

# Greening Affordable Housing

**Arnab Roy**  
Executive Director  
National Housing Bank

**May 01, 2014**

# Background

- World's population  
2050 9 billion
- World's urban population  
Present 50%  
2050 70%
- India's urban population  
Present 28.4%  
2030 40.8%  
2041 50%
- Housing sector - 40% of energy consumption
- Huge demand - affordable, green housing

# EE in Housing

- Energy efficient housing
  - Lighting
  - Space utilization
  - Ventilation
  - Energy efficient building materials
  - Energy efficient equipment
  - Alternative and renewable sources of energy
- Reducing energy demand at source
  - More sustainable in long run
  - Often with little incremental cost

# Govt.'s Commitment



- Part of national psyche
- Traditional building materials
- Alternative energy sources and energy conservation
- India's role as a responsible and enlightened member of international community

## National Urban Housing & Habitat Policy 2007

### Focus on Affordable Housing

- Improving the affordability of the vulnerable and economically weaker sections of society
- Technology enhancing energy and cost efficiency, productivity and quality in housing

## National Urban Housing & Habitat Policy 2007

### Focus on Green Buildings

- Promote appropriate ecological standards - healthy environment, better quality of life in human settlements
- The concept of 'green' and 'intelligent' buildings

# Convergence

**Convergence of these two focus areas can bring about tremendous benefits in terms of**

- Large scale proliferation, acceptance of energy efficiency concepts in housing
- Scalability of technology and economies of scale
- Benefits percolating down to all segments of the population

# Barriers

- Lack of awareness
  - Not my problem
- Perception
  - Energy efficiency is expensive requiring huge upfront investments
  - Marketing gimmick of developers
  - High maintenance cost
- Lack of information about Government schemes



# Overcoming Barriers



- Sensitization
  - Macro level
  - Applicability and usefulness in day-to-day life
  - Govt. schemes
- Perception Issues
  - Need not be comprehensive (and expensive) but incremental (and affordable)
  - Payback period manageable

# About NHB



- Statutory body
  - National Housing Bank Act, 1987
- Regulator of Housing Finance Companies in India
- Promotion and development of housing and housing finance sector
- Financing provided to retail institutions for housing finance

# NHB's Efforts



- NHB working with all categories of primary lending institutions to ensure that energy efficient housing concepts are extended to all segments
  - Based on geography (urban / rural)
  - Based on socio-economic groupings
  - Need based
    - Comprehensive energy efficiency solutions
    - Incremental needs (domestic solar equipments)

# NHB's Efforts (contd.)



- NHB has been working on multiple platforms to promote energy efficiency concept in residential buildings
  - Product development
  - Promotional efforts
  - Awareness building
  - Capacity building
  - Market infrastructure development
  - Financial assistance
    - Refinance
    - Capital subsidy

# NHB's Financing Products



Refinance	Direct Finance	Equity Participation
<p><b>Term Loans</b></p> <ul style="list-style-type: none"> <li>▪ Commercial Banks</li> <li>▪ Housing Finance Companies (HFCs)</li> <li>▪ Cooperatives</li> </ul>	<p><b>Term Loans</b></p> <ul style="list-style-type: none"> <li>▪ Housing Corporations</li> <li>▪ Societies</li> <li>▪ PPPs</li> <li>▪ Self Help Groups</li> </ul>	<p><b>Equity stake</b></p> <ul style="list-style-type: none"> <li>▪ Rural HFCs</li> <li>▪ HFCs involved in housing finance to low income segments</li> </ul>
<p style="text-align: center;">for</p>		
<ul style="list-style-type: none"> <li>▪ General Housing</li> <li>▪ Rural Housing</li> <li>▪ Special projects (in natural disaster affected areas)</li> </ul>		

# NHB KfW Partnership



- Promoting use of energy efficiency techniques in buildings
- Promoting energy efficient residential housing
- Jointly by NHB and KfW in 2008 pursuant to Indo - German Government-to-Government negotiations
- First of its kind programme in India

# Partnership contd.



- Feasibility study
  - Market potential
  - Awareness
  - Industry's framework
  - Characteristics of borrowers
  - Types of houses financed
  - Functioning of institutions involved in housing finance
- Rapid assessment study
- Modalities of Programme designed

# Partnership contd.



- Line of Credit : €50 million
- Technical assistance grant : €1.5 million
- The Programme
  - Financial assistance - housing loans to individual borrowers through retail lending institutions for purchase / construction of EE residential houses / flats
  - Technical assistance - assessment tool to calculate the level of energy savings of EE houses on the baseline (developed by TERI / Fraunhofer)



- Implementation
  - Identification
    - EE building projects
    - Retail lending institutions
  - Refinance potential
  - Borrower information
  - Energy calculation & certification
  - Compliance with NHB's reporting requirements to KfW

