

# FORM BASED CODES

## POLICY FRAMEWORK





**Ministry of Housing and Urban Affairs**  
Government of India

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The Ministry of Housing and Urban Affairs is the apex authority of Government of India to formulate policies, coordinate the activities of various Central Ministries, State Governments and other nodal authorities and monitor programmes related to issues of housing and urban affairs in the country. The Smart Cities Mission was launched by the Ministry in 2015 to promote sustainable and inclusive cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions.



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The World Resource Institute is a non-governmental global research organization that aims to protect earth's environment and provide for the needs and aspirations of current and future generations, including but not limited to improving the quality of life in cities, by developing and scaling environmentally, socially, and economically sustainable urban transport solutions, with capabilities to identify and implement such solutions in over fifty countries including within Europe, United States, Mexico, Brazil, Indonesia and India.

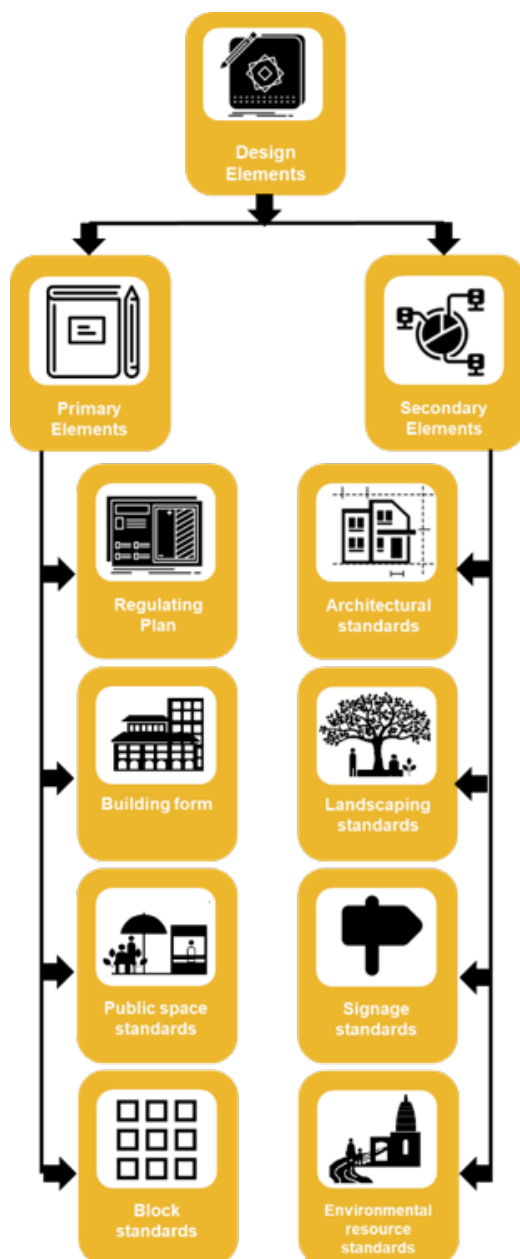
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# EXECUTIVE SUMMARY

Form Based Codes (FBC) is a planning and zoning tool that can be used for regulating development, using physical form rather than land use segregation, as the organizing principle for the code. It aims at contributing to a better quality of life by fostering a high-quality public realm. FBC comprises of two primary components, namely – Design Elements and Enabling Elements. Design Elements detail the codes to guide design of the built environment and are laid out as a combination of text and diagrams. Enabling Elements are more explanatory in nature and help to understand the implementation process and intent of the codes.

