

## ADAPTIVE PLANNING FRAMEWORK FOR GROWTH MANAGEMENT OF FRINGE AREAS: A CASE OF TIER II CITIES IN INDIA

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### Abstract:

India's Tier II cities are emerging as the frontiers of regional growth , the rapid expansion of the these cities have led to emergence of the unplanned areas with fragmented governance on the periphery known as fringe areas (peri-urban areas).These fringe areas are informal, and dynamic in nature and exhibit a potentiality for development , but experience complex challenges such as infrastructural deficits , fragmented governance , informal settlements and environmental degradation . The existing planning tools are rigid and static hence fail to adapt to the dynamic nature of fringes. This paper underlines the need for Adaptive planning framework that can respond to the dynamic nature of the fringe areas. The need has been identified by gap identification via policy evaluation , case analysis and literature review. The proposed framework would result to more resilient fringe area transitions, enhance service delivery and infrastructure provisioning, and support spatial equity and in totality contributing to SDG 11.A, which deals with the integration of Urban and fringe areas.

**Keywords:** Fringe areas, SDG 11.A , Adaptive planning framework , Growth management .

### 1. Introduction

A fringe area is a spatially and functionally transitional zone located beyond the periphery of the city, faces subsequent urban expansion causing continuous changes in land use, demographics, and infrastructural availability. These areas undergo dynamic processes such as suburbanization, informal development, agricultural decline, and shifting economic activities, resulting in a Transitional area that is neither fully urban nor rural. Often the development potentials of these fringe areas is underutilized. Fringe area/Peri Urban area being a new typology fail to respond to the planning tools for urban areas..

**Figure 1. Dynamic Nature of Fringes**



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The fringe is a fluid and transitional zone, shaped by urbanization forces spilling over from the city. The characteristic features of the fringes has been highlighted in Figure 1. Its dynamic nature as shown in Figure 1 demands flexible, inclusive, and adaptive approaches that recognize its evolving character.

## **2. Identification of the issue of fringe Area**

The increasing urbanization in the Tier II cities leads to outward expansion of Urban areas, hence creating fringes. Inhabitants from neighbouring Rural areas, are dependant upon these urban areas for job/opportunity. Due to primacy factor, the Urban area or the city may serve people from farther rural areas which leads to Uncoordinated growth in fringes leading to poor quality of life. In order to avoid daily commutation people settle in Fringe area due to affordable Land rates, cost of living and accesibility to services and Infrastructure of Municipal areas. The existing urban planning frameworks are rigid, hence fail to respond to rapid and dynamic changes in fringe areas. As each fringe area has a different level of development potentiality, managing growth of these fringes involves contextual and adaptive approach. Hence there is a need for adaptive planning framework that dynamically respond to the evolving growth patterns of fringe areas.

## **3. Need of the Study**

India's urbanization trajectory is witnessing a paradigm shift from the metropolitan cities to Tier-II cities. These Tier-II cities are emerging as "the next frontiers of growth" (ORF, 2023). Tier-II cities such as Lucknow, Jaipur etc are rapidly expanding, leading to creation of the fringe areas that are the spatially transitional areas with a blend of Urban and rural dynamics (Climate and Development Network, 2021).

Fringe areas attract inhabitants from the rural areas in the neighbouring vicinity due to affordable land rates, lower living cost and proximity to municipal infrastructure which leads to unregulated and informal development in the fringe areas. This is resulting in poor quality of life for fringe inhabitants. The existent adversities in social, economic and environmental dimensions in fringe areas are subsequently due to deficiencies in legislation, planning and governance (ORF, 2022). Fragmented governance between the rural and urban areas leads to weak coordination, while conventional planning tools such as master plans are rigid and static, these fail to adapt to the rapidly changing socio economic and spatial dynamics of fringe areas (UN-Habitat, 2016).

