among other unions up to this range. Only 2,269 people of 1.04 sq. km is safely distant from 01 km radius of any brickfield.

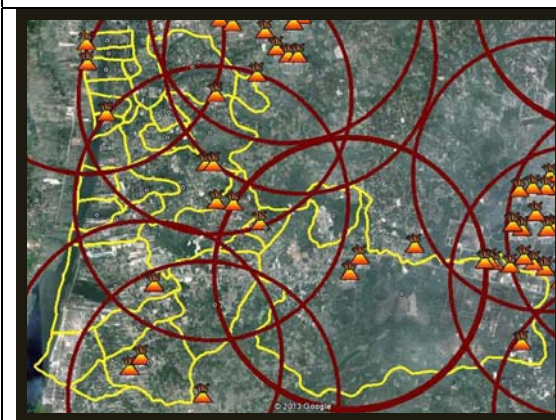
In Tetuljhora, 08 brickfields are set up on Medium High Lands of Modhupur Tract. 03 fields are on Medium Low Land and rest 08 are on Very Low Land of Brahmaputra Floodplain. These brickfields are very much adjacent to human settlement, which make this union one of the most vulnerable union.



Map 5-36 : Location of brickfields in Tetuljhora Union.



Map 5-37: Vulnerable area under 03 km. radius in Tetuljhora Union.



Map 5-38: Vulnerable area under 02 km. radius in Tetuljhora Union.



Map 5-39 : Vulnerable area under 01 km. radius in Tetuljhora Union.

Source : Compiled by the Author, 2013

Table 5-9 : Location of brickfields in Tetuljhora Union.

Sl. No.	Mouza Name & JL No.	DAP Block No.	Plot(Dag) No	Location		Land Type	
				Latitude	Longitude		Sub Class
01.	Bilamalia - 232	E12	4456, 4457	23.782872°	90.308752°	The Brahmaputra Flood Plain	Very Low Land
02.			6261	23.793035°	90.307091°		
03.			509	23.793374°	90.304836°		
04.			512	23.793713°	90.304093°		
05.			525	23.792094°	90.283945°		
06.		D12	821	23.792103°	90.283944°		
07.			892	23.794143°	90.285407°		
08.	Deopur			23.822373°	90.245956°	The Madhupur Tract	Medium High Land
09.	Digha Matia - 225	C12	33	23.779546°	90.252198°		
10.			175	23.780966°	90.253856°		
11.	Jamur-213	C13	208	23.806454°	90.264264°		
12.			180	23.806464°	90.263184°		
13.	JamurMuchipara(Joynabari)-219	C12	633	23.801253°	90.267171°		
14.			529	23.801478°	90.264736°		
15.	Kandibailarpur-218		153	23.790584°	90.255733°		
16.	Natopara			23.819774°	90.246079°	The Brahmaputra Flood Plain	Very Low Land
17.	Natarpara-204	C12	66	23.798640°	90.271048°	The Brahmaputra Flood Plain	Medium Low Land
18.	Rajaghat-212	C13	303	23.815600°	90.264653°		
19.	Swalpa Bhararia	B13	1251	23.813090°	90.248856°		

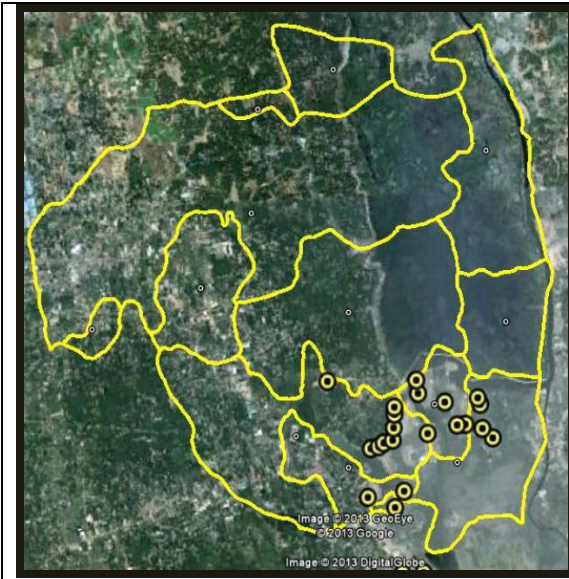
Source : Compiled by the Author, 2013

5.10. Yearpur Union

Yearpur holds 21 brickfields in her 27.44 sq. km area. These fields are scattered on one third of 12 mouzas. DAP, RAJUK covers only two block of Group–E. Total population of Yearpur were 27,044. Density were 985 people per sq. km.

20,527 people in 20.84 sq. km area are risky under 03 km radius of some brickfields, at Yearpur. This is about 75% of her total population. Such area is about to one-tenth of the whole upazila, in respect to 03 km radius of some brickfields. 16,086 people of 16.33 sq. km area reside under 02 km radius of some brickfields. About 60% of her total people lives there. In Yearpur, some brickfields make 9,338 people risky in 9.48 sq. km, within 01 km radius. Only about 06 sq. km of northern part of this union is safely distant from any brickfield.

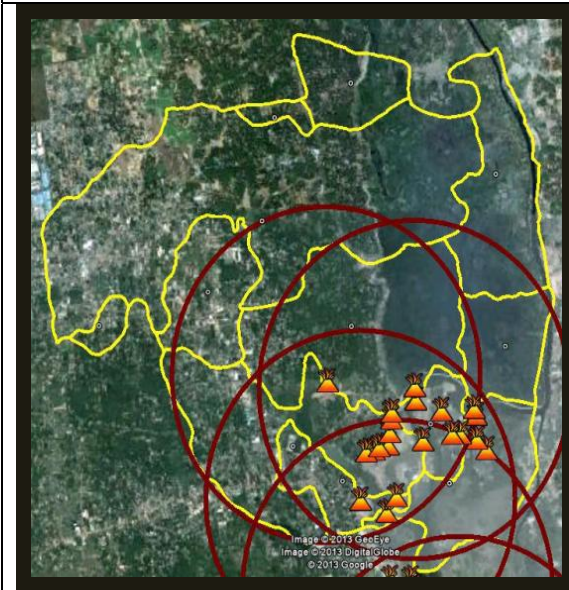
All brickfields of this union confined on Brahmaputra Floodplain only. 03 brickfields are rarely on Medium High Land. Another 18 are on Medium Low Land and Very Low Land consecutively. Brickfields are mostly developed by the water bodies, in Yearpur.



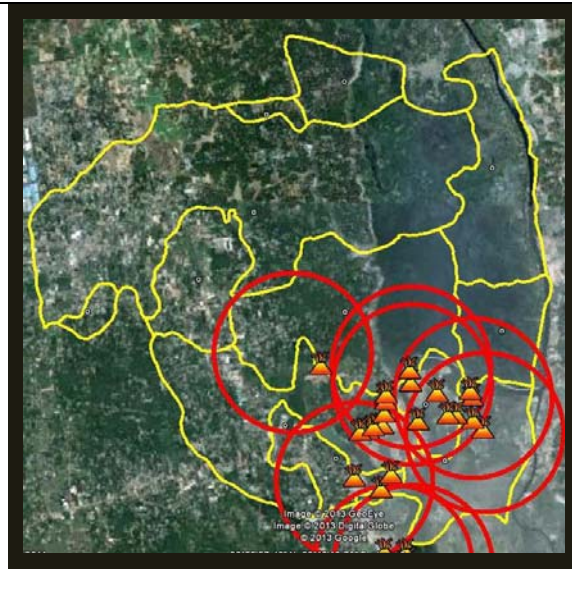
Map 5-40 : Location of brickfields in Yearpur Union.



Map 5-41 : Vulnerable area under 03 km. radius in Yearpur Union.



Map 5-42 : Vulnerable area under 02 km. radius in Yearpur Union.



Map 5-43 : Vulnerable area under 01 km. radius in Yearpur Union.

Source : Compiled by the Author, 2013

Table 5-10 : Location of brickfields in Yearpur Union.

Sl. No.	Mouza Name & JL No.	DAP Block No.	Plot(Dag) No	Location		Land Type	
				Latitude	Longitude		Sub Class
01.	Bighatpatti - 118	F18	2024	23.920684°	90.331429°	The Brahmaputra Flood Plain	Very Low Land
02.			2023	23.922112°	90.331330°		
03.		E17	164	23.917061°	90.336066°		
04.			163	23.917061°	90.337084°		
05.		F18	127	23.919610°	90.334726°		
06.	Jiraba-116	E17	208	23.910073°	90.324471°		Medium Low Land
07.					23.910430°		90.329029°
08.	Rudrapur - 119	F18	19	23.919783°	90.338882°		Very Low Land
09.		F17	15	23.919121°	90.339092°		
10.			224	23.916538°	90.339223°		
11.			254	23.915453°	90.340416°		
12.			1670	23.908827°	90.327758°		
13.	Taiyabpur 117	E17	1085	23.915201°	90.325165°		Medium High Land
14.			1404	23.915331°	90.326137°		
15.				23.915671°	90.326793°		
16.		F17	1419	23.915921°	90.327959°		Medium Low Land
17.			1342	23.917271°	90.328171°		
18.			1431,1444	23.916380°	90.332401°		
19.			1292	23.918643°	90.328373°		
20.		F18	1644	23.919394°	90.328432°		
21.		E18	889	23.922690°	90.320262°		

Source : Compiled by the Author, 2013

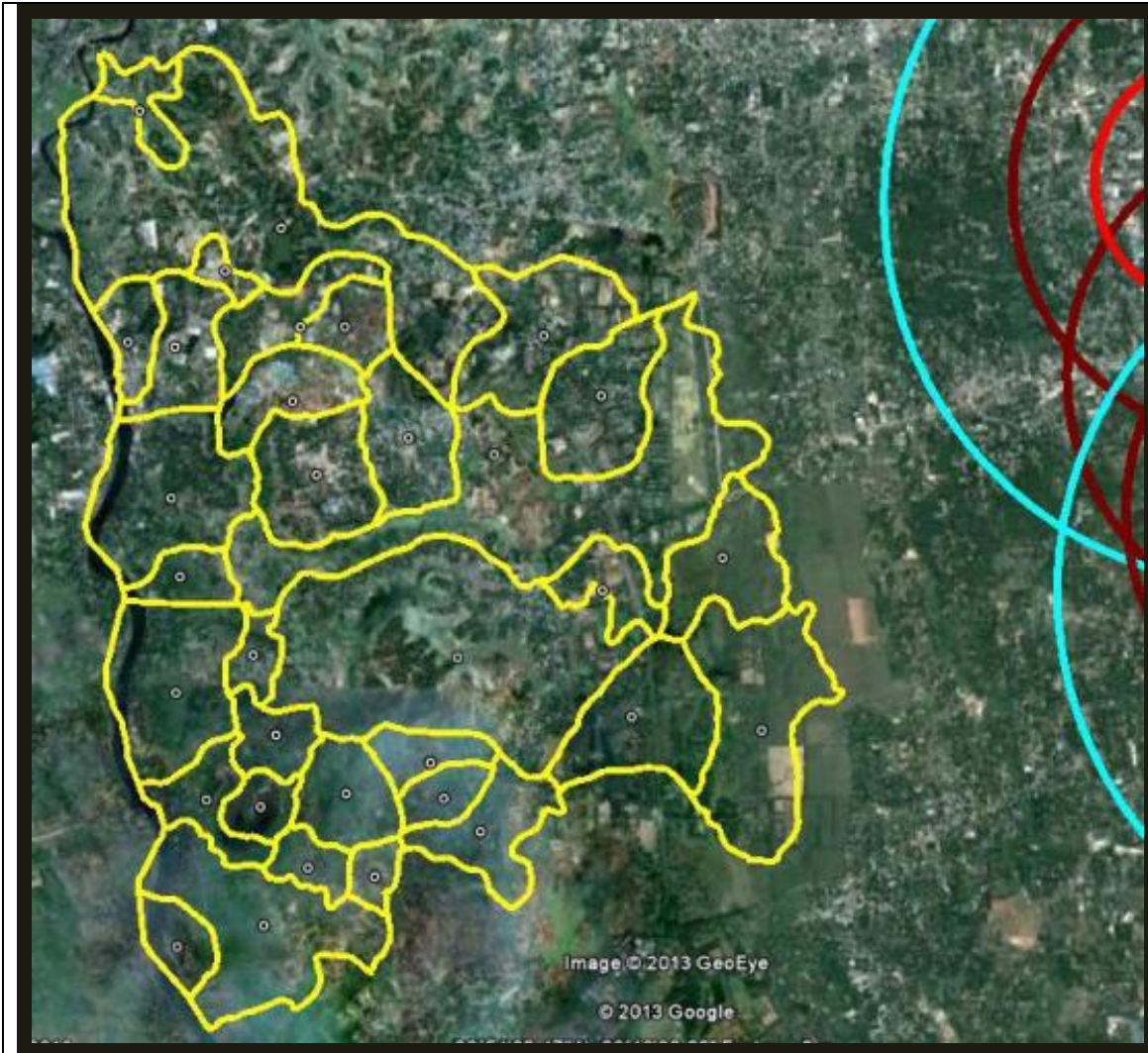
5.11. Pathalia and Dhamsona Union

Pathalia & Dhamsona are only two unions, who are infact, safely distant from any brickfield. Though 5,515 people in 1.85 sq. km of Dhamsona caught under 03 km radius of some brickfields, the figure is uncountrable.



Map 5-44 : Vulnerable ar under 03 km. radius in Dhamsona Union.

Source : Compiled by the Author, 2013



Map 5-45 : Pathalia union is safely distant from any brickfield.

Source : Compiled by the Author, 2013

6. EVALUATION OF ENVIRONMENTAL LAWS AT UPAZILA LEVEL

There are 179 brickfields established in Savar, nearest Upazila of Capital Dhaka city, in her 284.7 sq. km area. According to census 2001, total population were 635,508, when household size were 135,700. Density were 2,233 person per sq. km. The land of Savar is divided into 276 mouzas.

