



**KGID
2025**

**Green Growth:
The Path to
Sustainable Jobs**

Yan Zhang

Senior Urban Specialist, World Bank
J-AHoP India Working Group Co-Lead
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Problem Statement and Key Challenges for Housing in India

What problem are we trying to solve?

- **Significant unmet Affordable Housing (AH) demand:** Using the latest Adequate Housing Index, the housing stock deficit is 16 million in urban areas, projected to be 21.6 million by 2030.
- **Limited supply of AH:** Private developers and public programs can't match the scale of demand for the bottom 40%, bottlenecks on the supply side remain significant.
- **Only 2%** of residential buildings are green-certified (2021); barriers to greener solutions cut across entire value chain
- **WBG remains operationally fragmented:** Need to scale up initial successes and increase our collective efforts in mobilizing private capital and making Affordable Housing green and resilient.

Key risks/challenges for Affordable Housing (AH) across the value chain

- **Lack of up-to-date urban development plans** to guide real estate investments.
- **High cost of accessing land** and availability of well-located affordable serviced land.
- **Restrictive land use, zoning and building regulations** hamper the supply of affordable housing units.
- **Lengthy and uncertain permitting process** leads to project delays and wipe out already thin margins for a developer.
- **Delayed and un-coordinated infrastructure and service provision** increases costs burned by developers and consumers.
- **Weak institutional capacity** at State and Local Government levels.
- **Developers lack investment & capacity** to deliver enough volume to make a profit on affordable housing.
- **Limited long-term funding for mortgage financing** for FIs and through NHB
- **Lack of awareness & enabling eco-systems for Green Housing** (green building ratings, green mortgages)

WBG opportunities & proposed solutions to further develop the Affordable Housing sector in India

OPPORTUNITIES

- **Unmet demand for affordable housing:**
 - 10 million+ people are moving to cities every year
 - Over 18.8 million families in urban India and over 43 million rural families need affordable housing
 - Household size reduced from 5.1 in 2001 to 4.4 in 2022
- **PMAY 2.0 provided continued government support** (incentives and subsidies) to support the underserved segments
- **Small- and medium-sized developers seek to access** financing, especially to enter the affordable housing sector
- **Long-term funding for housing finance still in short supply**
- **Demand for green housing and ESG compliance on the rise**, presenting opportunities to invest in green.

PROPOSED SOLUTIONS

Supply Side:

- Pan-India Green and Affordable Housing Fund for developer financing
- Greening PMAY-G (making self-built homes low carbon and resilient for the rural poor)

Demand Side:

