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Sustainable Management of Construction and Demolition Waste

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Abstract: ***Construction activity in India has magnified well within the past decade. Likewise, there has conjointly been a proportion to rise within the generation of construction and demolition waste (C&DW). This, alongside the fact that in India the speed of recycling and reuse of C&DW continues to be quite low and has engendered a heavy environmental downside and a motivation to develop ways and management plans to resolve it. Almost every time the construction and demolition waste end up settling in landfills disrupting the environmental, economic, and social life cycle. Its composition has a significant potential to reuse or recycle C&DW, and thereby, contribute to enhancing the sustainability of construction, however, practical procedures don't seem to be widely known or practiced within the construction industry. Elements of construction and demolition waste generally embrace concrete, asphalt, wood, metals, roofing, paper, plastic, drywall, and glass. Sustainable development defines as accomplishing the current requirements without compromising the ability of future generations to satisfy their own needs and can be thought of as one of the concrete solutions to resolve construction and demolition waste downside. Sustainable development in construction can facilitate plenty to cut back the issues associated with the environment and natural resources as the construction industry is among the major user of the world's resources. Sustainable design, correct use, and reuse of the resources/construction materials can create the construction industry a lot more economical and greener. There's conjointly a large demand for natural aggregates within the construction sector with a big gap in its demand and supply, which may even be reduced marginally by the employment of recycling and reuse of construction and demolition waste. Correct handling, storage, and treatment of C&D waste not only solely forestall degradation of Mother Earth but even have an important impact on sustainability using reducing the usage of natural resources. The paper covers various issues associated with the reusing and recycling of C&D waste, which needs restrictive mechanisms and procedures to be followed for achieving the aim of sustainability in the construction industry.***

I. INTRODUCTION

As revival in growth is experienced by the construction sector, it's guaranteed to have a damaging impact on the environment. In the survey presented by U.K Green Building Council, the consumption of construction sector crosses 400 million tons of material every year, many of which harms the environment". Due to the extraction of raw materials, the products used in the construction had a significant impact on the environment. The environmental impacts caused by C&D waste in the main embrace land area consumption, landfill depletion, energy and non-energy resource consumption, resource depletion, air, noise, and water pollution. In the research conducted it is found that the construction sector alone has the contribution of 50 percent in the climatic change, 23 percent in the air pollution, 40 percent in drinking water pollution, and 50 percent in landfill wastes. In the research, it is found that the construction industry accounts for almost 40 percent of worldwide energy usage, with estimations that by 2030 emissions from commercial buildings will grow by 1.8 percent".

Construction and demolition waste is the waste stream generated attributable to activities like construction, renovation, repair, and demolition of buildings, dams, piers, bridges, and paved surfaces like roads, highways, and parking lots. Construction and demolition waste generally consists of greater sized materials and varies widely depending on activity kind. Construction and demolition waste consists of various materials like wallboard, roofing, insulation materials, plastics, cardboard, glass, asphalt, concrete, brick, soils, wood, metal, packaging, and miscellaneous trash. Management of construction and demolition waste sustainably plans for construction, renovation, and demolition projects is part of a growing movement for the betterment of managing materials and making communities sustainable. Building activities and demolition activities are integrated like "sustainability" or "green" management techniques designed to guard the environment, save resources (including financial resources), and save energy to make sure the well-being of current and future generations. The plan for sustainable management of C&D consists of recognizing debris generated by the infrastructure construction project and identifying how all waste streams will be handled. The waste generated at a fresh construction site is six pounds per square foot in measure, most of this waste is conceivably reused or recycled if correct planning is done in the design phase. The predominant intention of those plans is to initially cut back the quantity of generated construction waste.

This setup presents actions to extend supply reduction, reuse, recycling, composting, and beneficial use of assorted components of the C&D waste stream as well as disposal for the waste that can't be managed in such a manner. Not all C&D waste is subject to reclaimed, and those portions will require other management options. Those different management choices include: the employment of clean wood derived from C&D waste in clean or renewable energy applications, the burning of some types of processed C&D waste at resource recovery facilities or waste-to-energy facilities, the continuing export to out-of-state landfills, and disposal at newly developed in-state lined large waste landfills.

