

The Development of Kalyan Dombivili; Fringe City in a Metropolitan Region

By Isa Baud, Karin Pfeffer, Tara van Dijk, Neeraj Mishra, Christine Richter, Berenice Bon, N. Sridharan, Vidya Sagar Pancholi and Tara Saharan



Table of Contents

1. Introduction: Context of Urban Governance in the City Concerned	3
1.0. General Introduction: Framing the Context	3
1.1. Levels of Government and Territorial Jurisdictions Involved in the City Region: National/Sectoral, Macro-Regional (Territory), Metropolitan, Provincial and Districts	7
2. Urban Growth Strategies – The Role of Mega-Projects	10
2.1. KDMC’s Urban Economy and City Vision: Fringe City in the Mumbai Agglomeration	10
3. Addressing Urban Inequality: Focus on Sub-Standard Settlements.	15
3.1. Urban Formations; Socio-Spatial Segregation, Implications for Housing and Settlement Policies	15
3.2. Social Mobilization and Participation	20
3.3. Anti-Poverty Programmes in Kalyan Dombivili	22
4. Water Governance and Water-Related Vulnerabilities	26
4.1. Water Governance	26
4.2. Producing Spatial Analyses of Water-Related Risks and Vulnerabilities: Integrating Multiple Dimensions and Knowledge Sources at the City Level	27
5. Spatial Knowledge Management in the City: Spatial Perspectives and Participation in Knowledge Production, Exchange and Use?	29
5.1. Discourses and Rationales for Introducing ICT-GIS-Based KM in Urban Governance; Boundaries, Work Processes, Mapping Needs	29
5.2. Knowledge Management in Urban Planning in the City: Actors and Networks	30
5.3. Knowledge Building, Use and Contestation, Exchange	32
5.4. Spatial Knowledge Produced through Citizen Participation Processes	36
6. The Role of the City Government Finances and Venues of Participation within the Decentralization Process	41
6.1. KD finances: Capital Investments, Running Budgets	41
6.2. Financial Arrangements for Water Related Infrastructure and Budgetary Commitments for Millennium Development Goals (WP4 -WP6)	46
6.3. Links between Urban Planning Processes and Financial Decision Making in KD	48
6.4. Public Participation in Decision Making	49
7. Conclusions.	51
References	53
Annexes	55
Annexe 1: The Areas Covered in the Seven Administrative Wards Under the 74th Amendment	55
Excerpt from WB Report (2011)	55
Annexe 2: Figure 5 - Map of Kalyan-Dombivili and changes in the municipal borders 1992	56

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1

Introduction: Context of Urban Governance in the City Concerned

1.0. General Introduction: Framing the Context

The main question addressed in this paper is how a fringe city in an Indian metropolitan region has developed. This paper combines the various processes by which such fringe cities grow and their functions in the region change, as outlined in the EU Chance2Sustain programme.

As starting point we take the question of how fast-growing cities in metropolitan regions define their growth strategies, particularly the role of mega-projects in city development, in combination with large-scale investment programmes by government (for example Jawaharlal Nehru National Urban Renewal Mission - JNNURM). How do such strategies combine with existing local strategies for dealing with poverty (anti-slum strategies), and improving basic services (water)? What new instruments are utilized for

local governance (spatial knowledge management, ICT, and e-government) and what decentralized financial instruments exist that support these strategies? This question is examined in the context of a fringe city in a metropolitan region, in which fringe cities have been planned, and in which existing towns and villages have been incorporated.

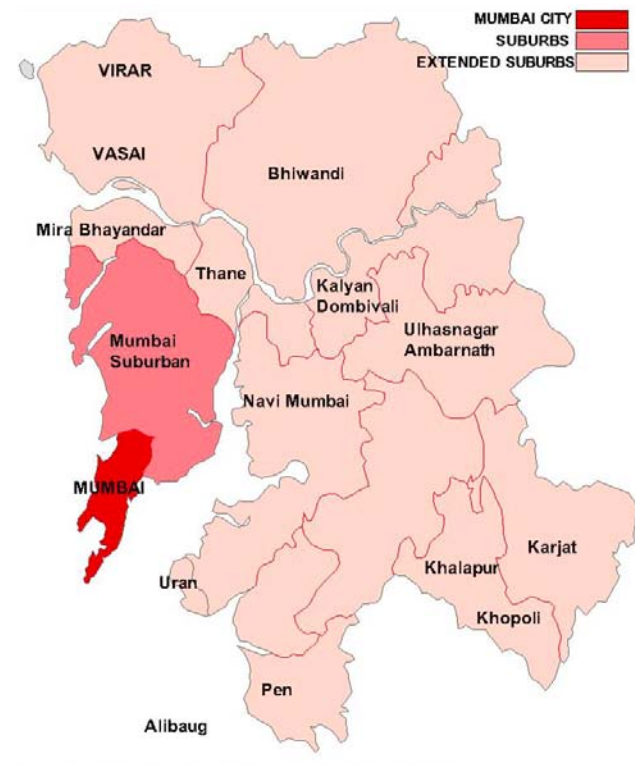
In this paper we focus on the development of Kalyan Dombivili (KD) as twin city in the Mumbai metropolitan region. KD is an interesting example of a fast-growing city within a metropolitan region, because it exemplifies the expansion of Mumbai's metropolitan region to the east and inland. Because Mumbai itself is built on a peninsula, it has few possibilities for expansion except to the north and to the east on the mainland. The expansion towards the east was the area of Navi Mumbai, the largest planned city in the world. Its planning was started in 1964 when the Gadgil

Committee recommended a new city be built to relieve Mumbai of its congestion. In 1967 the Mumbai Metropolitan and Regional Planning Board was set up, and drafted recommendations to set up a new metro centre of Navi Mumbai. The City and Industrial Development Corporation (CIDCO) was formed in 1971, under the Indian Companies Act, 1956 (see A. Shaw)¹. After 20 years of development in the area, the state government handed over jurisdiction to a newly constituted local government body, the Navi Mumbai Municipal Corporation (NMMC) for maintaining some of the developed areas within Navi Mumbai. Local self-government started in 1992, when NMMC was given nine of the 25 nodes of the Navi Mumbai project area for its jurisdiction. However, CIDCO, as a Planning Authority, has rights on the open plots in these five nodes for further development.

Such planned expansion forms the context for the growth and development of KD, which is part of the Thane District, just to the north of the Navi Mumbai expansion area. KD is also a city, which comes under the Central government's JNNURM programme, the largest programme for city renovation and improvements in India (with 85% of the investments going into infrastructure improvements, and 15% into poverty reduction measures (Sivaramakrishnan, 2011)).

KD also falls within the Mumbai Metropolitan Regional Development Authority (MMRDA) area, which covers a total area of 4355 sq. km. and consists of the following administrative units: Mumbai City District; Mumbai Suburban District; Part of Thane District comprising Thane, Kalyan Dombivili, Bhiwandi and Ulhasnagar tehsils; part of Vasai tehsil, the Uran tehsil of Raigad District and parts of Panvel, Karjat, Khalapur, Pen and Alibag tehsils (see Figure 1). The Mumbai metropolitan region (MMR) is one of the fastest growing regions in India. Its population increased from 7.7 million in 1971, to 18.3 million in 2001 and was 22.4 million in 2011. The built up and industrial area in the MMR increased from 4.9% of the total area in 1991 to 31% of the total area in 2011 (Baid, 2008). Growth has shifted to the areas of Thane, KD, Vasai and Mira Bhayander, with KD being the fastest developing area². The unexpected

Figure 1: Map of Mumbai Metropolitan region



Source: Baid, 2011

increase of population influx in this area has surpassed the growth calculations of the earlier Development Plans and has resulted in drastic changes in spatial organization.

These transformations have created great pressure on infrastructure facilities (Baid, 2011). In the second master plan of the MMR (1996-2016) KD and the surrounding area was therefore declared part of the Urbanizable Zone 1 of the plan (see Figure 2).

The growth of KD is also linked to its transport connectivity. Kalyan Dombivili provides the preferred route to connect the northern part of India to the southern regions. The city contains one of the important railway stations on the Mumbai to Pune (South-east bound trains) and Mumbai to Nasik (North-east bound route) rail routes. Finally, it is the centre of many industrial activities. Dombivili has an industrial area with 302 industrial units, producing a variety of products (Baid, 2008), and Kalyan has a large vegetable market which serves as a regional centre for trade.

History and growth of KD

KD was put together from the two towns of Kalyan and Dombivili in 1983, which have different historical

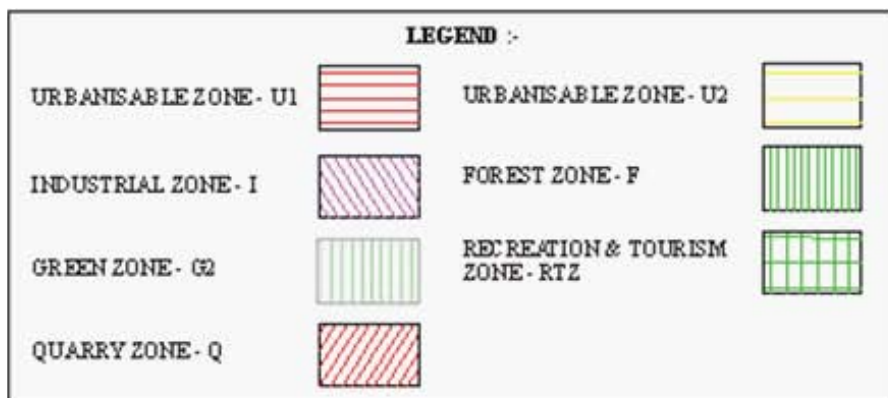
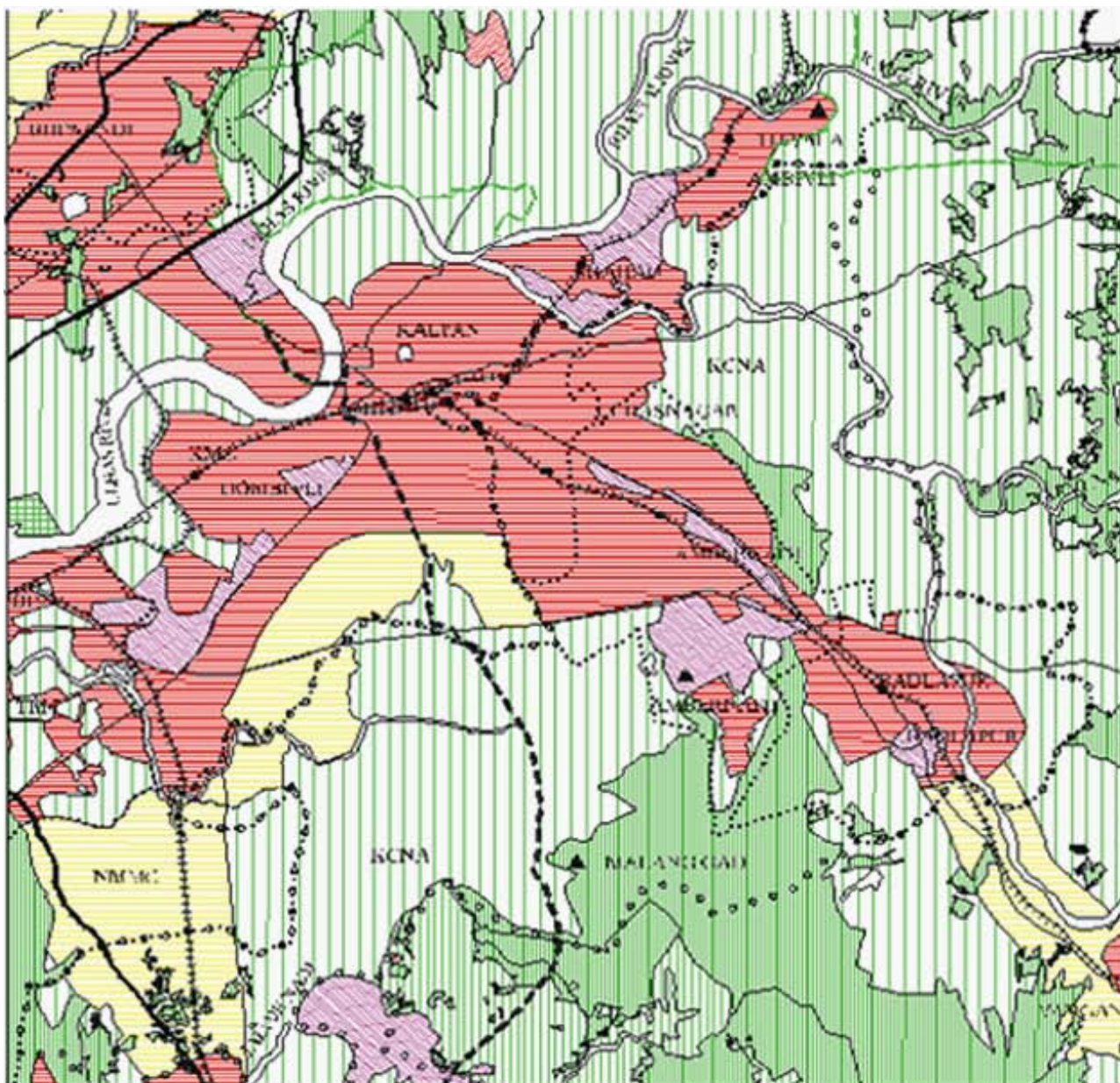
1 CIDCO prepared a developmental plan for Navi Mumbai covering 95 villages from Thane and Raigad district. For the first ten years of the project CIDCO acted as the planning and administrative body, as well as developer and builder. Taxes on property, land, commercial, and water were payable to CIDCO.

