



FINANCIAL ASSESSMENT AND INCENTIVE SCHEME REPORT

Development of Thermal Comfort Action Plan 2050 and Thermal Comfort Performance based Design Standard cum Guidelines for Affordable Housing in India. [REF: 8338 0638]



Environmental Design Solutions
Private Limited



Wuppertal Institute for Climate,
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Disclaimer

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Abbreviations

AAC	Autoclaved Aerated Concrete	INFONAVIT	Institute for the National Worker's Housing Fund
AFD	French Development Agency	LEED	Leadership in Energy and Environmental Design
AHBA	Affordable Housing Bond Aggregator	LHP	Lighthouse Project
AHF	Affordable Housing Fund	LIG	Lower Income Group
AHP	Affordable Housing in Partnership	LIHTC	Low-income Housing Tax Credits
AMI	Area's Median Income	MIG	Medium Income Group
ARHC	Affordable Rental Housing Complex	MoHUA	Ministry of Housing and Urban Affairs
BA	Bank Australia	MRB	Mortgage Revenue Bonds
BLC/E	Beneficiary-led construction/enhancement	NHB	National Housing Bank
CCG	Consolidated Capital Grant	NHBRC	National Home Builders Registration Council
CEFC	Clean Energy Finance Corporation	NHFC	National Housing Finance Corporation
CHP	Community Housing Provider	NHIF	National Housing Infrastructural Facility
CLSS	Credit Linked Subsidy Scheme	ODA	Other Delivery Agents
CMF	Capital Magnet Fund	PLI	Primary Lending Institutions
CPFB	Central Provident Finance Board	PMAY (U)	Pradhan Mantri Awas Yojana (Urban)
CRU	Community Residential Units	PSL	Priority Sector Lending
EHG	Enhanced Housing Grant	RHI	Rapid Housing Initiative
ESDS	Evergreen Sustainable Development Standards	SAH	Sustainable Affordable Housing
EU	European Union	SBTC	Sustainable Building Tax Credit
EWS	Economically Weaker Section	SHI	Social Housing Institutions
FAR	Floor Area Ratio	SHRA	Social Housing Regulatory Authority
FHG	Family Home Guarantee	SWOT	Strength Weaknesses Opportunities and Threats
FLISP	Finance-linked Individual Subsidy Programme	TERI	The Energy and Resources Institute
FSI	Floor Space Index	TIG	Technology Innovation Grant
GHTC	Global Housing Technology Challenge		
GRIHA	Green Rating for Integrated Habitat Assessment		
GST	Goods and Services Tax		
HELP	Home Energy Loan Program		
HFC	Housing Finance Company		
HML	Harmonized Master List		
HPF	Housing Provident Fund		
HTF	Housing Trust Fund		
HUDCO	Housing and Urban Development Corporation		
IECC	International Energy Conservation Code		
IGBC	Indian Green Building Council		
IHF	Incremental Housing Finance		

Executive Summary

The Pradhan Mantri Awas Yojana (PMAY-U), a flagship initiative of the Government of India launched in 2015, aims to provide affordable housing for the urban migrants and poor. Increased temperatures severely impact the urban poor due to lack of adequate housing and basic amenities. Financial mechanisms targeted towards building an **ecosystem** where there is,

- a) **demand for thermally comfortable homes,**
- b) **easy and accessible finance for thermally comfortable homes, and,**
- c) **economies of scale and smooth supply chain for technology solutions that are essential to thermally comfortable homes.**

These financial mechanisms are especially critical to affordable housing as they are expected to have favorable outcomes in not only financial viability, but also health, productivity and energy efficiency. These mechanisms have the potential to improve development indicators while also meeting national sustainability goals.

To achieve large-scale implementation of policy on affordable housing, attractive and easily accessible financial mechanisms are vital since the target beneficiary of such a policy will comprise of the urban poor/migrants. These financial incentives and schemes can be provided in the form of **grants, tax credits and exemptions, credit linked subsidies etc.** Targeted policies and incentives have the potential to unlock easy finance and promote thermally comfortable homes. Based on a comprehensive review of existing national and international policies related to financing affordable housing, it was observed that although current guidelines for affordable homes consider building typologies and construction technology, most existing schemes lack the criteria for financing low-carbon thermally comfortable homes. These limitations arise due to factors such as but not limited to, lack of awareness and demand for thermally comfortable homes, limited awareness regarding design options for developing thermally comfortable homes, limited financial incentives to facilitate thermally comfortable homes etc.

A review of existing national schemes such as affordable rental housing complexes for the urban poor, providing tax exemptions on purchase of affordable housing for first time buyers, credit linked subsidy schemes, etc. has been presented. Financing mechanisms such as grants offered under PMAY (U), for example Technology Innovation Grant, Global Housing Technology Challenge and direct benefit transfers like Affordable Housing in Partnership, Beneficiary-Led Construction etc. have also been reviewed. A comparative analysis of the existing finance incentives has been further presented which forms the base of the evaluation framework enabling listing the merits and demerits of existing schemes. Based on a comparative analysis, recommendations have been made in this report which can be implemented to promote incorporation of thermal comfort in affordable housing. Some recommendations have been listed below:

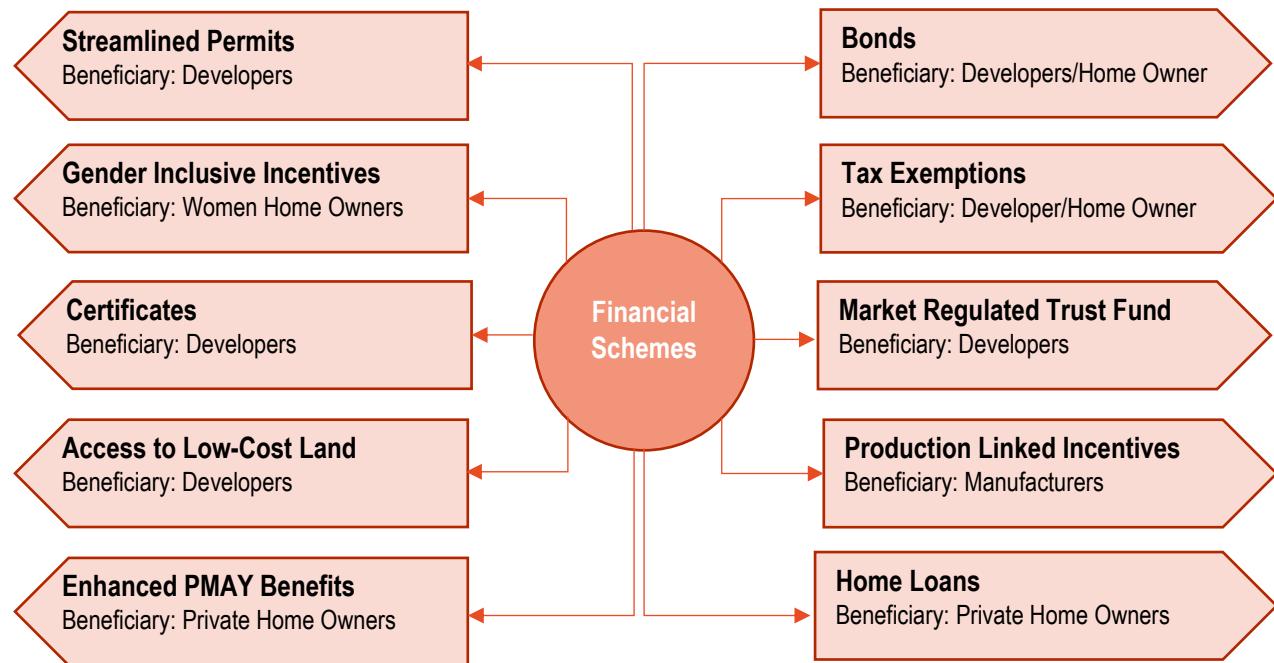
- Urban poor from EWS and LIG categories can be financed through housing finance companies and banks at lower interest rate for procuring thermally comfortable affordable home. They may also be provided rebates for purchasing comfort systems (5-Star fans, desert coolers, etc.)
- Municipal bonds, real-estate investment trusts and other such market-based mechanisms can bring in much needed private equity into the affordable housing sector. This infusion of capital can also facilitate economies of scale in to construction technologies (new and existing) and bring in financial viability.
- Use of alternate sources of energy for sustaining energy demand of affordable home can be incentivized through tax exemptions and subsidies for installing such a technological mechanism.
- Further incentives can be provided to private developers through tax exemptions, fast track clearances, land banks, etc. for complying with thermal comfort design standards.

