Journal of Advances and Scholarly Researches in Allied Education
Vol. 16, Issue No. 9, June-2019, ISSN 2230-7540

Technologies for Sustainable Development: A Review

Anupama Misra[1]* Dr. Navneet Kumar[2]

[1] Research Scholar, OPJS University, Churu, Rajasthan

[2] Associate Professor, OPJS University, Churu, Rajasthan

Abstract – The technology includes straightforward, simple to utilize and fix structures, it depends on complex, 21st century advancements. Fitting technology may include wise utilization of high vitality materials to enhance the properties of coming about composite materials. It will likewise include advancement of eco-accommodating procedures to tackle natural issues. The advancement of fitting technology in materials, items and administrations may request straightforward financially savvy types of gear, hardware and process. Thusly, this technology may include different orders like mechanical, substance and gadgets.

Keywords: Sustainable Building, Technology, Green Building

----------X----------

1. INTRODUCTION

The sustainable building fuses numerous methodologies amid structure, development and task of a building venture. Utilizing "green building materials "in development is said to be "economical structure". The green materials are naturally mindful materials as they help in lessening ecological effect.

A green building is characterized as the elite building which utilizes less water, vitality, produces less waste, keeps up indoor air quality for the inhabitants and utilizations effective building materials. Rick Fedrizzi, Chairman of World Green Building Council has said that the green building has roused endless material item and process development that have speeded up the selection of green building structure, development, and activity over the globe.

Today green building is a half-trillion dollar industry in the United States and in excess of a trillion dollar industry around the world, (Rick Fedrizzi in Forward of The business case for Green.

Green structure and development goes for utilizing assets all the more proficiently. The primary target of green building is to upgrade positive effects on the earth. On the off chance that every urban building were green, our country could have spares more than 8400 MW of intensity per year. Following parts of green building should be considered

1. Material proficiency (utilizing feasible development materials and such different procedures)
2. Water proficiency (utilizing low stream plumbing installations, rooftop top rain reaping, permeable clearing framework and such different procedures
3. Vitality productivity (utilizing vitality preservation Building Code ECBC 2007, Smart lighting apparatuses with control and sustainable procedures)
4. Indoor condition quality (utilizing microbial safe materials, warming and cooling framework guaranteeing ventilation and such different systems)
5. Squander the executives (utilizing green design benchmarks, delivering less measure of waste, gathering waste and reusing material, deconstruction and such different procedures)

2. REVIEW OF LITERATURES

The building business is an indispensable component of any economy yet significantly affects the earth. By temperance of its size, development is one of the biggest clients of vitality, material assets, and water, and it is an imposing polluter. In light of these effects, there is developing accord among associations focused on natural execution

focuses on that fitting techniques and activities are expected to make building exercises increasingly maintainable [1– 3]. As for such huge impact of the building business, the feasible building approach has a high potential to make a profitable commitment to economical improvement. Maintainability is a wide and complex idea, which has become one of the serious issues in the building business. The possibility of supportability includes upgrading the personal satisfaction, hence enabling individuals to live in a sound situation, with enhanced social, monetary and ecological conditions [4]. A feasible task is planned, fabricated, redesigned, worked or reused in an environmental and asset effective way [5]. It should meet some of specific targets: asset and vitality productivity; CO2 and GHG discharges decrease; contamination counteractive action; moderation of clamor; enhanced indoor air quality; harmonization with the earth [6]. A perfect task ought to be cheap to manufacture, keep going forever with unobtrusive support, yet return totally to the earth when relinquished [7]

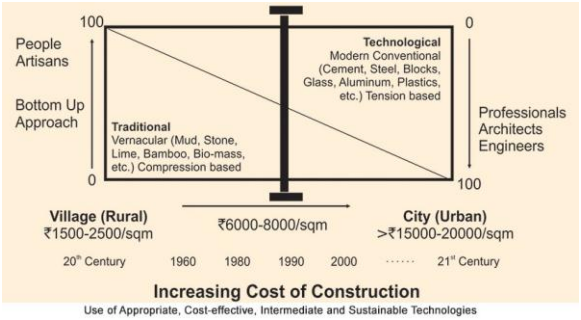
Building industry experts have started to focus on controlling and adjusting the ecological harm because of their exercises. Modelers, fashioners, architects and others associated with the building procedure have a special chance to lessen ecological effect through the execution of supportability targets at the structure improvement phase of a building venture. While current manageability activities, techniques and procedures center around more extensive worldwide yearnings and key goals, they are detectably frail in tending to small scale level (venture explicit dimension) incorporated basic leadership [8].

