

The Human Resource (HR) Factor and the Impact of Construction and Demolition (C&D) Waste on Environment: An Integrated Remedial Method

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Abstract: *Around the globe, all the quarters are seriously concerned about the environment. The construction sector in particular, whilst contributing to largely socio-economic advancement of a country has become a foremost exploiter of natural non-renewable resources and a polluter of the atmosphere, contributing to environmental deprivation and waste generation in the process of acquirement of raw material and its deployment. Therefore, to combat the situation of regulating construction and demolition wastes a strong and stringent organizational and governmental policy is necessitated. But for implementation of the policy, enlightening the persons involved a sound and efficient HR is essential which only can implement waste management practices successfully aligning concerned departments for environmental sustainability are discussed in the paper.*

Index terms: HRM, C&D waste management, environmental sustainability.

I. INTRODUCTION

Twenty-first century has shown increased curiosity in the ecological distress around the world regardless of areas be it political affairs, public affairs, or commerce.

Owing to the hazardous consequences of pollution and waste materials, including toxic chemicals that come up from construction sector made governments and non-governmental organizations (NGOs) around the globe to promote regulations and policies with the result of slowing down and to some point even overturn the devastation of natural resources and its harmful influence on the mankind in particular and atmosphere as a whole. Ecological consciousness is the today's spell-word that is invading every facet of our lives and work-spots. To check the negative impact of our living and professional habits on environment, serious strides are to be taken. In this course, HRM becomes a major stakeholder to design and implement the policies in construction sector to help minimizing construction and demolition wastes. Hence, green human resource

management (GHRM) should be the right reference as its intervention in construction sector for green. But for convenience the terms HRM and HR are used for GHRM in the article. The Construction sector, becoming causative to overall socio-economic improvement of a nation, is a key exploiter of natural non-renewable resources and a polluter of the atmosphere through which it throws in to the ecological ruin through resource exhaustion, energy consumption, atmosphere pollution and waste creation in the attainment of raw materials.

II. OBJECTIVES

1. To investigate the influence of construction and demolition waste on environment.
2. HR's role to help reduce C&D waste in construction sector

III. METHODOLOGY

A wide range of related literature reviews were considered as the base for the paper. In addition, various reports and survey data have become source for writing this paper. Therefore, the article is conceptual and no empirical data is involved.

IV. DISCUSSION

HR's importance for construction sector

Human resources managers are well located to take part in an active role in serving their organization accomplish its goals of becoming a socially and environmentally accountable firm. Internationally, HR leaders are rising and implementing enticement as well as evaluation systems that replicate sustainability as well as hiring workforce that stand for these values. Only the non-hazardous construction and demolition wastes shall be acknowledged for dumping at landfills. The unsafe waste factor shall normally be acknowledged and carefully separated preceding to demolition of a structure. Such hazardous materials perhaps comprise lead-based paint, asbestos containing shingles and insulation, and fluorescent light ballasts in old buildings.

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New structures probably generate quantities of treated lumber and minute quantities of heavy metals and radioactive materials contained in things like smoke detectors. Proper removal of harmful materials can lessen the menace of green contamination and threat to workers and civic wellbeing and security.

Hazardous Waste Section: The Hazardous Waste Section should coordinate with the Construction workforce to address the objectives described for the programmed issue areas:

1. Removal of infected Soil and Groundwater and proper disposal of the same during construction.
2. Removal of Underground Storage Tanks and proper clearance of the same during construction.
3. Remediation for Lead-Based Paint: To ease execution of special provisions for removal, control, compilation and appropriate dumping of lead-based paint debris during construction.
4. It possibly comes as no surprise that C&D wastes have somewhat a significant influence on the environment. Fortunately, there are a range of novel and green options that construction companies can better take to reduce environmental effects by minimizing wastes but save money also. All it needs is a little attentive planning that can be supplied by sound HR professionals for sustainable construction practices. HR can make easy the development of processes and systems; nonetheless, employee engagement is ultimate accountability. The greater the HR practitioner can realize their control in relation to environment and construction sector, the better their ability to pass these perceptions to the entire industry.

HR is in desirable situation of being able to offer the tools and framework for the supervisory team of the sector of its ethic and culture and the tactical framework of any organization. This is the only job that manipulates transversely the total enterprise for the whole lifecycle of the staff who work there – consequently it has substantial impact if held suitably. HR is poised for this pilot role since it is skilled at functioning horizontally and vertically from corner to corner and within the unit of attaining sustainability. Worldwide, HR leaders are developing and implementing inducements and appraisal systems that replicate sustainability, in addition, hiring recruits that represent these ethics for attaining goals.

