MANAGEMENT OF CONSTRUCTION AND DEMOLITION WASTE WITH REFERENCE TO A CASE STUDY OF PUNE .

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ABSTRACT

By its very nature, construction is not a sustainable activity. In India, the construction industry is now expanding at a 10% annual rate. In 2012, the housing market will experience excellent growth rates of up to 14%. Nearly 65% of all infrastructure investments are made in construction, and the tendency is rising. India will have 20 million square meters of finished office space by 2013. India's metropolises will account for half of the demand. Redevelopment projects are becoming more and more common due to the shortage of land and growing demand for developed spaces. The construction industry in India is concerned about the management of construction and demolition (C&D) waste. About one-third of all waste produced today is C&D waste. About one-third of India's total municipal solid trash is generated as C&D waste. The construction and repair of roads, bridges, flyovers, and other infrastructure projects, as well as real estate (particularly redevelopment and refurbishment work), demolition of unauthorized structures, and other activities, are sources of significant waste generation. With rising urbanization and housing demand, there is a deficit of aggregates in the housing sector of up to 55,000 million cubic meters, while Saehan Ghosh estimates that the road sector needs an extra 750 million cubic meters of aggregates. This demonstrates how important C&D waste management is for India.

KEY WORDS- ***Construction And Demolition Waste Management, Green Waste Management, IGBC, TERI-GRIHA, Construction Sector In India, Deconstruction, Reuse, Recycle, Up-Cycling, Down-Cycling, Closed Loop Material Cycles,Pune, Etc.***

INTRODUCTION

Environmental effects from construction and demolition (C&D) waste are gradually turning into a serious problem in urban solid waste management due to Pune's rapid economic growth following the creation of SEZs and subsequent increase in urbanization. Environmental problems include resource depletion, a lack of landfills, a rise in flood levels brought on by the unlawful dumping of C & D garbage into rivers, and illegal dumping on hill slopes are obvious in the city.

The construction industries in residential and non-residential structures in the city of Pune are the sole focus of this study. The analysis excludes highways, bridges, and other urban infrastructures. The facts and statistics for this study were compiled from secondary sources such as several research publications on C&D waste and other survey reports.

OVERVIEW OF C&D WASTE IN INDIA

Reduce, reuse, and recycle (3r) practices in building and demolition waste management in Asia were the subject of a survey by the Asian Institute of Technology in Thailand, which was released in May 2008. Bhutan, Japan, Hong Kong Special Administrative Region, PR Chin, Thailand, and other nations, including India, were studied. In terms of technologies relating to 3R and C&D waste management, the study demonstrates the current situation. It is unknown how sorting/segregating, storing, and monitoring facilities are doing, and there is a lack of information about C&D waste in India. In contrast, recycling and reusing facilities have a existence, management practices, and technologies.

CURRENT STATUS AND PROBLEMS WITH C&D WASTE IN PUNE

Pune and its surrounding areas have 44 Sezs. Since the previous ten years, Sezs development has led to a surge in the construction industry in Pune. Numerous redevelopment projects are being built in Pune as a result of changing culture, habits, and technology. 40 percent of Pune's MSW is made up of C&D garbage. In its most recent environmental status report, the PMC acknowledged that construction debris continued to be illegally dumped in the city's hills and riverbeds. Debris is frequently deposited in the river's greenbelt, which alters the river's natural flow.

Pune Municipal Corporation (PMC) launched a project to create an Integrated Solid Waste Management (ISWM) action plan for the city of Pune with assistance from the United Nations Environment Programme - International Environmental Technology Centre (UNEP-IETC), Osaka, Japan.

According to DNA, the flash floods of 2010 were caused by the dumping of construction debris on both sides of the Mula River on Wednesday, April 18, 2012.

Dumping of trash has narrowed the river on both the Pune and Pimpri-Chinchwad sides of the bridge.

Similar to this, debris that prevents water from flowing freely has reduced a river's width to half and led to flash floods during the monsoon season.Due to river pollution, the river's flora, fauna, and migratory bird population are all declining. Construction waste disposal has been a hot button issue with PMC for the past few years. At first, PMC intended to transport the waste to Urali Devachi's MSW land fill.