- IBRD financing to NHB for green mortgage

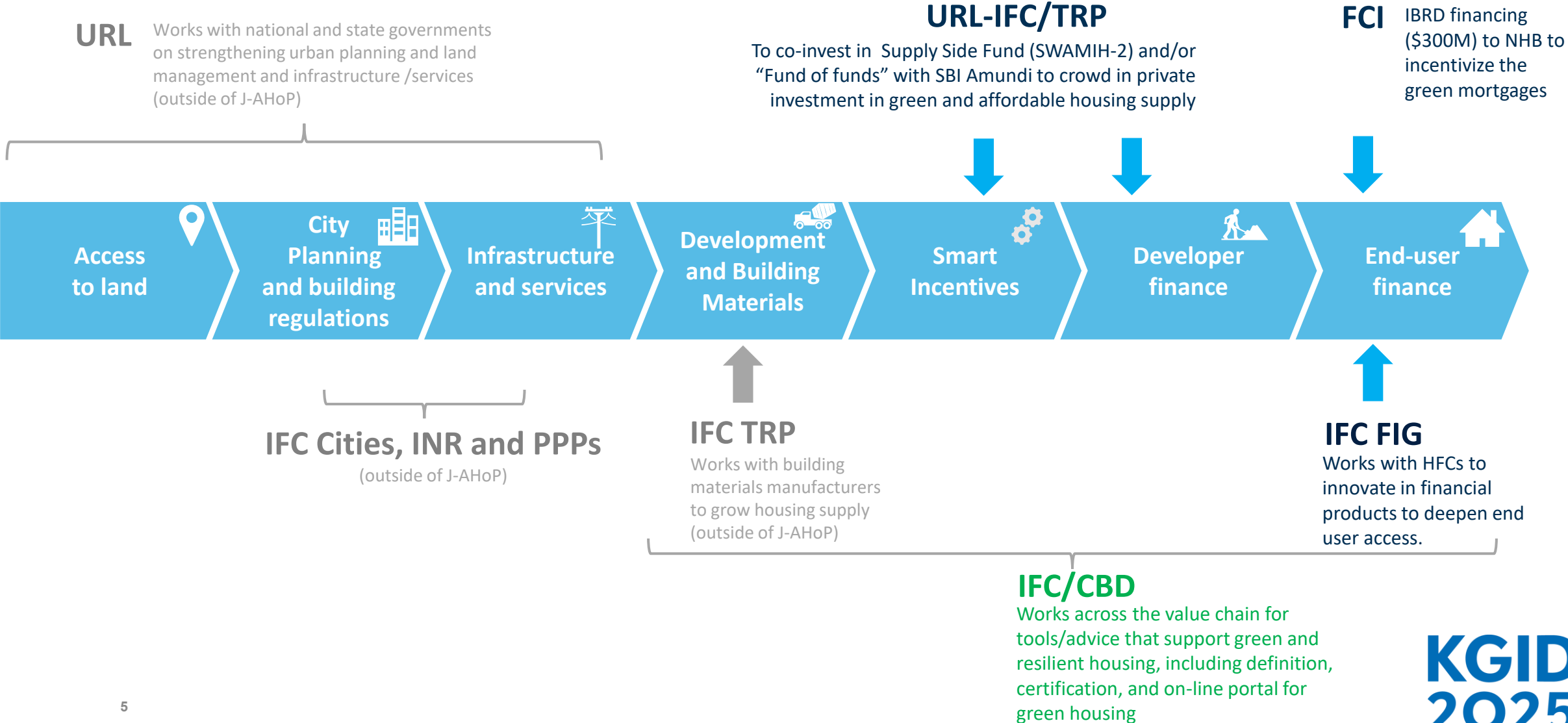
Cross-cutting:

- On-line portal for Green Housing and outreach
- Policy note for Ministry of Housing and Urban Affairs on scaling up Green Affordable Housing

WBG Stocktaking - Recent & Proposed Housing Interventions in India

| | Supply Side | Demand Side |
|----------|--|--|
| Current | <p>URL</p> <ul style="list-style-type: none"> Tamil Nadu Housing Sector DPL2 (concluded in 2022), IPF <p>IFC TRP/MAS</p> <ul style="list-style-type: none"> US\$1bn DREAM fund for green affordable and middle-income housing (\$ 150 million from IFC) US\$125 million equity investments in housing projects of Bridage, Aditya Birla Real Estate, Ashiana Housing <p>IFC CBD</p> <ul style="list-style-type: none"> 37,035 homes EDGE certified so far, with ~ 30,000 units more units in the process of certification | <p>FCI</p> <ul style="list-style-type: none"> Technical note on building India's Mortgage Securitization market (concluded in 2021) <p>IFC FIG</p> <ul style="list-style-type: none"> IFC has made debt and equity investments in nine clients since FY21 amounting to US\$1.3 billion. IFC's Advisory Services has also engaged with these companies for knowledge sharing and capacity-building, primarily in green affordable housing. <p>IFC CBD</p> <ul style="list-style-type: none"> Advisory support to HDFC and PNB Housing Finance. |
| Proposed | <ul style="list-style-type: none"> URL-IFC/TRP+CBD: Pan-India Green & Affordable Housing Fund: SWAMIH-2 (\$350M) URL- IFC/FIG+CBD: Greening PMAY-G rural self-built housing (SHIELD, \$500M) | <ul style="list-style-type: none"> FCI - IFC/FIG+CBD: IBRD financing to NHB for Green mortgages, co-investments with private sector (potentially FIG as co-anchor investor) on securities issued by the RMBS platform, with an estimated PCE factor of 5 (\$300M) |
| | <ul style="list-style-type: none"> URL- FCI-IFC (TRP+FIG+CBD): Guidance note on scaling up green affordable housing Green Housing Portal | |

