SOCIAL HOUSING

Analysis of housing vertical interventions for urban poor in large cities of Andhra Pradesh

Cost-Benefit Analysis

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Andhra Pradesh Priorities

An India Consensus Prioritization Project

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Academic Abstract

The objective of the study is to contribute to the discussion in the academic literature on the relative efficiency of engaging public agencies, private developers and civil societies along with the beneficiaries, in the housing projects. In the context of social housing, engagement of the private sector through direct and partnership with public agencies has been subject of discussion and debate, particularly since the early eighties. It is often argued that private sector enjoys a relative advantage in terms of cost efficiency, timeliness in delivery and responding to the requirements of beneficiaries. On the other hand, claims have been made that public agencies, through the involvement of the community leaders and mobilization of beneficiaries, are capable of bringing down the costs substantially and increase social benefits by reducing leakages or displacement of slum dwellers within a participatory framework.

The present study tries to bring in definite empirical evidence in the context of these alternative perspectives, based on an evaluation of three centrally sponsored verticals viz. Beneficiary-led Construction or enhancement (BLC) (individual led), Affordable Housing in Partnership (AHP) (private developers led) and *In-situ* Slum Redevelopment (ISSR) (public-private partnership and community engagement) launched under the contemporary national policy of Housing for All by 2022 - Pradhan Mantri Awas Yojana Urban (PMAY U). The three Centrally Sponsored Scheme verticals namely BLC, AHP and ISSR, launched under PMAY U, for large cities of Andhra Pradesh have been analyzed in terms of their Benefit-Cost Ratios within a comparative framework, keeping the national level figures as the reference point. Comparisons have also been made with All India and Rajasthan which is the other state, covered in the study.

Official available information has been used for computation, sourced from National Housing Bank (NHB) RESIDEX, Census 2011, NSS 60th round, Labour Bureau, HPEC, MoUD, HUDCO, NBO, NBCC among others. A few of the parameters have been determined in consultation with the officials of various public agencies, select subject experts, functionaries in concerned Civil Societies and other stakeholders engaged in slums and affordable housing projects at ground level.

Policy Abstract

The Problem

Providing ownership housing to all houseless households and those living in unacceptable dwelling units on account of the temporary or obsolete structure, congestion, privacy factors, slum and squatter settlements, etc. has been in the policy domain for past few decades. The present government has launched the PMAY U mission promising to provide acceptable dwelling units to all by 2022. Although the total target of the housing shortage has been brought down from 20 million to 12 million, apparently based on demand survey, the progress towards achieving the revised target has, at best, been sturdy. It is also interesting that the importance given to the four verticalsdeigned under the Mission, has undergone changes in the process of implementation. The progress under ISSR has been extremely low, which was supposed to meet about 90% of the housing shortages. This has been attributed to the problems related to legislative and administrative difficulties in providing land title to slum dwellers, the absence of agencies coordination dealing with land at city and state level, etc.

Interestingly, BLC has made significant progress because the public institutions have found it easier to deal with households with access to land in providing housing assistance. The success has been modest in CLSS due to lack of affordability among the poor to repay even the heavily subsidized loan. Consequently, the Ministry of Housing and Urban Affairs has made significant changes in the guidelines in order to bring in the middle class in this housing interest subvention vertical, by relaxing the ceilings of income, built-up areas and the amount of loan to be sanctioned. The progress towards AHP, too, has not been satisfactory because of the low level of participation of private sector and their reluctance to adhere to various stipulations, as envisaged under PMAY U.

The government is showing seriousness in achieving overall targets for housing shortage owing to social, economic and political considerations. The total benefit accruing to the country attributable to PMAY U would, however, depend not merely on the total number of units constructed but on the nature of the verticals through which this is achieved. The socio-

economic conditions of the beneficiaries, their locations, physical conditions of living, employment structure etc. vary widely from one vertical to the other, within the large cities. Given the absence of land title for the slum dwellers and the legislative and administrative difficulties encountered by state and local governments in making land available for the mission, the costs of land would vary widely across verticals. There will be significant differences in labor and management cost. Given this scenario, the present study attempts to determine the Benefit-Cost Ratios for the three verticals within a comparative framework, to help the central and state government agencies to prioritize their interventions in large cities. The idea is also to propose re-allocation of the funds available under PMAY U across verticals so as to maximize the impact on social welfare. The result of the analysis carried out for the large cities of Andhra Pradesh should help the Housing and Urban Development Departments to re-think their Housing for All by 2022 agenda for large cities.

The analysis carried out for the cities in Andhra Pradesh clearly reveals that AHP enjoys a distinct advantage over BLC in terms of the BCR. This implies that any resource re-allocation from BLC to AHP will result in greater net social benefit. Similarly, the ISSR has much higher BCR than the other two. The figures for ISSR work out to be double that of BLC. The results of the present analysis suggest that the implementing agencies must immediately address the issue of slow progress in slum redevelopment programme wherein the benefits per rupee of investment are much higher than the other two verticals. The goal for the government must, therefore, be not just meeting the overall target of housing shortage but also ensure that the programmes under ISSR and AHP are streamlined,and the bottlenecks at ground level are dealt with a sense of urgency. ISSR must have the top priority in the Mission, since under this, the benefit to the society is several folds, compared to BLC and AHP.

There are still three more years left to meet the target of Housing for All by 2022 under PMAY U. Although the dwelling units already completed and those under construction are not very large, the Ministry in recent years has shown seriousness to meet the overall target by sanctioning a large number of housing projects, much more than the annual budgeted amount. Furthermore, the budget for the year 2018-19 makes a provision for creating a dedicated Affordable Housing Fund for the Mission under National Housing Bank (NHB). Unfortunately, more than 50 percent of the sanctioned projects and housing units are under BLC which would lead to suboptimality in overall housing scenario. While the upsurge in

house constructionactivities is welcome, it would be important to monitor the composition of the verticals. The concerned authorities at the central and state level must take immediate steps in up-scaling the interventions with regard to slums redevelopment. The states must examine the hurdles being encountered in the slum redevelopment projects and take appropriate steps to get over the legislative hindrances and bureaucratic delays, proactively facilitate such projects, as well as increase the subsidy amount provided, which is abysmally low under ISSR vertical. Failure to do this would only result in the continuation of serious deprivation of slum dwellers and serious deficit in achieving Sustainable Development Goals. This would also imply large slum land being put to suboptimal usages, leading to huge social costs.

It would also be important to examine the factors responsible for slow progress in affordable housingprojects. A pro-poor thrust in this vertical in general and reservation of 35% of houses for the poor in AHP projects will ensure higher social return than building houses for the households having title to land under BLC. Finally, given the fact that housing poverty in India is largely because of the congestion factor (married couple sharing room with an adult family member), the thrust under BLC needs to be expansion or addition of room rather than constructing a new house.

Intervention 1: Beneficiary led Construction/Enhancement (BLC)

Overview
Households having land can construct a house or those having a house can extend it, as per a plan sanctioned by the local agency and claim a subsidy of Rs 1.5 lakh from the central government under this vertical.

Implementation Considerations
The initiative of beneficiaries primarily drives this vertical and hence can be taken as demand oriented.

Costs and Benefits
Costs
The major components of cost are that of land, house construction and building internal infrastructure. In addition, the cost of managing and supervising the construction process and

completing the procedures and formalities with the concerned local level agencies would be added to it.

Benefits

The market price of a planned ownership dwelling unit with abuilt-up area of 300 sq. feet is considered as the benefit. The market price is expected to reflect the net benefit derived by the household over the lifespan of the house.

Intervention 2: Affordable Housing in Partnership (AHP)

Overview

Under the AHP, affordable housing projects are to be undertaken in partnership with public and private sectors, 35 percent of the houses are to be reserved for the poor category.

Implementation Considerations

This vertical is led by the developers and hence may be taken as the supply side intervention.

Costs and Benefits

Costs

The cost of procuring land in the outer zone of large cities has been taken as the cost of land since the AHP are likely to come neither in the central business district nor in the outer periphery. In addition, the cost of construction of the house and those of provisioning of internal and external Infrastructure are to be added. The cost of project management and of completing the formalities and meeting procedural requirements vis-à-vis the concerned local authorities are often built into the cost of construction of the house and infrastructure.

Benefits

Its maket price would capture the benefits enjoyed by the consumer over lifetime of the house. However, in addition, there is a profit component accruing to the builder which would be counted as an additional benefit to the society. However, as the builder will be in a different income group than the beneficiary - who are taken as poor - the benefits of the former are to be given a different weight. The benefit to the builder is discounted based on a logarithmic welfare function, underlying the Theil's Entropy measure.

Intervention 3: In-situ Slum Redevelopment using land as resource (ISSR)

Overview

In-situ Slum Redevelopment is to be undertaken by a public agency jointly with private developers using land as a resource. The engagement of the slum community is likely to be high in these projects although the guidelines of the vertical are not very categorical about it.

Implementation Considerations

This intervention is carried out in public-private partnership mode. Private developers get extra FSI and other incentives and subsidy amount per slum household for rehabilitation if slum is on public land.

Costs and Benefits

Costs

The vertical involves no land cost as it is envisaged that the land will be made available by the state and local bodies free of cost or land title willbe given for in-situ development. This slum land has no alternate use as it is not possible to acquire the land by evicting the slum dwellers for any other purpose. Consequently, only the cost of constructing the dwelling unit, internal and external infrastructure; community mobilization, project management etc. are taken as components of the cost. To this, the cost of providing transit accommodation, that of shifting and bringing them back and rehabilitation are added.

Benefits

The market price of a house in a planned locality with 300 sq. feet built-up area in the low-incomeneighborhood in the inner zone of large cities is considered as the benefit accruing to the slum household. Slum dwellers, will, however, get certain additional benefits that are not reflected in the market price. These are benefits due to reduced morbidity and reduction in healthcare expenditure and person-hours saved due to access to basic amenities (especially availability of water and sanitation within the house). These benefits are not generally reflected in the market price as that is determined by middle-class priorities and will not occur to people who are already residing in a non-slum area. The final component of benefit

would be the price of the building material which the slum dwellers can get by dismantling their existing structure and selling these in the market.

BCR Table

Summary Table of Benefits, Costs and BCRs across Social Housing Verticals for Large Cities in Andhra Pradesh

Interventions	Benefit	Cost	BCR	Quality of Evidence
BLC	12.63	10.02	1.26	Very Strong
AHP	11.83	7.23	1.64	Very Strong
ISSR	10.74	4.34	2.48	Very Strong

Notes: All figures assume a 5% discount rate. Benefits and Costs are in Lakh (hundred thousand) Rupees.

