

Legal frameworks for sustainable urban development: Analysing the efficacy of zoning regulations in promoting environmental conservation

Sapna Bansal^{1,*} and Smita Pandey²

¹Assistant Professor, Symbiosis Law School, Pune, Symbiosis International (Deemed University), Maharashtra, India

²Associate Professor, Jharkhand Rai University, Ranchi, Jharkhand, India

Abstract Urbanization poses significant challenges to environmental sustainability, necessitating effective legal frameworks to balance developmental needs with resource conservation. This research aims to investigate the impact of zoning regulations on sustainable urban development, focusing on their effectiveness in promoting environmental conservation. The study will analyze case studies from different urban centers, examining the legal mechanisms in place, their enforcement, and their outcomes in terms of environmental protection. Key aspects to be explored include land use planning, waste management, and green space preservation and use of renewable energy within urban areas. The research will assess the strengths and weaknesses of existing legal frameworks and propose recommendations for enhancing the integration of environmental considerations into urban development policies.

1 Introduction

According to the 2019 Ministry of Health and Welfare report, India's urban population will increase significantly by 2036 and India is currently one of the largest urban systems in the world. The unplanned expansion of cities is a problem to poor section of society, biodiversity and to economy too. The need for planning and management of cities was direly felt during Covid-19 revealed the dire need for planning and management of our cities, emphasising on the health of citizens. There are issues such as shortage of serviced land, water shortage, traffic congestion, air pollution, urban sprawl, etc. results of unplanned cities and government framework [1].

1.1 Research Question

- How do zoning regulations contribute to or hinder sustainable urban development?
- What are the key legal mechanisms in place for environmental conservation within urban areas?
- How effective is the enforcement of zoning regulations in promoting resource management and environmental protection?
- How can legal frameworks be improved to better address the challenges of urbanization while prioritizing environmental sustainability?

1.2 Methodology

The research used a comparative case study methodology, examining several urban centers with various zoning regulations and sustainable development approaches. Data are collected through literature reviews, interviews with key stakeholders (government officials, planners, environmental activists) and on-site observations. Benchmarking is done to identify trends, challenges and best practices.

1.3 Significance

The results of this research will provide valuable information to decision-makers, planners and lawyers seeking to improve the effectiveness of legal frameworks in promoting sustainable urban development. By understanding the strengths and weaknesses of existing zoning bylaws, stakeholders can work to develop more comprehensive and adaptable legal mechanisms that balance development needs with long-term environmental conservation objectives.

2 Zoning Regulations and sustainable urban development

A plain and non-complex law-making aid to advance property rights and save the clients from inferior architectural forms and paves way in more capital

* Corresponding author : bansalsapna78@gmail.com

creation in the nation. The builders don't bother to take a permission if the in case the methods are too complex and expensive. About 60–80% of construction projects are carried out without the necessary permits and permissions in some developing nations. Construction regulations play a significant role for the builders to determine the location of their business. Zoning laws often are considered by investors to determine the best site for requesting a construction permit [2]. The zoning regulations also empower the local authorities to justify the approvals or rejections of construction permits. Zoning is a crucial component of building regulations as it sets restrictions on the placement and usage of specific building types in a given city. An updated zoning system is very crucial to encourage cooperation between the organisations for successful urban planning and to ensure efficiency in issuing the construction permits. To ensure the support of all social groups, the community must be involved in the consultation process. Zoning plans are detailed maps of land use management that include rules for how land should be used, preserved, and arranged in terms of regions and physical settings. The municipal body will approve zoning plans; however, they may be created by public and, in some circumstances, private groups. The intent to provide more detail on zoning plans as construction progresses is key to knowing the accuracy of any zoning plan. It is mandatory to establish an appropriate zoning plan before approving any construction work. The municipality has the discretion to include a clause for zoning plans in future cases. The municipality has a duty to consider whether or not zoning plans are necessary when developing urban planning policy and developing an urban master plan. The plan summary including the objectives and its impact should be there in any zoning plan. Proposals that might significantly affect the environment or community should be described together with a separate assessment that explains its implications similar to the process of an environmental impact assessment. Future land use in the city must adhere to the zoning plan that has been put into place. This will ensure compliance with the zoning plan for any future events, with exceptions. If an application for construction conforming to the zoning plan is filed, it will only be approved if the project complies with the requirements of the plan and the application [3].