Roadmap-1: Supply Side Pan-India Green and Affordable Housing Fund



Roadmap-2: Greening PMAY (supply) and NHB (demand)

URL-IFC/CBD

to support the greening of PMAY housing programs, including SHIELD (\$500M)

FCI

IBRD financing (\$300M) to NHB to incentivize the green mortgage and potentially home improvement loan origination by HFCs



IFC TRP

Works with building materials manufacturers to grow housing supply (outside of J-AHoP)

IFC FIG

Works with HFCs to innovate in financial products for PMAY beneficiaries and beyond

IFC/CBD

Works across the value chain for tools/advice that support green and resilient housing, including definition, certification, and on-line portal for green housing

Greening PMAY: one of the largest housing programs in the world

PMAY-U (2015-2024)

| TARGET | SANCTIONED | COMPLETED |
|--------|------------|-----------|
| 20 M | 11.9 M | 8.6 M |

PMAY-U Target (2024-2029)

10
Million

PMAY-G (2016-2024)

| TARGET | SANCTIONED | COMPLETED |
|--------|------------|-----------|
| 29.5 M | 29.4 M | 25.5 M |

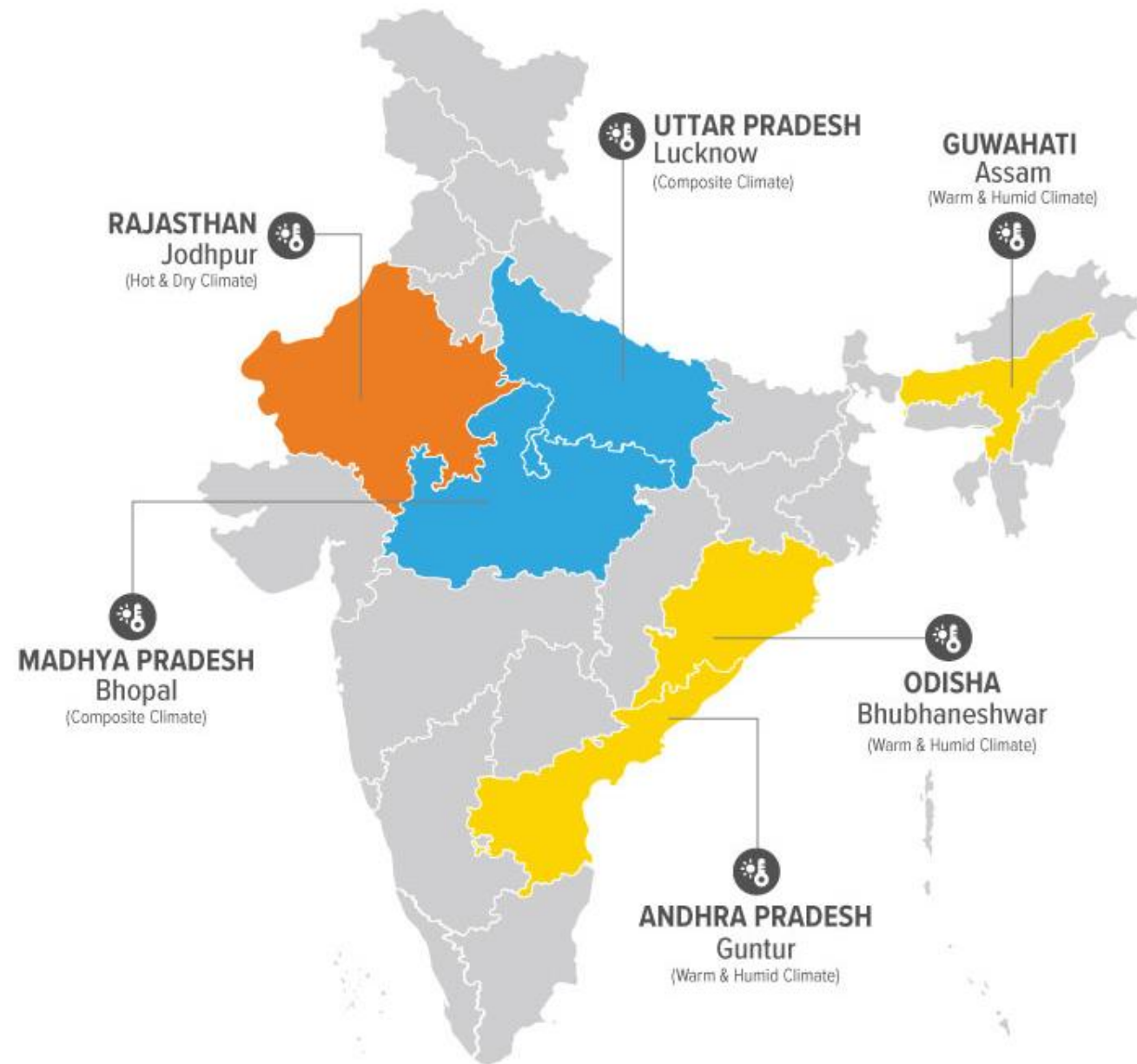
PMAY-G Target (2024-2029)