# Snapshot of some Certificates









Project: Sahara City Homes –Type C

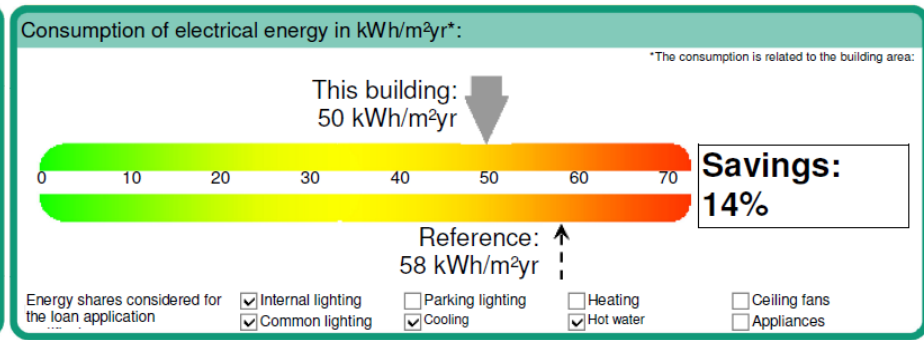
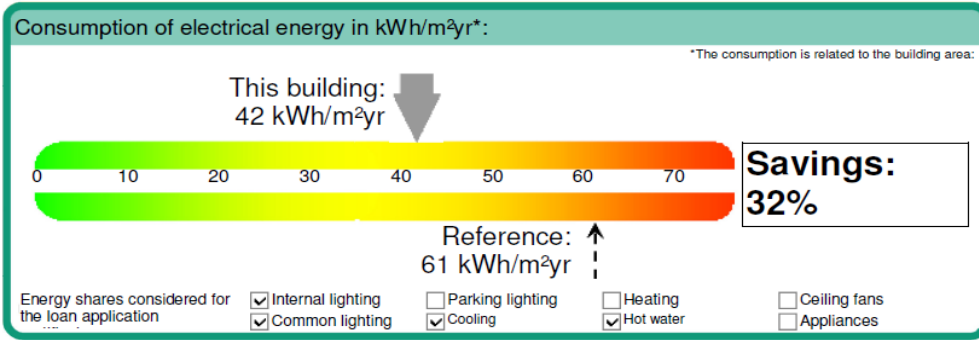
Project: Lotus Boulevard-Tower 18

Building:

Address of project:	Table of results - Electrical energy in kWh/m <sup>2</sup> yr*:			
Sitapur Hardoi By-Pass Road, Near IIM, Lucknow, Uttar Pradesh 226020		This building	Reference building	
Occupant/Owner:	Internal lighting	12,81	12,81	
	Common lighting	1,54	1,54	
	Parking lighting	0,00	0,00	
	Cooling	20,27	35,80	
	Heating	3,25	3,25	
	Hot water	6,97	11,16	
	Ceiling fans	1,74	1,74	
	Appliances	26,00	26,00	
	Building parameters:			
	Building type:	Residential building		
Total building area:	6.174,00 m <sup>2</sup>			
Climatic zone:	New Delhi			
Created with:	EneffResBuild:India Version 0.9.1.0			

Building:

Address of project:	Table of results - Electrical energy in kWh/m <sup>2</sup> yr*:			
GH-03, Sector 100, Noida, Gautam Budh Nagar District Uttar Pradesh, 201301		This building	Reference building	
Occupant/Owner:	Internal lighting	14,03	14,03	
	Common lighting	1,00	1,00	
	Parking lighting	0,00	0,00	
	Cooling	24,39	32,77	
	Heating	1,68	1,68	
	Hot water	10,24	10,24	
	Ceiling fans	0,90	0,90	
	Appliances	25,23	25,23	
	Building parameters:			
	Building type:	Residential building		
Total building area:	14.139,00 m <sup>2</sup>			
Climatic zone:	New Delhi			
Created with:	EneffResBuild:India Version 0.9.1.0			



Qualitative parameters (0 out of 6 measures are applied in this building):

<input type="checkbox"/> Daylit area in the core area is 20% to 40%	<input type="checkbox"/> Presence detection or photo sensors for outdoor and
<input type="checkbox"/> Solar street lights	<input type="checkbox"/> Efficient water pumps
<input type="checkbox"/> Efficient transformers	<input type="checkbox"/> Tailored user manual

Qualitative parameters (0 out of 6 measures are applied in this building):

<input type="checkbox"/> Daylit area in the core area is 20% to 40%	<input type="checkbox"/> Presence detection or photo sensors for outdoor and
<input type="checkbox"/> Solar street lights	<input type="checkbox"/> Efficient water pumps
<input type="checkbox"/> Efficient transformers	<input type="checkbox"/> Tailored user manual


Issuer:  
The Energy And Resource Institute (TERI)

04.07.2011  
Date

  
Signature

Issuer:  
The Energy And Resource Institute (TERI)

04.07.2011  
Date

  
Signature

# Capacity Building



- Training and capacity building programmes for housing finance personnel
- Special familiarization programmes focused on energy efficiency in residential sector
- Energy efficiency not only for the elite
- Showcasing of successful models to encourage replication

# Financial Assistance



- Refinance for energy efficient housing
- Refinance for installation of solar water heating and solar lighting equipments in homes
- Channelizing the capital subsidy available under JNNSM for installation of solar water heating and solar lighting equipments in homes

# Benefits



- Reduction in energy usage without compromise on comfort
- Building of sustainable housing and habitat to impact society and environment
- Availability of fund - source for encouragement
  - Lenders
  - Borrowers
- Availability of assessment tool - help to developers
- Percolating down of benefits to all segments

# Next Steps

- Absorption capacity / consumption of EE products in India to be enhanced
- Scalability important due to challenges
  - Cost aspects
  - Huge housing shortage
  - Existing housing
  - Present product for niche market segments
- Programme to be expanded to include existing housing units

Thank You