3 Why are zoning regulations needed?

Zoning is essential for urban planning and local development. Zoning facilitates to make the land available to all, be it for an individual or for public use in sufficient amount and hence provides the best

utilization of urban land, at the right time, and at fair prices [4]. The Apex Court in *Delhi Pradesh Citizen Council Vs Union of India, 2006*,² pinpointed certain guidelines to be complied with in case of the certain type of activities restricted to be held in residential areas. These directed not to have a banquet hall in the residential area, any transaction or activity including hazardous, toxic, explosive incompatible, or polluting goods or technique, retail shops selling liquor, construction materials, automotive repair shops, bike rickshaw repair, tire solving, re-treading, and battery charging are prohibited. Architects, chartered accountants, doctors, and attorneys are the exceptions to the direction of not carrying out technical practices. Even these exceptional practitioners are not allowed to carry on any practice more than 50% of the permitted coverage in residential premises. This is evident from the above judgement that judiciary has always been strict but the execution of the same is still to be carried out properly.

4 Zoning laws in India

There is diversity of laws in different cities. Land-use legislations in India are generally managed by a combination of both national and state-level laws due to 'land' being subject matter under concurrent list as per the Indian Constitution. This implies the right of both the centre and state governments to adopt land use and zoning rules within their respective domains [5]. Zoning provides the permissible use of land for specific type of operational and development purposes on a specific area. This is the duty of the Municipality authorities to divide the districts and neighbourhoods as per the master plan. The objectives are to preserve certain resources, lower noise levels, protect locals' right to live there, and promote economic development. Functions related to land use planning are carried out by various government agencies. Zoning regulations may also control the specifics of construction in a certain neighbourhood. The Rural Development Ministry introduced a draft National Land Utilization Policy to ensure optimal land use by adopting policies based on suitable land-use planning and management in 2013.

5 Why are these laws important?

The municipality can prohibit the commercial activities to be carried on the residential spaces or to a particular area of the city. These zones may cause disputes in case the locals are not happy with such designated usage of a particular area. Zoning regulations may also restrict the number of floors that

² *Delhi Pradesh Citizen Council Vs Union of India, 2006*, Law (SC), 2006-8-125, SC 06

can be constructed in an area [6]. The high-rise buildings may be not allowed to be constructed in specific areas to protect the interests of neighbouring residents. Zoning is now done in a holistic manner because of the shortage of available land in urban areas. Therefore, any developments “including those allowed in primary residential” such as banks, stores, etc. are permitted in a mixed residential zone. Additionally, zoning restrictions may outline a location’s maximum building height, the presence of green space, the density of structures, and the kinds of businesses that may be allowed to operate there.

6 Problems encountered by zoning regulations

Similar to other regulations, zoning also have their share of difficulties, such as restrictions on the government's ability to manage land use, some of which may serve as grounds for challenging the regulations [7]. Zoning regulations must be reasonable in light of all relevant considerations, including the municipality's needs, the object of the restraints, the land's location, size, and physical attributes, the neighbourhood’s character, and the impact on the property's value. Zoning is predicated on the idea that it benefits all if implemented in compliance with a detailed plan [8]. The land zoning for private interests is unquestioned, and exclusivity restrictions are prohibited. Only when the government has a compelling interest that cannot be served otherwise can racial or religious classifications be upheld. There are zoning appeal boards which are quasi-judicial authorities to solve the issues. They hear and resolve as per the civil procedure and they are subject to judicial review. The idea to challenge the zoning requirement is not advisable considering a strong system of zoning laws along with appellate authorities to hear and decide the matter. The zoning is done with the aim to segregate the municipality into residential, commercial, and industrial districts (or zones), which usually are separate from one another, with the use of property within each district being reasonably uniform. There can further be some more detailed restriction including- specific requirements as to the type of buildings allowed, location of utility lines, restrictions on accessory buildings, building setbacks from the streets and other boundaries, size and height of buildings, number of rooms [8].

7 Regulation of development

Land-use regulation is not only restricted to control the existing land use but it also serves the purpose to guide the future constructions as well. Municipalities usually create a master plan for the land and that is then put into effect by doing zone planning. Future

builders should also refer to the master plan while planning their sub-divisions. Recently, a trend has started to develop a regional plan rather than developing a city plan because any city planning also have some impact upon the neighbouring cities, occasionally in conflicting and contradictory ways. So, the regional planning offers one comprehensive vision and one set of regulations for a particular region avoiding such conflicts.