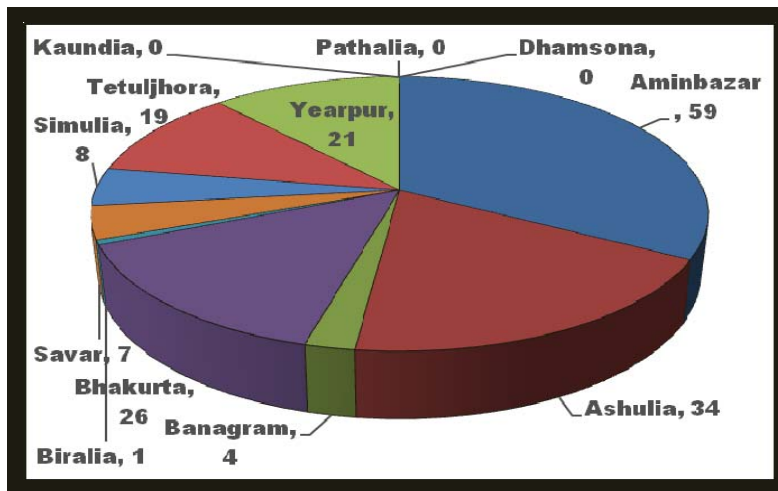


Figure 6-1 : Unionwise number of brickfields

Source : Compiled by the Author, 2013

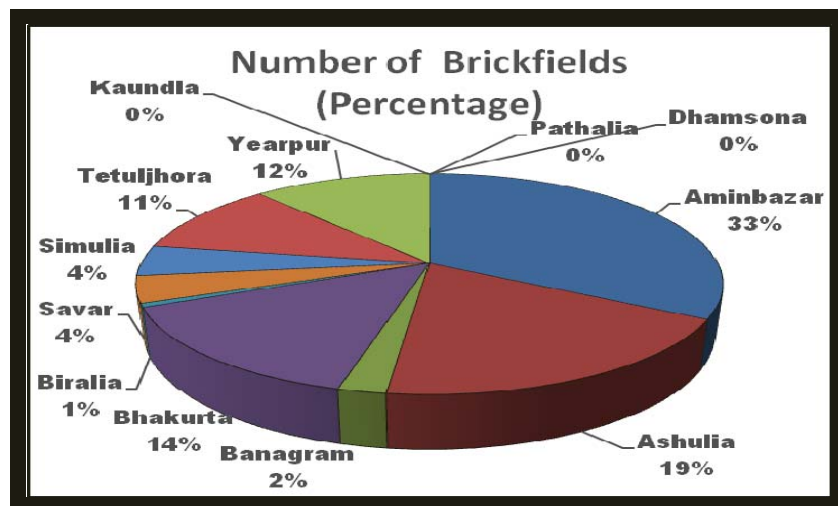


Figure 6-2 : Unionwise percentage of brickfields

Source : Compiled by the Author, 2013

The DAP area of Group–E encompasses 10 unions of Savar Upazila in full and one in part, Savar Cantonment Union, Savar Pourashava and other Urban Areas declared by BBS 2001. The planning area also includes three unions of Gazipur Sadar Upazila (Rajuk,2001). The total open space (including the civic centre) stands at 204.48 acres that gives 4.29 acres per 25000 populations in the year 2015. The DAP for Group–E area proposes 348.82 km of road network comprising secondary and tertiary roads that includes STP proposed roads as well. Proposals have also been made for widening of number of narrow roads and establish missing links.

Total 403,758 people in 172.43 sq. km are vulnerable, under 03 km radius of some brickfields. About half of entire area is threatened. 140.19 sq. km area of whole upazila breathing bad smell under 02 km area, where 315,374 people sleep. Under 01 km. radius from some brickfields 193,594 people of 99.12 sq. km are vulnerable.

Brickfields are clustered mainly in southern, northern and eastern part of the upazila. Aminbazar, Bangram, Bharkta, Savar and Tetuljhora union pollute the southern portion, when Simulia union do same at the northern side, sitting beyond the DAP area. At the same time two union–Ashulia and Yearpur damaging the eastern side of the said Upazila.

143 out of 179 brickfields set up on Brahmaputra Floodplain. They are mostly (109 brickfields) on Very Low Land. Among them 59 brickfields are on Aminbazar union. Only 03 is over Medium High Land. Brickfields on such land type are rare in Savar. Rest 31 brickfields lies on Medium Low land in 07 unions. Modhupur Tract Land produce 36 brickfields in Savar. 19 are solely in Very Low Land of Ashulia union. 06 brickfields are on Medium Low Land of Modhupur Tract, and 11 brickfields are on Medium High Land. Adjacent to water bodies 119 brickfields existed in Savar. Some brickfields are adjacent to Settlement and agriculture land.

Aminbazar burns more than one-third bricks among other unions, when Kaundia, Dhamsona and Pathalia stays completely cool. Second largest quantity of brickfields are at Ashulia, quite adjacent of Dhaka city. Bharkuta and Yearpur holds third and fourth position consecutively, with the number of brickfields 26 and 21 respectively. At the next sit, Tetuljhora produce smoke from 19 brickfields. People suffers from 07 brickfields in Savar Union. Simulia established 08 brickfields, to her outside DAP area. Only one black spot of Biralia keep her enlisted.

Simulia is the largest union in Savar, lying over 35.12 sq. km. Subsequent largest union is Dhamsona, 33.13 sq. km. Biralia and Pathalia covers 29.67 sq. km and 28.45 sq. km respectively. Yearpur, at the north-eastern side holds 27.44 sq. km. Upazila Sadar, Savar Union covers also same, 27.48 sq. km. New Dhaka, Ashulia stays on 26.31 sq. km only. In the eastern side of Aminbazar, Kaundia is the smallest union of Savar upazila, with her 7.78 sq. km area. Size of Aminbazar is not so big, only 10.99 sq. km. Area of Banagram and Bharkuta are 17.28 sq. km and 20.35 sq. km successively. After analysis, we got that proportionately all union is same in size, except a few.

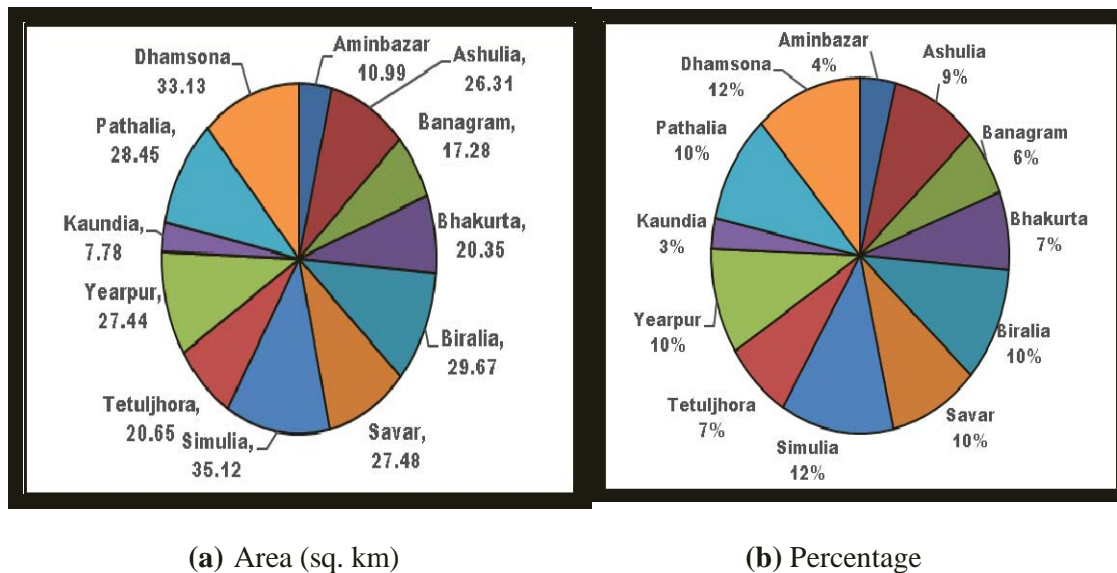


Figure 6-3 : Unionwise Area and percentage

Source : Compiled by the Author, 2013

By population upazila sadar, Savar stood first, carrying with 149,392 people. Dhamsona and Pathalia stays next with 98,764 and 69,656 people respectively. In Simulia, 59,966 people lives outside of RAJUK plan. Fewest people in Savar lives in her smallest union Kaundia, only 20,464 people. Next fewest union is, Biralia, 24,917people. 25,200 people dwell in Banagram, when in the eastern side of the upazila, Yearpur keeps 27,044 people. 33,140 and 38,025 people reside in Aminbazar and Bharkuta union. The remain 43,804 people lives in Ashulia union.

Savar union is the most density union among other union. 9,496 people lives in per sq. km. On the other hand, fewest density is Biralia, 840 people lives per sq. km.

Under 03 km radius of any brickfield Upazila sadar, Savar union distressed 112,433 people in her 11.84 sq. km area. Next alarming union of Savar is Simulia, 59,404 people distressed in her 34.8sq. km area.

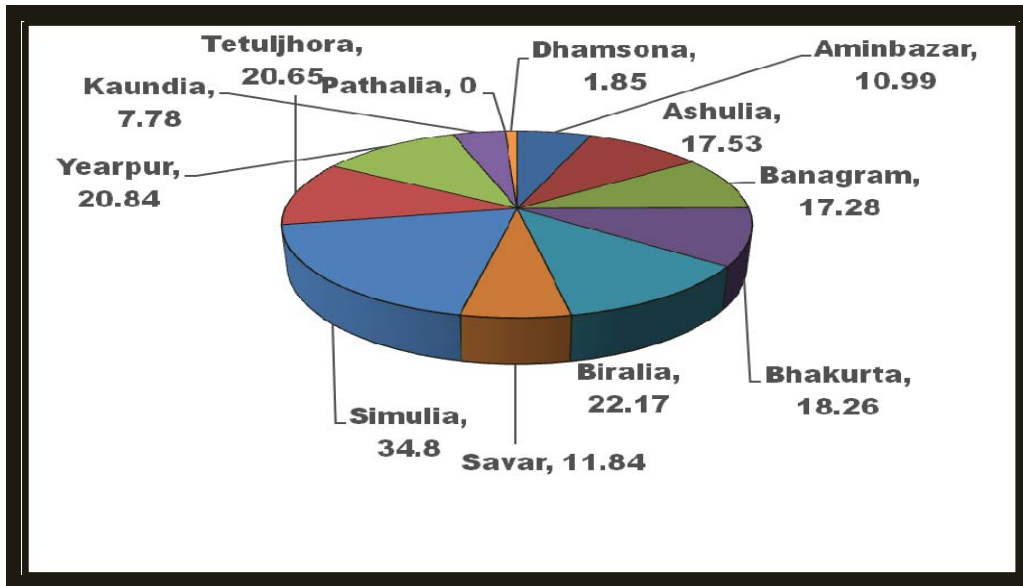


Figure 6-4 : Unionwise vulnerable area(sq. km.) (under 03 km. radius).