The construction process should end with waste exclusion and disposal processes that follow the attainment of the assignment must be the motto. Deforestation also drives to climatic change and biodiversity.

India is presently one of the fastest growing economies of the world and the construction sector alone accounted for approximately 10% of GDP in 2014 according to Centre for Science and Environment. The central pollution control board (CPCB) classifies waste generated from the construction and demolition of buildings and civil infrastructure as C&D waste. The CPCB has projected solid waste generation in India to be around 48 million tons per

annum of which construction industry calculates for approximately 25%, however the estimate of 12 to 15 million tons of C&D waste which is widely considered significant underestimate and no updated comprehensive estimate available. Construction and Demolition waste stand at one quarter of global waste as per research. Construction wastes increase with increasing construction works.

Erosion and Sediment controls: In fact, construction companies ought to design, set up and maintain erosion controls in order to lessen the release of noxious waste. These controls must contain mechanisms to restrict storm water controls and by curtailing the quantity of soil exposed all through construction course. There are certain discharges that are to be forbidden. This is to guard both contract recruits and the adjoining atmosphere. Wastewater from washout of concrete, if not handled by suitable control. Wastewater discharges from painting, release of oils, curative compounds as well as additional construction materials. The release of fuels, oils and other pollutants worn in automobiles and equipment of operation and maintenance during construction if not properly neutralized can become hazardous to environment.

HR's Role: How HR's intervention can help the construction sector cut down construction and demolition wastes on environment is as HR plays lead role in linking and integrating the departments of construction sector to churn out the implications of C&D wastes on environment. Furthermore, measures to be taken to mitigate construction waste and its impact on environment from project's design. And the construction of commercial/office complexes should be designed such a way that less electric power be consumed and better ventilated with natural air and light, as a result burning of fossil fuels can be reduced and emissions controlled. Moreover, any construction project need to be designed to meet the necessities of the future demands of at least 150 to 200 hundred years in every aspect, consequently demolition waste can be minimized in the name of expansion and renovation. With this virgin raw material is saved. And frequent activity of renovation produces waste that emits pollutants negatively impacting environment can be reduced. Therefore, the management of the companies should set up a strategic frame work which can only be possible with HRM to streamline and maintain the departments of the sector to be integrated to chalk-out a plan to run the sector less environmentally hazardous.

An integration of HRM and technological skills rightly shall help yield positive results in curbing negative effects of construction and demolition wastes on environment. Behavioral change may lead to successful environmental practices; change in behavior in employees may occur due to awareness to environment. This should be the function of a behavioral change and knowledge towards sustainability at organizational level. Behavioral change again is the function of training offered to employees, ultimately this exercise is possible with an able HRM practices. Offering a motivational training is indeed essential.

There are other external factors like government policies and other activities like *SWACHA BHARATH*. Even it is advisable to construction companies to go for environmental pro paints against using certain hazardous chemical paints. Therefore, sustainability needs to be integrated in to the sector such as HRM and organized management structures. To enable to understand reality and essentiality of sustainability, only HR can take lead role for its insight. For implementation of strict design construction policy is required. This is an area where HRM plays a vital role to get it done by enlightening the people involved. Most of the firms of construction sector barring reputed companies have not developed the sense of accountability towards the impact of construction waste over environment.

Certain chemical inputs used for processing and polishing granite stone etc., may have a negative impact on environment. Governments should impose restrictions on mining the granite and iron. Politicians in government on one side preach for environment and ecology on the other side permit limitless mining. Politicians in power lack accountability and responsibility for nature; as a result earth shall become shallow in the years to come. Human activities shall lead to natural imbalance causing natural catastrophe. This is the time to learn for governments, civil engineers, builders and designers from the past. HR becomes the main tool to enlighten in this connection.

