

Extending Land Readjustment Schemes to Regional Scale: A Case Study of Regional Ring Road via Mosaicking Neighborhood Level Plans

By Jay Mittal

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This article first presents a discussion on various land redevelopment concepts that are used to carry out redevelopment such as land pooling, land banking, negotiated purchases, and eminent domain. Later, this research provides a discussion on land readjustment, explaining how this mechanism works and how it was uniquely extended to achieve a regional scale mega-urban infrastructure project via a case study. This case is unique as multiple land readjustment (LR) schemes were systematically combined and extended in such a way to achieve planned growth at the neighborhood level and to create regional level assets for the metropolitan area.

UNDERSTANDING ASSEMBLY AND LAND REDEVELOPMENT CONCEPTS

This section presents various concepts and land assembling mechanisms that exist for area redevelopment purposes.

Land Redevelopment Using “Land Pooling” and Land Banking

The assemblage of land is called land pooling. This process helps in coordinating a large-scale development on contiguous land parcels that were initially fragmented by ownership,

use, and size. Pooling also helps in carving out space (land) for common public facilities such as roads and lots to accommodate public amenities while planning for a coherent larger-scale future development without worrying about the individual landowners.¹ Often, pooling is needed when the size of the new development cannot be accommodated in individual smaller lots. The pooling of land is carried out using two approaches: (1) the bottom up approach, which is driven by individual landowners who act as partners in the redevelopment, or (2) the top down approach, which is driven by an external development agency such as private developer or a city agency. Sometimes land pooling is called land banking.

Land banking is used to acquire and improve contiguous parcels of land.² In land banking, local governments or development agencies acquire surplus properties and convert them to economic and productive uses, or they may be held for a long-term strategic purpose.³ Land interest is systematically bought, and then pooled to carry out a large-scale development in this process. The original landowners may or may not benefit from the new development; while in land readjustment, owners do have stakes in the new development. One of the first approaches of land banking is to systematically purchase contiguous land via negotiated purchases of properties of interest.

Land Redevelopment Using “Negotiated Purchases” and Eminent Domain

Negotiated purchases are the first step in assembling land; the land assembler makes a purchase offer and the landowner sells the property rights at a negotiated arm’s-length transaction. However, if landowners are unwilling to sell or move, the drawbacks of the mechanism are visible. Land holdouts that delay the redevelopment projects are created when multiple landowners are involved.⁴ This was witnessed in the *City of Norwood, Ohio v. Horney*⁵ case, where the home owner finally sold his house to the developer for \$1.5 million after holding out for five years; the same house originally was bought for \$67,000 15 years earlier. More detail on this holdout is discussed in the later section of this article. Many mechanisms are used in negotiated purchases, such as shielded identity of the land assembler, to avoid speculative landholding. However, those landowners who are aware of the assemblage and want to maximize self-interest after realizing that their bargaining power increases if they refuse to sell, the result will be a holdout, delaying the entire project.⁶ It is in situations like this when eminent domain is employed.

Eminent domain, also known as compulsory acquisition, expropriation, takings, and compulsory purchase, is a process where private property may be taken for public purpose. Eminent domain effectively reassigns property rights from the original owner to a new owner, often from the older low-proactive use to a newer, but higher, productive use. Most highway projects and other road right-of-ways (ROW) are acquired using this approach. Being a top-down government driven process, sellers in eminent domain are deprived of their right to refuse, or even to sell, and often feel constrained in their right to bargain over price.⁷ The future benefit of the new developments also does not pass to the original landowner, because of the change in ownership. It is the power of government to acquire private rights in land for a public purpose, without the willing consent of its owner or occupant.⁸ It is a top-down approach and is government driven, requiring a judicial-administrative process in taking the property. Eminent domain is cash based, where property owners are paid-out based on their current fair market value, which is the present value of the property and does not reflect future assembly value. Because of this, landowners have little or no incentive to cooperate in land assembly this way.⁹ This coercive land assembling method, although very popular in carrying out public projects in many countries including the United States, has attracted a lot of controversy.¹⁰ It is considered inequitable, coercive, a

method that necessitates displacement of people, and permanently delinks property owners from their economic, social, and cultural networks. LR, on the other hand, is considered fairer and a more bottom-up planning approach.