2 The MMR includes within its folds the Municipal Corporations of Greater Mumbai, Thane, Kalyan, and Navi Mumbai, 16 municipal towns, 7 non-municipal urban centers and 995 villages. Its administrative region includes entire district of Greater Mumbai, and parts of Thane and Raigad districts (Baid, 2008).



Figure 2: Land use designations of KD area, according to MMR Plan (1996-2011)

Development Proposals for Ulhasnagar, Kalyan



Source: Mumbai Metropolitan Regional Plan (1996-2011)

backgrounds. Kalyan was an active port, with economic activities such as ship building, sand dredging, agriculture, smuggling and fish processing industries. Its population consisted of Agris and Kolis and included a sizeable minority of Muslims (van Dijk, 2011). The Agris were primarily landowners and have benefited from the increased land value in the area. The Kolis never owned land and have therefore benefited much less. Kalyan has more recently attracted poorer migrants from Uttar Pradesh and Bihar and entrepreneurs from Gujarat (van Dijk, 2011).

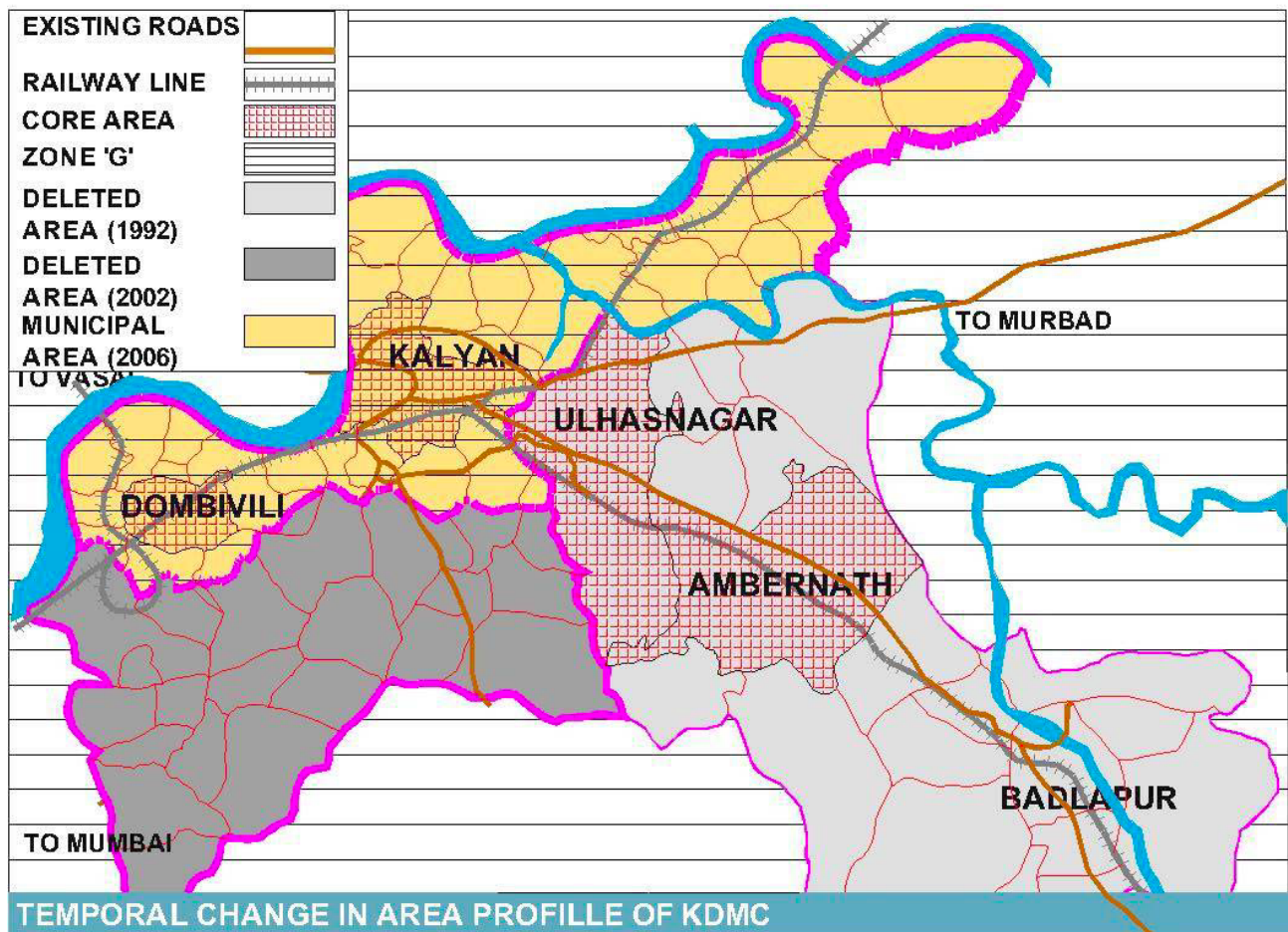
In contrast, Dombivili is of more recent origin. The Agris make up a minority of the population, but are the original population and owned the land. They have been able to benefit from land sales to developers and also dominate local politics in the area (cf. van Dijk, 2011). The population consists of many middle-class Brahmins who sold their homes in Mumbai and shifted to Dombivili, giving the city its reputation as more middle-class, modern, and cultured. Most residents in Dombivili commute to Mumbai for their work, whereas people in Kalyan work locally in non-formal

employment (van Dijk, 2011). However, Kalyan is also developing rapidly in terms of middle-class residential areas and business and consumption locations, as a result of changes in the building codes. Both large and small-scale real estate developments are emerging rapidly – at least some eleven major projects have been identified as ongoing in various stages of development (Bon, p.c.; Lad, p.c.). The borders of the city have been contested since the merger in 1983 of three municipalities: the third was Ambernath which later succeeded in becoming a separate municipality (van Dijk and Sridharan 2009) (see Figure 3).

Table 1 illustrates population growth, which has been high in the decades between the 1980-2001, but since then has slackened.

The land use in the city has changed over time, with a strong tendency towards mixed land use and high levels of population density in the city centres (Baid, 2008). The KD area is a 'receiving area' in terms of the Trading development rights (TDR), and this has led to an increase in regulated FSI

Figure 3: Map of Kalyan-Dombivili and changes in the municipal borders 1992



Source: Baid, 2008

Table 1: Population trends KDMC 1961-2011

year	population	Decadal growth	CAG
1961	149,894		
1971	2,38,499	88,605	4.7%
1981	442,242	203,743	6.37%
1991	820,562	378,320	6.38%
2001	1,047,297	372,704	2.47%
2011	1,246,000	198,703	1.75%

Source: Revised City Development Plan, November 2012, Kalyan Dombivili

from 1.3 to 1.8. This has increased the vertical build-up especially in the core areas of the city, where Baid estimates FSI to be 2.5-3.3, increased population density by 50%, and puts a great deal of strain on available services, which cannot meet the new demand in terms of water, sanitation and green areas (Baid 2011:66).

The city is characterized by heterogeneity, linked to its history and current expansion. The main types of areas identified are the modern middle-class real estate developments (characterized by van Dijk as 'lifestyle city'), unauthorized areas housing a mix of socio-economic groups in unauthorized apartment blocks and complexes, the *gauthans*, which are the traditional village-like areas in which many of the original population groups live, and the slums (van Dijk and Sridharan 2009). The various types are discussed in section 3.

1.1. Levels of Government and Territorial Jurisdictions in the City Region

When the three towns of Kalyan, Dombivili, and Ambarnath merged, the Kalyan Dombivili Municipal Corporation (KDMC) was inaugurated. It has taken on extensive tasks. KDMC is obligated to provide basic infrastructure like water supply, drainage, sewerage, roads and services such as solid waste management, fire fighting, street lights, education and primary health care under the 1949 Municipal Act. The Act empowers KDMC to levy taxes such as octroi and property tax, user charges for water supply, sewerage and fees on various other services. In addition, the KDMC also runs local transport service,

swimming pool, auditorium, and a stadium, which are not obligatory under the Bombay Provincial Municipal Corporations Act (BPMC) Act. After the introduction of the 74th Constitutional Amendment, seven committees at administrative ward level were constituted (NIUA, 2008: Appraisal of the CDP) (see annexe 1).

Figure 4 illustrates how governance of KDMC is organized. The deliberative wing encompasses the politically elected representatives, and the executive wing the administrative and executive departments. In the Executive wing, the TP Department (in Figure 4 within 'Other HODs' – Other Heads of Departments) has important functions related to land use planning, helping other departments plan for proper development in the KDMC area, marking Development Plan (DP) roads and land reservations, acquiring land by providing transferable development rights (TDR) or monetary compensation, acquiring lands by land acquisition act through the Collector, and giving permissions under the DP rules. It seems that KD has drawn tasks into the local government body rather than outsourcing them through parastatals.