Furthermore, each fringe area exhibits distinct level of development potentiality, shaped by locational advantages, accessibility, ecological sensitivity and socio-economic profile. "development potentiality" refers to the inherent capacity of fringe areas to achieve sustainable growth and improvement across various dimensions, including economic, social, environmental, and infrastructural aspects. (Halder et al., 2023; Paul, 2019; Butt, 2017). Due to this "One size-fits all plans are in-effective for managing peri-urban areas (Cattivelli, 2021). Hence for managing growth of fringe areas Contextual and adaptive planning approach is needed that responds to the dynamic conditions of fringes. In the Budget 2024-25 the need for collaborative planning for urban areas and fringe areas with infrastructure focused strategies has been highlighted (GOI, 2024). These initiatives also resonate with the SDG 11.A, that aims to strengthen national and regional development planning for fostering positive linkages between urban and fringe areas.

In totality, considering the dynamic nature of fringe area development and the transitions in its growth trajectories, it becomes crucial to considering planning approaches that respond to local contexts and development potentiality at the same time capable of adapting to emerging development patterns.

#### 4. Development potentiality of fringe areas

The “development potentiality” is the inherent capacity of fringe areas /peri urban area to achieve sustainable growth and improvement across various dimensions, including economic, social, environmental, and infrastructural aspects. (Paul, 2019; Butt, 2017).The study of the development potentiality acts as the basis for assessing achievements/ prospects in various dimensions .It is a cumulative expression that is determined by combined performance of selected parameters. (Paul, 2019). The scrutinization of the potentiality also enables in comparison of a fringe area with other areas in a region. (Halder, Mukhopadhyay, & Paul, 2023)Addressing the various parameters of Development Potentiality,help in reducing disparities and leads to inclusive and balanced development (Paul, 2019).

Fringe areas , functioning as transitional areas between urban cores and rural hinterlands ,exhibit immense potential for planned urban expansion and infrastructure development . These areas act as a pressure valves for urban cores. The degree of development potentiality varies due to parameters.Overall, the variation in fringe area potential arises from diverse spatial , institutional and infrastructural determinants, including proximity to core ,connectivity and service access.

#### 5. Why Adaptive planning Framework?

Distinct Fringes of a same city may exhibit different levels of development potentiality depending on various Parameters. An adaptive framework allows strategies to be tailored to these development potentials, enabling context-specific interventions (UN-Habitat, 2016; OECD, 2015). The adaptive framework is crucial for managing the growth of fringe areas (peri-urban ) because of the dynamic, complex, and unpredictable nature of fringes. (Allen, 2003; UN-Habitat, 2016).

**Figure 2: Need for Adaptive Planning Framework**



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Urbanization in the tier-II cities has led to uncertain and diverse Fringe growth , where as the conventional planning tools fail to manage spatial , infrastructural and the socio-economic conditions . The world cities Report highlights that the transitions in fringe areas are uncertain and demand iterative and adaptive planning approaches (UN-Habitat, 2022). Similarly the Urban-Rural linkages guiding principles advocate the need for adaptive planning and governance to bridge down the urban-rural planning gaps. It can be summarized that the uncertain growth dynamics of the fringe areas demand a flexible and iterative adaptive planning framework for growth management of fringes.

## **6. Literature Insights**

The literature has been segregated into the following heads for the gap identification, these heads are :

- Review of Existing frameworks and Policy
- Identification of Issue of Fringe Area
- Review of difference in LOS of Urban and fringe Area
- Fringe area Development Strategies
- Review of Top-Down Approaches
- Defining Development Potentiality

### **5. 1. Review of Existing frameworks and Policy**

Existing global and regional frameworks such as New Urban Agenda(UN-Habitat), Urban-Rural Linkages framework and EU Cohesion policy and national level instruments like statutory green belts and state growth management programmes highlight the need for integrated territorial development , but are mainly non-adaptive to dynamic nature of the fringe areas. The reason behind their non-adaptive nature is dependency on static policy parameters and broad spatial hierarchies, often overlooking the transformations in fringe areas. The national Urban Agenda NUA and related frameworks emphasize integration of fringe and urban areas but remain weakly translated into institutional mechanisms , resulting in variable results (Un-Habitat, 2019). Majorily the frameworks and policies are non-binding , city-centric or designed around static spatial boundaries that fail to capture the fluid and transitional nature of fringe areas.Their implementation is constrained by weak translation into statutory instruments and limited emphasis on transitional rural-urban linkages.