1. Introduction

1.1 Background

Soon after assuming power in May 2014, the National Democratic Alliance (NDA) government announced a goal of giving a boost to the housing sector in urban areas, with focus on urban poor. The goal of providing houses to all in a time-bound manner was announced in the address of the President of India to the joint session of Parliament on 9th June 2014. He announced that his government (i.e., the newly elected NDA government) would provide every family 'a pucca house with water connection, toilet facilities, 24x7 electricity supply and access.' To meet this objective, the Union Government launched Housing for All (HFA) by 2022 - '*Pradhan Mantri Awas Yojana* Urban' (PMAY U) as a comprehensive mission for the purpose. The mission seeks to provide houses to all eligible families/beneficiaries (consisting of husband, wife, unmarried sons and/or unmarried daughters) that do not own a *pucca* house in the name of any member of the family.

1.2 Interventions

The government announced a phased plan to be completed by 2022, wherein the Union Government would assist the implementing agencies at city level through States and UTs. The HFA scheme under the PMAY U was envisaged to address the total housing shortage of 20 million (18 million slum households and 2 million non-slum urban poor households). Four program verticals were envisaged under the mission to address the housing requirements of urban poor including slum dwellers, as noted below, wherein an eligible beneficiary can take advantage of only one:

• *In-situ* Slum Redevelopment (ISSR): Slum rehabilitation of slum dwellers with the participation of private developers, using land as a resource.

• Affordable Housing in Partnership (AHP): Under the AHP, projects are to be undertaken in partnership with public and private sectors, 35 percent of the houses are to be reserved for Economically Weaker Section (EWS) category.

• Beneficiary-led Construction or enhancement (BLC): Households having land or house can claim subsidy for construction or extension of the house as per a plan sanctioned by the local agency.

• Credit Linked Subsidy Scheme (CLSS): Encouraging house construction or purchase through interest subvention for EWS and low-income groups (LIG).

1.3 Purpose of the Study

This present study explores and attempts to quantify the benefits and costs of different program verticals under PMAY U and compares their relative advantages, by computing their benefit-cost ratios (BCRs), using alternate rates of discount. These verticals envisage differential levels of engagement by the public agencies. The benefits and costs are estimated based on the guidelines and operational procedures under the respective verticals. Other important aspects considered in the analysis are beneficiary profile, location, gestation period, changes in microenvironment, social and economic inequality, the technology of construction etc., using secondary and field level data. No survey has been conducted for this purpose, except gathering information at the ground level through discussions with relevant government functionaries and civil society activists. Since CLSS is a Central Sector Scheme, implemented directly through central government institutions, and under this, houses can be built or purchased from the market, it has been decided to exclude it from the analysis. The present study in benefit-cost analysis, thus, covers the other three verticals that are Centrally Sponsored Schemes, implying that these are implemented through state and local level organizations.

1.4 Objective of the Study

The objective of the study is to contribute to the discussion in the academic literature on the relative efficiency of engaging public agencies, private developers and civil societies along with the beneficiaries, in the housing projects. In the context of social housing, engagement of the private sector through direct and partnership with public agencies has been subject of discussion and debate, particularly since the early eighties. It is often argued that private sector enjoys a relative advantage in terms of cost efficiency, timeliness in delivery and responding to the requirements of beneficiaries. On the other hand, claims have been made

that public agencies, through the involvement of the community leaders and mobilization of beneficiaries, are capable of bringing down the costs substantially and increase social benefits by reducing leakages or displacement of slum dwellers within a participatory framework.

The present study tries to bring in definite empirical evidence in the context of these alternative perspectives, based on an evaluation of three centrally sponsored verticals viz. BLC (individual led), AHP (private developers led) and ISSR (public-private partnership and community engagement) launched under the contemporary national policy of Housing for All by 2022 - PMAY U. The three Centrally Sponsored Scheme verticals namely BLC, AHP and ISSR, launched under PMAY U, for large cities of Andhra Pradesh have been analyzed in terms of their BCRs within a comparative framework, keeping the national level figures as the reference point. Comparisons have also been made with All India and Rajasthan which is the other state, covered in the study.

1.5 Literature Review

Evolution and Evaluation of Social Housing Program in India:

The history of social housing policies and programmes in urban areas can be traced back to pre-British period. There are scattered evidence, particularly in the cities of Bombay and Madras, of the government going strong or soft intermittently on slum eviction with no policy of up-gradation or rehabilitation. Even after independence, central, state and city level policies and interventions did not have a clear focus varied widely. These were lacking in continuity of purpose, and were implemented erratically. However, a more sympathetic attitude to the felt needs of slum dwellers can be seen as emerging over various Five Year Plans of the Central Government. These include plans for subsidized housing but these envisioned an extremely limited role of the public sector.

In the First Plan, schemes were designed by various Ministries to create certain amount of social housing stock, particularly the Ministry for Rehabilitation for the displaced persons due to partition. Limitations of resources and resistance of local population to shifting to distant areas and maintenance failures led to abandonment of this approach. The Second Plan saw launching of Subsidized Industrial Housing Scheme. State governments and local bodies were

to provide developed and demarcated plots of land of 1000-1200 sq. ft. along with certain limited quantity of building material for the slum dwellers to build their houses through 'self help' and 'mutual help'. Under industrial housing scheme, centre provided interest-free loans to state governments/ private employers, to the extent of two thirds of the cost of housing, which was the beginning of PPP model Independent India. Importantly, the Slum Areas (clearance and improvement) Act was promulgated in 1956 which in a way protected the tenements in such areas from eviction. It also helped in speedier acquisition of slum land and scaling down of the rate of compensation.

The Third Plan made larger allocation for slum clearance, slum improvement and construction of night shelters. A new thinking seemed to be emerging which led to abandonment of slum clearance and relocation strategy. A scheme for providing open developed plots and 'skeletal housing' and then leaving the slum dwellers to build houses on their own was also launched, which, in some way, is a precursor to the "Site and Service Scheme" launched by the World Bank during 1970s. Under this scheme, 32 sq. mts. developed plot including a skeleton house were made available (with on-site infrastructure like water supply, electricity, drainage, sewerage etc.) on hire purchase basis. It sought to engage the cooperation of voluntary organizations and social workers for its implementation.

One of the most important slum development programmes of the sixties was the centrally sponsored Urban Community Development programme, launched in 1966. This was transferred to the state sector in 1969. By the very design and method of implementation of the scheme, the UCD could be implemented only in 20% of the slums - those that were on government and quasi-government land. However, even that was discontinued within a few years in most of the states due to paucity of funds and land.

In the Fourth Plan, the scope of the slum improvement schemes was enlarged to take up schemes of 'urban renewal' with an increase in budgetary support. A new scheme named Environmental Improvement of Urban Slums (EIUS) was designed in 1972 for large cities in the country. In 1974, its scope was enlarged to cover all urban centres in the country. A variant of the scheme was Slum Improvement Programme (SIP). Both of these were concerned with the physical improvement of slums through provision of a standard package of community facilities, such as provision of water taps, open drains for outflow of waste

water, storm water drains, community bath and latrines, widening and paving of existing lanes and street lighting. The only difference was that while under the SIP, the slum dwellers had to pay back the total cost of improvement, under EIUS, the central grants met a part of the costs. The basic philosophy behind these slum improvement schemes was to make it self-financing to the extent possible.

These schemes were made an integral part of the Minimum Needs Programme, transferred to the state sector and continued in the Fifth Plan, with substantial increase in fund allocation. It was during this plan period that the "Sites and Services" scheme was formally introduced. It was argued that giving of land title on leasehold or freehold basis would induce the slum dwellers to invest in their dwelling units. The success of the programme was dependent upon the people's participation. Its other distinguishing feature is the availability of Home Improvement Loan for shelter up-gradation. All these made poverty removal a dominant objective in India's development strategy in this Plan. A review of the implementation of the scheme, however, indicates that there was a gradual usurpation of the allotted plots by the better off house sections of population resulting in 'gentrification' in those areas.

The Sixth Five Year Plan marks the commencement of a more definite approach to poverty alleviation in urban areas through slum improvement when this got included in the Twenty Point Programme of the Govt. This was concretised in the Seventh Plan which, in a sense, made a conscious attempt to address urban poverty issues directly. This was brought into the core of poverty alleviation programme, constituting an indispensable component of slum development strategy. A composite macro level policy to improve the degree and quality of survival and development of the children and women of low income families living in small and medium towns was introduced by the name of Urban Basic Services Programme in the year 1985. It was a centrally sponsored scheme implemented through the involvement of the UNICEF, the state governments, and municipalities, envisaged to be implemented within the framework of community participation, convergence and cost effectiveness. Subsequently the UNICEF and the Central Government withdrew from the programme. Another programme purported to meet pressing basic needs of the slum dwellers was the Low-Cost Sanitation launched in the 1980s with the objective to provide sanitation to 80 percent of the

urban dwellers by the end of the UN Decade for Water Supply and Sanitation. HUDCO provided financial assistance to cover slums and old city areas under the programme.

In the Eighth Plan, the scheme got further strengthened. Slum improvement and up-gradation and urban poverty alleviation came to be considered legitimate functions of urban local bodies. In the light of the Constitution 74th (Amendment) Act and the extremely poor and unhygienic conditions of slum dwellers, the government of India introduced a centrally sponsored scheme for up-gradation of urban slums in 1996-97. The scheme was based on the UBSP philosophy of creating sustainable community structures that were expected to take over and maintain the facilities.

Jawaharlal Nehru National Urban Renewal Mission (JnNURM), launched during the Tenth Plan had two components: Basic Services for Urban Poor (BSUP) and the Integrated Housing and Slum Development Programme (IHSDP). Both the components, besides other objectives, were designed to provide housing and basic services to the urban poor. Respective state governments and urban local bodies, Development Authorities and other housing institutions were to be engaged in the production of social housing and provisioning of basic amenities. While both the schemes included slum improvement and up-gradation and relocation to an extent, their major concern was provision of basic services to the urban poor. Unfortunately, in-situ up-gradation was a small component. The shelter linked outcome was manifest in terms of new housing units that came up mostly in the peripheral areas of the cities. The limited success under the Mission was due to problems in the selection of beneficiaries, allotment process and quality of housing. (Mahadevia et al. 2014 for details). Rajiv Awas Yojana (RAY), which envisaged Slum-free Urban India by encouraging States / Union Territories to tackle the problem of Slums by increasing the supply of land and housing and universalization of basic services, was introduced during the Eleventh Plan. Like BSUP, it acknowledged the importance of in-situ rehabilitation. Besides, Affordable Housing in Partnership (2009), Interest Subsidy Scheme for Housing the Urban Poor (2009) and Rajiv Rinn Yojana (RRY), 2013 were some of the schemes that were designed with focus on economically weaker sections and slum population.