II. CONSTRUCTION AND DEMOLITION WASTE

A. C&D Waste Management

SWM (Solid waste management) has a hierarchy that is followed by construction and demolition waste and is the same as all other solid waste management. In this, the hierarchy of (SWM) Solid waste management strategies, source reduction, and recycling will receive the priority to a greater extent, and disposal at landfills and incinerators on the other hand are the less preferred choice. C&D is typically managed as a singular waste stream,) and the materials from demolition and deconstruction activities are a type of 'bulky waste' mostly considered for landfills.

To increase the extent of construction and demolition materials we recover for reuse and recycling. Some Construction and demolition materials might qualify for a "beneficial use determination" (BUD), in which solid waste is reused during the phase of the manufacturing process to produce a new product or as an efficient substitute for materials utilized in a commercial product. Like residential asphalt roofing will be ground and used as a paving product, or gypsum wallboard from new construction will be ground and used as an agricultural soil amendment.

B. C&D waste from building demolition, renovation, and construction

Construction and demolition waste are heavy and bulky in size, with heavy high density, typically larger and inhabited with needing considerable space either on the road or communal waste bin/container for storage. It's not at all uncommon to see the visuals of huge piles, which are hefty as well, stacked on roads particularly at large construction projects, resulting in congestion caused on roads and disruption. Asian country generates an estimated 150 million tonnes of construction and demolition (C&D) waste per annum. About one percent of its construction and demolition (C&D) waste, is recovered and recycled by India solely says the new CSE analysis. Several cities in India were expected to set up facilities to recycle and to recover material from the waste, but to date, only a few cities have accomplished it. No uniformity is there at all among the cities to quantify and characterize C&D waste to understand the way to segregate. Strategies haven't been updated to bring in new-age construction materials.

The composition of construction and demolition waste detritus also varies considerably, depending on the kind of project from which it's being generated. Construction activities that are related to buildings typically produce cleaner construction material waste than compared to building demolition activities, where waste materials may be bonded along or contaminated with hazardous materials. The composition of construction and demolition materials detritus also varies significantly, depending on the kind of project from which it's being generated. Management of waste related to building is expensive and presents unintended consequences several times. Efficient waste management of building waste needs coordinated action with governmental as well as business, and skilled professional teams and their activities. Many non-governmental organizations promote coordinated action and have known best management practices within the interest of public health and welfare. Absent coordinated rules and regulations, realistic business opportunities, and therefore the commitment of style and construction professionals and their shoppers for continual improvement of business practices, consistent and stable markets for recovered materials can't be achieved or sustained.

Activity	Classification of waste produces	Examples of the types of waste
Highway Construction and Demolition	Bulky waste, MSW, clean fill	Concrete, steel, asphalt, related construction and demolition wastes, utility poles, railroad ties.
Building Demolition	Bulky waste, clean fill	Brick, plaster, wood, roofing materials, wallboard, metals, carpeting, insulation, ceramics, concrete, siding, asphalt.
Building Construction	MSW, clean fill	Pallets, wood scraps, bricks, clean wallboard, siding and roofing scraps, packaging (such as cardboard), partially used paints and strains, scraps of new carpeting, foam padding and insulation.

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III. COMPOSITION OF CONSTRUCTION AND DEMOLITION WASTE

During the process of the demolition, rehabilitation, refurbishment, or enlargement of buildings, and other infrastructures the construction and demolition waste is mainly produced, also it is composed of materials like a mixture of concrete, tiles, wood, plastic, bricks, and ceramics. It also has mixtures of bitumen, and other tar products also metals consist of alloys. Soil is excavated from contaminated zones, dredged soil, and stones, materials used for insulation, and materials used in construction containing asbestos; materials based on gypsum and other materials mixed in construction and demolition waste.