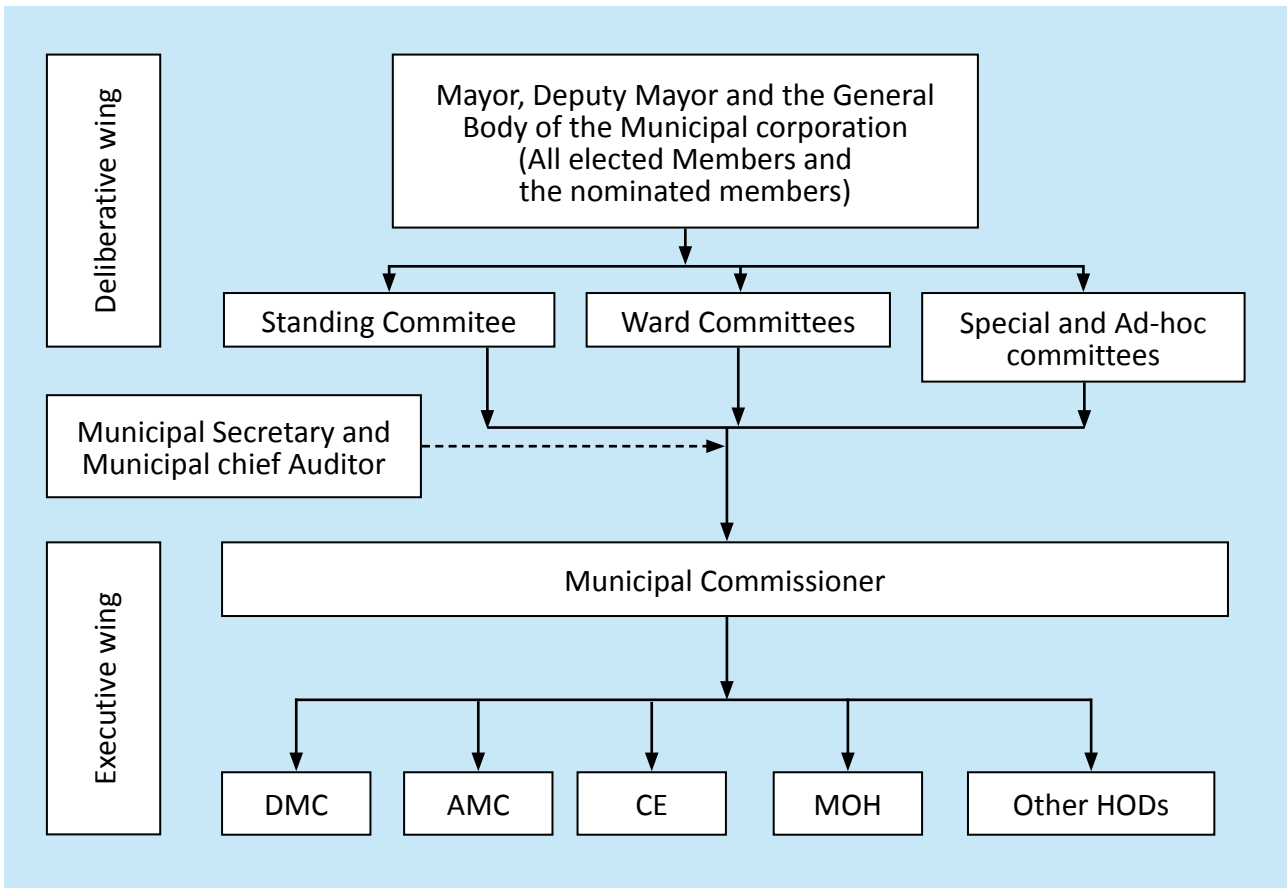
Politics in local government

In Kalyan, the original population of Agris are no longer involved in agriculture, but have diversified into real estate as landlords, developers, contractors, building suppliers, and real estate brokerage. This caste group holds extensive informal power, and dominates the political wing of the KDMC because of their high level of mobilization. However, emerging elites are challenging this network (e.g. Member of Legislative Assembly (MLA) Chavan who is BJP³). The Agri network seems to be stronger in Kalyan than in Dombivili, where middle class households moving out from Mumbai normally elect 'one of their own' as Municipal Councilor (MC). While Agris dominate locally, this is often not the case at higher scale levels.

Service provision to sub-standard settlements

Legally, municipal governments and MCs cannot provide services or enable illegal and/or unauthorized settlements to reproduce and expand. In practice, in the absence of strong and specific legislation, MCs and municipal officers and staff provide (uneven) services to all settlements in KD. Additionally, KD never went through the process of distinguishing between registered and unregistered slums. The official reason is because the

Figure 4: Organigram of Kalyan Dombivili Corporation – organigram (Lad, 2008)



process was too difficult and ever changing and they received permission from the state to ignore certain guidelines if capacity was not there--the off the record reasons are the following: 1) slumlords of slums on public land are often MCs or are closely tied to MCs and don't want the status of the inhabitants to become official and do not want to lose money and votes from slums; 2) those who own or effectively control slum areas are waiting for a policy that offers them more FSI and compensation, and 3) reluctance of local staff to enforce regulations.

Challenges for KDMC

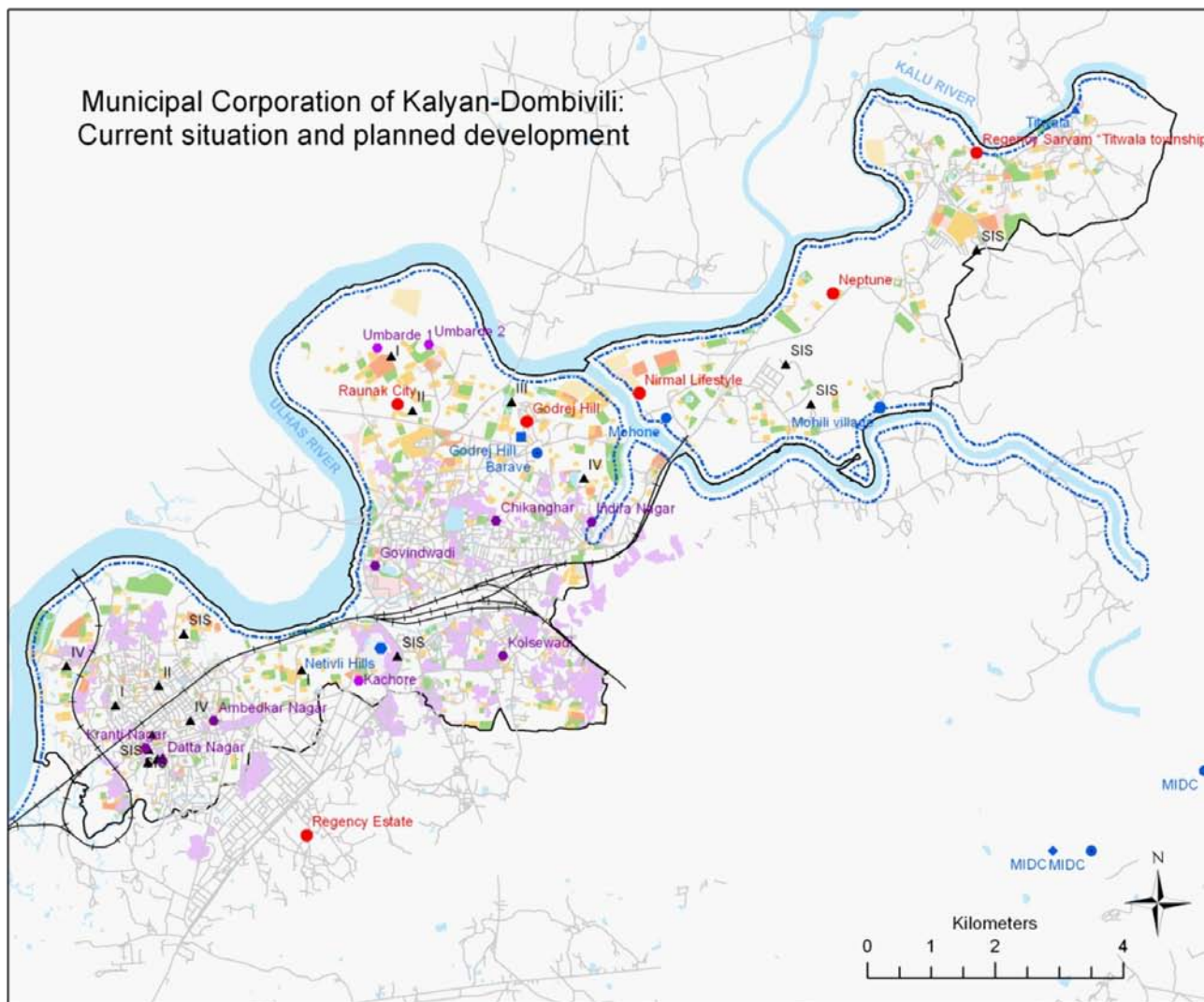
In the City Development Plan 2007 (CDP), weaknesses of the city have been identified. These include the fact that some areas are prone to floods, especially when high rainfall

coincides with high tides. The withdrawal of some areas from KD has also meant that there has been a loss of revenue in the city, and unauthorized construction has left less scope for better town planning of the old city area. The high influx of new residents has meant that the city has difficulties in providing basic amenities to the increasing population. In addition, the slum population has increased because of the influx of migrants from other parts of the state and country. Finally, it is suggested that there is a lack of a good economic base and infrastructure in the city (CDP, 2007).

Figure 5 shows a map of KD, in which the issues to be discussed in the next paragraphs are overlaid and integrated, to show a comprehensive picture of the way in which the domains in our programme overlap geographically (see annexe 2 for a larger version).



Figure 5: Map of Kalyan-Dombivili and changes in the municipal borders 1992



Legend

- Housing Projects
- ▲ Slum Improvement Schemes
- Coastal zone regulation
- Railway_Line
- Roads
- KDMC Boundary
- Water bodies
- Slum

Development Plan

- Undefined
- Commercial
- Public Purpose
- Public Utility
- Recreational
- Residential
- Traffic and Transport
- Water Bodies

BSUP sites

- BSUP site phase 1
- BSUP site phase 2

Water supply locations

- Master balancing reservoir
- Raw water source
- ▲ Source and treatment plant
- Storage tank
- Water project
- Water treatment plant

Sources: KDMC database (2007), scanned KDMC maps (2006), field work data (2012)
 Conception and design: Karin Pfeffer, Isa Baud, Neeraj Mishra and Berenice Bon (2013)
 Coordinate System: UTM WGS 1984 Zone 43 N

2.1. KDMC's Urban Economy and City Vision: Fringe City in the Mumbai Agglomeration

In KD, growth strategies of the local government are mainly linked to improving infrastructure (water, sewerage systems, transportation), as the city has grown rapidly over the past decades and is absorbing immigrants from the rest of the state, as well as Mumbaikers moving out from the city proper. Private sector initiatives concern housing development projects and industrial units, providing employment. The discussion below focuses on one of the largest public infrastructure projects in the city, namely the water pumping and treatment plan⁴.

National Urban Reforms for local governments

Policymakers in India have recognized that cities play a crucial role in promoting economic growth. They have also acknowledged the present dilapidated status of basic urban infrastructure in their own cities, which the government seeks to address by providing guidelines and financial support to the selected 65 cities under JNNURM.

The union government proposed radical transformation in urban governance to recognize the different local imaginations of the city and providing support to local governments, to prepare their developmental vision document for the area, but also take local developmental initiatives and raise funds through different partnerships within this urban renewal program. At the provincial level, JNNURM created opportunities for state governments to access funds for the infrastructural development of their cities. Maharashtra has been at the forefront in implementing constitutional directives, such as the 74th Constitutional Amendment Act and computerization of public service delivery. As JNNURM makes both of these mandatory conditions for grant of loan, Maharashtra was

4 As we have too little information on the private sector housing project initiatives, these are left out of the discussion. Ten major housing projects are indicated on the map, but several of these have not yet been built in practice (fieldwork report Tara Saharan, 2013).

able to secure many such projects. The state government's planning and development authority, MMRDA, had 85 approved projects, with the highest number (25) approved in the area of water supply.

Mandatory reforms at the state and municipal level under this program are intended to provide municipalities with greater freedom to manage their affairs and seek private partners for creating new infrastructure by restructuring their relationship with the state and union government. While the need for creating basic infrastructure in Indian cities cannot be overemphasized, its access to and inclusion of marginalized (people and areas) remains a contested issue causing conflicts and negotiations at different levels of government. If the market becomes the sole arbitrator of basic services, subsidized pricing would also undergo review and possible increases in prices can cause further exclusion of the poor.

City Development Plan: links to JNNURM

In 2007, in order to qualify for JNNURM funding, KD prepared the CDP, utilizing consultants to prepare the report and a consultation process (see NIUA, 2008). Some projects are proposed as BOT projects⁵. These include a parking plaza near Durgadi Fort, a water park swimming pool at Wardeghar, a multiplex theater and shopping mall complex, a vegetable market and parking plaza at Katemanivli, and several shopping centres in combination with other activities (CDP 2007). Other projects indicated in the CDP are partially linked to JNNURM projects and financing, as well as the reforms which JNNURM demands. The following projects were identified (Table 2).

Table 2 indicates that about three fourths of the estimated capital investment will be invested in roads, water supply and underground sewerage systems. The CDP links these projects to the JNNURM projects in its financial calculations, which show that total capital investment under the JNNURM is almost 780 crore Rupees, of which half is provided through a capital grant from the GOI/JNNURM, and another 32% by loans which KDMC has taken. The remainder is provided through KDMC's own revenue.

5 Build-operate-transfer

Table 2: Projects identified by KD under the City Development Plan 2007

Projects identified	Capital investment estimates (crore Rs.)	% of total investment (estimate)
Water Supply	183.75	23
Underground Sewerage scheme	168.00	21
Storm Water Drains	52.50	7
Solid Waste Management	20.00	3
e-Governance	4.70	1
Roads, Traffic & Transport	225.75	29
Station Area Development Scheme	17.85	2
Development of Parks and Playgrounds	5.09	1
Street Lighting	21.00	3
Urban Poverty & Slum Upgrading	19.78	
Conservation of Water Bodies (cf. NIUA, 2008).	9.22	1

Source: CDP of KD, 2007

Table 3: Estimated capital investment in city development / JNNURM projects in KD

Estimated capital investment	Crores Rupees
Capital grant- GoI/JNNURM	388.06
KDMC own contribution transferred from revenue surplus	138.05
KDMC contribution by loan/ borrowings	250.00
Total capital investment under JNNURM	776.11
Surplus amount for other capital infrastructure	235.29

Source: CDP Kalyan Dombivili 2007

The mandatory and optional reforms linked to the JNNURM programme and the extent to which they have been incorporated are discussed in the CDP. The main mandatory reforms the city has established are double accrual accounting, digitization of various services provided by KDMC (the use of GIS is not implemented, although the CDP suggests it has been), the reform of property tax for more efficient and effective collection (up to 85% effective), levying user charges for services to pay for operation and maintenance costs, internal earmarking for Basic Services for the Urban Poor (BSUP) services (15-20% of the budget),

and provision of basic services to the poor, including tenure security, education and health services which should become universal (CDP, 2007:xx). To some extent, such initiatives have been taken up by KDMC, although their implementation remains complicated (see other sections in this report).