Builders and owners are unwilling to dispose of the debris at an MSW dump due to the distance and high expense of transportation. Residents' and environmental activists' persistent protests have forced PMC to take action against builders and developers who engage in illegal dumping into rivers. However, according to Pune Sakal on August 15, 2012, the problem of illegally dumping waste on hill slopes is still present. Residential communities close to hill slopes suffer during the monsoon from mud coming from the hills as a result of washing of the trash.

Fig 1- Illegal dumping of C & D waste in open publiclands in Pune, Source-DNA

Fig.2- Dumping of debris into river bed has resulted into reduction of river width of RamnadiTNN reports

that on August 16, 2012, the PMC would include a provision in the city's new Development Plan for a place to dump building waste. A comprehensive policy for debris dumping in accordance with UDD standards will be included in the city's new Development Plan (DP).

The standards state that there should be a formal system in place to handle waste generated during building and demolition, including collection, transportation, interim storage, utilization, and disposal.

The civic authority is required by the UDD rules to issue a warning that no construction or demolition trash should be dumped on public property controlled by the municipality or the government, including streets, pavements, storm water drains, and open spaces.

Fig. 3- Segregation at source, reinforcing steel

Fig. 4- Bricks cleaned off mortar and sold to slum dwellers

C & D WASTE MANAGEMENT IS ESSENTIAL BENEFITS OF CONSTRUCTION WASTE MANAGEMENT

The urgent need to implement C&D waste management strategies through technological and design solutions of adoptability, deconstruction, recycling, and reusing and effective formation of legislative, administrative, and monitoring framework for implementation of the same. This is due to the global concern over the conservation of energy and natural resources. Another crucial concern is the development of human resources for the application of C&D waste management. The need of the hour is for R&D effort to investigate newer uses and maximize usage of existing technology for a sustainable C & D waste management.

Effective reuse and recycling of leftover building materials cuts down on the demand for new resources, lowers the amount of waste that must be transported for disposal and makes construction sites cleaner and safer.

Additionally, it prevents the inconvenience of combining C & D trash with biodegradable garbage and prevents its potential to impede the processing of both biodegradable and other recyclable waste.

The most significant benefit of C & D waste management is the decrease in reliance on natural resources like forests, oil, and minerals. It also helps to minimize pollution by cutting back on emissions from manufacturing and transportation. Lowered greenhouse gas emissions from the manufacturing and transportation of building materials are a result of the energy and water requirements for their production being lowered.

COMPOSITION OF C&D WASTE AND RECOVERY POSSIBILITIES

Based on their benefits to the environment, various waste management techniques can be organised in a hierarchy. Building materials should be kept as long as feasible in their own cycle to reduce waste. Reusing the structure (corresponding to renovation and design for adaptability), reusing the components (corresponding to disassembly and design for deconstruction), and recycling the material (corresponding to reprocessing or recycling, including up-cycling in which a material is reused for a more valuable purpose, such as fly ash in concrete aggregate and down-cycling in which a material cannot be converted back to its original form) are the three main way to reuse the material in a building.

CONCLUSION

Although there is a policy framework for C & D garbage management, nothing has been done in urban India. All stakeholders have a part to play in this regard for sustainable development, as highlighted in the article. Future problems are tremendous given the state of present construction techniques, given the rise in infrastructure and housing demand and the ensuing expansion of the construction industry. High rise structures are being constructed utilising in situ concrete for the framing and envelop, and they will be redeveloped in 30 to 40 years. It will be extremely difficult to handle C & D garbage in the near future given the scope of these operations and the materials they require.

As mentioned in the study, there are now gaps in the legal and regulatory system. It must be made clear that, even as these frameworks are strengthened, legislative and regulatory activities alone cannot fix the environmental problems. The following suggestions are made for optimal C & D waste management:

1. Comprehensive laws must be created with mandatory clauses, waste management plans, and waste reduction techniques.

2. Local governments are responsible for building infrastructure, such as recycling facilities. Development plans must provide locations for these facilities. It is possible to rehabilitate exhausted stone quarries in Pune by designating them for the disposal of C & D trash.

3. Plans must be evaluated for DFAD (design for adaptation and deconstruction) in order to receive building permits.

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