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Planning Strategies for Slum Improvement in Bathinda City

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Abstract
Slum improvement is a critical challenge faced by urban planners and policy-makers globally as burgeoning urban population outstrips the capacity of cities to provide adequate housing and services. This paper explores comprehensive strategies for the improvement of slums focusing on sustainable development, community involvement and policy innovation. By analyzing successful case studies from diverse urban contexts, the paper identifies key elements that contributes to effective slum upgrading including secure land tenure, provision of basic services, economic opportunities and participatory planning process. The research highlights the importance of integrating slum communities into the broader urban framework to ensure social equity and economic inclusiveness. Recommendations are provided for policymakers and urban planners on designing and implementing holistic slum improvement programs that can adapt to the unique needs of each community, fostering resilience and sustainable urban growth. This study also involves finding locational attributes of slums and assessment of present status of slums. The study is focused on the Bathinda Municipal Corporation and information for the analysis is culled from secondary sources. Slums in Bathinda tend to cluster around undeveloped regions, empty lots, and water features (such as the Sarhind canal) and other forms of urban sprawl. As they find it the most suitable and safe place to live. They settle near industrial areas because of their work. The vast majority of slum inhabitants own property and live in permanent residences. However, the actual causes of the difficulties include substantial property prices and a lack of critical amenities such as drainage, sewage, water supply, and solid waste disposal. Furthermore, in the informal home supply sector, there is insufficient land accessible to the poor in Bathinda.

Keywords: Slums, Infrastructure, Planning, Land use, Services, Amenities

1. Introduction

The term "slum" frequently refers to informal urban settlements characterized by insufficient housing and poor, deplorable living conditions. These communities are deprived of essential municipal services, including water, sanitation, waste collection, storm drainage, street lighting, and paved sidewalks and roads for emergency vehicles. Additionally, they often lack convenient access to schools, hospitals, and public gathering spaces. Many slums remain unserved and unrecognized for extended periods, sometimes exceeding 20 years in certain cities. In the Bathinda district of Punjab, there have been a total of 32,072 migrants over various periods, with 14,757 arriving in the last decade [1]. This influx has significantly contributed to the growth of slums in the city. Additionally, most of the slum residents come from modest economic backgrounds. In Bathinda district (Punjab, India), a city and municipal

corporation serves as the administrative headquarters. The city, situated in the Malwa Region of northwestern India, lies 227 km (141 miles) west of Chandigarh, the capital of Punjab. It is the fifth largest city in the state. Bathinda is recognized as the second cleanest city in Punjab, following Mohali. The city is home to Maharaja Ranjit Singh Punjab Technical University, Central University of Punjab, and AIIMS Bathinda. The city also has a contemporary thermal power plant, the Guru Hargobind Thermal Plant near Lehra Mohabbat, as well as a fertilizer factory, two cement companies (Ambuja Cements and UltraTech Cement Limited), a big army cantonment, an air force station and the old Qila Mubarak fort (Bathinda, 2020). Bathinda's total population growth rate increased from 22.79% during the 1991-2001 period to 26.96% during the decade 2001-2011, surpassing the growth rate of the state of Punjab. In 2001, Bathinda city had an urban population of 217,256. According to the 2011 census, this number had grown to 285,813. During this period, the proportion of slum dwellers in the city also increased **[2]**.

2. Literature Review

Mahadevia et al. 2018 [2] noted that in India, the PMAY program has integrated in-situ slum redevelopment using a public–private partnership (PPP) model. In this approach, the private sector contributes funding and expertise for housing construction, while the public sector provides the land. Their report examines the challenges faced in implementing the slum rehabilitation project in Ahmedabad through a case study of a specific slum site.

The number of slums and people living in them in Bathinda city has been steadily rising because of the city's large migrant population seeking better lives [3]. Because much of Bathinda city's land is undeveloped, slums have proliferated there. Slums tend to cluster in industrial regions because of the strong ties that people have with their jobs. High land prices and a lack of developed land supply by the public and private formal sectors are the underlying causes of concern, even if most slum inhabitants have their own land and a permanent dwelling. The administration's inability to provide essential services such as drainage, sewage, water supply, solid waste management, etc. is the most concerning aspect of the narrative.

