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Climate SAR सार

Climate Science And Research

Green Building

Climate Change Research Institute
Science & Technology Solutions for Sustainable Energy Future
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FROM EDITOR

'Climate Change is about change in the climate patterns resulting from global warming due to anthropogenic changes'.

Accumulation of greenhouse gas emissions in the atmosphere is giving rise to global warming and climate change. Carbon dioxide emissions occur from combustion of fossil fuels in thermal power plants for generation of electricity. Depleting resources and increasing industrial and building activity are causing environmental degradation on the Planet earth.

In this issue I discuss about Green Buildings. A green building should be able to reduce its carbon footprints in the environment during its construction, operation and occupation. It saves on energy, water and material resources and is favorable for healthy environment.

Climate Change Research Institute has started this bulletin on Climate Science and Research- 'Climate SAR'. In this issue you learn about what is a green building, what makes it green, its benefits and how do you certify a building that it is green.

Happy reading and send your feedback to contactus@ccri.in

Dr. Malti Goel
Climate Change Research Institute

WHAT IS A "GREEN BUILDING"?

Green Building, Green Rating and Green Economy are currently 'buzz' terms for non – greenhouse gas emissions related growth and development. A Green Building functions using an optimum amount of energy, consumes less water, conserves natural resources, generate less waste and create spaces for healthy and comfortable living, as compared to conventional buildings. Increasing use of renewable energy and a solar rooftop is desirable in a Green Building.

Green Buildings are high performance buildings. They protect and restore human health and environment during operation.

WHAT MAKES A BUILDING "GREEN"?

A building is environmentally responsible and resource-efficient throughout its life-cycle. These objectives incorprate design concerns of economy, utility, durability, and comfort.

Green buildings use sustainable materials in their construction (e.g., reused, recycled-content, or made from renewable resources) create healthy indoor environments with minimal pollution (e.g., reduced product emissions) and have landscaping that reduces water usage and is in harmony with external environment (e.g., by using native plants that survive without extra watering).

HOW DO BUILDINGS AFFECT CLIMATE CHANGE?

The energy used to heat or cool and power our buildings leads to the consumption of large amounts of energy, mainly from burning fossil fuels - oil, natural gas and coal - which generate significant amounts of carbon dioxide (CO_2), the most widespread greenhouse gas. Buildings contribute 14-40 per cent of the total carbon dioxide emissions.

Reducing the energy use and greenhouse gas emissions produced by buildings is therefore fundamental to the effort to slow the pace of global waeming. Buildings may be associated with the release of greenhouse gases in other ways, for example, construction and demolition debris that degrades in landfills may generate methane gas, and the extraction and manufacturing of building materials also generates greenhouse gas emissions.

WHAT ARE THE BENEFITS OF GREEN BUILDING?

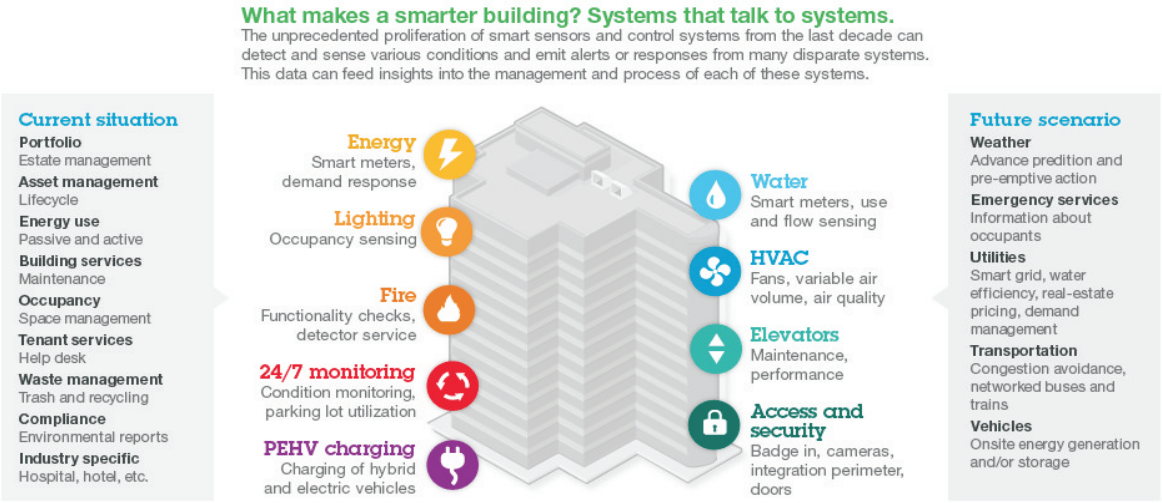
The successful adoption of green building strategies can maximize both the economic and environmental performance of buildings. Benefits of Green buildings are:

- Using less energy, water saving and recycling of resources
- Protecting occupant health and improving employee productivity
- Reducing waste, pollution and environment degradation

HOW IS GREEN BUILDING RELATED TO SMART CITIES AND SUSTAINABLE DEVELOPMENT?