The 15% of JNNURM financing that has to be spent on BSUP activities in Maharashtra is routed through a different government organization than the infrastructure investments (namely, Maharashtra Housing and Area Development Authority (MHADA)). For a further description of those activities, please see section 3.

The mandatory public engagement process conducted in making the 'city development plan' records meetings with eminent citizens of the city. However, personal interviews indicated that such meetings were staged and took place without much genuine concern to include people's knowledge in improving local policies. 'Participation' in the planning process was carried out mainly because the JNNURM format makes it a requirement.

2.2.1. Large-Scale Infrastructure Project in Urban Economy

In KD, the large-scale infrastructure project studied as mega-project concerns the large-scale water supply project funded under JNNURM. In MMRDA fringe cities, such projects are more commonly found than those related to

economic growth as such; the latter are reflected in the large housing project which have come up through the private sector investment (of which seven have been identified in KD). The large-scale project in KD under JNNURM concerns the 150 MLD water supply scheme in Kalyan-Dombivili.

Before 1995, the water needs of KDMC were met by a state-level agency, the Maharashtra Industrial Development Corporation (MIDC)⁶, which considered setting up an “independent filtered /potable water supply system of adequate capacity” an essential infrastructure for industrial development and a strategic step facilitating the growth of the Kalyan complex. Kalyan-Dombivili therefore remained dependent on this corporation for meeting its water needs and did not develop any infrastructure to procure its own drinking water.

In the 1990s KDMC built a 90 MLD water supply system on the Ulhas river but still bought water from MIDC to meet urban demand. In 1999, a new raw water pumping station at Mohane was sanctioned to augment the existing 90 MLD capacity to 144 MLD, making KDMC independent of the MIDC. This project also included new water treatment capacity, as existing water sources were heavily polluted and unfit for consumption. This project, consisting of the water treatment plant at Barave was completed in May 2002.

KDMC also draws 2 MLD of water from the Kalu river. KDMC has plans to increase this capacity to 7.5 MLD for its Manda-Titwala area along with the construction of a 500,000 liters capacity-balancing reservoir for this source. The water department is also currently supervising the construction of new elevated service reservoirs at Barave and Govindwadi in Kalyan (W), laying new distribution pipelines in the new zone of Kalyan (W), and construction of 15 ML capacity reservoir at Netivli for emergency water storage.

This water supply project originated with JNNURM in 2005-06. Both State and city government were aware of water shortages in KDMC and the cost of purchasing water from the Maharashtra Industrial Development Corporation (MIDC). Both realized that having its own water supply system would make the water department more self-sufficient, as it now recovered only two-thirds of expenditures. The incentives for the project lay in the need

for larger water provision for the fast-growing city, the burden on the MIDC in providing for the expanding water needs of KDMC, and the JNNURM context, which provided sources of additional investment loans. The formal planning for the project began with the preparation of the CDP in 2006, which provided an overview of the infrastructural capital in the city, existing gaps in water supply systems and ways to address these. The Detailed Project Report (DPR) of the 150 MLD project was drafted by a Mumbai private company and submitted to KDMC in late 2007, revised as per the comments made by Ministry of Urban Development (MoUD) and MMRDA, and resubmitted in early 2008. This was further revised by CES and a final report submitted to KDMC in January 2009. Consulting Engineering Services (India) Private Limited (CES) carried out topographic surveys for preparation of plan, base map, finalization of design parameters, estimates, operation and maintenance costs, tariff structure, and implementation schedule. It also advised on installing flow meters for monitoring at strategic locations and approving the water source for treatment to drinking water. Construction began at the project sites in 2009.

The project was first submitted to MMRDA and then nationally to the MoUD, and approved in February 2009. The water department of KDMC began work in July 2009 in Mohili village in partnership with an engineering company. The project was to be functional from January 2012 but is only expected to begin working after January 2013.

Progress and conflicts

The remarks raised by MMRDA on the first version of the DPR submitted by KDMC in 2008 notes that ‘the schedule of implementation should include land acquisition and clearance requirement’ if applicable. In the next version of the DPR, KDMC claimed that it had complied and there was to be no acquisition of land in the project. This information was largely correct as most of the land at the chosen site was owned by the forest department. However, a small patch of land (32 *guntha*) belonged to a local farming family from Mohili village, close to the project site. The owner agreed that water projects should not be stopped but that the land in the middle of the project site was ‘reserved’ and hence could not be sold, and in his grandfather’s name, which meant that owners spread across two generations. 25-30 people would have to come together to sell this land. The project was dependent on this land to construct its source tank, which meant KDMC had to resolve this issue before being able to proceed. Senior officials from the KDMC water department came to an agreement that allowed KDMC to begin work on the land and in return the corporation

6 After the formation of Maharashtra State in 1960, the state government constituted a “Board of Industrial Development” (BID) under the Chairmanship of Shri. S. G. Barve. As per the Borkar Committee recommendations, development of the Ulhas Valley Water Supply was entrusted to the BID. The BID framed legislation the Maharashtra Industrial Act, which gave birth to the MIDC as a separate corporation on August 1, 1962.



would supply 1.5 hours of water to Mohili village daily. Also, the owner got the contract for supplying materials and labour to the project construction site.

Space for the water treatment plant in Netivli was much easier to acquire as it belonged to the municipality, but was occupied by sub-standard housing. The deputy engineer at the site explained that the hilly area required blasting for digging the bedrock, and they needed to remove the slum residents for their safety. After doing so, people removed from the project site gradually reoccupied the Netivli foothills and other spaces on the hill outside the construction area.

Few direct links to the surrounding areas exist as the water treated here will be directly supplied to main city via Netivli storage tanks. Only the village of Mohili negotiated with KDMC to receive a half-inch drinking water pipe from the project site to the village.

Spending

The total project cost was estimated to be Rs. 2650 million (38 million euros), distributed among three levels of government: national (GoI), state (GoM) and local (KDMC). KDMC is expected to pay 50% of the project cost, to be funded through soft loans from the state government (GoM). GoM pays 15% of the total cost to KDMC. GoI pays 35% of total cost to KDMC. Private site developers are paid by KDMC as per the tender agreement.

Sites

The project has two main sites. The raw water collection and 100 MLD purification setup at Mohili village, located on the edge of Kalyan city towards Titwala and the storage system and 50 MLD purification plant located on Netivli Hills between Kalyan and Dombivli (see Figure 1).

The Netivli site was a dumpsite and had grown into a small slum populated by the garbage collectors when the project began. The site in Mohili village was used for agricultural purposes though the land was not considered to be exceptionally fertile by the local farmers. In terms of area, this project would be the largest water infrastructure project in Kalyan-Dombivli. Some relocation occurred at the Netivli hills site, where the slum moved twice in conjunction with the work process of the project. Afterwards, the slum dwellers reoccupied the hillock around the construction site.

Institutional embedding

To prepare the CDP, KDMC hired a private firm as consultant and coordinator. As per the JNNURM guidelines, people's participation was considered important for the preparation of the CDP, which was supposed to be achieved by meeting people belonging to different socio-political groups (KDMC-CDP, 2006: 9). The consultants also interviewed political representatives (ward councilors, MLAs and MPs) to include their developmental visions. The general body of the corporation approved the CDP that came out of the discussions in December 2006. Various institutions have to approve the plans for infrastructure processes; these included the water department of KDMC, the state-level nodal agency of JNNURM, the MMRDA, and finally the MoUD for final approval⁷.

Once the project is completed (i.e. partnership with private companies) it would be operated and maintained by the water supply department of KDMC. Therefore, although the project has created short-term coalitions within a PPP model, little institutional reform has taken place around this project. An informal citizens' committee (formed by the eminent citizens like lawyers, famous medical practitioners, teachers/professors, traders of the area) also came into being for a short period of two months during the preparation of CDP and disintegrated soon after.

Government agencies remained the strong drivers behind this project. Locally, KDMC drove the project by supervising assignments and DPR. At the state level, MMRDA acted as nodal agency and at the national level, the Ministry of Urban Development was responsible for assessing the project within the JNNURM program.

Accountability

While there is a defined accountability structure between the various levels of government involved, local accountability mechanisms between KDMC and the private companies are not well defined. Initial agreements outline completion dates of project phases, but sanctions in case of delay or non-delivery of project goals remain obscure. The relationship between private companies and KDMC is one of equality as partners in a common project, although control of funds gives KDMC an upper hand. The private companies are accountable to KDMC, which in turn is accountable to the funding agencies, GoM and GoI.

⁷ Indirectly, the guidelines for making the CDP were formulated by the MoUD, Planning Commission of India, NIUA, NIPFP in consultation with urban development scholars, and based on guidelines provided by WB, ADB, DFID, USAID documents.

Concept/framing

The national discourse on city development focuses on the need for basic services provision to urban areas, to realize the economic potential cities by providing better facilities to its citizens and attracting capital investments. State government realizes the importance of KDMC as an important industrial and residential suburb of Mumbai, which lacks infrastructural assets for basic services. Whereas earlier KDMC remained dependent on the industrial corporation provision, the new project makes it independent of other organizations. It uses a public private partnership (PPP) model, with funding from a variety of government sources with design and implementation being done by the private sector. The expertise used comes mainly from KDMC, private companies and think tanks providing monitoring services (NIUA), and is focused on technical and managerial requirements. Only in the phase of consultations, were citizen perceptions included.

The corporation agreed to share relevant published material with the consultant and provided information about the functions and duties of each department in KDMC. The consultants organized meetings with citizens from different walks of life to understand other developmental discourses in the city. If we consider the citizens invited to share their ideas about developing Kalyan-Dombivli as the representatives of non-dominant knowledge forms, it is evident that the dominant paradigm has prevailed without much visible input from the citizens'

committee. The CDP/DPR as a technical document does not reflect any inclusion of people's knowledge in planning or project implementation.

The main question addressed is how a fringe city like Kalyan-Dombivli has developed its basic services, growing under the shadow of Mumbai, which has defined and redefined its role in the region. The growth strategies of KDMC must take their proximity with Mumbai into account while developing their future plans for the city.

2.2.2. Large Housing Development Projects in KD⁸

KD is seen as an affordable housing area for starting young couples with less than 5 lakh rupees per year income. The Maharashtra Chamber of Housing Industry has opened a new unit in Kalyan in 2012, which brings together developers, government agencies, and home-buyers or renters. Kalyan has 5 Maharashtra Industrial Development Corporations (MIDCs) in the vicinity. The MMRDA has proposed large development schemes for the area (see table below).

Currently, the large housing development projects described below in Table 4 are shown on the integrated map (Figure 5).

8 This section draws on work done earlier by Berenice Bon.

Table 4: Layout plans in KD

Layout Plan Residential development Lifestyle City, Nirmal Lifestyle (Village Vadavali, Kalyan, 4000 flats) plinth stage. Delays because of land pooling and sanctions by KDMC. Rental Housing Scheme with MMRDA; KDMC: Sewage Treatment Plan at Barave Village (Nirmal Lifestyle: construction of the pumping stations). Environmental clearance received only in September 2011 (the documents have been collected). MMRDA: binding agreement with local authorities for the provision of services.

Layout Plan Residential development Godrej Hill, Godrej Properties & Investments Ltd. (Barave Village, Kalyan) completed

Layout Plan Residential and commercial development Regency Sarvam "Titwala township", Regency Group (Village Manda-Titwala, Kalyan, 42 buildings, cost of the project: 291 crores) under-construction, process of approvals, CRZ area.

