

Transforming Land Acquisition for Infrastructure Development: A Comparative Study of CIDCO's NMIA Model and International Approaches

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Abstract— Infrastructure development is a key catalyst for economic growth, especially for developing countries like India, which aspires to become a \$5 trillion economy. Among the many challenges faced in delivering large-scale infrastructure, land acquisition remains one of the most complex and contentious. Timely and efficient land acquisition is crucial for the successful implementation of projects such as airports, highways, and industrial corridors. This paper examines the land acquisition model adopted by the City and Industrial Development Corporation (CIDCO) for the Navi Mumbai International Airport (NMIA), one of India's most ambitious infrastructure ventures. CIDCO's innovative land pooling and participatory development approach has been widely recognized as a relatively successful model in a context where land acquisition often triggers legal disputes, delays, and resistance from affected communities. By analysing this model in detail and benchmarking it against international best practices, the study identifies its core strengths—including stakeholder engagement, rehabilitation packages, and transparent processes—while also highlighting areas that require improvement, such as long-term livelihood support and environmental safeguards. The findings offer actionable insights and policy recommendations to enhance the effectiveness, inclusiveness, and fairness of land assembly mechanisms in future infrastructure projects across India and other developing nations. This analysis contributes to the broader discourse on sustainable urban development and equitable growth.

Index Terms— Infrastructure development; Land assembly; Land models; Land Acquisition

I. INTRODUCTION

Infrastructure development is still crucial for economic growth, particularly for developing nations like India that aim to achieve ambitious targets like a \$5 trillion GDP. A fundamental prerequisite for

infrastructure projects, especially major ones like airports, is the timely and effective acquisition of land. However, land purchases in India have historically been beset by delays, disputes, and inadequate compensation schemes. In order to find weaknesses and suggest more effective and inclusive land assembly techniques, this study assesses the City and Industrial Development Corporation's (CIDCO) land acquisition approach for the Navi Mumbai International Airport (NMIA) by contrasting it with global best practices.

1.2 Overview of Land Acquisition in India

A key element of India's conventional land purchase strategy was the Land Purchase Act of 1894, which was eventually replaced by the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act of 2013. Despite improvements in compensation and consent provisions, land acquisition remains contentious due to worries about valuation, displacement, and a lack of stakeholder engagement (Ministry of Rural Development, 2013). In this regard, CIDCO's NMIA model stands out as a noteworthy exception thanks to its creative application of participatory frameworks and land pooling.

The property Acquisition Act of 1894, which was first amended multiple times throughout the years, governed property acquisition for public purposes in India. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (LARR) Act, 2013 eventually took its place and is currently the nation's most important piece of land acquisition law (Nikhil Shukla Dr. Kotaru Sai Charan)

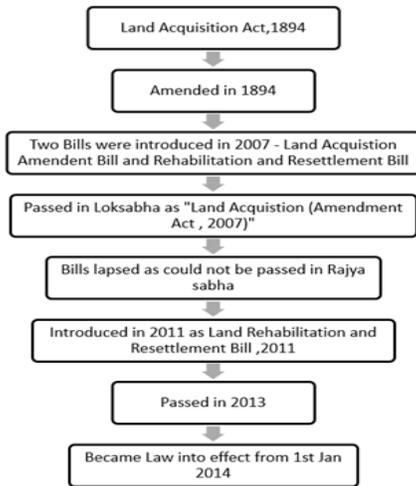


Figure 1: Flowchart showcasing Timeline of Land Acquisition Act, 1894 to LARR, 2013

II. LITERATURE REVIEW

Vulnerable groups are frequently marginalized by traditional land acquisition techniques, which exacerbate spatial inequality and compromise development results. Their study emphasizes the necessity of participatory frameworks, especially in countries that are urbanizing quickly (Payne et al. 2009). East Asian land readjustment as a collaborative approach that has sped up urban growth and decreased legal wrangling without causing mass evictions (Bourassa and Hong ,2003). Betterment levies and infrastructure impact fees are examples of land value capture tools that are used to finance urban infrastructure while fairly distributing the value gains from public investment. India's sparse and frequently uneven use of these instruments' contrasts with these models (Smolka 2013). The universal application of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and Resettlement is hampered by differences in institutional capacity among Indian states (RFCTLARR) Act, 2013. Despite the Act's improvements to consent and compensation clauses, its effects are still unequal, and there is still a shortage of resources for post-acquisition enforcement and rehabilitation (Singh 2020). Indian land purchase laws are criticized for having both fundamental flaws and being progressive. They point out that although compensation has increased, existing disparities are perpetuated since the procedures frequently ignore informal landowners and tenants (Bhan and Jana 2013).