The funding mechanism can be under the guidelines of PMAY (U) through intermediaries such as HUDCO, NHB, Public Sector Banks, Primary Lending Institutions etc. The primary beneficiaries of such a funding scheme will be the

marginalized urban poor from the EWS and LIG categories, along with private entities/developers investing in affordable housing projects which promote thermal comfort.

Based on the identified beneficiaries of the proposed scheme, several recommendations have been made for integrating financial incentives with existing government schemes for individual beneficiary. The recommendations have been made through an extensive review of existing financial mechanism globally which can be applied to the Indian context.

Financial incentives are expected to have a catalytic effect that can galvanize the affordable-housing averse developers into action. The multi-fold benefits of these investments will ensure improved living conditions and sustainable habitats.



I Intent and outcomes

Financial incentives can support compliance or even help to achieve improved performance levels by addressing financial barriers. Financial incentives in form of grants, tax breaks, soft loans, risk guarantees, etc. can accelerate market penetration.

The outcome is intended to be financial incentive scheme that dovetails into existing housing schemes, financial mechanisms and implementation frameworks while also being complimentary to the thermal comfort design standard and action plan.

2 Scope and process

This report on financial assessment and incentive scheme for successful implementation of Thermal Comfort Action Plan 2050 and Thermal Comfort Performance based Design Standard cum Guidelines for Affordable Housing in India presents a discussion on the existing financial schemes under different housing policies in India. A brief on the incentives offered under various schemes to promote affordable housing for urban poor in India has been presented. The report further discusses numerous financial schemes offered by International Governments in their respective countries to determine the best practice for promotion of affordable housing in urban context.

Based on an extensive review of existing policies in conjunction with various stakeholders, this report provides the most suitable recommendation for financial assistance for promotion and acceptability of thermally comfortable affordable housing in India. The report has been developed through a methodology covering secondary research of existing financial assistance schemes under national and international affordable housing schemes. Data from various public and private sources has been utilized in finalizing this report.

3 Background

Financial incentives are critical for large-scale implementation of policy on affordable housing, primarily since the target beneficiary of the policy consists of poor migrants with little access to habitable conditions. A brief discussion on the need for financial assistance for successful implementation of policy on thermally comfortable affordable housing has been presented hereafter.

3.1 The need for financial incentives to achieve thermally comfortable affordable housing

Financial incentives are usually required to increase the access to affordable housing. Financial incentives are offered in the form of grants, tax credits, credit linked subsidies etc. Although, affordable housing typologies and construction technology are sometimes guided by or linked to the financial incentive schemes, most existing schemes do not implicitly consider low-carbon and thermally comfortable buildings as qualifying criteria. Design and technology options are available to make affordable housing thermally comfortable, however, limitations such as,

1. lack of awareness and demand for thermally comfortable homes,
2. limited awareness on design and technology options for development of thermally comfortable homes among design professionals, construction agencies, urban development departments,
3. limited or no financial products that facilitate finance to thermally comfortable homes, and
4. absence of other enabling frameworks (supply chain, conflicting policies, etc.)

Targeted policies and incentive schemes have the potential to not only promote but also distinguish thermally comfortable homes to facilitate market-based mechanisms. Financial incentives in particular, may bridge these gaps to unlock easy finance and catalyse the enabling ecosystems.

Since the proposed financial incentives must be aligned with national policies, the following section outlines existing policies and incentive schemes. The following section also explores global incentive schemes from other countries.

4 Review of financial incentive schemes

This chapter presents an overview of existing national and international financial incentive schemes for affordable housing and low-carbon/green/sustainable/thermally comfortable housing. It further includes a qualitative assessment of various incentive mechanisms along with SWOT analysis. Shortlisted incentive schemes would form the basis for drafting a suitable financial incentive scheme for thermally comfortable affordable housing in India.

4.1 National examples of financial incentive schemes for affordable housing

4.1.1 Tax credits or tax exemption

Affordable Rental Housing Complexes (ARHCs)

ARHC intends to provide affordable rental accommodation for migrant workers or urban poor. Public-private partnerships will be used to provide housing in two models. A private concessionaire or entity will either repair or retrofit existing government funded vacant houses by improving civic infrastructure gaps like water, sewer or septic, sanitation, internal road etc. to make it liveable or they can construct, operate and maintain ARHCs on private land. In both models, the private entities are given exception on income tax and goods and services tax (GST) on any profits and gains derived from the operation of ARHCs (MyGov.in, 2020).

80EEA of the Income-tax Act

To encourage first time home buyers of affordable homes, individuals can claim the interest payable towards repayment of the home loan as a deduction on their total income, with a cap of INR 150,000, subject to specific conditions, such as - the period of the loan disbursement (1st day of April, 2019 and ending on the 31st day of March, 2020), value of residential house property does not exceed forty-five lakh rupees (Insertion of New Sections 80EEA and 80EEB in the Income-Tax ACT, n.d.).

4.1.2 Grants or Direct benefit transfer

Technology innovation grant (TIG) for Affordable Rental Housing Complexes (ARHCs)

Under the ARHC scheme, entities are eligible to receive Technology Innovation Grant (TIG) for using innovative, alternative and sustainable technologies, in order to help their wider acceptability. This grant amount is INR 60,000 per house for a single bedroom house, INR 100,000 for a double bedroom) and INR 200,000 for a dormitory bed in a shared rental accommodation (PIB & MOHUA, 2021).

Affordable housing in partnership (AHP)

AHP is a centrally sponsored scheme that provides a financial assistance INR 150,000 per house that is built specifically for Economically Weaker Sections (EWS). EWS houses that are built as a part of affordable housing projects and with a minimum 250 houses and with at least 35% of houses under EWS category are eligible for the financial assistance (PMAY (U), n.d.-c).

Beneficiary-led construction/enhancement (BLC/BLE)

BLC/BLE is a centrally sponsored scheme that provides eligible families with a financial assistance INR 150,000 to either construct new house or to enhance existing houses themselves. In case of enhancements, the minimum carpet area of 9 square meters should be added to the existing house. The total carpet area after enhancement must not be between 21 and 30 square meters (PMAY (U), n.d.-a).