Layout Plan Residential Raunak City, Raunak Group (Wadhegar, Kalyan) under-construction

Layout Plan Residential development Vikas Builders & Shri Sagarmal Jain (represents two of the owners of the land) & Shri Arvind Kapote one of the three owners of the land (Mouje Gandhare, Kalyan)

Layout Plan Residential development Sai Homes Properties (Village Barave, Kalyan, 208 flats)

Layout Plan Residential Development Neptune Swarajya, Neptune Developers (Village Ambivali, Kalyan, 6 sectors, 10 000 units, 130 acres) under-construction. Affordability. EWS.

Development of Parks and Playgrounds

Source: Berenice Bon, fieldwork report 2012

Note: EWS = economically weaker sections

Addressing Urban Inequality: Focus on Sub-Standard Settlements⁹

3.1. Urban Formations; Socio-Spatial Segregation, Housing and Settlement Policies

Because KD has recently had a fairly rural past, it still has a diversity of urban formations with concomitant heterogeneous rights-to-the-city arrangements¹⁰. Four different types of urban formations and rights-to-the-city were found, listed in Table 5. These impact on the settlement profile, including its housing, the actors and arrangements that govern service delivery and status of residents. Slums and gauthans tend to have the most precarious service delivery and be the most dependent on brokers and patrons.

Table 5: Urban formation and rights-to the city arrangements

Urban Form	Rights-to the City Arrangements
Authorized	Neo-Liberal
Unauthorized	Hybrid
Gauthan	Neo-Feudal
Slum	Clientelist

Source: CDP Kalyan Dombivili 2007

Authorized Settlements

A small but ideologically important percentage of KD's inhabitants live in authorized settlements. These range from single apartment blocks, to complexes, and the newer

'private townships.' In the last decade private authorized townships organized through PPPs have become a popular method of developing housing (eleven have been identified – see Figure 5). Such complexes offer those who can afford it a private well-ordered and well-serviced city within a city. Amenities and beautification of surrounding areas are managed by developers and their contacts at the MMRDA and KDMC before owners take possession. Once enough flats in each high-rise are sold housing societies are formed and management handed to them. Most heads of housing societies tend to be well versed regarding their rights and rules and regulations around service provision and can negotiate directly with providers.

Their Rights-to-the-City are neo-liberal, based on ideas of consumer rights. Neoliberal ideas of urban governance suit urban middle-classes oriented to the future, enamored with world-classing their cities, and who have the resources to compete in the professional job-market and live in a legitimate well-serviced flat. They can also afford to send their children to the best private English medium schools—securing their ability to compete for professional jobs. The ethos of self-responsibility and entrepreneurialism mixed with consumerism and faith in technology position them as the implied 'good' urban citizen in the CDP and large-scale urban renewal/development projects. These are the citizens presumably benefiting from malls, business districts, and leisure facilities, promenades, and walkable sidewalks. When it comes to issues of individual livelihoods, they are happy about the market and their individual efforts (Goopu 2009). Their associations work directly with the government for tackling issues of urban blight or to be granted space for self-regulation (private townships, housing societies, gated communities).

The network governing basic services in this urban form consists of: residents, housing society leadership, municipal actors and district and state level federations of cooperative housing societies operating under the purview of the Maharashtra Cooperative Societies Act 1960. The official purpose of this network is to produce well-serviced housing societies, directly benefitting residents and indirectly benefitting the city as whole (in terms of cleanliness, reduced encroachments, and property values) (van Dijk 2011b). State recognized housing societies are thought to have more direct contact with the local state and to deal with officials rather than politicians (see Ghertner (2011; Baud and Nainan 2008).

⁹ This section is based on the fieldwork carried out by T.K. van Dijk during 2009-2011

¹⁰ The actors in each urban formation are often the same but take on different roles depending on the context: inhabitants, local leaders, MCs and MLAs, KDMC officials and staff, party workers, middlemen, developers, contractors, private service providers, and strong-arm men (goundas).

However, in KD housing societies operate through a mix of informal and formal processes. Normally the secretary or president of the housing society has some knowledge of the official rules or regulations, but their members often do not. One issue concerns the extent to which developers have conveyed legal ownership to residents or not. In the latter case, they retain influence in the housing estate; both parties employ 'go-betweens' to deal with the cultural holes between their 'modern' sensibilities and the informal practices and norms of the local state and political society¹¹. The dealings between housing societies and developers, housing societies and the local state, and internal housing society relations can also be mediated by city and district level Cooperative Housing Society Federations. The Thane District Federation shared that, while the act is comprehensive and strong, most people are uninterested in changing how they currently manage internal conflicts within housing societies.¹² Many societies handle relations and conflicts with the local state and developers informally and hesitate to use the law and their citizenship to expose wrongdoing or to push for conveyance. Like the other urban rights-to the city, this one has a mix of formal, informal, illegal elements. However, some relatively elite housing societies make full use of the acts and their citizenship to hold the local state and developers accountable—but these are a minority and not enough to consider the local state and participation *en masse* as becoming 'gentrified' (see Ghertner, 2011).

Unauthorized areas

Recent estimates suggest that around 70% of the buildings in KD are unauthorized as per the CDP (residential building on agricultural zone) or as per building codes (extra floors, encroaching on what is supposed to be left for services etc.¹³). Unlike slums and *gauthans*--which have a particular physical manifestation--unauthorized apartment blocks and complexes are impossible to distinguish visually--they are creations of laws and official development plans. Also, residents are more diverse (income-wise) than those of slums and *gauthans*--so they also lack the cultural, social and physical indicators that can be mobilized to divide formal from informal settlements. The network governing

services and housing in this market in KD consists of consumers and renters (of flats), developers, municipal actors, and private service providers (van Dijk 2011b). It is cheaper and faster to build, organize services, and sell an unauthorized building than an authorized one, because the network connecting flat owners/renters to municipality is streamlined and produces rents for everyone involved. The flat owner or renter saves money, the developer and contractors save money by not getting all the permits and organizing their rights to the land informally with the landowner (via force and/or cooperation), the middlemen who negotiate on behalf of the developer with the local state and private sector actors receive 'fees' for their efforts, and local state and private sector service providers receive 'speed/influence' money for turning a blind eye to the unauthorized status of the building and organizing services quickly. This network bridges the gap between the informal sphere of unauthorized construction and formal state and private sector providers. Given the informal nature of these arrangements, this network also spans a cultural divide as most flat owners are unaware who the 'go-to' people are further up the network nor aware of the informal rules and norms binding this network together past the president of their housing society).¹⁴ State and Central level politicians and officials often possess large land holdings¹⁵ in these newly urbanizing areas—or are politically or economically beholden to those who do, which makes them interested in this network. Residents tend to be better educated and skilled than those living in slums or *gauthans*. However the unauthorized nature of their housing compels them to operate informally where housing and basic services are concerned thus their rights-to the-city can be seen as hybrid.

Gauthans

Gauthans (urban villages) were once rural settlements now surrounded by the city. Most of the land is designated as agricultural, although most have tenements built on them. Land ownership is usually concentrated in hands of one caste, with the majority of the residents living in chawl-like houses (often in terms of 100 year leases), rented out by the landowner (usually *Agris*) living in nicer family houses, encircled by small shops also leased out (van Dijk and Sridharan, 2009). As these settlements are considered organic rather than illegal (Risbud 2002) landlords can rule over these villages as they like. They can be benevolent and

11 However, if a retired politician or bureaucrat heads the society they report dealing directly (often by phone) with local politicians and officials.

12 Turning one's water or power off until they pay or just letting it be because it is too much of a headache to fight them and their allies who are less interested in area cleanliness or the regulations of the housing society.

13 This number is based on local officials and Times of India articles reporting on PIL cases.

14 Even though unauthorized many settlements are able to officially form housing societies.

15 This is often difficult to empirically trace because they put the deeds/titles in family members or friend's names (several personal communications).

allow city and government schemes to improve the welfare of their renters or keep them out. As land regulations shift and real estate values rise, many of these families are looking to develop their land, which requires removing present renters. In *gauthans* the MC is often either the landlord or a relative of the landlord. Tenancy arrangements are usually informal, so there is little tenants can do to defend their rights, because any serious protest would result in violence or eviction (cf. van Dijk and Sridharan 2009). This suggests that such tenant groups stand to lose their existing precarious access to housing and services as KD grows and land prices rise. The unplanned status of the *gauthan* causes their rights to the land to be vulnerable, relations with the local state highly mediated by their landlord and his/her network ties to government officials. The rights to the city arrangements here can be considered neo-feudal because inhabitants' relations to the landowner are central to accessing basic services.

Slums

Slums are considered illegal settlements marked by self-help substandard housing, poor sanitation and insecure basic services provision. The attributes that account for the differences in slum administration are whether it is on government or private land, the strength of its local leaders and supply and demand in the land market and degree of speculation (van Dijk and Sridharan 2009). Given their illegality, the extent to which populations on government land can negotiate access to services and occupancy is largely at the discretion of city administrators, street level bureaucrats and local politicians¹⁶. When the slum is on privately owned land, owners must officially agree to municipal provision of services beyond water and electricity. This rarely happens as it implies a loss of some land and strengthens tenure claims of slum residents. The strength of local leaders—MCs, party workers, and other slum leaders—impacts the quality of life in slums (van Dijk and Sridharan, 2009). Those, who have adequate knowledge of government schemes and “enough money and muscle power” can improve neighbourhood welfare; those without these abilities or indifferent to the needs of those living in slums do not. Almost, invariably the MC and top party workers are viewed as the only ones residents can go to for help in managing insecurity, securing better services, or to look for work.¹⁷ There is little perceived space for protest given the central position MCs and political workers have in the

stressed social networks of slum residents. Some form of clientelism is seen as the only way to secure a low level of housing and services.

Clientelist networks in KD include clients, patrons, municipal officials/staff, and middlemen and uneven resource exchanges. Resources are not necessarily distributed according to need, and areas with high clientelism have marked internal inequalities. Many patrons do not themselves problem-solve, complain or negotiate ‘informal’ service provision, but send middlemen whose rapport and discretion impact their quality and quantity of resources and power. The dispositions and discretion of municipal officials also play an intervening role. Middlemen depend upon both officials and patrons to function. Clients in this network are residents in illegal settlements and informal livelihoods. The stigma associated with these groups and places maintains the gap between those living in the slum and the formal sphere of government, managed by their patron(s) network(s). Patrons tend to be MCs¹⁸, but also include MLAs, municipal officials or retired government officials. Middlemen tend to be political party workers, slumlords and/or landlords. In the slums studied in KD it is habitual to plead your case to the local patron and accept that what happens or does not is up to his or her discretion and resources. Regarding benefits: patrons, middlemen, and municipal actors can earn social, political and economic resources from negotiations, whereas successful clients obtain a manageable level of insecurity.

Sometimes more macro-level actors play a role in this network. MLAs and MPs (Members of Parliament) also rely upon the votes generated by allowing this network to function in the city. Additionally, land ownership can be traced back to higher-level politicians, officials and their close allies. These actors—for the purposes of maximizing rents and profits from the real estate market—are interested in maintaining the slums to both protect them from being subject to land ceiling acts and appropriation for ‘public use’ until such time as they think they can extract the most political economic gains.

Official figures set the growth of the slum population as follows. The population living in slums or slum-like conditions (may include *gauthans*) has grown absolutely as the city has grown (Table 6). However, the percentage of the total population living in slums or sub-standard areas has remained fairly constant at slightly more than 40% (41 to 44% from 1991 to 2007).

16 This applies in many neighborhoods in the city-region (see also Nainan, 2012).

17 Please see van Dijk (2011a) for more discussion about MCs and party workers.

18 See van Dijk (2011a) for more on MCs in these networks.

3.1.1. Housing and Socio-Economic Conditions: Recent Issues in Selected Areas

This section provides information on critical issues in KD settlements, comparing situations in slum areas with those of the other urban formations. The results are based on a household survey carried out in 2010 among 352 households in selected electoral wards, as part of the van Dijk research project.

The Census 2001 provides evidence on housing and infrastructure issues at the level of administrative wards in

KD that indicate that a shortage of decent housing (particularly overcrowding) is an issue that affects the majority of areas in KD. On average 41% of the households experienced overcrowding then. Lack of sanitation infrastructure also existed in 10% of the households; lack of electricity and water taps was much less of an issue (table 7). Unfortunately, the 2011 Census is not yet analyzed at the KD level in terms of these issues.

