

# ARCHITECT/CIVIL ENGINEER INTEREST TOWARDS SUSTAINABLE MATERIALS FOR CONSTRUCTION

**L. ABIRAMI**

MBA Student, Saveetha School of management, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai.

**Dr. P. PRAVEEN KUMAR**

Associate Professor, Saveetha School of Management, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai. Email: praveenkumarp.ssm@saveetha.com

## Abstract

The revolutionary topic in construction industry is sustainable material. The carbon emissions, long-term viability and cost reduction in constructing a building are the main focus of the article. Architects use their knowledge and the skills in the construction and also in protecting the environment. They are trying to help the people in the way of the bringing healthy atmosphere where they live. There is an essential to know the adequate and the granted solution for the chemically aggressive environment. Architects collected the information from the building operation, and that is successfully used for the architectural design, the architects aim is to have a healthy and good environment. It is one of their responsibilities to create the good quality of the environment. People some are aware of this but most of them are unaware of the sustainable environment. The awareness will reduce pollution and waste that harms the environment and also helps in the reuse and recycling. This will use the materials that are non-toxic and sustainable. The main objective of this article is to a step forward to the innovation and trends in construction and to recreate a world to the sustainable environment.

**Keywords:** Architect, Innovation, Construction, Trends, Sustainable Development

## INTRODUCTION

The use of the sustainable materials in the construction has been a greater attention now a days, but many people are unaware of its full potential towards an environment and the everything that exists in the environment. The construction of the building using sustainable materials is not for the lower environmental impact but it is the new way of the thinking towards the future about the humans that how they live with the environment and to engage where they live. The benefits of using the sustainable materials on construction can be classified into three categories namely environmental, financial, and social benefits, all of these will become more apparent in the future years. This division shows the more contribution of sustainable building, and this become a more focus of the full building life cycle, combining utility, natural and environmental concerns. The main pillars of the sustainable materials are the social, natural, economic and environmental. From the beginning, the arts and science of the building construction passes with the use of the stones, leaves, untreated lumber, and the other natural materials and the new techniques and the methods. When man started to construct a building, there have been problems with the use in natural materials that results into the search for more durable building materials such as bricks, energy-consuming elements namely lime-based products and the metal products. Even though this has emerged, there is difficulty in the

planning and also it pollutes the environment by the release of the GHG gas. Many of the architects and the engineers are now a days shifting towards to the sustainable materials and also it improves the indoor environment of the construction and the safety of the environment and it promotes the good quality of the environment. The concept of the green building is adopted by the several countries such as India, Israel, and Bangladesh and so on. There are two different components of the composite materials to combine and to create a unique and the superior substance with the chemical and the physical qualities which are differ from the components that are of the individual one. Some of them are the green concrete, reinforced plastics, translucent concrete which are made up of the optic fibre. Similar researches have been conducted by many authors (Benita, 2021; Monica, 2021; David, Ahmed, Ganeshkumar & Sankar, 2020; Kumar, 2020; Kumar & Shree, 2019; Monica & Supriya, 2019; Mahesh & Uma Rani, 2019; Mahesh, Gigi, & Uma Rani, 2019; Robert & Monisha, 2019; Kumar & Shree, 2018).

## REVIEW OF LITERATURE

In the human life, house is the most important thing in their life. We spend our time mostly in our house or in the building of our workplace. The environmental pollution things will harm the people whereas, by the usage of green buildings, there will be a positive impact on the pollution and the everyday issues like water scarcity, health concern and the trash disposal. The adoption of the green building that become an essential in the built environment, and the architect's role (Faisal et al., 2020). Now a days, the concept of using the sustainable materials for the construction has been paid interest of the wide range. This is the long-term development of the country. The idea of constructing a building according to the eco-friendly that is the green building. The main aim is to reduce the resources amount used by the construction, operation and also the environmental damage that is caused due to the release of the emission. For constructing a building, it requires the large amount of water and the other resources and the garbage and which cause the negative impact on the environment by considering this the green building system has been adopted (El-Shimy et al., 2015). The sustainability concept have been spreader across all the sectors of the economy, which also includes in the building engineering. Sustainable materials helps to go along with the environment. It includes the fundamental and the multicriteria methods and the techniques, to provide the technological, economic, social and the environmental benefits (Zavadskas et al., 2018). The important thing considered in the construction material is the strength, cost and also the environmental impact. The architect, engineers and also the contractors have involved in this difficult procedure (Karjalainen et al., 2021). There was the lack of the information and the poor data integration, during early stages of the building projects. To solve this issues researcher have been suggested to take data from the existing buildings and to be transferred to design a new ones (Saridaki and Haugbølle, 2020). (Markström et al., 2016) conducted the study with an objective to learn about the bio based materials that can be used in the residential buildings, to expand the usage of the bio based building materials. Semi structured interviews have been conducted for this. That shows the likelihood of using the bio-based building materials