8 Limits on zoning regulation

Zoning and land-use laws are sometimes contentious because they limit property owners' ability to utilize it how they otherwise could (and frequently wish to). It's also challenging to pinpoint exactly what land use regulations governments may and cannot impose. As per the various decisions taken by courts, a zoning regulation can be implemented if it is reasonable and not capricious, if it has a reasonable and significant relationship to the public's health, safety, comfort, morals, and overall welfare, and if the methods used are reasonably necessary to achieve the goal.

9 Challenges to zoning regulations

There are multiple controls over the power of the municipality to control and regulate the land use which can anytime be challenged [9]. Zoning regulations must be fair in light of all relevant facts, including the municipality's needs, the restriction's intended use, the land's location, size, and physical attributes, the neighbourhood’s character, and the impact on the property's value. Zoning is justified by the idea that it advances the general welfare of the community in line with an all-encompassing plan. Individual property pieces that have been designated differently from adjacent properties, mostly for the owner's personal benefit, may be challenged if there isn't a valid justification to set the zoned parcel apart from the surrounding parcels. A categorization that discriminates against a racial or religious group can only be sustained if the state shows an overriding interest that cannot be met in any other manner. Restrictions based purely on race or occupancy of land are prohibited.

10 Non-Government restrictive covenants and easements

The builders sometimes may also impose restrictions in their development plans, usually via the use of restrictive covenants and easement [10]. Restrictive covenants are clauses in a deed that restrict and forbid specific uses of the property. Land developers usually employ restrictive covenants to specify minimum home sizes, setback distances, and aesthetic standards intended to improve the neighbourhood.

The right to use someone else's property for certain reasons is known as an easement. These days, easements are being utilized for public goals like conservation and open space preservation. An easement, for instance, may make it illegal for someone to construct on a certain piece of land, keeping it undeveloped and protecting an open green area for the benefit of all people [11].

11 The role of zoning regulations in urban development

Urban development is a complex and multifaceted process that shapes the way our cities grow and evolve. One of the key tools that cities use to manage this development is zoning regulations. Zoning regulations are a set of rules and guidelines that dictate how land can be used and what types of structures can be built in different areas of a city. These regulations play a crucial role in shaping the physical, social, and economic landscape of urban areas. In this article, we will explore the role of zoning regulations in urban development, highlighting their key points and implications.

11.1 Land Use Control

Zoning regulations primarily serve as a means of controlling land use. They divide a city into different zones, each with specific allowable land uses. For example, residential zones may permit only housing, while commercial zones may allow retail and business activities. This separation helps prevent incompatible land uses from coexisting in close proximity, which can lead to conflicts and negatively impact quality of life.

11.2 Density and Building Height Restrictions

Zoning regulations often include guidelines on the density of development and building height restrictions. These factors can significantly impact the character of a neighbourhood [12]. For instance, low-density zones may encourage spacious single-family homes, while high-density zones can promote apartment buildings and mixed-use developments. Building height restrictions can maintain the aesthetic appeal of an area and ensure that new developments do not overshadow existing structures.

11.3 Urban Planning and Design

Zoning regulations also play a crucial role in urban planning and design. They can influence the layout and aesthetics of a city, including the placement of parks, green spaces, and transportation infrastructure. Properly designed zoning regulations can create

walkable, well-connected neighbourhoods, making cities more accessible and attractive to residents.

11.4 Economic Development

Zoning regulations can have a significant impact on a city's economic development. By designating areas for commercial, industrial, or residential use, these regulations can help attract businesses, generate jobs, and increase property values. However, they must strike a balance between encouraging economic growth and maintaining the quality of life for residents.

11.5 Affordable Housing and Inclusivity

Zoning regulations can also affect housing affordability and inclusivity. In some cases, overly restrictive regulations can limit the construction of affordable housing units, contributing to housing shortages and rising prices. Cities must carefully consider how zoning rules affect housing options and take steps to ensure that everyone has access to safe and affordable homes.

11.6 Environmental Impact

Sustainable urban development is a global priority. Zoning regulations can influence the environmental impact of cities by encouraging green building practices, protecting natural habitats, and promoting energy-efficient designs. Sustainable zoning regulations can contribute to reduced carbon emissions and a healthier urban environment.

11.7 Community Engagement

Zoning regulations are often shaped through a community engagement process. Citizens, neighbourhood associations, and developers are often involved in discussions about the rules that will govern their area. This involvement can lead to more responsive and community-friendly regulations, fostering a sense of ownership and cooperation in urban development.