The wards where the household survey was carried out cover seven electoral wards; one consists mainly of a slum, five wards have chawl areas (corresponding to *gauthan* areas), and three have basic apartment block buildings (Table 8). Both the slum area and the area with a

Table 6: Slum growth in KD

	1991	2007 (est.)	2011
Total city Population	820,000	1,263,000	1,246,381*
Annual Growth Rate (Percent)	6.38	5.40	
i) Total slum Population	96,000	160,000	
ii) Total population of urban poor dwelling in slum like situation - Chawl system	250,000	400,000	
Total (i + ii)	346,000	560,000	
Annual Growth Rate (Percent)	-	3.86	
Slum population as per percentage of total population	41% of total city population	44% of total city population	

Source: NIUA KD CDP Appraisal Report (2008)

*The figures are difficult to compare because of changing boundaries of KD in the mid-2000s and mid-1980s.

Table 7: Physical deprivations in Kalyan Dombivili by census ward/sector

ward	% overcrowding	% no electricity	% no latrine	% no tap water
1	47.9	4.5	35.8	9.0
2	39.2	0.5	12.9	1.4
3	42.2	1.1	20.7	2.8
4	48.5	1.0	24.1	5.6
5	50.9	2.1	63.2	7.2
6	29.3	0.6	19.7	0.5
7	34.8	0.5	5.2	1.5
8	39.0	0.8	9.8	0.4

Source: Census, 2001

Note: ward/sector 8 is no longer included in KD, due to boundary changes in 2007

concentration of apartment blocks are more homogeneous than the in-between wards. The analysis of the characteristics of the electoral wards has shown that the main issues concern a lack of good physical infrastructure, relating to adequate housing (overcrowding, and mud brick vs. cement housing), inadequate water and sanitation facilities, and garbage disposal. Within most wards, clusters could be distinguished which differed from each other, suggesting some heterogeneity at that level in environmental conditions. Issues mentioned by households further included the type of school to which they sent their children, prevention of malaria and dengue, and toilets.

In the worst-off ward two clusters could be distinguished, according to their expenditures on food and housing. In cluster 1 36-50% of their monthly income was spent on food

whereas a large majority of households in cluster 2 indicated that they spend between 51-75% of their monthly income on food. Households in cluster 1 are better off as a majority of households think their housing is adequate. In both areas, open gutters are found. The variables of type of school and housing material are the fourth and respectively fifth most important variables for distinguishing the clusters. Households in cluster 1 send their children either to a general public school or a public Marathi school. A majority of households in cluster 2 also send their children to a general public school but a substantial minority has chosen either a private English or private Marathi school. A substantial minority of households in cluster 1 says their houses are made of scrap material, whereas a majority indicates their houses are made of mud brick. In cluster 2 nearly all households say their houses are made of mud brick.

Table 8: Electoral ward numbers (ranked according to degree of poverty) versus urban formations

Electoral ward numbers / Urban formations	98	36	37	42	21	96	97	Total
Slum	50	4	0	0	0	14	0	68
Chawl	0	46	49	49	37	23	7	211
Basic apartment block	0	0	1	1	15	13	43	73
Total	50	50	50	50	52	50	50	352

Note: electoral wards lie within the following administrative wards: 37 in B ward; 21, 36 in C ward; 42 in D ward; 96,97,98 in F ward; (98 is also a BSUP site/Indira Nagar)

Source: household survey from 2010: T.K. van Dijk

Picture 1: Kalyan Dombivili; from gautham to high-rise



Source: T.K. van Dijk

Households also indicated how they attempted to access better services, which showed different patterns across types of urban formation. The ward councilor remains the main intermediary by which households access services and receive assistance across all types of urban formations. In the chawls, more than 20% receive no assistance from anyone, and the KDMC bureaucrats provide services most to the basic apartment block residents (Table 9a and b). Overall, the KDMC itself and the ward councilors were considered the most important people for providing assistance.

3.2. Social Mobilization and Participation

In KD, residents express their own agency in various ways, not necessarily in the kind of social mobilization

put forward in the literature on slum mobilization. Generally speaking, in KD, households felt that they could express their agency best through their voting behaviour and their contacts at the KDMC (Table 10). The new Citizen Facilitation Centre (CFC) hardly plays a role as yet (Table 11), although it was designed to be the physical expression of improved relations between local government and citizens.

In order to elicit embedded knowledge in local communities (councilors) and local government, a participatory workshop was held in 2008 with councilors and KDMC officials. Priority issues in deprivations in KDMC were brought out during discussions, and mapped according to areas most affected according to participants' ideas. The resulting map (Figure 6) shows that lack of adequate housing, food distribution to below-poverty-line households, health issues and lack of access to drinking water were the four main issues given priority,

Table 9a: Government assistance for meeting basic needs by settlement type

Government actor	No one		Ward Councilor		Party Worker		KDMC		Total	
	%	N	%	N	%	N	%	N	%	N
Slum	7.4	5	86.8	59	0.0	0	5.9	4	100	68
Chawl	21.3	44	65.2	135	1.0	2	12.6	26	100	207
Basic apartment block	11.0	8	74.0	54	0.0	0	15.1	11	100	73
Total	16.4	57	71.3	247	0.6	2	11.8	41	100	348

Source: Household Survey Kalyan, 2010; Tara van Dijk/UvA; missing values: N=4;

Table 9b: Government assistance for meeting basic needs by electoral wards: sorted from poorest ward to best off ward

Government actor	No one		Ward Councilor		Party Worker		KDMC		Total	
	%	N	%	N	%	N	%	N	%	N
Ward 98	10.0	5	90.0	45	0.0	0	0.0	0	100	50
Ward 36	36.7	18	59.2	29	4.1	2	0.0	0	100	49
Ward 37	0.0	0	76.0	38	0.0	0	24.0	12	100	50
Ward 42	10.6	5	85.1	40	0.0	0	4.3	2	100	47
Ward 21	26.9	14	69.2	36	0.0	0	3.8	2	100	52
Ward 96	0.0	0	58.0	29	0.0	0	42.0	21	100	50
Ward 97	30.0	15	62.0	31	0.0	0	8.0	4	100	50
Total	16.4	57	71.3	248	0.6	2	11.8	41	100	348

Source: Household Survey Kalyan, 2010; Tara van Dijk/UvA; missing values: N=4;

and the wards where they were most dominant. In discussing those wards, participants showed considerable knowledge of the specificities in each ward, which showed heterogeneity across the city in the type of deprivations experienced¹⁹.

In KD, further social mobilisation centres around the entitlements that the local government provides through the intervention programmes taken up in the urban area, which are mediated through the ward councillors who are the main negotiators on behalf of local slum communities

19 For a full discussion of the results, please see Pfeffer, Martinez, Baud and Sridharan (2011)

Table 10: Means through which agency is expressed: ranked by relative importance of means

Means	Percentages and corresponding number of respondents indicating 'yes'	
	%	N
Voting	86.9	306
Contacts with KDMC officials	21.3	75
Housing society or residents' association	17.3	61
Ward Councillor or Party Worker	13.9	49
Media	5.7	20
Middlemen	3.7	13
NGO	2.8	10
CBO	2.3	8
Membership of a political group	2.0	7
Strike or a protest	2.0	7
CFC	0.8	3
Personal network	0	0
Developer	0	0
Membership of a citizens group	0	0
Total number of respondents in Kalyan		352

Source: Household Survey Kalyan, 2010; Tara van Dijk/UvA

with any external actor²⁰. Such intervention programmes include the self-help groups for women (SHGs) and the toilet blocks programme funded by the MMRDA. (The housing and resettlement programmes are discussed in the next section.) Here we discuss only the toilet block programme; the SHG information is still to be written up by van Dijk.

The MMRDA extended its original focus on slum *toilet blocks* in Mumbai by providing funding to the whole metropolitan region through the NMA²¹; based on a model in which local government regulates and approved NGOs build 'community' toilet blocks, which are run by a CBO formed within the community using them. NGOs are responsible for design and construction, community participation, hygiene awareness raising, and forming the CBO. The CBO in turn is responsible for maintenance, fee collection and paying the electricity and water bills. About 75% of the toilet blocks had been completed by the time of the fieldwork.

20 The information on toilet blocks is based on fieldwork and a draft paper by T.K. van Dijk and Vinay Shvtare (2010); information on SHGs was collected by T.K. van Dijk, including during a participatory focus group meeting with Indiranagar slum residents in 2009.

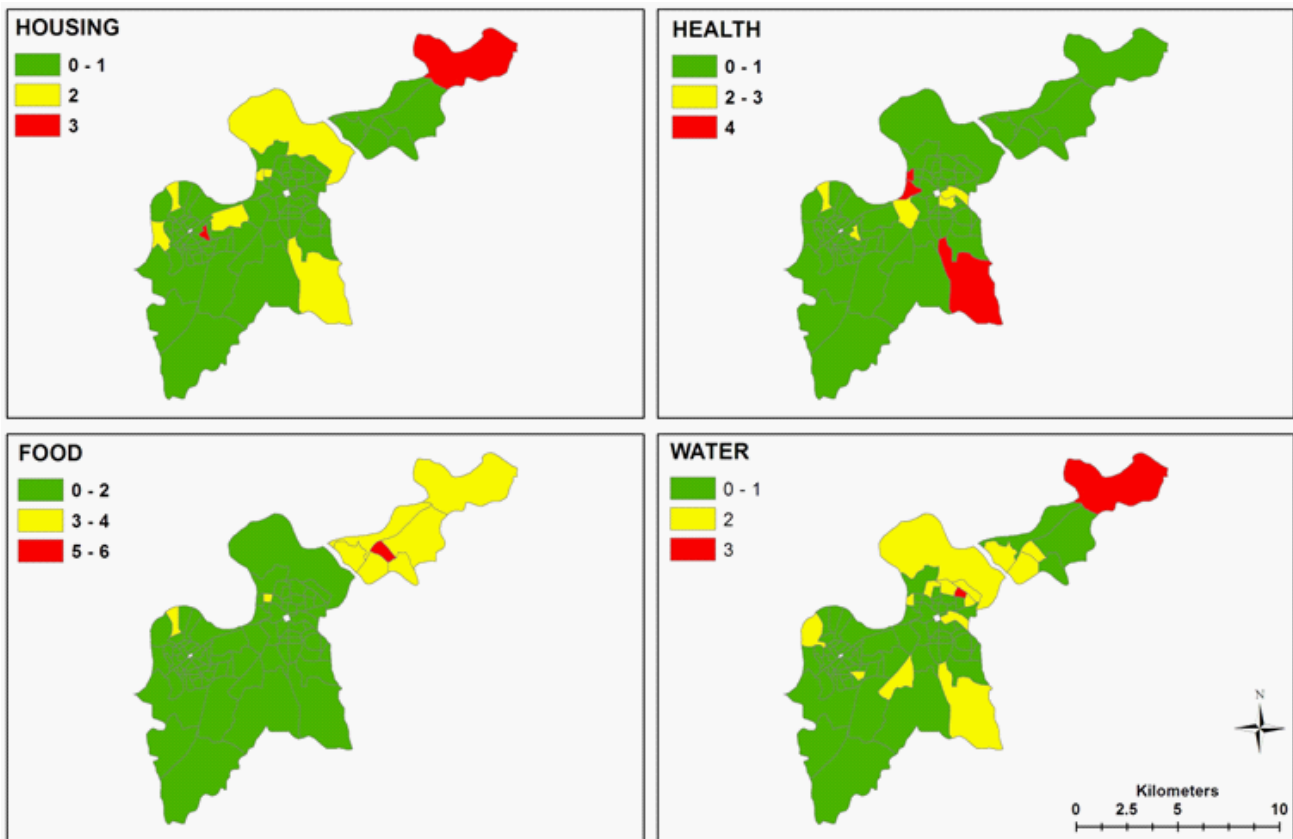
21 Nirmal Mumbai Metro Region Sanitation Abhiyan

Table 11: Assistance provided by type of actor: ranked by relative importance of actors

Actor	Percentages and corresponding number of respondents indicating 'yes'	
	%	N
Official with KDMC	29.0	102
Ward councillor	18.2	64
Housing society or residents' association	7.7	27
Party worker	4.3	15
Middlemen	2.6	9
CFC	2.0	7
CBO	0.9	3
Total number of respondents in Kalyan		352

Source: Household Survey Kalyan, 2010; Tara van Dijk/UvA

Figure 6: Spatial priorities of KDMC officials and councilors



Source: Electoral ward Kalyan Dombivli, 96 wards; Participatory workshop 2009
 Conception and design: Karin Pfeffer and Isa Baud (2013); Coordinate System: UTM WGS 1984 Zone 43 N

The implementation of building toilet blocks shifted significantly from the model in two ways; the MMRDA found its regulatory role too labour-intensive and shifted responsibility to the local governments (KDMC), and the ward councillors became strategic players in the whole process, who could not be bypassed without fear of failure, although they had not been included originally as acknowledged actors in the programme. In KD, the public works department (PWD) was responsible for implementing the project, and tended to encourage close cooperation with the ward councillors to the NGOs responsible for building, because of their knowledge and control of the wards and because they share in the 'fee' system surrounding such projects. Community participation was not a concern for the PWD. The NGOs were constrained by PWD and councillors particularly in terms of the contractors to be selected, the sites where the toilet blocks were to be placed, and the groups forming the CBOs for running the toilet blocks afterwards. Because councillors designated the CBO to be formed, they could claim the credit for providing the basic service, rather than the NGO.