Sustainable Building Principles

It is assessed that by 2056, worldwide monetary action will have expanded fivefold, worldwide populace will have expanded by over half, worldwide vitality utilization will have expanded about triple, and worldwide assembling action will have expanded in any event triple [9,10]. All around, the building part is ostensibly a standout amongst the most asset escalated enterprises. Contrasted and different ventures, the building business quickly developing world vitality use and the utilization of limited non-renewable energy source assets has officially raised worries over supply challenges, weariness of vitality assets and overwhelming ecological effects—ozone layer consumption, carbon dioxide outflows, an unnatural weather change, environmental change [10]. Building material creation devours vitality, the development stage expends vitality, and working a finished building devours vitality for warming, lighting, power and ventilation. Notwithstanding vitality utilization, the building business is considered as a noteworthy supporter of natural contamination [11–14], a noteworthy utilization of crude materials, with 3 billion tons expend every year or 40% of worldwide use [13,15– 18] and produces a tremendous measure of waste [19,20].

3. EMERGING TECHNOLOGIES

The globalization of exchange has brought about hurrying the speed of entrance of mechanical headways into lodging and building development part. Present day advancements for development, for example, NO-DIG or trenchless advances, Water Jet technologys, utilization of Fly Ash, solid admixtures and added substances, Ready Mixed Concrete, Slip Form and Tunnel Form development, construction, utilization of composite materials and development frameworks and so on are making advances into the development part. The need of working at the rate of 10 million houses each year needs an alternate methodology towards advancing the speed, cost and nature of development.



Source: [21]

It is likewise important to demand life-cycle costing in building development ventures considering both the capital expenses of development and upkeep costs also transfer costs amid the time of activity and end of life of the benefit. It is important to demand cutting edge advancements that offer the least upkeep costs and give the best of value and strength.

Approach to Adopt Appropriate Technologies

In spite of the fact that the expanded interest of the private area in substantial advancement ventures has acquired motorized and quick development rehearses, these are restricted to the extensive scale first class extends for the wealthy with most of development action dependent on age-old procedures and standards which have long out-experienced their flexibility. There is a requirement for the fundamental refinement and use of imaginative and proper contributions to the customary development rehearses.
This requires a people-situated base up methodology striking the privilege and sustainable harmony between the middle of the road, vernacular and creative advancements for the bigger requirements for enhancing the development costs [21].

This will prompt a harmony between "customary" (vernacular) rehearses and the ordinary

"innovative" choices and to receive moderate, practical, fitting and economical advances.

It is basic to use the vast number of practical alternatives for establishment, walling components, material components and timber substitutes particularly for joinery. An illustrative rundown of practical technologys with the measure of investment funds in expense imagined as against the ordinary choices is featured in the Table:

Practical Technology: Awareness, Application and Propagation

It is noticed that a large portion of these advances have not discovered much infiltration for application in the development business because of different authentic reasons and absence of appropriate mindfulness, thankfulness and holes in application endeavors. BMTPC/HUDCO has attempted a few endeavors. A cognizant exertion to close the hole in "taking technologys to the doorsteps" by organizing a fitting grass-root level technology exchange component was taken through the before Building Center Movement.

The Building Center development has been effective to guarantee:

- Technology exchange from 'lab' to 'land' and effect
- Skill upgradation and preparing to the craftsmans (bricklayers, craftsmen, bar drinking sprees, handymen, circuit testers, and so on.) on creative and financially savvy technology choices
- Production of different financially savvy segments utilizing assets and deals out-letting the equivalent
- Construction of lodging and structures utilizing the prepared work compel and the created segments as a savvy building framework
- giving vital lodging direction, data and guiding to the general population on the demonstrated creative, practical and fitting building materials and technology choices.

The building focuses have likewise possessed the capacity to show cost decrease of 15 to 40 percent as against customary techniques for development. This has been exhibited in development of houses for all salary classifications just as different structures for social and network resources, civilities and offices.

CONCLUSION

The prerequisites of cost-viability, condition cordiality, fiasco opposition and solidness have required the utilization of proper green advancements in lodging and building development [21]. Taking plan of action to green advances hold out the guarantee of making lodging progressively reasonable other than guaranteeing ideal use and a fair utilization of the rare assets.

