

# Role of Soil Brick Industry in the Degradation of Land and Environment-A Case Study of Mallaram in Nizamabad, Telangana State

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**Abstract:** Increased urbanization and industrialization in developing countries has created a huge demand for construction activities, which in turn has resulted in the fast growth of the brick-making industry. Unfortunately, brick-kilns are mostly situated on fertile agricultural land and moreover the process of digging soil from agricultural field for Brick industry is frequently accompanied by severe soil erosion, and destruction of mixed vegetation cover and grazing lands. Further transportation of raw materials for brick industry that is soil leads to environmental pollution by mixing of dust particles in the atmosphere along with CO<sub>2</sub> accumulation during burning of fresh bricks. However the opportunity cost of selling top-soil for brick making is likely to increase as good quality soil for agriculture become more and more scare. Basic objectives of soil conservation measures are: (a) protection of surface from splash erosion, (b) increase in infiltration of rain water, (c) decrease in volume and velocity of surface and subsurface runoff, (d) modifying biological and mechanical measures to increase the resistance of soil erosion. Also foam bricks and concrete bricks can replace this problem. The present study investigates on the role of brick industry in the degradation of land and environment at Mallaram in Nizamabad District of Telangana. Furthermore, this investigation shows the increasing of agricultural density due to the above mention process.

**Keywords:** agricultural density, environmental pollution, land degradation, Soil erosion.

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## I. INTRODUCTION

Land is an important natural resource which is present on earth in limited amount. The degradation of this natural resource is one of the most serious problems of the world today. Land degradation implies the temporary or permanent decline in the productive capacity of the land. Land degradation occurs due to natural or anthropogenic factors. Soil degradation is recognized as major aspect of land degradation. Today, top soil is eroding faster than it forms on about one third of the world's cropland, causing an estimated 85% of world's land degradation. In India, bricks are usually made of clay, and are generally produced in traditional, unorganized small scale industries. Burning of brick became mandatory by which environment is getting polluted; as Nizamabad has high cultivable percentage of land due to this cultivable land is getting degraded. As black soil plays a major role for manufacturing of bricks, for the convenience cultivable land is adopted as source by which crops surrounded to the industry are getting spoiled. To study the impact of brick industry on soil, land and environment, a survey was conducted and questionnaire was filled with the aid of workers.