Urban Land Redevelopment Using “Land Readjustments”

LR is a technique used for organizing peri-urban land or suburban land for urban development purposes. However, it also is used in denser inner city type settings. The LR technique combines several tools that planners and real estate professionals use including pooling of property rights, physical re-organization of land parcels, and preparation of a layout plan, all with an aim to provide planned urban growth and access to infrastructure. Due to land sharing involved in LR, once the infrastructure is in place in the area, the reconstituted lots capitalize externality and become more marketable and gain value. This gain in value for each reconstituted parcel is then compared against the initial value of the landowner’s parcel before LR, and accordingly, betterment charges are levied on the gained values. This betterment charge supports the cost of new infrastructure, making it a self-financed redevelopment process. The LR technique involves greater public participation and distributes financial costs and benefits to share betterment between private landowners and the public agency.¹¹

A pro-rata share of serviced land is given back to the owners after making provisions for roads and other public amenities. Thus, unlike land pooling via direct acquisition such as negotiated purchase or eminent domain, which involves permanent change in the landownership and the transfer of a land parcel from a passive to an active landowner, the land readjustment allows continuous landownership and inspires owners to actively participate in the new development.¹² LR also is a democratic and participatory planning process that is used in land development. LR often is considered as a landowner driven approach and is equity-based. Theoretically, all the property owners’ benefits are equal to their share of land by contributing to the pool and reaping the benefits via retaining landownership rights even after the readjustment.

History of Land Readjustment

LR has a fairly long history. Literature dates the usage of the technique back to 1899 in Germany and Netherlands, and 1923 in Japan. However, there is historic evidence of its usage much earlier than this in the United States. In the

late 18th Century, during the planning of the District of Columbia, George Washington used this method for assembling land for the federal city.¹³ Later, several countries in Europe, Asia, and Australia also practiced this LR technique in its varied forms.¹⁴

LRs are used in various situations. For example, in Asia, especially in Japan, LR was used in rebuilding cities after the Great Kanto Earthquake of 1923, and in reconstruction work after World War II.¹⁵ Other Asian countries such as South Korea,¹⁶ Indonesia,¹⁷ Taiwan,¹⁸ Nepal,¹⁹ Thailand,²⁰ Sri Lanka, and select states in India²¹ also used the LR mechanism to service land for urban use. In most cases, this technique was used because these cities were constrained financially, experiencing rapid population growth, and thus demanded infrastructure and serviced land. LR is used in other countries such as Turkey and Israel,²² and in select cities in Western Australia.²³

Land Readjustment in United Kingdom, United States, and India

In 1915 the British brought the LR technique to India and the process has been used there ever since.²⁴ Similarly, the British also brought this to other countries such as Australia; but they never practiced it in the United Kingdom itself. As mentioned earlier, the traces of LR technique and its application can be found in the land consolidation and planning of the District of Columbia in 1791,²⁵ but over time, this technique lost its ground in the United States. In the 18th Century, Washington persuaded landowners to participate in the plan and assembled 17 large farms and two small hamlets to create the planned federal city, consistent with L'Enfant's plan. Since then, the LR technique and its usability in the United States have been explored with little or no success. There are several reasons why it is not used in the United States. Home²⁶ pointed out three key reasons why the LR technique did not become popular in the United Kingdom and United States: (1) the average size of private land holdings were larger, (2) while average land values were lower in both these countries, and (3) the land developers in both these places were expected to pay for the infrastructure cost for any new development. In a situation when provision of infrastructure is expected from a developer, like in subdivision type developments in the United States, large landowners or developers see no advantage in employing or pursuing land readjustment methodology, hence the technique found no popularity in these two countries.

In contrast Indian cities provide necessary factors to implement the LR technique. Indian cities face several opportunities and challenges such as rising population, growing economy, and rapid urbanization. This changing demography has created greater demand for housing and need for more serviced urban land.²⁷ The enormity of growth pressure, limited serviced urban land combined with cash strapped municipal authorities, has led to urban growth preceding any planning intervention in most Indian cities. The net result of which is visible in urban growth being fragmented, leapfrogged, and ad-hoc in most cities with a million-plus population. Because it is the civic authority's responsibility to provide for infrastructure, the budget constrained municipal authorities attempt to devise various innovative tools to finance urban development. Land readjustment provided a partial answer to this self-financing tool. A few states, especially one discussed in the case study, took the lead and amended laws to expedite the LR process. Another reason why LR was successful in this state was due to fragmented private land-ownership where owners had smaller lots with higher land values in high demand real estate markets. Additionally, land developers were not compelled to provide for infrastructure in new developments, which resulted in higher acceptability of LR.²⁸ Exhibit 1 shows the state of the city and its civic infrastructure before and after land readjustment areas.

LR involves a blend of urban planning and real estate tools such as planning law, urban design, real estate appraisal, participatory and communicative planning, and land surveying.²⁹ In the land readjustment technique, peri-urban areas, primarily irregular shaped, inaccessible agriculture farmlands, are pooled, re-arranged into regular building lots, and equipped with basic urban infrastructure such as roads and drains. A certain percentage of each landowner's original holding is contributed toward the provision of land for roads right-of-way (ROW), public amenities such as parks, and a few lots are reserved for future sale, which pays for new infrastructure. When these original lots are converted into urban lots and are provided with public infrastructure and amenities, they become more marketable and gain market value.³⁰ Exhibit 2 shows the effect that landowners have on their land parcels after the land readjustment.