Source : Compiled by the Author, 2013

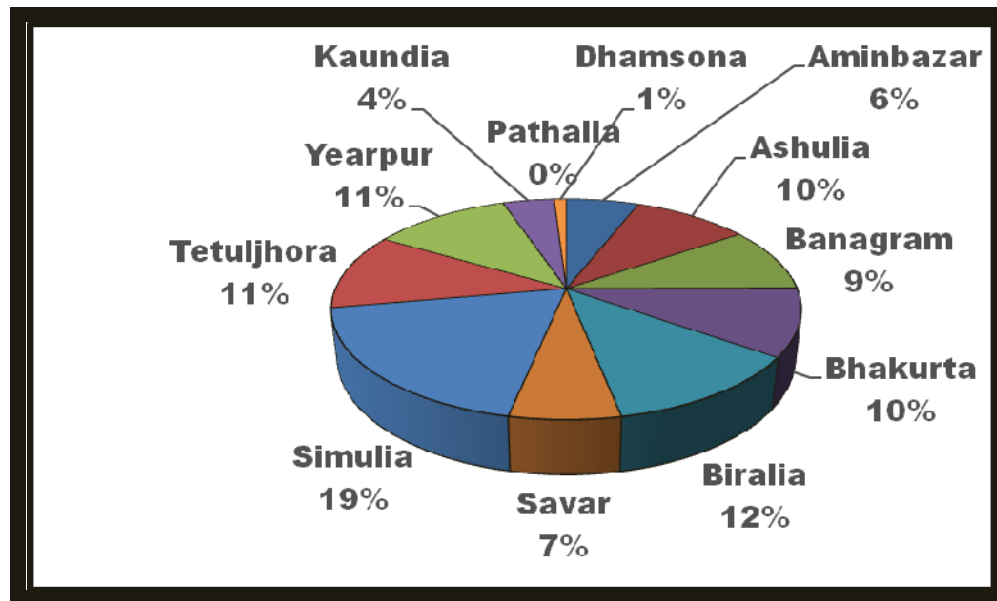
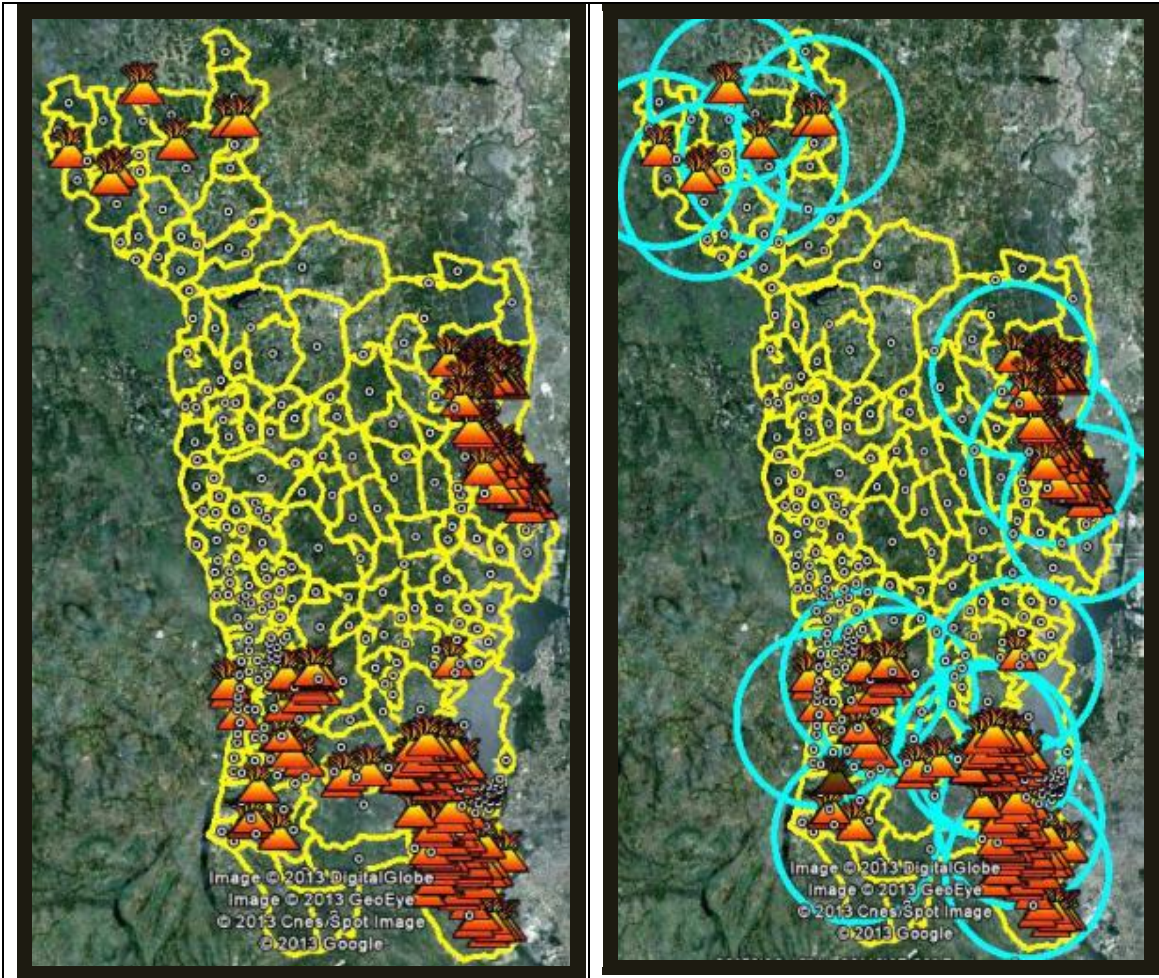


Figure 6-5 : Unionwise vulnerable area (percentage) (under 03 km. radius).

Source : Compiled by the Author, 2013

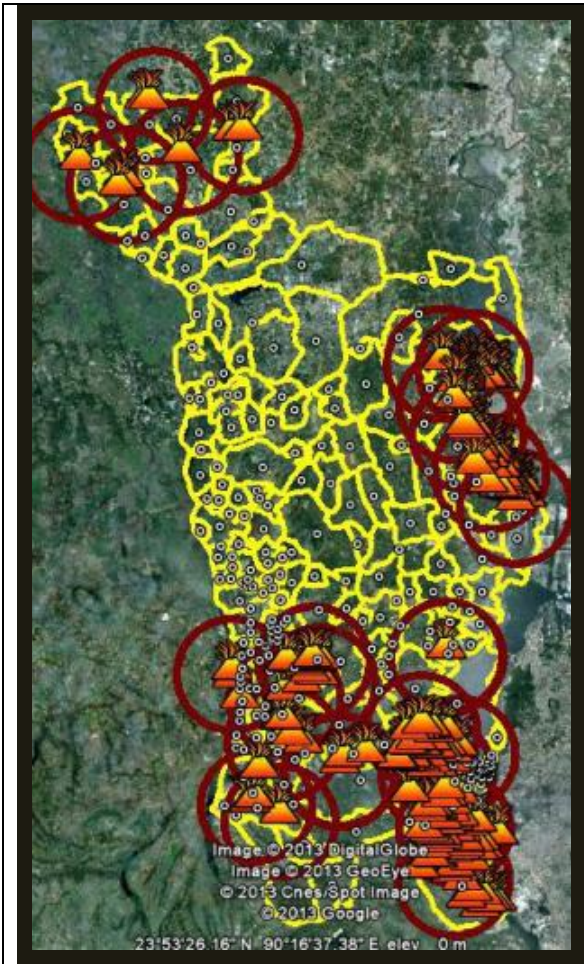
Under same radius, some brickfields polluted entire area of Aminbazar, Banagram and Tetuljhora, Kaundia are also in adverse situation. Only Pathalia is very much safely away from any brickfield. Unfortunately, Kaundia became endangered, without producing any brick. Dhamsona also suffers in 1.85 sq. km area, producing no bricks in her area.



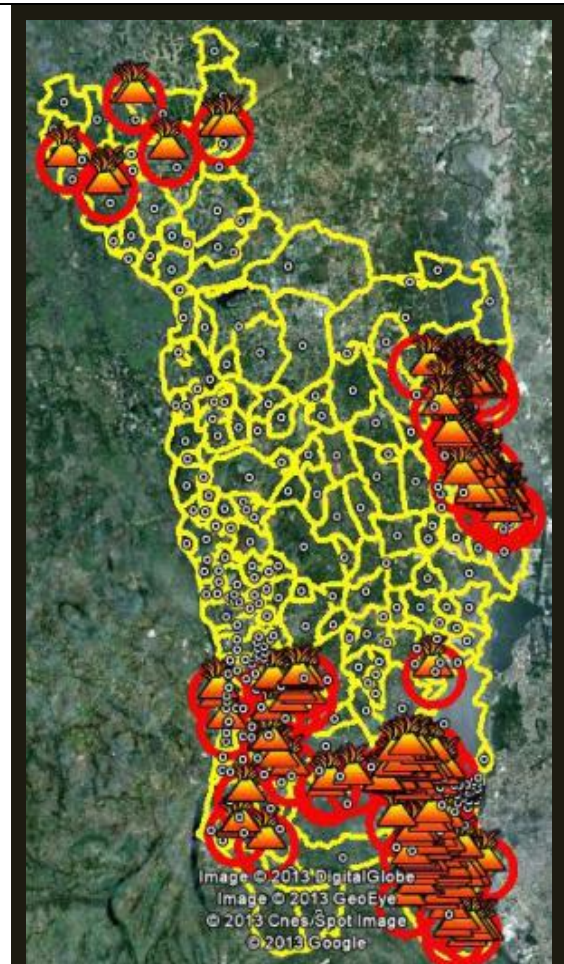
Map 5-46 : Location of brickfields in Savar Upazila.

Map 5-47 : Vulnerable area under 03 km. radius in Savar Upazila.

Source : Compiled by the Author, 2013



Map 5-48 : Vulnerable area under 02 km. radius in Savar Upazila.



Map 5-49 : Vulnerable area under 01 km. radius in Savar Upazila.

Source : Compiled by the Author, 2013

Under 02 km radius of some brickfields, Savar union also mostly in danger, with her 67,042 people in 7.06 sq. km area. Simulia condemns 33.01 sq. km of 35.12 sq. km, within this range, where 56,348 people lives. Aminbazar, Banagram,, Tetuljhora with Kaundia , whole union is under this range. Near about 40% people of entire upazila, waiting for good days in these unions. Like before, Pathalia and Dhamsona is completely free from this red zone.

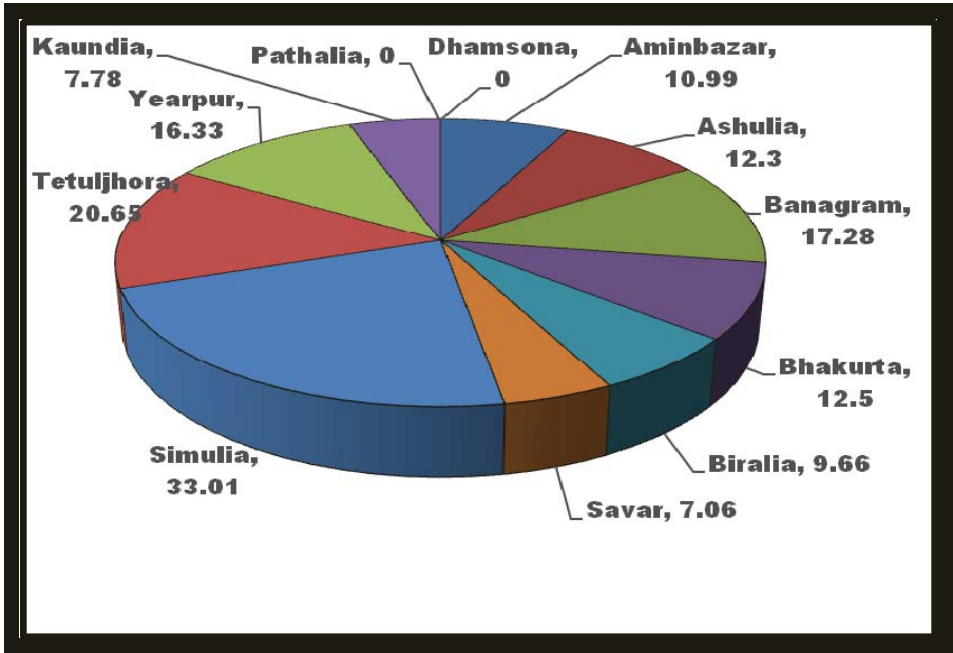


Figure 6-6 : Unionwise vulnerable area(sq. km.) (under 02 km. radius).

Source : Compiled by the Author, 2013

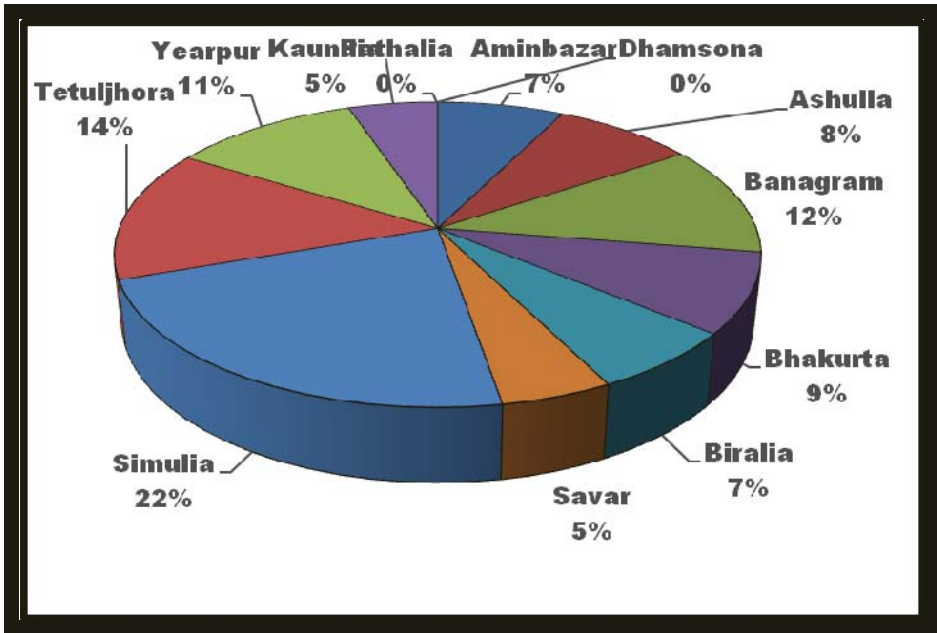


Figure 6-7 : Unionwise vulnerable area(percentage.) (under 02 km. radius).

Source : Compiled by the Author, 2013

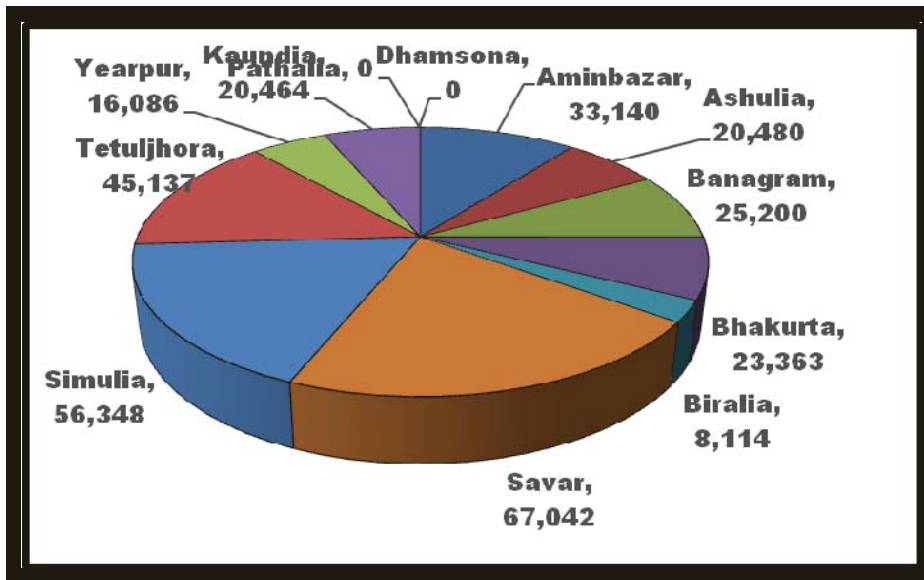


Figure 6-8 : Unionwise vulnerable population (under 02 km. radius).

