

Land Pooling and Reconstitution: A Self-Financing Mechanism for Urban Development

For more than half a century the town planning scheme (TPS) has been the predominant mechanism in Gujarat to plan and develop new urban residential areas. The mechanism is an effective alternative to land acquisition under the Land Acquisition Act (LAA), 1894 as it is more equitable, self-financing, and enables planned urban expansion. It should be replicated across the nation.

Initiative in Focus

- Land Pooling and Reconstitution: A Self-Financing Mechanism for Urban Development

Infrastructure Development - Turning Points

- National Solar Mission: Making Solar Power Affordable
- New Category of NBFC – Infrastructure Finance Company
- Infrastructure Highlights of Budget FY 2010-11

Policy Group News & Events

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Concept

Strong land owner opposition to forcible land acquisition, combined with extremely limited fiscal capacity has left the urban local bodies (ULBs) with very few options to develop well-planned and serviced urban land. Land pooling and reconstitution (LPR) is a tool that addresses both these issues by allowing the land owners to share the gain in the land value post provision of infrastructure and services. In lieu, the land owners pay betterment charges and contribute a part of their land to fund the infrastructure and services.

Figure 1: Section of LPR Scheme Depicting Original and New Plots



Source: TPS 50 Scheme, AUDA

Simply put, in LPR, a number of small holdings are pooled together, a part of land is taken from each plot for provision of infrastructure and public facilities and the rest returned to the original land owners. Figure 1 illustrates this process. The original plots (shown in green colour) are devoid of any road network. Once the infrastructure is planned, the land owners receive new smaller plots (shown in red colour).

An LPR scheme is developed by a public agency (typically a development authority or a municipal corporation) which:

- Prepares a detailed plan for a sector of a city. The plan identifies the location of major infrastructure (e.g. roads, water, sewer and street lighting) and services (e.g. schools, parks, and housing for economically weaker section - EWS), allocates land use, reserves plots for future sale and provides a financing plan. The plan is consistent with the city's master plan / development plan.
- Pools the various owners' land holdings.
- Rationalizes the property boundaries, and after deducting land for infrastructure and services, re-plots the land and allocates it back to the land owners.
- Finances the scheme through (a) betterment charges paid by land owners for increase in their land value due to the provision of infrastructure and (b) revenues from the sale of reserved plots.

Extent of Use

Extensively used internationally, LPR can trace its roots to Holland and Germany in the 1890s. It quickly spread across the globe including Europe (e.g. Sweden, Finland, France and Belgium), Asia (e.g. Japan, South Korea, Thailand, Indonesia, India and Nepal), the Middle East (e.g. Israel, Lebanon and Palestine) and Australia. It is used primarily for peri-urban expansion.

In India, the Bombay Town Planning Act of 1915 allowed the use of LPR in the form of Town Planning Schemes (TPS) in the erstwhile Bombay Presidency. Later, it became the basis of the TPS-enabling act in Gujarat - the Gujarat Town Planning and Urban Development Act (GTPUDA), 1976.

TPS was widely used in Maharashtra in the first half of the 20th Century. For example, large parts of Mahim, Khar and Borivali in Mumbai were developed through TPS. However, its use declined when the Maharashtra Regional & Town Planning Act, 1966 shifted the focus for the implementation of the city master plan from TPS to detailed Development Plans (DPs). Among the reasons for the shift was the long time taken between TPS initiation and final government approval (average of 15 years) and the fact that an ownership dispute over a single land parcel could hold up the entire scheme. In practice, DPs were rarely prepared, while the use of TPS declined.

On the other hand, TPS found a favorable environment in Gujarat, especially after the 1986 & 1999 amendments to the GTPUDA, which enabled:

- possession of land for construction of roads after approval of the Draft TPS - 1999 Amendment (see Figure 2). Since land values rise with roads, this has helped ensure land owner support.
- sale of plots (up to 15% of scheme area) to finance the scheme (1986 Amendment)
- tighter time limits in the process (1999 Amend.).