Constructions in the very past were mostly stone built around the world without environmental damage and of low maintenance. For instance, a rock solid project that has been survived for 2000 years *Grand Anicut* is an enormous structure constructed with bumpy stones to a length of 329 meters and a width of 20 meters across the river Cauvery by Chola kings in Tamilanadu, India. It is an exceptional structure built with large boulders brought over and sunk in the Cauvery sand, a mission of fraught need in order to irrigate fields. This structure does at no cost emit pollutants like CO₂. This kind of structures can result in, only with the interference of human element; when human factor is deficient, hazardous effects will be the outcome. Therefore, efficient HR personnel are indispensable to be associated in the sector from design stage. All construction projects usually result in the emission of CO₂. Methane and the rest of the wastes that contaminate the environment are supposed to contribute to global climatic transformation. The most damaging part of construction in terms of contributing to climatic modification is due to operation of heavy machines in mines and its projects. The international cement industry adds nearly 5% of global CO₂ emissions. Applications of fuel and electricity are as well chief contributors. Being contributed a lot to climatic change on a global level, individual contribution projects have an important influence on regional environment and nature. In addition, sources of water pollution lying on construction sites together with diesel and other fossil fuels, paints, solvents and toxic chemicals are noticed. Indeed, a slight chemical trickles leech in to the soil and go into water ways toxifying water and aqua life. Every construction project more or less results in significant local environmental damage with its wastes. HR's function becomes the driver for ecological sustainability inside the organization by lining up its practices and strategies through sustainable goals that reflect an

eco-oriented industry. Training and Development is a chief contribution of HR to manage waste that is in terms of deterrence and diminution of waste; as orientation programs in the case of hired staff. HR informs the workforce about the green measures and plans. It is HR's responsibility to see Total Waste Management components be included in the training. HR has an estimation of the attitude and dexterity of the employees. HR should oversee worker involvement as well as participation to take initiative in establishing recycling machinery for simple items at least. An employee involvement approach is taken up by HR where employees are motivated to detect possible wastes in the process of construction. HR practitioners of the organization should involve employees to participate in environmental management programs for enhanced organizational environmental presentation with a precise focal point on waste recycling and manufacturing green products.

Research gap: After having learned through reviews it is observed, the most important factor HR has been disregarded in regulating construction and demolition waste and its impact on environment. Therefore, the aim of the study is to dissect the essentiality of HR factor in minimizing C&D waste's influence over environment.

V. REVIEW OF LITERATURE

This review establishes that HR practices are also essential for green and sustainable environmental performance of organizations in general and construction sector in particular [1]. How the construction sector, its growth impact environment and biodiversity negatively together with the possible remedies to be taken up by builders have been completely explored [2]. The need of knowledge management and sharing knowledge among departments for smooth organizational operations are investigated in this regard [3]. The implementations of environmental management plan to minimize pollutants that arise in construction process and the impact of construction waste on nature have been explored [4]. Even green building taxes more to environment than renovation of existing structure: as new construction costs more on natural resources and biodiversity [5]. HR initiatives for green organizations in general and puts more weight on recycling and reuse processes here [6]. It has been underscored here for improvement of environmental performance; and pro-environmental performance depends only on changing employee behavior in work-place. In this course training and development plays vital role [7]. Pre-construction phase of any project- development, like environmental commitment and other important measures have been investigated [8]. Emphasizes that the impact of construction and demolition waste on environment that is due to poor managerial activity, lack of education and knowledge in environmental sustainability in addition to this poor performance in recycle and reuse of waste. Along with this, policies and regulations have been examined [9]. Certain standards that should be set and implemented to save environment; besides,

it emphasizes on waste disposal site measures too [10]. Thoroughly depicted that the influence of construction wastes on atmosphere and at all levels exposed the poor measures that are being taken up in reducing pollutants [11]. Construction and Demolition waste's strong influence over environment and solutions have been offered to overcome them [12]. Construction waste's impact over nature and climatic changes: and strongly suggests environmentally conscious construction methods [13]. How construction projects consume virgin raw material and other natural resources and as a result how environment gets impacted are examined in this [14]. The discharge of chemicals which are used in construction process and its impact be on environment; and measures to be taken up in this connection. Building green and its essentiality emphasized [15]. The activities of human beings and how ecosystem gets resulted negatively in consequence are investigated [16]. The growing construction projects that lead to increased usage of steel and its negative influence like emitting CO₂ on environment are thoroughly surveyed [17].

VI. CONCLUSION

In this article, the efforts have been put in to establish the essentiality of HR in attaining sustainability for green in construction sector and endeavored to establish and demonstrate the relation the construction sector has with HR for the many faceted growth of the sector. In this connection, possible aspects of HR with the sector have been discussed. Having known the importance of HR practices, it has been tried to establish the effectiveness of relating employee involvement and participation in green management programs to better environmental management of the organization. It is to be said, HR becomes a critical and decisive factor in achieving environmental sustainability in construction sector by minimizing construction and demolition wastes.

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