Source : Compiled by the Author, 2013

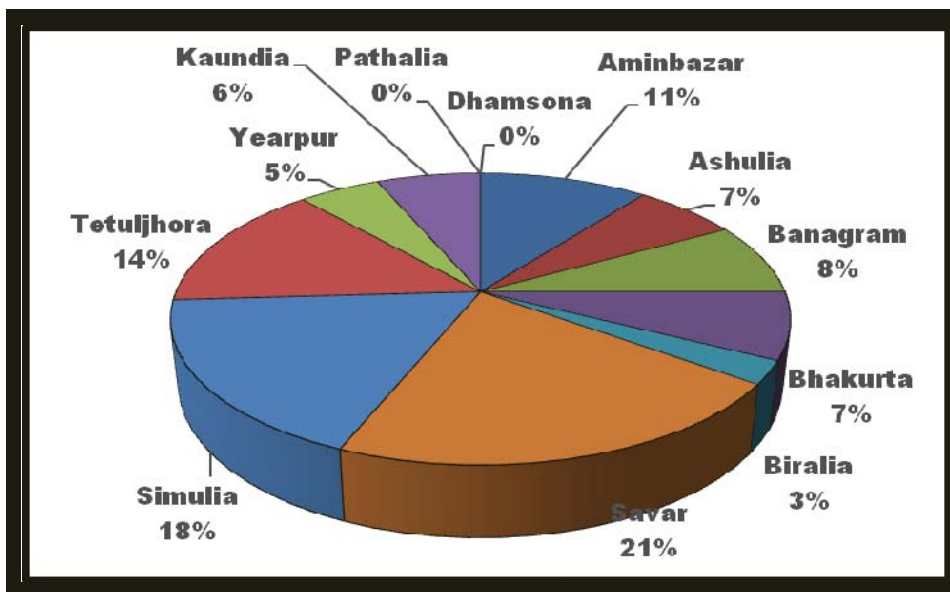


Figure 6-9 : Unionwise vulnerable population (percentage.) (under 02 km. radius).

Source : Compiled by the Author, 2013

Tetuljhora union made her top-troubled situation among other union, by 42,868 people in only 19.61 sq. km area, from 01 km radius of some brickfields. 32,644 people in 10.82 sq. km suffers with same range in Aminbazar union, holding next place. People of Pathalia and Dhamsona lives in eden, in this upazila, breathing no brick smoke. Even in Biralia 2,696 people cries in 3.21 sq. km, only burning one brickfield, in this range.

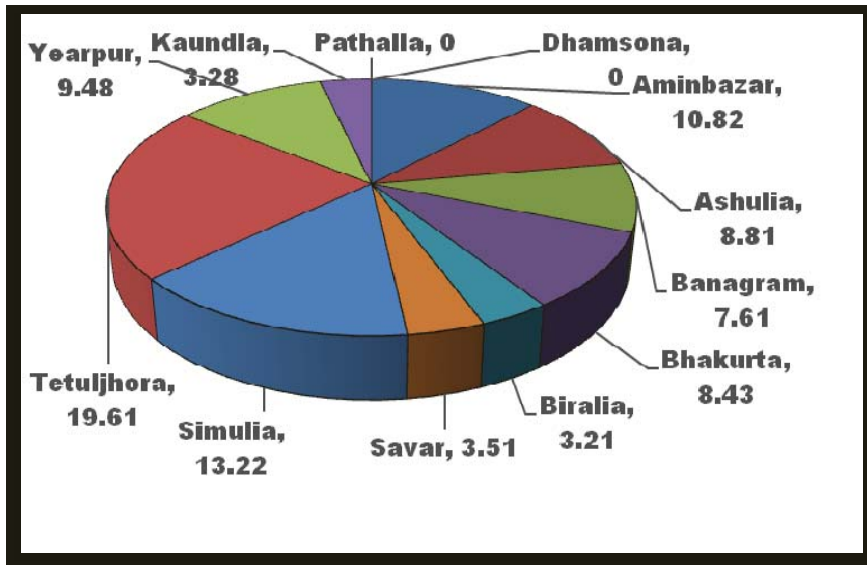


Figure 6-10 : Unionwise vulnerable area(sq. km.) (under 01 km. radius).

Source : Compiled by the Author, 2013

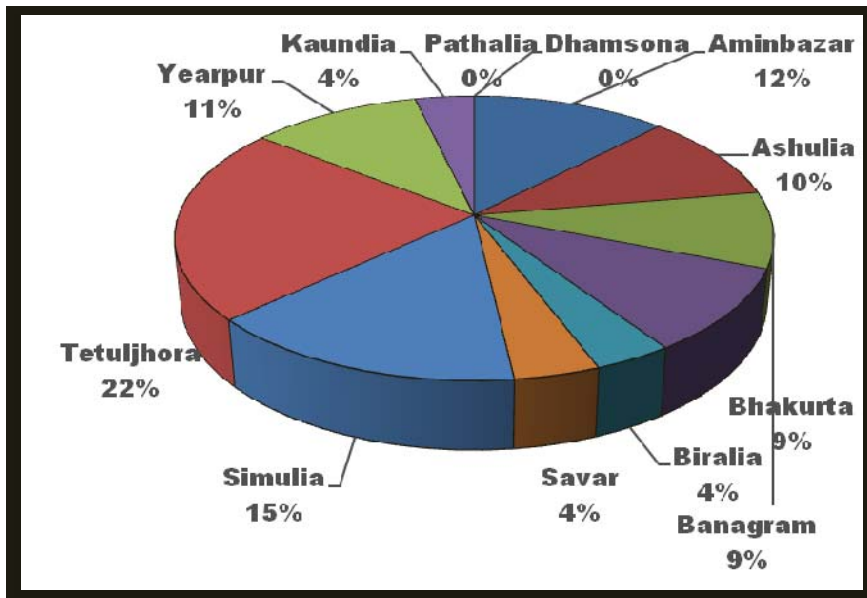


Figure 6-11 : Unionwise vulnerable area(percentage) (under 01km. radius).

Source : Compiled by the Author, 2013

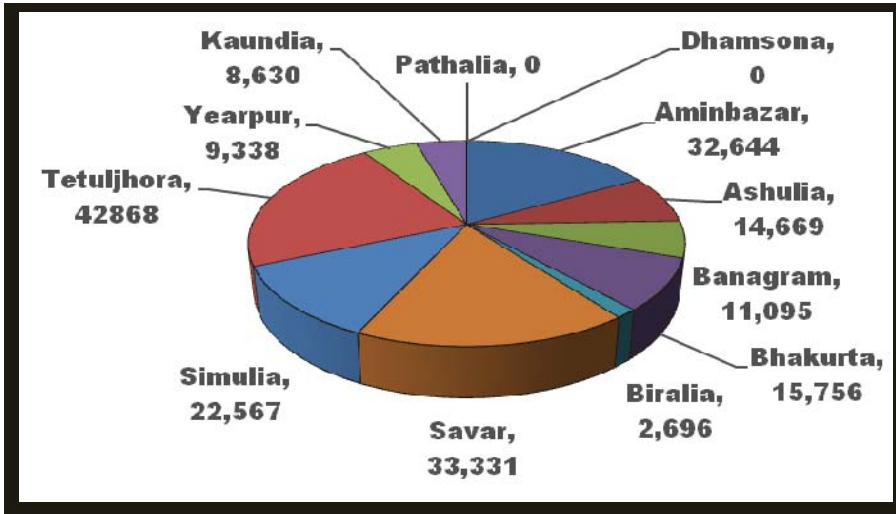


Figure 6-12 : Unionwise vulnerable population (under 01 km. radius).

Source : Compiled by the Author, 2013

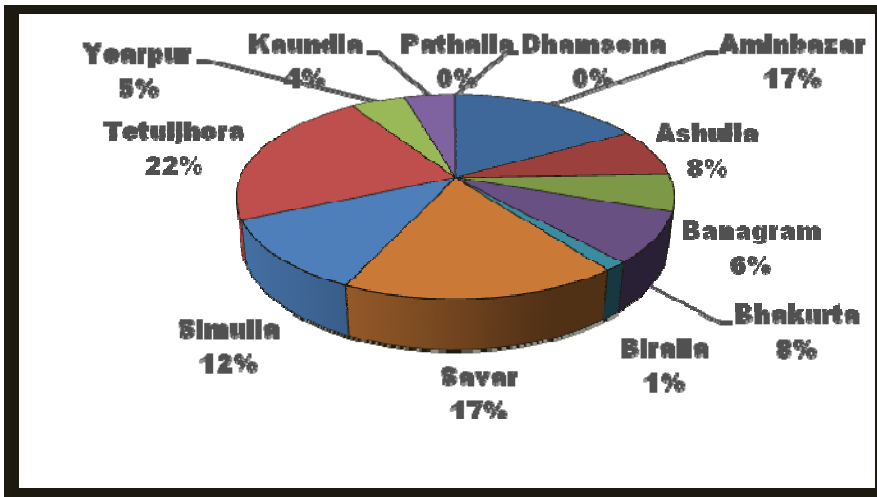


Figure 6-13 : Unionwise vulnerable population (percentage) (under 01 km. radius).

Source : Compiled by the Author, 2013

6.1 Environmental Problems

Most of the environmental problems are associated with low level of environmental awareness in industries, inappropriate location and choice of technologies well as absence of appropriate legislation and compliance.

The law requires a brick kiln to have a chimney not less than 16 meters high so that the emissions are discarded high up in the air. But few kilns have waste outlets this high (Islam, 2001).

Health experts say that **people living within five kilometres of** a brick kiln, are exposed to various health risks. A high incidence of liver and stomach troubles have been reported among people living close to brick kilns (Islam, 2001).

Lack of access to finance constrains the owners' capacity to adopt improved technologies that would reduce pollution and increase energy efficiency (World Bank, 2011).

Bricks are made from top soil, a process, which is said to be aggravating land degradation. According to soil scientists, the removal of top soil makes the land lose its fertility for a period of between 25 to 30 years (Islam, 2001).

Brick kilns are usually fired with low-grade coal with high sulfur content. Old rubber tires are also known to be burnt for making bricks (Islam, 2001).

Children in such areas are said to suffer from respiratory problems and blurred vision (Islam, 2001).

Women and girls make up a large proportion of brick kiln workers who have to place unburnt bricks in the ovens and keep on checking the burning wood or coal. A typical work day lasts between 10 to 12 hours (Islam, 2001).

There have been reports of many women brick kiln workers having suffered damage to their reproductive health (Islam, 2001).

An adult male worker is paid a maximum of about two dollars for a day's work. A woman worker gets much less for the same amount of work in the same conditions (Islam, 2001).

There is no provision for sick leave in an industry where working conditions expose workers to a variety of ailments (Islam, 2001).

Environmental activists say that, trees like jack fruit, palm and date, are fast disappearing from many areas in the northern districts of Bangladesh because these are being chopped down for the brick kilns (Islam, 2001).

The growing use of bamboo roots in the kilns is a serious threat to bamboo regeneration in the countryside, forest officials have been reported saying (Islam, 2001).

With a brick kiln estimated to burn up an average of 350 tones of wood annually, the industry is worsening forest depletion in the country (Islam, 2001).

Every year, Bangladesh is estimated to be losing about three percent of its present 2.56 million hectares of forest. Forest authorities warn that, at this rate, there will be virtually no forest left in the country, 30 years from now. Barely a tenth of the country has forest cover (Islam, 2001).

The mainly rural South Asian nation is also losing its cultivable lands, largely due to population growth and erosion caused by the numerous rivers (Islam, 2001).

According to World Bank estimates, cultivable land in Bangladesh is reducing annually by one percent (Islam, 2001).

Most brick kilns in Bangladesh are highly polluting since they use crude technology and low-quality coal for fuel. Burning of coal in the kilns releases various pollutants into the atmosphere, including PM, sulfur dioxide (SO₂), carbon monoxide (CO), CO₂, and NO_x. Among the three kiln types, the FCK releases the highest level of PM and SO₂, primarily because of the high ash and sulfur content of the coal. Evidence is inconclusive on PM emissions of the Zigzag kiln. In terms of pollutants, the Hoffmann kiln, fired by natural gas, is considerably superior to all coal-burning kilns. Unfortunately, due to natural-gas supply constraints, the expansion of this technology stopped and existing kilns are facing closure. The kilns also produce toxic wastes like carbon monoxide and sulfur oxide. The emissions are said to reduce the fertility of nearby farm lands (Islam, 2001).

7. FINDINGS OF THE RESEARCH

In Savar Upazila 179 brickfields are set up in 284.7 sq. km area. Total population 635,508 were declared in census 2001. 2233 people were living in per sq km. Household size were 135,700. Savar is covered with 270 mouzas. 172.43 sq. km of whole Savar upazilla are vulnerable under 03 km radius of some brickfields. More than half of the entire upazila was under distressed, where 403,758 people lived. 315,374 people lived under 02 km radius. 140.19 sq. km area of whole upazila is covered under this radius. 99.12 sq. km are mostly vulnerable of Savar, under 01 km. radius from some brickfields. 193,594 people of this upazila are living under this distress.

Largest union in Savar is Simulia, with her 35.12 sq. km. area. Dhamsona became second largest, which covers 33.13 sq. km area. 29.67 sq. km and 28.45 sq. km area are occupied by Biralia and Pathalia unions respectively. At the north-eastern side, Yearpur, holds 27.44 sq. km area. Same area also covered by Upazila Sadar, Savar union. New Dhaka, Ashulia, stays on 26.31 sq. km only. Kaundia, at the eastern side of Aminbazar, is the smallest union of Savar upazila. It covers 7.78 sq. km area. Aminbazar keeps only 10.99 sq. km. area. Banagram and Bharkuta is 17.28 sq. km and 20.35 sq. km successively. After analysis, we got that proportionately all unions are same in size, except a few.