Global Housing Technology Challenge

GHTC-India was conceptualized by the MoHUA in March 2019-20. Under this scheme, the aim is to identify the innovative technologies for the housing construction sector which are sustainable and eco-friendly. In the GHTC-India, a biennial conference is organized to provide a platform to all stakeholders for demonstrating through lighthouse projects (LHP), the merits of selected technologies along with technology transfer and increasing mass awareness for selected technologies. The funding for the LHPs is as per the guidelines of PMAY.

4.1.3 Credit linked subsidy scheme (CLSS) or subsidies on interest

EWS, LIG, MIG I and MIG II

To encourage home ownership among EWS and low- and middle-income group (LIG/MIG), under certain conditions, they are offered credit linked subsidies or interest subsidy. The level of subsidy de-pends on the income group and is capped based on the loan amount. Beyond the capped loan amount, the interest subsidy does not apply, and that amount is borrowed at normal rate of interest (PMAY (U), n.d.-b).

Affordable Rental Housing Complexes (ARHCs)

Entities or concessionaires that retrofits or develop and operate ARHCs receive project finance/loan at lower interest rate through concessional window under Affordable Housing Fund (AHF) by Housing Finance Companies (HFCs) and Priority Sector Lending (PSL) by Commercials Banks, upon inclusion of ARHCs in Harmonized Master List (HML) on the same lines of 'affordable housing' (MyGov.in, 2020).

4.1.4 Indirect and generic financial incentive schemes through PPP Models for affordable housing

Private entities that retrofit or develop and manage ARHCs are allowed to build 50% additional Floor Area Ratio (FAR)/ Floor Space Index (FSI) free of cost in such projects (MOHUA, n.d.).

4.2 National examples of financial incentive schemes for sustainable housing

4.2.1 Direct incentive schemes for green or energy efficient buildings

Sunref India affordable green housing for green buildings (Sunref India, n.d.)

SUNREF (Sustainable Use of Natural Resources and Energy Finance) is a programme developed by the French Development Agency (AFD) to support green investments through environmental credit lines for local financial institutions. In India, National Housing Bank (NHB) launched the SUNREF Green Housing India programme in partnership with NHB and with the support of European Union (EU). The beneficiaries of the programme include primary lending institutions (PLIs), housing project promoters and developers, and individual home buyers who finance, develop and buy houses that receive a minimum level of IGBC or GRIHA green homes rating. To benefit the final borrowers, a credit facility of Euro 100 million was made available, along a grant of Euro 9 million to reduce the cost of eligible loans for final borrowers. In addition, up to Euro 1 million was dedicated cover the expenses related to green label certification. At least 50% of the credit facility was allocated to EWS and LIG houses (NHB, n.d.).

Refinancing programme by KfW bank for energy efficient homes

KfW bank, Germany, extended a line of credit of EUR 50 million to the National Housing Bank (NHB) to refinance banks and other financial institutions that have financed energy efficient homes. The final borrows are benefitted from the benefits of low utility bills and enhanced thermal comfort of energy efficient homes and also a subsidy in their rate of interest. The project eligibility is calculated by a tool jointly developed by Fraunhofer and TERI (Auswärtiges Amt, n.d.).

4.2.2 Indirect financial incentive schemes for green or energy efficient buildings

Many state governments and municipalities allow projects that receive a minimum level of green building certification under green building rating schemes, such as GRIHA or IGBC LEED to construct additional floor space (calculated as Floor Area Ratio (FAR) or Floor Space Index (FSI) or ground coverage) than otherwise permitted (GRIHA, n.d.; IGBC, n.d.).

4.3 International examples of financial incentive schemes for affordable housing

4.3.1 Tax credits and tax exemptions

Low-income housing tax credits (LIHTC) – USA

Through the LIHTC programme, federal government of the USA offers tax credits to encourage the development and rehabilitation of affordable rental housing. The eligibility criteria involve options in which at least 20 or 40% of the project's units are occupied by tenants whose income is less than 50 or 60% of the area's median income adjusted for family size (AMI). The projects must comply with the eligibility criteria for at least 15 years and can claim LIHTC over a 10-year period (Keightley, 2022).

4.3.2 Grants and awards

HOME Investment Partnerships Program (HOME) – USA

Under the HOME programme, federal government of the USA offers formula grant to states, cities, urban counties, and consortia (contiguous units of local governments with a binding agreement) and also often in partnership with local non-profit groups that seek to develop a variety affordable housing activities for serve low- and very low-income families, including rental assistance, housing rehabilitation, assistance to home buyers and construction of housing. The target of new housing developed using HOME funds must include 90% and 10% families with incomes not exceeding 60% and 80% AMI (U.S. Department of Housing and Urban Development, 2017).

National Housing Trust Fund (HTF) – USA

Under the HOME programme, federal government of the USA offers formula grant to states and state designated agencies to aid the production or preservation of affordable housing through the acquisition, new construction, reconstruction, and/or rehabilitation. Annually, 80% of the grant must be used for rental housing and 10% to promote home ownership (U.S. Department of Housing and Urban Development, 2019).

Capital Magnet Fund (CMF) – USA

Under the CMF, the U.S. Department of the Treasury CDFI Fund awards competitive grants to certified Community Development Financial Institutions Fund (CDFI) and non-profit organizations that work to develop and manage affordable housing solutions (United States Department of the Treasury, n.d.).

Mixed-Finance Public Housing – USA

Public Housing Agencies (PHA) can use funds from mixed sources, including public housing funds, HOPEVI revitalization grants, capital funds, and remaining development and modernization to be loaned and/or grant by the PHA to a development partner to develop public housing projects. The developed public housing units consists of mixed-income beneficiaries (U.S. Department of Housing and Urban Development, 2001).

Rapid Housing Initiative (RHI) – Canada

Under the Rapid Housing Initiative, Government of Canada provides grants to provinces and cities to develop modular multi-unit rental housing, and conversion of non-residential building to an affordable rental project for vulnerable population. The grant is delivered by Canada Mortgage and Housing Corporation (CMHC), under the National Housing Strategy (NHS) and is provided to eligible housing providers who meet the criteria provided by CMHC, including non-profit affordable housing providers (CMHC, n.d.; Government of Canada, 2020).

Social Housing Program (Programa De Vivienda Social (PVS S177)) – Mexico

Federal Government of Mexico provides grants to state agencies or municipal bodies to meet the housing needs of vulnerable population. The programme is executed by National Housing Commission (CONAVI). The subsidy can be used in one of the three ways, either as a 100% subsidy to cover their housing needs, as co-financing and as emergent housing, which focuses on activation of local economies and the generation of employment in the housing construction industry (Comisión Nacional de Vivienda, n.d.).

Consolidated Capital Grant (CCG) for social housing - South Africa

Social Housing Regulatory Authority (SHRA), along with the contributions from National Housing Finance Corporation (NHFC) provides significant contribution to the capital cost of social housing projects to develop affordable rental accommodation to low-middle income households. The total amount of grant is redetermined individually for each project. The projects are developed through accredited Social Housing Institutions (SHI) and other delivery agents (ODA) in coordination with local municipalities Provincial Human Settlement Departments (SHRA, n.d.; Social Housing Finance Corporation, n.d.).