Govindraju, 2012 [4] His research aims to examine the living conditions of women residing in slums in Man-galore, a city in the Indian state of Karnataka. Two hundred women from four different slums—Kudukorigudda, Bhavanthi Street, Vivekanagara, and Urava Store—make up the sample. Those involved were in their twenties and thirties. To measure quality of life, Saxena, 1998 [5] utilized the WHOQOL Group's Hindi version of the World Health Organization's Quality of Life Scale. Each of the 24 dimensions covered by the scale—physical health, psychological dependency, social relationships, the environment, spirituality, religion, and personal beliefs—has its own score. Every one of the twenty-four aspects and six domains had their data examined statistically, yielding means and standard deviations. Environmental and social connection domain scores were very poor, while scores across the board were below average. Because they are shrouded in neglect, misery, ignorance, and isolation, slum women have a very low quality of life, according to the results. It is suggested that governmental and non-governmental organizations conduct community-level assessments of these women's quality of life and implement strategies to enhance it.

3. Methodology

To guarantee accuracy in any research effort, systematic research methods are essential. At first, fifty

individuals were selected from several slums in India, including Dhobiana Basti, Ramdev Nagar Slum, 100 Ft. Road Ki Jhugian, Oriya Basti, Patiala Fatak Ki Jhugian, Dubey Colony, and Gopal Na-gar Jhugiyan. The participants ages varied from eighteen to forty-five. Make sure you have the right equipment and methods for collecting data before you go out into the field. There are seven parts to the scale: water availability, open defecation, sewage, drain, street lighting, housing conditions, health, and education. Overall health and quality of life ratings are also provided, in addition to information organized by domains and aspects. This research will use a combination of methods, including basic random sampling, interviews, and observations, to cover a wide range of topics relevant to the inquiry. The study's primary variables, parameters, and aims informed the development of the interview schedule. Because the interviewees were illiterate, we had to interview each sample responder individually and use a scale to record their answers. Following this, the government enacted several regulations and acts aimed at improving slums. Priorities and needs of slum dwellers are determined by the sample. Housing (the state of housing) and Infrastructure (the availability of basic ser-vices) are the areas that need attention first.

4. Study

The total number of slums in Bathinda Municipal Corporation (MC) are 30, Out of which 7 slums are notified namely Balraj Nagar, Bangi Nagar, Dubey Colony, Kheta Singh Basti, Vishal Nagar, Dhobiana Basti and Ramdev Nagar Slum while 9 slums are non-notified namely Alam Basti, Amarpura Basti, Chandsar Basti 1, Chandsar Basti 2, Harbans Nagar, Janta Nagar, Jogi Nagar, Sanjay Nagar, Subhash Basti and 14 slums are newly notified namely 100ft Road Ki Jhugian, Arore Kothe, Gurunanak Nagar, Hardev Nagar, Oriya Basti, Patiala Fatak Ki Jhugia, Toba Nagar, Tibba jogi Nagar, Birbal Bast, Gopal Nagar Jhuggiyan Near Durga Shakti Temple, Guru Nanak Colony beside Kheta Singh Basti, near Gurudwara Sahib, Jhuggiyan Guru Nanak Colony Gali No. 1 , Jhuggiyan Near Choti Loco Ward No. 47, Madrasi Jhuggiyan (Near Gopal Nagar) Ward No. 47. A primary survey conducted by MC Bathinda under Rajiv Awas Yojana reveals that the slum population totals 46,442, with 11,867 households. This indicates that 16-17% of the slum population lives in 19.68% of the households, which occupy 4.57% of the total area managed by the municipal corporation. [6 - 8].

