

# Construction

## Business today

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## SUSTAINABLE MANTRA

Rapidly expanding its realm, Sustainability will culminate into self-sustaining ecospheres for space travel and space colonisation by end of 21st Century, and will drive development of recyclable technologies.

### SPECIAL FEATURE

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- Aladdin City

### MANAGEMENT STRATEGIES

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- Veka India







Atiti Griha Auroville

## "Rating systems made 'building Green' a style statement"

The Sustainability movement has just begun to spread in India but its scope and definition still remains vague. And a few among the construction fraternity, especially real estate sector, have bent it to their own vested interests. In an exclusive interview to *Construction Business Today*, **Roshni Udyavar Yehuda, Head- Rachana Sansad's Institute of Environmental Architecture**, discusses the pros and cons and what the government and society-at-large can do to promote sustainability as a way of life.



**In what way is the scope and definition of Sustainability of Structures expanding today, especially in context of green environmental concerns?**

Sustainability has been traditionally

defined as a situation that caters to the needs of the present populace without compromising those of the future. Starting from structures that provide thermal comfort without mechanical

aid (passive solar architecture) to those which are self-sustainable (rely on water and energy available on site); Sustainable Structures have been redefined in many ways over the years.



Net zero energy buildings and cities, smart homes and intelligent buildings, pollution absorbing façade materials and dynamic buildings are some of the new dimensions in sustainable buildings

### What are its main aspects in the context of architecture and construction?

In general, a sustainable structure is one that causes minimum impact on the earth, which consumes minimal resources and produces minimal waste, and contributes to the health and well being of occupants. Parameters to assess sustainable building materials internationally include low embodied energy, recyclability, reusability, biodegradability, acidification (air), eco-toxicity (water) and eutrophication (water) potential, impacts on health such as respiratory impacts, global warming potential and ozone layer depletion potential.

Sustainable site management, water, energy, waste, building materials and indoor environmental quality are some of the general aspects considered to assess sustainability in construction.

### What best practices would you prescribe for sustainable construction?

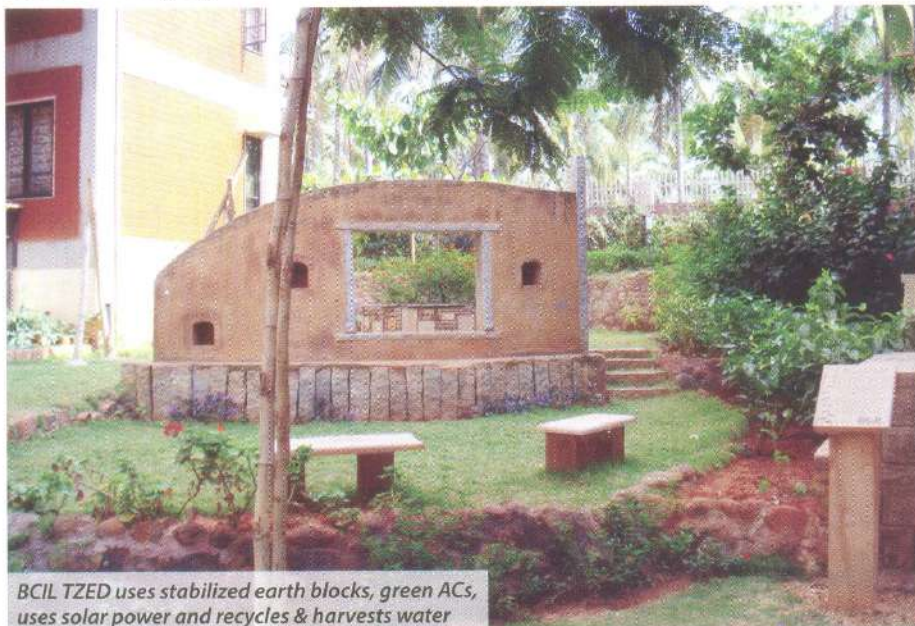
Best practices in sustainable construction can be seen in structures such as Luminosity, Quiet Healing Centre, Auroville language laboratory, Solar



*Masdar Eco-city in Abu Dhabi planned by Sir Norman Foster was conceived as a Zero Energy City*

Kitchen, Atiti Griha and several others at Auroville, where a variety of sustainable materials and technologies have been experimented with such as CSEB blocks, ferrocement, Vortex waste water treatment system, Solar dish for cooking and DEWATS.

BCIL headquartered in Bangalore also has several sustainable construction projects to its credit such as TZED, Red Earth, TransIndus and projects in Bangalore, Coorg and Goa. In Mumbai, the recycling of water at Hiranandani Complex in Powai, the zero garbage facility developed by Stree Mukti Sanghatana in several ALMs and colonies and urban farms developed by R.T. Doshi and Bombay Port Trust, are good practices to emulate.