The ideas towards the friendly environment of constructing a building is the green building and this helps in the reduction of pollution and improves the quality of the life of the people (Mirzaei et al., 2017). The concepts sustainability have been expanded to the all the areas of the economic activity, it is the one which is of the more complex (Edmundas et al., 2018).

(Grierson and Moultrie, 2011) described the Para diagram shift of the sustainable building and which requires the transformation of the architecture and also in the design process. They examined a sustainability that is embedded into the design and the methods they have used. (Akadiri et al., 2012) have worked for the propose of a conceptual framework for integrating the sustainability concepts in construction industry. Everything that has been a part of this example resource conservation, the cost so on. The main aim is to have a proper balance between the economic, social and the environmental factors by using the sustainable materials.

## PERCEPTION TOWARDS SUSTAINABLE MATERIALS

This literature aims to measure architect/engineer perception towards sustainable materials in construction industry by using questionnaire method. The details of architect/engineer are given in Table 1.

**Table 1: Profile**

S. No.	Gender	%	S. No.	Age	%	S. No.	Occupation	%
1	Male	73	1	< 30 Years	100	1	Architect	60
2	Female	27	2	> 29 Years	0	2	Civil Engineer	40

Table 1 shows that 73 percent of the respondents are male followed by 27 female respondents. The study includes 60 percent of architect and 40 percent of civil engineer with the age group of 25-29 years. Their perception on sustainable materials is shown in Table 2.

**Table 2: Perception towards Sustainable Materials**

S. No.	Perception towards Sustainable Materials	Mean	Rank
1	Integrated insulated concrete wall system by recycled plastic and stell will be affected by any natural calamities (Durability)	4.32	1
2	Sustainable materials are the best solution for green building (Solution)	2.74	3
3	Emission of GHG is reduced while using sustainable materials (Pollution)	4.21	2

Table 2 shows that variable durability has the highest mean value of 4.32 followed by pollution and solution. It is inferred that the professionals feel that integrated insulated concrete wall will be easily affected by any type of natural calamities. The difference between perception of professionals and their occupation is discussed in the Table 3.

**Table 3: Occupation Vs Perception**

S. No.	Perception towards Sustainable Materials	F	Sig. Value
1	Integrated insulated concrete wall system by recycled plastic and stell will be affected by any natural calamities	1.21	0.872
2	Sustainable materials are the best solution for green building	0.37	0.321
3	Emission of GHG is reduced while using sustainable materials	1.63	0.070

Table 3 shows the values of F and its significant value. Almost in all the cases, the significant value is greater than 0.05, it is inferred that both the architect and civil engineers have the same level of perception towards sustainable materials.

## CONCLUSION

The sustainable materials that have been accepted by the many of them due to the lower pollution and the safety of the environment. Many architects use their ability and the knowledge to adopt these sustainable materials for the construction. The purpose of the study is to make an attempt on finding the perception of architect/engineer on sustainable materials and to educate the people that sustainable materials is the best for the everything that exists in the world and to the environment.

