





Minimization of construction waste in Chennai construction industry

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Abstract

Generally, solidified scrap is mostly produced by the construction field. There is a need to manage and reduce bulldozing scrap which has become a rising concern due to the adverse things of human's happenings on the atmosphere. Wastage of construction materials, unsuitable management at the place and little alertness of waste reduction are common in Indian construction sites. With landfills becoming scarcer the need to reduce wastes generated at all stages and recycle construction and demolition wastes is becoming increasingly relevant. This research assessed the knowledge of construction professionals in Chennai about sustainable construction and waste management perception through a designed questionnaire survey that help to provide experiential evidence on levels which has become an evident to waste minimization methods for construction waste minimization. **Study has shown that government legislature on non-availability of bulldozing scrap in the building area and the defendants measured various factors such as training of workers, company waste management policy, financial reward and promotion as more helpful incentives to reduce waste.** Nearly half of the respondents says that, there is no bill available for minimizing scraps of resources that are used in construction. This article scrutinizes various factors affecting waste generation at all stages and gives remedial measures to be taken to curb this.

Introduction

With increasing urbanization and economic growth, there has been a substantial increase in development projects and consequently leading to the generation of construction and bulldozing scraps. Bulldozing scraps are produced throughout the establishment of building, reconstruction as well as edifice demolition, roads, bridges, dams and utility plants. The construction companies follow different procedures and exploits enormous quantities of necessary elements. Many environmentalists state that Environment gets affected by the construction activities, which happen over a change of periods from mining, and also manufacturing of primary substances used for building edifice [3]. Chart 1 Fig. 1 Fig. 2

In Infrastructure projects, the wastes usually generated mainly on indestructible cement, ceramic, steel, cracked bricks, and brick works. All such rubbishes would be weighty, consuming thick solidity repeatedly cover arsenal at the site, which may be on a pathway, otherwise the common scrap container at open areas. Wastes from the construction or destruction of residential buildings; founds in public container, scrap yards, and make the municipality not to recycle it as it has become decomposable things and not able to treat like power retrieval and burning [2].

At a distance from growing difficulties in managing building scraps, and even though, there is a need to manage these difficulties, retrieval is reduced. The main focus is on substances separation, improved profits, minimized travel expenses, as well as minimized human impacts on the world [7]. First of all, there is a need to reducing decomposable materials such as cement, ceramic, plaster, steel, and cracked bricks. To reserve traditional natural substances, we need to focus on the importance of reprocessing of natural substances, for conserving the traditional building materials which help to complete other important tasks [6].

Nowadays, consciousness of resource-efficient is missing in most of the countries. The extreme material wastes, inappropriate maintenance of construction area as well as little attention on minimizing of scrap can be mutual in building areas. Few nations like England, United States, Denmark, Netherlands, and few European countries. Belgium and few countries help to prosper to emerge the economical feasibility and technically viable technologies to reprocess the C&D scrap about 80 or 90%. These research studies have confirmed the possibility of using C&D waste for substitution of conventional materials [4]. Nevertheless, the usage of this waste is minimized in our nation.

Construction field is a reason for more economic outflows in India and it is in secondary place in the development of our national economic growth.. However, this field has created a large amount of atmospheric effect. Construction field usually avails a lot of natural substances. This field produces more numbers of occupational choices. If we study the lineage of this field, we find that it plays an important role in the development of economy and this field on the economy has a great value [9].

Investments in this field help to raise Gross Domestic Product (GDP) in India. The Building field can be predicted for calculating the development in the future due to our nation's plans taken for attracting the approximate percent of overseas direct investment in the real estate development projects. Studies are done based on the Technology, Information, Forecasting and Assessment Council (TIFAC 2000), this sector involves in a project of \$847 billion for the duration of five years (2006–2011). A study says that the cost of building materials is a reason for the major percentage of expenditures incur in this field [8]. So reprocess of construction scraps will be important for reducing material cost and it is recommended to adopt the right scrap management system to save millions of dollars which is considered a major percentage of expenditure of a work. It can be mandatory for a growth and it is open for a threat to natural sustainability, the challenges of environmental sustainability, less release of carbon also minor damage in natural substances [10].