*BCIL TZED uses stabilized earth blocks, green ACs, uses solar power and recycles & harvests water*

### What should be the Metrics for measuring sustainability?

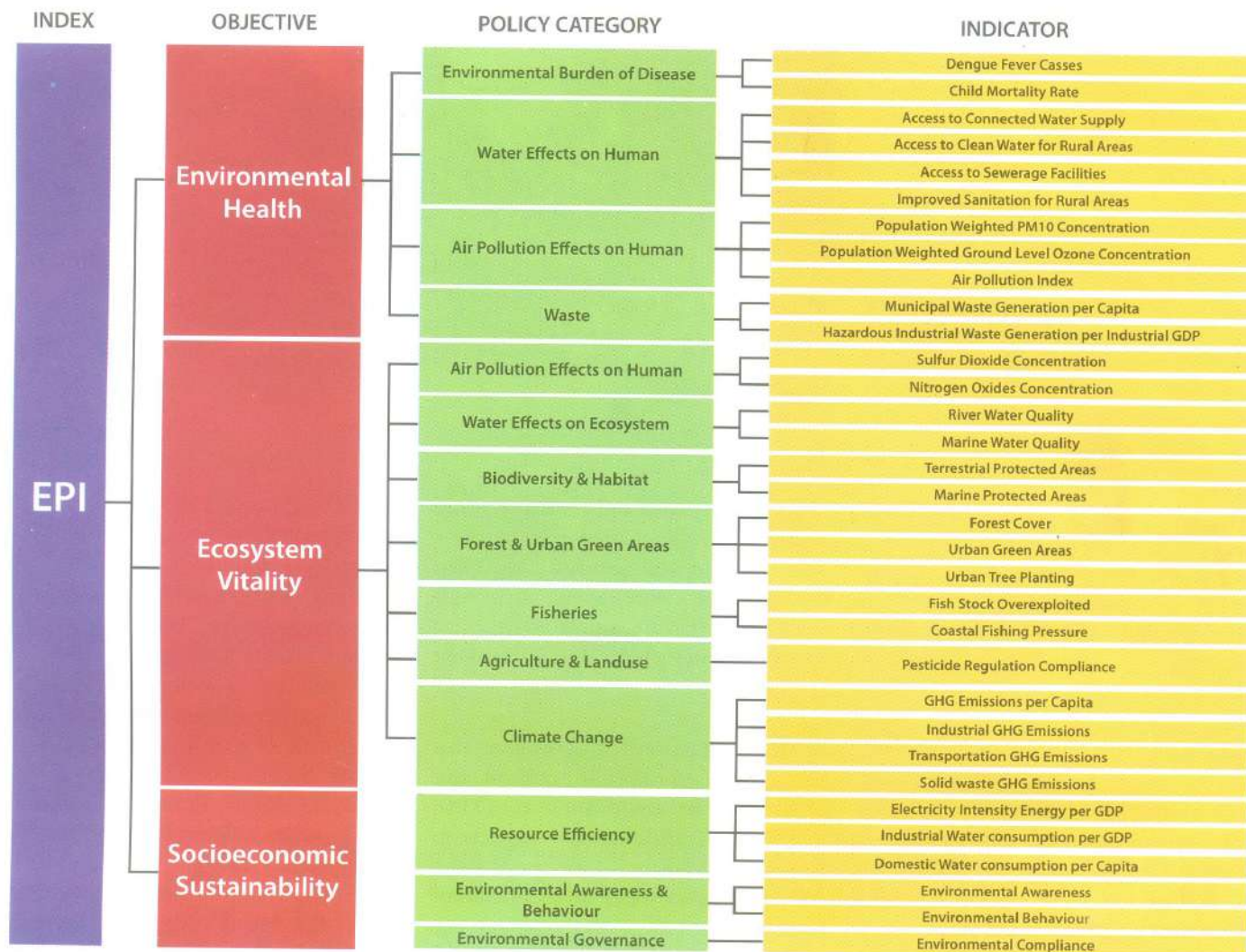
Energy Performance Index of buildings, which measures the wattage of consumption per unit area of the building, (watts per square metre) is one significant outcome-based Metric. Similarly water consumption per capita or per unit of a material produced, is another Metric. Broader sustainability metrics include the 'Ecological Footprint' (developed by William Rees and Mathis Wackernagel) and the 'Environmental Performance Index' Metrics (reported under the World Economic Forum). The Life Cycle Assessment Approach is a significant Metric that can be used to assess sustainability of building materials.