Six Step Process of Land Readjustment

LR is an intense, process-oriented, land development, and neighborhood scale area planning tool. It requires clear records on all land parcels that are earmarked for LR

Extending Land Readjustment Schemes to Regional Scale

EXHIBIT 1—STATE OF THE CITY AND ITS CIVIC INFRASTRUCTURE BEFORE AND AFTER THE LAND READJUSTMENT

Before Land Readjustment	After Land Readjustment Treatment
City faces population growth, this causes demand for serviced land, absence results in ad-hoc growth	Planned layout accommodates growth, guides efficient, planned, and desirable development
Rural peri-urban land, population growth pressure demanding infrastructure and public services	Layout plan allows ROW for roads, creates lots for public amenities and land bank
Need for more economic land uses and economic nodes for rapidly growing city	Land bank is created, can be strategically used to attract economic investments
Limited fiscal resources to carry out public works	No land acquisition, no upfront cost, land bank is used to fund costs.

EXHIBIT 2—EFFECT ON LANDOWNERS AND LAND LOTS BEFORE AND AFTER THE LAND READJUSTMENT

Before Land Readjustment	After Land Readjustment Treatment
Irregular shaped land lots, low value	More marketable geometrical shapes of lots
Agriculture land lots on peri-urban area	Serviced land brought to urban use
Inaccessible, land locked lots	Road access is provided to every land lot
No infrastructure & public services	Availability of serviced land
Underutilized lot potential	Land lots gain market value
Land lots may be originally large, but rural, low value and undevelopable	Smaller final land lots (60% of original), but urban, gain value and are developable

purposes in terms of their shape, size, location, and other value and ownership attributes. It also requires visionary planning skills so that the planning of the area chosen for the LR scheme is well integrated with the city level master plan. It also requires a legal instrument to support the transparent, collaborative, and step wise process. After the declaration of the chosen area for LR, that area and all land parcels within are considered frozen for any development purposes for a fixed amount of time. There are multiple steps of approval involved from the landowners, the implementing agency, and state urban development department.³¹ Therefore, for speedy implementation of the LR process, it requires a strong political will and a high degree of public acceptance. Most importantly, for the successful implementation, LR has some prerequisites such as a strong demand in the local real estate markets. A typical LR process in Ahmadabad follows multiple steps,³² however, a simplified LR process is presented here in six key steps:

1. *Declaration of land readjustment and demarcation of area boundaries.* This stage is the intent declaration stage, when the decision about where the LR process would be undertaken is made. Often, decision on this stage is

politically driven, although sometimes they are driven by the market forces based on growth and demand. The size of the area varies on several variables such as local zoning, density, lot sizes, and the number of landowners involved. Typically, an average size of land readjustment scheme varies from 250 to 500 acres with 2,000 to 5,000 people.³³ Once the area is demarcated the second stage involves collecting and collating information regarding individual land parcels and landowners that fall within the demarcated boundary.

2. *Collection and collation of land records (Maps, Ownership, Use and Value).* This stage involves developing a cadastral map for all the land parcels within the LR scheme boundary and collecting relevant attributes related to parcels. As shown in Exhibit 3, in this stage, the original lots are earmarked accounting for ownership, location, shape, size, current use, and current value. Sometimes a single landowner may have more than one lot, and in a situation like this, a single number is allotted, which is called the original lot (OL). These earmarked lots are then considered for coherent planning as pooled land for the LR scheme area while acknowledging ownership records, physical features in the area, development potentials, and constraints.

EXHIBIT 3—ORIGINAL LOTS TO FINAL LAYOUT WITH RECONSTITUTED LOTS



3. *Preparation of a layout plan and reconstitution of lots.* Planning on this pooled land lot now involves preparation of a layout plan. This layout plan includes a road network plan, which provides access to all individual lots. This layout plan also shows lots for public amenities, and the final reconstituted land parcels. The original shapes of the lots are reorganized to accommodate for roads, so a portion of the pooled land is allocated for the provision of roads right-of-way (ROW), infrastructure facilities, and lots are also earmarked to accommodate public amenities such as parks, schools, and land for housing for the poor. A small portion of this pooled land also is allocated for the land bank that the implementing agency auctions to recover the cost of infrastructure at market rate. The layout plan also shows lots that were reserved for sale purposes.
4. *Costing and financial calculations.* Once the layout is completed, estimates on costs and potential economic recovery via sale of lots and betterment charges are made. If after the lot (OL) reconstitution, the individual landowner's gain on the land parcel's new value is significantly higher than its initial contribution, those owners are charged with a betterment levy. The betterment charges and the revenues from the auction of reserved land, make the LR mechanism a self-financing scheme.
5. *Participatory inputs with planning official and legal due process.* The layout plans as explained above, are presented before the affected landowners for public objections and suggestions. Individually affected landowners are invited to participate in the primary discussion regarding the location of newly reconstituted lots, the reduced size and shape of the lots, and the betterment charges, which are addressed in two to three rounds of public meetings with every landowner. Once

the agreements are reached, the plan is sent for final approval.

