

Guidebook

for adoption of

Form Based Codes



National Institute of Urban Affairs



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Form Based Codes



Kindly send your valuable feedback on
info@formbasedcodes.in

October 2023

Quotes from Honorable Prime Minister's Post Budget-2023 speech

Dated: 02.03.23



“Well-planned cities are going to be the need of the hour in the fast-paced environment of India in the 21st century”

“Development of new cities and the modernization of services in the existing ones are the two main aspects of urban development”

“Urban planning will determine the fate of our cities in Amritka and it is only well-planned cities that will determine the fate of India”

“India has overtaken several countries in terms of metro network connectivity”

“75 percent of waste is being processed today when compared to only 14-15 percent in 2014”

“Our new cities must be garbage-free, water secure, and climate-resilient”

“The plans and policies that the government is making should not only make life easier for the people of the cities but also help in their own development”

हरदीप एस पुरी
HARDEEP S PURI



आवासन और शहरी कार्य मंत्री
पेट्रोलियम एवं प्राकृतिक गैस मंत्री
भारत सरकार
Minister of
Housing and Urban Affairs; and
Petroleum and Natural Gas
Government of India

Foreword

Urbanisation is a hallmark of development for any nation. The Modi government has leveraged India's rapid urbanisation to propel economic growth and build a path towards meeting the goals of sustainable development. As India undertakes the largest planned urbanisation programmes in the world, the government is also cognisant of its responsibilities of balancing development needs with ecological harmony.

Successful programmes such as the Smart Cities Mission, Pradhan Mantri Awas Yojana – Urban and AMRUT have not only shown the need for in-situ upgradation but demonstrated the preparedness of our city administrators and planners to steer the process. By strengthening area-based planning, improving last-mile access to services, and integrating digital technology, these missions have led to a greater appreciation of sustainable urban form in our cities. The government is further incentivising a shift in our urban morphology by prioritising reforms such as modernisation of building bye-laws, transit-oriented development and adoption of Transferable Development Rights, among other measures.

I am pleased that this 'Guidebook on Form Based Codes' is being released to ensure that this objective is met. Within the ambit of applicable laws and regulations, this Guidebook and its Standard Operating Protocols demonstrate that achieving sustainable urban form is possible through a Form Based Codes approach. Combined with a digital interface, the tools proposed in this guidebook have the potential to increase efficiencies in city planning and management.

I look forward to seeing this guidebook being adopted by city planners and managers across India. It will be a useful resource in improving the urban form of our cities, thereby optimising urban services, streamlining development efforts, and reducing carbon emissions.


(Hardeep S Puri)

New Delhi,
06 October, 2023

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Foreword by Director NIUA



Director, National Institute of Urban Affairs (NIUA)

The rapid and unprecedented growth of Indian cities, characterized by chaotic urbanization, severe congestion, and escalating environmental degradation, has taken urban planners by surprise. Conventional urban planning methods have given rise to a multitude of challenges, including inflexible and unyielding plans, a disconnection from investment planning, resulting in poor implementation, and a failure to comprehensively address the intricate interplay between spatial and functional aspects. It is now imperative that the field of urban planning undergoes a fundamental shift towards a people-centric development paradigm that takes into account the diverse needs of all residents, with a particular focus on the underprivileged segments of society.

In his recent post-budget speech, the Hon'ble Prime Minister not only emphasized the pivotal role of planning and governance in urban development but also stressed the urgent need to direct our efforts towards spatial planning, transport planning, and urban infrastructure. To fulfill the Prime Minister's vision, it is imperative that we foster a climate of innovation, develop a versatile array of planning tools, fortify our human resources with efficiency, and augment the capabilities of urban local bodies to create a plethora of opportunities.

In line with the vision of the Hon'ble Prime Minister, the National Institute of Urban Affairs is nudging the urban eco-system through its seven-pronged approach: (1) Data for Action; (2) Evidence-Based Integrated Planning; (3) Demonstrate to Scale, (4) Equip to Institutionalize and Empower, (5) Innovate and Co-create, (6) Foster Collaborations and Alliances; and (7) Invest in cities of tomorrow; has developed a Guidebooks for the adoption of Form-Based Codes and its Standard Operating Procedures.

These Guidebooks offer practical tools for managing brownfield sites of varying scales at the city level. They outline a step-by-step process to transition towards adopting Form-Based Codes in India, streamlining the development process for all stakeholders and facilitating business operations.

Moreover, in addition to the Guidebooks, the NIUA is poised to launch a comprehensive training program. This program is specifically designed to provide guidance and support to practitioners, professionals, and students, enabling them to embrace and refine this innovative approach. Through these concerted efforts, we are paving the way for a new era of urban development in India, one that is in harmony with the vision of our Hon'ble Prime Minister and focused on sustainable growth and inclusive prosperity.

Hitesh Vaidya

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List of Abbreviations

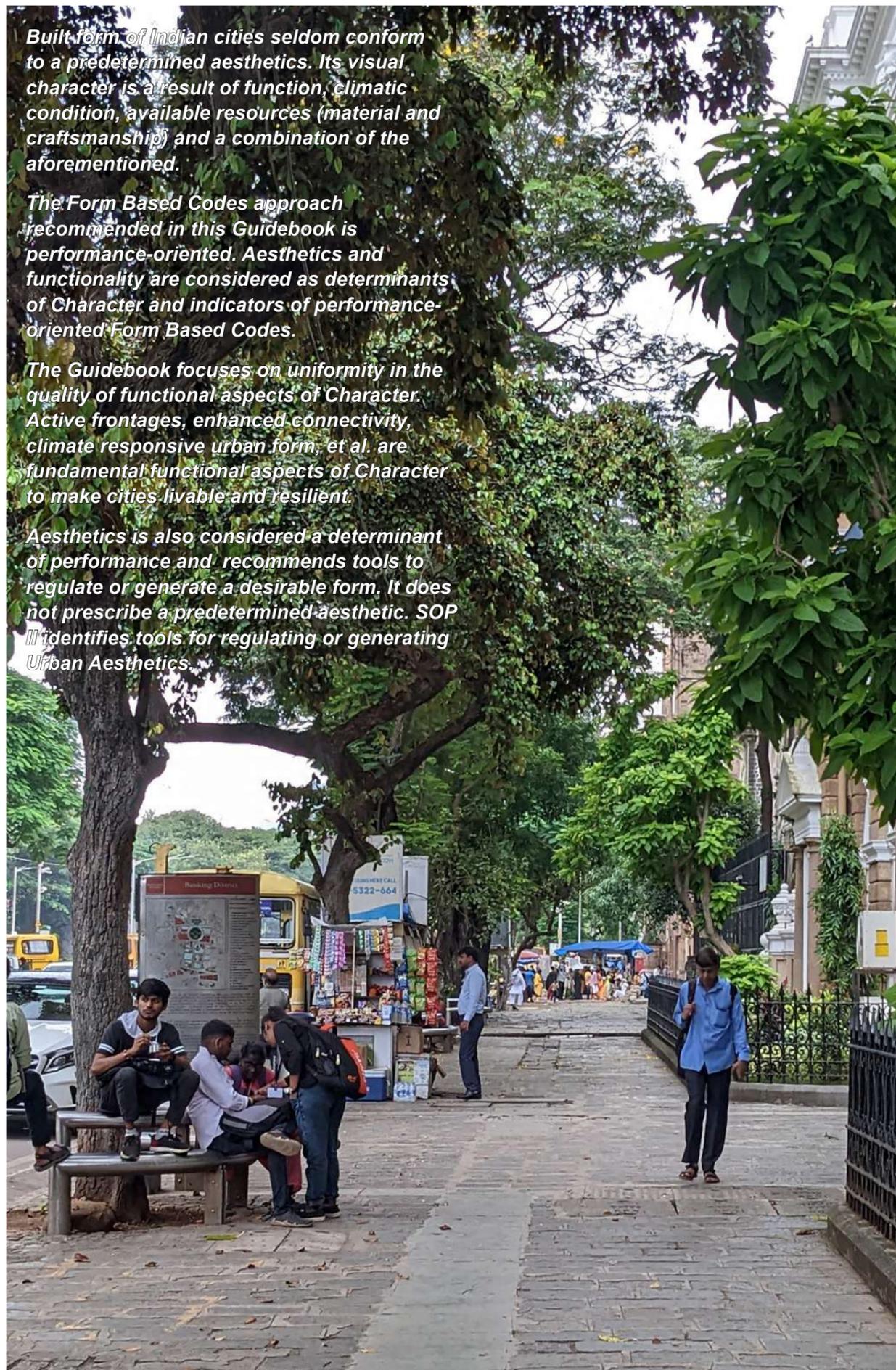
| | |
|-----------------|--|
| AAI | Airports Authority of India |
| ABD | Area Based Development |
| AF | Active Frontage |
| AI | Artificial Intelligence |
| AMRUT | Atal Mission for Rejuvenation and Urban Transformation |
| AR | Artificial Reality |
| BBL | Building Bye-Laws |
| BTL | Build-To-Line |
| BUA | Built-Up Area |
| CBALP | Character Based Area Layout Plans |
| CBP | Community Building Program |
| DCR | Development Control Regulations |
| EoDB | Ease of Doing Business |
| EWS | Economically Weaker Section |
| FAR | Floor Area Ratio |
| FBC | Form Based Codes |
| FC | Facade Controls |
| FSI | Floor Space Index |
| GC | Ground Coverage |
| GDA | Green Development Area |
| GIS | Geographic Information System |
| GPR | Ground Penetrating Radar |
| HRIDAY | Heritage City Development and Augmentation Yojana |
| IoMT | Internet of Moving Things |
| IPT | Intermediate Para Transit/ Public Transport |
| IRP | Interface Regulation Plan |
| IT | Information Technology |
| LAP | Local Area Plan |
| LCMP | Low Carbon Mobility Plan |
| LDS | Low-Emissions Development Strategy |
| LP | Layout Plans |
| MUZ/ MFZ | Multi-Utility Zone |
| NMT/ NMV | Non-Motorized Transport/ Vehicles |
| NUTP | National Urban Transport Policy |
| OSP | Outdoor Space Plan |
| PDC | Property Development Cards |
| PDP | Property Development Plan |
| PHPDT | Peak Hour Peak Direction Traffic |
| PT | Public Transport |
| PW | Pedestrian Way |
| ROP | (Re)generation Opportunity Plan |
| RoW | Right of Way |
| SAP | Special Area Plan |

| | |
|---------------|--|
| SOP | Standard Operating Procedures |
| TDR | Transferable Development Rights |
| TOD | Transit Oriented Development |
| UFR | Urban Form Regulations |
| UNFCC | United Nations Framework Convention on Climate Change |
| URA | Urban Redevelopment Authority |
| URDPFI | Urban and Regional Development Plans Formulation and Implementation Guidelines |
| VW | Vehicular Way |
| w.r.t. | with respect to |

List of Definitions

| | |
|---|--|
| Form Based Codes | Form Based Codes (FBC) is an area-based regulatory tool to facilitate incremental development or transformation of Urban Built Form (and Public Realm) to enhance, inherent or acquire a desired character. It is a performance-oriented, bottom-up approach, and applicable to brownfield and greenfield areas. |
| Character Based Area | An area that is distinct by the virtue of identity defining feature is called a Character Based Area (CBA). The Character thus identified may generate from its functionality, visual quality of built form and/ or landscaping et al enabling the urban realm to impart a collective experience. Such areas are often contiguous to an anchor, like railway, metro or bus stations/ terminals, water bodies, heritage building/ precinct, university, business district, wholesale market, industrial park, etc. Areas without an anchor with a uniform identity defining features like urban villages, plotted residential neighborhoods, farmhouse zones, slums, organically developed areas, etc. can also be referred as CBAs. CBAs are usually bound by physical features like roads, green areas, water bodies, railway lines, etc. |
| Character Based Area Layout Plan | Each CBA will require a Layout Plan to regulate its urban form. Such Layout Plans will be referred as Character Based Area Layout Plans (CBALP). These will be a set of plans to regulate the development of public realm and its adjoining urban forms. |
| Urban Form Regulations | Urban Form Regulations (UFR) are tools which originate from CBALPs and can be used to regulate the design of urban form (building and open spaces). These regulate the qualities of public realm created by plot/ building frontages. These, when applied to brownfield sites, may require removal, amendment or at least rationalization of some conventional clauses in Development Control Regulations and Building Bye-Laws. |
| Property Development Card | Property Development Card (PDC) is defined as a document containing UFR applicable to concerned plots as derived from the approved CBALP and its UFR. PDCs are to be structured as per the requirements of CBAs and will vary from a city to another. |

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Built form of Indian cities seldom conform to a predetermined aesthetics. Its visual character is a result of function, climatic condition, available resources (material and craftsmanship) and a combination of the aforementioned.

The Form Based Codes approach recommended in this Guidebook is performance-oriented. Aesthetics and functionality are considered as determinants of Character and indicators of performance-oriented Form Based Codes.

The Guidebook focuses on uniformity in the quality of functional aspects of Character. Active frontages, enhanced connectivity, climate responsive urban form, et al. are fundamental functional aspects of Character to make cities livable and resilient.

Aesthetics is also considered a determinant of performance and recommends tools to regulate or generate a desirable form. It does not prescribe a predetermined aesthetic. SOP identifies tools for regulating or generating Urban Aesthetics.

Executive Summary

This Guidebook is an instrument to achieve the urban transformation agenda initiated by the Government of India. It provides tools to implement the Form Based Codes (FBC) approach for Indian cities - the Character Based Area Layout Plan (CBALP), Urban Form Regulation (UFR) unique to corresponding CBALP and Property Development Cards (PDC) for improving public realm by meeting the demands of live-work-recreate, safety, sustainability and resilience, including brownfield areas.

Urban form in India is heterogeneous, and layered. Its planning is increasingly gravitating to address qualitative aspects of incremental growth, from the earlier quantitative approaches. This is evident in the emergence of approaches like Local Area Planning, Layout Planning, Special Area Planning, Area Based Development, Smart City Project, Transit Oriented Development et al. to upgrade public realm. Addressing this need, Character Based Area (CBA) has been introduced as a physical planning area defined through its existing or desired quality of public realm. Improvements in the latter, boosts outdoor activities that increases social interaction, community building, business potentials and has environmental benefits. And, the resultant incremental improvement of living condition, infrastructure and mobility, makes it a viable format of development.

This Guidebook details out a process to adopt FBC in India. It also comprises the Standard Operating Procedures (SOPs) for preparing CBALP and its corresponding UFRs. The plot specific DCRs and UFRs shall be compiled in PDCs to streamline the development process for all end-users, thereby enabling Ease-of-Doing Business (EoDB).

The CBALP enlists overlays of Layout Plans for (re)generation opportunities, mobility network, outdoor space network, interface regulation and property and community development. This would inform the generation of UFRs (of CBALP) that enable functional design regulations of -

1. Public realm, through organization and utilization of streets, open-spaces, waterfronts
2. Plots, through buildable envelope, pedestrian way, public place within plots, projection across Public Right of Ways, etc
3. Interface of Plots with Public Realm, through Build-To-Line, Active Frontages, Colonnades, etc

The Guidebook also provides tools for cities to regulate aesthetics of the facades through establishing proportions, material, colour etc.