### Your view of the Ratings game. How relevant are the ratings Metrics for Indian conditions?

There is no doubt that Rating Systems such as the US-originated LEED (Leadership in Energy and Environmental Design) made a fashion statement about sustainability in India. Until the launch of the CII Godrej Green Business Centre (India's first platinum rated LEED certified building in 2004), building green was not in vogue except among a few Institutions in India. Even then, Laurie Baker's style of architecture or buildings in Auroville hardly got the attention they deserved.

Rating systems changed all this and made 'building green' a style statement. This has had its pros and cons. While a number of builders and developers opted for





Malyasian EPI is a metric to measure environment sustainability

their buildings to have a green rating to avail of the fast tracking of their projects' environmental clearance, for many others getting a Gold or Platinum rating became a prestigious issue. On the positive side, many corporations have taken it to the next level and made it part of their corporate policy. In these cases, the buildings are maintained green. Examples include the **Kirloskar** head office in Pune, the **Suzlon One Earth** premises in Pune and the **Cement House, ACC Headquarters** in Mumbai.

Rating systems provide a method of evaluating performance against a set of criteria. They help quantify the efforts or practices, provide independent third party evaluation, standardization of procedures and most importantly provide a set of design and technical guidelines – a sort of checklist for anyone who wants to design a green building.

However, the manner in which the points are distributed and even the aspects such as pre-certification, may lead projects to use rating systems to 'green wash' the public at large. For example, in a study done by the Rachana Sansad's Institute of Environmental Architecture last year, it was found that only 18 per cent of the buildings registered for certification were actually certified green. Most buildings use green pre-certification as a means to achieve government environmental clearances. It should be ensured that buildings that undergo pre-certification, complete the process of implementation and commissioning.

Moreover, the aspect of maintaining green buildings is a big concern. A LEED Gold certified building in Gulbarga – one of the first government buildings to achieve green certification, was found within a

few years, to have neither maintained its waste water recycling system or its wind towers (which provided cool air without air conditioning), or solar panels or its green roof. There are many such documented cases. Rating systems are now addressing this issue by awarding ratings for a limited period of time.

#### What kind of government policy would promote sustainable construction?

Government policy will need to address all stakeholders if sustainable construction is to become real. Policies that address developers must include mandatory and incentive based schemes that address the increased cost of building green (such as capital investment in solar or wind based energy generation, construction of waste water recycling plants, etc). These should address areas such as provision of on-ground open spaces with adequate green



cover and trees, soil conservation on site, passive energy design of buildings, garbage segregation and treatment facility, use of energy and water efficient equipment and pollution-reduction practices during construction.

There should be policies that address end users, which may be based on incentives (such as reduction in property tax) or penalties (in the form of fines) for avoiding water and energy waste, maintaining green cover, and garbage segregation.

Policies that address manufacturers should include encouraging the use of waste materials (tax benefits), reduction of water and air pollution during manufacture (compulsory practice with heavy fines), recycling policy and so on. There must be also policies that address that large segment of contractors and workers that need to be trained in sustainable practices.

Across the board, the need for awareness about environmental protection – among developers, users, children and youth may include training for housing societies and other stakeholders. The moral responsibility of citizens and society as a whole towards protecting their environment and ensuring a good quality of life should be the spinal column on which all the government policies should be based. ■



Kirloskar head office, Yamuna, Pune is a LEED Platinum rated structure



Revamped open office in Cement house - a heritage LEED rated building

## Green Credentials

Head of **Rachana Sansad's Institute of Environmental Architecture**, **Roshni Udyavar** has impeccable credentials. Apart from being an Academic on the international circuit she's actively involved in following projects; Dahisar River Restoration Project, Sawantwadi Ecotourism Development, Restoration of Charolette Lake in Matheran, 'Harvest to Harness' Rainwater Harvesting Competition, Capacity building for professionals through education in building physics and energy simulation, in collaboration with **Bureau of Energy Efficiency** and **USAID's ECO III Project**. She is presently heading a project 'Developing a roadmap for the implementation of **Energy Conservation Building Codes** in Maharashtra'.

Professional practice includes **EnviroArch**, a Mumbai-based design bureau, and **Roshni Udyavar & Associates**. Other Memberships include:

- **Council of Architecture & Indian Institute of Architects**
- Evaluation Committee on rainwater harvesting, **Municipal Corporation of Greater Mumbai (MCGM)**
- Panel on education and development at **Maharashtra Nature Park (MNP)**, Mumbai.
- Bid Panel Committee, **MMRDA**, for installation of street furniture in the **Bandra Kurla Complex (2013)**.



IGP complex Gulbarga 2006 and 2010