## II. LAND USE PATTERNS

### **LAND DEGRADATION PATTERNS:**

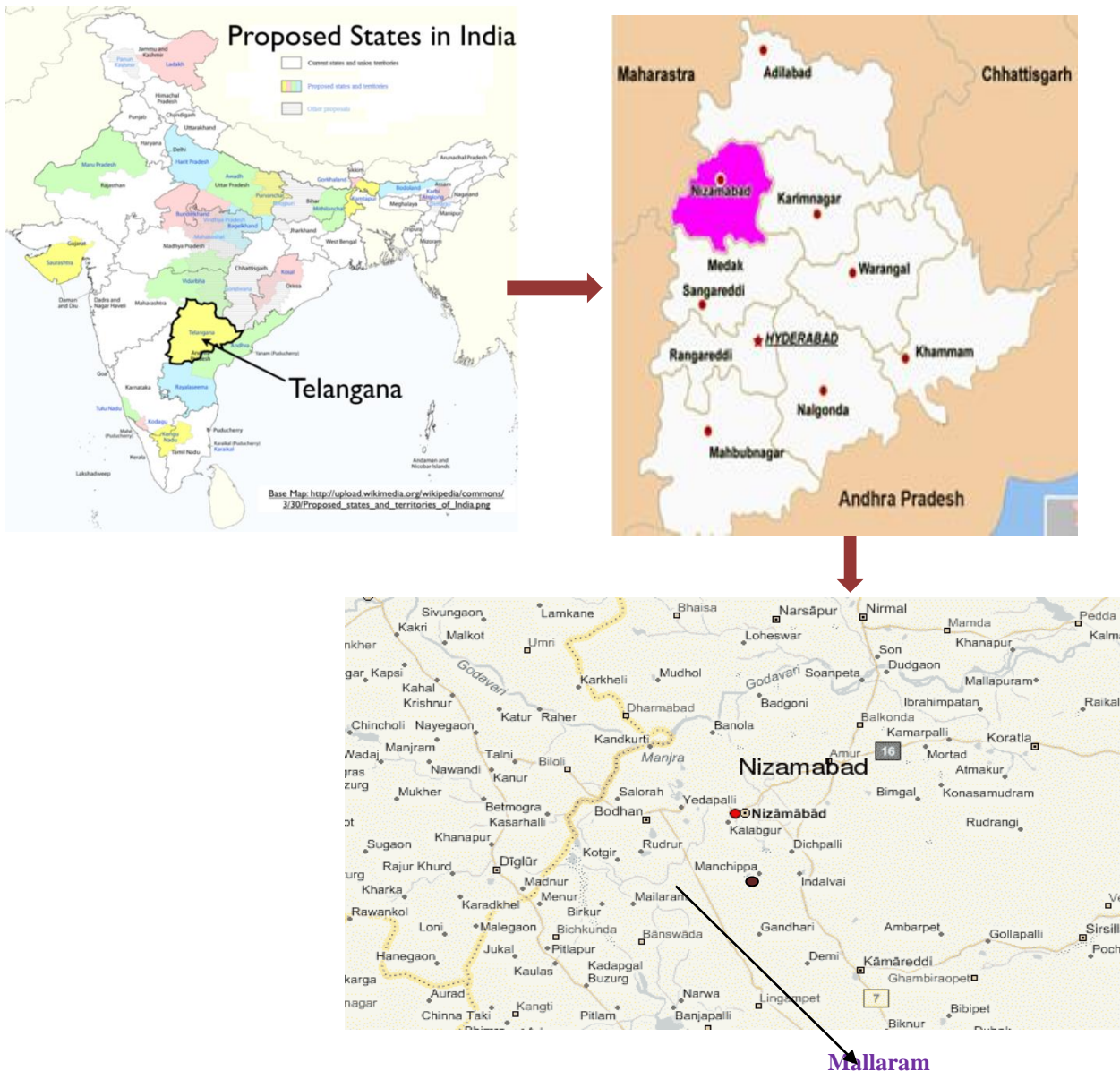
Land degradation takes place commonly due to wind, surface runoff and of course human activity and poor land management by low educated cultivators. Lack of awareness, people extracts soil from bank of river, ponds bank and also

from low lying areas for their usage like flooring of houses, pottery, major quantity of soil is used for manufacturing of bricks etc., As the income level of villagers are relatively low as compared to the urban areas, in addition to per capita land for agricultural production is very low, the farmer earning more by selling soil. This results in landslides, soil erosion, desertification and deforestation.

**LAND DEGRADATION AND ENVIRONMENTAL POLLUTION DUE TO MANUFACTURING OF BRICKS:**

India is known for agriculture. Soil degradation is the major problem India is facing today. With the population growth the supply of land is limited. In our case study, at Mallaram in Nizamabad district the area under agriculture use is about 20.07% and the population density is about 295 persons per km sq. As standards of living increasing day by day, so the demand for construction also rapidly rising leads to increase in brick industries. Due to huge demand of brick forcing to dig the cropland and cause a great trouble for environment concern. Carrying a soil from different sources to the brick industries assimilates dust particles in the atmosphere and vegetative cover in the surrounding areas. Due to open burning of the bricks environment is getting polluted. Therefore the conservation of agriculture land and soil is very important .At present 6 brick industries are located at Mallaram in Nizamabad district. The bricks are placed into number of blocks, each block consist of 130,000 of bricks, for baking with the help of coal and husk. In Mallaram 10 tons of coal is exported for open burning of bricks, generally 1 ton of coal liberates 2.86 tons of carbon dioxide so, it is affecting the environment.

**LOCATION OF VILLAGE:**



Map 1: Location Map of the Study Area.

**BOUNDARIES AND TOPOGRAPHY:**

Nizamabad district is bounded on the North by Adilabad district on the East by Karimnagar district, on the South by Medak district, on the west by Nanded district of Maharashtra state. The geographical area of this district is 7956 sq.km. The district lies between 18°40'00'' of the Northern latitudes and 78°7'00'' of the eastern longitudes. As the district is situated at a considerable distance from the sea coast, the climate is tropical. The extreme temperature fluctuations do occur in the district. The normal mean minimum temperature is 13.7°C and mean maximum is 39.9°C. The temperature goes as low as 5°C during winter and rises as high as 47°C