Material Type	% Of C&D Waste Generated
Concrete and mixed rubble	40-50%
Wood	20-30%
Drywall	5-15%
Asphalt roofing	1-10%
Metals	1-5%
Bricks	1-5%
Plastics	1-5%

The majority of construction and demolition waste is inert, that is, non-dangerous since it does not experience any significant physical, chemical, or biological transformation at all when exposed to the outside environment in a landfill. The inert waste is not soluble and combustible and reacts neither physically nor chemically also not in any other way. The construction waste of infrastructure is non-biodegradable and doesn't affect any material which is in contact with it, also does not produce any contamination that can harm the environment or human health. Though construction and demolition waste is described as inert, this is not at all true so, since much of the construction and demolition waste stream is embraced of materials that can decompose or otherwise leach chemicals into the environment. Wood treated with pesticides, or other types of toxic products, certain paints, solvents, and the presence of gypsum board in landfills contributes to the formation of hydrogen sulphide as a fraction of landfill gas. One more characteristic of this type of waste is that its leachability of the detritus, and the contaminating content of the waste, and the ecotoxicity of the leachate although sometimes it is insignificant and can imply some risk for the superficial or underground waters. Groundwater contamination is caused by leaching from construction and demolition waste landfills.

IV. REDUCE, REUSE, AND RECYCLE OF CONSTRUCTION AND DEMOLITION MATERIALS

A. Supply Reduction/Reducing Materials Use

Source reduction is very effective in lessening the life-cycle of material usage, energy usage, and waste generation. Environmental Protection Agency offers it the best priority for addressing solid waste problems. Reuse and recycling are vital strategies to sustainably manage waste, once waste has already been generated, supply reduction prevents waste from being generated within the initial place. Some examples of C&D supply reduction measures embrace the preservation of existing buildings instead of constructing new ones; optimizing the scale of naive buildings; coming up with designing of new buildings for the ability to prolong their essential lives; usage of construction strategies that permit dismantlement and facilitate reuse of materials; using different framing techniques; reducing interior finishes.

B. Salvaging and Reusing C&D Materials

Demolishing existing buildings and removal of the debris is not at all a resource economical way, but still-valuable construction and demolition waste materials for more use is an efficient way in which we can thank to economizing whereas protective natural resources.

1) *Deconstruction for Reuse:* Deconstruction is that the method of fastidiously disassembling buildings to salvage elements for reuse and recycling. It will be applied on many levels to salvage usable materials and considerably cut waste. Deconstruction of the infrastructure has various advantages, also it maximizes the recovery of materials, conserves finite, old-growth forest resources. Provides several employments and job coaching opportunities. Traditional demolition strategies permit communities to form native economic activities around producing or reprocessing salvaged materials. Diverts demolition junk is sure for disposal and preserves resources through reuse.

C. Materials to Reuse

The major advantage of reusing materials is that the resource and energy use that one saves is avoided by reducing the assembly of naive materials. Some things are easy-to-remove things like doors, hardware, appliances, and fixtures of construction and demolition materials. These will be salvaged for donation or use throughout the make or on alternative jobs. Wood cut-offs will be used for cripples, lintels, and obstruction to eliminate the necessity to chop full-length lumber. Scrap wood will be broken on-site and used as mulch or groundcover. Brick, concrete, and masonry will be recycled on-site as fill, moulding material, or route bedding. Excess insulation from exterior walls will be employed in interior walls as noise deadening material. Paint will be remixed and employed in garage or storage areas, or a coat of paint on alternative jobs. Packaging materials will be coming to suppliers for application**.**

D. Recycling of C&D Materials

Many building elements will be recycled wherever markets exist. Asphalt, concrete, are usually recycled into aggregate or new asphalt and concrete. Wood will be recycled into engineered-wood products like the article of furniture, likewise as mulch, compost. The metals embraced by steel and copper are valuable commodities that can be recycled. Additionally, though cardboard packaging from home-building sites isn't classified as a C&D material, it will create its method into the mixed C&D stream, and plenty of markets exist for recycling this material. Occasionally materials sent for recycling are found to be poorly managed or mismanaged. Asking your recycler, several queries, like whether or not they follow state and native rules, state licensing or registration, and/or third-party certification, will make sure the correct and meant management for your materials.