Community Residential Units Programme (CRU) - South Africa

The government of South Africa provides grant to provincial governments and or municipalities to re-develop old hostels, and to establish new low-cost rental residential facilities for low income persons/households (Government of South Africa, 2022).

Affordable housing bridging finance – South Africa

NHFC providers short term development bridging finance to developers of affordable housing for sales to the low to middle income earners (NHFC, n.d.-a).

Enhanced CPF Housing Grant (EHG) – Singapore

EHG grant is provided by the Central Provident Fund Board (CPFB) to first-time flat buyers. The grant amount is subject to the monthly household income (CPFB, n.d.).

Affordable Homes Programme – UK

Homes England, a government's housing accelerator, provides grants to strategic partners including, developers, housing associations to develop affordable homes that are let at discounted rent, increase affordable home ownership (e.g., through schemes such as rent and buy) and assist supported housing etc (GOV.UK, n.d.).

4.3.3 Soft loans/credit linked

Finance-Linked Individual Subsidy Programme (FLISP) – South Africa

FLISP provides subsidy to the poor to middle income household who do not qualify for full subsidy and for mortgage loan from the banks. Applicants are required to buy a home from a builder registered with the National Home Builders Registration Council (NHBRC) to ensure building and safety standards. The subsidy amount is provided upon meeting the eligibility criteria and securing the applicable finance option (Western Cape Government, 2022).

Incremental Housing Finance (IHF) – South Africa

NHFC offers loans to eligible retail financial intermediaries (RFIs) (e.g., micro finance or cooperative finance institutions) that further extends loans to low and middle-income homeowners to improve their housing condition on an incremental/gradual basis. IHF can be used to building a new house, add extensions to an existing house, connecting to utilities, energy efficient retrofits including addition of thermal insulation, and solar energy (NHFC, n.d.-b).

Grameen Bank Housing Programme (discontinued) – Bangladesh

Grameen Bank, a non-governmental cooperative association extended loans to rural poor to build modest homes. Along with the loans, the recipients received four pre-fabricated concrete pillars, corrugated iron sheets for roofing and sanitary slabs for the construction of toilets. It was noticed that the incomes of the recipients of the loan rose after they built the houses and 98% of the participants of the programme repaid the loan (Aga Khan Foundation, 2020).

Local Authority Home Loan – Ireland

First time home buyers in Ireland can avail local authority home loan through their local authorities to buy a home, including purchase of home through state schemes such as tenant purchase scheme and affordable housing schemes (Local Authorities Ireland, n.d.). It is also possible for the tenants to buy the home, after meeting the eligible criteria.

Housing Provident Fund (HPF) – China

HPF accumulates funds from mandatory contributions from employee and employer in the savings account of the employee. By leveraging on these savings, workers can benefit from low-interest home loans (Taffin et al., 2011).

4.3.4 Programmes under other and/or mixed categories

National Social Housing System – Brazil

The financing bank, Caixa Econômica Federal (CEF) provides capital to Private developers to build affordable homes, which are delivered to the beneficiaries after construction. After the beneficiaries are identified and approved, CEF determines the amount of subsidy offered and enters into a ten-year contract during which the beneficiaries make monthly payments towards the house (Dalla Vecchia & Medvedovski, 2021).

Family Home Guarantee (FHG) – Australia

Family Home Guarantee (FHG) is a credit guarantee (partly, for up to a maximum amount of 18% of the value of the property) scheme administered by the National Housing Finance and Investment Corporation (NHFIC) on behalf of the Australian Government to help first time homebuyers. It partly eases the burden of initial deposit without paying Lenders Mortgage Insurance (NHFIC, 2021a).

San Francisco's Citywide Affordable Housing Program – USA

San Francisco's Citywide Affordable Housing Program provided capital grants and loans to developers to construct and maintain stock of affordable housing, including supportive housing, family rental housing and housing for people with disabilities (NLIHC, 2014).

The National Housing Infrastructure Facility (NHIF) – Australia

NHIF offers concessional loans, grants and equity finance to help support critical housing-enabling infrastructure. Eligibility for the NHIF includes local governments; local government-owned investment corporations; State, Territory and local government-owned utility providers; registered CHPs; and special purpose vehicles incorporating one of the aforementioned entities (NHFIC, 2021b).

Affordable Housing Bond Aggregator (AHBA) – Australia

AHBA provides low cost, long-term loans to registered community housing providers (CHPs) to promote social and affordable housing and can be used to acquiring new housing stock, constructing and maintaining new housing stock, and carrying out retrofits (NHFIC, 2021).

Choice neighbourhoods – USA

Choice neighbourhoods programme helps distressed public or HUD assisted housing through a comprehensive approach to neighbourhood transformation. The goals of the programme are centred on housing, people and neighbourhood, i.e., to replace distressed housing with high-quality mixed-income housing, improve the outcomes of households, create amenities that are important to the community. The projects benefit from both public and private funding (USHUD, n.d.).

4.3.5 Housing bonds as instruments to finance affordable housing

Housing bonds are long-term financial instruments designed to provide finance while reducing complexity in access to housing finance for affordable home to low-income buyers. The bonds are issued by local or state governments to raise funding for affordable housing projects. Investors of affordable housing purchase at low interest rates made possible through tax exemptions on income from affordable houses.

Thematic Bonds for Green Housing in the Asia and Pacific Region

With the assistance of ADB, Thailand's National Housing Authority aims to mobilize capital investment to finance affordable and sustainable housing for low-income citizens. The NHA provides financial assistance to over 2 million households and from 2022-2027, aims to raise close \$ 4 billion to fund 16 projects across the country.

Mortgage Revenue Bonds (MRBs) and Multifamily Housing Bonds - USA

MRBs finance single-family affordable home purchases and multifamily housing bonds are used to finance construction and purchase of multifamily developments for low-income communities. As per policy, the finance is capped by the population of respective state. Using MRBs, more than 3 million low- and moderate-income families have been provided houses.

4.4 International examples of financial incentive schemes for sustainable housing

4.4.1 Tax credits

Tax Credits for Home Builders – USA

For each energy efficient building, home builders are eligible for tax credits of \$2,000 and \$1,000 when they achieve 50% and 30% energy savings for heating and cooling over the 2006 International Energy Conservation Code (IECC) and supplements. Alternatively, manufactured homes are eligible for a \$1,000 tax credit if it meets ENERGY STAR requirements (Energy Star, n.d.).

Sustainable Building Tax Credit (SBTC) – Mexico

Homes that are certified by either LEED or the Build Green New Mexico rating system; or manufactured homes that have energy star label are eligible for tax credits. Existing homes that have installed energy conserving products include certain, air source and ground source heat-pumps, heat pump water heaters, windows, doors, thermal insulation upgrades and electric vehicle charging equipment are also eligible for tax credits (EMNRD, 2022).

4.4.2 Soft loans

Green Mortgage programme – Mexico

Institute for the National Workers' Housing Fund (INFONAVIT) have developed a housing finance scheme called Green Mortgage to encourage the use of energy efficient systems and technologies for low-income households. Homes purchased using INFONAVIT funds receive additional 'green' mortgage (a credit on the top of the actual mortgage credit) of up to USD1,250 to cover the incremental cost of eco-technologies (World Habitat, 2017).