**Land use pattern of the district:**

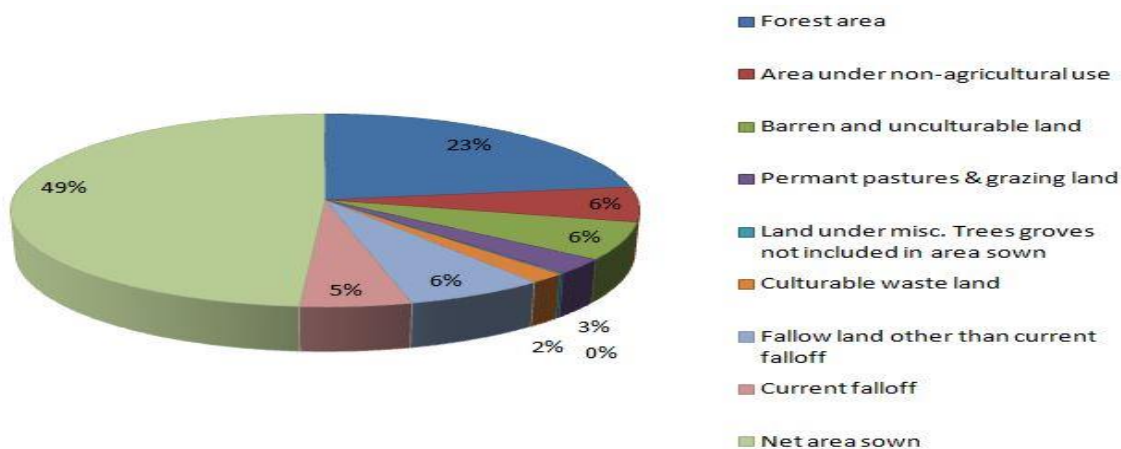
In one hand the supply is limited and, on the other, hand has alternatives uses .The following table shows the land use pattern in the district.

**Table-1: Land use pattern of Nizamabad district-2014. (\*000Hectares)**

Year	Reporting Area	Forest area	Area under non-agricultural use	Barren and uncultivable land	Permeant pastures & grazing land	Land under misc. Trees groves not included in area sown	Cultivable waste land	Fallow land other than current falloff	Current falloff	Net area zone
2014	795600	169343	43362	46833	19626	1540	12490	48116	38312	362287

Source: Directorate of agriculture

The above table shows that the net sown area accounting highest among all pattern of bushes and is about 362287 hectares, followed by area under non-agricultural use(43362).Areas under forest cover and land under trees groves not included in net area sown together accounting170883.The first one indicates the agrarian economy. The last one indicates the district. It further the potentiality of degradation of land and environment.



**Figure-1: Land use pattern in Nizamabad**

In Nizamabad out of total reporting area (2 acres) the net sown area occupy a sizeable portion. The villages under Nizamabad are basically an agrarian village. Therefore collection of soil from cultivable land for brick industry leads to soil erosion and of crisis of agricultural plots.

**Table-2: Land pattern of Nizamabad (2014) (\*000hectares)**

Year	Reporting area	Forest area	Area under non-agricultural use	Barren and uncultivable land	Permeant pastures & grazing land	Land under misc. Trees groves not included in area sown	Cultivable waste land	Fallow land other than current falloff	Current falloff	Net area sown
2014	38671	13663	6647	936	31	6	1136	5211	3278	7763