Upazila sadar, Savar, is contains highest number of population, with 149,392 people. Later, with 98,764 and 69,656 people Dhamsona and Pathalia unions hold next positions respectively. In Simulia 59,966 people lives outside of RAJUK plan. By area, Smallest union in Savar, Kaundia, carries also lowest number of population, only 20,464 people. Biralia is the next union with fewest population, 24,917 people. 25,200 people dwell in Banagram. In the eastern side of the upazila, 27,044 people lived in Yearpur. In Aminbazar and Bharkuta union 33,140 and 38,025 people reside respectively. The remain 43,804 people lives in Ashulia union.

Savar union is the mostly density among other union. 9,496 people lives in per sq. km. On the other hand, in Biralia, 840 people lives per sq. km.

7.1 Findings from the Legal Documents

The application of **Environmental laws** in Bangladesh starts from the 19th century, although these were remained either unenforced to a large extent or vaguely known to the people and the responsible public agencies. The Ministry of Environment and Forest was established in 1989, to address environment-related issues. About 30 environment related Act/Rules/Ordinance are compiled. The Brick Burning (Control) Act, 1989 was amended two times-1992 & 2001. The Brick Burning (Control) Rules, 1989, the rules of this act is activated still now without any amendment after issuing in 1992. No new of rules were declared yet, but a few Government Orders.

The District Administration get empowered by the Brick Burning (Control) Act, 1989, to issue license. Brick burning without license was prohibited first time, by this act. Government declares the procedure to collect license, in this act. Government holds her power to cancel any license, without any excuse. The use of firewood were strictly prohibited in brick kiln, by this act. List of officials to inspect or enforce this act are stated. Violation of this act also announced the reward.

The application procedure detailed in The Brick Burning (Control) Rules, 1989. It is described within 03 steps. The rules contains two schedules.

The Brick Burning (Control) Act, 1989, first time amends after 03 years. The new name—The Brick Burning (Control)(Amendment) Act, 1992. This amendment first exclude the ‘dead roots’ of bamboo from the definition of ‘firewood’. The Deputy Commissioner were replaced instead of Chairman. The Inspection Officers empowered to seize firewood, if any violation. Monetary penalty was extended up to fifty thousand taka.

The Brick Burning (Control)(Amendment) Act, 2001 included ‘date wood’ with ‘dead roots’ of bamboo in the definition of ‘firewood’. A committee was formed, by this amendment, to verify the application of license. The validity of license was reduced to three years. To establish any brick kiln within 03 kilometer radius of upazila headquarter, conservative forest, acquisition land, city corporation, municipality, residential area, fruit garden became restricted this time. ‘Residential area’ were defined as, where fifty family lives and a cluster of fifty fruit or medicated trees were treated as ‘fruit garden’. Imprisonment was enhanced up to one year instead of six months, remaining the monetary penalty unchanged.

7.2 Location Analysis

The brickfields of Savar is geographically located between 23.760762° and 23.922690° North and between 90.191903° and 90.349380° East. These brickfields are clustered in mainly southern, northern and eastern part of the upazila. 143 brickfields are built on Brahmaputra Floodplain. Most of them (109 brickfields) are on Very Low Land. Only Aminbazar union conceives 59 brickfields. 03 brickfields are over Medium High Land. In 07 unions rest 31 brickfields lies on Medium Low land of Brahmaputra Floodplain. 36 brickfields produced in Modhupur Tract Land at Savar. Among them solely Ashulia union produced 19 in very low land. 11 brickfields are on Medium High Land and 06 brickfields are on Medium Low Land of Modhupur Tract. 119 brickfields situated besides the water bodies. Some brickfields are adjacent to Settlement and agriculture lands.

Among other unions, more than one-third bricks are produced in Aminbazar. On the other hand, Kaundia, Dhamsona and Pathalia are free from any brickfield. Ashulia is second largest brick producer union, staying adjacent to Dhaka city. Third and fourth position captured consecutively, with the number of brickfields 26 and 21 respectively, by Bharkuta and Yearpur union. 19 brickfields produced smoke with bricks in Tetuljhora. At the next, 07 brickfields established in Upazila Sadar, Savar. Simulia, most density among other union, established 08 brickfields in her outside DAP area. Only one black spot of Biralia keep her enlisted.

7.3 Monitoring Systems

The monitoring system of the Brick Burning Act is developing by the amendments of act. Increase the range of 'firewood' definition, also increase the range of monitoring system. Monitoring system became more effective after empowering the district administration. A Deputy Commissioner or an Additional Deputy Commissioner can enforce the act more, rather than a public representative, Upazila Parishad Chairman. A committee was formed to verify the application of license. Brickfield inspection of some officials without warrant is the most effective tool of monitoring. Power to cancel any license, without any excuse, empowered government very much to monitor. Monitoring system became more strengthen after reducing the validity of license. It is a good step to restrict brickfields within 03

kilometer radius of upazila headquarter, conservative forest, acquisition land, city corporation, municipality, residential area, fruit garden. But the monitoring system of this restriction found weak. Brick burning is a highly profitable and seasonal business in Bangladesh. As a result, these lower scale penalty couldn't frightened the offenders. Restriction of cognizance the offence also encourages the violation. Though government encourages brick kiln to install latest technology, it cannot implemented due to capital. Obligation to collect clearance from DG, DoE and concerned DC, created a latest monitoring tools.

7.4 Field Experiences

Under 03 km radius of any brickfield Upazila Sadar, Savar union polluted 11.84 sq. km area, where 112,433 people lived. Simulia is the next alarming union of Savar, with one-fifth people of the entire upazila. They are living in 34.8 sq. km area. Due to some brickfields total area of Aminbazar, Banagram and Tetuljhora unions are polluting from same radius. Without producing any brick, Kaundia became endangered. Only Pathalia is very much safely away from any brickfield. Producing no bricks in her area, Dhamsona also suffers in 1.85 sq. km area.

Under 02 km radius of some brickfields, Savar union captured again highest polluting union in Savar Upazila. This radius covers 7.06 sq. km area in this union, where 67,042 people lives. Within this range 33.01 sq. km pollutes in Simulia, where 56,348 people lives. There is no room in Aminbazar, Banagram, Tetuljhora and Kaundia, under this range. About 40% people of entire upazila, are suffering from the pollution, in these unions. Pathalia and Dhamsona is completely free from this red zone, as before.

Under 01 km radius of some brickfields, Tetuljhora union became highest sufferers among other unions. In 19.61 sq. km area 42,868 people is in troubled situation, in Tetuljhora. In Aminbazar such range pollutes 10.82 sq. km area, where 32,644 people lives. Pathalia and Dhamsona is in green zone, under this range. Within this range, only brickfield covers 3.21 sq. km, area of Biralia. 2,696 people resides in this area.

8. RECOMMENDATION AND CONCLUSION

8.1 Summary

To assess the environmental laws in Bangladesh, was the aim of this research. Among many laws environment is vulnerable one. GIS based research enrich this study. GIS is the most sophisticated tools to analyze this types of study. Rapid changing of population density attracts to choose this Savar Upazila.

Satellite image is used through Google Earth software to study plot to plot survey. It was the major source of data. Google Earth software permits to this plot to plot survey. Placemark, polygon, circle different tools were using in this platform. Data were analyzed digitally.

In facing the ever growing demand of Dhaka city and its Modhupur Tract and flood plain type land , in Savar upazila total 179 brickfields developed in some limited unions. Environmental laws specifically Brick Burning Acts are violated very frequently, exposed in this research. Scarcity of resources obstacles government willingness to enforce the laws and monitor the violation strictly. Due to illiteracy, our people is unaware of rules and regulations and thus violate this very much. Some entrepreneurs thinking of their profit, having no social responsibility or such mindset. For a green urban environment, different termed proposals are advised in the recommendation.

8.2 Recommendations

This report suggests that the development of the brick industry in Bangladesh *over the next 20 years* should aim at: (i) moving from traditional brick-making technologies (e.g. FCK) to cleaner ones (e.g. HHK, VSBK); (ii) diversifying products (e.g. hollow and perforated bricks) and finding alternative raw materials that are locally available; (iii) increasing the proportion of large-scale enterprises with higher capacity to adapt to cleaner technologies. To achieve these goals, a summary of concrete recommendations is provided below. Table 7.1 presents a comprehensive set of policy recommendations drawn from this study, together with the institutions responsible for their achievement.

In the short-term:

1. Recognize brick kilns as a *formal industry*. This would enable easier access to financial resources (which in turn will enable investment in cleaner technologies and access flood free land) and improved working conditions.

2. Create a ***Brick Technology Center*** to raise awareness about the benefits of cleaner technologies. The center should: (a) disseminate information on the *social benefits* provided by cleaner technologies, new wall materials (e.g. perforated and hollow bricks) and alternative raw materials; (b) promote pilot projects of new technologies with improved provisions (e.g., mechanized, higher labor productivity and larger product lines); (c) improve use of existing dissemination channels (e.g., field visits to pilot plants, video demonstrations of the technologies, use of the Bangla language) and introduce new channels (e.g., newsletters, industry journals, conferences, and Internet blogs).

3. Support ***research and development*** aiming at: (a) exploring alternative raw materials⁹⁸ that are locally available, brick diversification, and use of higher level of mechanization; (b)

4. Facilitate the availability of ***subsidized credit lines*** to account for reduced health impacts from pollution and of other ***economic incentives*** supporting the production of new wall materials and use of alternative raw materials (e.g. via specific funds and preferential tax policies, as in China).

5. Provide access to ***carbon markets***, on account of the carbon emission reductions provided by cleaner technologies.

6. ***Train*** several stakeholders with regard to the benefits of adopting cleaner technologies (e.g. brick owners, workers and the financial sector).

In the medium term:

7. ***Enforce the existing regulations and policies***, such as the ban of traditional high polluting kilns (e.g. FCK, BTK), particularly those located close to large population centers, upstream of the wind (north) in the dry season (November to April).

8. ***Introduce regulations and policies that encourage adoption of cleaner technologies***, such as: (a) revise emissions standards for brick kilns under ECR97 to make them technology independent and to encourage brick diversification (e.g., perforated or hollow bricks for partition walls); (b) establish proper emission monitoring for brick kilns; (c) impose an emission levy based on “polluter-pay principle”; (d) design rules and standards for the entire brick value chain: from raw materials to production processes and equipment and final products to building designs and construction processes.

9. *Develop industrial parks* to accommodate a large number of industries on flood-free land. These parks would mean less cost for kiln owners, due to the economy of scale achieved by providing the basic infrastructure for all kilns (e.g. roads, electricity, water) and other facilities (e.g. schools for the employees' children). They would also require less land for kilns establishment compared to the current situation.

10. *Improve working conditions* by introducing higher levels of mechanization, social programs to reduce child labor, occupational safety and health measures in kilns.

Recommendations and institutions concerned with their implementation.

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
In the medium term	
7. Enforce the existing regulations and policies	DOE, MOEF, Bangladesh Standards and Testing Institution (BSTI)
8. Introduce regulations and policies that encourage adoption of cleaner technologies	DOE, MOEF
9. Develop industrial parks to accommodate a larger number of industries	Bangladesh Small and Cottage Industries Corporation (BSCIC), MOI, DOE
10. Improve working conditions	DOE, Ministry of Labor and Social Welfare (MOLSW), Ministry of Women Affairs (MOWA), Entrepreneurs, BBMOA

8.3 Concluding Remarks

Bangladesh's brick sector is characterized by outdated technologies with low energy efficiency and high emissions, low mechanization rate, dominance of small-scale brick industries with limited financial capacity, and dominance of single raw material (clay) and product (solid clay brick). Adopting gas-based cleaner technologies is hampered by serious energy shortage and land scarcity.

How long can the country afford making bricks in this way? The current status is by no means sustainable. Bangladesh has every reason to upgrade its brick sector in order to save valuable natural resources, reduce air pollution, and increase energy efficiency. The government has already established regulations that ban the use of fuel wood and FCKs and has reconsidered the location and height of brick kiln chimneys.

Brick making is indispensable for Bangladesh' economy. Though not formally recognized as an industry, brick-making is a significant economic activity in Bangladesh (Ministry of Industries 2010). The country's overwhelming dependence on bricks is due to its lack of stones in any sizable quantity or other alternative building materials at comparable cost. Brick kilns in Bangladesh are mostly informal and small-scale operations. More than 90 percent of brick kiln owners are small-scale operators. Most FCKs are individually owned, with each owner possessing one kiln only.

Valuation of the health impacts of pollution is complex. The main estimated health impacts of pollution are: • infant and child mortality related to respiratory disease • adult mortality related to cardiopulmonary disease and lung cancer; and • all-age morbidity, such as chronic bronchitis, hospital admission of patients with respiratory problems, emergency-room visits, restricted activity days, lower respiratory infection in children, and general respiratory symptoms. Valuation involves the following steps: • identify the pollutants and measure their concentration, • estimate the population exposed, • establish dose-response coefficients, and • measure the health impacts (physical and monetary valuation).

In Bangladesh, around 95 percent of the brick fields are making bricks by the highly polluting fixed chimney kilns, as it requires low capital costs and has high investment returns. With about 5,000 operating kilns, brick-making is a significant sector in Bangladesh, contributing about **1 percent** to the country's gross domestic product (GDP) and generating employment for about **1 million** people. Brick is the main building material for the construction industry, which has been growing at about **5.6 percent** annually between 1995 and 2005, leading to an estimated growth rate of 2–3 percent for the brick sector.

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Appendix –A

A Compilation of Environment Laws

***Administrated By the Department of Environment
Edited by Md. Emdadul Haque***

This Book prepared by Md. Emdadul Huq, a senior Officer of the Ministry of Law, provides the first completion of Bangladesh environmental and pollution control laws implemented and enforced by the Department of the Environment. To enhance its practical value as a working reference, legal texts have been annotated with reference to relevant government implementation policies, directives and procedural orders.