6. *Modifying land records, returning the final lots to the landowners and to the public agencies for development.* After completing all the above steps, the new plan and new land records are updated to the official land records. Usually in LR, as in Ahmadabad, the implementing agency would take away 40 percent to 50 percent of the original lot owner's land and return the rest of the 60 percent to 50 percent.³⁴ The newly reconstituted lots, though smaller in size than the OL, now have access to roads and infrastructure services, thus achieving greater marketability, and command higher values.

CASE STUDY OF RING ROAD—MOSAICS OF LAND READJUSTMENTS

As discussed earlier, first negotiated land purchase and then coercive land acquisition is typically used to assemble land for the provision of a ROW and infrastructure in most countries. In India, the Land Acquisition Act of 1894, allows acquisition in both urban and rural areas, while LR are limited to only certain areas. The urban development act of Gujarat as defined in the Gujarat Town Planning and Urban Development Act of 1976 (GTPUDA) allows land readjustment only in urban areas.³⁵ This case of 47 mile long regional Ring Road in Ahmadabad is a unique case as it was developed using the LR mechanism and was self-financing.

Background and Contextual Settings of the Ring Road Project

The Ahmadabad Urban Development Authority (AUDA) is a metropolitan level planning authority, which is equivalent to the Metropolitan Planning Organizations (MPOs)

in the United States, and was mandated to monitor and plan for its metropolitan fringe areas. A high level board of technicians, politicians, and bureaucrats governs it. A politically appointed person titled, “Chairman” from the state government in charge of the AUDA and works with an executive officer and a Senior Planner on a day-to-day basis supported by a planning and engineering staff. The board members are bureaucrats, such as the state’s principal secretary of urban development department, the secretary of revenue department, the municipal commissioner of the core city, *i.e.*, Ahmedabad and the district collector, and on the technical side, the state’s chief town planner (the highest technical planning position in the state). Besides these, there are political heads of the four districts panchayats involved (the equivalent of county commissioners in the United States). These are Ahmedabad, Gandhinagar, Kheda, and Mehsana districts. The Chairperson of the standing committee of the core city, *i.e.*, Ahmedabad Municipal Corporation and the financial advisor of urban development, are also on the board. Despite having strong board and leadership during 1998 to 2005, AUDA witnessed a single person led polity by the Chairman, Mr. Surendra Patel.³⁶ During his regime, a number of innovative and high profile public projects were initiated and many were completed in record time.

Pro-Development Political Leadership Involved in Ring Road

The success of Ring Road is a result of this visionary and powerful leader, Mr. Patel, who not only recognized the “urgency” of this project, but also employed democratic processes of meeting with the people involved—a tool of “equity based, economically efficient planning without affecting civil liberty” in the land appropriation of Ring Road. The AUDA’s charismatic leader was a civil engineer by education and a seasoned politician by profession, and was the showman of major urban investment publics in the city. Mr. Patel was very well networked politically, very savvy and down to earth, and held several key positions for the ruling political party. He was the state treasurer of the ruling party mandated to collect funds for party purposes. Additionally, he was the confidant of the state’s chief minister (equivalent to the office of governor in the United States) and the national party president of BJP, who was then the Deputy Prime Minister of India (equivalent of Vice President in the United States).³⁷ His powerful and visionary profile, desire to do improvements, personal involvement in these mega projects, and down to earth

personality created great respect for him with the locals and the powerful lobby of business elites. All factors combined, helped the AUDA convince people to participate in the LR process.