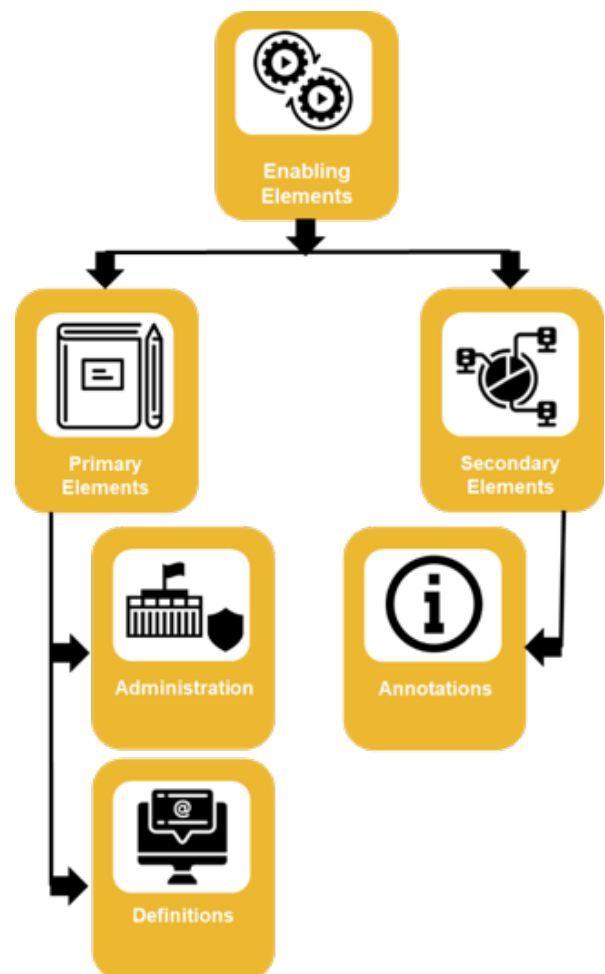
Fig 1 | Design Elements of FBC



In the Indian context, FBC can be adopted and applied as a mandatory code, hybrid code or parallel code. Mandatory code is where the form-based code replaces the existing conventional zoning code. On the other hand, hybrid code or floating code is the one that overlays and combines with a conventional zoning approach. Lastly, the parallel code is a standalone code and does not combine with or replace the existing code. The scale of application can be at the city level, area/neighborhood level or project/site level.

FBC is a bottom-up development approach which aims to achieve economic, social and environmental sustainability, while ensuring contextual planning that is functional and in accordance with the development goals of the city. The keystone of FBC is community involvement in not only determining community needs and priorities, but also in its development and implementation.

Fig 2 | Enabling Elements of FBC





# POLICY FRAMEWORK

## 1. Background and context

India's rapid urbanization is significantly altering its natural landscape, putting a strain on resources and creating an urban infrastructure crisis, particularly in megacities that absorb large volumes of population influx. As per the 2016 UN World Cities Report, India, the world's fastest-growing major economy, is expected to reach a population of 600 million by 2031. There's an urgent need to review the current development approach to mitigate the impacts of unplanned urbanization and streamline the urbanization process. A huge task lies ahead for the government to accommodate this growth in a planned, sustainable manner and position India's development at par with global standards.

Image 1 | **Typical urban development scenario in India.**



Source: WRI India

The current planning process in our cities emphasizes rigid land-use, zoning and development controls that fail to recognize the unique characteristics and challenges of different neighborhoods within the city needing area-specific solutions/interventions. For decades, cities have been planned around automobiles, creating an unsafe and unwelcome environment for other users. As a result, the livability of cities has degraded with unplanned urbanization, congestion and environmental degradation.

## 2. Need for FBC

Current planning practices have led to built environments that are largely disconnected from the rapidly changing socio-economic conditions of urban areas and hence, the functional aspects of built space. To address these dynamic conditions, concerned authorities tend to resort to frequent land use changes and layout/building

regularization schemes to formalize irregular developments. On a regional and national scale, this lack of integration between economic and spatial planning has exacerbated the skewed hierarchy of settlements, where the benefits of economic investments and development schemes have not been fully realized.

The existing planning process emphasizes land use zoning and generic building development controls, that apply uniformly to differing local contexts and ground realities. This is often also why prescriptive parameters are flouted and abused by development interests looking to maximize the use of their land and thereby profits, irrespective of infrastructure capacities, social, economic and environmental needs and goals of the city.

Therefore, it is imperative to look at alternative ordinances, standards and best practices to adopt an effective approach at the local level. It should involve the community, promote predictability in outcomes, meet the development and growth needs of the city and be transparent in formulation and implementation.

In this respect, FBC has emerged as a powerful alternative to conventional zoning and building regulations. It focuses on comprehensive development and aims to improve economic, social and environmental sustainability, while ensuring community involvement.

## 3. What is Form Based Codes?

FBC is a planning and zoning tool that can be used for regulating development using physical form rather than land use as an organizing principle

Image 2 | **An illustration of Form Based Codes Development.**



Source: www.urbancimcy.com

for the code. It aims at contributing to a better quality of life by fostering predictable built results and a high-quality public realm. FBC addresses the relationship between the form and mass of buildings in relation to one another, as well as to the public realm, the scale and types of streets and blocks. In other words, FBC focuses on how development relates to and fits within the local context, especially the relationship between buildings and the street, pedestrians and vehicles, public and private spaces. The code regulates site design, circulation and overall building form. These codes are regulatory; not

advisory or mere guidelines. They are drafted to implement a community plan and to achieve a community vision, based on time-tested forms of urbanism.