REFERENCES

1. Halliday, S. (2008). Sustainable Construction; Butterworth Heinemann: London, UK, 2008.
2. Barrett, P.S.; Sexton, M.G.; Green, L. (1999). Integrated delivery systems for sustainable construction. Build. Res. Inf., 27, pp. 397–404.
3. Abidin, N. Z. (2010). Investigating the awareness and application of sustainable construction concept by Malaysian developers. Habitat Int., 34, pp. 421–426.
4. Ortiz, O.; Castells, F.; Sonnemann, G. (2009). Sustainability in the construction industry: A review of recent developments based on LCA Constr. Build. Mater. 2009, 23, pp. 28–39.
5. Ortiz, O.; Pasqualino, J.C.; Castells, F. (2010). Environmental performance of construction waste: Comparing three scenarios from a case study in Catalonia, Spain. Waste Management, 30, pp. 646–654.
6. John, G.; Clements-Croome, D.; Jeronimidis, G. (2005). Sustainable building solutions: A review of lessons from natural world. Build. Environment, 40, pp. 319–328.
7. Bainbridge, D. A. (2004). Sustainable building as appropriate technology. In Building without Borders: Sustainable Construction for the Global Village; Kennedy, J., Ed.; New Society Publishers: Gabriola Island, Canada; pp. 55–84.
8. Ugwu, O.O.; Kumaraswamy, M.M.; Wong, A.; Ng (2006). S.T. Sustainability appraisal in infrastructure projects (SUSAIP) Part 1. Development of indicators and computational methods. Autom. Construct., 15, pp. 239–251.
9. Matthews, E.; Amann, C.; Fischer-Kowalski, M.; Huttler, W.; Kleijn, R.;

Moriguchi, Y.; Ottke, C.; Rodenburg, E.; Rogich, D.; Schandl, H.; Schutz, H.; van der Voet, E.; Weisz, H. (2009). The Weight of Nations: Material Outflows from Industrial Economies; World Resources Institute: Washington, DC, USA, 2000; Available online: http://pdf.wri.org/weight_of_nations.p (accessed on 24 May 2009).

10. Ilha, M.S.O.; Oliveira, L.H.; Gonçalves, O.M. (2009). Environmental assessment of residential buildings with an emphasis on water conservation. Build. Serv. Eng. Res. Technol., 30, pp. 15–26.

11. Kukadia, V.; Hall, D.J. (2004). Improving Air Quality in Urban Environments: Guidance for the Construction Industry; Building Research Establishment (BRE) Bookshop, CRC Ltd.: London, UK.

12. Pitt, M.; Tucker, M.; Riley, M.; Longden, J. (2009). Towards sustainable construction: Promotion and best practices. Construct. Innov. Inf. Process Manag., 9, pp. 201–224.

13. Yahya, K.; Boussabaine, H. (2010). Quantifying environmental impacts and eco-costs from brick waste. J. Archit. Eng. Des. Manag. 2010, 6, pp. 189–206.

14. Zimmermann, M.; Althaus, H.J.; Haas, A. (2005). Benchmarks for sustainable construction: A contribution to develop a standard. Energy Build., 37, pp. 1147–1157.

15. World watch Institute (2003). State of the World, A World watch Institute Report on Progress Toward a Sustainable Society. World watch Institute: Washington, DC, USA, 2003. Available online: http://www.worldwatch.org/system/files/ESW03A.pdf (accessed on 2 May 2012).

16. Holton, I.; Glass, J.; Price, A. (2008). Developing a successful sector sustainability strategy: Six lessons from the UK construction products industry. Corp. Soc. Responsib. Envrion. Manag., 15, pp. 29–42.

17. Ding, G.K.C. (2008). Sustainable construction—The role of environmental assessment tools. J. Environ. Manag., 86, pp. 451–464.

18. Nelms, C.E.; Russell, A.D.; Lence, B.J. (2007). Assessing the performance of sustainable technologies: A framework and its application. Build. Res. Inf. 2007, 35, pp. 237–251.

19. Osmani, M.; Glass, J. (2008). Price, A.D.F. Architects' perspectives on construction waste reduction by design. Waste Manag., 28, pp. 1147–1158.

20. Burgan, B.A.; Sansom, M.R. (2006). Sustainable steel construction. J. Condtruct. Steel Res., 62, pp. 1178–1183.

21. http://www.mgsarchitecture.in/green-construction/technology-projects/338-building-technologies-for-sustainable-development.html

Corresponding Author

Anupama Misra*

Research Scholar, OPJS University, Churu, Rajasthan