20
Million

Achieving climate resilient and low carbon self-built homes

OBJECTIVES

- Examine how self-built affordable housing schemes can be strengthened to enhance the climate resilience of India's urban and peri-urban poor.
- Understand current baseline performance of self-built houses through field studies
- Evaluate strategies to improve energy efficiency and climate resilience of self-built affordable houses delivered both under PMAY and other affordable housing funding initiatives.
- To develop policy, regulatory, institutional, and programming recommendations



Achieving climate resilient and low carbon self-built homes

Metrics for Green and Climate-resilient Self-built PMAY Homes

Level 1

Prerequisites

Need promotion by policy and business

- Access to affordable legal land or building title
 - Market availability and affordability of low-carbon materials
 - Construction practices using low-carbon materials & technology
- For reduced embodied carbon and improved thermal properties

Level 2

Site and building level

Metrics for 'Green'

Metrics for 'Climate-resilience'

*Checklist: Performance metrics
- 'essential' and 'to be optimised'*

- **Layout plan, Dwelling unit plan and Building envelope**
Passive design strategies for thermal and visual comfort, Water management, energy-efficient appliance, Access to softscape
- **Construction techniques and materials**
Building compactness, Reduced reinforcement steel intensity, low-carbon walling materials, low-carbon doors and windows
- **Climate protection and preparedness**
Protection from climate change impacts, water and electricity autonomy

3 Climate Zones - Thermal response

Hot-Dry | Warm-Humid | Composite

- Site Plan and Building Orientation
- Thermal Mass
- Building Compactness
- Building Envelope
 - Wall
 - Roof
 - Windows
 - Shading
 - Ventilation