Figure 1: Open drainage system with sewerage at dhobiana slum area

4.1. Current Status of Basic Facilities & Amenities

4.1.1. Drinking water supply

The total current population of slum area is 46,442 in which 37% slum households have access to individual tap connection, 28% have access to tube well and 8% households have access to open well within premises. Therefore 73% of the total slum households come within premises, while 27% comes under outside premises [9].

4.1.2. Toilet Facility

Two percent of slum homes in Bathinda MC use open defecation, according to a primary survey of those households. Based on the data we have, it seems that 12% of people have access to dry toilets, 75% to flush toilets with septic tanks, 3% to shared dry toilets, and 3% to shared flush toilets with septic tanks. One percent of the population used a dry latrine, and one percent used a flush latrine connected to a septic system. All slums, except for Vishal Nagar slum, have sufficient sanitation facilities [10].

4.1.3. Bathroom Facility

The percentage of households having access to a restroom varies among different types of facilities: 70% have one inside the home, 17.5% have one outdoors, and 11.5% do not. The slums of Bathinda Municipal Corporation do, in fact, have access to restrooms.

4.1.4. Sewerage Facility

Within the slums of the Bathinda Municipal Corporation, there are 22,244 households that do not have access to sewage facilities. These slums include Sanjay Nagar, Tibba jogi Nagar, Birbal Basti, Gopal Nagar, Guru Nanak Colony, Jhuggiyan Guru Nanak Colony Gali No. 1, Jhuggiyan near Choti Loco, and Madrasi Jhuggiyan, where 57% of the households inhabit. It has the greatest number of dwellings without a sewage infrastructure, followed by the Jogi Nagar slum at 50% and an average of 16%.

4.1.5. Drainage Facility

Slums namely: Harbans Nagar, Vishal Nagar, Chandsar Basti 2, Oriya Basti, Chandsar Basti 1and Alam Basti exhibit excellent coverage of drains though slums, i.e., Arore Kothe, Gurunanak Nagar, Subhash Basti, Tibba Jogi Nagar, Toba Nagar, Birbal basti, Gopal nagar jhuggiyan, Guru nanak colony, Jhuggiyan guru nanak colony gali no. 1, Jhuggiyan near choti loco and Madrasi jhuggiyan own the lowest number of drain coverage. Without a well-thought-out drainage network, sewage from homes in slum areas may pool and create serious environmental problems.

4.1.6. Road Access

Since 57% of the roads are kutcha and 43% are pucca, there is still a significant lack of motor-able roads, which prevents vehicles like fire trucks and ambulances from reaching the slums.

4.1.7. Street lighting

The slums of Bathinda Municipal Corporation have very insufficient street illumination. Alam Basti and Balraj Nagar are the only two slums that have sufficient street lighting. One way in which street lighting contributes to a sense of safety and security is by discouraging loitering and other forms of criminal activity.

4.1.8. Land Ownership Status

Bathinda has over 30 slums. Six are on public property, seventeen on private land, five on trust land, and two are under mixed ownership. Since 57% of slums are located on privately held property, development may be challenging due to land title challenges or the landowner's wish to see the area developed, according to the Land Ownership Analysis. As a result, substantial communication with landowners is required before making decisions. Consultation with the Wakaf board is essential for the

development of the five slums on board-owned land. The slum on public land will be developed first since the plan is easier to execute there.

4.1.9. Land Value Status

There are 19 slum areas having land value upto 750/sq ft, 5 slums having land value between 750 sq ft-1500/sq ft and 6 slum areas having high land value which is above 1500/sq ft.

4.1.10. Population Density

An analysis of population density in Bathinda slums indicates that 60% of slums have a population density below 250 people per hectare (pph), 16.5% of slums have a density between 250 pph and 500 pph, and 12% of slums have a density exceeding 500 pph [6-7]

Slum specific development model is based on various factors, including location, tenure status, land/property ownership status, infrastructure and housing conditions, stakeholder's preferences, whether it involves in-situ redevelopment or requires relocation, and environmental conditions. The following are the models for slum development, rehabilitation, and upgradation:

- Slums in-situ up-gradation: Gap filled housing with infrastructure up gradation and improvement.
- Slums in-situ redevelopment: For high-value land, the PPP model is used for housing and infrastructure. For medium and low-value land, redevelopment is managed by slum dwellers' cooperatives and public agencies. When only infrastructure is provided, housing is initiated by the beneficiaries.
- Relocation: In high-premium areas, the PPP model is used for housing and infrastructure on public land. In medium-premium areas, a PPP with a Viability Gap Funding model is employed on public land. For relocation on public land, the conventional model is implemented through public agencies [11].