From a perusal of the above, one can argue that initially the strategy to deal with slum development was to simply remove the slum dwellers by demolishing their structures.

Though the nomenclature "Slum Clearance and Improvement" suggests that both clearance and improvement, it was the clearance part that had an overwhelming dominance till the mid eighties. In most of the programmes, the involvement of NGOs and communities was only symbolic. This is not to deny the numerous endeavours made by the government to involve them but their engagement can at best be considered as peripheral.

Importantly, the major concerns and areas of emphasis in the programmes have changed significantly with the changing policy perspective at the macro level. The basic services were financed primarily by central government till the seventies. Thereafter, however, there was a distinct shift of responsibility from the Central to state governments and to local bodies. The new schemes continued to enjoy certain amount of central assistance as loans but these were much less than that provided in the earlier programmes. These changes affected the availability of housing to urban population, particularly the poor adversely. The perspective seems to have changed again in the middle of the Twelfth Plan. It is now recognised that the cities cannot become engines of growth and provide a basis for sustainable development in the country unless the housing and ground level environmental conditions improve substantially. Given this macro perspective, the four verticals of PMAY-U have been designed with the avowed focus on the poor. An evaluation of these verticals and computation of their basic rates of return would help in determining the extent to which these have succeeded in achieving the goal.

The description of the four verticals, as attempted below, clearly reveals how their key ideas have evolved over time through a variety of experiments undertaken with social housing and provisioning of basic services in different Five Year Plans.

In-situ Slum Redevelopment (ISSR): The proposition of allowing and assisting the slum dwellers to upgrade their dwelling units with some amount of central assistance was ingrained in the site and services programme in the early seventies. This was based on the principle of self help, informal and incremental housing, as discussed above. Through the programmes such as Housing and Slum Development Programme (IHSDP) and BSUP, that incorporated earlier schemes like Valmiki Ambedkar Awas Yojana (VAMBAY) launched in 2001 and National Slum Development Program (NSDP) launched in 1996, there has been a gradual shift from informal to formal housing. The initiative of Rajiv Awas Yojna in the

Eleventh Plan too relied in much greater role of the public agencies, discounting the principle of incremental housing, particularly in the context of land scarcity in large cities and adoption of modern technology to build multi-storied structures. ISSR envisages engagement of public agencies along with private builders and has marginal role for civil society and community participation. It is designed to support the states and local bodies to redevelop all existing slums in a holistic and integrated way and to create new affordable housing stock.

Beneficiary-led Construction or enhancement (BLC): Assisting households having clear land title and proving subsidized capital for incremental housing have always been a part of both formal and informal housing strategy since the sixties. Formalisation of individual initiatives at the lower end of housing spectrum and supporting these with loans at low interest rates, besides adding to the affordable housing stock, is expected to ensure greater compliance to building regulations and city planning norms. It is, however, difficult to hold that such initiatives are effective in targeting the poor and houseless since not many among them would have clear land titles.

Affordable Housing in Partnership (AHP): The scheme of Affordable Housing in Partnership was introduced in 2009 as part of BSUP component of JnNURM and subsequently, dovetailed into RAY in 2011. The aims were to encourage private sector participation in creation of affordable housing stock recognizing that mere efforts of Government would be insufficient to address the housing shortage.

Credit Linked Subsidy Scheme (CLSS): Housing considered as a part of priority sector in banking has always enjoyed interest subsidy. Government employees and those in different public sector undertakings has been given housing loan at very low rates of interest. The genesis of the CLSS can, however, be immediately be traced to Interest Subsidy Scheme for Housing the Urban Poor (ISHUP) launched in 2009 in the 11th Plan. The objective of ISHUP was to create an enabling and a supportive environment for expanding credit flow to the housing sector and increasing the home ownership, a goal envisaged in the National Urban Housing and Habitat Policy of 2007.This was fllowed up by RRY, launched in 2013 which was a Central Sector Scheme linked to the RAY with the identical goal of interest subvention for poor households.

Critical Review of PMAY U:

The focus in the current housing strategy for the poor in the country has been on adequacy, formalisation, financial viability and private sector participation. Adequate housing in operational terms would imply all weather dwelling units of reasonable size with basic civic amenities, infrastructure and services, conforming to the National Building Code and other relevant Indian Standards codes. Formalisation of the strategy is to be ensured through insistence of clear title to land for legibility of subsidies and engagement of Banks, ULBs and State Governments for financing. Substantial central assistance and subsidized bank loans are to gurantee financial viability. Engagement of private sector was facilitated through simplification of legislative formalities and of administrative formalities and incentivisation of private builders by providing incentives of higher Floor Space Index. All these have led to formalizing of the housing strategy minimized the role of participatory model, incremental housing, etc. wherein the civil society and the community organization assume the pivotal function. Despite the element of subsidy and certain restrictions on the resale of the property, house construction activities have come totally into private domain under all the verticals under the PMAY-U, except the scheme of In-situ Slum Redevelopment. These verticals have been opened to non-poor households with regard to beneficiaries with the declaration of increase in the built-up area as well as income ceiling. The provision of self-certification or affidavit as proof of income, linked to Aadhar and *Jan Dhan Yojana*, is further likely to help the non-poor households benefitting from the Missions (Kundu & Kumar, 2017).

All these changes must be seen as a clear departure from the strategy of sites and services focused on the people, processes and incremental housing linked with their economic affordability and opportunity followed during the last three decades of the last century, which involved providing basic shelter and a small loan in a manner that the poor could incrementally construct their houses. The strategy, thus, had a built-in mechanism for self-targeting. The focus, now, has shifted to building formal houses with the engagement of public agencies at city, town and state level through substantial central funding or highly subsidized loans.

There has been a sharp rise in housing prices over the past one and a half decade except the last two years, as seen in the NHB RESIDEX and the quarterly House Price Index (HPI) released by the Reserve Bank of India (RBI). The concerned Ministries, as well as the RBI, have voiced

in different platforms the need for an intervention to combat the speculative forces and bringing housing within the affordability limits of the poor and LIG households. It is important to note that the subsidized loan available in one of the verticals of PMAYU can be used for purchasing these already constructed houses that have remained vacant for several years. The subsidy now makes these units affordable to the middle class. The present strategy would allow this class to benefit from the Mission. This will also be a relief for the builders having massive unsold housing stock. (Kundu & Kumar, 2017)

The Technical Group on Urban Housing Shortage, 2012–17 (TG-12) had noted that the households from EWS and LIG account for 56.18 percent and 39.44 percent, respectively, of the total shortage of 18.8 million (MoHUPA, 2012). Households with income up to Rs. 5,000 per month were placed in EWS category while those with income between Rs. 5,000 and Rs. 10,000 per month constitute the LIG category. Using consumption expenditure data from the National Sample Survey's 66th round, 2009–10, one would hold that the households in EWS category comprises one-third of households in urban areas. They, combined with those in LIG category, account for almost 80 percent. Furthermore, TG-12, determines 80 percent of the total housing shortage to be on account of congestion – households having large number of persons per room or wherein a married couple shares a room with an adult. The figures for the households living in obsolete houses, non-serviceable katcha house and the homeless are 12 %, 5 % and 3 % respectively.

Despite the pronouncements made regarding housed to be provided to the poor at affordable prices and making urban India slum-free, several structural factors stand in the way the benefits reaching the targeted beneficiaries. The key factor in this has been the high Equated Monthly Installment (EMI) to be paid by them. As a well-accepted practice, the housing loan is generally given with the upper limit of 4 times the annual income of the household for a longer tenure (around 15-20 years), considering the fact that not more than 25-30% of the annual income can be paid towards payment of EMI. Poor households, mostly engaged in the informal sector, can, under no circumstances, incur expenditure higher than this. This, of course, is not the case with high-income households. Thus, repayment of the loan amount with interest, amounting to more than 30 percent of their earnings, built into the vertical CLSS, would be a major issue for the poor and LIG households, given their pattern of earning and expenditures. For the homeless, daily wage earners, migrant workers, and

marginalized families, repayment of such loans would be impossible and has the risk of pushing them into a debt trap by forcing to borrow from private sources. Unfortunately, the EMI has not been worked out taking into consideration the socio-economic characteristics of the slum dwellers/poor or the regional and city-specific factors.

The poor and LIG households also face problems in producing documents pertaining to ownership of land, duration of stay at the location, birthplace and employment linked certificates. The stringent eligibility criteria and the process of verification, often adopted by the agencies undertaking the slum development project, lead to their being excluded from the list of beneficiaries or falling in trap of unscrupulous agents, resulting in benefits going to non-targeted people (Kundu & Kumar, 2017).

Progress under PMAY U:

The demand registered in the MIS database of PMAY U (submitted by each city) as on 1st January 2018 is 16.84 million (MoHUA, 2018). The likely validated demand as estimated by the Ministry is about 12 million. Unfortunately, information about this demand survey giving the disaggregation by program verticals, city, state, beneficiaries profile etc. are not in public domain for any detailed policy analysis.

As per the latest Monitoring of Progress report from Mission Directorate PMAY U, 4302 cities have been included in the mission that include 469 Class-I cities (MOHUA, 2018). The total number of house construction sanctioned is 3.7 million of which only 8 per cent have been completed and another 36 percent units are in different stages of completion. Unfortunately, as high as 56 per cent of the houses are yet to be grounded for construction.

Across verticals, the houses sanctioned under BLC, AHP, ISSR and CLSS were 55, 37, 2 and 2 percent respectively. The remaining 4 percent were constructed in the earlier Mission, RAY, discussed above. The average cost of per house sanctioned under PMAY U comes out to be around Rs. 5.4 lakh. It comes out to be Rs. 3.6, 7.4, 6.24 and 10.7 lakh for BLC, AHP, ISSR and CLSS respectively.

The houses sanctioned under PMAY U in 2015-16, 2016-17 and 2017-18 (until December 2017) were 0.60, 1.02 and 1.97 million respectively. One, however, notes a significant acceleration in PMAY U houses sanctions in recent years, especially under BLC and AHP

verticals. Cities from the most urbanized States, especially in Western and Southern India, accounted for a large proportion of these houses.