Adaptive policy mechanisms such as review based UGB(urban Growth boundaries), Florida's evaluation and appraisal review (EAR) and Transfer of development rights(TDR) have been used in US ,these represent a shift towards flexibility and responsiveness in growth management. These approaches incorporate feedback and periodic review mechanisms and utilization of potential still the implementation mainly depends upon institutional capacity and coordination. Overall , major gaps in the existing policy are rigidity and inflexibility of policy tools , lack of responsiveness to spatial and demographic shifts , inequitable implementation , poor inter-jurisdictional coordination and absence of feedback mechanisms for improvement. These shortcomings justify the need for adaptive planning framework that integrates real time monitoring for managing fringe growth effectively.Such a framework will align with the principles of adaptive governance and resilience based urban planning (Allen, 2010).

### **5. 2. Identification of Issue of Fringe Area**

The literature on peri-urban and fringe areas highlights complex challenges emerging from rapid urban expansion and unplanned development. Studies emphasize that the growth of fringe areas is characterised by infrastructural deficiencies , unplanned settlements and

absence of integrated planning frameworks (Aijaz, 2022) . These deficiencies hinder ability of existing planning mechanisms to respond effectively to dynamics of fringe areas.

A recurring focus across the literature is the lack of adaptive and context-specific planning mechanisms capable of addressing the diversity of fringe development. It has been highlighted in the literature that rigid, top-down planning systems fail to respond to the socio-economic dynamics and environmental challenges , leading to ineffective policy implementation (Simon, 2023). Studies reveal that the urban expansion often occurs without socio-economic or ecological consideration , results in service disparities , livelihood insecurity and environmental degradation (Varkey, 2015). This reinforces the necessity for planning models or frameworks that integrate livelihood needs , infrastructure planning for equitable growth management of fringes.

Overall the four major issues are the inflexible planning systems , fragmented policies , weak regional regulatory mechanisms and lack of adaptive and context specific planning models. These issues reduce the capacity of planning institutions for manage irregular fringe growth effectively. Addressing these gaps requires a adaptive planning framework. The framework should focus on adaptability , inclusivity , cross-sectoral coordination to manage the evolving dynamics of fringes (Aijaz, 2022).

### **5. 3 Review of difference in LOS of Urban and fringe Area**

The literature highlights disparities between urban cores and adjoining fringe areas in terms of infrastructure provision, accessibility and quality of life . It has been identified that service levels tend to decline as one moves away from the city centre and the fringe residents experience the deficiencies in infrastructural facilities , economic wellbeing and social environments (Faal, 2016). The lack of integrated territorial planning approaches and community participation exacerbates the service delivery gap between urban and fringe areas (J, 2008). The studies underline that the absence of holistic planning frameworks contributes to unbalanced growth and neglect of fringe needs.

Another major issue observed in the literature is ambiguity regarding infrastructure governance and lack of anticipatory mechanisms. The accessibility and infrastructure quality consistently decline with increasing distance from the municipal limits. Infrastructure in fringe areas is often inadequate and outdated due to absence of participatory frameworks that can adapt to evolving urban dynamics . Fringe areas are also often neglected in city-infra and sanitation programs , resulting in inequities in service delivery (Kana, 2022).

The key gaps identified are service disparities , infrastructure deficits , ambiguity in infrastructure governance which primarily due to absence of dynamic and adaptive frameworks. Consequently the research underscores a need for adaptive planning frameworks that can bridge service and infrastructure gaps between urban and fringe areas.