The recommended FBC approach is performance-oriented and prioritizes on optimum utilization of resources (trunk infrastructure, road network, environmental assets etc) where the CBALP conforms with the capacity of infrastructure. The emerging UFRs will regulate the design of public realm. Execution of the latter will be contextual, and demand-driven, hence flexible to factor specifics such as land restructuring, use, articulation of frontages, open-spaces, building facades et al.

To leverage from the FBC approach, a dynamic portal with the above outputs is recommended.

Integration of CBALP and Special Purpose Plans

Planning starts with **Regional Planning** where urban, rural and urbanizable areas, environmental assets are identified besides proposals for regional infrastructure.

This is followed by preparation of **Master or Development Plan** for urban areas. These are prepared for a horizon year of 20-30 years, by incorporating proposals from Regional Plan while allocating resources at local level. The shared resources of an urban area like residential, commercial, institutional areas, green areas, social and physical infrastructure etc. are planned based on projected population and employment opportunities. **At this stage even strategies and plans for Climate Change mitigation and Disaster Risk Mitigation are prepared.**

The Master Plans also identify **smaller planning areas**, like Special Area, Local Area, Influence Zones, etal. Plans for these areas guide quantitative subdivision of land into plots, streets, green areas, etc. **Character Based Areas** subsumes all former types of smaller area planning while adding regulatory plans for qualitative improvement. This enables context-specific solutions that are flexible, leading to incremental improvement in public realm through participation.



Fig. 1: Pyramid of Planning System/ Process Framework

While drafting overlays of CBALP, the following measures for climate change and Disaster Risk Mitigation are emphasized.



Fig. 2: Measures adopted for climate change and disaster mitigation while preparing CBALP overlays

Conventional Zoning Vs Form Based Code Zoning in Planning Process

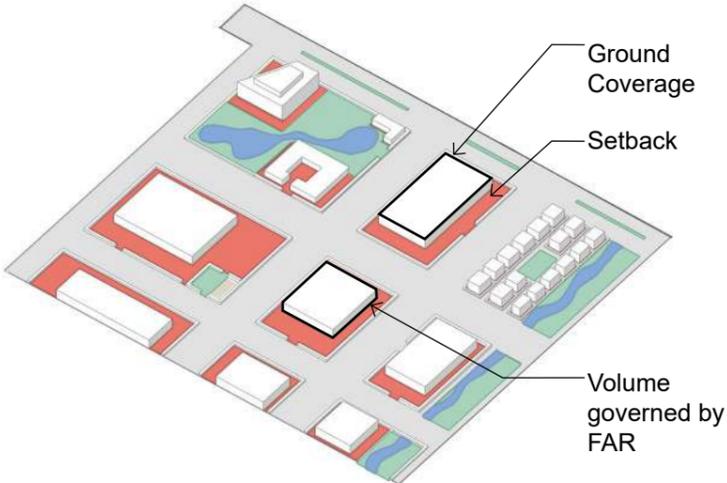
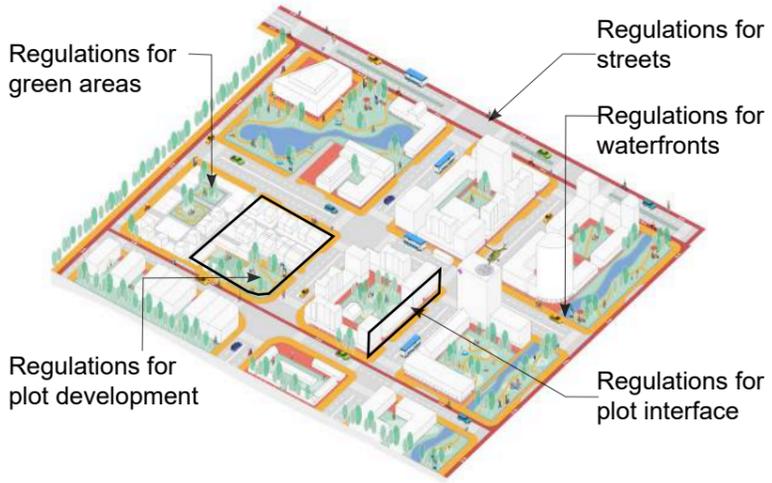
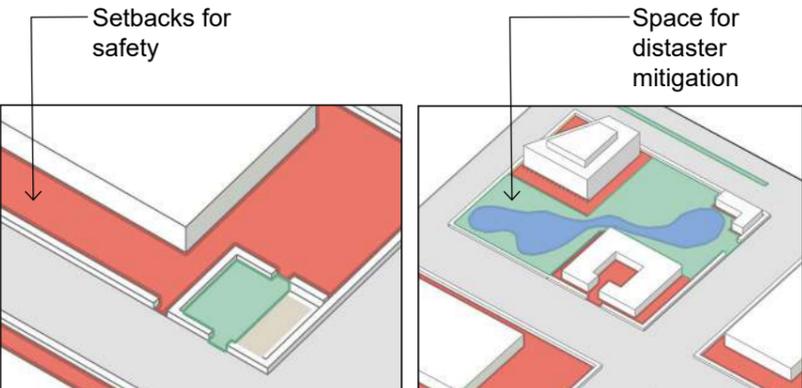
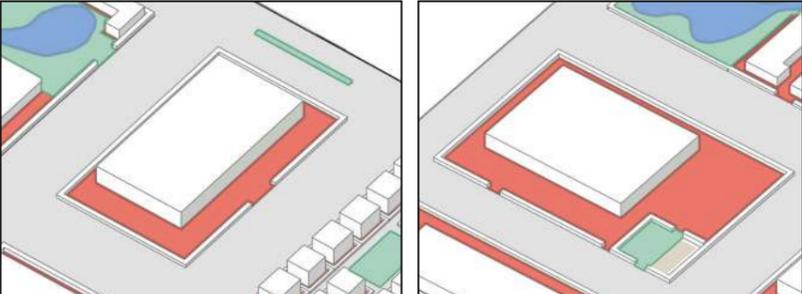
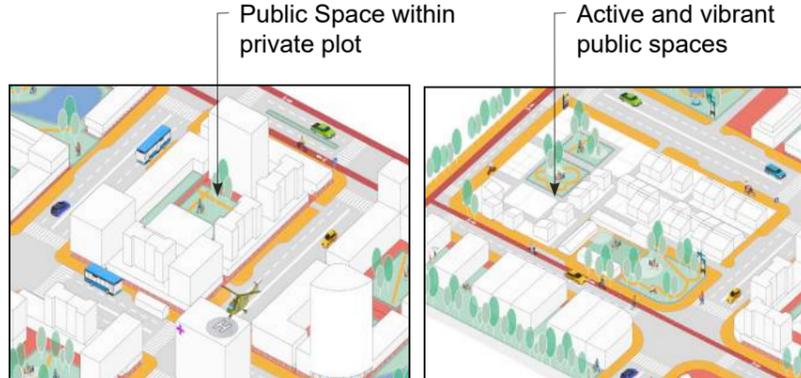
| Conventional Zoning | Key Parameters | Form Based Code Zoning | Key Parameters |
|--|--|---|---|
|  <p>Ground Coverage</p> <p>Setback</p> <p>Volume governed by FAR</p> | <ol style="list-style-type: none"> 1. Regulates development volumes through FAR, ground coverage, setbacks and may continue to apply as it is with certain re-articulations. For Example- Setbacks may be treated as extended footpath without boundary walls, like in case of Navi Mumbai and Ahmadabad |  <p>Regulations for green areas</p> <p>Regulations for streets</p> <p>Regulations for waterfronts</p> <p>Regulations for plot development</p> <p>Regulations for plot interface</p> | <ol style="list-style-type: none"> 1. Regulates quality of development through parameters like active frontage, build-to-line etc. NOTE: Urban Form Regulations would be part of notified CBALP, hence independent of Master Plan changes. |
|  <p>Setbacks for safety</p> <p>Space for disaster mitigation</p> <p>Green Areas and Recreational Spaces are disconnected and hence less active.</p> | <ol style="list-style-type: none"> 2. Emphasizes on safety (fire, disaster etc.). 3. Public agencies are responsible for environmental preservation. 4. Controls quantity of development through pan-city 'Development Control Regulations'. |  <p>Regulations encourage plot development integrating greens</p> <p>Regulations encourage active frontages and open spaces</p> <p>Green Areas and Recreational Spaces are connected with adjoining development and hence remain active.</p> | <ol style="list-style-type: none"> 2. Safety (Fire, disaster etc.), functionality and efficiency remain paramount. 3. Public and private agencies share responsibility for environmental preservation 4. CBA specific Urban Form Regulations guide quality of Urban Realm, while Development Control Regulations control the development volumes. |
|  <p>Resultant development is monotonous and often encourage vehicle dependence.</p> | <ol style="list-style-type: none"> 5. Focused towards controlling private development, irrespective to its physical context. |  <p>Public Space within private plot</p> <p>Active and vibrant public spaces</p> <p>Resultant development creates vibrant Urban Environment which has pedestrian priority.</p> | <ol style="list-style-type: none"> 5. Focused towards development of Public Realm through private participation. |

Table 1: Key Parameters of conventional zoning in planning process

Table 2: Key Parameters of Form Based Codes zoning in planning process

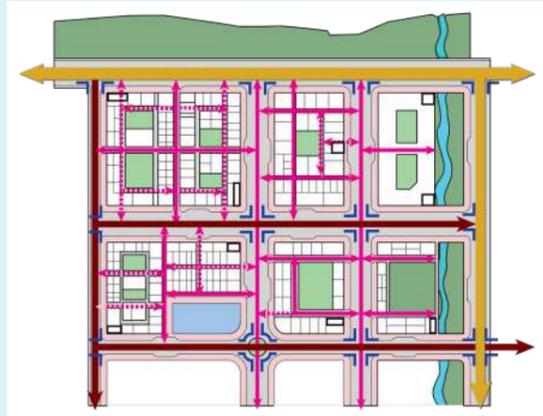
Attributes of Form Based Code Approach

Form Based Codes (FBC) is an area-based regulatory tool to facilitate incremental development or transformation of Urban Built Form (and Public Realm) to enhance inherent or acquire a desired character. It is a performance-oriented, bottom-up approach, and applicable to brown and greenfield areas.

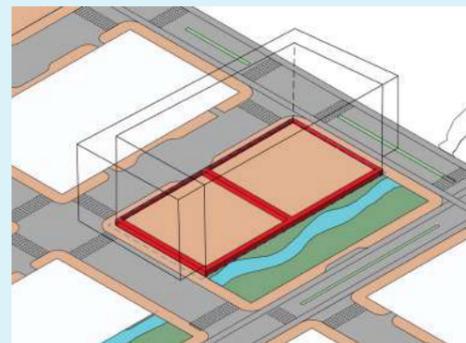
FBC aims to create Urban Realm that is -

1. Climate responsive and resilient.
2. Market responsive development for value maximization.
3. With integrated response to Natural and Built Heritage, and other resources.
4. 24 x 7 walkable, safe and comfortable urban environment.
5. With ease of living environment.

Form Based Codes comprise of:



1. Character Based Area Layout Plans



2. Urban Form Regulations

| PROPERTY DEVELOPMENT CARDS NO. [CITY/PLOT UID/YEAR] | | | | | |
|--|--|---------------------|--|--------------------|-------------------------------|
| Plot Area | sq.m. | | | | |
| VP.1. Applicable F.A.R./ F.S.I. | _____ m | | | | |
| VP.2. Applicable Ground Coverage | _____ % | | | | |
| VP.3. Use Premise as LP/ CBALP | Residential/ Commercial/ Public-Semipublic/ Industrial/ Transportation/ Social Infrastructure (Educational/ Hospitals) etc. | | | | |
| VP.4. Permissible mix of use | <table border="0"> <tr> <td>_____ % Residential</td> <td rowspan="3">All use premises to have atleast- 20% residential 20% commercial or social infrastructure or both.</td> </tr> <tr> <td>_____ % Commercial</td> </tr> <tr> <td>_____ % Social Infrastructure</td> </tr> </table> | _____ % Residential | All use premises to have atleast- 20% residential 20% commercial or social infrastructure or both. | _____ % Commercial | _____ % Social Infrastructure |
| _____ % Residential | All use premises to have atleast- 20% residential 20% commercial or social infrastructure or both. | | | | |
| _____ % Commercial | | | | | |
| _____ % Social Infrastructure | | | | | |
| VP.5. Mandatory Setbacks | Frontage adjoining open spaces- _____ m, to be maintained as public space without boundary wall. Frontage abutting another plot- _____ m. | | | | |
| VP.6. Maximum permissible height of Superstructure | h= _____ m, above natural ground level | | | | |
| VP.7. Maximum permissible Depth of underground structure | d= _____ m, below natural ground level | | | | |

Fig. A: Indicative Volumetric Parameters

3. Property Development Card

Fig. 3: Tools of Form Based Codes

Integration of Form Based Codes in Planning Process

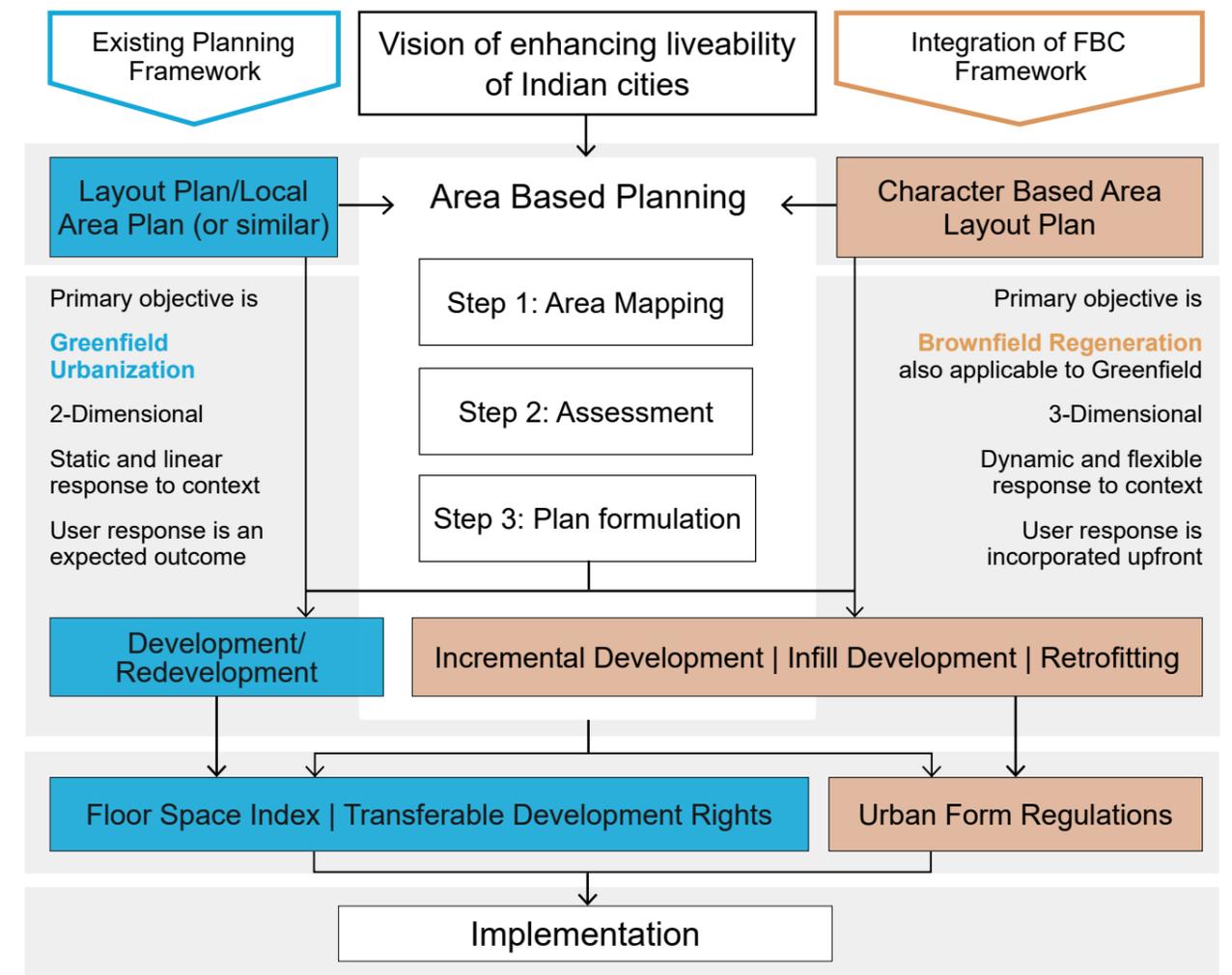


Fig. 4: Integration of Form Based Codes with planning processes

NOTE:

- The response to character defining features are included into the FBC framework. Heritage, environment, climate, user requirements etc are examples of character defining features
- FBC preparation and implementation is a consultative process.