#### 4. Difference between FBC and conventional codes

The key differences between conventional zoning and development codes and FBC are enumerated below in Table.

Table 1 | **Key differences between FBC and conventional codes**

Sr no	CURRENT ZONING, DEVELOPMENT CONTROL REGULATIONS	FORM BASED CODES
1.	Focus on land use segregation, primarily led by separating incompatible or different uses in an area	Focus on how development relates to the local community and context, especially relationships between buildings and the street, pedestrians and vehicles, public and private space
2.	Top-down approach applied city wide	Bottom-up approach with specific codes in response to the local context; applied at a district or local area level
3.	Based on segregation of uses	Based on compatibility of uses
4.	Often encourages excessive land consumption and automobile dependency	Encourages a mix of uses and compact development, often reducing the need to travel extensively daily
5.	Typically focused on what uses are not allowed	Typically focused on what the community requires
6.	Preparation process includes minimal public participation	Community input, public participation and interaction, an integral part of the process
7.	'Planning' perspective and fragmented - looks at components separately	Urban design' perspective, integrated - looks at components together and in relation to each other. Lays down regulations for land use, blocks, buildings, architecture, access, parking, streetscape, landscape, preservation, etc.
8.	5-10 year revision to reflect any changes to the master plan and ZR/DCRs. Does not incorporate references to other adopted plans, regulations, guidelines	Integrates other standards, ordinances and plans with periodic or annual review
9.	Presented in the form of text, numbers and tables; lacks ease in comprehensibility, making it easier to flout, difficult to monitor and enforce	Illustrations are presented graph (maps, sketches) making it clearer, easier to decipher and enforce, identify non-conformity.



## 5. Objectives

The primary objectives of FBC are as below:

- **Develop contextual planning:** The intent is to facilitate a localized approach to development that benefits the community and fosters a sense of identity and belonging.
- **Produce functional and vital urbanism:** The focus is on creating vibrant, walkable neighborhoods that prioritize pedestrian access, safety and foster social interaction.
- **Prioritize community needs:** The intent is to encourage development based on community requirements, unlike the top down approach of land use-based development.
- **Participative planning:** The intent is to facilitate a community-led planning and development process with citizens as the primary stakeholders.

Image 3 | Diversity of development in the Indian context



Source: WRI India

## 6. Elements of Form Based Codes

FBC regulations and standards are presented through words and supporting illustrations. Design Elements are laid out as combination of text and diagrams, while Enabling Elements are laid out primarily as text. Each of the elements have primary and secondary standards, of which the latter may or may not be elaborated as part of the codes.

## 6.1 Design Elements

### 6.1.1. Primary elements:

**Concept Plan:** A plan or map of the regulated area designating physical locations where the code's various standards will apply. This is also called a Regulating Plan and is a mandatory requisite for FBC implementation. Extensive codes of building form standards and public space standards may have separate Regulating Plans. This plan has three purposes, namely:

- i. **Administrative:** To establish the planning area boundary and identify where the FBC standards would apply.
- ii. **Direct regulation:** It is for a selective purpose. For example, regulations for active edges, where thoroughfares are required, etc.
- iii. **Planning:** For preparation of a detailed regulating plan for each zone within the broader plan boundary. It helps to define the critical differences in form and character of development in each zone, thereby determining the configuration of the public realm.

- **Building Form Standards:** The building form standards outline regulations controlling the configuration, features and functions of buildings that define and shape the public realm. These typically include building form, building placement, frontage types, parking and lot sizes. It may also include architectural or building type regulations.

Fig 3 | FBC coded building and its characteristics



Source: WRI India

- **Public Space Standards:** These standards detail specifications for elements within the public realm e.g., sidewalks, travel lanes, on-street parking, street trees, furnishings and interface with buildings. They regulate parameters such as appropriate location, functionality, minimum and maximum sizes and landscaping.

Image 4 | **FBC coded building and its characteristics**



Source: WRI India

- **Block Standards:** This details regulations for dividing large-scale sites to ensure connected and walkable streets and block sizes.

#### 6.1.2. Secondary elements:

- i. Architectural Standards:** Regulations controlling building character and quality.
- ii. Green Building Standards:** These provide specifications for environmentally sensitive, energy efficient and low-carbon buildings.
- iii. Landscaping Standards:** Regulations controlling landscape design and plant materials on private property as they impact public spaces. For example, regulations for parking lot screening and shading, maintaining sight lines, ensuring unobstructed pedestrian movements, etc.
- iv. Signage Standards:** Regulations controlling allowable signage sizes, materials, illumination and placement.