### **5. 4 Fringe area Development Strategies**

Recent studies of Fringe development emphasize the need for adaptive , context specific planning frameworks to address the rapid transitions at urban boundaries. Multi-scalar and adaptive governance and planning are essential to tackle the complex and risks of uncoordinated urbanization and environmental vulnerabilities (Parthasarathy, 2020) . Several scholars have noted the inadequacy of conventional planning approaches in addressing the dynamic nature of fringe areas. The current planning tools are static and fragmented , lacking flexibility to adapt to shifting socio-spatial conditions (Halдар, 2024). Case studies from Rourkela and other Indian cities demonstrate that peri-urban development requires a balance between strategic planning and governance to ensure inclusivity . These

findings basically advocate for integrated and flexible urban-rural frameworks that respond dynamically to local conditions.

International scholars argue that fringe development must adopt differentiated and adaptive planning mechanisms that include spatial, ecological and economic characteristics (Rawns, 2011) . It can be basically summarized one-size-fits-all planning models are ineffective in managing the growth of fringe areas. Instead , an adaptive planning framework incorporating multi-scalar coordination , feedback loops and phased interventions based on the development potential is critical to achieve sustainable urban development.

### **5. 5 Review of Top-Down Approaches**

Existing top-down planning frameworks lack effective regional-to-local integration, adaptive tools, and multi-level coordination, resulting in limited applicability for dynamic local contexts and peri-urban growth management. Institutional fragmentation at metropolitan levels often results in a lack of regulatory frameworks for fringe development (Woltjer, 2014).It can be emphasized that adaptive planning mechanisms cannot be effectively implemented without supportive top-down policy environments.

Recent contributions also stress that the success of adaptive frameworks depends on multi-scalar coordination mechanisms that link strategic policies with actionable implementation . Summarizing the literature underscores the need for Adaptive framework that coordinates local strategies with local implementation , ensuring coherence , responsiveness and inclusivity in fringe area planning .

### **7. Case Studies**

The fringe areas of Mexico , Africa , Australia , Kenya and India have been studied as the case studies. It can be inferred that the governance and planning challenges that constrain adaptive urban management . In the case of Mexico , local governance structures are often insufficient for managing the complexity of fringe growth , due to institutional fragmentation and lack of participatory mechanisms (Torres Lima, 2022).While in the context of African cities , planning is static and centralized , with limited flexibility to respond to dynamic socio-spatial changes (Chrisa, 2010).

In the case of South East Queensland,identifies significant implementation gaps within regional strategic growth management models . Comparable limitations are noted in Kenya, such as weak enforcement of policies and neglect of fringe areas with urban and rural frameworks. The Case of Chennai , as discussed by author , demonstrates that frameworks such as Peri-cene provide valuable guidance for adaptive planning, their implementation remains limited due to weak institutional framework. Evidences suggest that the effectiveness of planning frameworks depends on cross-sectoral coordination and territorial linkages .

It can be summarized collectively reveals common patterns such as fragmented and static tools , poor coordination between planning levels and inadequate planning responses , which further underscores the need for an adaptive planning framework that is iterative and participatory to address dynamic nature of fringe growth.

### **8. Analysis**

A review of the existing literature and policy frameworks reveals that several studies have highlighted service disparities , planning models and policy interventions in the fringe areas , the existent approaches are static , fragmented and urban centric . Current frameworks at global and national levels , tend to emphasize territorial development but lack mechanisms to adapt to transitional nature of fringes.Study of the tier II cities indicate that fringe areas exhibit high development potentialitydriven by informal land transitions ,population influx

and Functional diversification. Despite these characteristics , most planning instruments continue to rely on top-down approaches and uniform strategies that do not address the local context and evolving patterns of fringes. The review indicates a need to evolve planning approaches that are more responsive to development potentiality and capable of adapting to the dynamic processes in fringe areas.