Development Control Norms are 'volumetric parameters' of urban form.

Form Based Codes integrate 'qualitative parameters' of urban form with development regulations.

Character Based Area Layout Planning' subsumes the Layout Planning process.

Urban Form Regulations add value to Development Control Regulations.

¹ Chapter 2 defines Character Based Area Plans

LAP vs CBALP Preparation Process for Brownfield Areas

| Sl. No. | Stages/ Activities of Local Area Plan (LAP) | Timeline (In months) |
|----------|---|----------------------|
| A | Preliminary Stage | 2 |
| | <ol style="list-style-type: none"> 1. Identification and delineation of the project area 2. Preliminary Gazette Notification 3. Consultation with Land/ Property owners and other stakeholders 4. Compilation of the list of property owners and ownership pattern 5. Institutional arrangement, overview of process | |
| B | Situation Analysis (Draft Stage) | 8 |
| | <ol style="list-style-type: none"> 1. Detailed area survey and data collection, analysis of existing infrastructure (Scale 1:250/ 1:500): <ul style="list-style-type: none"> • Mapping of physical infrastructure • Land Use and social infrastructure mapping • Conducting street surveys, mapping of all installations and trees • Plot wise building information • Ground Penetration Radar (GPR) can be used for assessment of existing infrastructure | |
| C | Review of all the existing plans prepared for the city | |
| | <ol style="list-style-type: none"> 1. Master Plan/ Development Plan and Zonal Plan 2. Plan prepared under Smart Cities Mission 3. Plan prepared under AMRUT 4. City Development Plan 5. City Mobility Plan 6. Plan prepared under HRIDAY 7. Any other special purpose plan (Climate Action Plans, Environmental Conservation Plan, Disaster Management Plan, Disaster Mitigation Plan, Vulnerability and Risk Assessments) | |
| D | Plan Preparation (Redevelopment) | |
| | <ol style="list-style-type: none"> 1. Prepare Redevelopment Plan by way of Local Area Plan: <ul style="list-style-type: none"> • Layout Plan showing linkages, connectivity and appropriate setbacks if required • Proposed land use (if amended) • Proposals for redevelopment • Change in DCR for additional FSI or TDR for value capture 2. Identification of projects for urban infrastructure and redevelopment | |
| E | Plan Implementation and Strategies Framework | |
| | <ol style="list-style-type: none"> 1. Strengthening sustainability component – conservation of urban lakes by delineating and declaring no-development areas, parks, plantation plan for road side and open areas 2. Formulation of strategy for use of VCF tools 3. Benefits and impact assessment 4. Consultation with the land/ property owners and other stakeholders – incorporating suggestions and objections 5. Implementation strategies and proposed timelines | |
| F | Adoption of FBC | |
| | Recommended | |
| G | Final Proposal | 2 |
| | <ol style="list-style-type: none"> 1. Submitting LAP to Government for approval 2. Gazette Notification | |

Table 3: Typical process and timeline for preparation of LAP for brownfield areas

| Sl. No. | Additional Stages/ Activities of Character Based Area Layout Plan (CBALP) | Timeline (In Months) |
|----------|---|----------------------|
| A | Preliminary Stage- Same as LAP | |
| B | Situation Analysis (Area Appreciation Stage) | Additional 4 |
| | <p>In addition to data collected in LAP, following may be required for preparation of CBALP-</p> <ol style="list-style-type: none"> 1. Plot wise information: <ul style="list-style-type: none"> • Mapping of open vs built form within plots • Plot ownerships • Economic and work profile of the existing population (to predict the affordability level of the area) • Property / land values for various asset classes • Rental scenario for both residential and commercial properties • Unit sizes and distribution in the area • Prime locations of various real Estate Asset classes in the CBA 2. Mapping of population and built density (existing and proposed) | |
| C | Review of all the existing plans prepared for the city- Same as LAP | |
| D | Plan Preparation | |
| | <ol style="list-style-type: none"> 1. Delineation of CBALP for further plan preparation and defining the overall character based on surveys, observations and data collected 2. Preparation of CBALP by conducting the following assessments: <ul style="list-style-type: none"> • Real Estate demand and supply • Existing infrastructure, its capacity, future augmentation feasibility • Population (and Floor Area) holding capacity • Blue Green resource study, possibility of integrating Sponge City approach • Activity and spillover assessment 3. Prepare all CBALP Overlays | |
| E | Plan Implementation and Strategies Framework | |
| | <p>In addition to proposed Plan Implementation and Strategies Framework in LAP, following may be required for adopting FBC-</p> <ol style="list-style-type: none"> 1. Prepare UFR applicable to respective CBALPs in addition to existing Development Control Regulations (DCR) and Building Bye-Laws (BBL) provision. Prepare typical PDCs. 2. Prepare the wire-frame for online portal | |
| F | Adoption of UFRs | |
| | Mandatory | |
| G | Final Proposal- Same as LAP | |

Table 4: Additional stages/ activities and timeline required for preparation of CBALP, in comparison to LAP for brownfield areas

LAP vs CBALP Preparation Process for Greenfield Areas

| Sl. No. | Stages/ Activities of Local Area Plan (LAP) | Timeline (In Months) |
|----------|--|----------------------|
| A | Preliminary Stage | 2 |
| | <ol style="list-style-type: none"> 1. Identification and delineation of the project area 2. Preliminary Gazette Notification 3. Consultation with Land/ Property owners and other stakeholders 4. Compilation of the list of property owners and ownership pattern | |
| B | Situation Analysis (Draft Stage) | 8 |
| | <ol style="list-style-type: none"> 1. Detailed area survey and data collection, analysis of existing infrastructure (Scale 1:250/ 1:500) 2. Preparation of a list of landowners and map identifying the land under individual ownerships 3. Detailed data collection and analysis of future infrastructure requirements based on projected population | |
| C | Review of all the existing plans prepared for the city | |
| | Same as that for Brownfield Areas | |
| D | Plan Preparation (Urban Expansion) | |
| | <ol style="list-style-type: none"> 1. Original plots merged and final plots redrawn on map after making provisions of land for public purposes (Road, parks, affordable housing, conservation of wetlands, reserved land for commercial sale etc.) (Scale 1:250 / 1:500) [Emerging provisions of TOD, TDR, Area Based FSI, new and renewable energy, environment conservation for urban lakes, disaster management, rain water harvesting etc. Overall plan to be in accordance with the Norms and Standards as prescribed in URDPFI Guidelines, 2014 to the extent feasible and practical] 2. Area calculation for deduction of land from each plot 3. Identification of projects of urban infrastructure and redevelopment 4. Preparation of phasing plan if necessary 5. Allocation of Land Use to individual plots <ul style="list-style-type: none"> • Layout plan showing linkages, connectivity and higher setbacks if required • Assessment of betterment levy • Special DCRs for TPS | |
| E | Plan Implementation and Strategies Framework | |
| | <ol style="list-style-type: none"> 1. Strengthening sustainability component – conservation of urban lakes by delineating and declaring no-development areas, parks, plantation plan for road side and open areas 2. Formulation of strategy for use of VCF tools 3. Benefits and impact assessment 4. Consultation with the land/ property owners and other stakeholders – incorporating suggestions and objections 5. Implementation strategies and proposed timelines | |
| F | Adoption of UFRs | |
| | Recommended | |
| G | Final Proposal | 2 |
| | <ol style="list-style-type: none"> 1. Submitting LAP to Government for approval 2. Gazette Notification | |

Table 5: Typical process and timeline for preparation of LAP for greenfield areas

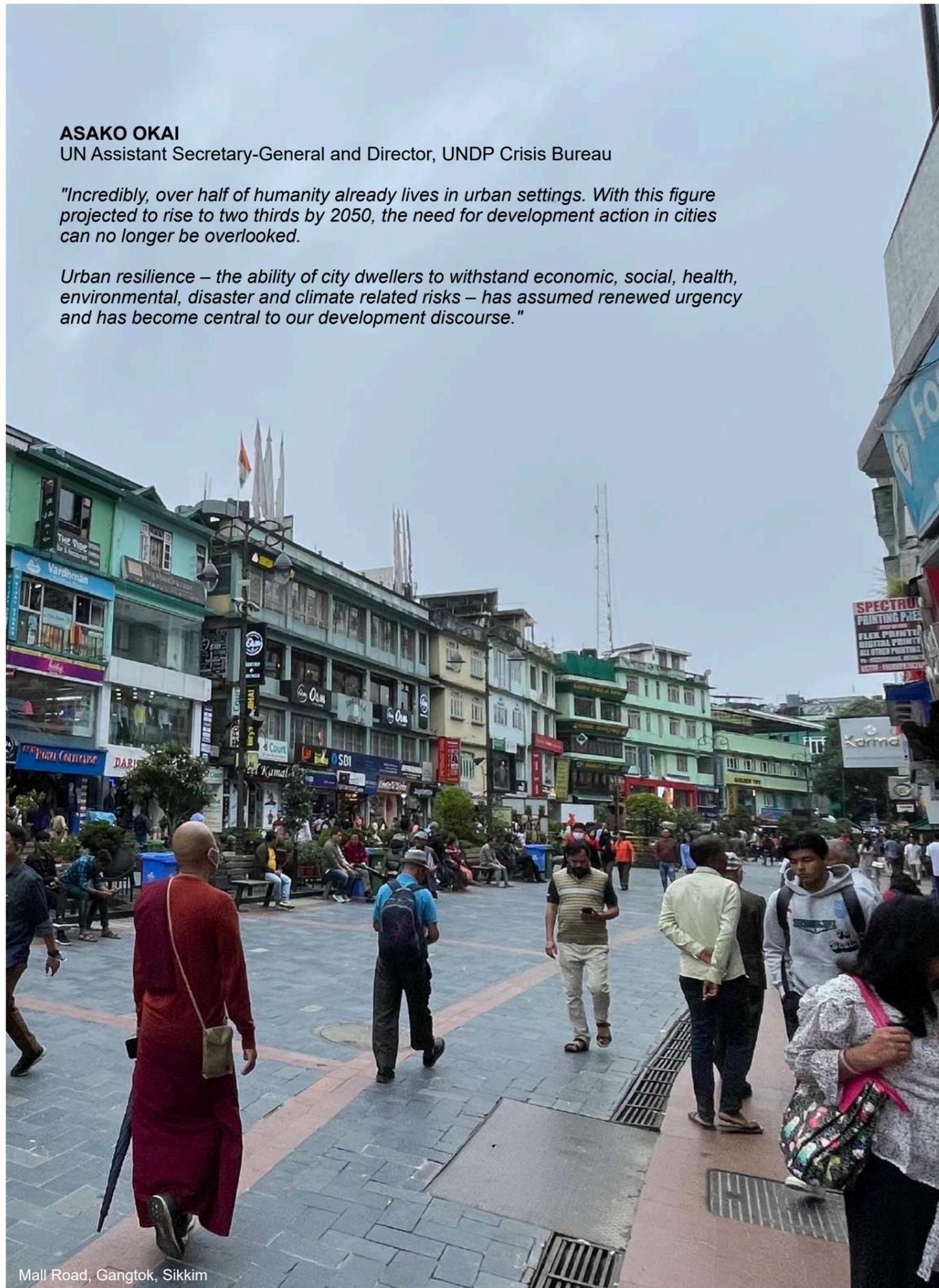
| Sl. No. | Additional Stages/ Activities of Character Based Area Layout Plan (CBALP) | Timeline (In Months) |
|----------|---|----------------------|
| A | Preliminary Stage- Same as LAP | |
| B | Situation Analysis (Area Appreciation Stage) | Additional 1 |
| | <ol style="list-style-type: none"> 1. Economic and work profile of the land owners 2. Land values 3. Unit sizes and distribution in the area 4. Surrounding amenities/ important landmarks around the area 5. Prime locations for proposed infrastructure allocation | |
| C | Review of all the existing plans prepared for the city- Same as LAP | |
| D | Plan Preparation (Urban Expansion)- Same as LAP | Additional 1 |
| | <p>In addition to plans prepared in LAP, preparation of following overlays of CBALP would be critical-</p> <ul style="list-style-type: none"> • Outdoor Space Plan • Interface Regulation Plan • Property Development Plan • Community Building Plan <p>NOTE: CBALP Overlays missing in list above are prepared in LAP with different names.</p> | |
| E | Plan Implementation and Strategies Framework | |
| | <p>In addition to proposed Plan Implementation and Strategies Framework in LAP, following may be required for adopting FBC-</p> <ol style="list-style-type: none"> 1. Prepare UFR applicable to respective CBALPs in addition to existing Development Control Regulations (DCR) and Building Bye-Laws (BBL) provision. Prepare typical PDCs. 2. Prepare the wire-frame for online portal | |
| F | Adoption of UFRs | |
| | Mandatory | |
| G | Final Proposal- Same as LAP | |

Table 6: Additional Stages/ Activities and timeline required for preparation of CBALP, in comparison to LAP for greenfield areas

01 Introduction

This chapter explains:

- (i) application and benefits of Form Based Codes
- (ii) integration of FBC with existing planning and regulatory frameworks



ASAKO OKAI

UN Assistant Secretary-General and Director, UNDP Crisis Bureau

"Incredibly, over half of humanity already lives in urban settings. With this figure projected to rise to two thirds by 2050, the need for development action in cities can no longer be overlooked."