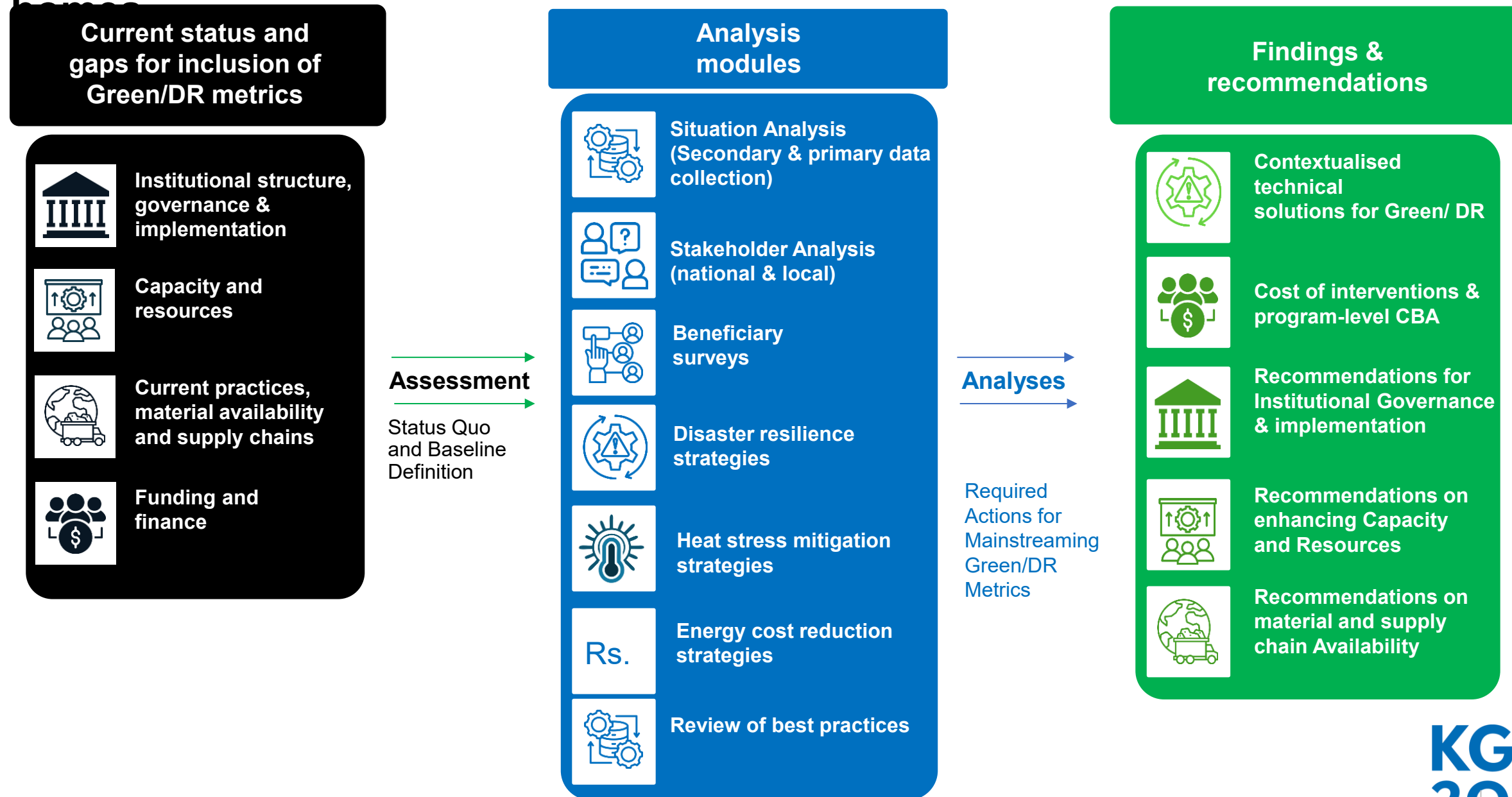
Level 3

Neighbourhood and locality level

Desirable provisions to protect the security of the investment in the making of the house

- Locality resilience
Protection from climate change impacts, Environmental security, Community resilience centres
- Neighbourhood layout
Location and exposure, Neighbourhood planning, and amenities