- v. Environmental Resource Standards:** Regulations controlling aspects such as storm water drainage and infiltration, development on slopes, tree protection, solar access, etc.

The above list is comprehensive but not limited to these. There may be context specific codes that could be included based on requirements. For example, codes for historic preservation, lighting, non-conforming use regulations, and affordable housing along with lessons learned.

## 6.2. Enabling elements

### 6.2.1. Primary elements:

- i. Administration:** A clearly defined application and project review process.
- ii. Definitions:** A glossary to ensure the precise use of technical terms, their definitions and any other component as per requirement.

### 6.2.2. Secondary elements:

- i. Annotation:** Text and illustrations explaining the intentions of specific code provisions.

## 7. Form Based Codes Application

### 7.1 Methods of implementing FBC

There are several methods for introducing FBC into an established zoning ordinance.

- i. Mandatory code:** Here, the form-based code replaces the existing conventional zoning code for all or parts of the area wherein all development (within that area) must abide by the regulations of the form-based code. This approach generally offers the widest range of opportunities for transforming a targeted area. An urban design plan and the implementation of regulations are bundled together, greatly improving user comprehension. It also offers the advantage of consistency in regulatory vocabulary and procedures throughout the code.
- ii. Hybrid or Floating code:** A hybrid code is one that combines form-based codes with a

conventional zoning approach. Form-based standards can be merged or created in conjunction with the existing conventional code. A hybrid code can take the form of a chapter within the code, like a special district or overlay. Areas that fall within the FBC boundaries are rezoned to new zoning districts per the code, wherein development must abide by the new regulations. This approach can be used for a sub-area in the phased replacement of an existing code and can also be an effective way of responding to pressure for physical change in “sensitive” areas.

**iii. Optional or Parallel codes:** The form-based code is created as a standalone code but does not replace the existing conventional zoning code. Instead, it is available as an alternate code that may be adopted by any stakeholder under taking development. The area/property does not have to be rezoned, but once the developer chooses a code, the entire development project must abide by it. There are advantages to this approach, but the challenges of administering two codes may become cumbersome, especially if there is a lack of common interpretation language and a clear understanding of the two types of codes. It may also result in developers attempting to pick and choose only those FBC requirements that are most beneficial to their interests.

## 7.2 Scales of application

FBC can be applied at various scales. The Regulating Plans can be prepared primarily at three scales:

**i. City:** At this scale, interventions are more w.r.t. broad components of FBC that can be applied to the whole city. In terms of spatial demarcation, it will essentially be the administrative boundary of the city.

**ii. Area:** This level of intervention can be classified under four sub-categories, namely:

- Ward or local area level
- Transit corridor level
- Neighborhood level
- Station area level

Here, the spatial demarcation will depend on the sub-category that is applicable. Hence, the area demarcation can either be an existing administrative boundary, or a new boundary that may be notified earmarking the area for FBC application.

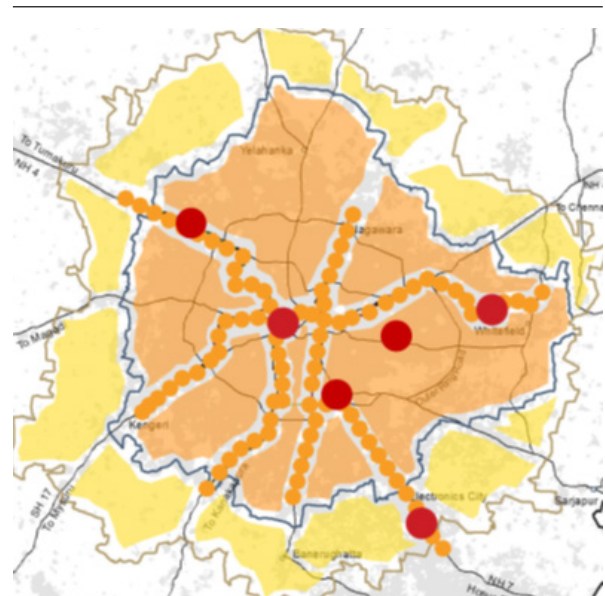
**iii. Project:** This refers to an individual site within an area.