Urban resilience – the ability of city dwellers to withstand economic, social, health, environmental, disaster and climate related risks – has assumed renewed urgency and has become central to our development discourse."

Mall Road, Gangtok, Sikkim

1.1 Vision for Indian Cities

As per the long-term Low-Emissions Development Strategy (LDS) submitted to the United Nations Framework Convention on Climate Change (UNFCCC) in November 2022 (Government of India, 2022), India aims to have Net Zero cities by 2070. This makes liveability and resilience the priority and target for urban development.

Aligning with these goals, this Guidebook provides necessary tools, guidelines and a palette of options that enable cities to meet the target of LDS, being:-

1. Net Zero
2. Sustainable and risk averse
3. Accessible, affordable and active round the clock
4. Safe and inclusive
5. Integrate and sustain natural and built heritage
6. Respond and adapt to market dynamics
7. Climate mitigation, adaptation and resilience
8. Energy efficiency
9. Transit Oriented Development and Travel demand management
10. Child-friendly cities
11. Flood resilient
12. Urban heat
13. Gender responsive cities
14. Urban finance
15. Affordable housing
16. Future of urban economy
17. Sponge Cities
18. Nature-based Solution

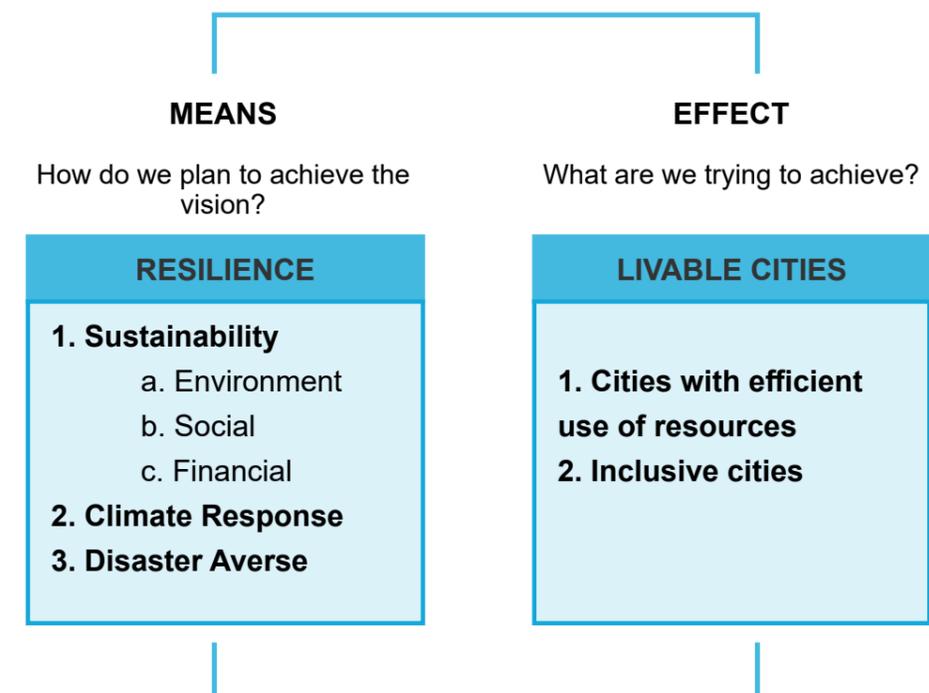


Fig. 5: Vision for Indian Cities

1.2 Benefits of Form Based Codes (FBC)

1. Natural, cultural, context and infrastructure resource specific design solutions.
2. Maximizes value of urban areas and makes cities viable for investment.
3. Increases effective capacity of urban areas.
4. Diversifies and distributes spatial use across the day in response to community requirement and market demand.
5. Simplifies processes of transformation and incremental development.
6. Leads to sustainable development through retrofitting, in-fill, reuse, upgradation, et al of existing urban resources without the wastage of time and money.

Conventional Form Based Codes

Focuses on Setbacks, Floor Space Index, Height Restrictions, etc.

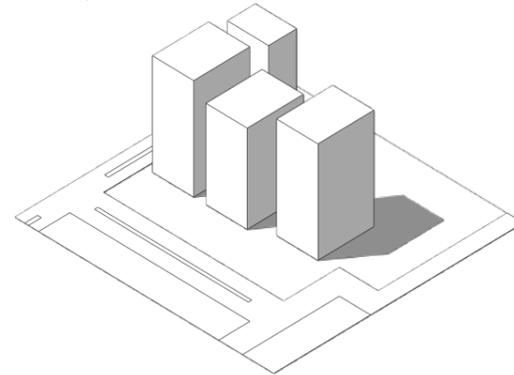


Fig. 6: Conventional FBC

Hybrid Form Based Codes

Over and above parameters of Conventional FBC, it includes regulations for Public Spaces, Interface and Plots like active frontage, Build-To-Line, Colonnade etc.

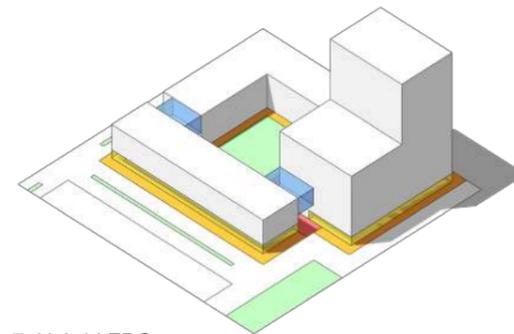


Fig. 7: Hybrid FBC

Advanced Form Based Codes

Over and above parameters of Hybrid FBC, includes regulations for facade regulations and architectural design controls.

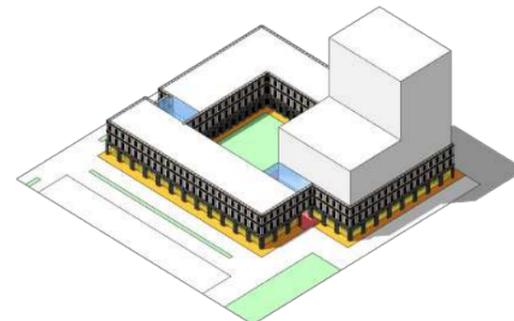


Fig. 8: Advanced FBC

It is recommended that cities work towards adopting the Hybrid Form Based Codes.

It is desirable for cities to plan and adopt Advanced Form Based Codes to regulate facades and architecture styles. This imparts an identity and reinforces positive public response/ behavior.

1.3 Application of this Guidebook

This Guidebook provides tools and processes to integrate Form Based Codes in existing planning, building regulation, sanctioning and regulatory frameworks. It introduces ‘**Character Based Areas Layout Planning**’ and ‘**Urban Form Regulations**’ that are value addition to the existing systems of Layout Planning and Development Regulations, respectively.

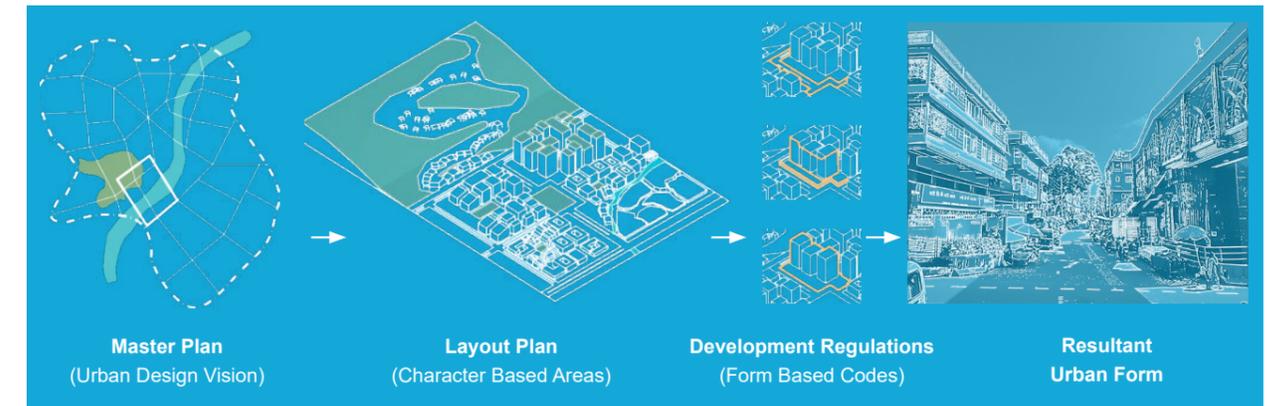


Fig. 9: Form Based Codes application framework



Fig. 10: Urban Form generated in response to climatological and functional conditions, Location: Guwahati, Assam

1.4 Steps to Adopt Form Based Codes

The figure below explains the proposed framework for implementing Form Based Codes. It is integrated with the existing planning stages, and applicable acts/ policies listed in the Urban and Regional Plan Formulation and Implementation (URDPFI) Guidelines, 2014 (Volume IV). The modifications and value additions to existing framework are mentioned in blue.

| PLANNING HIERARCHY | NECESSARY PLANS | ACTS/ POLICIES APPLICABLE | CONCERNED AUTHORITIES |
|---|--|--|--|
| City/ Master Plan/ Development Plan Stage | Development Plan Specific Purpose Plan Identification of Character Based Areas | Model and Regional Town Planning Development Law, 1985 State Town and Country Planning Acts State Urban Planning and Development Acts Environment Impact Assessment Notification, 2006 Environment Protection Act, 1986 Forest Conservation Act, 1980 Coastal Regulation Zone, 2011 74th Constitutional Amendment Act Model Municipal Law, 2013 | These plans are prepared by Town Planning departments or concerned development authority. While preparation of the plan, consultation with corporation, utility service providers and other stakeholders are conducted. At this stage, the boundaries of Character Based Areas have to be identified and synchronized with other boundaries of area based plans like LAP, TOD Influence Zone plan, etc. |
| Area Based Planning Stage (Preparation of CBA Plans, LAP, TOD Influence Zone Plan, Green Development Area Plan, etc.) | Specific Purpose Plan Identification of Character Based Areas Plan CBA - Specific Urban Form Regulations | Industries (Development and Regulation) Act, 1951 Industrial Policy, 1991 National Investment and Manufacturing Zones (NIMZs) Guidelines Special Economic Zone (SEZ) Act, 2005 Schemes for Cluster Development Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010 National Heritage Conservation Cantonment Act, 2006 | The area based plans are prepared by public and private agencies under the provisions of the Master plan. For example, TOD Influence Zone Plan may be prepared by development authority/town planning department/ MRTS agency or any agency. At this stage, the CBA layout plans and Urban Form Regulations have to be prepared and integrated with Development Control Regulations and Building Bye-Laws. |
| Plot Development Stage | Project Planning Enforcement of FBC Approvals - PDC approval - Building Sanctions | Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 National Building Code, 2016 Model Building Bye-Laws, 2016 Local Building Bye-Laws | To facilitate development of plots, planning authorities issue Development Control Norms and Building Bye-Laws. Municipal Corporations thereafter implement the DCR and BBL. At this stage, Form Based Codes have to be enforced by concerned authority/corporation. |

Fig. 11: Proposed Planning and Regulation framework

Following three tools have been introduced to institutionalize the FBC-

1. Character Based Areas-

Refer Chapter 1 for definition and SOP-I for details

2. Urban Form Regulations-

Refer Chapter 1 for definition and SOP-II for details

3. Property Development Cards-

Refer Chapter 6 for definition and SOP-II for details

01 Step 1: Notify modification to city's Master/ Development plan to introduce provisions of FBC

- Define CBAs and its demarcation process.
- Define UFRs as a part of DCRs and notify (recommended) it as regulations for CBA.

02 Step 2: Notify modifications to Building Bye-Laws

- Introduce provisions for submission and approval of Property Development Cards (PDC) before application for Building Sanction.
- Integration of PDC with EoDB portal.

03 Step 3: Create Dynamic CBA portal

- Create and publish a Dynamic Online Portal displaying all overlays of CBALP enabling access of compliances applicable to a CBA.
- Integrate the CBALP with Building Sanction portals so that sanctioned building plans are visible to all user. This will encourage plot owner/developer/designer to respond to surrounding development.

04 Step 4: Update the online EoDB

- Keep EoDB and CBA portals updated to display information on a real time basis.
- Simplify the process of change of land use provided it adheres to all necessary norms.

Roles and responsibility for implementing FBC-

- Plan and Regulation Formation-** Area Planning Agency while preparing CBALP including UFR
- Regulation Implementation-** Development Authority/ Corporation while notifying CBALP including UFR
- Building Sanction-** Building Department of Authority/ Corporation

02 Character Based Area Layout Plans

This chapter introduces:

- (i) Character Based Areas (CBA) and CBA Layout Plans (CBALP),
- (ii) Applications, requirements, benefits and stages of preparing CBALP.

2.1 Character Based Areas (CBAs)

Character Based Area Definition

"An area that is distinct by the virtue of identity defining feature is called a Character Based Area. The Character thus identified may generate from its functionality, visual quality of built form and/or landscaping et al enabling the urban realm to impart a collective experience. Such areas are often contiguous to an anchor, like railway, metro or bus stations/terminals, water bodies, heritage building/precinct, university, business district, wholesale market, industrial park, etc. Areas without an anchor with a uniform identity defining features like urban villages, plotted residential neighborhoods, farmhouse zones, slums, organically developed areas, etc. can also be referred as Character Based Areas. CBAs are usually bound by physical features like roads, green areas, water bodies, railway lines, etc. "

The Character can be a function of either of the following, or their combination:

1. Activities - Formal and Informal
2. Density - Population density, Built density, Spatial density
3. Climate - Climatic character of the area
4. Heritage - Natural and Built
5. Collective experience
6. Administrative area proposed for a type of development or use

Need for Character Based Areas

CBAs are to be defined in the Master/ Development Plans with the intention of compiling applicable UFRs for respective CBAs.

Benefit of Character Based Areas

CBA will encourage preparation of CBALP and implement Master/ Development Plan vision, especially in relation to Urban Design, Conservation and Regeneration.

Explanation

Existing 'Character' of an Urban Area can be desirable or not. Areas may be devoid of one too. The areas with desirable character can inspire those with undesirable character or devoid of one.

FBCs can be applied to the following types of CBAs-

1. Brown-field area with desirable character. For example- A heritage area can inspire others to draw reference from its traditional

character through FBC approach.

2. Brown-field area with undesirable character. For example- slums or informal settlements may require introduction of a new character to meet the needs of its residents.
3. Greenfield areas where FBC approach can impart a new character.
4. Special Areas identified in the Master / Development Plan
5. Edges along natural features. For example strand or ghats, marine drives etc.