Community mobilisation and awareness-raising around hygiene led to problems within local communities. Paying

for sanitation was an issue, as it was previously a free activity. Only 10% of the funding was earmarked for community participation activities, so that in practice almost no activities were carried out in this area. The CBOs formed were used instrumentally; commanded by their councillors they found fee collection difficult and bills very high because they were earmarked as commercial rather than residential organisations. As a result, the water and electricity connections are being informalized or the toilet block ceases to function properly (van Dijk, n.d.).

3.3. Anti-Poverty Programmes in Kalyan Dombivli²²

In this section the JNNURM programme activities are discussed, as the main programmes for slums in India. In Maharashtra two JNNURM sub-missions, i.e. infrastructure

²² This section is based on the work by Christine Richter, and contributed by her. Tara Saharan provided additional information on the various departments in KD involved.



and governance and basic services for the poor (BSUP), are being funded and monitored through MMRDA and MHADA. The latter oversees the BSUP mission and channels Central and state government funding for BSUP to local governments. Coordination between general urban infrastructure projects under JNNURM and infrastructure provision under BSUP takes place mainly at municipal level. The Basic Services to the Urban Poor (BSUP) focuses on housing and physical infrastructure provision for slums and is allied with the broader national goal of “Slum free cities” (Box 1).

Researcher: One more question, if BSUP is for the urban poor, why are no houses being built for the people I see living on the sidewalks, under overpasses, and so forth?

MHADA Interviewee: One problem are the identity documents and to trace these people. Also, the goal is to make India slum free. So, we target the slums. The government is now setting up a night shelter program...

Text Box 1: Excerpts from interview with MHADA officials indicating alignment of BSUP and slum free cities objectives as possible explanation for focus on slums. (Source: Fieldwork Richter, 2012)

Costs are funded 50% by central government, 30% by state government, and 20% divided between ULB and beneficiaries. Based on caste membership, ‘reserved category’ beneficiaries are to contribute 9%, and ‘open category’ beneficiaries 12% of the costs per unit. The CDP of KDMC indicates that provision of basic services to urban poor will include “security of tenure at affordable prices, improved housing water supply and sanitation. Delivery of other existing universal services of the government for education, health and social security is ensured. KDMC has planned to provide 31,928 houses for the urban poor in the first phase, which covers a population of 131,980, to be developed on Municipal and State government land. The tenure of land will be transferred in the name of beneficiaries. In case of in-situ development on private land the NOC/POA will be taken in the name of KDMC before executing the actual project. The detailed project is under preparation and will be submitted to MHADA for appraisal” (KDMC CDP, 2007). However, recent discussions have indicated that only housing and not services will actually be provided (Saharan 2012).

There are ten BSUP sites in Kalyan-Dombivali where approximately 11,000 tenement units will be constructed. These ten sites are categorized under four DPRs, through which funding has been secured (see integrated map - Figure 5). Four sites are in-situ redevelopments and six are open-plot developments²³. In the former case, dwellers occupying the area are relocated to a temporary transition camp or provided a 10,000 rupees lump sum to rent a place for an 18 months construction period. As per the contract between KDMC, the project management consultant (PMC), and building contractor these arrangements are the responsibility of the building contractor. Open plot development refers to construction of housing on vacant land procured by KDMC, usually at the outskirts of the city. Future residents include current residents of various urban areas labeled as slums.

Figure 7 shows the procedure for development and monitoring under BSUP. While the central agency is MHADA, local government implements the project. In KDMC, an engineering team is responsible, led by a BSUP executive engineer. To manage finances and coordination at construction sites, KDMC hires building contractors, who oversee implementation and hire sub-contractors. Survey and architectural work as well as quality and progress monitoring is done by the project management consultant (PMC), who is the same across all BSUP sites in KDMC. Quality checks and monitoring progress is done by a third party inspection agency appointed by the central government.

To date none of the projects have been completed. In one site building construction is complete, but water supply, community hall, and open space remain to be finished. After completion, the building contractor hands over the project to KDMC, who allocates units according to the beneficiary list. A completion report issued by MHADA also requires completed allocation of all units to beneficiaries.

The main reasons for delays in project completion are²⁴:

- a. Beneficiary opposition to new locations and building arrangements, expressed through ward councilors, letters to Commissioner and executive engineer,

23 Open plot developments are vacant areas in which new housing is built, and people from various areas are brought together. They are KDMC owned when built, so that land has to be transferred from previous owners. The grey area starts with the ownership of the land and transfer, as well as with the list of beneficiaries to receive housing units. The BSUP sites are usually at the edges of the city, beyond other residential areas, which are being expanded (pc. Richter).

24 Cited by municipal and state administration, private contractor and ward politicians interviewed.

demonstrations, and refusal to abandon original houses. In the latter case, the police may forcibly remove residents.

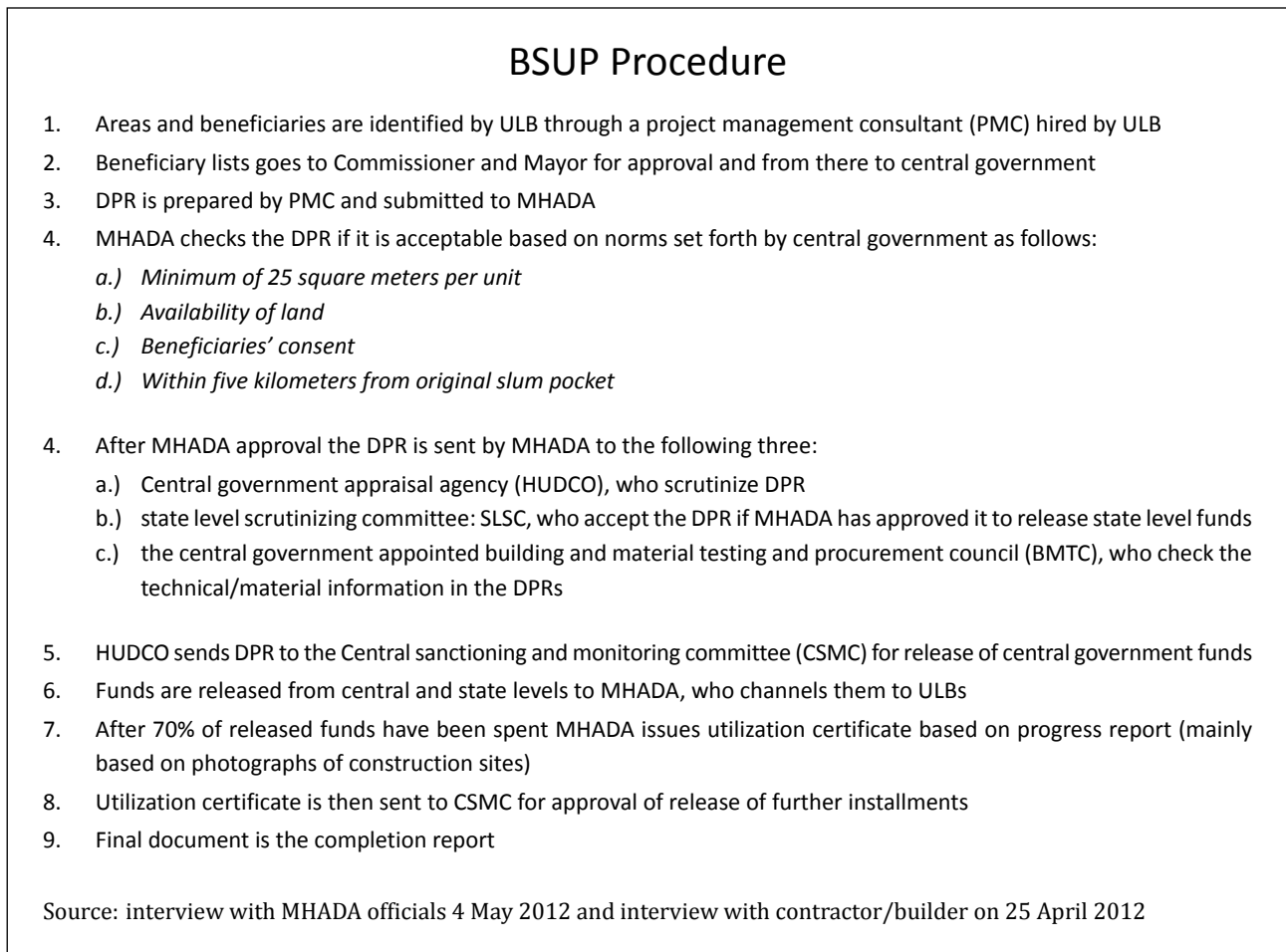
- b. Changes through time between submission of DPR and present situation: in terms of land availability, document required to be included on beneficiary list, and changes in beneficiaries' household structure and size.
- c. Political use of surveys and beneficiary lists, e.g. use to favor influential politicians' families, listing people in return for money or votes.
- d. Problems of "bogus records," (forged identity documents, reporting more household members or lower than actual income).
- e. Administration delays in processing documents and records.
- f. Land litigation, partially due to profit and real estate deals and partially because of mistakes in land survey and faulty or inconsistent or outdated land records.

- g. At the time of planning, beneficiaries cannot imagine how such changes will impact their lives and are ready to accept them even if informed about the details of the plan, but when it is implemented, they oppose it, because they see actual impacts on their lives. (Richter fieldwork report, from MHADA official, May 2012)

Delays in securing additional funds to cover cost escalation as well as inconsistencies in allocation and beneficiary lists currently hinder progress. Especially people whose original homes were demolished and who received rent money are in a difficult situation, because 18 months have passed.

To what extent beneficiary lists for BSUP overlap with other program beneficiaries is impossible to determine accurately. The different types of slum related records in local government indicate that a program's given process (specific funding, timing, objectives, citizen-state relations etc.) is usually determined by both area definition and categorization of target population. This helps to explain

Figure 7: Planning, implementation and progress monitoring procedures in BSUP program Maharashtra



apparent inconsistencies between slum and beneficiary lists. Slums listed in one program overlap with those in other programs²⁵. Slums listed for various programs cannot be clearly spatially delineated based on a consistent set of criteria across government programs and schemes.

In sum, data related difficulties lie in the paradox that a clear set of areas and beneficiaries are required for each program, but the ambiguity in who is included is also an outcome of differing requirements and program implementation processes. Implicitly, this interpretation of the problem is corroborated by interviews with MHADA and MMRDA officials, who lament as major difficulty the gap between a fast changing ground reality and the criteria and requirements of government programs.²⁶ In official BSUP project implementation procedures, a number of information production and exchange issues come up. The actors involved include the ULB, the builder, and project management consultant (PMC), connected through a tripartite contract for the project. A first set of information needed is the beneficiary list for the new housing being constructed. Households have to produce documents indicating eligibility²⁷. On this basis, beneficiary lists are constructed and submitted to the Commissioner and Mayor for approval and from there go to central government.

An earlier government programme was the identification of below poverty line (BPL) households, eligible for various types of financial support. The Slum Improvement Board, Poverty cell, is responsible for this program. A BPL survey was done in 2005, and families selected based on the poverty line of Indian Rupees 519.75/month/person. Their database is said to show 24,090 hutments with a population of 120,000 people. Based on this 10,195 persons were selected²⁸. The survey was done by ward officers (appointed

by KDMC) with the help of college students. The beneficiary list is with the staff in KDMC, and in practice is unavailable to anyone else within or outside KDMC²⁹; this is a quite exclusionary space. The Poverty Cell mainly works with local councilors as key actors in the programs. They indicate who should get loans and provide support for work needing to be done in the settlements, (Saharan 2012).