Clearly, ISSR vertical has not kicked off with 0.07 million houses sanctioned so far. Initially, the MoHUA had placed the total urban housing shortage at 20 million (18 million slum households and 2 million non-slum urban poor households), which is reflected in the PMAY U guidelines as well. Despite the Mission acknowledging the need for a sharp focus on slums, the progress under ISSR vertical has so far been abysmally low. However, the Central Assistance under BLC is higher than that of ISSR. This underlines the need for revisiting the targets set for different verticals and for monitoring their progress so as to produce the desired number of dwelling units under different verticals. The ultimate success will be measured not merely in terms of meeting the target at the aggregate level but also by ensuring that an optimal balance among the verticals is ensured.

Andhra Pradesh has reported very high proportion of houses as being sanctioned under BLC under PMAY U. A total of 0.48 million houses have already been sanctioned to be built under BLC which is much higher than what has been designed under the Mission. The same is true for AHP. Unfortunately, ISSR is yet to take off the ground with no unit being sanctioned under it till date. The average cost of per house sanctioned came out to be Rs. 4.5 and 6.6 lakh for BLC and AHP respectively.

1.6 Data Sources, Methodology, Computational Procedures and Elaboration and Justification of the Assumptions

Data Sources

Officially available information have been used for compution of benefits and costs, sourced from National Housing Bank (NHB) RESIDEX, Census of India 2011, National Sample Survey 60th round, Labour Bureau, Ministry of Urban Development (MoUD), MoUD Reports on Minimum Standards and Service Level Benchmarking, and High-Powered Expert Committee's (HPEC) Report on Indian Urban Infrastructure and Services, Housing and Urban Development Corporation (HUDCO), National Buildings Organisation (NBO), National Buildings Construction Corporation (NBCC), Construction Industry Development Council (CIDC) among others. A few of the parameters have been determined in consultation with the officials of various public

agencies, select subject experts, functionaries in concerned civil society organizations and other stakeholders engaged in slums and affordable housing projects at ground level.

This section elaborating Methodology, Computational Procedures and Elaboration and Justification of the Assumptions has been divided into three sub-sections:

a. Overall methodology of the study;

b. Estimation of the Benefits; and

c. Estimation of the Costs.

A.   Overall methodology of the study

Size of the dwelling unit for Affordable housing to the urban poor is taken to be 300 sq. ft. for all the three verticals- BLC, AHP, and ISSR in large cities of India for the purpose of comparisons.

Time of completion of house/project is taken to be 1.5 years for all the verticals. This would be realistic if the concerned agencies implement the projects with a sense of urgency. The average construction period in housing projects is between 4 and 5 years. However, since the government has announced PMAY-U as a major flagship mission and it is likely to be important election agenda, it is assumed that the concerned agencies will work with a sense of urgency, backed up of by political will, resulting in significant reduction in the time required for construction. Aided by modern technology, it is possible to complete the construction in less than six months. However, this too would be unrealistic given the constraints and lethargy in the present socio-political system.

The issues of misappropriation, non-completion, cost overruns due to delay etc. to an extent are built into the calculations while determining the average duration of construction and cost for the benefit cost analysis. These estimates are based on discussion with relevant agencies and their data base. However, more precise estimates can be obtained only through primary surveys since no reliable information are available in public domain about the leakages in the housing projects under different verticals

The identification of beneficiaries under different verticals under consideration cannot be expected to be perfect viz. without any leakage to non-targeted households. This is so even

when the elected representatives are involved in the selection process. The local politicians are understandably guided by vote bank politics and likely to give undue considerations to factional groups and vested interests that support them. The political expediency would, therefore, be an important consideration in selecting the beneficiaries under the vertical BLC, as many would belong to powerful middle class who are able to show clear land titles, free from all incumbencies. Under the vertical AHP, it would be a challenge to ensure allocation of 35 per cent of the houses to the poor. Despite Adhar card being used for beneficiary identification and data validation, the temptation to earn higher profit by allocating houses to non poor cannot be eliminated. The government, however, is expected to make serious endeavour to minimise leakage on this account due to the high profile of the mission.

The possibility of non-poor getting the benefit under ISSR, however, is not very high in the present climate of political mobilization in slums, given the growing awareness with regard to the rights and the entitlements under the PMAY. NGOs in low income areas, barring a few exceptions, work with reasonable level of independence and innovative spirit and cannot ignore participatory approach. This makes it difficult for the political leaders to have direct control of the slum vote bank or the government officials seek illegal gratification. This would explain the low level of interest in providing land title to the slum dwellers and low progress in fund off-take under the ISSR vertical. Since estimation of leakage under different verticals would be impossible without a fairly large sample based survey, no attempt has been made to do that. However, one can generally argue that the BCR would be relatively higher in case of AHP compared to BLC and that for ISSR would be the highest, if a reasonable assessment of the leakage could be built into the analysis.

The costs and benefits in this study have been calculated on per house basis under each vertical. It may be desirable to estimate the costs and benefits at the required scale of the mission at the city levels and if possible the state level, under each PMAY U vertical. However, the numbers of houses to be produced under different verticals are not currently known and are demand driven. Consequently, up-scaling the unit cost by multiplying it by the estimated number of units has been avoided. It is, nonetheless, important to note that the unit costs have been taken from projects that built average number of units and not by considering the cost of building a stand-alone unit.

The net present value (NPV) of the stream of benefits and costs have been worked out after discounting by different rates of interest viz. 3, 5 and 8 %. Understandably, the raking of the verticals do not change when different rates of discount are applied.

Vijayawada city has been selected for the state of Andhra Pradesh, comparable to the average large cities of India and to Jaipur, the capital city in the state of Rajasthan, which is taken as the second case study, presented in the second part of the Report. Although Vijayawada is not the state capital, it falls in the Capital Region and would perform many of the functions of the capital until its new capital city viz Amaravati is fully developed. It is a Metropolis having more than 1 million population like Jaipur. Comparable information on housing prices for both the cities is available from several sources.

B. Estimating the Benefits

The present market value of the house has been taken in the benefit side which gives the present value of the residential services to be rendered by the unit over its life time. The value of the house, which will be completed after 1.5 years is assumed to be same as the current price. It is difficult to predict the value after one and a half year of construction as there has been a surge in the prices in past years, followed by a dramatic decline in recent years. NPV is computed discounting for 1.5 years, as the value of the house when completed is assumed to be same as its current prices.

Official estimates for property prices in the market are obtained from the RESIDEX, prepared by National Housing Bank (NHB) (https://residex.nhbonline.org.in/) and the Housing Price Index of the Reserve Bank of India (RBI). Estimates from institutional and private sources are also available from real estate companies and institutions such as HUDCO, NBCC, NBO, CREDAI, NAREDCO, JLL, CBRE, Knight Frank, Cushman & Wakefield, Propequity, KPMG, McKinsey Global Institute, Colliers, HDIL, ET Intelligence group and so on. Furthermore, nestoria.in, housing.com, commonfloor.com, 99acres.com, makaan.com and many others provide online portals for real estate and housing. However, all these collect information for a handful of large cities and a limited number of projects in India, and, hence, lack robustness.

Circle rates are obtained from the Registration and Stamps Dept. of the Department of Revenue for all the states and cities. Municipal Valuation Committees/local bodies decide

these rates for different localities, such as colonies, wards, zones, etc. Circle rates consist of land and construction costs by type of settlements, colonies, location, etc. Based on the overview of the estimates of the circle rates for residential houses for all cities in India, the prices of BLC, AHP and ISSR have been estimated. For BLC, the circle rate of the house in the inner city has been taken for the estimation which is about Rs. 2400 per sq. ft. For AHP, the rate will be less than the BLC average, since, despite the project being in a planned area, this is likely to be located in the outer circle or periphery of the city. This has been estimated to be Rs. 2100 based on ground level discussion with concerned organisations. Under ISSR, although, many of the slums are within the city and a few in the city center, these are likely to remain low-income neighborhoods even after redevelopment, unattractive for the middle class. Also, there will be stringent measures to prevent resale of the properties due to certain non-transferability clause. Consequently, the rate here is taken as less than the AHP at Rs. 1800. These rates are used for determining the relative and not the absolute prices of the houses since the market prices are much above the circle rates. In other words, the present study considers the prices of one sq. ft. of the houses under BLC, AHP and ISSR categories to be in the ratio of 8:7:6.

The weighting on the social housing relative to market (6/8 for slums, 7/8 for AHP), as considered in this study, is based on the actual experience of social housing programs. These roughly indicate the weights that are prevailing in practice and observed in the secondary literature and available databases. Additionally, market values in select localities have been compared to obtain these values, in consultations with relevant stakeholders.

The level of housing prices used in this study is sourced from RESIDEX of the NHB. The assessment prices for Q1 2017-18 reported in June 2017, for 50 select large cities are considered. Prices are available in Rs. per sq. ft. for carpet area for houses with less than 60 sq. mt. (for EWS and LIG, as per PMAY U) area. To arrive at the average house price in large cities for the country as a whole from the information on selected 50 cities in the NHB database, weights are given to cities as per their respective population, obtained from the Population Census of 2011. To deal with the problem of extreme cases or outliers, 5 cities out of these 50 are excluded, making the number of large cities for arriving at the All India house prices as 45. The excluded cities are Chakan and New Town Kolkata, as they have population much less than the class I city threshold of 1 lakh. Furthermore, the cities of Mumbai, Navi

Mumbai and Thane are excluded as they record extremely high housing prices, Rs. 20,047, 12,415 and 13,543 per sq. ft., that would distort the results. The all India house price per sq. ft. is thus estimated as Rs. 4,879. The value would have soared to Rs. 6,821, had we included the three extremely high city prices, as noted before. The housing prices for Vijayawada and Jaipur were taken as Rs. 4532 and 3573 per sq. ft.respectively, directly obtained from NHB RESIDEX database as discussed above.

Importantly, NHB database cannotbe used for determining house prices under different the three verticals under consideration, since the information is not available by different locations of the city settlements.

Health and Employment benefits for the slum households are considered but only for the households covered under ISSR. The households benefitting under BLC and AHP verticals are assumed to be residing in areas that do not have such serious health deprivations and hence health benefits would not occur to them. Similarly, they are likely to have the basic amenities at a reasonable distance even before coming under the project and hence would not have the additional time benefit.

The benefits on these accounts have been computed by taking a time horizon of ten years after their possession of the house. Given the rapid changes expected in the socio-economic conditions of the cities in India with globalization, prediction beyond this period has been considered as hazardous.