12 Urban planning methods adopted in USA to reduce environment pollution

12.1 Land use prohibition for specific purposes

Some usages of land leads to environmental pollution. To stop the misuse and prohibit pollution, it is required for those specific rules to be banned. The laws on prohibition and banning are majorly

manifested by municipalities through municipal laws. Some examples of such laws in USA are:

- Seattle through its laws resolved to commit itself to its goals of Paris Agreement on climate change and environmental impact goals in 2017 [13].
- Expansion of terminals for crude oil was banned in Baltimore in 2018.

12.2 Municipal Laws for Land usage

Municipalities are major forces alongside the state government to emerge effective policies on land misuse that triggers environmental pollution. Some examples:

- SF EJ program of San Francisco awarded those communities and NGOs which were addressing the issue of health, air quality efficient renewable energy, in 2000.
- Fulton County was involved in an innovative initiative whereby they encouraged community participation in education and awareness. Low income population were encouraged to participate in decisions related to zoning and land usage in 2010.
- New York actively participated in the zoning laws for reducing and mitigating pollution effects by passing two laws which are :
 - ✓ *Environmental impact of zoning and land use through local law number 60.*
 - ✓ *Law number 64 which is a local law called Interagency Working Group to hold hands and guide agencies on the environmental impacts of zoning.*

12.3 Process of environmental review

To regulate the development of their jurisdictions, the process of environmental review is considered to be a powerful way for local municipalities. Many already have their regulations to review all the plans and expansion and growth of new ventures. The 2004 amendment passed by Fulton County, GA, requires environmental impact reports. To perform an environmental study analysis, a use permit and rezoning approval are needed, following this zoning resolution. An ordinance passed by San Francisco in 2008 necessitates power plants to ask for authorization of conditional use from the zoning or planning authority. Some more ordinances on similar lines were passed by Cincinnati in 2009, Camden, NJ in 2015 and Newark NJ allocating powers to urban planning authorities to review and reject or approve the upcoming projects [13].

12.4 Proactive Planning

Cities and states envisage future development projects and work toward that vision through proactive planning. In 2013, Commerce, CA implemented the Green Zones Policy, focusing on reduction, revitalization, and reinvesting. In 2015, LA County launched the Green Zones Program to improve public health through land-use policies,

community engagement, and prevention efforts. In 2017, Minneapolis designated green zones for public health and economic development.

12.5 Land Use Measures in Targeted Manner

The mitigation measures are effective if conducted in targeted manner. The noxious use reduced in phased manner and the mitigating factors implemented in targeted manner have impactful appearance. Examples:

- Huntington, CA implemented the EIA facility for buildings in residential areas and its proximity in 2001. This was done with the aim of monitoring health of citizens.
- Amortization Ordinance was implemented in National City, CA for non-confirming usage termination for recovering their investments, in 2006.
- Maximum community participation and equal environmental protection was ensured by laws in Washington DC in 2009.
- All equipment, not only vehicles, were asked to get pollution check and impact registered in city of Minneapolis in 2016 [13].

12.6 Enhanced Public Health Codes

Public health is highly impacted by pollution and has impact on various organs of body. To mitigate this impact various health codes have been administered in the country like noise, odour, dust etc [13].

13 Conclusion

Zoning is a technological method to regulate the pollution control mechanism of any area particularly urban area. Zoning is now considered as a part of town planning and planned cities. Although as discussed, many regions have their own zoning systems and laws, reason being different geographical topography, still they all have one goal of planning and environmental pollution mitigation because of development, Sustainable development goals have also prioritized zoning for development but in a sustainable manner. This technology has far reached impact and a major requirement of SDGs [13]. The zoning laws of various regions have concentrated not only on development but also on health concerns of its citizens and environment. The approach is ecological as compared to anthropologic [13]. We can see how zoning is essential to maintaining a nation's growth. Planning is influenced by zoning in every city. A town or municipality's future can be shaped by this technology by creating special facilities or making the greatest use of the available space. The process of zoning is the initial stage in evaluating any construction or development proposal. Zoning laws vary greatly from area to area, but generally speaking, their purpose is to separate residential from commercial land. These regulations will forbid the construction of any form of enterprise,