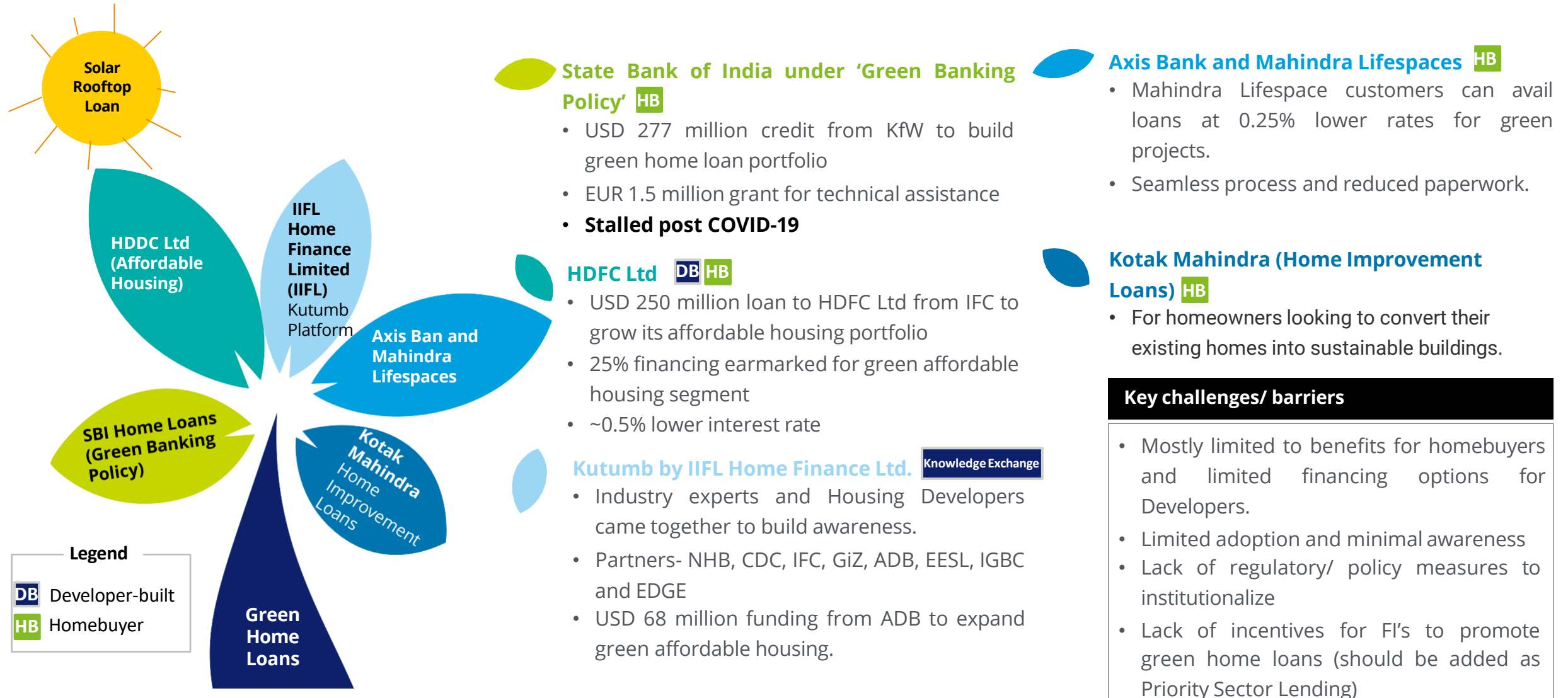
Achieving climate resilient and low carbon self-built



Note: Conclusions and recommendations are based on surveys conducted in six study areas across six states.

Home Loans for Green Housing in India

Few financial institutions in India offer green home loans, however this is limited mostly for homebuyers with limited adoption and low awareness of incentives despite some support from DFIs.



Green Housing Portal

Online portal to enable homeowners to compare, purchase and get finance for material and equipment that would help reduce the GHG emissions from their homes and make their home more resilient to impacts of climate change.

Listing of green housing materials and equipment with their performance specifications and costs

Collate existing datasets and evaluate for validity

Develop performance thresholds and testing protocol

Identify testing facilities for new products

Add new products and brands to the database using validation protocol

Publish the location-based portal for homeowners to access the information

Enable a third party to maintain the portal through sponsorships, subscription or pay-as-you-use business model

Listing of FIs who provide finance for green products

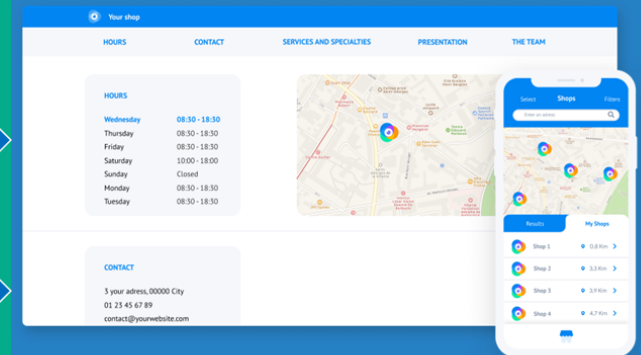
Collect financing criteria and contact details