Because of the increment of metropolitan cities, Technology, Information Forecasting and Assessment Council (TIFAC) has conducted a study on utilization of reprocess system. Central Pollution Control Board is aimed for reprocess of scraps in our nation which can be 48 million tones per year and this field books for about 50% of the total scraps. These huge wastes put huge pressure on waste management system [12]. Wastes are produced at different phases of construction process. During construction activities, the wastes arrive because of unnecessary mortar/cement that cannot be used, ndestruction by the alteration of pattern and so on. Projected scrap production at the time of building activities can be around 60kg per sq.m., scrap production at the time of reconstruction job can be estimated at 50kg per sq.m. Destruction of constructed edifice plays the major role for the scrap production. Pucca and Semi-Pucca edifice demolition too produce scraps at maximum amount of 500kg per sq.m [14].

The preparation of Construction waste minimization is aimed to protect the atmosphere since it is found that building scraps has become the reason for the contaminated atmosphere. (Shen et al, 2002). Numerous methods can be found to minimize the building scrap. Removal of building scrap has become a tough task in scrap management. These

strategies effectively utilize the construction resources with an opinion of minimizing the scrap in an efficient way [11]. An utmost effective method is designed for handling building scraps is discarding in dump site; builders feel more expensive for minimizing junk file gap and also for the removal of junk pile. Comparatively huge quantity of materials is been wasted because of no proper supervision available in the construction areas (Poon, et al, 2004). Hence it shaped the substitutes to minimize building scrap which may be lead to recycle the scrap and it is known as the 5Rs of building scrap management process [13].

Based on the Coventry and Guthrie, in the year 1998, there two basic advantages in reprocessing scraps are having economical and atmospheric advantages. These environmental privileges are reducing the risk of instant as well as the forthcoming atmospheric contamination which may hurt human beings whilst economic privileges are low estimated cost and profit maximization amongst others [5].

Based on these parameters, the various factors influencing the minimization of the construction waste has been listed out.

The Construction wastes are directly going to the dumpsite. Procurement of new materials can be minimized, if we reuse the construction wastes. Based on these criteria, the factors affecting construction wastes were listed out.

Wastereduction, reuse and recycling should be considered and to be involved in all stages in construction projects. Hence, in order to find out the root causes of wastes, a few questions were developed with the help of experts from the construction industry. This helps to find the factors that affect the waste minimization in the construction industry.

Section snippets

Research methodology

The Main objectives of my research are,

- a) To explore and to understand the present scenario of waste minimization measures in the construction industry....
- b) To find out the root causes and the factors affecting material wastes in the Construction Industry....
- c) To find out the barriers in Construction waste minimization....
- d) To give the suggestions and recommendations to minimize and reuse the wastes in the construction industry....

...

Scope of the research

- a) Useful in research work under new construction building...
- b) More important to avoid, reduce, reuse the construction material wastes....
- c) Identify the root causes of material wastes in the construction industry....

...

Research methodology

This investigation of this study is done into people using objective type questions. All respondents were experts who deal with civil engineering and who also engage themselves in construction field, i.e. Project managers, Planning designers, Architects, Experts in surveying the field, Contractors, Site engineers, Design engineers and senior planning engineer who were managing construction projects within Chennai.

The questionnaires were prepared through Google form and the link was sent to 100...

Company profile

A whole of 80 questionnaires were managed and set to study, among this, 72 effective answers would have been given. We got feedback from 42% respondents. These respondents to these questionnaires were 36.4% of project managers, 13.6% of contractors, 13.6% of quantity surveyors, 5.2% of architects, HR, site engineer, supervisor, design engineer, design manager, senior planning engineer.

From the results of the survey 56.5% are involved in residential buildings, 13% in commercial buildings, 13%...

Conclusions and recommendations

This investigated study's feedback mention about the regular performance in construction area scrap administration as well as area scrap minimization in Chennai's construction industry is still poor but has room for immense improvement. The construction professional's understanding of construction of waste management was found to be deficient since most respondents had less than 5 years of experience, as well as this implementation as well as performance was additionally loaded by the shortage ...

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper....

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