III. OBJECTIVE

In order to suggest more effective, inclusive, and scalable land assembly strategies for infrastructure development in India, it is necessary to assess the land acquisition model used by the City and Industrial Development Corporation (CIDCO) for the Navi Mumbai International Airport (NMIA), compare it with global best practices, and pinpoint areas that require improvement.

IV. RESEARCH GAP

Although the report provides a thorough analysis of CIDCO's land acquisition plan for Navi Mumbai International Airport and compares it to international land assembly models, it also highlights a significant flaw in the models' wider applicability and scalability throughout India. There is currently no study evaluating the potential for national adoption of standardized, codified methods based on locally effective strategies such as CIDCOs. The legal, institutional, and sociopolitical obstacles that hinder the replication of value-driven and participatory land acquisition frameworks in various regional contexts are not sufficiently explored. The study also points out that there aren't enough long-term monitoring and assessment tools to see whether rehabilitation promises—like job and resettlement benefits—can be sustained. Thus, more thorough research is required to close the gap between effective case-specific models and an equitable, enforceable, and globally applicable land assembly policy framework in India.

V. PRESENT STUDY

Methodology Adopted

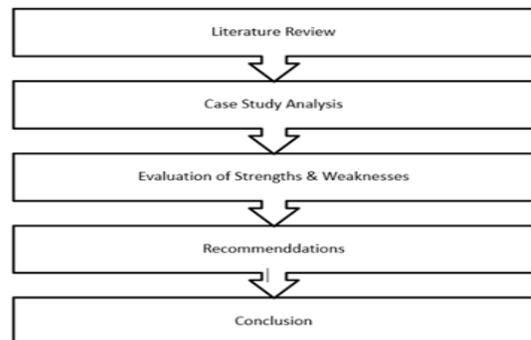


Figure 2: Structure of Methodology

5.1 CIDCO's Navi Mumbai International Airport Land Acquisition Model

For the NMIA project, CIDCO had to acquire over 1,160 hectares of land spread across ten communities. The NMIA concept is unique in that it combined land pooling and negotiated settlement to guarantee impacted communities' involvement. In addition to compensation and other incentives including housing and job opportunities, CIDCO returned 22.5% of the developed property to landowners. The concept prevented legal issues that frequently halt major projects in India and guaranteed minimum displacement. Furthermore, CIDCO created grievance resolution procedures and open lines of communication, which promoted openness and confidence among interested parties (CIDCO Annual Report, 2021).

5.2 Comparative Analysis with International Models

Land acquisition procedures for infrastructure projects differ between countries according to socioeconomic and governance contexts. The land readjustment model in Japan, for example, enables landowners to voluntarily donate their land for the development of public infrastructure in exchange for smaller plots in more developed regions, increasing the land's value and encouraging collaboration (World Bank, 2017). A similar value capture approach is used in the Netherlands, where projects are partially financed by the rise in property prices brought about by public infrastructure (UN Habitat, 2012). The strategy used in South Korea emphasizes prompt dispute resolution and stakeholder participation while combining robust government planning with public-private partnerships and negotiated settlements (Altman, 2010). While CIDCO's NMIA strategy is successful in Navi Mumbai, it may not be easily replicable across other Indian states without legislative or procedural reforms. In contrast to South Korea's or Japan's systems, CIDCO's model is still largely dependent on institutional autonomy rather than a codified national framework, even though it reflects many of the same progressive principles as these international models, most notably its use of land pooling and stakeholder engagement.

5.3 Strengths and Weaknesses of the CIDCO Model

The main reasons CIDCO's strategy was successful were its integrated rehabilitation package, proactive stakeholder engagement, and support from institutional processes at the state level. Its main advantage is that it aligns landowners' interests with those of infrastructure developers, which lessens opposition and the need for legal action. However, scalability issues are brought up by the model's strong reliance on CIDCO's institutional capability. Furthermore, there is still insufficient documentation on problems pertaining to the real implementation of promised rehabilitation benefits, particularly long-term job and resettlement standards.

5.4 Recommendations for Future Land Assembly Models in India

India needs a hybrid land assembly strategy that incorporates financial incentives, participatory planning, and legal clarity, as demonstrated by the NMIA case and global best practices. Standardizing procedures would be facilitated by the national institutionalization of land pooling policies, maybe based on CIDCO's methodology. Furthermore, to guarantee equitable funding and lower the public cost of acquisition, value capture instruments such as impact fees, transferable development rights, and betterment taxes ought to be used. Transparency and accountability could be improved by establishing a specific regulatory body to oversee the land purchase and rehabilitation procedures.

VI. IMPLICATIONS AND BROADER APPLICABILITY OF THE CIDCO MODEL

6.1 Policy and Practical Implications

An important development in India's infrastructure land assembly paradigm is the CIDCO model. Combining land pooling, negotiated settlements, and participatory rehabilitation packages, the model is a strategy based on reaching an agreement rather than using force.