Certain slum policies can address various aspects of poverty, such as employment and income, shelter, food, health, education, and access to basic urban infrastructure and services [12].

Some of the more effective upgrading initiatives have been sponsored by local non-governmental organizations (NGOs) that collaborated with people and their groups before forming relationships with local governments [13].

5. Analysis

Initially, 50 people from slums, specifically Dhobiana Basti, Ram dev nagar slum, 100 Ft. Road ki jhugian, Oriya basti, Patiala fatak ki jhugian, Dubey Colony, Gopal Nagar Jhugiyan, were chosen as the sample. The age of the participants ranged from 18 to 45 years.

5.1. Vulnerability Matrix Analysis

People living in slum areas have their needs and priorities considered when assigning weights to two dimensions in a matrix analysis: housing (the state of the housing stock) and infrastructure (the availability of basic services). It is accomplished via face-to-face communication. To assist build development recommendations for the slums, the matrix will highlight the deficit or vulnerability of each slum. Below is the pie chart for each slum shown in Figure 2.

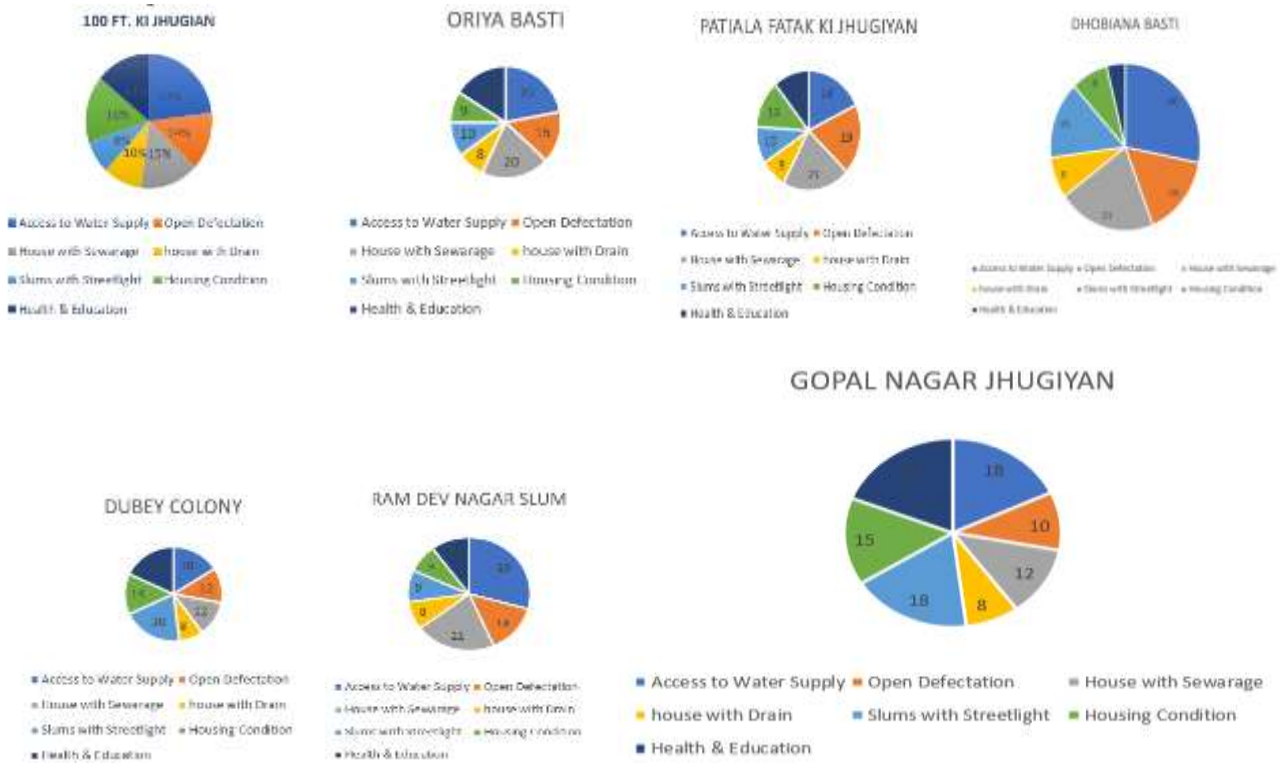

Figure 2: Pie chart showing the weightage of basic services and infrastructure for different slums
By analysis of above data average weightage is given to indicators which are written as below:

Table 1: Score of basic services in slum areas

S. No.	Key Indicators	Score
1	Access to Water Supply	25
2	Open Defecation	15
3	House with Sewerage	20
4	house with Drain	10
5	Slums with Streetlight	10
6	Housing Condition	05
7	Health & Education	15
	Total	100

The range between 0-40 is considered poor condition, 41-65 is considered under moderate condition, while above 65 is considered as good condition of slum area. This score depends upon the present condition and availability of services in different slum areas.

5.2. Results of Vulnerability Matrix Analysis

Table 2: Scores of different slums

S. No.	Name of slum area	Score