Conceptual Plan of the Ring Road

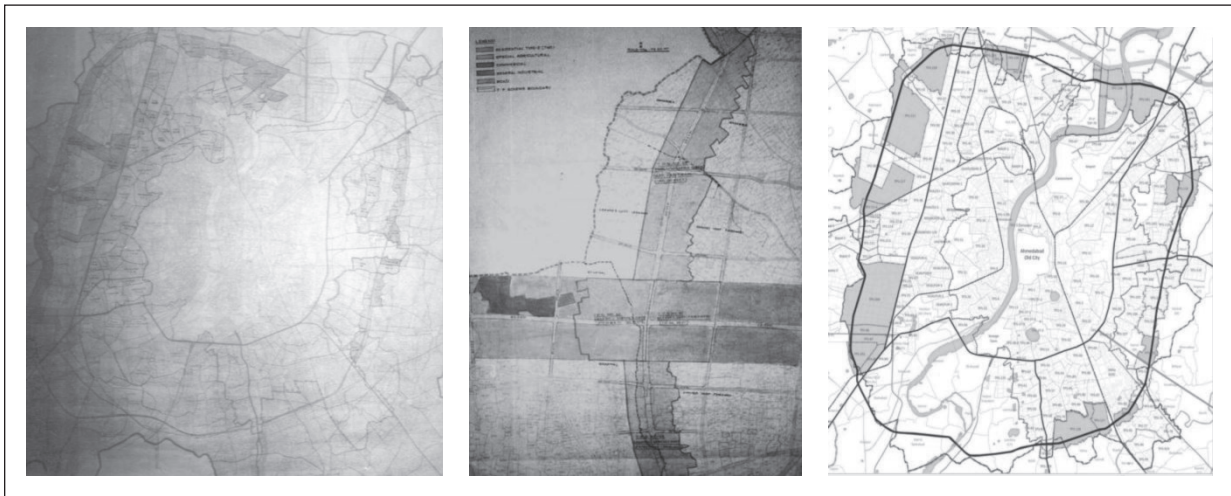
The Ring Road wasn’t the original idea of Mr. Patel, but promoted by his predecessor, Mr. Nattu Mama who served as the previous chairman representing the opposition party. The initial Ring Road proposal was planned during this regime, but received over 35,000 public objections on its rationale, alignment, and most importantly, on its acquisition methodology. The earlier plan, proposed reserving 1,700 feet ROW (520 m) that included a 120 m (394 feet) wide Ring Road and a 200 m wide green belt on both sides of the road. It was proposed to acquire all land using compulsory purchase, which not only was financially unviable for the cash strapped AUDA, but also publicly unacceptable due to massive land acquisition.

In 1999, AUDA reformulated its plan and prepared a revised 10-year future development plan that targeted the year 2011.³⁸ The author of this article was professionally involved in this Revised Development Plan from 1998 to 2000 and participated in strategic discussions as a key planning team member. The Ring Road was re-conceptualized in this plan to bypass regional traffic from the core city area and to connect the peripheral communities. It encircled this major metropolitan area of five million people, connecting several small communities in its periphery. The unique feature of Ring Road is that its ROW was reserved using a market-friendly LR technique, rather than coercive land acquisition or eminent domain. The new plan envisioned the city where all citizens have access to basic services and development takes place in a planned manner, supporting rapid and sustainable economic growth. LR schemes were proposed to furnish infrastructure in the newly zoned fringe areas.

Features of Ring Road

Ring Road is a 200’ wide, 47.2-mile long regional road. It was planned primarily to segregate regional and urban traffic and to bypass the north-south regional traffic, thus reducing traffic congestion on the peripheral roads.³⁹ This road is similar to the I-275 beltway around the city of Cincinnati, OH, or other beltways in the United States. In planning for the road’s 200’ wide ROW, AUDA used a combination of LR schemes and land acquisition

EXHIBIT 4—LAND READJUSTMENT SCHEMES ALONG RING ROAD



methods to ensure speedy implementation. Of its total length, 36.6 mile length (77.5 percent) was procured via LR technique. This section of Ring Road is in the rapidly developing peri-urban areas of the western and eastern sides of the rapidly growing city of Ahmadabad, where the western side is predominantly residential land and the eastern side is largely industrial. All along the Ring Road alignment, the LR schemes were formulated within about 1 km of the road in such a manner that Ring Road could circumnavigate via the proposed LR schemes. The rest of the stretch of Ring Road, especially on the southern link, which was 10.56 miles (22.5 percent) long, was procured via land acquisition. This section of Ring Road was in non-urbanized areas of the city, where future growth was limited and was on the southern link of Ring Road. This section had undevelopable lands, no growth, and thus land values were low, and even future demand for the real estate appeared very low with low market potential.

Extension of Land Readjustment to Regional Scale for Ring Road Development

Under the LR technique, multiple individual land parcels are pooled and then their lot boundaries are reorganized after making provision for infrastructure and providing road frontage via a layout plan. This reorganization of road fronting parcels, ordered, made regular in shape, and access to public infrastructure provides a property value enhancement to these lots and encourages landowners to participate. This LR technique is used to make provision for roads and

other public infrastructure without additional budgetary expenses and was aimed to create private benefits for the landowners by creating land values and public benefits by achieving planned urban growth. Typically, world-over LR schemes were carried out only at a neighborhood scale.⁴⁰ In the case of the Ahmedabad Ring Road, this was extended via multiple individual LR schemes coordinated in such a way to achieve a planned growth at neighborhood level with an aim to create a regional asset via their systematic implementation.