According to Payne et al. (2009) and Medda (2012), inclusive land acquisition approaches in developing nations have a higher chance of producing fair development outcomes and lowering community resistance. This is in line with their suggestions.

The model recommends the following policies

- Institutional autonomy and the ability to oversee land assembly.

- Integrated legal protections to maintain environmental, compensation, and resettlement commitments.
- Coordinated planning for the housing, infrastructure, and urban sectors. Additionally, CIDCO's approach avoids the legal snags that are frequently encountered in forced acquisition, allowing for timely project completion, which is crucial for large-scale projects like smart cities and airports.

6.2 Prospects for Replication Across India

It is possible to replicate the CIDCO model in other states, but this will require the following:

- A strong grievance redressal mechanism;
- State government support and legal flexibility;
- A dedicated planning and development authority; and community trust

Replication may necessitate significant institutional reforms and innovative legislation in governments with limited institutional competence, as Singh (2020) points out. The land pooling strategy used in Andhra Pradesh's Amaravati model has had mixed results; early achievements were tainted by governance errors, suggesting that CIDCO's success was also due to its trust capital and execution efficiency (Reddy & Babu, 2018).

6.3 Integration with Regulatory Frameworks such as RERA

Ensuring post-resettlement housing quality and delivery schedules is one area in which the Real Estate (Regulation and Development) Act, 2016 (RERA) might be extremely important

- Keeping an eye on developer commitments in areas with mixed infrastructure.
- Improving accountability for rehabilitation packages connected to infrastructure.

Although RERA's current focus is on consumer protection in the housing sector, its integration with infrastructure resettlement and land acquisition projects, particularly when developers are involved, can offer transparency and grievance redressal frameworks for inhabitants and displaced landowner (Chakrabarti, 2021).

6.4 Case Studies: CIDCO-Inspired or Related Projects

1. Naya Raipur (Now Atal Nagar), Chhattisgarh

For capital development, the Naya Raipur Development Authority (NRDA) decided to use a land pooling approach. In line with the CIDCO strategy, farmers received a percentage of the developed plots. The proposal placed a strong emphasis on infrastructure-first development and planned urbanization

- Advantages: Integration of smart infrastructure, decreased lawsuits.
- Weaknesses: Slow government office migration and a lack of economic drivers cause delayed resale and monetization (Sharma R,2019)

2. AURIC (Aurangabad Industrial City), Maharashtra Additionally, CIDCO was a key player in the Delhi-Mumbai Industrial Corridor (DMIC) project AURIC. Through the application of tools like integrated industrial town planning, value capture finance, and transfer of development rights (TDRs), it showed that, with the correct funding and policy alignment, CIDCO's institutional strengths can be expanded to additional greenfield sites in Maharashtra (DMICDC, 2020).

3. Pushpak Nagar and Khopta Township Projects

These more recent CIDCO projects close to Navi Mumbai demonstrate how land pooling is increasingly being used as a peri-urban development concept. Under a rehabilitation program akin to NMIA, CIDCO distributed developed plots and commercial land to residents of Pushpak Nagar (CIDCO,2022).

6.5 Addressing Sensitive Zones: CRZ, Forests and Sanctuaries

As part of the NMIA project, CIDCO acquired land close to mangrove forests and coastal control zones (CRZ-I and CRZ-II). Numerous legal and environmental issues were encountered during the project. In response, CIDCO prepared Environment Management Plans (EMPs), secured incremental approvals from MoEFCC, relocated mangroves to designated buffer areas, and ensured compensatory afforestation. Due to the location's environmental sensitivity, a multi-stakeholder environmental clearance process was required; in order to ensure openness, this process was made public. (MoEFCC ,2019).

6.6 Synthesis and Recommendation

To use the CIDCO model in other contexts, states ought to

- Create empowered regional planning bodies based on the CIDCO model
- Combine land purchase with infrastructure and housing planning for urban areas
- Put in place legal tools like value capture, TDR, and land pooling
- Require environmental and social impact analyses for all major purchases

VII. CONCLUSION

In India, the CIDCO land acquisition model for Navi Mumbai International Airport is a prime example of a proactive, inclusive method for assembling land for infrastructure. Although successful in Maharashtra, its wider replication necessitates institutional capacity building, legal support, and conformity to international best practices. Its strengths and the necessity of systemic changes are revealed when compared to foreign models. India needs to implement a thorough, open, and inclusive land assembly mechanism that balances efficiency and social justice if it is to achieve its aspirational infrastructure and economic objectives. In addition to being incredibly successful in its particular setting, the CIDCO model opens the door for a nationwide rethinking of land acquisition that is transparent, rehabilitative, and participatory. It can serve as a strong basis for India's infrastructure goals if it is supplemented by organizations like RERA and tailored to regional requirements.

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