The recommended scale for FBC application is at the Area level. Planning at this scale helps in identifying the development potential of the demarcated area, while understanding the needs of the community and market dynamics.

## 7.3 Typology of selected area

FBC can be categorized under four typologies as mentioned below. These are essential to ascertain the components that may be prioritized for the same.

Figure 4 | Map of Bengaluru city indicating the 4 typologies of areas



● Centers ● Corridors ● Wedges ● Peripheries

Source: Cityscapes, WRI India

**i. Central Business Districts (CBD):** Dense, highly-developed, central city areas that have a unique character due to its history, heritage or centers of robust trade and economic activity agglomeration.

**ii. Corridors:** Well-connected and diverse in character, these are areas along mass transit lines that extend across the center of the city to its peripheries.

**iii. Wedges:** Low-density/intensity areas between corridors where neighborhoods are growing, evolving and stabilizing in terms of use and character.



**iv. Peripheries:** Under-served areas, typically along and outside municipal boundaries where unplanned growth is occurring.

## 8. Framework for implementing FBC

For adopting and facilitating FBC implementation, it is essential to first undertake a review of existing legislation, policies, Master/Development Plans and development control regulations. This will help to identify the necessary interventions or revisions for incorporating FBC.

The FBC Policy should be notified as part of the Master/Development Plan of the city and subsequently should be incorporated in the zoning and development control regulations. The FBC zone/area should be clearly identified, demarcated and notified by the concerned authority.

To ensure that infrastructure in the FBC zone/area is provided in a planned manner, the ULBs and the concerned agencies should prepare a comprehensive plan integrating all the physical infrastructure and utilities such as roads, drains, water supply and sewer lines, power lines, green spaces, police and fire posts, electric sub-stations, etc. This plan would be useful to assess the carrying capacity of the existing infrastructure (if applicable) and the upgradation needed to meet any increased demand because of FBC interventions.

## 9. Financing

The successful implementation of FBC requires significant public and private sector investments. Innovation to finance FBC projects, depending upon the scale of intervention and desired outcome, will be crucial to its success. With growing interest in India for adopting FBC to address issues in existing and newly emerging urban areas, it is important to understand that its implementation requires a bottom-up approach for envisioning the desired development outcomes. It will also require cross-sectoral integration and partnering at various tiers of Government, and its departments along with the local community.

The project proponents must identify all the components to be financed, the best model that could finance them, the role of all stakeholders

in the financing process and most importantly, possible changes to the finance model if the project deviates from what was originally planned. The financials of the project must be scrutinized for being realistic and whether the project is feasible. A “business model framework” to support building capacity around the key elements of FBC investments and facilitating dialogue between strategic actors on the options available, current gaps and potential strategies for developing bankable business models for FBC investments - need to be explored.

Between the local, state and central government, infrastructure agencies, business community, philanthropy leaders, community and community-based organizations, developers and financial institutions that provide resources and support to the FBC process, the amount of capital available for development is huge, but it needs to be properly channelized. Hence, finance mechanisms such as Land Value Capture (LVC), Public Private Partnerships (PPPs), Corporate Social Responsibility (CSR), should be explored and incorporated during the planning process so that it can be successfully used to facilitate FBC implementation in cities. Further, the roles and responsibilities of the stakeholders should be structured so that the fund channeling and governance structures are in sync.

## 10. Stakeholder Coordination

Depending upon the scale of intervention of FBC, its implementation would entail the involvement of various agencies for the preparation of regulating plans, reviewing the infrastructure, building regulations, provision of public transport and traffic control, etc. Therefore, to ensure the success of FBC, it is important that there is coordination between these agencies for efficient planning and implementation.

For pivoting FBC implementation, a suitable institutional mechanism may be created in cities. An entity formed jointly by the Urban Local Body and the Development Authority would be most suitable for expeditious planning and implementation of FBC. However, till the time such a body is set up, the city development authority could coordinate the implementation. Adequate capacity building measures may also be taken by the state governments and urban local bodies to familiarize officials with the tenets of FBC.

Image 5 | **Public consultation process for a neighborhood development**



Source: WRI India

Cities should provide transparency and clarity in the policy and procedures for FBC, which will facilitate consensus building and save time in its implementation.

For long term commitment of public agencies and the private sector in implementing FBC, cities should create clear and fair rules for sharing costs, benefits and risk among the stakeholders.

Cities may encourage PPPs in the planning and implementation of FBC, as well as infrastructure upgradation, to leverage the technical know-how, operational efficiency and financial capacity of the private sector.



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