Mosaics of Planned Layouts Circumventing Ring Road's Alignment

A half-mile wide band of peri-urban land was conceptualized for LR purposes as part of the initial proposal. This band would circumnavigate the proposed alignment of Ring Road as planned in the RDP. Land on either sides of the road was planned to be considered for LR purposes using the center of the Ring Road's ROW as a base. (See Exhibit 4.) This band included all lots falling on the course of the 200' wide ROW and also the nearby lots. This way a string of LR schemes were proposed that would be aligned to reserve ROWs for the regional Ring Road at a regional scale and make provision for serviced land and infrastructure at a neighborhood scale. After pooling land under a string of multiple LR schemes, 20 to 30 percent of the land was proposed to be used for public amenities such as roads, schools, gardens, and affordable housing, and over 8 to 10 percent of the land was used as saleable lots (land bank). A conservative estimate of this land bank itself accounts

EXHIBIT 5—SPATIAL, SIZE AND TEMPORAL CHARACTERISTICS OF LAND READJUSTMENTS SCHEMES

LR Schemes	Planning & Implementation Time			Total
	Up to 2005	2006–2008	2009–2012	
Total nos.	20	14	12	46
Total LR area in HA (Acres)	1,326 (3,277)	3348 (8,273)	3,356 (8,293)	9,215 (22,771)
Average LR size in HA (Acres)	66 (164 Acre)	239 (590 Acre)	280 (691 Acre)	200 (494 Acre)
LR Location by growth pressure and demand	Very High	High	Medium to High	High

Source: Adapted from Gautam, *supra* n.30.

for over 40 million sq. ft. (918 acres) of prime urban land. Assuming a conservative land value of \$30 per sq. ft. along the Ring Road, a total market value of AUDA's land bank is over \$1 Billion. This is the amount of land that AUDA had planned to create to finance this mega road project via land auctioning.

Later, the size of this band of LR schemes around Ring Road's ROW was chosen based on practicality of implementing LR schemes and the local market demand. A string of 46 LR schemes were planned as shown in Exhibit 4. If only the lots that were falling on the roads ROW were chosen for reconfiguration purposes, the benefit of Ring Road would not have reached to the directly impacted landowners. Many small landholders would have just lost all their land if it had fallen under Ring Road's ROW. Further, after the 40 percent appropriation from the original lot area, the final reconstituted lot would have been smaller and infeasible to build. Hence, to address such concerns, the size of this band was extended for the practicality purposes.

Road Phasing Based on Market Dynamics

A total of 46 LR schemes were planned along Ring Road as shown in Exhibit 4 and Exhibit 6. Exhibit 5 presents spatial and temporal characteristics of these 46 LR schemes. A total of 22,771 acres of land was considered under the 46 LR schemes. As shown in Exhibit 4 and Exhibit 6, the individual shapes and sizes of these 46 LR schemes varied from location to location. This variation is based on several factors such as allowable zoning, current density of development, lot sizes, market demand, and future growth potential. The individual boundaries of these strings of 46 LR schemes were first demarcated and then every scheme was developed in a phase-wise manner. Exhibit 5 shows how these schemes were developed temporally.