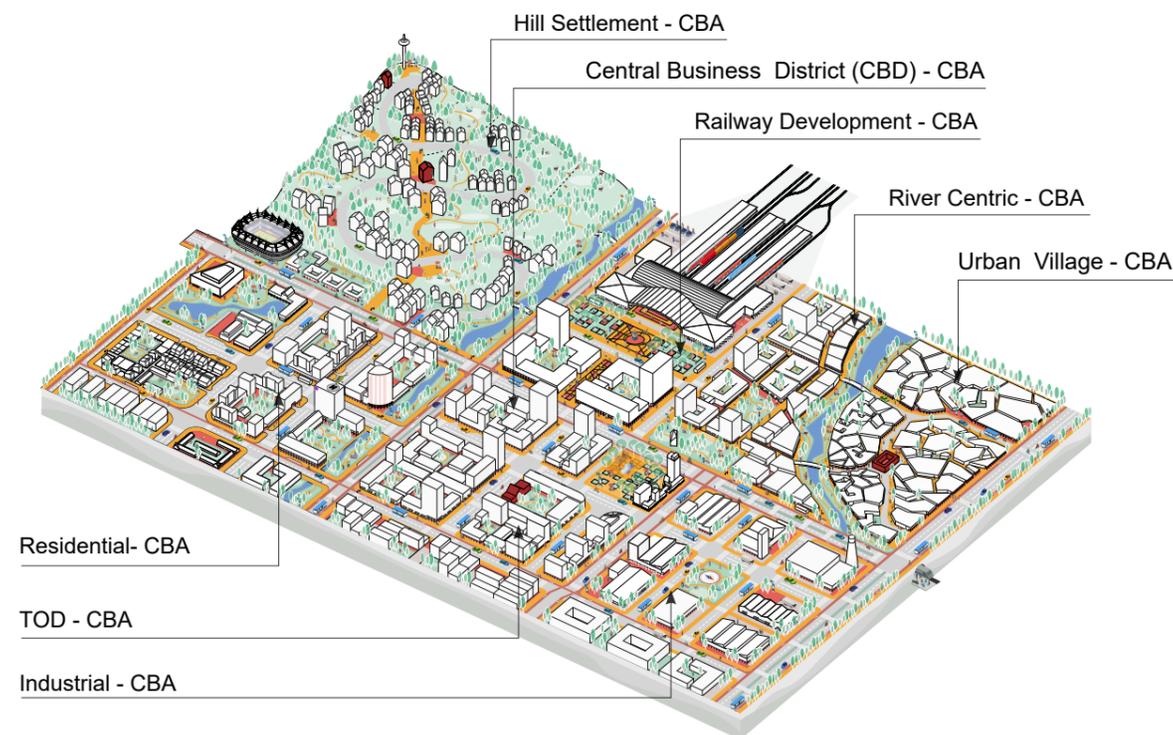


Fig. 12: Identification of Character Based Areas (CBAs)

Types of CBAs

| City | Character Based Area Types Studies | Name of the Area |
|----------|---|----------------------|
| Chennai | Heritage Precinct, Wholesale Market, Institutional Area, Mixed-use Zone | George Town Area |
| | High Density Mixed-use along MRTS corridor and Aerial Road | Anna Salai Area |
| | Local Mixed-use Street | T. Nagar |
| Pune | Business District, River Oriented Development, Heritage Precinct, Educational Hub | Areas along R. Mutha |
| Mumbai | Industrial Town | JNPT, Navi Mumbai |
| | Reused Mill Precinct | Parel |
| | Heritage Street | D.N. Road |
| Indore | Business District, Wholesale Markets | GPO, Jail Road Area |
| Gangtok | Business District, Hill Settlement, Educational Hub, Mixed-use | Mall Road |
| Guwahati | Administrative Hub, Institutional Hub, Commercial Area | Pan Bazaar Area |

Table 7: Examples of CBAs in India, studied on the basis of respective inherent attributes

NOTE:

The CBAs mentioned in figure and table above are samples studied to document features of FBCs in use in Indian cities. It shows the attributes typical to CBAs, and how such areas function, within limitations, to enable everyday city life. These are references to understand planning provisions, design adaptations, and required range of upgradation for other cities to learn and devise their own solutions. It does not recommend replication of any sample, even within the city and nor does it compare one to another.

Example 1- George Town, Chennai

George Town (Chennai) is a mixed use district. Part of George Town near High Court is a Heritage Precinct.



Fig. 13: Mix of uses in predominantly residential areas, George Town, Chennai

This high density area has pedestrian passages with active frontages through buildings which provide mutual shading. These factors encourage high footfalls and hence return of revenue.

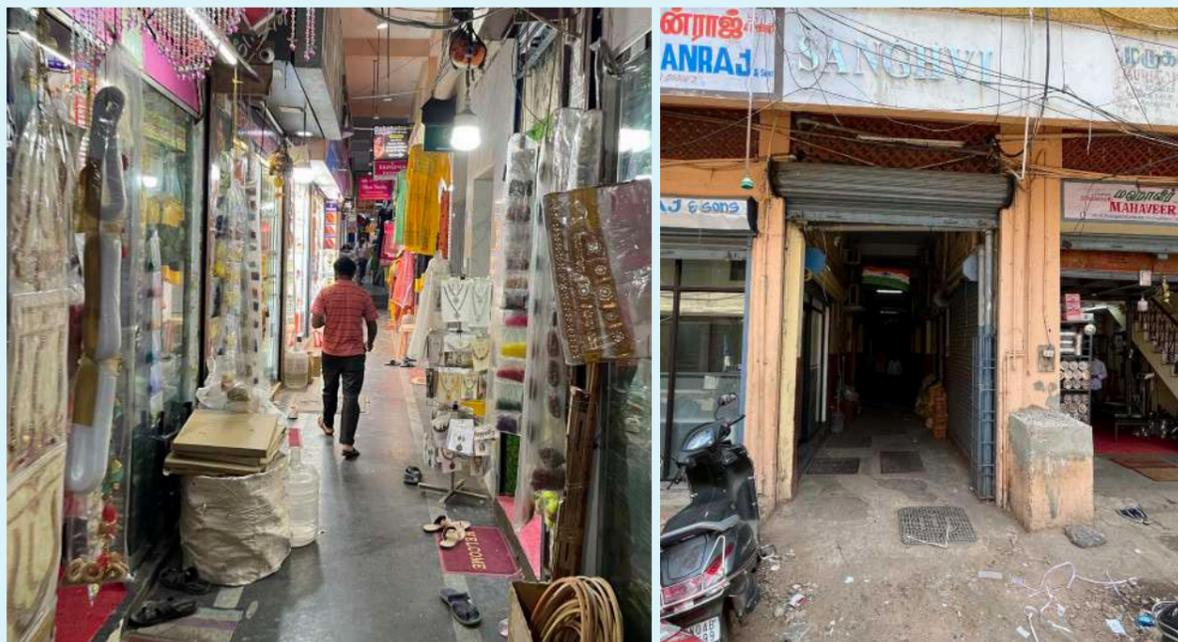


Fig. 14: Pedestrian passages through buildings, George Town, Chennai

Example 2- Shaniwar Peth, Pune

Shaniwar Peth (Pune) shows an optimum utilization of land through mixed use buildings, wide footpaths integrated with the plot frontages, rounding or chamfering of corner building to enable strategic allocation of public space and adaptive reuse of heritage buildings.



Fig. 15: Rounded corners creating public space, Pune

Pune has preserved the essence of traditional *wadas* (residential units). While private buildings in *wadas* are transforming, there is a seeming sensitiveness towards local heritage by maintaining (comparable) plot width, openings at ground floor level, recesses et al.



Fig. 16: Contemporary and Heritage buildings coexist while preserving the character of the *Wadas*, Pune

Example 3- Mumbai Mills and DN Road

The defunct mills in Mumbai (Maharashtra) have seen redevelopment through upcycling industrial units. This has helped to maximize revenues from mill lands, encourage private participation in preserving an otherwise derelict precinct, besides upgradation of infrastructure.



Fig. 17: Phoenix Palladium, Mumbai

The Heritage Precinct of DN Road in Mumbai continues to use historic buildings actively and has retained its character. The precinct also shows heritage sensitive insertions, like sign boards, and how buildings need to be regulated.



Fig. 18: DN Road Heritage Precinct, Mumbai

Example 4- Jail Road Area, Indore

In the old city of Indore (Madhya Pradesh), buildings have vehicular passages through it. This has enabled active street frontages with parking behind the perimeter block.

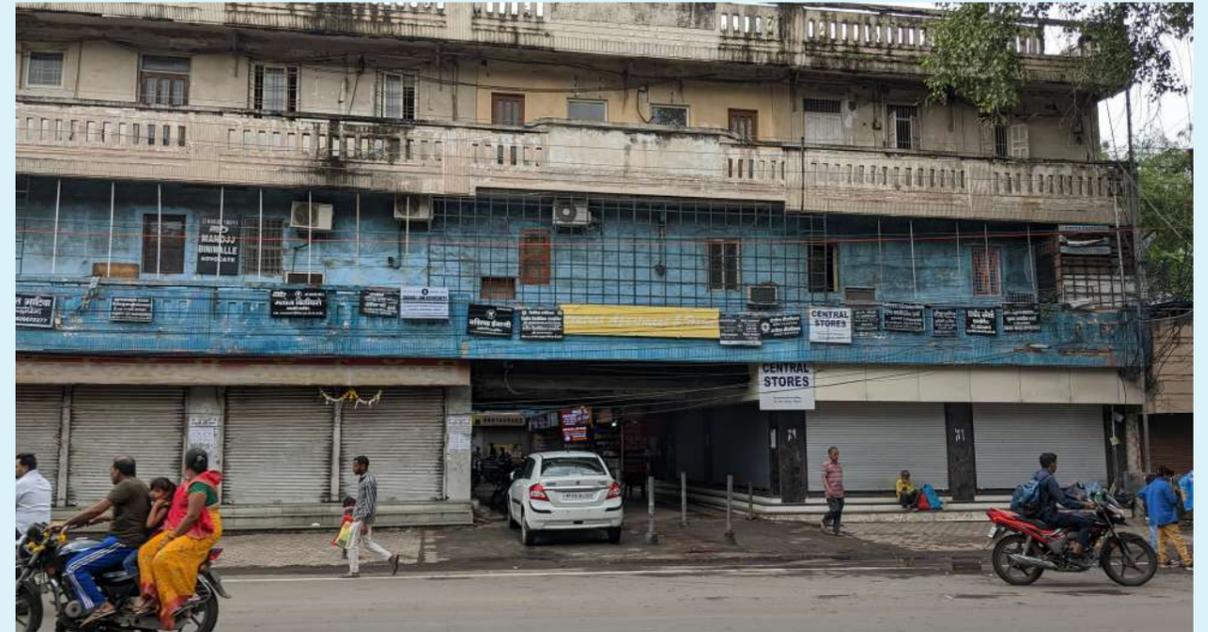


Fig. 19: Vehicular passage through plot, Indore

Pedestrian passages through commercial plots encourage walkability and maximizes return of revenue.



Fig. 20: Pedestrian passage through plot, Indore

Example 5- Mall Road, Gangtok

Urban Development in Gangtok (Sikkim) has adapted contours to create pedestrian passages that allow seamless movement across building heights. Entry to facilities are synchronized with pedestrian passages which encourage vertical mix of uses and active frontage at different levels.



Fig. 21: Pedestrian passage integrated with footpath, Gangtok

Integrated pedestrian network through plots, buildings and public spaces, and connections above RoWs increases and encourages walkability. This enhances value capture and EoDB.



Fig. 22: Connection above RoW, Gangtok



Fig. 23: Stepped passage through building, MG Road, Gangtok

Example 6- Pan Bazaar, Guwahati

The Pan Bazaar area of Guwahati (Assam) is a mixed use, high density commercial area. Buildings here have shading devices to reduce heat load and pedestrian passages through buildings lined with retail shops flanking either sides. It encourages pedestrians to walk through these shaded passages, and maximize value capture.



Fig. 24: Shading device on western facade, Guwahati



Fig. 25: Shading device on western facade, Guwahati

2.2 Overlays of CBA Layout Plans

1. CBA Layout Plans will regulate UFR components at area level and create basis for its application to individual plots.
2. Character Based Area Layout Plans (CBALPs) are intended to enhance liveability of the area through:
 - Mix of uses and ease of conversion of use.
 - Preserving green-blue network through land sharing and environmental remediation methods.
 - Provide height relaxation and air-rights maximization while conforming to applicable norms.¹
 - Activate street edges by utilizing the front setbacks to maximise the revenue potential and maintain eyes-on-street.
 - Creation and preservation of landmarks that aid in legibility and definition of urban area.
 - Cities may add more information/ overlays of CBA Plans subsequently.

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¹Height control norms may be in the form of AAI rules, heritage response, Infrastructure requirements and Transit Corridors, et al. and to ensure buildings have solar access for atleast up to two hours per day by specifying Height Control Zones.

Fig. 26: Types of CBALP Overlays

2.3 CBALP Formulation Methodology

Methodology for Brownfield areas

| |
|--|
| A. Preliminary Stage |
| <ol style="list-style-type: none"> 1. Identification and delineation of the project area 2. Preliminary Gazette Notification 3. Consultation with land/ property owners and other stakeholders 4. Compilation of the list of property owners and ownership pattern 5. Institutional arrangement, overview of process |
| B. Situation Analysis (Draft Stage) |
| <ol style="list-style-type: none"> 1. Detailed area survey and data collection, analysis of existing infrastructure (Scale 1:250/ 1:500): <ul style="list-style-type: none"> • Mapping of physical infrastructure • Land Use and social infrastructure mapping • Conducting street surveys, mapping of all installations and trees • Plot wise building information • Ground Penetration Radar (GPR) can be used for assessment of existing infrastructure 2. Plot wise information: <ul style="list-style-type: none"> • Mapping of open vs built form within plots • Plot ownerships • Economic and work profile of the existing population (to predict the affordability level of the area) • Property / land values for various asset classes • Rental scenario for both residential and commercial properties • Unit sizes and distribution in the area • Prime locations of various Real Estate Asset classes in the CBA 3. Mapping of population and built density (existing and proposed) |
| C. Review of all the existing plans prepared for the city |
| <ol style="list-style-type: none"> 1. Master Plan/ Development Plan and Zonal Plan 2. Plan prepared under Smart Cities Mission, AMRUT, HRIDAY 3. City Development Plan, City Mobility Plan, City Sanitation Plan 4. Any other special purpose plan (Climate Action Plans, Environmental Conservation Plan, Disaster Management Plan, Disaster Mitigation Plan, Vulnerability and Risk Assessments) |
| D. Plan Preparation |
| <ol style="list-style-type: none"> 1. Delineation of CBA and defining the desired character through CBALP. 2. Preparation of CBALP by conducting the following assessments: <ul style="list-style-type: none"> • Real Estate Demand and Supply • Existing infrastructure, its capacity, future augmentation feasibility • Population (and Floor Area) holding capacity • Blue Green resource study, possibility of integrating Sponge City approach • Activity and spillover assessment 3. Prepare all CBALP Overlays |
| E. Plan Implementation and Strategies Framework |
| <ol style="list-style-type: none"> 1. Formulation of strategy for use of VCF tools 2. Prepare UFR applicable to respective CBALPs in addition to existing Development Control Regulations (DCR) and Building Bye-Laws (BBL) provision. Prepare typical PDCs. 3. Benefits and impact assessment 4. Consultation with the land/ property owners and other stakeholders – incorporating suggestions and objections 5. Implementation strategies and proposed timelines 6. Prepare the wire-frame for online portal |
| F. Adoption of UFRs |
| G. Final Proposal |
| <ol style="list-style-type: none"> 1. Submitting CBALP to Government for approval 2. Gazette Notification |