1	100ft Road Ki Jhugian, Oriya Basti, Patiala Fatak Ki Jhugia, Dhobiana Basti, Ramdev Nagar Slum	0-40

S. No.	Name of slum area	Score
1	100ft Road Ki Jhugian, Oriya Basti, Patiala Fatak Ki Jhugia, Dhobiana Basti, Ramdev Nagar Slum	0-40
2	Dubey Colony, Gopal Nagar Jhuggiyan,	41-65

5.3. Proposals & Recommendations

There are many development options as per slum score which are as given in Table 3 below.

Table 3: Development options based on the scores of the slums

S. No.	Slums score	Preliminary Development options
1	0-40	Housing Gap Filling, Housing (Kutcha houses) and Partial Infrastructure (Water Supply, Pucca Roads and Drains) and Soci-Economic Conditions Improvement
2	41-65	Partial Infrastructure (Water Supply, Pucca Roads and Drains
3	Above 65	Delisting after nominal improvement

6. Prioritization Factors for Slum Improvement

6.1. Tenure Status of Households in Slum

Slums that have a large proportion of families with mostly insecure tenure are more susceptible and hence need prompt action. With that in mind, phasing has prioritized certain slums above those that have semi-secured or secured homes

6.2. Land Ownership of Slums.

Publicly owned slums have received greater attention than privately owned or mixed-owner slums.

6.3.Result of Vulnerability Matrix Analysis

Housing, infrastructure, and socioeconomic status all contribute to a person's vulnerability, which should inform the order of priority for implementation.

6.4. Willingness of Slum Community

In slum areas, researchers have used focus groups to gauge people's willingness to participate (Rangwala, 2016).

7. Strategy for Slum Improvement

After conducting the geographical analysis and condition assessment, a participatory process was initiated with slum populations via in-situ focus groups to brainstorm potential development ideas and possibilities. The current situation of slums in Bathinda has led to the conclusion that two of the seven slums should be delisted after minor infrastructure improvements, while the remaining five can be kept alive through in-situ upgrading and in-situ redevelopment and resettlement plans.