Sources: Directorate of agriculture

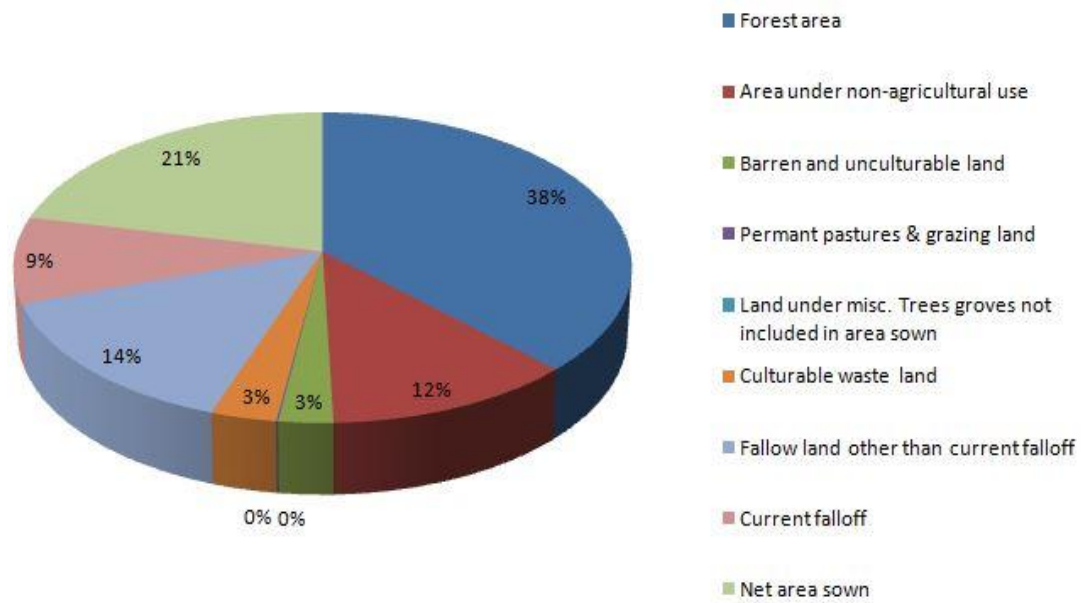


Figure-2: Land use pattern in Nizamabad

Table-3: Soil erosion and land affected

Village/District	No. of Brick industry	Soil needed per day in cubic metres	Soil collected from land in hectares
Nizamabad District	78	6240	156
Mallaram	6	480	12

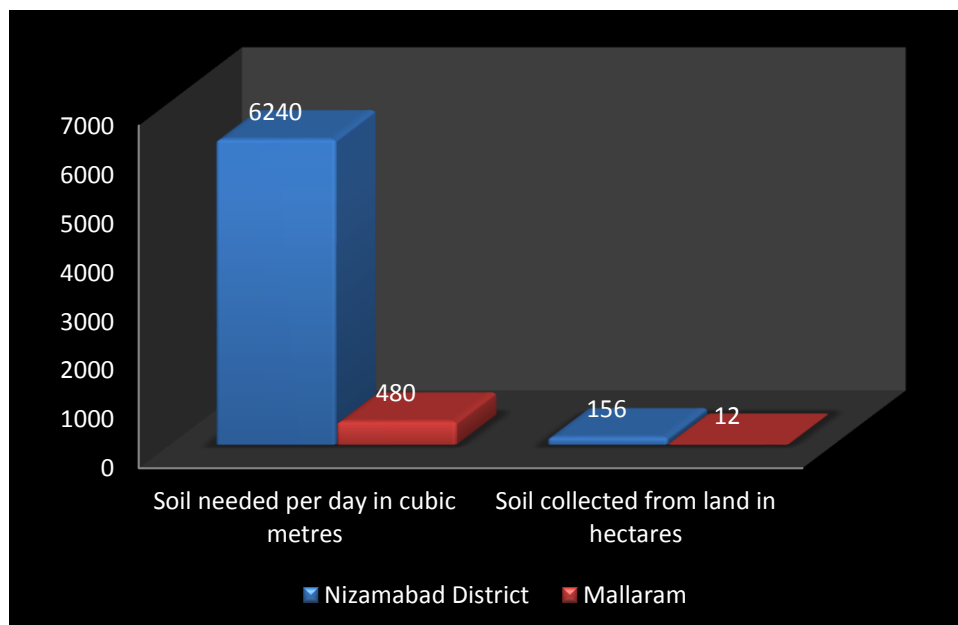


Figure 3: Bar diagram showing soil erosion and land affected in Nizamabad

**RESULT AND DISCUSSION:**

At present 6 brick industries are located at Mallaram in Nizamabad district. The process starts by mixing of black soil with water. After drying the bricks are ready for open burning. Then bricks are placed into number of blocks, each block consist of 1,30,000 of bricks, for baking with the help of coal and husk. 10 tons of coal is exported.





**Figure 4: Land is getting eroded due to manufacturing of bricks**



**Figure 5: Coal is used to burn the bricks**



**Figure 6: Burning the bricks with husk and coal which is polluting the environment**





**Fig.7: Showing the damaged roads due to transportation  
Coal and manufactured bricks**



**Fig.8 Showing spoiled shrubs because emission of dust  
particles during transportation**

### **III. CONCLUSION**

The brick industries at Mallaram in Nizamabad district are degrading huge land area, since bricks plays important role in construction field but land and environment protection is also our duty. It is also challenging aspect to preserve soil fertility, productivity, water table, vegetation cover, species of trees and soil moisture. By observing from our case study, it is very important to conduct awareness programs among cultivators and also common people. Guide alternative measures to use concrete bricks, foam bricks and green energy bricks etc., should be adopted.

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