Smart city development serves the economy, the community, and the environment by supporting healthy communities, create jobs and economic prosperity without burdening future generations with environmental degradation. Sustainability, or sustainable development, is the ability to achieve continuing economic prosperity while protecting the natural systems of the planet and providing a high quality of life for its people.

Green buildings help in achieving the objectives of both smart cities and sustainability.



WHY SHOULD WE CARE ABOUT GREEN BUILDINGS?

Buildings account for about 70%-80% of a city's electricity consumption, nearly 40% of its energy use and close to 40% of all its greenhouse gas emissions according to the Energy Information Administration, USA. Compared to standard buildings, green buildings have been shown to approximately

- **Lower maintenance costs by over 10%**
- **Reduce energy use more than 25%**
- **Lower greenhouse gas emissions by 33%**
- **Significantly increase occupant satisfaction**

HOW A GREEN BUILDING IS CERTIFIED.

Two green building rating systems in India are being used by design professionals as:

LEED: Leadership in Environmental and Energy Design is building rating system adopted by commercial buildings in India. It is developed by Indian Green building Council in association with Confederation of Indian Industry. Buildings are rated as Platinum, Gold and Silver.

GRIHA: Green Rating for Integrated Habitat Assessment is a green building 'design evaluation system', and is suitable for all kinds of buildings in different climatic zones of the country. GRIHA rating system consists of 34 criteria categorized under various sections such as Site Selection and Site Planning, Conservation and Efficient Utilization of Resources, Building Operation and Maintenance, and Innovation points. All future buildings in India are expected to meet GRIHA requirements and award points on a scale of 100.

Eight of the 34 criteria are mandatory, four are partly mandatory, while the rest are optional. Each criterion has a number of points assigned to it. Different levels of certification (one star to five stars) are awarded based on the number of points earned. The minimum points required for certification is 50.

New Lecture Hall Complex, IIT Delhi

New Lecture Hall Complex at Indian Institute of Technology is GRIHA rated Green Building at New Delhi. Indian building Congress has also awarded the architect for its Design.

ECC LECTURE SERIES - 2015

Third Lecture on "CO2 Sequestration : A Fresh Outlook"

Climate Change Research Institute organized third lecture in the Environment and Climate Change (ECC) series 2015 on 'World Environment Day'. The lecture entitled 'CO_2 Sequestration: a fresh outlook' was delivered by Prof. Malti Goel, Former Advisor & Emeritus Scientist, Ministry of Science & Technology on 5th June, 2015 at India International Centre, New Delhi.

Fourth Lecture on "Energy and Fossil Fuel"

The fourth lecture in the Environment and Climate Change (ECC) series 2015 on 'Energy and Fossil Fuel' was delivered by Shri. Gautam Sen, Executive Director, ONGC on October 16, 2015. He explained the concepts in a lucid manner. Chief Guest on the occasion was Prof. D. P. Agrawal, Former Chairman, UPSC and Chairman GC, CCRI.

ECC Lecture Series was attended by a large number students from various schools.

ACBCCS 2015

Awareness and Capacity Building in Carbon Capture, Storage and Utilization:

Towards a Low Carbon Growth Strategy

A capacity Building workshop on Carbon Capture Storage and Utilization was recently organized by Climate change Research Institute at India International Centre, New Delhi from July 27-31, 2015. In the inaugural address Dr. Madhukar O. Garg (DG, Council for scientific & Industrial Research) said Power, Transportation and Industry are major sources of carbon dioxide. In this five day workshop delegates nominated by various stakeholder agencies participated. Technical Sessions focused on CO_2 utilization and industry perspectives. It was recommended that a pilot facility be set up for testing results of CO_2 capture.

The concluding session held on 31 July 2015 was chaired by Shri R.K. Sachdev (Ex-Adviser Min. of Coal). An open roundtable discussions on CCSU: acceptance as a low carbon strategy was held.

For more information about Green Building solutions.

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