7.1. In-situ Upgradation Strategy under RAY

A plan for upgrading and improving the living conditions in sustainable slums and families within partly sustainable slums, characterized by a high proportion of solidly built houses but with poor or average infrastructure, will be offered. There are two slums, namely Dubey Colony and Gopal Nagar Jhuggiyan,

including a total of 968 homes that need upgrading and improvement. The in-situ development of slums will include enhancing the basic infrastructure inside the slums, as well as addressing the deficiencies in kutcha homes and upgrading incremental housing, such as improving the roofing and flooring. If there is a need to fill gaps, the carpet area of the housing unit will be 25 square meters. Slum Upgradation and improvement would include addressing the gaps in kutcha housing and implementing incremental housing strategies. This will be a beneficiary-led building approach, where beneficiaries will have access to subsidized loans under the Rajiv Rin Yojana to build permanent pucca housing. The development framework will adhere to the following model:

- The house should be a durable structure with a total area of 25 square meters. It should have permanent walls and roofs, created using cement mortar.
- The Competent authority must complete application papers for the permission of beneficiaries. The location is MC Bathinda. The Central Government offers a home loan with a 5% p.a. interest subsidy to economically weaker sections (EWS) and low-income groups (LIG) for the purpose of acquiring or constructing a house.
- The Central and State government will deliver installments in stages upon the completion of the Foundation, Plinth, and Casting of the roof slab. The installments will be issued at a rate of 30%, 20%, and 50% of the total cost of the Housing project.

7.2. Relocation & Resettlement Strategy under Pardhan Mantri Awas Yojna

Only in the most extreme cases, such as in completely unsustainable slums or homes in partly unsustainable slums, would the relocation approach be considered as a potential development alternative. The 100ft Road Ki Jhugian, Dhobiana Basti, and Ramdev Nagar Slums are all in need of relocation and resettlement since they are situated in inhospitable regions. As a result, 4,678 households are now undergoing relocation.

The Pradhan Mantri Awas Yojna, often known as the "Housing for All" Mission, is set to be implemented from 2015 to 2024 in metropolitan areas. Its purpose is to provide housing to all eligible families and beneficiaries by 2024 by giving government aid to implementing agencies via States and UTs. There are four parts to a mission as discussed below.

7.2.1. Urban slums on federal, state, or ULB property

- Housing subsidy for slum rehabilitation of one lakh rupees for each home, on average.
- Latitude for states and municipalities to use this central funding for the rehabilitation of additional slums.
- Projects are made financially feasible by states and cities by the provision of increased FSI/FAR or TDR.
- Federal entities are exempt from paying land costs.

7.2.2. Urban Slums on Private Property

- Additional FSI, FAR, or TDR is provided to landowners by states and cities in accordance with their policies.
- A lack of centralized support.
- Housing and basic municipal infrastructure are essential components of slum redevelopment.
- Developers have access to a free sale component that they may use to generate revenue for the project via open market sales.
- Slums on private property have only been selected for in-situ rehabilitation when the land value is high and the density is medium, making them feasible for public-private partnership development.

7.2.3. Beneficiary-Led Individual House Construction or Enhancement

- This category includes households with solid tenure. It also includes assistance to qualified families belonging to EWS groups so that they may build new dwellings or improve their current ones.
- Households might get central aid of 1.5 lakh rupees.
- Persons receiving benefits, whether they reside in or outside of slums, should visit ULBs accompanied by documentation proving they own land or a home.
- It is possible to cover kutcha dwellings in slums that have not been designated for redevelopment.

7.2.4. Affordable Housing in Partnership

- The goal is to help fund the construction of affordable housing via various collaborations between the business sector, cities, and states/UTs.
- Each EWS home receives central aid of 1.5 lakh rupees.
- Efforts to build affordable homes that qualify for federal funding — Roughly one-third of the homes.
- An EWS category project must have 250 or more dwelling units.
- Beneficiaries listed in HFAPoA will receive their allocations via a transparent process that has been authorized by SLSMC.
- Sale prices to be secure on the basis of following principles: – For initiatives that do not include private sector involvement, the "no profit, no loss" principle applies – In an open and transparent manner, taking into consideration the incentives offered by the Centre, the State, and ULB, initiatives involving the private sector slums that are unsustainable are implemented or located on private lands with insecure tenure that is they do not possess any land has to be proposed for relocation and resettlement under affordable housing projects taking place in the city individual applicants for assistance shall not be considered.