Listing of local installers/contractors

Aggregate local installer/ contractor database from manufacturers and partners

Guidance on installation and maintenance of products

Collate and/or develop simple guidance videos/ graphics for installation and maintenance



J-AHoP Affordable Housing in India (approved by HSC)

| Key Gap | Activity (Joint Due Diligence) | Delivered by FY26 | Ask in US\$ | Expected Outcome by FY28 |
|--|---|---|---------------|--|
| Supply side constraints for private sector investment in affordable housing (urban regulatory environments, adequate land supply, delayed and fragmented infra provision, access to developer finance for affordable housing) | a. Creating a supply side (Aggregation vehicle) developer financing fund on green and affordable housing. b. Greening PMAY-G | URL-IFC/TRP+CBD | \$180K | <ul style="list-style-type: none"> Increase in investment in green and affordable housing supply by the private sector nationally with additional 100,000 AH units 1 million housing units under the PMAY 2.0 program are greener and more resilient |
| Demand side constraints: Lack of long-term funding in housing finance, limited uptake of green housing | a. Finance to NHB for green mortgages. | a. FCI-IFC/FIG | \$50K | <ul style="list-style-type: none"> IBRD financing to NHB to support the green mortgage origination up to \$300M, leveraging \$ 1.5B private capital (5x) |
| | | b. FCI-IFC/CBD | | |
| Cross-cutting constraints: Limited uptake of green and resilient housing practice | a. Scaling up green and affordable housing policy note with MoHUA (\$45K) b. Green Housing Portal to simplify access to product information and finance (total \$50K, \$25K from J-AHOP and \$25K from Cooling Fund) | a. URL-FCI- IFC (CBD+TRP+FIG) b. URL-FCI-IFC (CBD+TRP+FIG) | \$70K | <ul style="list-style-type: none"> Energy saving and emission reduction by at least 20% within portfolios with WBG financing Green housing principles mainstreamed in PMAY program guidelines. |
| Total | | | \$300K | |