The health benefits have been computed under the ISSR vertical based on the reduction in morbidity (as a result of slum dwellers shifting to a non-slum area) and consequent saving in their out of pocket expenditure incurred for treating their ailments. This essentially can be attributed to the better standard of living resulting from improved infrastructure and availability of basic services. The difference in the morbidity rate and savings in the cost of ailments in slums and non-slums areas is likely to be less in large cities, due to availability of some medical facilities and basic services. The benefits figures, therefore, may considered to be conservative or on the lower side in the context of the situation in the state. Importantly, such benefits have not been considered for other verticals as the local environmental conditions would not change as a result of moving into the new houses.

The figures for the state of Andhra Pradesh has been taken to be the same as the all India figures, the latter being computed from the data from NSS 60th and 71st round on health expenditure and average hourly wage for casual workers. The health benefit is calculated as the reduction in morbidity and saving of cost for treatment of ailment at the rate of Rs. 500 per households per month. Similarly, employment benefit is calculated at the rate of Rs. 800 per households per month, based on the wage rate for manual work assuming time saved is about 2 hours per day.

The price of the building material which the slum dwellers can get by dismantling their existing structure and selling these in the market, has been assumed at Rs. 0.1 lakh. It has not been discounted as value can be realized at the beginning of the process.

Under AHP, there is a profit component accruing to the builder which would be counted as an additional benefit to the society. The profit margin to the builderis taken as Rs. 1.1 lakh, based on the cost of construction and price of the house. However, as the builder will be in a different income group than the beneficiary - who are taken as poor - the benefits of the former are to be given a different weight. Benefit accruing to the builder vis-à-vis that of the beneficiary is estimated as Rs. 0.85 lakh by applying the logarithmic welfare function underlying Theil's inequality index (builder's average annual income is taken Rs 20 lakh and that of the poor household as Rs 3 lakh). The net present value of the benefit to builders has been discounted for 1.5 years as it can be realized at the completion of the project.

C. Estimating the Costs

Land costs are generally estimated as one-third of the market price of the house - the usual practice of official cost estimation in India. However, in large cities, the proportions of land costs are higher. Consequently, 50% of the current value of the house is taken as the land cost for affordable housing for poor in the present study, based on the data from HUDCO in their housing projects.

For BLC, the cost of land for 300 sq. ft. house in the inner city is estimated at 50% of the market price of houses of that dimension, estimated using NHB database, as discussed above. For AHP, the project is likely to be located in a planned area in the outer ring or periphery of the city. As the dwelling units are likely to come up in multi-storied structures, there will be optimization of land use with additional FSI/FAR. Assuming the FSI to be 3, the

land cost is taken to be 1/6th (1/3rd of 50%) of the market price of the house (for AHP), as obtained from the NHB database.

For ISSR, the land cost is taken as zero since the government policy, embodied in the mission is to provide land title to slum dwellers. The vertical is designed with the understanding that residents of tenable slums cannot and must not be evicted and they should be rehabilitated through *in-situ* development. This means that only those slums which are either identified or notified by the local authorities and are tenable would be taken up under this vertical. Hence, no value to the land can be assigned. The mission stipulates that the state government with support of the local governments must provide land free of cost in order to claim the Central government funds. In the untenable slums, where land would have an alternate use or user, it will have positive value but here this vertical would not be operationalized. This provides the rationale for not taking land cost into our benefit cost analysis under ISSR. The slum households residing in untenable or other slums are envisaged to be shifted to nearby ISSR sites or incorporated under other three verticals. For details about the operations in case of non-tenable slums, means and ways are proposed for their development in the PMAY U, as may be seen in its guidelines.

Land costs are not discounted as land must be procured or used right at the beginning of the process. All other costs in this study discussed below, have been computed for their NPV discounted half yearly for 1.5 years, as total cost under these overheads are assumed to be incurred in three equal installments, every six months.

As per the national standards of construction of houses, having all the amenities, envisaged under PMAY U, such as water supply, sanitation, drainage, kitchen etc., based on the prescribed designs and norms of 300 sq. ft. units, the cost of construction is computed as Rs. 1,000 per sq. ft. This has been considered as appropriate for the large cities under ISSR at All India level. For BLC, the amount is taken as 10% below the average cost and kept at Rs. 900 per sq. ft. since the process of construction, purchase of materials etc. are likely to be supervised by beneficiaries themselves. For AHP, 50% additional costs have been considered since the units will be in multi-storied structures, which push up the costs per sq. ft. to Rs. 1500. All these have been worked out in consultation with officials from NBO, NBCC, HUDCO

and major Civil Society Organizations, engaged in house construction for slum dwellers and affordable housing.

Construction cost consists of Material and Labor components. Construction Industry Development Council (CIDC) provides Construction Cost Index. However, due to its multifarious limitations, well known among practitioners, it has not been used here. For the present study, it is assumed that 2/3rd of the cost of construction comprises the material cost, the remaining being attributed to labor. This has been decided in consultation with officials from NBO, NBCC, HUDCO and a few ground level organizations. Assuming the material cost to be constant across large cities in India for affordable housing projects under PMAY U, the source of variation in the cost of construction across states would be the labor cost.

The Minimum Wage Rates per day for unskilled workers at the state level, collected by Construction/Maintenance of Roads and Building Operations for India and the States and recorded in the Report on the Working of The Minimum Wages Act, 1948 for the Year 2014, brought out by Labour Bureau in the Ministry of Labour and Employment, have been used for estimating the labor component of construction for the the state of Andhra Pradesh based on the ratio with All India figure. Cost differences for different verticals, as discussed above, have been incorporated to obtain separate cost estimates. The per day minimum wage figures for All India, Andhra Pradesh and Rajasthan are Rs 276 (Grade B), 269 and 189 respectively that have been used to compute the ratio of the labor cost of each state with the national average. The interstate variation in the cost of construction is, thus, attributed to differences in labor cost.

Internal and External Infrastructure and O&M costs comprise the costs of providing water supply, sewerage, solid waste, drainage, storm water drains, roads, transport and traffic support, street lighting, power, community and recreational support, including their Operations and Maintenances. The estimates used in the study are determined based on information obtained from the Ministry of Urban Development (MoUD), Reports on Minimum Standards and Service Level Benchmarking, and High-Powered Expert Committee's (HPEC) Report on Indian Urban Infrastructure and Services, 2011.

Internal infrastructure Costs: For BLC and AHP, it is estimated at Rs. 0.5 lakh per house. For ISSR, Rs. 0.75 lakh is required, as an additional amount for redevelopment and brown field development. This includes the cost of the process of making slum land available free of cost for the project.

External infrastructure Costs: For AHP, it is estimated at Rs. 0.3 lakh, per house, as it is likely to be Greenfield development in the outer city area. For ISSR, the cost will be less, Rs. 0.15 lakh, as it will be in or very near the central city. For BLC, no external infrastructure is required.

Community mobilization, project management and completion of procedures: For BLC and AHP, the cost is estimated at Rs 0.12 lakh. For ISSR, it is estimated at Rs 0.21 lakh as it will require more effort under this overhead.

Transit accommodation and rehabilitation costs (relevant only for ISSR.): Rent for alternate accommodation is calculated at Rs. 2000 per month for 18 months per households and estimated at Rs 0.36 lakh. In case permanent structures are build lasting for four to five years, the imputed cost per family will be about the same. This transit accommodation cost has been arrived at using Information from MoUD and grass root institutions engaged in slum development.

2. Beneficiary led Construction/Enhancement (BLC)

2.1 Description of intervention

Subsidy for beneficiary-led individual house construction or enhancement (BLC) is given under this vertical to eligible EWS households to either construct new houses or enhance their existing ones. It covers the beneficiaries, who are not able to take advantage of other components of the mission, particularly the poor who live in non-slum areas. Such families may avail of the central assistance of Rs. 1.50 lakhs. The initiative of beneficiaries primarily drives this vertical and hence has been described as demand oriented.

Beneficiaries desirous of availing this assistance shall approach the Urban Local Bodies (ULBs) with adequate documentation regarding the piece of land owned by them. Such beneficiaries

may be residing either in a slum or non-slum area. People living in slums which are not being redeveloped can be covered under this component if they have a *kutcha or semi-pucca* structure. The ULBs shall check the information, verify the details like economic status, eligibility etc. and approve the building plan submitted by the beneficiary, in the context of the perspective of city's future development. The condition of the houses, e.g. kutcha, semi-kutcha etc. are to be verified in the context of the Socio-Economic Caste Census (SECC) data to approve eligibility for construction of new housing. Similarly, the beneficiary's eligibility for enhancement of the dwelling unit must be approved by taking into consideration the number of rooms in the existing house, details of family members, number of married couples, etc.

2.2 Calculation of Costs and Benefits

Costs

The major components of cost under the vertical are that of land, house construction and building internal infrastructure. The cost of managing and supervising the construction process and completing the procedures and formalities with the concerned local level agencies would also be added to this.

The total cost of building a 300 sq. feet house under the BLC vertical for large cities in Andhra Pradesh at NPV has been estimated at Rs. 10.05 lakh, 10.02 lakh, and 9.97 lakh, at the discount rate of 3, 5 and 8 percent respectively. (Table 1)

Table 1 Summary Table of Benefits, Costs and BCRs for BLC Vertical for Large Cities in Andhra Pradesh

Benefits		NPV at discount rate			Costs		NPV at discount rate		
		3%	5%	8%			3%	5%	8%
VHMP	13.60	13.00	12.63	12.09	Land	6.80	6.80	6.80	6.80
					Construction	2.68	2.64	2.61	2.58
Total Benefit	*13.60*	*13.00*	*12.63*	*12.09*	Ínt Infra	0.50	0.49	0.49	0.48
					CMPMCP	0.12	0.12	0.12	0.12
					Total Cost	*10.10*	*10.05*	*10.02*	*9.97*
BCR	1.35	1.29	1.26	1.21					

Notes: All Benefits and Costs are in Lakh (hundred thousand) Indian Rupees

Benefits

The market price of a planned ownership dwelling unit with a built-up area of 300 sq. feet is considered as the benefit, as noted above. The market price is expected to reflect the net benefit derived by the household over the lifespan of the house, as mentioned above. The net present value of the benefit at the three rates of discount works out as 13.0 lakh, 12.63 lakh and 12.09 lakh.

Benefit-Cost Ratios

The BCRs for BLC vertical thus works out to be 1.29, 1.26 and 1.21 at the discount rate of 3, 5 and 8 percent respectively.

3. Affordable Housing in Partnership (AHP)

3.1 Description of intervention

Affordable housing in partnership with public and private sectors (AHP) is a supply-side intervention, to be led by private developers. To increase the availability of houses for EWS category at an affordable rate, States/UTs, either through its own agencies or in partnership with private sector including industries, builders, etc. can design affordable housing projects. The Mission will provide financial assistance for constructing EWS houses built through such

private-public partnerships. Central Assistance at the rate of Rs.1.5 Lakh per EWS house would be available for all EWS houses in such projects.