## REFERENCE

- Benita, M. S. (2021). Are the student migrants satisfied with life? Effect of acculturative stress and perceived discrimination. *International Journal of Education Economics and Development*, 12(1), 79-96.
- David, A., Ahmed, R. R., Ganeshkumar, C., & Sankar, J. G. (2020). Consumer Purchasing Process of Organic Food Product: An Empirical Analysis. *Calitatea*, 21(177), 128-132.
- El-Shimy, H., Ragheb, G. A., & Ragheb, A. A. (2015). Using mixed reality as a simulation tool in urban planning project for sustainable development. *Journal of Civil Engineering and Architecture*, 9(7), 830-835.
- Faisal, F., Tursoy, T., & Pervaiz, R. (2020). Does ICT lessen CO2 emissions for fast-emerging economies? An application of the heterogeneous panel estimations. *Environmental Science and Pollution Research*, 27(10), 10778-10789.
- Grierson, D., & Moultrie, C. M. (2011). Architectural design principles and processes for sustainability: Towards a typology of sustainable building design. *Design Principles and Practices*, 623-634.
- Karjalainen, M., Ilgin, H. E., Metsäranta, L., & Norvasuo, M. (2021). Residents' attitudes towards wooden facade renovation and additional floor construction in Finland. *International journal of environmental research and public health*, 18(23), 12316.
- Kumar, P. P. (2020). Effectiveness of Marketing Strategy Formulation in Biomedical Healthcare Industry.
- Kumar, P. P., & Shree, K. C. (2018). Determinants of Vendor-Client Relationship in Medical Equipment Industry. *Indian Journal of Public Health Research & Development*, 9(10).
- Kumar, P. P., & Shree, K. C. (2019). Green human resource management: A access device to evade exhaustion of natural resources. *International Journal of Innovative Technology and Exploring Engineering*, 8(11), 740-743.

- Markström, E., Bystedt, A., Fredriksson, M., & Sandberg, D. (2016). Perceptions of Swedish architects and contractors for the use of bio-based building materials. In COST Action FP1407 2nd Conference: Innovative production technologies and increased wood products recycling and reuse, Brno, Czech Republic, 29-30th of September, 2016 (pp. 19-20). Mendel University in Brno, Czech Republic.
- Mirzaei, N., Ghaffari, H. R., Sharafi, K., Velayati, A., Hoseindoost, G., Rezaei, S., ... & Dindarloo, K. (2017). Modified natural zeolite using ammonium quaternary based material for Acid red 18 removal from aqueous solution. *Journal of environmental chemical engineering*, 5(4), 3151-3160.
- Monica, B. (2021). The Effect of IT Employees' Engagement on Work Attitudes Through Cloud Computing Services. In *Recent Advances in Technology Acceptance Models and Theories* (pp. 497-507). Springer, Cham.
- Monica, B. S., & Supriya, M. V. (2019). Acculturative stress of internal migrants: impact on work attitudes. *International Journal of Human Resources Development and Management*, 19(2), 150-165.
- Saridaki, M., & Haugbølle, K. (2020, November). Towards sustainable design: Integrating data from operation of buildings in design practices. In *IOP Conference Series: Earth and Environmental Science* (Vol. 588, No. 5, p. 052051). IOP Publishing.
- V. J, Mahesh & Uma Rani, P.(2019). Impact of Promotional Strategies on Viewers of Kollywood Movies. *International Journal of Innovative Technology and Exploring Engineering*, 8(10), pp. 1140–1144
- V. J, Mahesh, Gigi, G.S., & Uma Rani, P. (2019). Movie promotional strategies in tamil film industry-the contemporary access. *International Journal of Innovative Technology and Exploring Engineering*, 8(11), pp. 712–717
- William Robert P, R. Monisha (2019) .A Research on Factors of Forex Procedures in Private Bank. *International Journal of Innovative Technology and Exploring Engineering*, 8(11s), 777- 781.Scopus Indexed-e-ISSN:2278-3075.
- Yazdani, M., Zarate, P., Zavadskas, E. K., & Turskis, Z. (2018). A Combined Compromise Solution (CoCoSo) method for multi-criteria decision-making problems. *Management Decision*.
- Zavadskas, E. K., Šaparauskas, J., & Antucheviciene, J. (2018). Sustainability in construction engineering. *Sustainability*, 10(7), 2236.