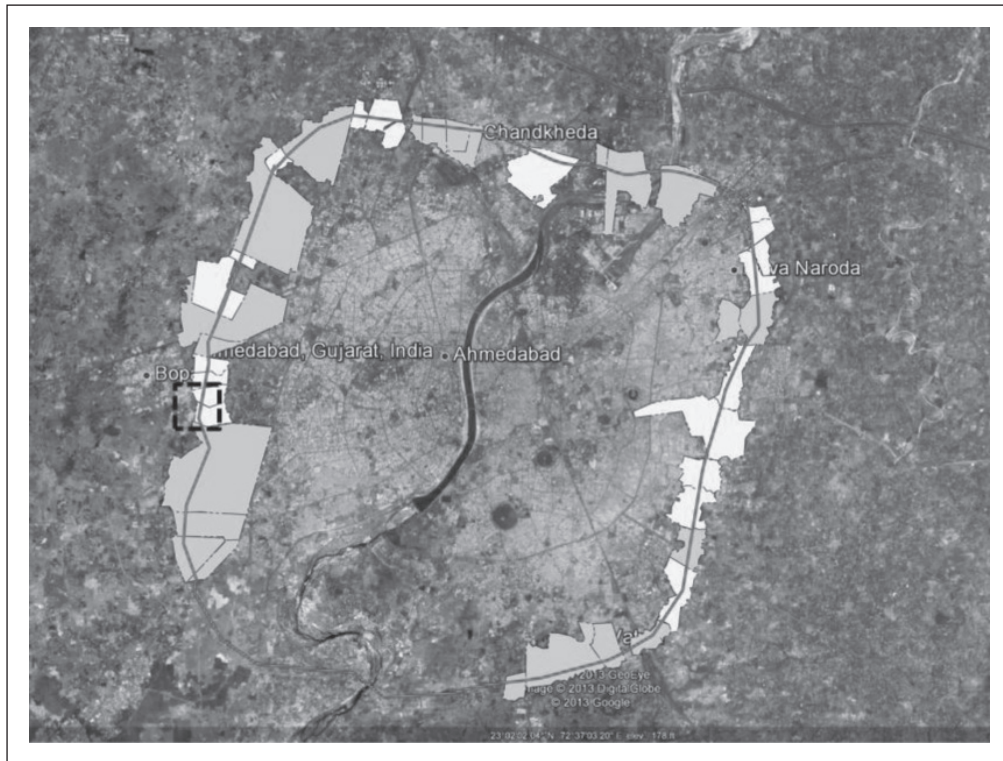
As seen from Exhibit 4 and Exhibit 6, more land area under individual LR schemes was chosen along the western section of the ring as compared to the eastern section of the road. Also, notice the size of these LR schemes. Sizes also varied due to two reasons: (1) greater demand and availability of land on west, and (2) lower demand on the eastern section. As Ballaney and Patel,⁴¹ point out, "use the land market and not thwart it," Ring Road phasing followed similar logic. Land readjustment is a "market savvy" way of financing infrastructure.⁴² A total of 36.6 miles of the 47.2-mile Ring Road was developed using the LR technique. Most land along the southern section of the road was acquired as a negotiated purchase or via land acquisition. This was because the land around the southern section of the Ring Road was mostly undevelopable land and had very low demand for any productive urban use. Thus a total of 46 LR schemes were planned along the Ring Road.

Political Support in Mega Projects

As discussed earlier, the charismatic political leader had clout, which helped reduce potential resistance to a mega scale project such as Ring Road. A noteworthy example is how the ROW acquisition process started even before the LR implementation. AUDA conducted public meetings with the landowners and raised four points for the ROW reservation:

1. The Road is an important feature for development.
2. The development of the entire area is possible only after construction of the Road.
3. I request possession of your land in advance, on which I will start construction the next day.
4. If possession is not provided right now, I will have to get possession through legal procedures, which will take 2 to 3 years. But this delay ultimately will result in delay of the overall development.

EXHIBIT 6—LR SCHEMES ALONG THE RING AND URBAN GROWTH



Point 4 was a political statement loaded with multiple. Knowing the strong political clout of the AUDA Chairman, it was perceived as a warning by some, a ruthless threat by some, and seen as a development oriented leadership gesture by many. The underpinning idea of this announcement was to convey the message that this project is of high priority and there is urgency. The effect of these meetings was an advanced voluntary surrender of a series of land parcels by landowners. This happened even before a detailed plan to make space for the ROW so AUDA could plan for the regional road.

Participatory Planning for Greater Stakes and to Expedite the Implementation

In their study Sanyal and Deuskar⁴³ critically emphasized that LR schemes as practiced in Ahmadabad do not require consent of landowners; and their participation is compulsory. The state decides on the LR schemes and carries out the plan as a top down approach; however, Ballaney and Mathur⁴⁴ were appreciative of LR schemes for being collaborative and participatory in their scope. As per Mathur and Ballaney, LR in Ahmadabad is a democratic and participatory approach; it is an equitable, inclusive, and transparent process that employs non-coercive and non-authoritarian

processes of land appropriation for public infrastructure while it respects private property rights. It definitely allows development of public infrastructure to pay for itself and is a “win-win” proposition for both the landowners and the planning agencies.

Economic and Financial Motivation of Landowners

An important discussion point from the US perspective could be why a Ring Road would create greater land value to its surroundings, and, if it would, will it be only at the entry/exit points or all along its ROW. Ring Road was planned as an “at-grade” road rather than a controlled access road, which requires entry/exit ramp. This at-grade road provides abutting land owners a direct access to the Ring Road via a provision of a service road, which was planned in the ROW configuration. This creates value for the landowners. Landau *et al.*⁴⁵ conducted a pre and post implementation study of 100 highway projects in the United States. Their study concluded that the construction of highway or a road project positively contributes to the short term and long term job opportunities while creating value to the nearby properties.

Another important factor that could influence surrounding property values is the design of the ROW section itself. Providing the ROW with plantation and amenities to maintain higher visual quality could have a positive impact. Another study was conducted by Cervero *et al.*⁴⁶ in San Francisco, California for the Embarcadero Freeway. The study was aimed to measure effects of highway transformation on surroundings when converted from a freeway to a boulevard. This study concluded positive amenity effect on surroundings, if roadways are converted to landscaped multi-way boulevards.