The book may serve as a reference guide to law enforcers and legal practitioners - police, inspectors, public prosecutors, defence council, magistrates and judges- in the processing of environmental civil and criminal cases.

This compilation should prove invaluable to investors, entrepreneurs and industrial proponents, informing them of environmental requirements and procedures with resulting improved compliance. To facilitate this information transfer, an English translation is provided of key environmental laws and rules. Finally the book provides valuable legal information of Bangladesh public and non-government organizations dedicated to making action to protect the environment.

It is available for download on a chapter-by-chapter basis. Just click on the chapter heading below.

Texts of the following are available to view or download using Acrobat Reader And Winpdf.

৩য় ভাগ
মুদ্রা আইন, নটেশনমকরী আইন, ইত্যাদি

- ১৫। অল্‌গেবন পব্লিকেশন সন্ডেকশন আইন, ১৯৯৫
- ১৬। অল্‌গেবন পব্লিকেশন সন্ডেকশন (সেঙ্কেশন) আইন, ২০০০
- ১৭। অল্‌গেবন পব্লিকেশন সন্ডেকশন (সেঙ্কেশন) আইন, ২০০২
- ১৮। পব্লিকেশন আদালত আইন, ২০০০
- ১৯। পব্লিকেশন আদালত (সেঙ্কেশন) আইন, ২০০২
- ২০। ইন্ড পোঙ্কলে (সিঙ্কেশন) আইন, ১৯৮৬
- ২১। ইন্ড পোঙ্কলে (সিঙ্কেশন) (সেঙ্কেশন) আইন, ১৯৯২
- ২২। ইন্ড পোঙ্কলে (সিঙ্কেশন) (সেঙ্কেশন) আইন, ২০০১
- ২৩। পব্লিকেশন সন্ডেকশন সিঙ্কেশন, ১৯৯৭ সন্ডেশনবী কঙ্কেশন, সেঙ্কেশনী '০২
- ২৪। পব্লিকেশন সন্ডেকশন সিঙ্কেশন, ১৯৯৭ সন্ডেশনবী কঙ্কেশন, আর্কট '০২
- ২৫। The Environment Pollution Control Ordinance, 1977
- ২৬। The Water Pollution Control Ordinance, 1970

৪র্থ ভাগ
সংকেশন, কন্ডেশন ইত্যাদি

- ২৭। অল্‌গেবন পব্লিকেশন সন্ডেকশন আইন, ১৯৯৫ এর অর্ধে অর্ধীকৃত কঙ্কেশন, কন্ডেশন, ইত্যাদি
- ২৮। পব্লিকেশন আদালত আইন, ২০০০ এর অর্ধে অর্ধীকৃত কঙ্কেশন, কন্ডেশন ইত্যাদি
- ২৯। সিঙ্কেশন সন্ডেশন, পন সিঙ্কেশন ইত্যাদি

৫য় ভাগ
আর্কট পব্লিকেশন বীতি, ১৯৯২

- ৩০। পব্লিকেশন বীতি, ১৯৯২ ও অর্ধকেশন সন্ডেশন

Appendix –B

BURNING OF BRICKS (CONTROL) ACT, 1989

Act no.8 of 1989

An Act made to control the burning of bricks

Whereas it is expedient to make provision for the control of the burning of bricks;

Therefore it is enacted as follows:-

1. Short title and commencement.-(1) This Act may be called the Burning of Bricks (Control) Act, 1989.

(2) This Act shall come into force on the 17th Asharh, 1396/1st July, 1989, accordingly.

2. Definitions.-Unless there is anything repugnant in the subject or context, in this Act-

(a) "Firewood" means wood usable as firewood;

(b) "Rule" means a rule made under this Act;

(c) "Person" means any company, committee or group of persons, whether statutory or not;

(d) "Licence" means a licence given under this Act.

3. Supremacy of the Act.-This Act shall have effect, notwithstanding anything contained in any other laws for the time being in force.

4. Licence for burning bricks.-(1) No person may burn bricks without a licence given under this Act.

(2) An application must be put forward to the chairman of the Upazila Parishad of the District in which bricks are to be burnt, for a licence as mentioned in subsection (1), in a form determined by rule, and by paying a fee.

(3) Being satisfied with the accuracy of the matters mentioned in the application, the chairman of the Upazila Parishad shall grant the licence in a form specified by rule.

(4) The licence for burning bricks shall be valid for five years from the date of its issue; but if within the said period any person holding a licence violates any provision of this Act, or any rule under the said provision, or any of the conditions contained in the licence, the chairman of the Upazila Parishad may cancel the licence:-

Provided that the licence may not be cancelled without giving the person holding the licence the opportunity of showing reasons against the proposed cancellation of the licence.

5. Prohibition of burning bricks with firewood.-No person may use firewood for burning bricks.

6. Inspection.-The chairman of the Upazila Parishad or any person entitled to do so by the Government or the chairman may without any order inspect any brick factory in order to inquire if any sections of this Act have been violated or not.

7. Punishment.-Any person violating any provision of this Act, or any rule under such provision, or any conditions mentioned in the licence, shall be punishable with sentence to imprisonment up to six months, or with a fine up to 10000 Taka, or with both punishments.

8. Filing suits.-No suit shall be filed in any court against offences under this Act without the written accusation of the chairman of the Upazila Parishad or a person put into charge by him for this purpose.

9. Power to make rules.-The Government may by notification in the official Gazette make rules for the purpose of this Act.

Appendix – C

পরিবেশ আইন সংকলন

ইট পোড়ানো (নিয়ন্ত্রণ) বিধিমালা, ১৯৮৯

[বাংলাদেশ গেজেটের অতিরিক্ত সংখ্যা ২৪-১২-১৯৮৯ ইং তারিখে প্রকাশিত]

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
পরিবেশ ও বন মন্ত্রণালয়

বিজ্ঞপ্তি

ঢাকা, ৭ই পৌষ, ১৩৯৬/২১শে ডিসেম্বর, ১৯৮৯

নং এস, আর, ও ৪২১-আইন/৮৯-ইট পোড়ানো (নিয়ন্ত্রণ) আইন, ১৯৮৯ (১৯৮৯ সনের ৮ নং আইন) এর ধারা ৯ এ প্রদত্ত ক্ষমতামতে সরকার নিম্নরূপ বিধিমালা প্রণয়ন করিল, যথা :-

১। সগন্ধিষ্ঠ শিরোনাম।- এই বিধিমালা ইট পোড়ানো (নিয়ন্ত্রণ) বিধিমালা, ১৯৮৯ নামে অভিহিত হইবে।

২। লাইসেন্সের দরখাস্ত।- (১) যে এলাকায় ইট পোড়ানো হইবে সেই এলাকার উপজেলা পরিষদের চেয়ারম্যানের নিকট এই বিধিমালার সহিত সংযুক্ত ফরম 'ক'-তে ইট পোড়ানো লাইসেন্সের দরখাস্ত দাখিল করিতে হইবে।

(২) উক্ত ফরম উপজেলা পরিষদের চেয়ারম্যানের অফিস হইতে দশ টাকা মূল্য প্রদান করিয়া ক্রয় করিতে হইবে।

৩। লাইসেন্স প্রদান পদ্ধতি।- (১) যথাযথভাবে পূরণকৃত ফরমে উপজেলা পরিষদে দরখাস্ত জমা হইবার পর উহাতে উল্লিখিত বিষয়গুলির সত্যতা যাচাই ও অন্যান্য প্রাসংগিক তথ্যাদি তদন্ত করিয়া উপজেলা পরিষদ চেয়ারম্যান, উপ-বিধি (৩) এর শর্ত পূরণ সাপেক্ষে এই বিধিমালার সহিত সংযুক্ত ফরম 'খ'-তে লাইসেন্স প্রদান করিবেন।

(২) সকল লাইসেন্সের মেয়াদকাল অর্থ বৎসর অনুসারে ৫ বৎসর হইবে।

(৩) লাইসেন্স ফি বাবদ পাঁচগত টাকা উপজেলা পরিষদ তহবিলে জমা দিতে হইবে।

ফরম 'ক'
[বিধি-২ (১) দ্রষ্টব্য]

ইট পোড়ানো লাইসেন্সের জন্য দরখাস্ত

- ১। দরখাস্তকারীর নাম -
- ২। ঠিকানা (ক) স্থায়ী -
(খ) অস্থায়ী -
- ৩। পেশা-
- ৪। ইট পোড়ানোর উদ্দেশ্য-
- ৫। ইটের ভাটার অবস্থান (৩ কপি ম্যাপ সংযুক্ত করিতে হইবে)-
(ক) দাগ নং-
(খ) মৌজা নং-
(গ) গ্রামের নাম/রাস্তার নাম-
(ঘ) ইউনিয়নের নাম-
(ঙ) উপজেলার নাম-
- ৬। কি ধরনের জ্বালানীর দ্বারা ইট পোড়ানো হইবে-
- ৭। প্রস্তাবিত জ্বালানীর উৎস-

আবেদনকারী স্বাক্ষর

তাং ইং
..... বাং

তদন্তকারী কর্মকর্তা বা ব্যক্তির প্রতিবেদন :

সংশ্লিষ্ট রেকর্ড পত্র পরীক্ষা ও সরজমিনে তদন্ত করিয়া দরখাস্তে বর্ণিত বিষয়সমূহ সঠিক পাওয়ায়/না পাওয়ায় লাইসেন্স প্রদানের জন্য সুপারিশ করা গেল/গেল না।

স্বাক্ষর-

তাং-

পদবী-

সীল-

ফরম 'খ'
[বিধি-৩ দ্রষ্টব্য]

ইট পোড়ানো লাইসেন্স

প্রাপকের নাম
ঠিকানা
আপনার তারিখের দরখাস্তের প্রেক্ষিতে
আপনাকে নিম্নে বর্ণিত পরিমাণ ইট পোড়ানোর জন্য নিম্নলিখিত শর্তে লাইসেন্স প্রদান করা হইল।

২। ইটের ভাটার অবস্থান :
(১) দাগ নং
(২) মৌজা নং
(৩) গ্রামের নাম/রাস্তার নাম
(৪) ইউনিয়নের নাম

৩। লাইসেন্সের মেয়াদ ১৯ ইং/..... ১৩ বাং
হইতে ১৯ ইং/..... ১৩ বাং

৪। শর্তাবলী :
(ক) ইটের ভাটায় কোন অবস্থানেই কোন প্রকার জ্বালানী কাঠ ব্যবহার করা যাইবে না।
(খ) উপজেলা চেয়ারম্যান নিজে অথবা তাহা কর্তৃক ক্ষমতাপ্রাপ্ত যে কোন কর্মকর্তা বা ব্যক্তি অথবা বন অধিদপ্তরের যে কোন কর্মকর্তা বা কর্মচারী (ডেপুটি রেঞ্জার পদ মর্যাদার নীচে নহে) যে কোন সময় কোন প্রকার পরোয়ানা ব্যতীত ইটের ভাটা পরিদর্শন করিতে পারিবেন এবং ইহাতে কোন বাধা প্রদান বা ওজর আপত্তি করা চলিবে না।
(গ) পোড়ানো ইটের পরিসংখ্যান ও বিক্রয়ের ব্যাপারে রেজিস্ট্রার সংরক্ষণ করিতে হইবে।
(ঘ) ইট পোড়ানো নিয়ন্ত্রণ আইন, ১৯৮৯ এবং উক্ত আইনের অধীন প্রণীত বিধির পরিপন্থী অনুযায়ী মোকদ্দমা দায়ের করা যাইবে।

তারিখ :

স্বাক্ষর
চেয়ারম্যান
উপজেলা পরিষদ উপজেলা,
জেলা

রাষ্ট্রপতির আদেশক্রমে

এম, আজিজুল হক
ভারপ্রাপ্ত অতিরিক্ত সচিব।

Appendix –D

The Brick Kiln (Control) (Amendment) Act, 1992.

Act No.22 of 1992

[Published in Bangladesh Gazette Extraordinary Dated 17th July, 1992]

An Act made to amend the Brick Kiln (Control) Act, 1989

Whereas it is expedient to amend the Brick Kiln (Control) Act, 1989 (Act No.8 of 1989) for the following purposes;

Now, therefore, it is enacted as follows:-

1. Short title.- This Act may be called **the Brick Kiln (Control) (Amendment) Act, 1992.**

2. Amendment of section 2 of Act No.8 of 1989.- For clause a) of section 2 of the Brick Kiln (Control) Act, 1989 (Act No. 8 of 1989), hereinafter referred to as the said Act, shall be substituted the following clause, namely:-

"(a) "fuel" means any fuel except the dead roots of bamboo."

3. Amendment of section 4 of Act No.8 of 1989.- In section 4 of the said Act,-

- a) sub-section (2), for the words "the chairman of the Upazila Parishad" shall be substituted by the words "the Zila Administrator";
- b) in sub-section (3), for the words "the chairman of the Upazila Parishad" shall be substituted by the words "the Zila Administrator";
- c) in sub-section (4), for the words "the chairman of the Upazila Parishad" shall be substituted by the words "the Zila Administrator".

4. Amendment of section 5 of Act No.8 of 1989.- In section 5 of the said Act, for the word "firewood" shall be substituted the word "fuel".

5. Substitution of section 6 of Act No.8 of 1989.- For section 6 of the said Act shall be substituted the following section, namely:-

- "6. Inspection.-** (1) The Zila Administrator or any person authorized by him in this behalf may without any kind of notice inspect any brick kiln in order to ascertain whether or not any section of this Act has been violated.
- (2) If during an inspection under sub-section (1) the officer who conducts the inspection is of the opinion that fuel had been used to burn the bricks which are

stored in the brick kiln, he may seize all the bricks found in the brick kiln and the fuel, if any."