Table 8: CBALP formulation methodology for brownfield areas

Methodology for Greenfield areas

| |
|---|
| A. Preliminary Stage |
| <ol style="list-style-type: none"> 1. Identification and delineation of the project area 2. Preliminary Gazette Notification 3. Consultation with land/ property owners and other stakeholders 4. Compilation of the list of property owners and ownership pattern |
| B. Situation Analysis (Draft Stage) |
| <ol style="list-style-type: none"> 1. Detailed area survey and data collection, analysis of existing infrastructure (Scale 1:250/ 1:500) 2. Preparation of a list of land owners and map identifying the land under individual ownerships 3. Detailed data collection and analysis of future infrastructure requirements based on projected population 4. Economic and work profile of the land owners 5. Land values 6. Unit sizes and distribution in the area 7. Surrounding amenities/ important landmarks around the area 8. Prime locations for proposed infrastructure allocation |
| C. Review of all the existing plans prepared for the city |
| <ol style="list-style-type: none"> 1. Master Plan/ Development Plan and Zonal Plan 2. Plan prepared under Smart Cities Mission, AMRUT, HRIDAY 3. City Development Plan, City Mobility Plan, City Sanitation Plan 4. Any other special purpose plan (Climate Action Plans, Environmental Conservation Plan, Disaster Management Plan, Disaster Mitigation Plan, Vulnerability and Risk Assessments) |
| D. Plan Preparation (Urban Expansion) |
| <ol style="list-style-type: none"> 1. Original plots merged and final plots redrawn on map after making provisions of land for public purposes (Road, parks, affordable housing, conservation of wetlands, reserved land for commercial sale etc.) (Scale 1:250 / 1:500) [Emerging provisions of TOD, TDR, Area Based FSI, new and renewable energy, environment conservation for urban lakes, disaster management, rain water harvesting etc. Overall plan to be in accordance with the norms and standards as prescribed in URDPFI Guidelines, 2014 to the extent feasible and practical] 2. Area calculation for deduction of land from each plot 3. Identification of projects of urban infrastructure and redevelopment 4. Preparation of phasing plan if necessary 5. Allocation of Land Use to individual plots <ul style="list-style-type: none"> • Layout plan showing linkages, connectivity and higher setbacks if required • Assessment of betterment levy • Special DCRs for TPS 6. Prepare necessary CBALP Overlays |
| E. Plan Implementation and Strategies Framework |
| <ol style="list-style-type: none"> 1. Formulation of strategy for use of VCF tools 2. Prepare UFR applicable to respective CBALPs in addition to existing Development Control Regulations (DCR) and Building Bye-Laws (BBL) provision. Prepare typical PDCs. 3. Benefits and Impact Assessment 4. Consultation with the land/ property owners and other stakeholders – incorporating suggestions and objections 5. Implementation strategies and proposed timelines 6. Prepare the wire-frame for online portal |
| F. Adoption of UFRs |
| G. Final Proposal |
| <ol style="list-style-type: none"> 1. Submitting CBALP to Government for approval 2. Gazette Notification |

Table 9: CBALP formulation methodology for greenfield areas

03 Urban Form Regulations

This chapter introduces:

- (i) Urban Form Regulations (UFR)
- (ii) Components of UFR to regulate quality of built environment

Urban Form Regulation Definition

"Urban Form Regulations (UFR)" are tools which originate from Character Based Area Plans and can be used to regulate the design of Urban Form (Building and Open Spaces).

UFRs regulate the qualities of Public Realm created by plot/ building frontages. These, when applied to brownfield sites may require removal, amendment or atleast rationalization of some conventional clauses in Development Control Regulations and Building Bye-Laws .

SOP II of this Guidebook provides an ideal palette of components to form UFR for concerned CBA. Over time, cities may introduce new components of UFR to enhance the palette.

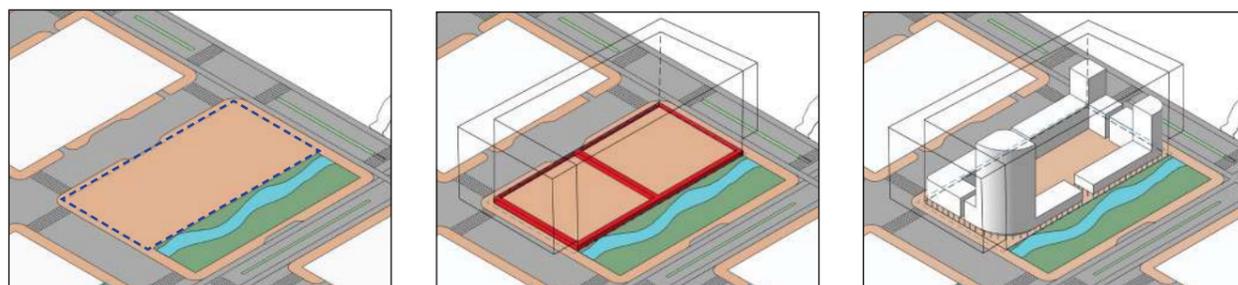
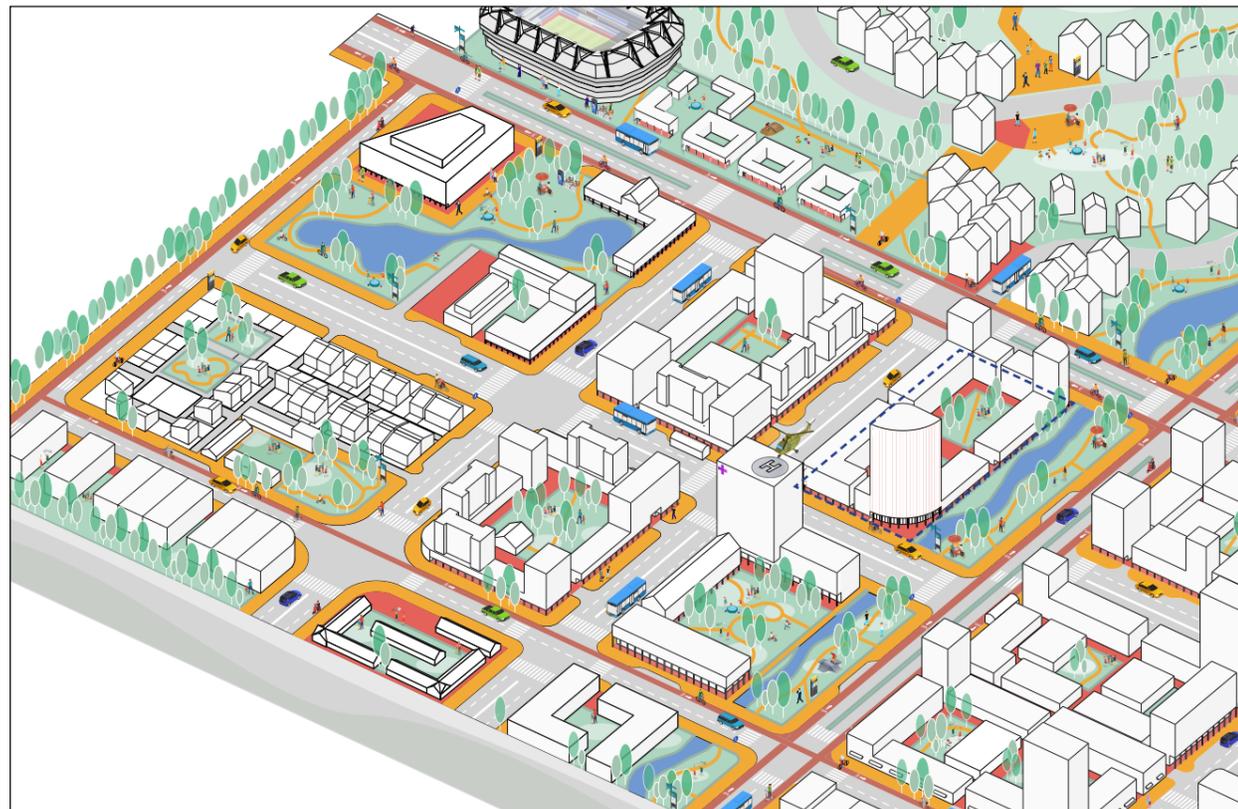


Fig. 27: Plot Development as per FBC

3.1 Urban Form Regulations (UFR)

Preparation process:

1. **Select the Character Based Area for which CBALP is ready**
2. **Generate a flowchart of Layout Plan regulation, implementation and building sanction**
3. **Select the suitable category of Urban Form Regulations (UFR) applicable to -**
 - i. Open Spaces,
 - ii. Interfaces with Plots and Open Spaces
 - iii. Plots/ Buildings
4. **Prepare sample PDCs**
 - i. From the CBA, select plots, with differing geometries, site context and use
 - ii. For each selected plot, prepare a sample PDC
5. **Consult and process**
 - i. Organize public consultation to seek feedback on the CBALP including UFR
 - ii. On the basis of feedback, a committee of experts constituted by the Competent Authority may revise/ amend CBA Layout Plan
6. **Process and notify the CBALP and UFR together under the provisions of relevant rules, regulation/ Acts**
7. **Create digital dynamic portal for CBALP and integrate it with the relevant Building Sanction and Ease of Doing Business portal**
8. **Create review and monitoring framework for periodic updates**

3.2 Categories of UFR

Cities have three components that contribute towards building its character.

These are:

A: PUBLIC OPEN SPACE

- A1: Streets in less dense areas
- A2: Streets in dense areas
- A3: Green areas including Plazas and Public Space within plots
- A4: Water bodies and Waterfronts