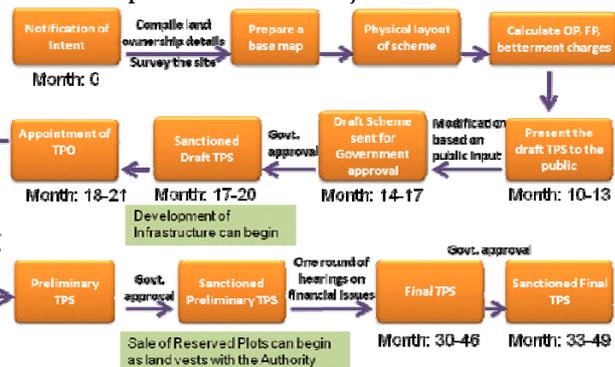
Further, the TPS process does not settle land ownership disputes, it just transfers them to the newly reconstituted plot, thereby not holding up the TPS approval process. As a result, TPS has become the predominant urban expansion tool in all the major cities in Gujarat. For example, Ahmedabad Urban Development Authority (AUDA) has prepared over 109 schemes and Ahmedabad Municipal Corporation (AMC) has prepared 61 in the last 4 decades.

Apart from Gujarat and Maharashtra, a few other states, notably Andhra Pradesh, Karnataka, Punjab and Kerala have TPS-enabling legislation, albeit with little use of the mechanism. Instead of using TPS, Punjab only permits conversion of large parcels of agricultural land to urban use. For example, a 100 hectare agricultural land may be allowed conversion if 45% is used for public facilities and infrastructure, and the remaining 55% for residential use.

TP Scheme Preparation Process in Gujarat (see Figure 2)

- Despite the 1999 amendments, the entire process can still take much longer than the stipulated 3-4 years mainly due to delays by the Town Planning Officer (TPO) and the state government.
- Development of roads can begin after approval of the Draft TPS (which is supposed to take 1.5 years). If considered a priority, the development of the remaining infrastructure – water, sewer, street lights – can also begin at this stage. Land for public facilities and plots for future sale vests with the development authority after approval of the Preliminary TPS when sale of reserved plots can also begin.
- There are 4 rounds of public inputs. The first round is initiated by the development authority at the Draft TPS stage. The other 3 rounds are initiated by the TPO in the Preliminary and Final TPS stages (the first two rounds focus on physical issues, such as location and size of plots and the third focuses on financial issues, such as determination of plot values and betterment charges).
- Although the TPS process provides ample public input opportunities, formal land owner consent is not required.

Figure 2: TPS Preparation Process in Gujarat



Source: Based upon GTPUDA, 1976 and S. Ballaney and B.Patel. 2009. Using the Development Plan-Town Planning Scheme Mechanism to Appropriate Land and Building Urban Infrastructure. India Infrastructure Report: OUP, N. Delhi.

Case Studies

Three TP Schemes were chosen from Ahmedabad. Bodakdev 1B is an example of a pre-1999 scheme whereas TPS 50 is a post-1999 scheme. Both schemes involve land use conversion from agriculture to urban. The third, Bopal 3, while also located in a peri-urban area, is one in which substantial urban development has already taken place. As a result, final plots are very similar in shape and size to the original plots. The scheme areas range between 200-300 hectares and the number of landowners between 250 and 800.

Timeline: While TP Schemes still take a very long time (10+ years) from initiation to final government approval, infrastructure provision has accelerated in schemes after 1999. Road development started 2.5 years after notification of scheme intent in TPS 50, as against 15 years for Bodakdev 1B (see Table 1). However, the provision of other infrastructure is uncertain in TPS 50 as the scheme was transferred from

AUDA to AMC in 2008 due to a change in the municipal boundary.

Table 1: Actual TPS Timeline

Scheme	Stages in the TPS Preparation Process				Infrastructure Milestones	
	Scheme Intent	Sanctioned Draft TPS	Sanctioned Preliminary TPS	Final TPS	Roads	Other
Bodakdev	May-78	Mar-82	Aug-86	Jan-93	1993-2005	
TPS 50	Dec-01	June 2004	-	-	2004-present (80% done)	-
Bopal 3	Apr-01	Sent for approval in May 2009	-	-	-	-

Source: TPS Reports, AUDA

Deduction of Land: Whereas around 25% of land was taken from the landowners in Bodakdev 1B, recent schemes such as TPS 50 are based on higher land deduction – upto 40%. The actual amount deducted may be less, depending on the extent of structures on a person’s land (generally, upto 20% is deducted from lands with built-up structures) and the usability of the land post deduction. Thus, an average of 36% has been deducted in TPS 50 whereas as little as 15% is deducted from the partially built up Bopal 3. The higher land deduction enabled creation of a larger land bank in the post-1999 TPS 50 scheme of 9% compared with less than 4% in the pre-1999 Bodakdev 1B scheme (see Table 2).