including processing facilities and oil refineries, in residential areas. Thus, it becomes essential to comprehend the land's zoning rights. The zoning rights will be beneficial for farmers as well [14]. It appears that India must follow the UK's lead and transition to decentralized, strategic urban planning. Urban planning must take into account the new and evolving demands. To meet the demands of both systemic and geographical shift, the planning framework needs to be dynamic as well. "In order to promote inclusive urbanization, the government must consider urban planning development as a phase of value creation through the market, giving ample space for value capture and recycling" [13]. In India, the method of allocating land usage focuses on land acquisition for public purposes (roads, parks, utilities etc.) [13]. There is a displacement of property today, the allocation of land is coerced by the government through the Land Acquisition Act of 1894 for 'public purposes.' Land reform is required, particularly the demand for a financial regularization policy based on redistribution rather than displacement, excess land should be allocated for strategic reasons. At the master plan level, land is purchased which is implemented in various states. Certain states also implement the land pooling process (area plan) in addition to the development plan (which is land use, legislation and particular projects) for the towns. In order to optimize social welfare, harm must be avoided by separating the land uses that are incompatible with each other and simultaneously doing good by encouraging the promotion of the land.

References

1. M. U. Babu, S. Nautiyal, Historical Issues and Perspectives of Land Resource Management in India: A Review. Institute for Social and Economic Change (2013). https://www.isec.ac.in/wp-content/uploads/2023/07/WP-309-Umesh-Babu-and-Sunil-Nautiyal_final.pdf
2. R. Bandyopadhyay, "Land System in India: A Historical Review". Economic and Political Weekly, 28(52), A149-A155 (1993). <https://doi.org/10.1093/acprof:oso/9780198089544.001.0001>
3. R. J. Burby, R. E. Deyle, et al. "Creating Hazard Resilient Communities through Land Use Planning". Natural hazards review, 1(2), 99-106. (2000). [https://doi.org/10.1061/\(ASCE\)15276988\(2000\)1:2\(99\)](https://doi.org/10.1061/(ASCE)15276988(2000)1:2(99))
4. DDA. "Master Plan for Delhi". (2021). Retrieved from <http://52.172.182.107/BPAMSCClient/seConfigFiles/Downloads/MPD2021.pdf> on February 2, 2024.
5. J. P. Powelson, Land tenure and land reform: Past and present. Land Use Policy, 4(2), 111-120 (1987). [https://doi.org/10.1016/0264-8377\(87\)90045-7](https://doi.org/10.1016/0264-8377(87)90045-7)
6. M. Duncan, Land Use Planning Perspectives. J. ASFMRA, 41(1), 59-67. (1977). https://www.unccd.int/sites/default/files/2018-06/1.%20Land-Water%2BNexus_A_M_Duda.pdf
7. Government-of-India. The Gazette of India. Government of India. (2013) (February, 2024). https://bhoomirashi.gov.in/showfileF.asp?link_id=2&lang=1
8. Government-of-India. "Pilot Project on Land Use Planning and Management". (2023) (February, 2024). <https://dolr.gov.in/programme-schemes/giz-led-pilot-land-use-planningand-management-project>
9. Government-of-India. "Programme Details". (2023) (February 2024). <https://dolr.gov.in/en/programme-schemes/dilrmp/digital-india-landrecordmodernization-programme> |
10. H. Grover, Z. Tang, et al. "Incorporating Climate Change Mitigation and Adaptation into Local Land Use". Land Use: Planning, Regulations, and Environment. 101-124. Nova Science Publishers, Inc. (2012). <https://www.jstage.jst.go.jp/article/irpspd/11/3/111/article-char/en>
11. J. Gupta, Land Use Planning in India. J. hazard. Mat. 130(3), 300-306 (2006). <https://doi.org/10.1016/j.jhazmat.2005.07.006>
12. V. Jain, Examining the Town Planning Scheme of India and Lessons from Land Readjustment in Japan. ADBI Working Paper Series. (2019). <https://www.adb.org/sites/default/files/publication/539736/adbi-wp1037.pdf>
13. C. Millman, "How Zoning Laws Can Help Reduce Pollution", Journal of Millman National Land Services" (2021) (April, 2024). <https://millmanland.com/industry-news/how-zoning-laws-can-reduce-pollution/#>
14. S. Pandey, "Women and Gender Bias: With Specific Reference to Women Cultivator and Farmers," Bioscience Biotechnology Research Communications (2020) (March, 2024). <http://bbrc.in/bbrc/wp-content/uploads/2020/12/Volume-13-No-10-Special-Issue-2020-Combined.pdf>
15. S. Bansal, "Testing the adequacy of Telecommunication Laws and policies in context of Human health", International Journal of early childhood Special education, 14(3), 1710-1717 (2022). <https://doi.org/10.9756/INT-JECSE/V14I3.201>