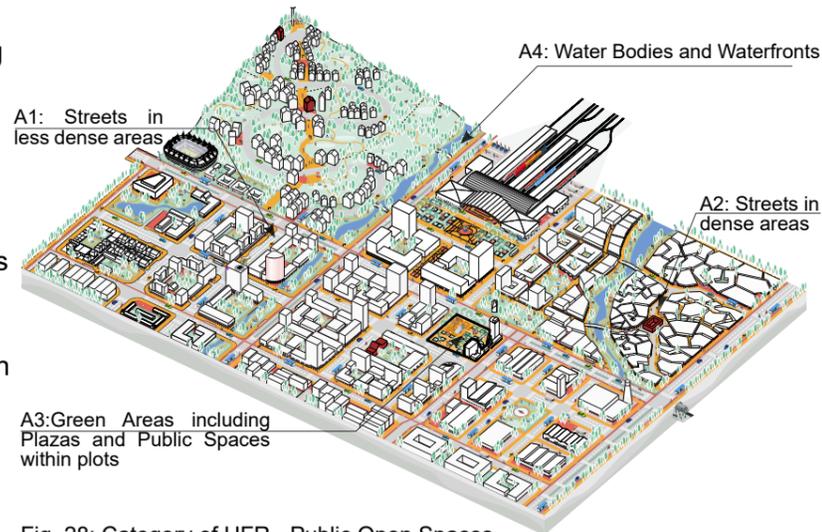


Fig. 28: Category of UFR - Public Open Spaces

B: INTERFACE OF PLOTS/ BUILDINGS WITH OPEN SPACES

- B1: Within less dense areas
- B2: Within dense areas

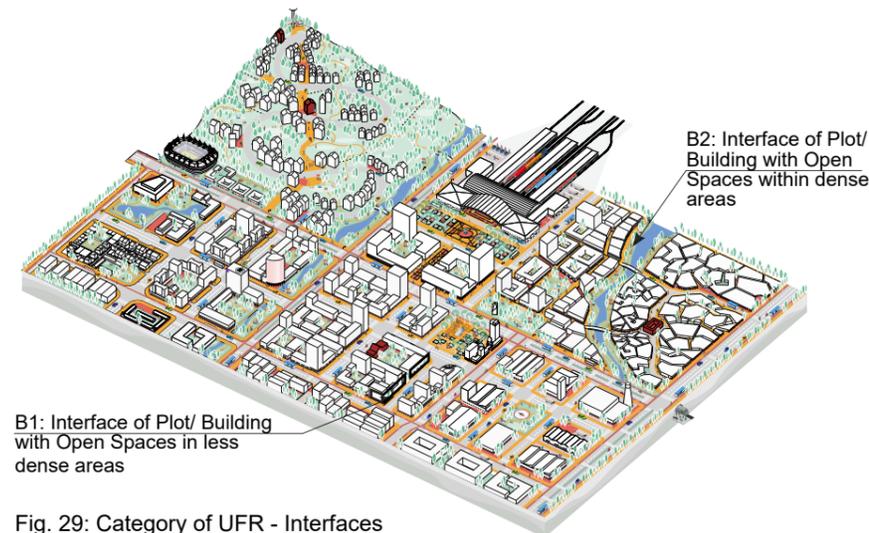


Fig. 29: Category of UFR - Interfaces

C: PLOTS/ BUILDINGS

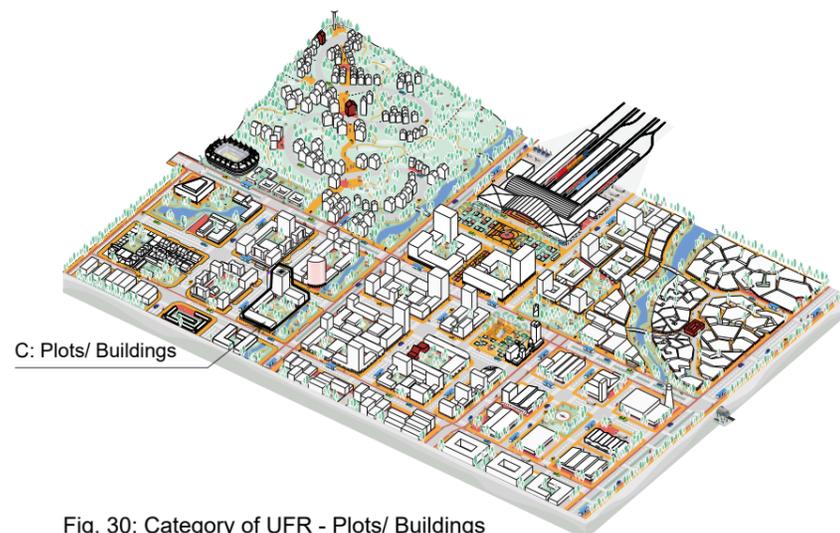
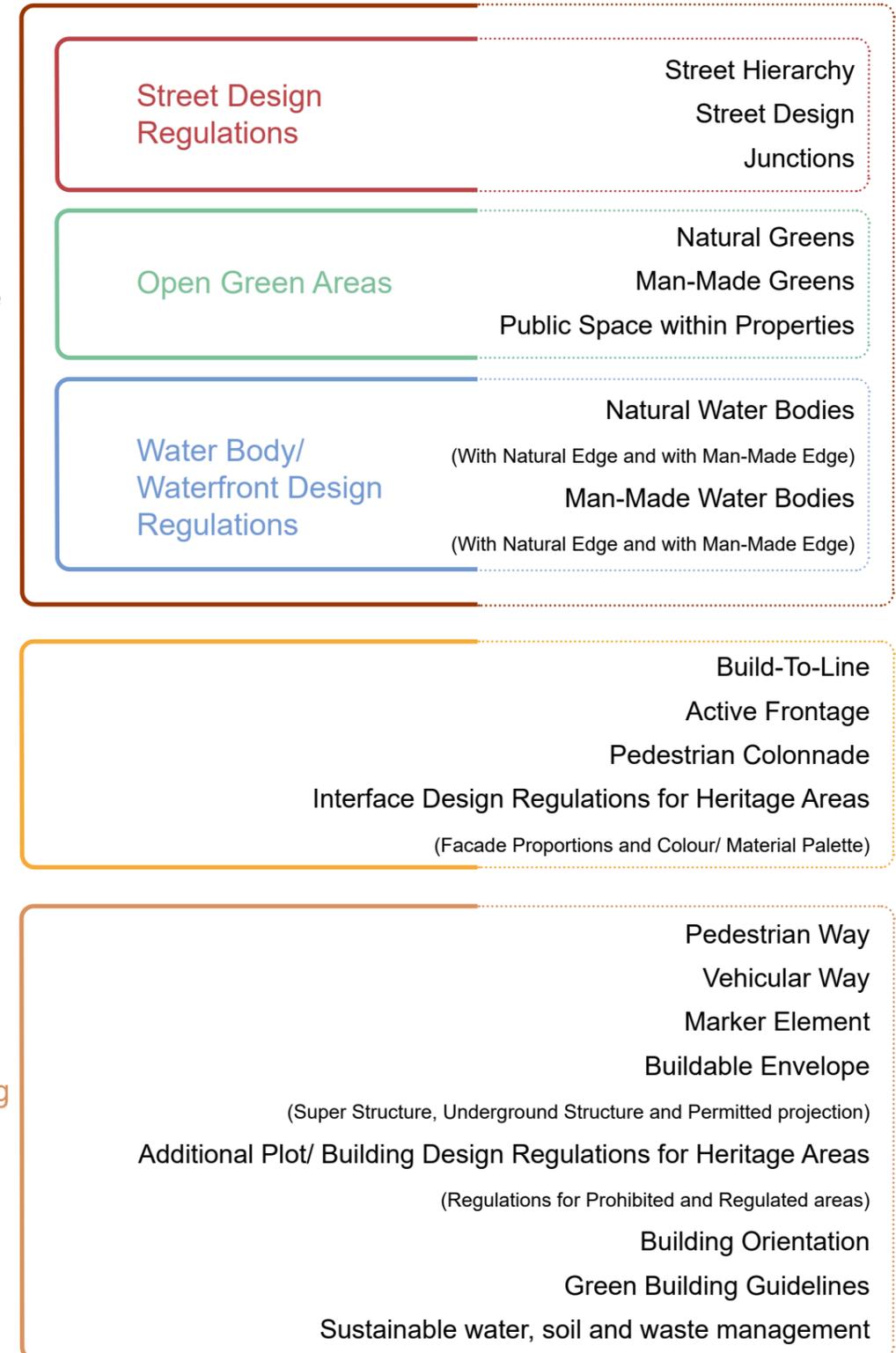


Fig. 30: Category of UFR - Plots/ Buildings

Components of Urban Form Regulations



04 Other actions required to adopt FBC

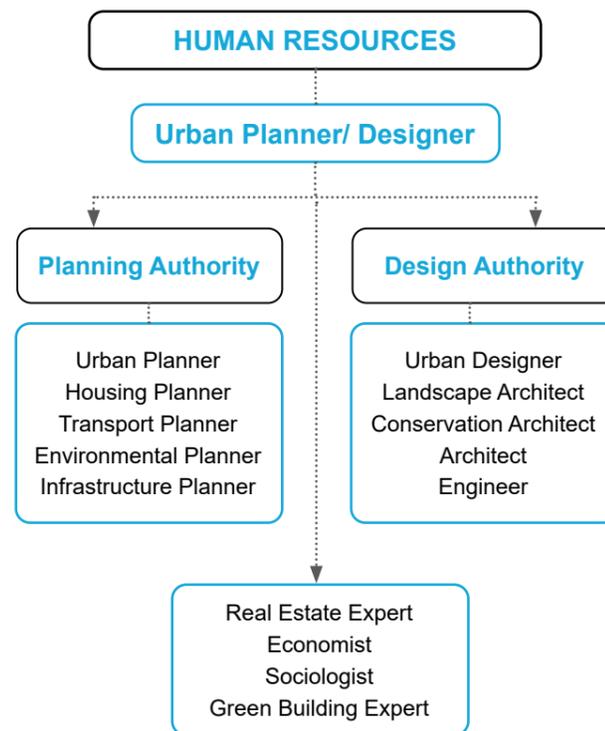
This chapter identifies the steps to strengthen institutions and way forward.

4.1 Augment Institutional Capacity

Multidisciplinary planning is necessary to achieve a desired urban form.

Schemes like Smart City Mission, AMRUT have explored this approach and have involved different disciplines into urban planning and management mechanism. Planning and implementation of area-based proposals like CBALP, LAP, TOD schemes and FBC requires a dedicated team of experts working in the Development Authority/ Town Planning Departments. They may be aided by external agency to conduct surveys and undertake specialized studies, support analysis and prepare sector-specific schemes/ proposals.

Further, it is recommended to involve universities for mutual capacity building of professionals and students.



IT Resources

Most cities now have a GIS database. This may be used to draft the CBALP and be updated into an online CBA Portal to reflect real time conditions. The latter is envisaged as a dynamic portal synchronized with EoDB portal while preparing the CBALP, UFR, PDCs.

A dedicated IT task force supported by atleast the identified resources (see Fig.31) is recommended to be a part of the in-house team drafting CBALP.

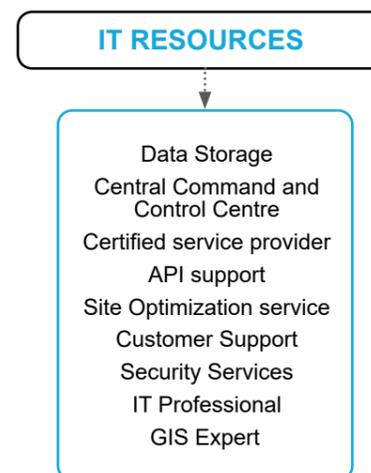


Fig. 31: Proposed Institutional Capacity framework

4.2 Digital Dynamic CBA portal

CBALPs prepared following SOP I when uploaded on a dynamic online portal and updated regularly, shall reflect real-time conditions. This is fundamental to enabling EoDB and can be plugged into its portal. The PDCs prepared following the SOP II when uploaded on this portal and linked with the EoDB Portal, will synchronize CBALP implementation and building sanction.

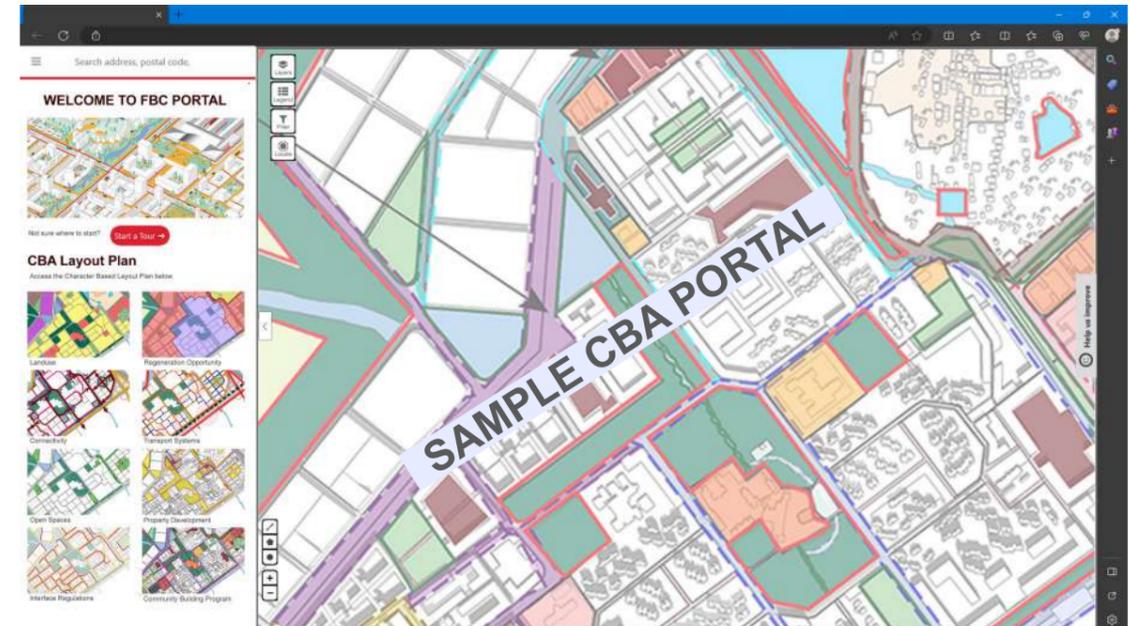


Fig. 32: Screenshot of sample CBA portal

An example of such a portal is the platform used by the Urban Redevelopment Authority (URA) of Singapore:

<https://www.ura.gov.sg/maps/index.html?service=CTRLPLAN>

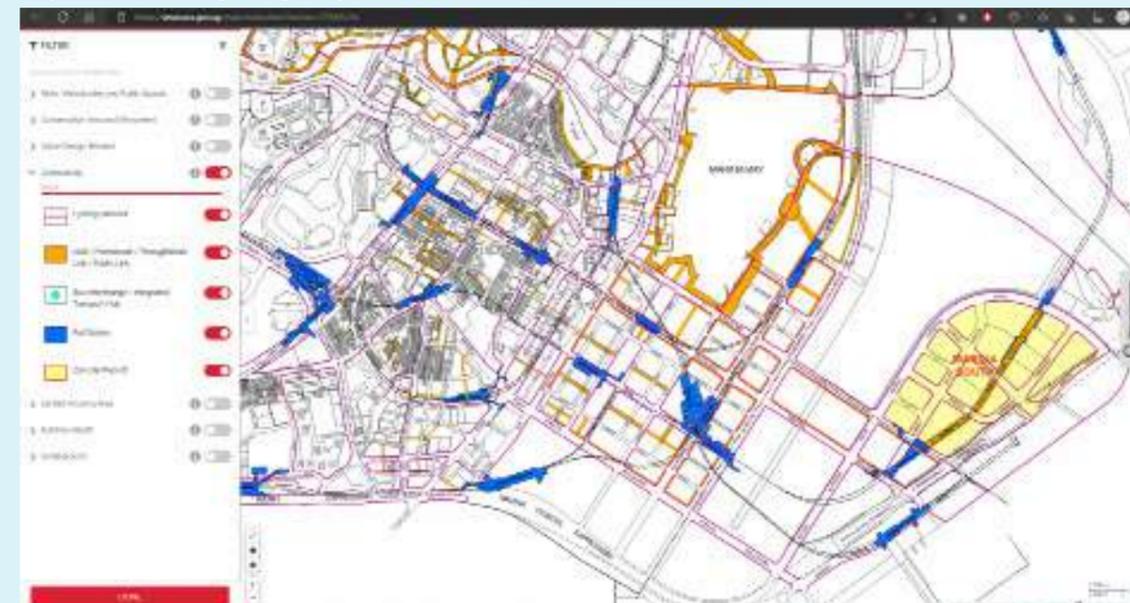


Fig. 33: Screenshot of URA, Singapore's portal: Connectivity plan

4.3 Property Development Cards (PDC)

| PROPERTY DEVELOPMENT CARDS NO. [CITY/PLOT UID/YEAR] | | | | | | | |
|---|--|--|--|---------------------|--|--------------------|-------------------------------|
| Plot Area | | _____ sq.m. | | | | | |
| VP | Volumetric Parameters | | Applicable Regulations/ Measurements (Development Control Norms/ Local Byelaws) | | | | |
| | VP.1. | Applicable F.A.R./ F.S.I. | _____ m | | | | |
| | VP.2. | Applicable Ground Coverage | _____ % | | | | |
| | VP.3. | Use Premise as LP/ CBALP | Residential/ Commercial/ Public-Semipublic/ Industrial/ Transportation/ Social Infrastructure (Educational/ Hospitals) etc | | | | |
| | VP.4. | Permissible mix of use | <table border="1"> <tr> <td>_____ % Residential</td> <td rowspan="3">All use premises to have atleast- 20% residential 20% commercial or social infrastructure or both</td> </tr> <tr> <td>_____ % Commercial</td> </tr> <tr> <td>_____ % Social Infrastructure</td> </tr> </table> | _____ % Residential | All use premises to have atleast- 20% residential 20% commercial or social infrastructure or both | _____ % Commercial | _____ % Social Infrastructure |
| | _____ % Residential | All use premises to have atleast- 20% residential 20% commercial or social infrastructure or both | | | | | |
| | _____ % Commercial | | | | | | |
| | _____ % Social Infrastructure | | | | | | |
| VP.5. | Mandatory Setbacks | Frontage adjoining open spaces- _____ m, to be maintained as public space without boundary wall, Frontage abutting another plot- _____ m, | | | | | |
| VP.6. | Maximum permissible height of Superstructure | h= _____ m, above natural ground level | | | | | |
| VP.7. | Maximum permissible Depth of underground structure | d= _____ m, below natural ground level | | | | | |
| <p>Indicative Volumetric Parameters</p> | | | | | | | |

Table 10: Sample Property Development Card

Definition

Property Development Card (PDC) is defined as a document containing UFR applicable to concerned plots as derived from the approved CBALP and its UFR.

PDCs are to be structured as per the requirements of CBAs and will vary from a city to another. An indicative structure has been shown in SOP II. Sample of a page from the indicative PDC is shown on page 60.

Application

1. After CBALP and its UFR are approved, a set of PDCs unique to typical types of plot development are to be issued by the Planning Authority.
2. The PDCs will specify components of UFR applicable to plots. Developer will have freedom to generate architectural design of each component while adhering to its functionality. For plots with historic buildings or heritage Precincts, norms applicable to generating desirable built form are included in SOP II.
3. The planning authority can add, remove or modify the PDC periodically.
4. Developers can opt to apply for preparing a new PDC that may be approved through the Building Sanction (EoDB) portal, after necessary assessment by Planning and Regulatory Authorities.
5. Based on the typical PDC, developers can get unique PDCs approved for their plots.
6. The Building Sanction Authority may consider the unique PDC while issuing construction permits.
7. The process mentioned above can be automated via the integrated CBALP and EoDB portal.

The concept of **Property Development Cards** are not new. Chandigarh, Haryana and GIFT City have been issuing similar documents in different names. While Chandigarh and Haryana refer to them as **Standard Control Sheets**, GIFT City calls it **Urban Design Guidelines**.

Property Development Card shall follow a hybrid **Form Based Codes** approach and outline Plot specific requirements of built form.

- The objective is to ensure **creation of safe, vibrant, people-centric and transit -friendly built environment**.

4.4 FBC Readiness Checklist

The checklist below can be used by planning and development authorities to assess preparedness before initiating drafting of CBALP, and UFR to adopt FBC approach.