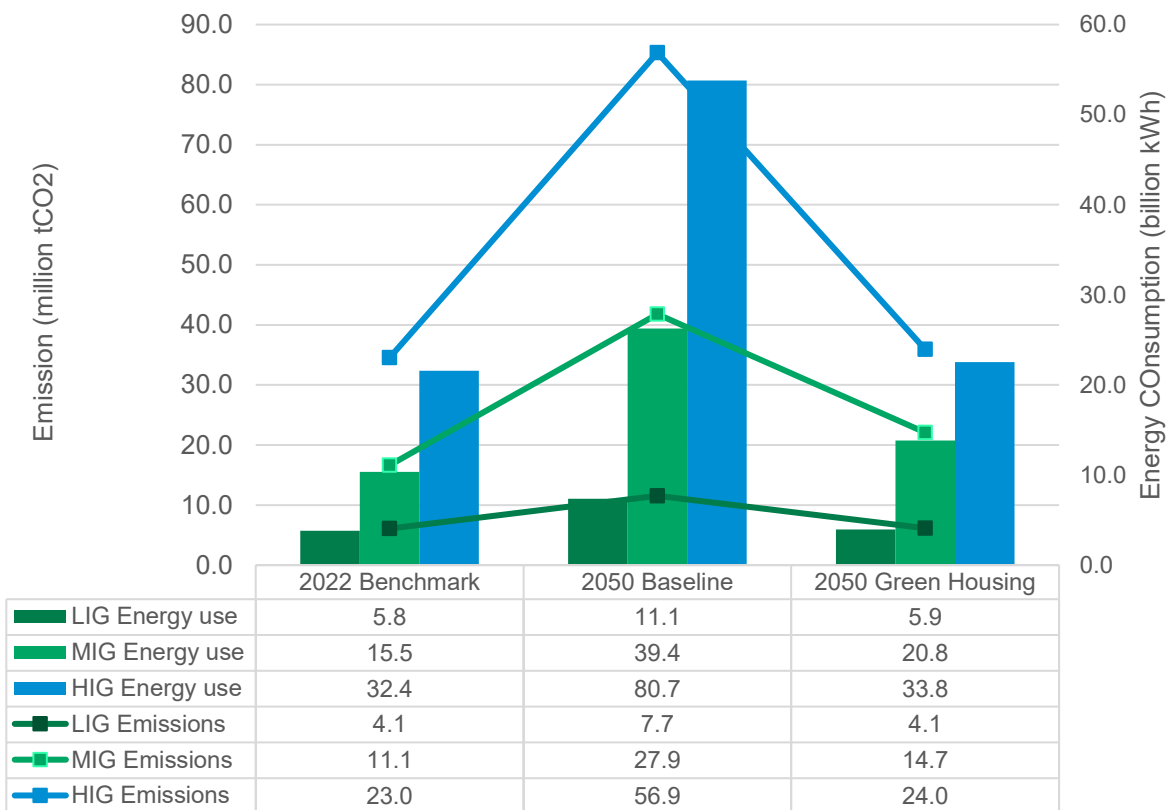
Annex



FINDINGS from EDGE-based SIMULATION

Housing for High-Income Group Generate the Bulk of GHG emissions

Total Household Energy Use and CO₂ Emissions by Income Group in Five Case Cities in India (2022 and 2050)



- High-income Groups incur higher energy use and generate more CO₂ emissions
- Low-income groups, though having the largest number of dwelling units, contribute much less to CO₂

*World Bank, 2023, Scenario simulations using the EDGE model for Chennai, Delhi, Indore, Thiruvananthapuram, and Surat

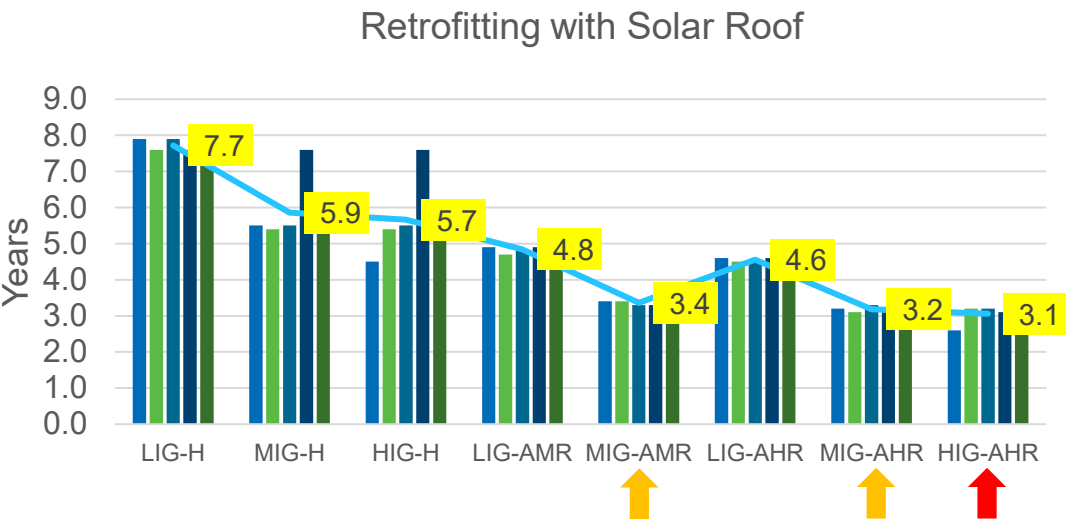
FINDINGS from EDGE-based SIMULATION



**Greening HIG housing entails short payback time;
Greening LIG/EWS housing brings thermal comfort
benefits and quality of life improvement**

Payback Period by Income and Housing Typology in Five

Chennai Delhi Indore Surat Thiruvananthapuram Average



50.0

40.0

30.0

20.0

10.0

0.0

Efficient Envelope and Solar
Roof

LIG-H MIG-H HIG-H LIG-AMR MIG-AMR LIG-AHR MIG-AHR HIG-AHR

11.4 3.2 1.8 18.2 2.2 26.9 0.5 -



*World Bank, 2023, Scenario simulations using the EDGE model for Chennai, Delhi, Indore, Thiruvananthapuram, and Surat

Incentives for green housings (supply side)