6. Amendment of section 7 of Act No.8 of 1989.- In section 7 of the said Act, for the words "with a fine up to 10000 Taka, or with both punishments" shall be substituted by the words, commas and number "with a fine up to 50000 Taka, or both punishments and the Court may, if during the trial of the offence it comes to the decision that the bricks and fuel seized under section 5 should be confiscated, give order to confiscate the said bricks and fuel".

7. Substitution of section 8 of Act No.8 of 1989.- For section 8 of the said Act shall be substituted the following section, namely:-

8. Cognizance.- No court may take cognizance of any offence under this Act without a complaint in written form from the Zila Administrator or any person authorized by him in this behalf.

(2) Notwithstanding anything contained in any other Act, every offence punishable under this Act shall be cognizable."

8. Repeals and savings.- The Brick Kiln (Control) (Amendment) Ordinance, 1992 (Ordinance No.2, 1992) is herewith repealed.

(2) Notwithstanding such repeal, any action done or measure taken under the said Act amended by the repealed Ordinance shall be deemed to have been done or taken under the said Act amended by this Act.

**BU tcvovtbn (wqšy) (mstkrab) AvBb, 2001
2001 młbi 17 bs AvBb**

[evsj vt`k tMłRłUi AwZwi³ mSL`vq 11-4-2001 Bs Zwi tL cKvmkZ]

BU tcvovtbn (wqšy) AvBb, 1989 Gi mstkrabKłr cłrZ AvBb

thłnZwłæwYZ Dłł kmgn cłYKłr BU tcvovtbn (wqšy) AvBb, 1989 (1989 młbi 8 bs AvBb) Gi mstkrab mgxPxb Ges cłqvRxbq;

tmłnZiGZłv włæifc AvBb cłYqb Kiv nBj t-

1| **msłłB włctvbg**|- GB AvBb BU tcvovtbn (wqšy) (mstkrab) AvBb, 2001 bvtg AvfłnZ nBłe|

2| **1989 młbi 8 bs AvBłbi aviv 2 Gi mstkrab**|- BU tcvovtbn (wqšy) AvBb, 1989 (1989 młbi 8 bs AvBb), AZtci D³ AvBb evj qv Dwj wLZ, Gi aviv 2 Gi `dv (K) Gi cwł etZ włæifc `dv wj cłZ`wcz nBłe, h_v t-

(K) 0BłUi fuUó A_©Ggb `vb thLvtb BU cłrZ ev tcvovtbn nq;

(KK) 0Ryj vbx Kwó A_©evłki tgv_v l tLRj MvOmn Ryj vbx Kw wnmvte e`envi thvM` Kw|

3| **1989 młbi 8 bs AvBłbi aviv 4 Gi mstkrab**|- D³ AvBłbi aviv 4 Gi -

(K) DcvšwłKvq 0BU tcvovtbnó kã wj wej ß nBłe|

(L) Dc-aviv (1) Gi cwł etZ włæifc Dc-aviv cłZ`wcz nBłe, h_v t-

0(1) jvBłmY e`ZxZ tKvb e`w³ BłUi fuUv `vcb KwłtZ cwł łeb bv ev BU cłrZ ev BU tcvovtZ cwł łeb b|0

(M) Dc-aviv (2) Gi 0th GjvKvq BU tcvovtbn nBłe tmB GjvKvió kã wj i cwł etZ 0msłkó kãwł cłZ`wcz nBłe;

(N) Dc-aviv (3) Gi cwł etZ włæifc Dc-aviv (3), (3K) l (3L) cłZ`wcz nBłe h_v t

0(3) tRjv cłvmK KZł głbvbxZ GKRb cłZwłwa, włwb AwZwi³ tRjv cłvmłKi włtæ nBłeb bv, DcłRjv `v` cłvmK, cwł łek Awł Błi i KgłZł ev thLvtb cwł łek, Awł Błi i KgłZł bvB tmLvtb eb KgłZł Ges msłkó GjvKvi BDwłqb cwł l` tPqvi g`vb mgštq GB avivi Dłł łk` cłYKłr GKłU Z`š-KwłU włkłe|

(3K) Dc-aviv (2) Gi Aaxb cÖB`i Lv`-msukó tRjv cÖvmK KZR Dc-aviv (3) Gi Aaxb MwZ Z`š-KwguLi wbKU`i Lv`-Dwj wLZ weiq. wj i mZ`Zv m`úftK`nti Rwgfb Z`šeeK cÖZte`b`wLjt i Rb`tcÖi Z nBte|

(3L) Dc-aviv (3K) Gi Aaxb cÖZte`b cÖBi ci tRjv cÖvmK t`fTgZ`i Lv`Kvi xtK wewatZ wbañi Z c`wZtZ j vBtmY cÖvb Kwit eb|0

(O) Dc-aviv (4) G ÖcuP0 kñUi cwietZ`ÖwZb0 kñU cÖZ`wcz nBte|

(P) Dc-aviv (4) Gi ci wbaifc Dc-aviv (5) msthwiRZ nBte, h_v t-

Ö(5) GB avivq hvnv wKQy_vKk bv tKb, Dc`Rjv m`ñi mxgvbv nBtZ wZb wKtj wguvi, msiw`fjZ, iw`fjZ, úKg`Lj ev AwamöhYKZ ev miKvti wbKU b`-ebv`Aj, wmiU Ktcfi kb, wgdwimc`wvj wU, AvevmK GjvKv l dtj i evMvb nBtZ wZb wKtj wguvi`ttZji gta` tKvb BtUi fuUv`vcb Kivi jvBtmY cÖvb Kiv hvBte bv Ges GB aviv KvhKi nBvi Ae`ewmZ cte`D³ mxgvbi gta` tKvb BtUi fuUv`wcz nBqv`wKtj msukó jvBtmY MñvZv, miKvi KZR miKvix tMtrtU cÖwcb Övív GZ`ft`K` wbañi Z mgqmvgi gta`, GB Dc-avivi weavb tgvZvteK, Dnv h_vh`_vfb`vbršt Kwit eb, Ab`_vq msukó jvBtmY ewZj nBqv hvBte|0

e`L`v|- GB Dc-avivq ÖAvevmK GjvKv0 A_`Ab`b cÄvkuU cwievi emem Kti Ggb GjvKv Ges Ödtj i evMvb0 A_`Ab`b cÄvkuU dj R ev ebR MvQ AvtQ Ggb evMvbtk ešvBte|0

4| **1989 mñbi 8bs AvBtbi aviv 5 Gi mstkrab**|- D³ AvBtbi aviv 5 Gi ÖRyj vbx0 kñUi cwietZ`ÖRyj vbx KvV0 kãlq cÖZ`wcz nBte|

5| **1989 mñbi 8 bs AvBtbi aviv 6 Gi cÖZ`tcb**|- D³ AvBtbi aviv 6 Gi cwietZ` wbaifc aviv 6 cÖZ`wcz nBte, h_v t-

Ö6| **cwi`kß**|- (1) GB AvBtbi tKvb aviv j`Nb nBqvTQ wKbv Zvrv wbi`fcb Kivi Rb` tRjv cÖvmK ev tRjv cÖvmK KZR`fjgZvcÖB KgRZP`ev eb KgRZP`ev cwitek Awam`Bti i KgRZP, hvnt`i c`ghP`v mnKvix eb msi`fjK/mgch`fqi wta bñ ev Dc`Rjv cwil`ti tPqvi`gvb, tKvb cÖvi tbwUk e`ZxZ, th tKvb BtUi fuUv cwil`kß Kwit tZ cwit eb|

(2) Dc-aviv (1) Gi Aaxb cwil`kßKvtj cwil`kßKvix KgRZP wbKU hñ`Bnv cÖxqgvb nq th, -

(K) BtUi fuUvq gl Ry BU`tjv tcvotbvi Rb` Ryj vbx Kv e`envi Kiv nBqvTQ, Zvrv nBtj wZwb BtUi fuUvq cÖB mgj`q BU Ges Ryj vbx Kv AvUK Kwit tZ cwit eb;

(L) jvBtmY e`ZxZ BtUi fuUv`vcb Kiv nBqvTQ ev nBtZtQ, Zvrv nBtj wZwb BtUi fuUvq cÖB mgj`q BU, mi`Avgv` Ges Ab`vb` gjj vgvj AvUK Kwit tZ cwit eb|0

6| **1989 młbi 8 bs AvBłbi aviv 7 Gi cłZ`łcb**|- D³ AvBłbi aviv 7 Gi cwi etZ^o
wbæifc aviv 7 cłZ`łmcZ nBłe, h_v t

07| `E|- tKvb e^w GB AvBłbi tKvb weavb ev Z`axb cłVxZ tKvb wewa ev
jvBłmłYi tKvb kZ^oj•Nb Kwi łj wZłwb AbwaK GK eQłi i Kvi v`E ev AbwaK cĀvk
nvRvi UvKv A_^oE ev Dfq `łE `Ebxq nBłeb Ges Aciva wePvi Kłłj Av`vj Z hw` GB
wm×vłš-DcbxZ nb th, aviv 6 Gi Aaxb AvUKKZ BU I Rłj vbx KłV evłRqvBłthvM^o,
Zvrv nBłj Av`vj Z D³ BU I Rłj vbx KłV evłRqvB Kivi włł`R w`łeb|0

7| **1989 młbi 8 bs AvBłbi aviv 8 Gi mstkrab**|- D³ AvBłbi aviv 8 Gi Dc-aviv (1)
Gi cwi etZ^owbæifc Dc-aviv (1) cłZ`łmcZ nBłe, h_v t

0(1) łRj v cłvmK ev łRj v cłvmK KZR ħlgZvc0B KgRZP ev eb
KgRZP ev cwi łek Awa`Błi i KgRZP, hvrvł`i c` ghP v mnKvix eb msi ħłK/
mgchłqi włłæ błn ev DcłRj v cwi łł`i łPqvi g`vb Gi vj wLZ AvłłthvM e`ZxZ tKvb
Av`vj Z GB AvBłbi Aaxb tKvb Aciva wePvi vł`MłY Kwi łZ cwi łeb bv|0

০৫/০৬/১৪১৩ বঙ্গাব্দ
তারিখ : ২০/০৯/২০১০ খ্রিস্টাব্দ

নং- পবম/পরিবেশ-৩/০৪/(ইভানী)-০২/২০০৮/৫২২

তারিখ : ২০/০৯/২০১০ খ্রিস্টাব্দ

সংশোধিত পরিপত্র

নং-৩ : ইটের ভাটার অনুকূলে পরিবেশগত ছাড়পত্র ও লাইসেন্স প্রদান প্রসঙ্গে।

৩টি ভাটা কর্তৃক সৃষ্ট পরিবেশ দূষণ, ভূমির উর্বরতা হ্রাস, বন উজাড় ইত্যাদি বিষয়ে সচেতনতা তৈরি করে সার্বজনীন পরিচালনার ক্ষেত্রে পরিবেশবান্ধব উন্নত প্রযুক্তি প্রবর্তনের সিদ্ধান্ত গ্রহণ করেছে। এ প্রেক্ষাপটে পরিবেশ সংরক্ষণের জন্য সারাদেশে ইট পোড়ানো (নিয়ন্ত্রণ) আইন, ১৯৮৯ এবং (সংশোধন) আইন, ২০০১ মোতাবেক ইটের ভাটা স্থাপন এবং পরিবেশ সংরক্ষণ আইন/বিধি অনুসারে ছাড়পত্র গ্রহণ সঠিকভাবে কার্যকর করা একান্ত প্রয়োজন। সে প্রেক্ষিতে পরবর্তী নির্দেশ না দেওয়া পর্যন্ত নিম্নলিখিত ব্যবস্থা গ্রহণের লক্ষ্যে নির্দেশ প্রদান করা হলো :

১. শুধুমাত্র আধুনিক প্রযুক্তি তথা হাইব্রিড হফম্যান কিলন, জিগজ্যাগ কিলন ও ভার্টিক্যাল শ্যাফট কিলন এবং অন্যান্য পরীক্ষিত উন্নত প্রযুক্তির ইট ভাটায় ইট পোড়ানো কার্যক্রম পরিচালনা করা যাবে।
২. বিদ্যমান ১২০ উচ্চতার স্থায়ী চিমনি বিশিষ্ট ইটভাটাসমূহকে এ বিজ্ঞপ্তি জারির ২ (দুই) বছরের মধ্যে নতুন প্রযুক্তিতে রূপান্তর করতে হবে।
৩. আধুনিক প্রযুক্তি তথা হাইব্রিড হফম্যান কিলন, জিগজ্যাগ কিলন ও ভার্টিক্যাল শ্যাফট কিলন এবং অন্যান্য পরীক্ষিত উন্নত পরিবেশবান্ধব প্রযুক্তির ইট ভাটার অনুকূলে সরকারি নীতিমালা ও বিধি-বিধান অনুসারে পরিবেশগত ছাড়পত্র প্রদান ও নবায়ন করা হবে। বিদ্যমান ১২০ উচ্চতার স্থায়ী চিমনি বিশিষ্ট ইট ভাটাসমূহ-এর অনুকূলে ইতোপূর্বে জারিকৃত পরিবেশগত ছাড়পত্র পরিপত্র জারির পরবর্তী ১(এক) বছর পর্যন্ত নবায়ন করা যাবে।
৪. পরিবেশ অধিদপ্তরের মহাপরিচালকের নিকট হতে অথবা মহাপরিচালকের দ্বারা ক্ষমতাপ্রাপ্ত কর্মকর্তার নিকট হতে বিধি দ্বারা নির্ধারিত পদ্ধতিতে পরিবেশগত/অবস্থানগত ছাড়পত্র ব্যতিরেকে কেউ কোনো ইটভাটা স্থাপন বা পরিচালনা করতে পারবেন না।
৫. উদ্যোক্তা পরিবেশগত/অবস্থানগত ছাড়পত্রের জন্য পরিবেশ অধিদপ্তরের সংশ্লিষ্ট বিভাগীয়/জেলা কার্যালয় এবং ইট পোড়ানো লাইসেন্সের জন্য সংশ্লিষ্ট জেলা প্রশাসকের দপ্তরে আবেদন করবেন। পরিবেশ অধিদপ্তর হতে ছাড়পত্র প্রদানের পর জেলা প্রশাসকগণ ইটভাটার লাইসেন্স প্রদান করবেন।
৬. সংশ্লিষ্ট জেলা প্রশাসকগণ ইট পোড়ানো (নিয়ন্ত্রণ) (সংশোধন) আইন, ২০০১- অনুসরণপূর্বক এবং তনয় ধারার (৩) উপধারা মোতাবেক সঠিকভাবে তদন্ত সাপেক্ষে নতুন ইটের ভাটার লাইসেন্স প্রদান করবেন।
৭. পরিবেশ অধিদপ্তরের ছাড়পত্র ব্যতিরেকে কোনো জেলা প্রশাসক ইটভাটার লাইসেন্স প্রদান/নবায়ন করবেন না। লাইসেন্স নবায়নের পূর্বে উদ্যোক্তা কর্তৃক পরিবেশগত ছাড়পত্র, ছাড়পত্রের নবায়ন এবং AT প্রদান সংক্রান্ত কাগজপত্র দাখিল করার পরই লাইসেন্স নবায়ন করবেন।