E. Rebuying C&D Materials

Buying the construction and demolition materials that are already used and recycling the content product to be used in naive construction buildings or other infrastructure and can enhance the local economy as recovered materials are usually regionally sourced. Lower construction and renovation prices while maintaining building operation and performance. Guarantee materials collected from recycling and reusing programs are going to be used once more within the manufacture of naïve products and/or new construction, thereby totally realizing the advantages of recycling and reuse efforts

V. ADVANTAGES OF REDUCING THE DISPOSAL OF C&D MATERIALS

Reducing the quantity of C&D materials disposed of in landfills or incinerators will produce employment and economic activities in recycling industries and supply exaggerated business opportunities inside the area people, deconstruction, and selective demolition strategies are used. The Recycle Economic Info is also known as REI has shown in the report in 2012 that the recycling of construction and demolition waste materials created one lakh seventy-five thousand jobs. The reuse of materials on construction sites reduces transportation prices. Causes fewer disposal facilities, doubtless reducing the associated environmental problems. Equalizing the environmental effect which is related to the extraction as well as consumption of resources and the production of materials and conservation of landfill space.

VI. CONSTRUCTION AND DEMOLITION WASTE RECOVERY AND PROCESSING

Two different procedures can be utilized to make the minimal production of this waste. First is known as source reduction technique which should be applied both the places, on-site construction of infrastructure and during the designing, and procurement phase of the infrastructure construction project and enhance the management of that waste which is generated on-site during construction; and secondly implement the waste management strategies in which every participant in the construction process of infrastructure should be involved, allocating responsibilities between the construction manager, the main contractors, and trade subcontractors. One of the most important applications derived from the recycling of construction and demolition waste is the production of aggregates which can be used in the construction of other infrastructure. Up to very recently, only 6% of the aggregate production was produced from recycled waste. Additionally, it suggests that there were significant opportunities to enlarge the usage of recovered aggregates from the recycling process to reduce the usage of virgin sources, as well as the volume of construction and demolition waste required for land disposal. The major problem with the usage of recycled aggregate which is originated from construction and demolition waste is that the manufacturers are least interested in reusing recycled aggregate as an alternative source of raw material and disregarding the possibilities and applications of this material at the end of its useful life. Prices for post-consumer waste also known as secondary materials from any of the sources varies based on many other factors, embracing the 'purity of the waste.

The production of high-quality homogeneous materials from construction and demolition waste is often more costly, and the processing costs of the waste may not be recoverable through the sale of processed materials at prevailing market prices.

Generally, a typical approach which can be utilized in the industry for the production of aggregates from masonry waste as an alternative for virgin or new aggregate in naive construction is firstly, to begin with, the classification of the wastes from construction and demolition, in two different sizes, with a difference of 40-50 mm following the regulations for recycled aggregates. Smaller-sized pieces are usually rejected because it incorporates a high quantity of impurities in them like steel, wood, glass, gypsum, and coal. After the classification took place, another step is of crushing the waste with a heavy hammer crusher or impact crusher which his having a great impact, followed by a second grinding. Once this process is completed, then the elimination of the impurities takes place using one of these two methods, the dry method, or the thermal method. Recycled aggregates generated from the concrete waste, the procedure of it is in a generalized way is to crush the concrete detritus firstly, to a maximum size of aggregate up to 1200mm, and then once the process of grinding is done in any of the fixed plants, and the aggregates which are of the size of 400 to 700 mm when we are using a movable plant. Once, it is done them the waste is taken to the central plant, where the process of grinding is done also known as second grinding by the impact, using a hammer crusher and a conical crusher machine. The contaminating elements present in construction and demolition waste are being eliminated and basically, the steel remains, and finally, the aggregates are stored according to their sizes where coarse aggregates 70%, and the fine aggregate, are distinguished from the natural one. At the time of production, the recycled aggregates meet the industrial required specifications, and also possess a good reliable consistency with very few impurities, and a pre-selection is done of the materials before the demolition is needed. When the waste comes from new construction works, it makes the process easier, since it includes the possibility of carrying out a selection at the production site, and the separation into other different categories is simply a straightforward task. Also, the classification of aggregates having demolition as origin has the most complex process, also before and during the demolition process of the infrastructure, the contractor should separate the materials which will help in the prevention of mixing and contamination of the materials which are to be recycled. Despite that, the economic saving that is derived from the selection of the detritus during the demolition processing is far greater because this process implies a greater quality in the recycled aggregate, and also there is not at all the need to perform a further selection process at the plant.