7.2.5. Affordable Housing Through Credit Linked Interest Subsidy

- Home loans taken out by qualified urban poor (EWS/LIG) for the purchase, building, or improvement of a dwelling, with interest subsided.
- EWS/LIG may get a 6.5% interest subsidy on home loans up to Rs. 6 lakhs with a 15-year duration. Loans over Rs. 6 lakhs will be charged at market rates.
- Interest subsidy computed on a net present value basis using a 9% discount rate.
- Financial institutions advance the subsidy to the loan accounts of those who would benefit from it.
- The EWS carpet size is 30 square meters, whereas the LIG carpet area is 60 square meters.

8. Preventive Strategy

Slums will not be allowed to emerge in the future thanks to the preventative policy. This necessitates interventions by the state government and urban local bodies via statute and regulation, which will be carried out by the appropriate authorities. The primary goal ought to be the development of reasonably priced homes and their appropriate distribution to the designated populations. If we want to know how many homes Bathinda will require in the next 20 years, we must look at their housing demand. The following are some of the suggested solutions to meet this future demand:

- Using Development of public housing programs to increase the availability of affordable homes in response to the housing needs of low-income and extreme-wealth individuals in metropolitan areas.
- Creation of Affordable housing stock for the urban poor by increasing the supply of EWS and LIG housing through Public Private Partnership.

- Some Changes to City Planning Policies pertaining to urban poor people should be considered and included into the Master Plan as part of the regulations.
- Specific guidelines and requirements for land use, building dimensions, floor area ratio, ground coverage, facility specifications, and open space regulations.
- The development of Low-Income Housing Specific Building Bylaws is imminent.
- Each new housing project in the city shall set aside 15% of residential F.A.R. or 35% of dwelling units, whichever is more, for EWS/LIG, with a system of cross-subsidization in compliance with Rajiv Awas Yojna principles.
- Proper creation and monitoring of the Public Housing Scheme's disposal strategy to guarantee appropriate disposal to the target population (EWS and LIG).
- The slum area of dhobiana basti occupied 26.5 acres of government land. The cost of this land is approximately 14.5 cr. Out of 26.5 acres, 10 acres land can be used for development of EWS houses and remaining land can be used for commercial purpose.
- There is provision in PAPRA act to leave the five percent EWS sites in Residential colonies. Development authorities are the owners of these sites. There is approximate 62 acres land vacant for EWS sites in approved colonies. The ownership of this land is with development authorities. This land can be used for transfer of Slums in these areas.

9. Conclusion

This study anticipates the creation of a slum-free Bathinda utilizing a universal rights framework with a futuristic perspective. The Slum Free City Plan emphasizes people-centered methods to development. The new Sustainable Cities viewpoint is an inclusive strategy that prioritizes the vision of the poor and disadvantaged sectors while including all aspects of development in a holistic and synergetic way. The Plan strives to create inclusive cities in which all people, particularly the poor, have equitable and complete access to services that are both socially and ecologically sustainable. Its core themes are reiterated one again:

- Proper It will acknowledge that everyone, has the right to a decent home, a means of subsistence, services, and resources— especially the poorest, marginalized, and most vulnerable groups.
- It will guarantee an equitable level of services for all, rich and poor, without discrimination based on religion, caste, land ownership, formal identity, or formal livelihoods.
- It would guarantee the comprehensive development of all slums and low-income settlements, addressing the entire range of impoverished people's requirements and connecting them legally to the city's infrastructure to reduce poverty rates over time.
- To ensure that the city and area plans address the needs of the poor, it will guarantee the poor's actual and meaningful participation in the planning and implementation process.
- It will make sure that slum development follows two socially and environmentally sustainable paths and is connected to the resurgence of conventional environmental management techniques. The objective is to enhance the local government's resource-based processes and institutions and provide these organizations with the capacity to deal with the impoverished in a sustainable and long-term way.

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