CEFC Green home loan/Bank Australia clean energy home loan – Australia

Clean Energy Finance Corporation (CEFC) is investing up to \$60 million in a green home loan program launched in partnership with Bank Australia (BA). BA offers a discount of at least 0.4% per annum for up to five years for new and existing homes if they meet the eligibility criteria for energy efficiency as per Nationwide House Energy Rating Scheme (NatHERS) (CEFC, 2022).

Sustainable Home Loan by regional Australia bank – Australia

Sustainable Home Loan provides discount on interest rates, and other banking incentives for homes that meet the current minimum environmental standards required by the relevant state or territory authority. In addition, homes are required to provide evidence that they have installed at least few of the mandatory features required by the programme (Regional Australia Bank, n.d.).

Affordable housing initiative – Europe

Affordable housing initiative is a part of the European Commission's renovation wave strategy for Europe, with the aim of decarbonizing the EU building stock with deep renovations. Shape-EU is a programme funded under this initiative with the goal to support public, social and cooperative housing providers, public authorities, and SMEs to deliver social and affordable housing district renovations (European Commission, n.d.; Shape-EU, n.d.).

Sustainable Affordable Housing (SAH) – Canada

Supported by the Green Municipal Fund, federation of Canadian Municipalities' SAH initiative provides grants and loans for energy efficiency retrofit of affordable homes during five stages, including planning, feasibility studies, pilot projects, retrofit and new projects (FCM, 2022).

Canada Greener Homes Grant – Canada

Grants of up to CAD 5,000 are provided for eligible home energy retrofits, of up to CAD 600 are available for home evaluations, and interest-free loans with a repayment period of 10 years are provided for major retrofits (Natural Resources Canada, 2021).

Home Energy Loan Program (HELP) – Canada

Cities, such as Toronto offer homeowners loans of up to CAD 125,000 with limited time, zero-percent interest rates and terms of up to 20 years of amortization upon retrofitting existing homes with qualifying energy conservation measures and installation of renewable energy systems (City of Toronto, 2017).

4.5 Examples for green or energy efficient standards for financing affordable housing

Evergreen Sustainable Development Standard (ESDS) – USA

Affordable housing projects that receive capital funds through the state Housing Trust Fund programme must comply with ESDS standards. ESDS is based on nationally recognized Green Communities standard and has been adapted to reflect Washington State priorities and building codes (Washington State Department of Commerce, 2022).

ECOCASA – Mexico

The EcoCasa programme focused on providing energy efficient and low-carbon housing for low-income families. The programme was successful in financing more than 61,000 certified homes. Certification scores are awarded with tools Housing Environment Evaluation Tool – HEEVi, Life Cycle Analysis Tool – LCA and SISEVIVE ECOCASA Tool (DEEVi, SAAVi and IDG). In the process, it worked with 79 developers in around 240 projects in 23 Mexican states, and thus helped in capacity building (Sociedad Hipotecaria Federal, n.d.)

4.6 Summary and Recommendations for Indian Context

The comprehensive survey of financial incentive schemes shows that in India, limited number of financial schemes promoting affordable housing projects are currently employed under PMAY (U). Based on the extensive survey of financial incentive schemes, currently in practice in India as well as internationally (see Appendix 1 for detailed case studies), some recommendations for promotion of affordable housing can be made which can be applied to Indian urban housing context.

- Incentives in the form of tax exemptions for construction, retrofit or acquiring of affordable housing project
- Grants for use of sustainable technologies in construction of affordable housing
- Development of forum of financing institutions for proper regulation of fair and timely fund dispersal
- Tax benefits on import of sustainable and affordable technologies for development of affordable housing
- Low interest home loans to the urban poor through central funding agencies

These are some examples of different mechanisms through which private home buyers and real-estate developers can be incentivized to develop affordable housing projects in urban centres in the country. Based on this extensive survey, an evaluation framework has been presented in Section § 5. The different schemes in practice in India and internationally have been compared based on different metrics. This evaluation framework is further used to propose detailed recommendations for a draft incentive scheme in Section § 6 with the objective of promoting thermal comfort in affordable housing. The recommendations have been made to enhance existing schemes and propose integrations into the scheme to promote thermal comfort in affordable homes for building a climate resilient society.

5 Evaluation framework to compare financial incentive schemes

5.1 Evaluation framework

The methodology will focus on financial incentives that can support compliance or even help to achieve improved performance levels by addressing financial barriers. However, it does not compare the various incentive schemes for their inherent risks.

Table 1 Evaluation framework (India)

Subsidy Scheme title	Beneficiary	Eligibility Criteria	Green/Energy Efficiency requirement	Funding Source
Affordable Rental Housing Complex (ARHC)	EWS and LIG category (urban poor)	i. For EWS – annual income up to INR 3,00,000/- ii. For LIG – annual income between INR 3,00,000 and 6,00,000/-.	No	NHB HUDCO SBI
80 EEA of Income Tax Act	First time home buyers investing in affordable homes whose value does not exceed INR 45 lakhs.	The buyer/investor should not have any property prior to approval of loan in his/her name.	No	Housing finance companies Banks providing home loans
Technology Innovation Grant (TIG)	Private entity responsible for repairs and retrofitting of existing government funded vacant houses under ARHC	Private entity/ developer	Yes	NHB HUDCO SBI
Affordable Housing in Partnership (AHP)	EWS category	Annual Income less than INR 3,00,000/-.	No	Centrally funded scheme through: ULBs Housing Boards Private agency/developer

Table 1 Evaluation framework (India)

Subsidy Scheme title	Beneficiary	Eligibility Criteria	Green/Energy Efficiency requirement	Funding Source
Global Housing Technology Challenge (GHTC-India)	Private developers	Based on outcome of grand expo-cum-conference where stakeholders showcase best technologies to build houses.	Yes	As per guidelines of PMAY (U)
Beneficiary led construction (BLC/BLE)	EWS category	Annual Income up to INR 3,00,00/-.	No	NHB HUDCO SBI
Credit linked subsidy scheme (CLSS)	EWS, LIG and MIG category households	EWS- annual income up to INR 3,00,000/- LIG- annual income between INR 3,00,000 and 6,00,000 MIG I- annual income INR 6,00,000 – INR 12,00,000 MIG II – annual income INR 12,00,000 – INR 18,00,000	No	NHB HUDCO SBI
Sunref India affordable green housing for green buildings	Primary lending institutions Housing project developers Individual home buyers	Houses should receive a minimum level of IGBC or GRIHA rating.	Yes	National Housing Bank with the support of European Union
Refinancing programme by KfW bank for energy efficient homes	Banks and Financial Institutions which finance energy efficient and thermally comfortable homes.	New residential buildings are considered energy efficient if they save at least 18% compared to reference buildings through passive measures, and at least 30% through hybrid active and passive measures.	Yes	KfW Bank, Germany

Table 2 Evaluation framework (International)

