Brick Industry in India – Part 1

The construction industry in India integrates a variety of locally sourced materials. This highly depends on the kind of construction, which ranges from 'Kuccha' mud houses to modern urban infrastructures that use high-end materials. The pressing problem with the industry is, however, the way the source materials are obtained. Sand mining, open fly ash factories, and disregard of sustainability standards have had a huge impact on the environment across the past decades. While the civil engineering and construction industry has boomed over the past decade, the country faces strong challenges from the exhaustive and highly polluting nature of building materials. Problems like illegal sand mining have been affecting the river systems. Densely clustered city planning has been leading to climate disasters.

India's building floor space is growing rapidly, propelled by economic and population growth, and urbanization. The number of houses increased from 25 crore to 33 crore, an increase of 33% between 2001 and 2011.1 A study by McKinsey2 estimated that the building floor space doubled from 4 billion m2 to 8 billion m2 during the period 1990–2005. The same study projected that the demand for building floor space will rise to 41 billion m^2 by 2030 (a 500% growth during 2005–30). A study by NITI Aayog has projected that India's building floor space will increase by about four times, i.e., from 14 billion m2 to 64 billion m^2, during 2012–47. The enhanced focus of the Government of India on programmes such as 'Housing for All' and 'Smart Cities' is expected to increase the growth of building floor space in the immediate future.

Construction of buildings requires a variety of building materials such as sand, aggregates, cement, steel, aluminium, timber, glass, brick, and ceramic tiles. Growth in construction of new buildings means an increase in the demand for building materials. As per the McKinsey study, the annual demand for cement doubled from 60 million tonnes (MT) in 1990 to 127 MT in 2005; further, this is expected to grow to 860 MT by 2030. As per NITI Aayog, the annual demand for cement is projected to increase from about 230 MT in 2012 to over 1000 MT by 2047 (an increase of 400%) and that of steel, another material used widely in building construction, from about 90 MT in 2012 to 650 MT by 2047 (an increase of about 700%).

There are a variety of environmental impacts that take place during the life cycle of a building material and hence increased demand for building materials would have severe impacts on the environment. The life cycle of building materials essentially consists of five stages:

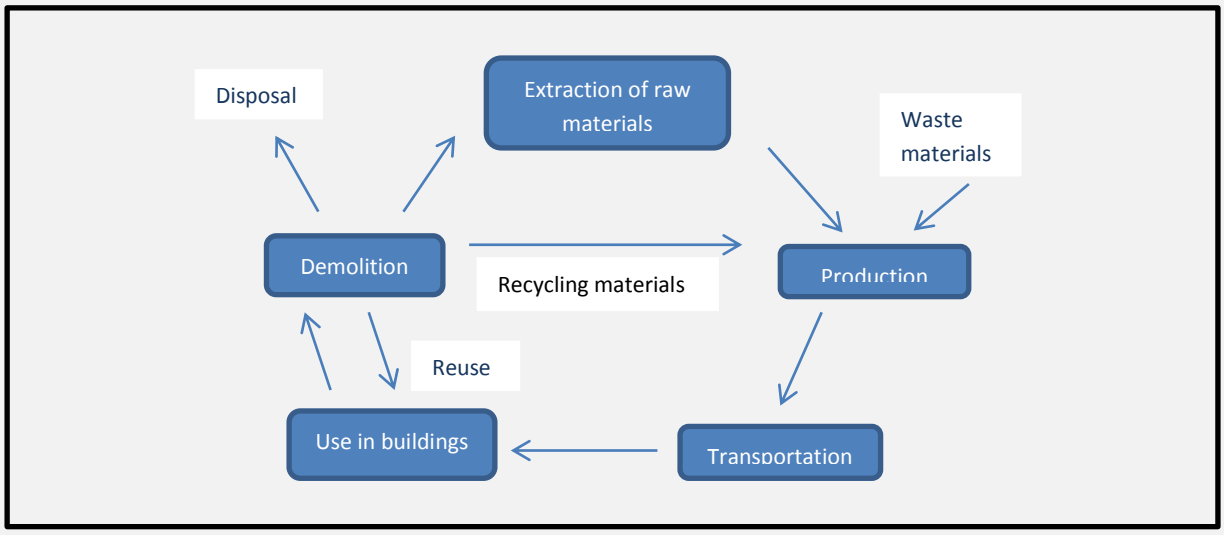

Fig 1.1: *Stages in the life cycle of building materials*

Resource efficiency is defined as 'using the Earth's limited resources in a sustainable manner while minimizing impacts on the environment'. There is a need to apply the concepts of resource efficiency to deal with the issue of environmental impacts of building materials.

India does not have an overarching policy framework on resource efficiency. However, there are several regulations pertaining to buildings and building materials, which directly or indirectly promote the concept of resource efficiency.

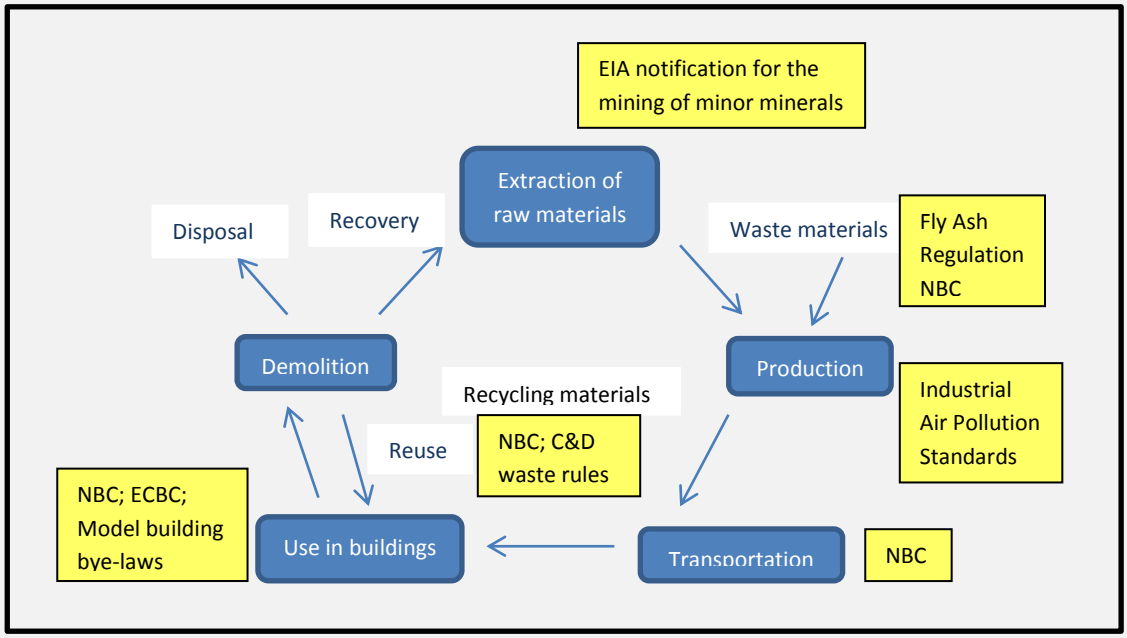

Fig 1.2*: Existing environment regulations that promote resource efficiency in buildings and building materials*

Reference:

The following excerpt has been taken from the report "Roadmap for promoting resource efficient bricks in India: A 2032 strategy by Sameer Maithel. (Greentech Knowledge Solutions and Shakti Sustainable Energy Foundation).