The States/UTs would decide the ceiling on the sale price of EWS houses in rupees per square meter of carpet area in such projects with an objective to make them affordable and accessible to the intended beneficiaries. The State and city governments may also extend other concessions such as state-level subsidy, land at concessional rates, stamp duty exemption, etc.

An affordable housing project can be a mix of houses for different categories but it will be eligible for central assistance if only it has at least 250 houses and 35% of these are for EWS category. Allotment of houses to identified eligible beneficiaries in AHP projects should be made following a transparent procedure as approved by local authority. It is stipulated that the beneficiary selection would be part of HFA Plan of Action.

3.2 Calculation of Costs and Benefits

Costs

The cost of procuring land in the outer zone of large cities has been taken as the cost of land under AHP since the projects are likely to come up neither in the central business district nor in the outer periphery. In addition, the cost of construction of the house, that of provisioning of internal and external Infrastructure,etc. are to be included. The cost of project management and of completing the formalities and meeting procedural requirements vis-à-vis the concerned local authorities are often built into the cost of construction of the house and infrastructure when builders are involved in the project. The total cost of a 300 sq. feet house along with the infrastructure under the AHP vertical for large cities in Andhra Pradesh at NPV, is estimated at Rs. 7.29, 7.23 and 7.16 lakh at the discount rate of 3, 5 and 8 percent respectively. (Table 2)

Table 2Summary Table of Benefits, Costs and BCRs for AHPVertical for Large Cities in Andhra Pradesh

Benefits		NPV at discount rate			Costs		NPV at discount rate		
		3%	5%	8%			3%	5%	8%
VHMP	11.90	11.38	11.05	10.58	Land	1.98	1.98	1.98	1.98
Benefit to Builder	0.85	0.81	0.79	0.75	Construction	4.46	4.40	4.35	4.29
					Ínt Infra	0.50	0.49	0.49	0.48
Total Benefit	*12.74*	*12.19*	*11.83*	*11.33*	Ext Infra	0.30	0.30	0.29	0.29
					CMPMCP	0.12	0.12	0.12	0.12
					Total Cost	*7.36*	*7.29*	*7.23*	*7.16*
BCR	1.73	1.67	1.64	1.58					

Notes: All Benefits and Costs are in Lakh Indian Rupees

Benefits

The benefits enjoyed by the consumers over the lifetime of the house would be captured by its market price. However, in addition, there is a profit component accruing to the builder which would be counted as an additional benefit to the society. However, as the builder will be in a different income group than the beneficiary - who are taken as poor - the benefits of the former are to be given a different weight. The benefit to the builder is discounted based on a logarithmic welfare function, underlying the Theil's Entropy measure, as noted above. The benefit of a 300 sq. feet house under the AHP vertical at NPV was estimated at Rs. 12.19, 11.83 and 11.33 lakh at the discount rate of 3, 5 and 8 percent respectively.

Benefit-Cost Ratios

The BCRs under AHP vertical thus works out to be 1.67, 1.64 and 1.58 at the discount rate of 3, 5 and 8 percent respectively.

4.In-situ Slum Redevelopment using land as resource (ISSR)

4.1 Description of intervention

In-situ slum development, using land as a resource with private participation for providing houses to eligible slum dwellers, aims to leverage the locked potential of land under slums to

provide houses to the households residing there for certain number of years and thereby bringing them under the formal urban settlement. All slums are to be taken up for "in-situ" redevelopment irrespective of whether on their land belongs to central, state or local government or to private individual/agency. Slums so redeveloped should compulsorily be denotified.

Private partner for slum redevelopment would be selected through an open bidding process. State and city governments would, if required, provide additional Floor Area Ratio (FAR)/Floor Space Index (FSI)/Transferable Development Rights (TDR) to the private partners, for making their engagement in slum redevelopment projects financially viable. Slum rehabilitation grant of Rs. 1 lakh per house, on an average, would be admissible for the houses built for eligible slum dwellers on public land. States/UTs will have the flexibility to deploy this central subsidy for other slums involving a process of cross-subsidisation. It means that States/UTs can utilize more than Rs. 1 lakh per house in certain projects and less in other projects within an overall average of Rs. 1 lakh per house.

In-situ redevelopment of slums on privately owned lands is to be incentivized by State Governments/UTs or ULBs by allowing additional FSI/FAR or TDR to private developers, as mentioned above. Central assistance cannot be used in such cases. The engagement of the slum community is likely to be high in these projects although the guidelines of the vertical are not very categorical about it.

Beneficiary contribution in slum redevelopment projects, if any, shall be decided and fixed by the State/UT Government. Eligibility of the slum dwellers like cut-off date etc. will be in the domain of State/UTs government which preferably be should done through legislation. They would also decide whether the houses, thus constructed, will be allotted on ownership, renewable, mortgageable, inheritable or leasehold rights. States/UTs may impose suitable restrictions on the transfer of houses, constructed under this component.

4.2 Calculation of Costs and Benefits

Costs

The vertical involves no land cost as it is envisaged that the land will be made available by the state and local bodies free of cost or land title willbe given for in-situ development, as a

matter avowed policy. The slum land can be considered as having no alternate use since it is not possible to acquire the land by evicting the slum dwellers and use it for any other purpose. Consequently, only the cost of constructing the dwelling unit, internal and external infrastructure; community mobilization, project management, etc. are taken as components of the cost. To this, the costs of providing transit accommodation, that of shifting and bringing them back and rehabilitation are to be added.

The cost of a 300 sq. feet house under the ISSR vertical for large cities in Andhra Pradesh at NPV was estimated at Rs. 4.38, 4.34 and 4.28 lakh at the discount rate of 3, 5 and 8 percent respectively based on the computational procedure, discussed in the methodology section. (Table 3)

Table 3 Summary Table of Benefits, Costs and BCRs for ISSRVertical for Large Cities in Andhra Pradesh

Benefits					Costs				
		NPV at discount rate					NPV at discount rate		
		3%	5%	8%			3%	5%	8%
VHMP	10.20	9.75	9.47	9.07	Construction	2.97	2.93	2.90	2.86
HH Health	0.96	0.81	0.72	0.62	Ínt Infra	0.75	0.74	0.73	0.72
EmpOpp	0.60	0.50	0.45	0.39	Ext Infra	0.15	0.15	0.15	0.14
RBM	0.10	0.10	0.10	0.10	CMPMCP	0.21	0.21	0.20	0.20
					TAR	0.36	0.35	0.35	0.35
Total Benefit	*11.86*	*11.16*	*10.74*	*10.17*					
					Total Cost	*4.44*	*4.38*	*4.34*	*4.28*
BCR	2.67	2.55	2.48	2.38					

Notes: All Benefits and Costs are in Lakh Indian Rupees

Benefits

The market price of a house in a planned locality with 300 sq. feet built-up area in the low-incomeneighborhood in the inner zone of large cities is considered as the benefit accruing to the beneficiary household. Slum dwellers, will, however, get certain additional benefits that are not reflected in the market price. These are benefits due to reduced morbidity and reduction in healthcare expenditure and person-hours saved due to access to basic amenities (especially due to the availability of water and sanitation within the house). These benefits are not generally reflected in the market price as the latter is determined by middle-class

priorities and will not occur to people who are already residing in a non-slum area. The final component of benefit would be the price of the building material which the slum dwellers can get by dismantling their existing structure and selling these in the market.

The net present values of a 300 sq. feet house under the ISSR vertical are estimated at Rs. 11.16 lakh, 10.74 lakh and 10.17 lakh applying the discount rates of 3, 5 and 8 percent respectively.

Benefit-Cost Ratios

The BCRs for ISSR vertical work out to be 2.55, 2.48 and 2.38 at the discount rates of 3, 5 and 8 percent respectively.

5.Results

5.1 Summary of Findings

The analysis carried out for the three verticals in Andhra Pradesh clearly reveals that AHP enjoys a distinct advantage over BLC in terms of the BCR. Similarly, the ISSR has higher BCR, significantly above the other two. The figures for ISSR at different discount rates work out to be double that of BLC. This implies that any resource re-allocation from BLC to AHP will result in greater net social benefit. However, giving ISSR the top priority can strongly be recommended since, under this, the net benefits to the society would be several folds compared to BLC and AHP.

5.2 Assessment of Quality of Evidence

The quality of evidence for this study is very strong as the information have been takenfrom official sources that are validated at different levels in different ways. Some of the parameters that are contextual have been determined based on extensive discussion with diverse stakeholders, as well as an overview of debates on social housing, aligning these with the contemporary policies and goals. Care has been taken to ensure that the sources are robust and credible. The findings of the study in terms of benefits and costs across the verticals of social housing would, therefore, be stable, comparable and likely to be accepted as important for reprioritizing the ongoing projects under PMAY U.

5.3 Sensitivity Analysis

A sensitivity analysis has been attempted in this study to determine if the results change significantly in response to the variations in the rate of discount, which is a critical variable with high volatility, considered in the study. Three alternate rates of the discount have been considered for each of the verticals that are 3, 5 and 8 percent. The BCRs come down systematically with the adoption of higher rates as expected because the *net* benefits occurring under each of the programs over time are positive. The rankings of the three interventions do not change with the adoption of different rates which confirms the robustness of the results.

6.Conclusion

The study attempts to evaluate the three verticals or the three Centrally Sponsored Schemes namely BLC, AHP and ISSR, launched under PMAY U in terms of their Benefit-Cost Ratios (BCRs). The scope is restricted to large cities of Andhra Pradesh (in comparison to that of the country and the state of Rajasthan) since the situation in smaller towns varies greatly. These have been computed using officially available information and in consultation with the officials of Ministry of Housing and Urban Affairs (PMAY U monitoring unit), concerned agencies such as HUDCO, NHB and NBCC and select experts and functionaries in civil societies and stakeholders engaged in slum development and affordable housing projects. The official information used is sourced from NHB RESIDEX, Census 2011, NSS 60th round, Labour Bureau, HPEC, MoUD, HUDCO, NBO, NBCC, among others.

The benefit-cost analysis carried out for the three verticals in Andhra Pradesh clearly reveals that AHP enjoys a distinct advantage over BLC in terms of the BCRs. Similarly, the ISSR has BCRs, significantly above the other two. The figures for ISSR work out to be double that of BLC. This implies that any resource re-allocation from BLC to AHP will result in greater net social benefit. However, giving ISSR the top priority can strongly be recommended since, under this, the benefit to the society would be several folds compared to BLC and AHP.