Subsidy Scheme title	Beneficiary	Eligibility Criteria	Green/Energy Efficiency requirement	Funding Source	Country
Evergreen Sustainable Development Standard (ESDS)	Private Developers	Standard comprises of 89 Criteria, either Mandatory or Optional. Each affordable housing project must comply with Mandatory criteria and achieve minimal number of points.	Yes (In case of Optional Criteria)	State Housing Trust Fund Program	USA
ECOCASA	Private Developers	Low-cost construction loans provided to developers to build affordable homes which cut CO ₂ emissions by 20% or higher.	No	Mexican National Housing Bank Sociedad Hipotecaria Federal Inter-American Development Bank German Development Bank	Mexico
Finance linked individual subsidy programme (FLISP)	Private Home Owner	Beneficiary household income between ZAR 3501-ZAR 22,000 per month	No	Western Cape Government	South Africa
Grameen Bank Housing Programme	Private Home Owner	Rural poor with bank membership	No	Grameen Housing Bank	Bangladesh
Enhanced CPF Housing grant (EHG)	Private Home Owner	First time flat buyers with grant amount subject to monthly income	No	Central Provident Fund Board	Singapore
Minha Casa Minha Vida (MCMV)	Private Home Owner	Low-income families with income less than BRL 1800 per annum	No	Caixa Economica Federal	Brazil

Table 2 Evaluation framework (International)

Subsidy Scheme title	Beneficiary	Eligibility Criteria	Green/Energy Efficiency requirement	Funding Source	Country
First home guarantee	Individual Home Buyer	Applicant should be over 18 years of age, Australian citizen, income up to 125,000 \$ and first-time home buyer	No	National Housing Finance and Investment Corporation (NHFIC)	Australia
Green Mortgage Programme	Private Home Owner	Applicant should be individual worker with formal employment in the private sector who become affiliated to INFONAVIT.	Yes	Mexican Institute of the National Housing Fund for workers (INFONAVIT)	Mexico
CEFC Green home loan	Private Home Owners and Developers	Available for home builders and renovators for homes with 7-star rating or higher and solar PV system	Yes	Clean Energy Finance Corporation in association with co-financiers	Australia
Sustainable Affordable Housing (SAH)	Local affordable housing providers	<ul style="list-style-type: none"> • New construction projects are required to meet NZE/NZER standards. • Buildings must target a net annual total energy use intensity of 80 kWh/m² at project completion. 	No	Green Municipal Fund, Government of Canada	Canada
Low-income housing tax credits (LIHTC)	Private owners or Project Developers	<ul style="list-style-type: none"> • At least 20% of project's units are occupied by tenants with 50% or less of area median income adjusted for family size. • At least 40% of units are occupied by tenants with income of 60% or less of AMI • At least 40% of the units are occupied by tenants with income averaging no more than 60% of AMI • No units are occupied by tenants with income greater than 80% of AMI 	No	Federal government issues tax credits to state governments. State housing agencies then award credit to private developers	USA

6 Proposed recommendations for draft incentive scheme

Housing policies have witnessed a significant change since the first policy was developed in the 1950's, along with the Government's role in housing sector. In the beginning, the policies were developed with a vision of general welfare and were later refurbished driven by an agenda of economic prosperity of the marginal communities in India. The development of housing policies and financial schemes can be traced through the decades as part of 5-year plans, and divided into four phases as seen in the illustration below.

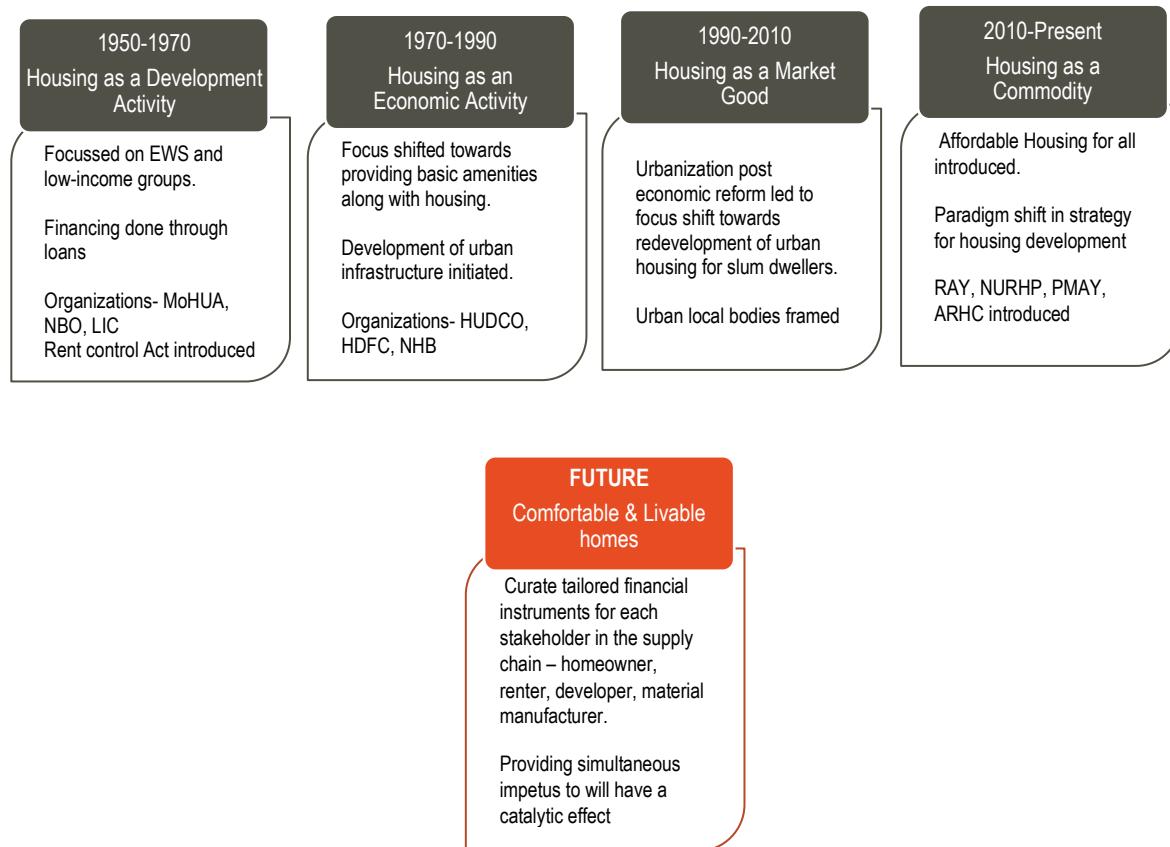


Figure 1 Evolution of Housing Policies and Finance Schemes in India since 1950's and conceptual approach to the future

In the last decade, climate crisis has aggravated the social and economic disparities between the low income and high-income class in the country, which has an impact on the fundamental human right to adequate housing. A report published by NITI Aayog states that "Affordable Housing" can be a major driver towards India's expected GDP growth enabling the transition of people from lower income groups to live in adequate housing (NITI Aayog, India at 75, 2018). The report further highlights the capability of affordable housing to help achieve multiple Sustainable Development Goals (SDGs) primarily SDG 11 (Sustainable Cities and Communities) which targets adequate, safe and affordable housing for all. Affordable housing with an agenda of ensuring thermal comfort of occupants can further ensure fulfilment of good health and well-being (SDG 3), provide access to decent work and economic growth through urbanization (SDG 8), responsible consumption and production (SDG 12) and lastly combat climate change (SDG 13).