VII. ENVIRONMENTAL ASPECTS OF C&D WASTE

Mostly all construction of infrastructure activities has a significant amount of impact on the environment: on the countryside by buildings themselves, on geological resources by the extraction and use of materials, on-air and water quality by emitting the pollutant gases as well as liquids, and by consumption of the energy and production of solid waste on the site of building and demolition. The sensible use of natural resources is the most essential component when it comes to applying the principles of sustainable development. Therefore, energy consumption is the most important consideration we look into when it comes to processing construction and demolition waste to create new aggregates since it takes a substantial amount of energy to run the grinding and other size-reduction equipment. Then regarding the production of construction and demolition waste, the development of environmental policies to reduce costs of construction and demolition waste management has proved to be beneficial. Embracing the environmental factors into the construction as well civil-engineering practice such as incentives to recycle construction and demolition waste and the development of construction and demolition waste management plans is also an important contribution to the aim of achieving sustainable growth. These are some of the environmental policies that are taken into the consideration for both quantitative volume of the construction and demolition waste production, and the qualitative measures mean reduction of hazards posed by this waste.

a. In terms of quantitative measures of construction and demolition waste, when the building or any civil engineering infrastructure is designed, architects, prime contractors, and suppliers should consider construction and demolition waste production in the technical choices that they make, to reduce the amount of waste generated by future demolition and to make it easier to re-use materials and carry out selective demolition. The designing of the new construction infrastructure, and the maintenance of existing construction, also help to extend the life of such buildings.

b. The qualitative measures mean reducing the hazards posed by the construction and demolition waste, certain measures must be taken to limit the use of dangerous substances in the construction of new buildings. For a similar purpose, the manufacturers who are in the field of producing construction materials, need to eliminate the use of dangerous substances in the manufacture of these products at the design stage. Limiting the usage of dangerous substances will help in reducing the adverse environmental impact of managing such waste and will make it easier to manage the general construction and demolition waste.

One more environmental advantage to underline is that construction and demolition waste recycling allows massive quantities of resources which are to be used rationally that otherwise would get to be extracted from the decreasing stock of non-renewable resources. The recycling of mineral wastes allows the environmental impact of quarrying or mining (transport, noise nuisances, vibration, surface and groundwater pollution, waste, visual and aesthetic impacts, changes to the topography and natural habitats) to be reduced. Similarly, the reuse of construction and demolition waste reinforces the preservation of the other natural spaces as well as reduces the exploitation of mineral resources or quarries. Recycling of construction and demolition waste enables the environmental impact of the construction of infrastructure to be reduced as compared with the extraction of primary aggregates and the disposal to the landfill of an equivalent quantity of construction and demolition waste.

The disposal of the waste which is used for landfilling has a significant amount of impact on the environment: leaching of the decomposition products of certain non-inert components like plaster, plastic, wood, bitumen, hazardous waste such as paints, transport over greater distances than involved in on-site recycling.

VIII. MEASURES TO IMPROVE THE REUSE AND RECYCLING OF C&D WASTE

Deficiencies in the application of appropriate waste management. Steps to achieve a significant level of C&DW recycling and directly influencing the environment.

Holders or creators of demolition and construction waste, who are responsible for it must pay a significant amount for the disposal of such wastes, while otherwise dangerous, unsorted waste must incur a higher cost to avoid contamination and thus to discourage mixing. The site which is to be used for landfilling should be managed properly and the dumping which takes place illegally should be banned and penalties assessed as per the prevailing regulations. Facilities like sorting and/or crushing should be made available for treating the inert part of construction and demolition waste for recycling purposes. There should be tacit acceptance by the potential users of recycled aggregates as an alternative for virgin aggregates and that there should not be any discrimination which is based on the origin of aggregates.