Comparing the figures of the state with that of the country, one would place Andhra Pradesh at a lower level than the country as a whole. The BCRs for all the three verticals for the state

turns out to be slightly lower than those of the country. In particular, the net benefits occurring through the ISSR programme in the state are significantly lower than that of the country. This can be attributed to higher cost components in the state. Also, the market prices of the housing units in large cities of the state are lower compared to the All India figures. The BCRs values for all the three verticals are, however, higher for Andhra Pradesh, compared to Rajasthan, as discussed in the second part of the study which deals with the latter state.

The quality of evidence for this study is very strong as these are based on secondary data, official information, generated through a system of cross-validation, and intensive discussion with a cross-section of stakeholders. The findings of the study raise serious questions on the present allocation of funds across various verticals under PMAY U. These suggest that there is an urgent necessity to reprioritize the verticals in order to maximize their impact in terms of social well-being in the area of housing.

The sensitivity analysis carried out shows that the rankings of the three interventions in the state do not change with the adoption of different rates of interest for discounting. Thisalso holds at the all India level. One would infer that the rankings by the BCRs would not alter with the changes in the interest rate in the capital market. AHP will be a better social option than BLC, irrespective of the variations in the rates of interest for discounting. Similarly, ISSR will give the highest benefits to the society in relation to costs, compared to both AHP and BLC.

Table 4 Vertical wise Summary Table of BCRs for Large Cities in Andhra Pradesh

Intervention	Discount Rate	Benefit	Cost	BCR	Quality of Evidence
BLC	3%	13.00	10.05	1.29	Very Strong
	5%	12.63	10.02	1.26	
	8%	12.09	9.97	1.21	
AHP	3%	12.19	7.29	1.67	Very Strong
	5%	11.83	7.23	1.64	
	8%	11.33	7.16	1.58	
ISSR	3%	11.16	4.38	2.55	Very Strong
	5%	10.74	4.34	2.48	
	8%	10.17	4.28	2.38	

Notes: All Benefits and Costs are in lakh (hundred thousand) Indian Rupees.

Table 5 Vertical wise Summary Table of BCRs for Large Cities in India

Intervention	Discount Rate	Benefit	Cost	BCR	Quality of Evidence
BLC	3%	14.00	10.59	1.32	Very Strong
	5%	13.59	10.56	1.29	
	8%	13.01	10.51	1.24	
AHP	3%	13.06	7.47	1.75	Very Strong
	5%	12.68	7.42	1.71	
	8%	12.14	7.35	1.65	
ISSR	3%	11.91	4.40	2.70	Very Strong
	5%	11.47	4.36	2.63	
	8%	10.87	4.30	2.53	

Notes: All Benefits and Costs are in Lakh Indian Rupee

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Links for Housing Authority in Respective Governments:

Ministry of Housing and Urban Affairs (MoHUA), Government of India http://www.mohua.gov.in/

Andhra Pradesh State Housing Corporation (APSHC), Government of Andhra Pradesh https://apgovhousing.apcfss.in/

Urban Development & Housing (UDH) Department, Government of Rajasthanhttp://urban.rajasthan.gov.in/content/raj/udh/udh-department/en/home.htm

Annexure

Table A1BLCVertical Summary Table of Benefits, Costs and BCRs for Large Cities in India

Benefits		NPV at discount rate			Costs		NPV at discount rate		
		3%	5%	8%			3%	5%	8%
VHMP	14.64	14.00	13.59	13.01	Land	7.32	7.32	7.32	7.32
					Construction	2.70	2.66	2.63	2.60
Total Benefit	*14.64*	*14.00*	*13.59*	*13.01*	Ínt Infra	0.50	0.49	0.49	0.48
					CMPMCP	0.12	0.12	0.12	0.12
					Total Cost	*10.64*	*10.59*	*10.56*	*10.51*
BCR	1.38	1.32	1.29	1.24					

Notes: All Benefits and Costs are in Lakh Indian Rupees

Table A2AHPVertical Summary Table of Benefits, Costs and BCRs for Large Cities in India

Benefits		NPV at discount rate			Costs		NPV at discount rate		
		3%	5%	8%			3%	5%	8%
VHMP	12.81	12.25	11.89	11.39	Land	2.13	2.13	2.13	2.13
Benefit to Builder	0.85	0.81	0.79	0.75	Construction	4.50	4.43	4.39	4.33
					Ínt Infra	0.50	0.49	0.49	0.48
Total Benefit	*13.65*	*13.06*	*12.68*	*12.14*	Ext Infra	0.30	0.30	0.29	0.29
					CMPMCP	0.12	0.12	0.12	0.12
					Total Cost	*7.55*	*7.47*	*7.42*	*7.35*
BCR	1.81	1.75	1.71	1.65					

Notes: All Benefits and Costs are in Lakh Indian Rupees

Table A3ISSRVertical Summary Table of Benefits, Costs and BCRs for Large Cities in India

Benefits					Costs				
		NPV at discount rate					NPV at discount rate		
		3%	5%	8%			3%	5%	8%
VHMP	10.98	10.50	10.19	9.76	Construction	3.00	2.96	2.93	2.89
HH Health	0.96	0.81	0.72	0.62	Ínt Infra	0.75	0.74	0.73	0.72
EmpOpp	0.60	0.50	0.45	0.39	Ext Infra	0.15	0.15	0.15	0.14
RBM	0.10	0.10	0.10	0.10	CMPMCP	0.21	0.21	0.20	0.20
					TAR	0.36	0.35	0.35	0.35
Total Benefit	*12.64*	*11.91*	*11.47*	*10.87*					
					Total Cost	*4.47*	*4.40*	*4.36*	*4.30*
BCR	2.83	2.70	2.63	2.53					

Notes: All Benefits and Costs are in Lakh Indian Rupees

Methods for Estimating the Benefits

Table A4Details of Benefits overheads used in the study

Type	Further explanation
Value of a planned ownership dwelling unit at market price (VHMP)	All weather dwelling unit conforming to standard codes, service level benchmarks and security of tenure and ownership reflecting higher standard of living (availability and adequacy of human settlements and habitat-related services, leading to higher quality of life); Locational benefits (location of the house and proximity to economic and other opportunities); Improved built environment, area re/development and sustainable habitat; Overall planned development for future; Private sector participation, investment and contribution.
Household health	Improved health of the family and savings on medical expenses
Employment opportunities (EmpOpp)	Economic benefits of employment using the time saved by accessing basic amenities and services within the house
Reutilizable building material (RBM)	Reuse of building materials and area development from the earlier existing tenements and settlement
Benefit to builder	Profit made by builder or developer per house after meeting the material, labor, management and interest cost

Table A5Method of Computation of Benefits used in the study

	Benefit items	Source of Data	Variable Details	Methods	Time-related info
					for NPV
1	Value of a planned ownership dwelling unit at market price	Circle rates, NHB RESIDEX (https://residex.nhbonline.org.in/), Census 2011	Value of a formal and planned house of 300 sq. ft. for urban poor and slum dwellers; Prices as per NHB database, for Assessment Prices 2017-18 Q1 Quarter, June 2017. Per sq.ft.carpet area prices considered for houses with less than 60 sqmt (for EWS and LIG, as per PMAY U).	The prices of one sq. ft. of houses in BLC, AHP and ISSR verticals at thenational level are determined to be in the ratio of 8:7:6. Aggregated average price of 45 select large cities, as per NHB database @ Rs 4879 per sq. ft., weighted by their population from 2011 Census. Vijayawada Prices @ Rs 4532 and Jaipur Prices @ Rs 3573 per sq. ft., directly obtained from NHB.	Discounted for 1.5 years, as the value of the house when completed is assumed to be same as its current prices
2	Household health	NSS data 60th round and Authors calculation	Reduction in morbidity and saving of cost for treatment of ailment	Relevant only for ISSR. Computed for 10 years at the rate of Rs 500 per HH per month. For Andhra Pradesh same as all India. For Rajasthan, 15% more than the all India average.	Present value of the benefits considered for 10 years after possession of the house
3	Employment opportunities	Authors calculation	Time saved is about 2 hours per day	Relevant only for ISSR. Computed for 10 years at the rate of Rs 800 per HH per month, based on the wage rate for manual work. For Andhra Pradesh same as all India. For Rajasthan, 16% more than the all India average.	as above
4	Re-utilizable building material	Authors calculation	Rs 0.1 Lakh (assumed)	Relevant only for ISSR. Rough average calculation of theamount of re-utilizable materials per house from the slum. For Andhra Pradesh and Rajasthan, same as all India.	Not discounted as value can be realized at the beginning of the process
5	Benefits to the builder	Authors calculation of profit margin as Rs. 1.1 lakh, based on the cost of construction and price of the house	Benefit accruing to the builder vis-à-vis that of the beneficiary is estimated as Rs 0.85 Lakh by applying the logarithmic welfare function underlying Theil's inequality index	Relevant only for AHP. Since this benefit is for builders, Logarithmic welfare function underlying the Theil inequality index has been applied (builder's average annual income is takenRs 20 Lakh and that of the poor household as Rs 3 Lakh) to discount the benefit accruing to the builder vis-à-vis that of the beneficiary. For Andhra Pradesh and Rajasthan, same as all India.	Discounted for 1.5 years

Methods for Estimating the Costs

Table A6Details of Costs overheads used in the study

Type	Further explanation
Land	Cost of land
Construction	Cost of construction
Ínternal infrastructure	Development of Internal infrastructure for house and basic operation and maintenance (O&M)
External infrastructure	Development of external infrastructure for connecting the area with city-level infrastructure and O&M
Community mobilization, project management and completion of procedures	Community mobilization, project management and completion of procedures (CMPMCP)
Transit accommodation and rehabilitation (TAR)	Slum dwellers are to be provided with accommodation during the construction period