6.1 Thermal comfort under affordable housing

Under PMAY (U), a flagship initiative of the Government of India aims to provide over 12 million affordable housing for the urban poor (MoHUA 2017). These houses will have the potential to impact the use of natural resources over their life span. It becomes crucial to ensure the design of such houses does not compromise on energy efficiency as well

as thermal comfort. To ensure energy efficient designs, action across multiple facets of building construction will be needed. Furthermore, focus should be provided to low-cost passive measures like low-energy cooling systems to ensure affordable solutions to the habitants. In addition to energy efficiency, efforts need to be made to ensure the houses are thermally comfortable reducing and mitigating dependency on active cooling or heating measures for indoor spaces. This will ensure a sustainable building operation along with reducing the habitants need for procuring expensive equipment thus maintaining affordability.

Community scale construction of affordable housing creates an opportunity to build and demonstrate housing which focuses on providing thermal comfort thereby minimizing future energy use in line with the country's climate change mitigation strategies. Thermally comfortable affordable homes further enable building climate resilience of the urban poor. Increased temperatures and urban heat island severely impact the urban poor due to lack of access to adequate housing and basic amenities. A majority share of the urban poor lack access to expensive air conditioning mechanisms to achieve thermal comfort in their homes. Thus, a policy dedicated towards building affordable housing should inherently include thermal comfort of the occupants and such houses should be designed for achieving the necessary levels of thermal comfort. Developing climate resilient housing can reduce the vulnerabilities of the urban poor from health as well as energy perspective.

6.2 Financial incentive scheme

Climate change and affordable housing crisis are clearly linked, and to remedy this, local-level and federal level actions through policy framework are essential to offset the impact of climate change. The right to adequate housing should be integrated into proposals and strategies for climate change mitigation. A way forward can be the through the participation of local governments through a series of policy actions such as creating state and local level authorities to buy, build or rent affordable properties and disseminate funds. The local bodies can further become market players and introduce subsidies for real-estate developers to promote affordable housing for low-income communities.

In order to increase access to thermally comfortable affordable housing, rigorous financial incentives and schemes are necessary, in the form of subsidies, tax exemptions, grants, loans etc. Such incentives and initiatives have the potential to promote thermally comfortable and affordable housing through simple finance mechanisms. Simultaneously, fiscal policy decisions for thermally comfortable affordable houses should have an inclusive approach by providing special concessions for women. An inclusive policy framework will provide women with economic opportunities, reduce inequality and promote overall sustainable growth. It will be essential for a successful financial policy initiative to consider collaborations and knowledge sharing among various stakeholders, including public and private organizations.

6.2.1 Beneficiaries

The primary beneficiaries of the financial incentives will range from home owners, majorly from the economically weaker section (annual income < INR 3,00,000) and low-income group (INR 3,00,000 < annual income < INR 6,00,000). Apart from that, private real estate developers, local urban bodies responsible for construction and management of affordable homes will be the beneficiaries of such fiscal incentives. The eligibility of each beneficiary will depend on the nature of the beneficiary and will be based on stakeholder consultations.

6.2.2 Funding Mechanisms

The funding mechanism will depend on the nature of technological and financial assistance required for establishing or procuring a thermally comfortable affordable house/s. Based on the evaluation framework in Table 1 in Section § 5.1, additional incentives can be provided in conjunction with existing funding frameworks to promote thermal comfort in affordable housing projects. A few examples for the same have been listed below

- i. Private entities and real estate developers investing in developing affordable housing projects can be incentivized through tax exemptions for showing compliance with thermal comfort design standards.

- ii. Private home buyers can be financed through rebates on income tax and property tax for installing BEE star labelled products and appliances to achieve thermal comfort design compliance in affordable housing.
- iii. Private developers investing in affordable housing or setting up affordable housing communities targeting thermal comfort can be provided incentives in form of tax exemptions or fee waivers for retrofitting houses with BEE star labelled appliances.
- iv. Use of alternative sources of energy for offsetting the energy demand to achieve thermal comfort in the affordable house can be promoted through tax exemptions on procurement of alternate energy generating technology (e.g., PV panels, etc.).
- v. Urban poor from the EWS and LIG communities purchasing or renting a thermally comfortable affordable house can be financed through housing finance banks, public banks, etc. at lower interest rate.
- vi. Finance mechanism such as housing bonds, housing loans at lower interest rates, funds from primary lending institutions etc., can be set up for mobilizing development of affordable housing targeting thermal comfort of occupants.

Some instruments along with the beneficiaries and modus operandi are identified in Table 3 in further detail.

Table 3 Various mechanisms for integrating financial incentives with existing government schemes

Instrument/Scheme	Beneficiaries	Executing Agency	Modus Operandi
Bonds	Developer/Consumer/Manufacturer	State/Central Government	Market based mechanism, where the government/civic agency issues bonds to public for a fixed return. The proceeds from the bonds can be channelled into executing thermally comfortable homes and along the way establishing supply chains for key technologies/materials. The civic agencies have liquidity (from private equity), manufacturers/developers have potential to deliver economies of scale and along the way make a value offering to consumers.
Real Estate Investment Trust	Investors and Tenants	Developers	Regulated by market watchdogs, the Developers can raise capital from the public. This capital can be channelized into developing thermally comfortable homes. The resulting real estate can be leased to eligible beneficiaries for rental purpose. Part of this capital may be used for developing commercial real estate from a financial viability perspective. The income from rentals will generate returns for the investors.
Production linked incentives	Manufacturers	Central Government	For sustainably produced materials and construction technologies that are critical to the development of thermally comfortable homes, the government can provide incentives in the form of payback for incremental sales under the Make in India scheme.
Tax exemptions and Rebates	Private Home Owners/Developers	Central/State Governments	Provide additional tax incentives to consumers investing in thermally comfortable homes. These incentives may include GST waivers and deduction in taxable income on EMIs. Consumers/developers may be provided with centre/state sponsored rebate programs to purchase BEE 5 star labelled products to aid thermal comfort. Bulk procurement of these equipment may facilitate reduction in costs. These products may also be encompassed in PLI scheme mentioned earlier. To boost sentiments of home buyers and developers towards thermally comfortable homes, rent from non-self-occupied property should not be taxable.
Home Loans	Private home owners	Primary lending institutions, Public Sector Banks, State Housing Development Boards	Low interest home loans can be provided to private home buyers in LIG category for construction or retrofitting homes with energy efficient measures like renewable energy generation to achieve levels of thermal comfort.

Table 3 Various mechanisms for integrating financial incentives with existing government schemes

Instrument/Scheme	Beneficiaries	Executing Agency	Modus Operandi
Streamlined Permitting Process	Developers	Zoning regulatory bodies, State Housing Development Boards	A comprehensive review of the approval process can be conducted and redundancies removed to streamline the permit granting process for new thermally comfortable residential construction. Streamlining approval process will transform under developed urban areas more attractive to for-profit developers of affordable housing.
Gender-Inclusive Fiscal Incentives	Women Home Owners	Central/State Governments	Incentives, in addition to existing schemes for development of thermally comfortable housing, can be provided for women registered as home owners, such as partial waivers on stamp duties, tax benefits and interest rate concessions will provide opportunity for economic and social development of women, especially from marginalized communities.
Transferrable Certificates	Developers	Central/State Governments, Urban Housing Bodies	Credits for developing thermally comfortable affordable homes can be issued in form of certificates, which can be transferred or sold to avail tax exemptions. In turn, this could attract large-scale real-estate developers in financing affordable housing projects which meet the thermal comfort standards.
Enhanced access to low-cost land	Developers	Central/State Governments, Urban Housing Bodies	Private sector builders required to provide thermally comfortable affordable housing as a condition to be allowed to create high end housing which is a profitable market. Additionally, poorly utilized government land often illegally encroached can be made available to private sector at low cost to develop affordable homes meeting thermal comfort standards.
Enhanced PMAY benefits	Private Home Owners/Developers	Centre/State Governments	Centre and state may independently facilitate additional benefits (over and above existing PMAY schemes) to promote thermal comfort in affordable homes.