A. Barriers That Hinder the Increase of C&DW Recycling and Reuse Rates are Identified.

The promoters usually don't include specific budgetary allocations for construction and demolition waste management and do not facilitate waste management plans by including them in the technical specifications, or by making provision for the use of recycled material. Governments of regional and national level are not so serious or slow in implying the steps of construction and demolition waste management which are approved to date. A standard regarding the technical management of construction and demolition, also the production of recycled materials, arid has not fully developed yet. Various companies involved in construction currently don't fulfill their obligations as manufacturers of hazardous waste due to the high costs of managing this type of waste and the imprecision of current legislation.

To encourage and strengthen the reuse and recycling of C&DW the development of a C&DW management plan to state the principles and proceedings applicable to this type of construction waste and also its disposal, with specifying the responsibilities and obligations of the other different agents who intervene in the production and management of construction and demolition waste. At the same time, the new regulations should ensure the correct treatment for recycling the waste to maximize the recovery of construction resources and hence contribute to sustainable construction development.

IX. PRIORITIES FOR MANAGING C&D WASTES

In promotion to the adoption of construction and demolition waste, prevention of certain strategies by builders, architects, developers, demolition companies, and other generators of construction and demolition waste; can be utilized to enhance reuse, recycling, additionally it is beneficial as well, for the use of construction and demolition waste in a manner that protects the human health and the environment.

It also improves markets for other products to be manufactured from recycling or beneficial for the use of construction and demolition waste.

Exploring new sources of renewable and clean energy, several technologies are used for recovering energy from that portion of the construction and demolition waste to the related waste stream that cannot be source reduced, reused, or recycled. To maintain a construction and demolition waste management infrastructure which is enabled to meet all the necessary regulatory standards required for the protection of human health and safety, natural resources, and the environment; and the usage of existing solid waste facilities as much as efficient as possible for recovery and disposal of construction and demolition waste.

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X. UPCOMING ISSUES OF CONSTRUCTION AND DEMOLITION WASTE

In an era in which the costs of energy are accelerating, the waste of construction and demolition is more likely to be recognized worldwide as the source of recoverable resources. Technology and attendant rules and regulations could promote enhancement within the diversion of wastes from the landfill and more and more towards energy generation and recycling of materials. Materials like plant and wood, which are organic in nature wastes will be recognized increasingly, as essential components of biofuel feedstock in the generation of green power. Product Manufacturers of building products will continue to look for and find more opportunities to reclaim their used products and to promote their use of recycled materials into new and improved products. Manufacturers of industrial recycling equipment are looking forward to the development of improved machinery which has the potential to revolutionize the efficient sorting and diversion of waste. Shredders reduce physical volume which is used in industries and produce particles of one similar dimension, enabling efficient mechanical separation. The technologies like air separation which are used in the industry enables efficient segregation of materials with differing mass characteristics and separation of the small pieces of wood as well as plastic from metals and aggregates. Trade and shipping that are recognized internationally will be presenting various opportunities and different risks for the responsible diversion, disposal, and recycling of waste. Indiscriminate dumping of wastes catches public attention and will continue to pressurise governments to ensure compliance with environmental regulations. Landfills that have solid waste and are present in arid regions will be receiving a certain amount of waste generated in urban areas. Also, the landfills that are located in wet regions, near waterways, and located in other environmentally sensitive areas will continue to have a trend toward closure. Expenses related to post-closure which are regarding the management of landfills and will continue to expand, with environmental monitoring, as well as greenhouse gas management, being significant priorities. In many areas the costs for disposal may continue to increase faster than the cost of energy, creating a demand for increased diversion, recycling, and reuse.