Table 2: Land Use in TPS (sq.m.)

Land Use	Bodakdev 1B		TPS 50		Bopal-3	
Final Plots to Private Owners	1,556,866	74%	1,157,591	64%	2,509,221	84%
Infra. & Pub. Facil.						
Roads	275,963	13%	311,685	17%	289,978	10%
EWS Housing	38,242	2%	49,860	3%	39,194	1%
Others	144,053	7%	125,740	7%	63,986	2%
Plots for sale	76,456	4%	166,559	9%	105,408	4%
Total	209 ha		181 ha		300 ha	

Note: Others include gardens, open space, social infrastructure, neighbourhood centres, schools and playgrounds.

Source: TPS Reports, AUDA

Calculation of Plot Values and Betterment Charges: Plot values are calculated to determine compensation to landowners for land taken and betterment charges payable by them. After notification to initiate the TPS, recent sales data of similar land parcels are analyzed to assign original plot (OP) value, on which compensation is based. The future plot (FP) value is the hypothetical value of the plot remaining with the land owner once the infrastructure and facilities would be provided. Both OP and FP are values as of the date of notification to initiate the TPS. The betterment charge equals one-half of the difference between the FP and OP value and is only payable when a landowner applies for land use change from agricultural to urban use. The ratio of FP to OP value per square metre varies between 2 and 3 for the case study TPS (see Table 4). For example, it is 2.7 for TPS 50 with OP value of Rs. 500/sq.m. and FP value of Rs. 1,300/sq.m.

Scheme Costs and Financing of Infrastructure: Infrastructure is the single largest scheme cost under LPR. The cost for compensation is not as high compared with LAA as only a portion of land is deducted in LPR as against 100% acquisition under LAA (see Table 3). Importantly, the ULB needs to come up with funds for acquiring land under the land acquisition scenario, whereas under LPR net outflow for the ULB is negligible as betterment charges typically exceed compensation for land deduction.

Table 3: Scheme Cost: TPS 50 (Rs. Crore)

	TPS 50 Scheme Cost	
	Actual under LPR	Hypothetical under LAA, 1894
Infrastructure	38.9	38.9
<i>Roads</i>	19.1	19.1
<i>Water</i>	4.7	4.7
<i>Sewer</i>	12.3	12.3
<i>Street Lighting</i>	2.8	2.8
Compensation for Land Deduction	21.39	90.5*
Publication and Legal Expenses	0.12	-
Cost of Demarcation/Salaries/Other	0.25	0.1
Total	60.66	129.5

Note: * Assuming all 181 ha is acquired at OP value (Rs. 500/sq.m.)

Source: Draft TPS 50 Report, 2002, Form "G" for actual cost

As per the Draft TPS Reports, betterment charges could finance 87% to 98% of the project cost if all expenditures are made and revenues realized in the first year itself (see Table 4). The remainder could be financed through the sale of plots. However, the reality is actually the opposite if we take into account the timing of cash flows. The FP value and, in turn, the betterment charges are set very low, determined at a very early stage and are not revised over time to account for increase in land value. Delays in implementation increase construction costs and reduce the net present value of betterment charges. As betterment charges are only payable when the land owner chooses to apply for land use change, they are realized over a very long period of time. In the case of Bodakdev 1B, betterment charges, set in 1978, started coming in 1993 onwards and are still trickling in, resulting in their financing only 6% of the scheme cost (see Table 4). In fact, even if the betterment charges were to be realized over a short time span of 3 years (from 1993-1995), they would have financed only a fraction (13%) of the scheme cost.

Delays work in the opposite direction for land sales as land values increase over time. Thus, revenues from the sale of plots can pay a much larger share of the TP Scheme cost, and in fact can provide a surplus (estimated at Rs. 60 crore in the case of Bodakdev 1B on an estimated scheme cost of Rs. 67 crore in 2010 prices) that could go towards funding regional infrastructure like a sewerage treatment plant and water pumping stations that serve multiple TP Schemes.