Appendix I

1.1 Detailed Case Studies of financial incentives schemes for sustainable housing

Finance-Linked Individual Subsidy Programme (FLISP), South Africa

Title of the financial incentive scheme	Finance-Linked Individual Subsidy Programme (FLISP)
Country	South Africa
Type of financial incentive scheme	Subsidy (for first-time home buyers)
Eligibility criteria	Beneficiary household income between ZAR 3,501 to ZAR 22,000 per month
Financial component	The amount of subsidy depends on the household income and typically ranges between ZAR 30,000 – ZAR 130,505
Technical component	-
Primary beneficiary	Home owner
Scheme sponsor	Western Cape government
Typical housing typology	Single or multi-family housing
Intermediary	None
Green / energy efficiency requirement	None
Description	
<p>Finance-Linked Individual Subsidy Programme (FLISP) provides subsidy to the poor to middle income households who do not qualify for full subsidy and for mortgage loan from the banks. This scheme is applicable for first time home buyers and can be availed to buy either an existing house/apartment or a serviced residential site (i.e., plot with access to basic services). The subsidy amount can be used to reduce the equated monthly instalments (EMIs). Applicants are required to buy a home from a builder registered with the National Home Builders Registration Council (NHBRC) to ensure building and safety standards. The subsidy amount is provided upon meeting the eligibility criteria and securing the applicable finance options, which include the following (Western Cape Government, 2022).</p> <ul style="list-style-type: none"> • Mortgage loan – i.e., an approved home loan. • No fee or no interest loan – i.e., securing an interest free loan from a lender (say an employer or family). • Pension-backed loan – i.e., a loan secured by pension savings. • Rent to Buy or deferred ownership – i.e., an agreement with the landlord to purchase the rental home. • No financial contribution required – i.e., the subsidy amount is equal to or greater than the price of the house. • Cash – Form own savings. 	

The Grameen Bank Housing Programme, Bangladesh

Title of the financial incentive scheme	The Grameen Bank Housing Programme
Country	Bangladesh
Type of financial incentive scheme	Loan and construction material
Eligibility criteria	Multiple criteria based on the membership of the bank and land title, but identifies the most needful rural poor as beneficiaries
Financial component	Loans are granted in four categories ranging from USD 88 to USD 439
Technical component	In addition to the loan, beneficiaries are provided with basic construction material - 4 pre-cast RCC columns, corrugated iron sheet for roof, and a sanitary slab for toilet.
Primary beneficiary	Home owner
Typical housing typology	Single family houses
Intermediary	-
Green / energy efficiency requirement	None
Description	
Grameen Bank, a non-governmental cooperative association extended loans to rural poor to build modest homes. The loans are provided under four key categories – pre basic, basic, improved basic and moderate – each with a varying maximum term for repayment – 3,4,6 and 10, respectively. In 2003, the total cost of construction for a standard house was USD 307.50. The fundamental principles of loan eligibility, disbursal and conditions of repayment micro-lending that promotes discipline in loan repayment by various measures such as peer pressure. Along with the loans, the recipients received four pre-fabricated concrete pillars, corrugated iron sheets for roofing and sanitary slabs for the construction of toilets. Other construction material is procured from a mass production site at an affordable cost. The construction is robust enough to sustain routine floods that affect the rural houses. It was noticed that the incomes of the recipients of the loan rose after they built the houses and 98% of the participants of the programme repaid the loan (Aga Khan Foundation, 2020).	

Enhanced CPF Housing Grant (EHG) – Singapore

Title of the financial incentive scheme	Enhanced CPF Housing Grant
Country	Singapore
Type of financial incentive scheme	Grant
Eligibility criteria	Eligibility is based on multiple criteria, such as ownership of another property, status of employment, monthly household income ceiling, remaining lease to flat.
Financial component	The grant amount is capped at SGD 80,000 for families and 40,000 for singles.
Technical component	None
Primary beneficiary	Home owner
Typical housing typology	Multistorey apartments
Intermediary	Housing and Development Board
Green / energy efficiency requirement	None
Description	<p>EHG grant is provided by the Central Provident Fund Board (CPFB) to first-time flat buyers. The grant amount is subject to the monthly household income (CPFB, n.d.). There are variants of the scheme for families, singles, new and resale flats. The grant amount is subject the income in the previous 12 months prior to the application, with a cap of monthly household income of SGD 9,000 for families and 4,500 for singles. First-timer singles must be 35-year-old and above of age. In addition, the beneficiary or their spouse, must be employed for at least 12 months prior to and on the date of application.</p>

Minha Casa Minha Vida (My House My Life) – Brazil

Title of the financial incentive scheme	Minha Casa Minha Vida (MCMV)
Country	Brazil
Type of financial incentive scheme	Subsidy
Eligibility criteria	Low-income families, with an income of less than BRL 1800 per annum
Financial component	
Technical component	None
Primary beneficiary	Home owner
Typical housing typology	Single family and low-rise housing
Intermediary	Construction companies
Green / energy efficiency requirement	None
Description	<p>MCMV was a Brazilian housing subsidy program created in 2009. The financing bank responsible for the programme, Caixa Econômica Federal (CEF) invested more than USD 60 billion in the programme to build about 4.4 million housing units between 2009 and 2016 (Biderman et al., 2018). CEF provides capital to private developers to build affordable homes, which are delivered to the beneficiaries after construction.</p> <p>Beneficiaries are identified and distributed into three brackets based on the monthly income. Bracket 1, 2 and 3 accepts families with monthly income up to 3, 3–6, 6–10 minimum wages (Biderman et al., 2018). The amount of subsidy depends on the income bracket. For example, for beneficiaries in bracket 1, monthly instalments cannot exceed 10% of the total family income with a minimum amount of BRL 50 per month and payable in 120 months. The total amount of subsidy can reach up to as high as 92% of the property value. After the beneficiaries are identified and approved, CEF determines the amount of subsidy offered and enters into a ten-year contract during which the beneficiaries make monthly payments towards the house (Dalla Vecchia & Medvedovski, 2021).</p>

First Home Guarantee, Australia

Title of the financial incentive scheme	First home guarantee
Country	Australia
Type of financial incentive scheme	Credit guarantee scheme
Eligibility criteria	Applicant should be >18 years of age, Australian citizen, earning up to \$125,000 and first home buyer.
Financial component	
Technical component	
Primary beneficiary	Individual Home Buyer
Typical housing typology	Residential Property
Intermediary	
Green / energy efficiency requirement	
Description	First Home Guarantee (FHG) is a credit guarantee (partly, for up to a maximum amount of 18% of the value of the property) scheme administered by the National Housing Finance and Investment Corporation (NHFIC) on behalf of the Australian Government to help first time homebuyers. It partly eases the burden of initial deposit without paying Lenders Mortgage Insurance (NHIFC, 2021a).