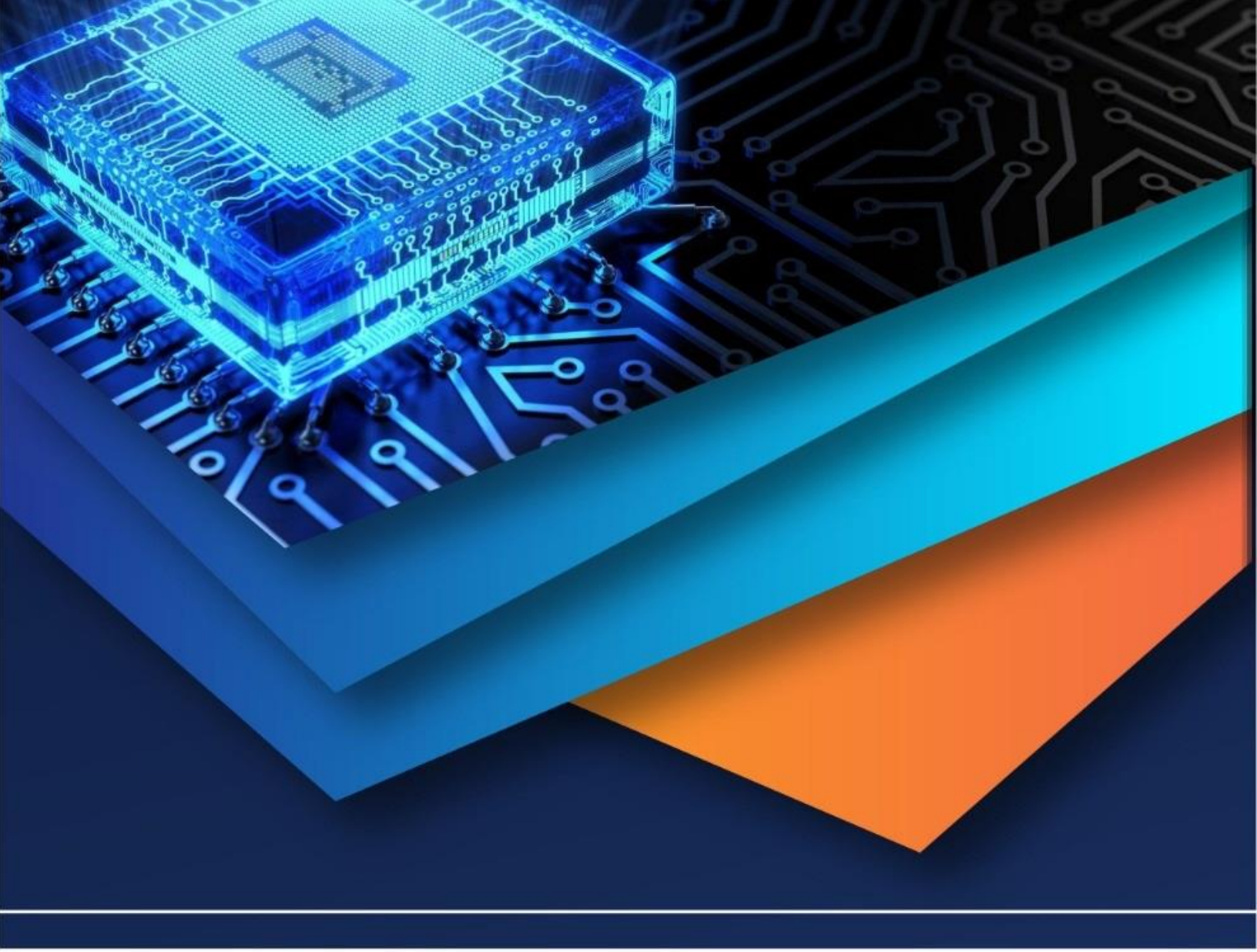
XI. CONCLUSION

Despite the increasing awareness of society, there is the need to protect the environment and to recycle, reuse or recover, and the policies that are carried out to promote these principles. But still, it is the common ongoing practice to dispose of the construction and demolition waste in dumps and landfills with almost very little or no attempts to recover such waste beforehand. The mechanisms of management need to be developed and have to embody economic, environmental, and legal issues. The construction waste management implemented, represents the very initial step towards the holistic strategy for reducing waste generation from the construction process. This construction and demolition waste management plan also includes preventive policies, which together with comprehensive regulations regarding recycling, reuse, and disposal procedures which lead to the optimal treatment of the waste materials. The development which took place of integral construction and demolition waste management plan will help to achieve the most important objective of reducing and preventing the generation of construction and demolition waste both at a local as well as a global sphere. It will also help to encourage the reuse and recycling of the waste generated, additionally, it will ensure the necessary treatment of the waste to be disposed of, in an attempt to improve the recovery of the resources contained in construction and demolition waste and having a contribution to the environmentally sustainable growth of the construction industry. Thorough and careful application, as well as the implementation of the waste disposal laws and ordinances, need to be enforced, and the usage of recycled and reused waste is to be promoted to lessen the serious polluting effect caused by construction and demolition waste. People are involved in the construction sector should be aware of the possible cost savings from measures that successfully prevent and diminish construction waste, and the environmental impacts, and the long-term national and global implications.

According to this, the main goal is not of avoiding an increase in the generation of construction and demolition waste could be reached, but there should be the need for the reuse and recycling of the waste material generated which is also encouraged. The correct treatment of the materials at the same time is to be disposed of and is ensured to enhance the recovery of the resources contained in the construction and demolition waste, and has a significant contribution to more sustainable development in the construction industry. The responsibility for construction and demolition waste