**Table 1: Analytical summary of Gaps in existing Planning approaches**

| S. No. | Research Gap Area                                                                         | Observation                                                                                                                                                          | Gap Identified                                                                                                                                                  |
|--------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | <b>Insufficient Integration of Infrastructure and Service Delivery in Planning Models</b> | Infrastructure and service delivery are emphasized, but <b>integrated models aligning these with land use and demographic shifts are lacking.</b>                    | No planning models effectively <b>bridge the urban-fringe LoS (Level of Services) gap</b> using adaptive or context specific strategies.                        |
| 2      | <b>Governance Challenges in Peri-Urban Areas</b>                                          | Governance remains fragmented; studies from Mexico and Kenya highlight <b>institutional silos</b> , weak decentralization, and limited community participation.      | Need for adaptive, multi-level governance models that address the hybrid and transitional nature of fringe areas.                                               |
| 3      | <b>Underutilized Development Potential</b>                                                | Fringe areas have high development potential but are overlooked or <b>underutilized due to fragmented land use policies.</b>                                         | Lack of systematic methods to identify, analyze, and <b>prioritize development potential in fringe areas</b> .                                                  |
| 4      | <b>Weak Urban–Peri-Urban Linkages</b>                                                     | Urban planning often excludes fringe areas, leading to <b>inadequate services, disconnected infrastructure, and fragmented development.</b>                          | <b>Inadequate models and strategies to integrate fringe areas</b> into holistic city-region or metropolitan planning.                                           |
| 5      | <b>Lack of Contextual and adaptive Framework</b>                                          | Most <b>planning tools are rigid and do not accommodate the fluid</b> , fast-changing characteristics of fringe growth.                                              | Critical need for a context-sensitive, adaptive planning framework responsive to dynamic fringe realities and potentiality shifts.                              |
| 6      | <b>Weak Institutional Integration and Governance Mechanisms</b>                           | Studies suggest improvements in governance, decentralization, and multi-stakeholder engagement but fail to explore the necessary operational structures and dynamics | Insufficient research on the operational structures, power dynamics, and institutional coordination mechanisms for inclusive governance and planning mechanism. |
| 7      | <b>Inadequate Public Participation</b>                                                    | Community voices and local stakeholders <b>are often excluded from peri-urban planning</b> , limiting legitimacy and contextual fit of decisions.                    | Weak participatory mechanisms and civic engagement processes in fringe planning.                                                                                |
| 8      | <b>Gap in Monitoring and Evaluation Tools</b>                                             | While policies advocate strengthening spatial planning, there is <b>a gap in developing tools to evaluate the effectiveness of implemented strategies.</b>           | Need for research focused on developing monitoring mechanisms and performance indicators for assessing fringe area development strategies.                      |
| 9      | <b>Real Estate-Development Potentiality Disconnect</b>                                    | Real estate models oversimplify causality; they ignore <b>informal markets, tenure complexity, and phased investment lags.</b>                                       | Lack of <b>real estate planning tools</b> grounded in dynamic development potentiality and adaptive land suitability analysis.                                  |
| 10     | <b>Static Top-Down Policies without Local Linkages</b>                                    | Indian and global policies (Kerala, Odisha, NUA, EU Cohesion) lack regional–local synergy and are not scalable/adaptive to fringe variations.                        | <b>Urgent need for regionally anchored top-down approaches with flexible, local-level implementation pathways.</b>                                              |

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## 9. Conclusion

The review of the literature , case studies collectively highlights that the planning and governance of fringe areas in India is constrained by rigid , top-down and city-centric approaches that fail to respond to dynamic nature of fringes. The research highlights that existing urban planning mechanisms fail to integrate infrastructure delivery , service provision and governance mechanisms at the fringe areas resulting in fragmented and inequitable development. Furthermore there is absence of of adaptive and context specific frameworks which has perpetuated disparities in Infrastructure access in the fringe areas. This gap basically calls for a context-sensitive , adaptive planning framework that aligns with principle of inclusivity and resilience.

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