DISCUSSIONS AND CONCLUSIONS

Lessons from this LR technique case study can potentially be applied in the United States, especially in areas where negotiated purchases and eminent domain are currently used to acquire private properties for redevelopment purposes. LR process could be a good alternative to address several limitations that the above two methods pose in land polling for redevelopment purposes.

Potential Limitations of Negotiated Purchases and Eminent Domains Resulting in Holdouts

Another example of land consolidation shows the limitations of negotiated purchase and use of eminent domain in the form of holdouts and delays in the project. As per the Fifth Amendment, for exercising eminent domain the government must employ “due process of law,” acquire the property for “public use,” and provide “just compensation” to the owner.⁴⁷ A classic case of holdout was witnessed in the *City of Norwood, Ohio v. Horney* case. Norwood, Ohio is a small city near Cincinnati. The city supported a private developer, Rookwood Partners, to develop a large-scale mixed-use project. The developer used a negotiated purchase on 71 homes in order to assemble land for development. A few home owners petitioned against the city and after five years of fighting, the Ohio Supreme Court ruled in the favor of landowners.⁴⁸ Eventually in 2008, one of the landowners, Mr. Horney, sold his house to the Rookwood Partners for \$1.25 million, which was originally bought for \$67,000, 15 years ago.⁴⁹

Current Variants of Land Readjustments in the United States

The United States employed LR in the 18th Century in L’Enfant’s plan of Washington, DC where land was

consolidated for the federal city.⁵⁰ There are a few other incidences of land banking that are noteworthy. For example, in 1973 underused land in the Canal Square area of Schenectady, NY, was assembled by a group of merchants who pooled together properties to redevelop the area. Similarly, the Farmer’s Market district in downtown Dallas, TX, was developed by assembling 30 parcels to develop 10 million square feet of office space, 1,500 hotel rooms, 400,000 square feet of retail uses, and 1,500 residential units. Neighborhood pooling and buyouts are LR, but without any downstream rights, which means there is no continued ownership by the land contributors.⁵¹ All these examples show that there is already an interest within the development community for LR or its variants.

Potential Application of LR for University Campus Extensions and Real Estate Based Economic Development

In order to accommodate growing space demands for student housing, class rooms, research facilities, and new buildings urban universities in the United States extend their campuses to their fringes. Additionally, to make campuses more safe and attractive as part of campus redevelopment and inner city area revitalization strategies, universities often carry out negotiated purchase or sometimes employ eminent domain to acquire properties adjacent to the campuses. Such property led campus extension programs uproot the original owners from their land.⁵²

In the United States, LR can be used in at least two types of redevelopment projects: (1) university led campus extensions and (2) city led real property based economic development in distressed areas. Landowners could be made partners in the land or even could be equity partners in the new development. If the size of the area considered for redevelopment is small, a choice could be given to the landowners to have an ownership interest in reconfigured land or in new property.

Prerequisite of a Successful Land Readjustment

LR can be potentially used to facilitate economic development or to carry out large scale revitalization projects. However, as learned from the case study above, there are a few prerequisites for a successful LR mechanism to function.

1. *Need for favorable Real Estate Market Conditions.* As noted in the case study above, the southern section

of Ring Road could not be developed using LR and land acquisition was employed. This demonstrates the importance of strong real estate market demand as one of the necessary conditions for LR to be successful.

2. *Need for a Legal Instrument.* Because LR requires a change in the legal status of the land titles, it clearly requires a legal process. Mathur⁵³ also explained how the process of LR in Ahmadabad was expedited after making amendments in the state's urban development act called Gujarat Town Planning and Urban Development Act, 1976 (GTPUDA). The Government of Gujarat⁵⁴ provides a complete list of various provisions under the Act for LR schemes.
3. *Need for Political Leadership in Mega Projects.* As explained in the case study, the political leadership had a significant role in reducing potential resistance likely to occur in any mega scale project. Resistance includes hurdles at the planning level, at the project development level, and at the implementation level. The leadership was involved right from the beginning at the conceptual planning stage, and had a significant role in convincing land owners, state level leadership, and improving the legal instruments in expediting the LR process at the project development level. The AUDA's Chairman used his clout to the advantage of the megaproject and assisted in the advanced voluntary surrender of the series of land parcels by landowners that followed the Ring Road ROW.
4. *Need for a Comprehensive Land Record System, and Transparency in Property Transactions.* LR schemes are intense and are time consuming. Due to poor land records in India, a lot of time is spent in collecting and collating the information on land records. An LR scheme requires clear information on landownership, title, and value because it is required for accurate lot reconfiguration, title transferring, and calculating the betterments charges. In addition to poor land records, a few of the key reasons causing delays in planning LR schemes in India include a lack of availability of computerized land cadastral data, information asymmetry on past transactions, and appraisal data due to lack of transparency.

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