(চলমান)

০৫/০৬/১৪১৩

৩০/০৯/১৪১৩

৩০/০৯/১৪১৩

জরুরী / অতিরিক্ত
পরীক্ষণে মহামন্ত্রসং পেশ করুন
আপোদনা করুন / সঠিকতায় দিন
যাবত্ন নিতে সংশ্লিষ্ট বিভাগকে বসুন
কর্তব্য করে একটি প্রতিবেদন পেশ করুন

৩০/০৯/১৪১৩

-০২-

৮. ইট পোড়ানোর ক্ষেত্রে কৃষি উর্বর মাটির ব্যবহার পরিহারের লক্ষ্যে প্রতিটি জেলায় কনক্রিট কম্প্রেস্ড ব্লক ইট উৎপাদনের ব্যাপারে উদ্যোক্তাদেরকে উদ্বুদ্ধ করতে হবে।
৯. কোনো অবস্থায়ই কোনো ইট ভাটায় কাঠ বা কাঠ জাতীয় জ্বালানী ব্যবহার করা যাবে না।
১০. ঘনবসতিপূর্ণ, সরকার কর্তৃক স্বীকৃত সংরক্ষিত এলাকা, বিনোদনমূলক এলাকা এবং জাতীয় গুরুত্বপূর্ণ স্থাপনাসহ সরকার কর্তৃক ঘোষিত নিষিদ্ধ এলাকায় বা এলাকার আশেপাশে ইটভাটা স্থাপন করা যাবে না।
১১. সরকার কর্তৃক সময়ে সময়ে ঘোষিত আমদানী নীতি আদেশে বর্ণিত নির্ধারিত মানের কয়লা ব্যবহার করে ইট পোড়ানোর কার্যক্রম পরিচালনা করতে হবে।
১২. আয়কর অধ্যাদেশ, ১৯৮৪-এর ধারা ৫২ F অনুযায়ী ইটভাটার লাইসেন্স প্রদান/নবায়নের সময় ইটভাটার আয়তন অনুসারে আয়কর আদায় করতে হবে।

পরিবেশ ও বন মন্ত্রণালয়ের ২০ অক্টোবর ২০০২ তারিখের পবম-৪/৭/১২৩/২০০২/৯১২ সংখ্যক স্মারকের নির্দেশনা প্রত্যাহার করা হল। তবে, ইট পোড়ানো (নিয়ন্ত্রণ) (সংশোধন) আইন, ২০০১-এর বিধি বিধানের ব্যত্যয় ঘটিয়ে কোনো ইট ভাটা স্থাপন করা যাবে না। ইটভাটা স্থাপন ও তদারকিতে আইনের কোনো ব্যত্যয় ঘটলে সংশ্লিষ্ট কর্মকর্তা দায়ী থাকবেন।

জনস্বার্থে এ পরিপত্র জারি করা হল। এ আদেশ অবিলম্বে কার্যকর হবে।

(ড. মিহির কান্তি মজুমদার)
সচিব

বিতরণ :

১. মন্ত্রিপরিষদ সচিব, মন্ত্রিপরিষদ বিভাগ, বাংলাদেশ সচিবালয়, ঢাকা।
২. মুখ্য সচিব, প্রধানমন্ত্রীর কার্যালয়, পুরাতন সংসদ ভবন, তেজগাঁও, ঢাকা।
৩. সচিব(সকল), ----- মন্ত্রণালয়/বিভাগ।
৪. মহাপরিচালক, পরিবেশ অধিদপ্তর, আগারগাঁও, ঢাকা।
৫. প্রধান বন সংরক্ষক, বন অধিদপ্তর, আগারগাঁও, ঢাকা।
৬. বিভাগীয় কমিশনার, ঢাকা/চট্টগ্রাম/রাজশাহী/খুলনা/সিলেট/বরিশাল বিভাগ (অধীনস্থ জেলা প্রশাসকগণকে অবহিত করার অনুরোধ সহ)।

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
পরিবেশ অধিদপ্তর
পরিবেশ ভবন, ই-১৬, আগারগাঁও
শেরে বাংলা নগর, ঢাকা-১২০৭
www.doe-bd.org

০৪/০৭/১৪১৭

নং-পরিবেশ/প্রচার/বিজ্ঞপ্তি/১৬৯/২০০২(২য়)/৪১৬

তারিখঃ -----


১৯/১০/২০১০

সংশোধিত গণবিজ্ঞপ্তি

সংশ্লিষ্ট সকলের অবগতির জন্য জানানো যাচ্ছে যে, ইটভাটা কর্তৃক সৃষ্ট পরিবেশ দূষণ, ভূমির উর্বরতা হ্রাস, বন উজাড় ইত্যাদি বিষয় বিবেচনা করে সরকার ইটভাটা পরিচালনার ক্ষেত্রে পরিবেশবান্ধব উন্নত প্রযুক্তি প্রবর্তনের সিদ্ধান্ত গ্রহণ করেছে। এ প্রেক্ষিতে সরকারের নির্দেশনা নিম্নরূপ :

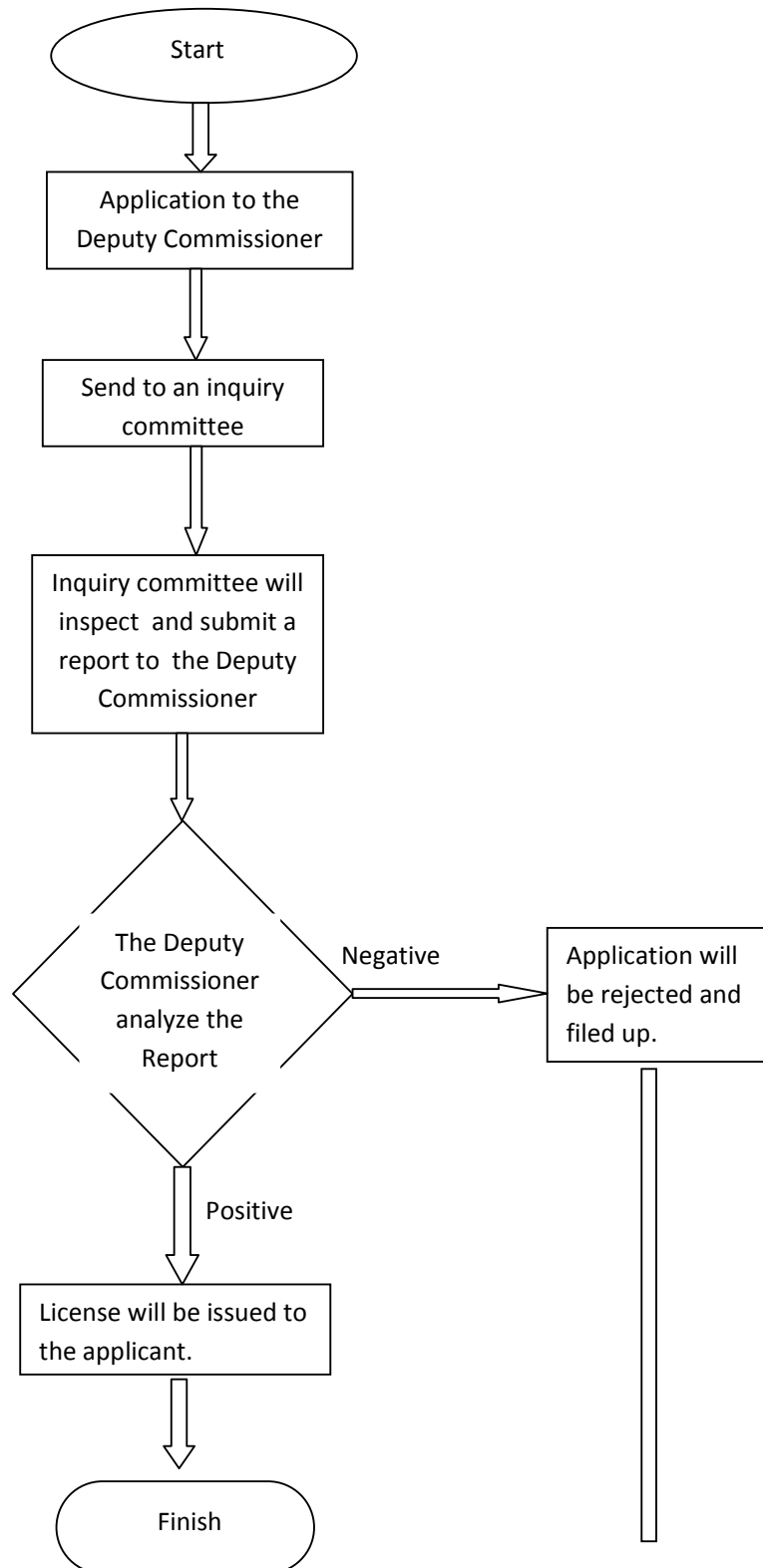
- শুধুমাত্র আধুনিক প্রযুক্তি তথা হাইব্রিড হফম্যান কিল্ন, জিগজ্যাগ কিল্ন ও ভার্টিক্যাল শ্যাফট কিল্ন এবং অন্যান্য পরীক্ষিত উন্নত প্রযুক্তিতে ইট তৈরি করা যাবে।
- বিদ্যমান ১২০ উচ্চতার স্থায়ী চিমনি বিশিষ্ট ইটভাটাসমূহকে এ বিজ্ঞপ্তি জারির ২ (দুই) বছরের মধ্যে নতুন প্রযুক্তিতে রূপান্তর করতে হবে।
- আধুনিক প্রযুক্তি তথা হাইব্রিড হফম্যান কিল্ন, জিগজ্যাগ কিল্ন ও ভার্টিক্যাল শ্যাফট কিল্ন এবং অন্যান্য পরীক্ষিত উন্নত পরিবেশবান্ধব প্রযুক্তির ইটভাটার অনুকূলে সরকারি নীতিমালা ও বিধি-বিধান অনুসারে পরিবেশগত ছাড়পত্র প্রদান ও নবায়ন করা হবে। বিদ্যমান ১২০ উচ্চতার স্থায়ী চিমনি বিশিষ্ট ইটভাটাসমূহের ক্ষেত্রে ইতোপূর্বে জারিকৃত পরিবেশগত ছাড়পত্র আগামী ১ (এক) বছর পর্যন্ত নবায়ন করা যাবে।
- আয়কর অধ্যাদেশ, ১৯৮৪ এর ধারা ৫২ F অনুযায়ী ইটভাটার লাইসেন্স প্রদান/নবায়নের সময় ইটভাটার আয়তন অনুসারে আয়কর প্রদান করতে হবে।
- এ নির্দেশ লংঘনকারীগণের বিরুদ্ধে আইনানুগ ব্যবস্থা গ্রহণ করা হবে।

২। জনস্বার্থে এ গণবিজ্ঞপ্তি প্রকাশ করা হলো।


(মনোয়ার ইসলাম, এনডিসি)
মহাপরিচালক

Appendix – H

Flow Chart of Application for Brickfield License.



Appendix – I

List of Relevant papers attached during the application for Brickfield License

1. Plain Application to the Deputy Commissioner.
2. Application Form.
3. Photocopy of Trade License from Union Parishad / Pourashava/ City Corporation.
4. Photocopy of National ID Card.
5. Photocopy of Bank Solvency Certificate.
6. Photocopy of TIN Certificate.
7. Photocopy of Clearance Certificate from the Deptt. Of Environment.
8. Photocopy of VAT Certificate.
9. Photocopy of DCR of Land.
10. Photocopy of LD Tax.
11. Photocopy of Mutation of Land.
12. Photocopy of Registration of Land.
13. Photocopy of Mouza Map/ Sketch Map of the Land.

List of the Members of Inquiry Committee for Verification of the Application for Brickfield License.

1. Additional Deputy Commissioner -----
Convenor.
2. Upazia Health Administrator. ----- Member.
3. Representative from the Deptt. Of Environment / Forest Officer.----- Member.
4. Chairman of the concerned Union Parishad. ----- Member.

Appendix – J

List of Officers/ Positions Concerned with

The Brick Burning Act

Inquiry Committee for License(Section 4(3))

01. Representative of Deputy Commissioner – not less than ADC.
02. Upazila Health Administrator.
03. Officer from Deptt. Of Environment, if no Forest Officer.
04. Chairman, Concerned Union Parishad.

Inspection (Section -6):

Officer empowered by Deputy
Commissioner

Or,

Forest Officer or Officer from Deptt. of
Environment , not less ACF or equivalent.

Or ,

Chairman, Concerned Upazila Parishad.