Early infrastructure development would trigger land use conversion and, in turn, payment of betterment charges, thereby increasing their contribution to scheme financing. A sensitivity analysis for Bodakdev 1B shows if the receipt of betterment charges would have commenced 3 years after the notification to prepare the scheme (as was the case with TPS 50), the charges could have financed 28% of the scheme. Indeed, a scenario analysis for TPS 50 shows that the betterment charges could finance almost half of the scheme cost (48%) even if infrastructure development takes 13 years and betterment charges are realized over 20 years from the date of Draft TPS sanction (2004). The sensitivity analyses clearly indicate that *the contribution of betterment charges towards financing a greater share of the scheme cost hinges on early start of infrastructure development.*

Potential for Land Bank: Reserved plots in TP schemes form the land bank, which can help finance much infrastructure beyond the specific TP scheme. For instance, AUDA can realize at least Rs. 450 crore if all the reserved plots (17 ha) in TPS 50 are sold at the current market rate of Rs. 30,000/sq.m.

Table 4: Source of Financing

Scheme Title	FP/OP Ratio	As per Draft TPS % of Expenses Financed Through		Estimate of Actual Financing (assuming 10% discount rate and 15% cost escalation annually)	
		Betterment Charges	Sale of Land	Betterment Charges	Sale of Land
Bodakdev	2.5	97%	3%	6%	187%*
TPS 50	3	87%	13%	48%	
Bopal 3	2	98%	2%	48%	

Note: 1. For Bodakdev 1B it is assumed that construction expenditure and betterment charges are evenly spread over the period 1993-2005 and 1993-2012, respectively; for TPS 50 over 2004-2016 and 2004-2023, respectively; and for Bopal 3 over 2012-2025 and 2013-2032, respectively.

2. * Actual sales data are used for Bodakdev 1B.

Source: IDFC analysis based on Form "G" of the TPS Reports

Reasons for Success of TPS in Gujarat

- *Early provision of infrastructure*
- *Land ownership disputes transferred to the new plot*
- *Manageable scheme size* which is large enough in area for planning and small in number of plots to make the process manageable (including public hearings and reconciliation of revenue records with the site survey).
- *Development authorities' planning capacity* to interconnect physical, financial and property rights dimensions of TPS.
- *Self-financing* as revenues from sale of reserved plots supplement betterment charges, and act as a hedge against increase in construction cost.
- *Land owner satisfaction* due to infrastructure provision and increase in own net land value. There are some concerns though, such as difficulty in understanding the TPS documents and of inequitable treatment as influential land owners sometimes get smaller land deduction, wider roads and higher FSI.
- *Political Acceptability* because of self-financing nature and high degree of land owner satisfaction, many of whom are also highly politically connected.

Issues

- *Need improved transparency in process and accounting* of revenues and expenses of the schemes
- *Firm deadline for government to approve the TPS* to enable timely sale of plots and development of public facilities. The scheme should be considered approved if government fails to take a decision within a reasonable time period.
- *Need for better quality infrastructure*, for example, footpaths, medians and landscaping.
- *Need for better, cohesive urban form* as the scheme documents do not provide urban design guidelines.
- *Train architects and city planners* to develop a better quality urban environment.

Concluding Thoughts

Gujarat has made great strides in the use of TPS. Improvements need to focus on timely provision of public facilities and sale of plots, as well as on the quality of infrastructure.

TPS holds immense potential nationally. All we need is the political will. Amendments to State Town Planning Acts may be required, especially if these do not currently allow plot reconstitution and levy of betterment charges. In other cases, existing provisions within the state and local planning acts can be explored to frame rules for LPR. Finally, promotion of LPR can be part of the JNNURM reform agenda.

Infrastructure Development - Turning Points

National Solar Mission: Making Solar Power Affordable

In January 2010, the Government of India (GoI) announced the National Solar Mission that targets 20 GW of solar power by 2022 (covered in its draft form in our Quarterly of September 2009). In its final form, the Mission has done away with the provision of generation based incentives (GBI) to promote solar power. It has instead come up with a mechanism of bundling the 1000 MW of solar capacity addition planned till 2013 with equivalent power from the cheaper unallocated quota of NTPC coal-based stations (i.e. power not committed to any state and available for allocation through GoI's discretion) and selling this bundled power to distribution utilities (discoms) at rates fixed by the Central Electricity Regulatory Commission (CERC). NTPC Vidyut Vyapar Nigam (NVVN) has been designated as the nodal agency for purchasing power from solar power developers (SPDs) and selling it to the discoms.