is to be passed both to the generator of that waste, which is construction developers, as well as to the holder constructor together with the intervention of public administrations and the authorities to enhance the legislation of construction and demolition waste, to encourage the development of a waste-reduction culture and to reduce the production of waste. The effective and efficient management of this waste can be achieved only with the participation of all those who are involved in the construction industry and the local and central government, public administrative agencies together with a very strong enforcement program and thorough tracking of the proposed measures.

REFERENCES

[1] https://www.epa.gov/smm/sustainable-management-construction-and-demolition-materials
[2] https://www.finnz.com/insights/news/sustainable-management-of-construction-and-demolition-materials/
[3] https://www.wbdg.org/resources/construction-waste-management
[4] https://gocontractor.com/blog/how-does-construction-impact-the-environment/
[5] https://portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Construction-and-Demolition/CD-Waste-Management-Plans
[6] https://portal.ct.gov/DEEP/Reduce-Reuse-Recycle/Construction-and-Demolition/CD-Waste-Management-Plans
[7] https://www.cseindia.org/india-manages-to-recover-and-recycle-only-about-1-per-cent-of-its-construction-and-demolition-10326
[8] https://earth5r.org/sustainable-construction-waste-management-india/
[9] https://en.wikipedia.org/wiki/Construction_waste#:~:text=%22Construction%20and%20Demolition%20Materials%22.%20www.calrecycle.ca.gov.%20Retrieved%202020%2D12%2D17.
[10] "Municipal Solid Waste and Construction & Demolition Debris | Bureau of Transportation Statistics". www.bts.gov. Retrieved 2020-12-17
[11] "RECYCLING CONSTRUCTION AND DEMOLITION WASTES A Guide for Architects and Contractors" (PDF). April 2005.
[12] Shooshtarian, Salman (2020). "Landfill levy imposition on construction and demolition waste: Australian stakeholders' perceptions". Sustainability. 12 (11): 4496. doi:10.3390/su12114496.
[13] "Construction Waste Management | WBDG Whole Building Design Guide". www.wbdg.org. Retrieved 2017-05-06.
[14] Wang, Jiayuan; Wu, Huanyu; Tam, Vivian W. Y.; Zuo, Jian (2019). "Considering life-cycle environmental impacts and society's willingness for optimizing construction and demolition waste management fee: An empirical study of China". Journal of Cleaner Production. ISSN 0959-6526.
[15] Anonymous (2018-09-18). "EU Construction and Demolition Waste Protocol and Guidelines". Internal Market, Industry, Entrepreneurship and SMEs - European Commission. Retrieved 2020-12-17.



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