

INNOVATING ENERGY

Sustainable development: The catalyst for climate change mitigation



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Editor's Note

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Dear Readers,

We are increasingly witnessing the effects of climate change. The rising mercury levels and extreme weather events are being seen across the world. In such a scenario, there is an urgent need for interventions that can arrest this downward spiral. Nearly a decade ago, the Paris agreement obligated nations to pursue a goal of limiting global warming to 1.5 degrees Celsius in comparison to preindustrial levels. It laid down a long-term roadmap for decrease in the carbon footprint through a significant reduction in greenhouse emissions facilitated by sustainable use of energy, globally. Recently, the Honorable Prime Minister of India, Shri Narendra Modi proposed a five-fold strategy 'Panchamrita' for India at the 26th Conference of Parties (CoP26) in Glasgow to meet its climate action goals. Commitments under 'Panchamrita' focuses on renewable energy, carbon emission reduction and Net Zero.

However, we still have a long way to go in realising this imperative. Sustainable development is at the center of our fight against climate change. Powering the economic engine with clean energy and finding newer pathways for reduction of emissions is now the need for the hour. In this edition of our newsletter, themed "**Sustainable development: The catalyst for climate change mitigation**", we take a deep dive into the nuances of sustainable development and trace its role in leading us towards a green, clean and equitable future for our planet.

In the article, "**Green Buildings – The Pathway for Sustainability**", we discuss how green buildings can pave the pathway to sustainability. "**Transitioning to a fossil free energy economy: Solar power for mitigating carbon emissions**" charts out the roadmap towards the shift to renewable energy and the role solar power can play in that transition. We then delve into the Bangladesh's energy efficiency journey and decarbonisation efforts in "**Tracing Bangladesh's energy efficiency journey: Learnings & way forward**". Finally, we deconstruct the merits of sustainable cold chain in "**Sustainable cold chains can provide the twin benefits of food and energy security**".

All of these diverse, yet interconnected aspects of sustainable development will be at the heart of our efforts towards achieving the desired temperature reduction and the goal of net zero. The time is nigh for all the sectors and industries to take concerted steps towards combating the rising global temperatures. Only then can we create a peaceful, ecologically sustainable and energy secure world. This edition of the newsletter seeks to be a mirror for the various aspects of the climate action roadmap, and we hope it makes for an insightful read.



Green Buildings - The Pathway for Sustainability

Shivraj Dhaka

Senior Counsellor

Indian Green Building Council



Sustainable development is the only way forward to meet the twin goals of economic growth and combating climate change. Interventions aimed at our urban areas will be particularly effective, as the building sector is one of the engines of growth. Green buildings can pave the pathway for sustainability, and it can enable the sector in becoming less carbon intensive.

A green building is one which uses less water, optimises energy efficiency, conserves natural resources, generates less waste and provides healthier spaces for people as compared to a conventional building. Key areas addressed in green buildings are Site selection, Planning, Building material, Water conservation, Energy efficiency, Resources and Indoor Environmental Quality (IEQ).

Our first major milestone came in 2003 when the CII-Godrej GBC building in Hyderabad became India's first platinum-rated green building. It was the greenest building at that point of time and this distinction really marked the start of the green building movement in India.



India is now amongst the top three countries in the world in terms of largest registered green building footprints and IGBC represents about 92% of the market share in India.

It has been demonstrated that constructing a green building is economically viable. Incremental costs can be 2-3% higher or same as a conventional building, but it all depends on the design parameters. If there is any additional cost, it can be paid back within 2 to 3 years, with a substantial reduction in operational costs, about 30% or more.

In the past, IGBC has launched over 29 rating systems to address different building typologies and national priorities, including energy efficiency, water conservation, handling of household waste, reduced use of fossil fuels, reduced dependence on use of virgin materials and health & wellbeing of building occupants. Therefore, Green Buildings have facilitated a market transformation. Most of the products and technologies are today readily available within our country, with an estimated market size of USD 300 billion by 2025.

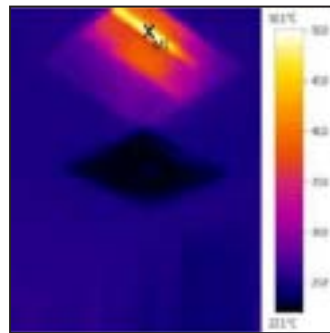


Key Benefits of Green Buildings

Green buildings make use of several technologies and solutions enabling better resource efficiency. Some of the advancements are as following:

1. Optimising energy efficiency

- A green building has the most energy efficient building envelope (glass, wall and roof), lighting and HVAC system. However, optimisation of performance can be ensured only through regular monitoring with the help of BMS/EMS/SCADA system. An optimised BMS can save 15-20% energy savings as compared to building without BMS. Lighting control and integration of day-lighting and artificial lighting fixtures can also happen through BMS.



- Night purging to cool the building can be explored to reduce operating cost of HVAC system
- Chiller management (Chiller Plant Manager), it automates chiller sequencing
- AHU fan type and speed control based on heat load, speed control of chilled water pumps etc save huge energy savings in any green building EPI (Energy Performance Index, kWh/m²-yr) and per capital water consumption (KL/lit-yr) have been found significant less in green buildings. EPI can be in the range of 75-90kW/m²-yr.

2. Enhancing Indoor air quality

Green buildings are well designed for following ASHRAE 62.1 guidelines to meet/exceed the requirement of fresh air. Provision of fresh air ventilation helps in increasing productivity of building occupants. It has been validated through research that productivity of 8-12% can be enhanced in green buildings which in turn offers significant operation cost savings to the company/organization