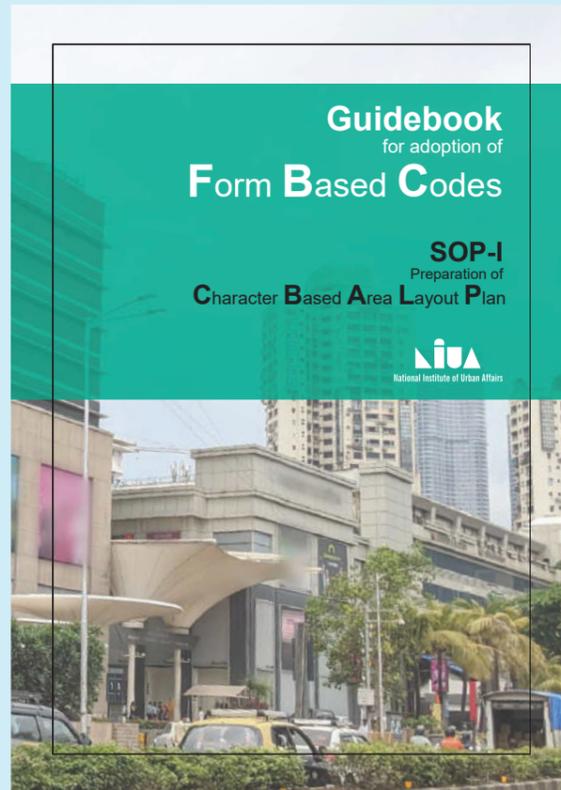
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| Steps | Stage / Activities | Completion |
|----------|--|------------|
| A | CBA Demarcation | |
| | 1. CBA Demarcation 2. Preliminary Gazette Notification Explanation: Cities may have already demarcated its boundaries of special areas while undertaking Area Based Planning, like TOD, LAP, LDRA, GDA, SAP, etc. The same boundaries may be reused for drafting CBALP and adopt FBC approach during the Pilot Phase, and hence move to Step B. Some overlays of CBALP recommended in this Guidebook may have already been prepared for such pilot areas. | 25% ready |
| B | Data availability | |
| | 1. GIS data related to all land parcels, infrastructure and population 2. Data related to all planning proposals, schemes etc. | 50% ready |
| C | Availability of Studies and Assessments | |
| | 1. Real Estate Market Demand and Supply assessment 2. Existing infrastructure, its capacity, future augmentations feasibility 3. Population and Built Up Area Holding Capacity based on infrastructure capacities 4. Blue Green resource study, possibility of integrating Sponge City approach 5. Activity and spillover assessment | 75% ready |
| D | CBALP and UFR | |
| | 1. Approved CBALP 2. UFR applicable to respective CBALPs | 100% ready |

Table 11: FBC preparedness checklist

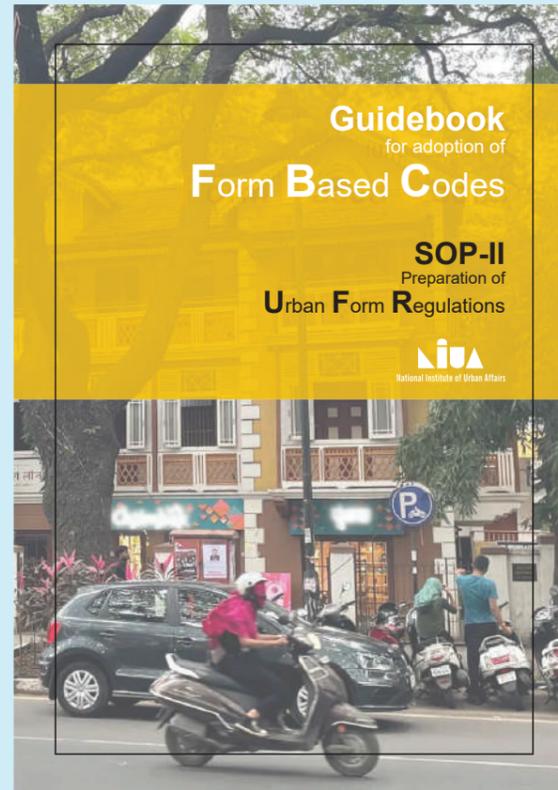
Other Documents

SOP I



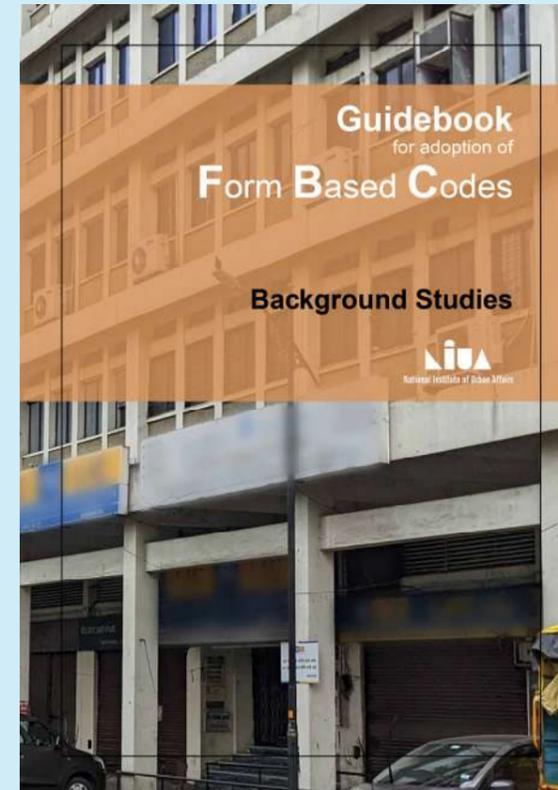
SOP-I provides tools and processes for creating CBALP.

SOP II



SOP-II provides tools and processes for formulating UFRs applicable to various CBALP.

Background Studies



This document contains all background studies and references for Form Based Codes (FBC).

Manuals for Station Redevelopment including Commercial Development



These Manuals and Guidebooks were prepared by IRSDC Ltd. through testing on on-going projects and adopted in 2021 after an India-wide consultative process involving key sector experts. The manuals have been applied to plan for Indian station redevelopment projects at Nagpur, Bijwasan (New Delhi), Chandigarh, Amritsar, etc.

Source:
<https://smartnet.niua.org/content/ce38f242-d616-454f-83f6-6e9c4d7b4443>

<https://shaktifoundation.in/impact-stories/indian-railways-adopts-form-based-codes-for-station-redevelopment/>

Testimonials

“The Standard Operating Procedures I and II viz., Preparation of Character Based Area Layout Plan and Preparation of Urban Form Regulations along with Guidebook for adoption of Form Based Codes -Case Studies have assumed much significance especially as Ministry of housing and Urban Affairs have been advocating area based strategies through Special Assistance to States to implement Urban Planning Reforms as formulation of Local Area Plans and Town Planning Scheme have been identified as one of the reforms. Both the SOPs and Guidebook are comprehensible and Town Planners working in State Town and Country Planning Department, Urban Development Authorities and Urban Local Bodies can use these documents while taking up area based strategies.”

R.Srinivas,

Consultant (Urban Planner) M/o Housing and Urban Affairs, Govt. of India.
Former Town and Country Planner, TCPO, MoHUA,
Director (Ahmedabad Smart City Development Limited)

“ The effort put in to develop the FBC Guidebook and the SOPs is commendable, the documents are well written and illustrated with simple graphics. Integration of FBCs in the Planning Process is indicated clearly, and as understood from the guidebook, its implementation may be done in a phased manner over a period of time. Using performance oriented and area based approach for FBCs with a dynamic portal offering flexibility is good and will ensure that the regulations are neither too prescriptive nor rigid. FBCs lays emphasis on climate responsiveness and addresses resilience while integrating natural and built resources, which is good. PDCs are in an easy to understand format, which may make it useful for wide range of users. Additional regulations for heritage and high density areas is much needed and is welcomed.”

Dr. Sujata Govada

Founding and Managing Director, UDP International
Adjunct Associate Professor at CUHK
Vice President (International Relations) and Founding Member of Hong Kong Institute of Urban Design (HKIUD)
Vice President of AIA HK
Global Trustee of the Urban Land Institute and ExCo member of ULI North Asia

“The proposition in the documents (Form Based Codes) – i.e. to streamline the process of transformation of brownfield sites can be a useful tool for upgrading areas in and around monuments and historic cities in general. As the regulations are contextually driven, the layers in historic towns, which impart its characteristics can be included and responded suitably. Which means, one evolves a format of development where heritage is synonymous to upgradation/ better quality of development. The Property Development Card – is of great help to those with property in Prohibited and Regulated Areas. As the PDCs are applicable even at plot level, it will very clearly articulate options of development at the very onset. This will prevent the issues arising from ambiguity and tentativeness due to complications in the norms and even how monuments were notified originally. In fact – this is the essence of EoDB. As a reviewer, I have understood the immense value of these regulations and guidelines, and I would look forward to further Consultation and adoption processes.”

Prof. Ajay Khare,

Professor (HAG) and Dean Research & Head CHCR
School of Planning and Architecture, Bhopal, India. (M/o Education, Govt. of India)
Former Member, National Monuments Authority, (M/o Culture, Govt. of India),
Former Director, (Founder) SPA Bhopal, (2009-2014)

“Very good piece of work done and relevant considering. This is a non-prescriptive and handholding tool to streamline the processes for brownfield transformation and aligns with the new vision for Indian cities, being promoted by the Government of India, MoHUA and other allied bodies/ missions like NIUA, GATI and JAL Shakti. While individual agency/ Mission focus on isolated mandates, the Guidebook and SOPs are providing an integrated framework and have enlisted actions to achieve necessary outcomes.

The idea of Property Development Cards and dynamic portal would facilitate implementation of Real estate bonds, green bonds and even carbon markets. With this we can also imagine exploring tools like these to increase participation/ interest of participants in improving the public and green spaces when you are sequestering carbon. Improving the quality of life for people in the urban spaces if made tradeable, benefits real estate development and boosts revenue capture. When quality and feasibility is converted into real estate shareable bonds, it becomes easier to incentivize everyone to participate.”

Dr. Sumana Bhattacharya

Senior Advisor, Climate Change at Iora Ecological Solutions
Expert in review, development, management and implementation of programmes and projects in the areas of
Climate Change, GHG inventorisation, Ecosystem Assessment, and Low Carbon Development.
She is a key member for engagements on climate change policy development, finance and governance issues at
a national and state level.

“It is good to note that the Guidebook and SOPs integrate Green Building parameters as part of area planning and regulation. The integration of Green Building Guidelines into Property Development Cards lay the ground for cities to adopt Green Building Passports.”

SMH Adil

Built Environment Simulation Specialist, CEO, GEED
Licensed ECBC Master Trainer,
Certified Energy Manager, Bureau of Energy Efficiency, M/o Power Govt. of India

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- **National TOD Policy, 2017** - https://mohua.gov.in/upload/whatsnew/59a4070e85256Transit_Oriented_Development_Policy.pdf
- **Delhi TOD Policy, 2021** - <http://uttipeec.nic.in/upload/uploadfiles/files/Notified%20TOD%20Policy%2030%20July%202021.pdf>
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- **Sizing up Parking Space (ITDP Street Guidelines), Pune, 2016** - <https://www.pmc.gov.in/sites/default/files/project-glimpses/PMC-public-parking-policy-English-revised-March2016-Final.pdf>
- **Electric Vehicle Policy, Delhi, 2022** - <https://ev.delhi.gov.in/files/Accelerating-Electric-Mobility-in-Delhi8497bf.pdf>

2) Sustainable Solid Waste Management/ Stormwater Management/ Solar Power/ Water bodies:

- **National Action Plan for Municipal Solid Waste Management** - https://cpcb.nic.in/uploads/MSW/Action_plan.pdf
- **Indicative Guidelines for Restoration of Water Bodies, CPCB** - <https://cpcb.nic.in/wqm/Ind-Guidelines-RestWaterBodies.pdf>
- **SOP for Restoration of Existing Water Bodies, Delhi** - https://cityoflakesdelhi.com/wp-content/uploads/2022/10/SOP-for-Restoring-Managing-Existing-Water-Bodies_FINAL.pdf
- **Manual on Stormwater Drainage Systems, CPHEEO (Vol. I & II)** - <http://cpheeo.gov.in/cms/manual-on-storm-water-drainage-systems---2019.php>
- **Stormwater Master Plan, Pune** - https://www.pmc.gov.in/sites/default/files/project-glimpses/Storm_Water.pdf
- **Ministry of New and Renewable Energy, Solar Energy** - <https://mnre.gov.in/solar/current-status/>
- **Solar Power Policy, Telangana** - <https://www.tssouthernpower.com/telanganastatesolarpowerpolicy>
- **Solar Energy Policy, Tamil Nadu** - <https://teda.in/wp-content/uploads/2019/02/SOLARPOLICY2019.pdf>

3) Green Building/ Development/ Infrastructure:

- **Government Incentives to IGBC-rated Green Building Projects** - <https://igbc.in/igbc/redirectHtml.Green>
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- **CoolRoofPolicy, Telangana, 2023** - <https://www.telangana.gov.in/PDFDocuments/Telangana-Cool-Roof-Policy-2023-2028.pdf>

4) Conservation/ Restoration/ Preservation of Heritage Properties and Precincts:

- **Improving Heritage Management in India** - <https://www.niti.gov.in/sites/default/files/2020-06/Improving-HeritageManagement-in-India.pdf>

- **National Policy for the Conservation of the Ancient Monuments, Archaeological Sites and Remains** - <https://asi.nic.in/wp-content/uploads/2018/11/national-conservation-policy-final-April-2014.pdf>
- **National Heritage Byelaws** - <http://www.nma.gov.in/view-heritage>
- **CPWD Handbook of Conservation of Heritage Buildings** - <https://cpwd.gov.in/Publication/Conservation-Hertbuildings.pdf>
- **DCPR, Pune, 2017** - https://www.pmc.gov.in/sites/default/files/DCR_PUNE_FINAL.pdf
- **Development Regulation provisions for Heritage Conservation, Chennai** - http://www.cmdachennai.gov.in/pdfs/seminar_heritage_buildings/Development_Regulation_provisions_for_Heritage_Conservation_in_CMA.pdf

5) Climate and Disaster Mitigation/ Adaptation/ Resilience/ Energy Efficiency:

- **Climate Risk Management** - https://nidm.gov.in/PDF/pubs/GIZ_NIDM_Climate%20RiskManagementFramework.pdf https://www.changing-transport.org/wp-content/uploads/E_K_NUMP_India_2014_EN.pdf
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6) Miscellaneous:

- **Indicators for Child-Friendly Local Development (I-CHILD), 2016** - <https://smartnet.niua.org/sites/default/files/resources/indicatorsl.pdf>
- **Toolkit for Enabling Gender Responsive Urban Mobility and Public Spaces, (Vol I.) World Bank** - <https://documents1.worldbank.org/curated/en/099651410192229435/pdf/IDU01ef8184c02ec004af50ae850e22d-67ee8c62.pdf>
- **Projects on Inclusive Cities** - <https://niua.in/inclusive-cities-centre>
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