Thus, cheap coal based power (priced otherwise at about Rs. 2/unit) will cross-subsidize expensive solar power (priced at Rs. 18.44/unit for PV and Rs. 13.45/unit for solar thermal by CERC). From the GoI perspective, this mechanism has two-fold benefits: (i) it saves an estimated Rs. 2145 crore per annum on account of the earlier proposed GBI subsidy (computed using CERC norms, solar PV and solar thermal having equal shares in the above 1000 MW, and utility purchase price of Rs. 3.50/unit as per the draft mission) and (ii) it provides payment security to SPDs who were reluctant to sell such high cost power directly to discoms, despite an earlier scheme offering GBI. However, NVVN's ability to pay SPDs would hinge entirely on the payment by discoms. Moreover, the cost of bundled power will increase to Rs. 5-6 per unit. In essence, in the absence of a government subsidy, the discoms will bear the incidence of higher prices. .

New Category of NBFC -- Infrastructure Finance Company

In February 2010, the RBI introduced Infrastructure Finance Companies (IFCs) as a special category of Non Banking Finance Companies (NBFCs). To qualify as an IFC, the entity must have over 75% of its total assets in the form of infrastructure loans, a

Table 5: Changes in exposure norms for NBFC-ND-IFCs

Exposure	Old Norms	Revised Norms
	% of owned funds	
Lend to single borrower	15	25
Lend to single group of borrowers	25	40
Lend & invest in a single party	25	30
Lend & invest in a single group of parties	40	50

Source: RBI

net worth in excess of Rs 3 billion, a minimum credit rating of A and a capital adequacy of over 15% (Tier-I over 10%). IFCs are allowed higher exposure norms than other categories of

NBFCs (see table 5) and risk weights on their bank borrowing have been lowered from a flat 100% in accordance with corporate bond ratings viz., 20% for AAA. They can also borrow through External Commercial Borrowings (ECB) under approval route up to 50% of Net Owned Funds.

Infrastructure Highlights of Budget FY 2010-11

Infrastructure Bonds: To channelize domestic savings into infrastructure, an additional deduction of Rs 20,000 from personal income tax, over and above the existing Rs 1 Lakh has been provided for investments into central government notified infrastructure bonds. However, the resource mobilization of such bonds will largely depend on the lock-in period and interest rate.

Green Infra: The budget has announced the establishment of a National Clean Energy Fund (NCEF) for funding research & innovative projects in clean energy technologies. The NCEF will be funded by a clean energy cess @ Rs. 50 per tonne on domestic and imported coal. Taking the FY 2008-09 level of coal production and import (551.95 MT), the cess will generate a minimum of Rs. 2760 crore every year. The size of the fund can be gauged from the fact that in three years, the NCEF can provide debt funds for 65-85% of the capacity planned in the first phase of the solar mission.

Coal: The GoI has proposed to allocate such blocks through competitive bidding. Ideally the criteria for bidding should be linked to the lowest cost of power generated from the block and not on the highest bid value offered for the block, since it would be passed on to the end consumer. However, the former approach is possible only if sufficient data on the depth, seam thickness, and quantity & quality of the coal are available for the blocks to be auctioned. IDFC's Energy Advisory Board, in its note of October 2008 to the Ministry of Power and the Planning Commission on *Issues in Captive Coal Block Development*, had suggested that auctioning on the basis of maximum proposed production or production sharing formula may be workable till sufficient data for coal blocks are available.

Railways PPP: The GoI envisions developing and implementing new business models in the railways through PPP. It has also proposed the setting up of a National High Speed Rail Authority for planning, implementing and monitoring six high speed passenger corridors to be executed through PPP. However, the intent of promoting PPP within railways needs to be backed by credible action, as the Annual Plan for FY 2010-11 envisages a small contribution from PPP (not exceeding 2.5% of the total outlay) in meeting the planned expenditure.

Policy Group - News & Events

- **IDFC co-sponsored** an international symposium titled *Public Transportation for Indian Cities with a special focus on Bus Rapid Transit (BRT) Systems* held on January 20-21 in Delhi. Speakers provided global examples of BRTS, highlighting the role of information technology and the need to integrate BRTS with other transportation modes.
- **The Writers' Workshop for the India Infrastructure Report (IIR) 2010** *Infrastructure Development in a Sustainable Low Carbon Economy*, organized by IDFC jointly with IIT-K and IIM-A, was held on February 6-7 in Delhi. The Workshop provided a platform for prospective authors to discuss their papers and receive feedback from peers.

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