Table A7 Method of Computation of Costs used in the study

	Cost items	Source of Data	Variable Details	Methods	Time-related info for NPV
1	Land	Circle rates, NHB RESIDEX (https://residex.nhbonline.org.in/), NBO, NBCC,and HUDCO	Value of land for construction of ahouse of 300 sq. ft.	Land costs are calculated as one-third of the market price of the house as the usual practice of official cost estimation in India. However, in large cities, the proportions of land costs are higher. Consequently, 50% of the current average value of house of 300 sq. ft. is taken as the land cost for affordable housing for poor in the present study. For BLS, the cost of land for 300 sq. ft. house in the inner city is estimated as 50% of the market price of thehouse as obtained from the NHB database, discussed above. For AHP, the projects being located in the outer side or periphery of the city, the land cost is taken to be 1/6th (1/3rd of 50%, assuming FSI to be 3) of the market price of the house (for AHP), as obtained from the NHB database. As these units are likely to come up in multi-storied structures, optimization in land use is expected with this additional FSI/FAR. For ISSR, land cost is taken as zero as the government policy is to provide land title to slum dwellers. Land prices are computed using these house prices.	Not discounted as land has to be procured or used right at the beginning of the process.
2	Construction	NBCC, NBO, CIDC and HUDCO, Report on the Working of The Minimum Wages Act, 1948 for the Year 2014, (Labour Bureau, Ministry of Labour and Employment) gives data of wages in construction activities at national and state levels	Aggregating the costs of all the items and factors used in construction, including labor but not land	As per the national standards of construction for houses having all the amenities, envisaged under PMAY U such as water supply, sanitation, drainage, kitchen,etc. with the prescribed designs and norms of 300 sq. ft. units, the cost of construction works out as Rs 1,000 per sq. ft. This has been considered as appropriate for large cities under ISSR at All India level. For BLC, the amount is taken as 10% below this average cost viz. Rs 900 per sq. ft. Since the process of construction, purchase of materials,etc. will be supervised by beneficiaries themselves. For AHP, 50% additional cost is added to this, since these will come up in multi-storied structure, bringing the cost per sq. ft. to Rs 1500. Construction cost consists of Material and Labor components. For the present study, it is assumed that 2/3rd of the cost of construction comprise material cost, the remaining being accounted for by labor. Assuming the material cost to be constant across large cities in India for affordable housing projects under	Discounted half yearly for 1.5 years, total cost is assumed to be incurred in 3 equal installments, every six months

			PMAY, the source of variation in the cost of construction across states would be the labor cost. The Minimum Wage Rate per day for unskilled workers, specified for Construction/Maintenance of Roads and Building Operations for India and the States, as recorded in the Report on the Working of The Minimum Wages Act, 1948 for the Year 2014 brought out by Labour Bureau in the Ministry of Labour and Employment have been used for estimating the labor component of construction for the two States, using their ratios with All India figure. Cost differences for different verticals, as discussed above, have been incorporated to obtain their cost estimates. The per day minimum wage figures for All India, Andhra Pradesh and Rajasthan are Rs 276 (Grade B), 269 and 189 respectively that have been used to compute the ratio of thelabor cost of each state with the national average. The interstate variation in the cost of construction is, thus, attributed to differences in labor cost.	
3	Internal infrastructure	Authors calculation based on scattered information with HPEC and MoUD	Value of development of internal infrastructure for the houses in the project	For BLC and AHP, it is estimated at Rs 0.5 Lakh per house. For ISSR, Rs 0.75 Lakh is required, as an additional amount for redevelopment and brownfield development. This includes the cost of the process of making slum land available free of cost for the project. For Andhra Pradesh and Rajasthan, same as all India.	as above
4	External infrastructure	Authors calculation, HPEC, MoUD	Aggregation of the cost of all elements of external infrastructure for the project	For AHP, it is estimated at Rs 0.3 Lakh, per house, as it is likely to be Greenfield development in theouter city area. For ISSR, the cost will be less, Rs 0.15 Lakh, as it will be in or very near the central city. BLC, no external infrastructure is required. For Andhra Pradesh and Rajasthan, same as all India.	as above
5	Community mobilization, project management and completion of procedures	Authors calculation	Amount required for this overhead	For BLC and AHP, over 1.5 years, the cost is estimated at Rs 0.12 lakh. For ISSR, it is estimated at Rs 0.21 lakh as it will require more effort under this overhead. For Andhra Pradesh and Rajasthan, same as all India.	as above

6	Transit accommodation and rehabilitation	Information with MoUD and grass root institutions engaged in slum development	Cost of shifting to alternate accommodation, rent for 1.5 years and rehabilitation	Relevant only for ISSR. Rent for alternate accommodation is calculated at Rs 2000 per month for 18 months per households and estimated at Rs 0.36 lakh. In case permanent structures are build lasting for four to five years, the imputed cost per family will be about the same. For Andhra Pradesh and Rajasthan, same as all India.	as above

Table A8List of Cities used in the study for housing prices as given by NHB RESIDEX, Assesment Prices Q1 Quarter 2017-18, June 2017 data and their Population by Census 2011

| | CITY | Prices (Rs. per sqft carpet area) | | CITY | Population by Census 2011 |
		COMPOSITE PRICE	LESSTHAN60 Sqmt house		in millions
1	Ahmedabad	3274	2976	Ahmadabad (M Corp.)	5.57
2	Bengaluru	6428	5812	BBMP (M Corp.)	8.43
3	Bhiwadi	3458	3190	Bhiwadi (M)	0.10
4	Bhopal	3615	3635	Bhopal (M Corp.)	1.80
5	Bhubaneswar	3844	3877	Bhubaneswar Town (M Corp.)	0.84
6	Bidhan Nagar (Excluding Rajarhat)	4374	4127	Bidhan Nagar (M)	0.22
7	Chandigarh (Tricity)	3924	3876	Chandigarh (M Corp.)	0.96
8	Chennai	6700	6243	Chennai (M Corp.)	4.68
9	Coimbatore	4597	4234	Coimbatore (M Corp.)	1.06
10	Dehradun	4458	4703	Dehradun (M Corp.)	0.58
11	Delhi	9902	7778	DMC (U) (M Corp.)	11.01
12	Faridabad	5431	5547	Faridabad (M Corp.)	1.40
13	Gandhinagar	3315	3628	Gandhinagar (NA)	0.21
14	Ghaziabad	4949	5312	Ghaziabad (M Corp.)	1.65
15	Greater Noida	4478	4483	Greater Noida (CT)	0.11
16	Gurugram	8590	4813	Gurgaon (M Corp.)	0.88
17	Guwahati	3672	3999	Guwahati (M Corp.)	0.96
18	Howrah	4765	3824	Haora (M Corp.)	1.07
19	Hyderabad	3865	3121	Greater Hyderabad (M Corp.)	6.81
20	Indore	3282	3120	Indore (M Corp.)	1.96
21	Jaipur	3979	3573	Jaipur (M Corp.)	3.07
22	Kalyan Dombivali	7847	7825	Kalyan-Dombivali (M Corp.)	1.25
23	Kanpur	4538	4121	Kanpur (M Corp.)	2.77

24	Kochi	5912	5138	Kochi (M Corp.)	0.60
25	Kolkata	5751	4380	Kolkata (M Corp.)	4.49
26	Lucknow	4371	3995	Lucknow (M Corp.)	2.82
27	Ludhiana	4607	3663	Ludhiana (M Corp.)	1.61
28	Meerut	3288	3647	Meerut (M Corp.)	1.31
29	Mira Bhayander	10000	10027	Mira-Bhayander (M Corp.)	0.81
30	Nagpur	5526	5826	Nagpur (M Corp.)	2.41
31	Nashik	3541	3602	Nashik (M Corp.)	1.49
32	Noida	5871	4759	Noida (CT)	0.64
33	Panvel	8132	7836	Panvel (M Cl)	0.18
34	Patna	3677	3680	Patna (M Corp.)	1.68
35	Pimpri Chinchwad	5755	5549	Pimpri-Chinchwad (M Corp.)	1.73
36	Pune	6970	6339	Pune (M Corp.)	3.12
37	Raipur	3425	2695	Raipur (M Corp.)	1.01
38	Rajkot	5041	5015	Rajkot (M. Corp)	1.29
39	Ranchi	2981	2934	Ranchi (M Corp.)	1.07
40	Surat	3870	3811	Surat (M Corp.)	4.46
41	Thiruvananthapuram	5159	4634	Thiruvananthapuram (M Corp.)	0.75
42	Vadodara	2957	2978	Vadodara (M Corp.)	1.67
43	Vasai Virar	6199	6206	Vasai Virar City (M Corp.)	1.22
44	Vijayawada	4577	4532	Vijayawada (M Corp.)	1.05
45	Vizag	3754	4028	Vishakhapatnam (M Corp.)	1.73
					94.52
	Mumbai	21412	20047	Greater Mumbai (M Corp.)	12.48
	Navi Mumbai	12807	12415	Navi Mumbai (M Corp.)	1.12
	Thane	14109	13543	Thane (M Corp.)	1.82

Source: National Housing Bank (NHB) RESIDEX (https://residex.nhbonline.org.in/)

Notes: To arrive at average house price in big cities of India, for this case select 50 cities in NHB database, weights are given to cities by their respective population from Census 2011.

5 cities out of these 50 are excluded, making the final select large cities for arriving at All India house prices at 45.

They are Chakan and New Town Kolkata, as they have considerably less population than 1 lakh, to fall into large cities categories.

Rest three are Mumbai, Navi Mumbai and Thane as they have extremely high house prices as compared to all India, which are Rs 20,047, 12,415 and 13,543 per sqft respectively.

The all India house price per sqftis thus estimated at Rs 4,879 (for affordable housing, less than 60 sq.mt.).

The housing prices soar to Rs 6,821 if we include the 3 extreme high case cities as discussed before.

As a new state, Andhra Pradesh faces a bright future, but it is still experiencing many acute social and economic development challenges. It has made great strides in creating a positive environment for business, and was recently ranked 2nd in India for ease of doing business. Yet, progress needs to be much faster if it is to achieve its ambitions of becoming the leading state in India in terms of social development and economic growth. With limited resources and time, it is crucial that focus is informed by what will do the most good for each rupee spent. The Andhra Pradesh Priorities project as part of the larger India Consensus – a partnership between Tata Trusts and the Copenhagen Consensus Center, will work with stakeholders across the state to identify, analyze, rank and disseminate the best solutions for the state. We will engage people and institutions from all parts of society, through newspapers, radio and TV, along with NGOs, decision makers, sector experts and businesses to propose the most relevant solutions to these challenges. We will commission some of the best economists in India, Andhra Pradesh, and the world to calculate the social, environmental and economic costs and benefits of these proposals

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Copenhagen Consensus Center is a think tank that investigates and publishes the best policies and investment opportunities based on social good (measured in dollars, but also incorporating e.g. welfare, health and environmental protection) for every dollar spent. The Copenhagen Consensus was conceived to address a fundamental, but overlooked topic in international development: In a world with limited budgets and attention spans, we need to find effective ways to do the most good for the most people. The Copenhagen Consensus works with 300+ of the world's top economists including 7 Nobel Laureates to prioritize solutions to the world's biggest problems, on the basis of data and cost-benefit analysis.