Initiatives to Mainstream Sustainability & Affordability in the Built Environment

Conserving Now, Preserving Future
The Context

- Two-thirds of the commercial and high rise building stock in 2030 will be built in the next 15 years.

- Buildings are responsible for more than a third of India's total energy consumption.

- Buildings are central to India's development and climate change agenda.

Residential & Commercial Buildings consume 37% of total electricity

Source: 18th EPS, CEA
Housing Shortage

Conserving Now, Preserving Future

- HIG: Private sector-led, Government-led (small-scale)

Income Segment: HIG, MIG, LIG, EWS
Housing Segment: Social Housing
Urban Housing Shortage (DUs): 10.55 million (56.18%)

Gov Defined Annual HH Income: > 6 Lakh (7.41 million (39.44%))
Gov Defined Size of DU: 600-1,200 sq ft (55-110 m²)
Gov Defined Size of DU: 300-600 sq ft (28-55 m²)
Gov Defined Size of DU: <300 sq ft (<28 m²)

Ministry of Environment, Forest and Climate Change
Government of India
Challenges

Wide spread adoption of:

- Energy efficient building design
- Energy efficient water use, sewage treatment and reuse of grey water
- Construction & demolition waste
- Solar and thermal storage integration
We at TERI

Conserving Now, Preserving Future

Sustainable Building Design
- Passive Architecture & Building Materials
- Daylight Integration & Artificial Lighting
- System optimization & Renewable Energy Integration

Policies & related studies
- Policy
- Visual Comfort Studies
- Thermal Comfort Studies

Retrofits
- Energy Audits
- Systems Optimization
- Devising control strategies
Mahindra-TERI Centre of Excellence
To develop innovative materials and technologies tailored to the Indian building sector and climates. The focus will be on market-ready, scalable and viable technologies to support and encourage the real estate industry.
Mainstreaming Sustainable Social Housing

Objectives of the Project:
• Sustainability Index- Sustainability Index for building materials and construction technologies.
• Policy briefs for decision makers to mainstream sustainability concerns.
• Sustainability Toolkits
Technology Lever for Sustainable Housing

- Identify and prioritize technologies.

- Goal to achieve 20% reduction in incremental cost of building green.

- Development of Prioritization Matrix of building materials and technologies.

- International Finance Corporation

- Developers
  - Mahindra Lifespaces
  - Godrej Properties
  - TATA Housing
  - Value Budget Homes
  - Shapoorji Palonji
Objectives:

• Development of energy use reporting framework

• Development of Measurement and Verification (M&V) protocol.

• Development of supportive standards and regulation that will enable market uptake of energy efficient technologies.
Green Building Consultancy

- Building design optimization
- Energy performance optimization & Cooling demand optimization
- Sustainable building materials selection
- Daylight and artificial light system integration with controls
- Renewable energy integration
- Water and waste management
GRIHA
Conserving Now, Preserving Future
GRIHA Version 2015
30 criteria – 100 points
What gets measured gets managed…
GRIHA variants

SVAGRIHA
(Small Versatile Affordable)

100m² ≤ Built-up area < 2500 m²

GRIHA

Built-up area > 2500 m²

GRIHA LD
(Large Developments)

Site Area > 50 hectare

Conserving Now, Preserving Future
GRIHA

Green Rating for Integrated Habitat Assessment

Acknowledged by NDC’s as India’s rating tool to evaluate emission reduction through Habitats.
Thank You

To know more about us you may visit:
http://www.teriin.org/

You may reach out to us on:

Sanjay Seth
Senior Fellow & Senior Director, TERI
Sanjay.Seth@teri.res.in