The revised CDP from 2011 shows 74 notified slums, located on local government land³⁰. The department runs programs for these selected urban poor through self-help groups, who receive matching collective and individual savings and loans and insurance schemes as well as vocational training for children, based on their own collective savings base. People residing in slums who are above the BPL are not eligible for programmes run by the Poverty cell; either the Public Works department or the BSUP department running JNNURM looks after them. Although the number of poor is higher in Kalyan, many NGOs are located in Dombivili as the elites reside there.

A major difficulty with such anti-poverty programmes is the detailed information they require from households. Because people sell their huts many times it is extremely hard to find owners who fit the eligibility criteria and have papers to prove it (cut-off dates). This means that information provided is usually contested by government staff. In order to circumvent the lack of information from residents, political channels are used (councilors). Land ownership is also an issue; when it belongs to Central government or private owners, it is almost impossible to transfer and provide legal tenure to informal settlement dwellers.

The newest anti-poverty programme is Rajiv Awas Yojana (RAY). RAY guidelines state that the city has to make a "Slum-free Plan" using GIS and socio-economic data, as knowledge on location and situation of substandard settlements is required. However, the endeavor of creating a slum-free city requires a lot of time because the scale of planning is for the whole urban area. Currently, 2 pilot projects are being formulated: Adarsh Nagar in Dombivili and Kargalao in Kalyan. The Estate department officer on special duty for BSUP does the beneficiary selection based on eligibility criteria set by the programme, but little else is known at this stage about this process. For RAY, the private sector will prepare the map with the aid of the technical cell of KDMC. The RAY programme does not provide a capacity building process for local government staff (Saharan 2012).

25 For instance, part of a slum included in BSUP may be listed for SJSRY funds, and may appear listed in the Geographic Information System (GIS) database, but not all GIS database slums are part of BSUP or SJSRY.

26 According to them, planning, implementation and monitoring follow a strategy of situation-by-situation adjustments, where information and action are matched to new ground realities emerging over time

27 These can include household-level proof of identity and length of stay, ration/BPL cards, site surveys, biometric survey, as well as neighborhood proof of existence through councilor meetings and the City Development Plan (Master Plan) (Richter 2012).

28 The assessment of UvA team member is that the BPL line is set so low, that it would be impossible to find 10,000 people earning so little per month. This suggests that the selection of beneficiaries is heavily influenced by other considerations, which is confirmed indirectly by the KDMC staff indicating that councilors are important identifiers of beneficiaries.

29 It is said that the data is available with the Nagar Parishad Prashasan Sanchalya in Worli, but this could not be verified.

30 Local government cannot access slums on central government or private properties, to provide inhabitants with amenities (Saharan 2012).

These three programmes illustrate similar issues in the production and exchange of (spatial) information sets.

- Different and changing definitions of ‘slums’ over time, according to anti-poverty programme.
- Listing of slum housing occurs both through unclassificatory as well as classificatory listings (Mol and Law, 2002).
- Discovery of inconsistencies in implementing new survey systems, e.g. biometric survey.
- New programme regulations over time, e.g. period for proof of length of stay.
- One survey result depends on another (e.g. housing beneficiary survey and BPL survey).
- Immediate and later opposition to projects based on alternative information (Richter 2012).
- Information production and provision largely by private sector consultants without capacity building for KDMC staff. Therefore, dependence on the private sector remains high.

4

Water Governance and Water-Related Vulnerabilities

4.1. Water Governance

A major issue in KD is the lack of drinking water facilities, related to the high growth rate of the population. Section 2.1.1 provides an overview of the lack of drinking water issues, and the plans for expanding and improving drinking water provision. The new investments are designed to expand water provision on those areas where large housing projects are in the process of being constructed or have recently been completed (see Figure 1). They are also designed to increase the autonomy of the local government in controlling the sources of water, and to reduce the unit costs of water procurement for KDMC. During the earlier period in which the fringes of the Mumbai agglomeration were developed (before Corporations were established, the parastatal MIDC controlled water resources and provision for a wider area. The implications for consumers in the city are unclear, as water billing is currently generally not effectively carried out (PAG 2010). If more effective electronic processing is put into place, revenue for KDMC could go up substantially; at the moment such digitization is being resisted by the Water Department within KDMC itself.

Maharashtra has responded to World Bank initiatives globally on establishing new types of water governance. The state government has established the Maharashtra Water Resources Regulatory Authority for Maharashtra (through an Act which came into force in 2005) to regulate the water sector at the state level. The Authority sets out an explicit policy on water allocation priorities between agriculture, industry and drinking water purposes³¹ and is the only Water Authority to do so (Dharmadhikary, 2007). It also sets out promote an “integrated and multi-sectoral

approach to water sector planning, development and management on a sustainable basis taking the river basin/sub-basin as a unit.” (quoted in Dharmadhikary 2007). In Maharashtra five River Basin Agencies have been put in place, who produce plans for their own areas, which together form the State Plan. Although the Maharashtra Water Resources Regulatory Authority includes representatives from each River Basin Authority, overlapping sets of authorities have been built into the current Acts governing each organization. The Authority also fixes rates for use of water in agriculture, industry and for drinking water at the bulk level.

The importance of the Water Regulation Act is illustrated by the changes in water allocation priorities currently being discussed in Maharashtra (2013). Although drinking water remains the first priority, industrial use had second priority from 2003 -2011, which changed to irrigation as second priority in May 2011 when industrial use was relegated to third place (Dharmadhikary 2013). Allocation to the various sectors over the last decade suggests that industry and drinking water allocation has received much more priority than irrigation for agriculture, particularly for large power plants and urban drinking water purposes (Menon, April 2013³²).

Information on per capita budget on water is not available. What is known is that revenue collected

31 The Act states as objective „judicious, equitable and sustainable management, allocation and utilisation of water resources“ (quoted in Dharmadhikary, 2007).

32 An NGO report by Pune-base Prayas should become available soon.



through water billing in KDMC is very low; the audit report on KDMC from 2010 shows that the administration of water billing is not done well through the existing digitized system, with bills even showing negative water consumption. Paper-based administration is also haphazard, so that internal monitoring is hardly possible (PAG 2010).

4.2. Spatial Analyses of Water-related Risks and Vulnerabilities: Integrating Multiple Dimensions and Knowledge Sources

Kalyan-Dombivili is in a low-lying region, at the confluence of the Ulhas, Kalu and Waldhuni rivers with access to the Arabian Sea via its two estuaries, the Thane

and the Vasai creeks³³. The river Kalu, Ulhas & Kalyan Creek which form the natural outlets for storm water, run along the Northern and Western boundaries of the Corporation and cover 60% of the periphery of the Corporation. The city is vulnerable to flooding when one or more of these rivers overflow their banks (see map). This situation is exacerbated by both the tidal flows which do not allow water to drain from the rivers when tides are high, and the state of the city drainage system, which is choked with waste and receives too little maintenance from the government (SPA Studio report, 2008). This drainage system was designed for storm water, but also works as a sewerage system in the absence of separate sewerage pipes. One reason for the blockages is the growth of the population which has resulted in household and industrial waste being directly channeled into the drainage system. The large industrial

³³ 6 meters above mean sea level (Disaster management Centre, TISS)

Picture 2: Floods in Kalyan Dombivili, 27/06/2005



Source: S. Krishnan, 2011, FLOOD RISK MAPPING: Kalyan - Dombivli Region, Mumbai using Remote Sensing and GIS techniques: ppt presentation found on internet

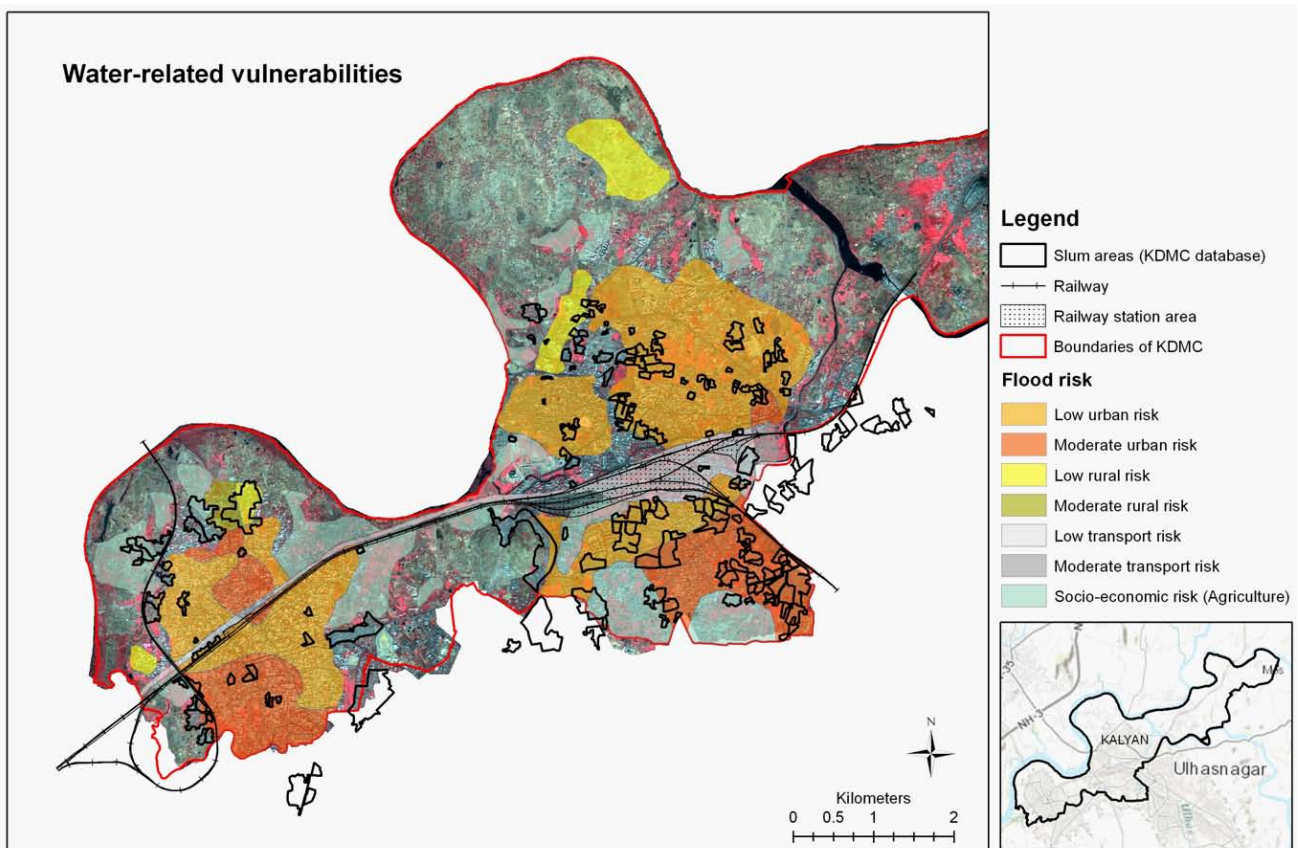
complex where electrical equipment, rayon, and dyes and other chemicals are manufactured, as well as large numbers of textile-manufacturing cottage industries also channel waste into the creeks. As the general elevation of the old town areas is low, even in the dry season, water from the creek enters the major drains during high tide and difficulties are experienced in draining off water after heavy rains and high tides. In addition storm water from Ulhasnagar Municipal Corporation enters the KDMC area as well.

The floods affecting Mumbai in 2005-6, also affected parts of KD (see picture above). The main effect was submersion of housing and roads, with people stranded without access to relief supplies. An environmental health effect experienced in that period was a small epidemic of leptispirose, which is a quite serious and potentially deadly disease. However, there is no known evidence available on numbers affected in KD. (In Mumbai TISS has set up a disaster management Centre providing post-graduate education in dealing with natural disasters, suggesting a regional approach to building up knowledge on these types of issues³⁴.)

In this section a spatial analysis of water-related vulnerabilities has been compiled and mapped (Figure 8), which integrates several risks dimensions at the city level utilizing a range of knowledge sources (cf. Martinez, Pfeffer and Baud, conference paper). These factors include elevations (low elevation riverine zones), a multi-criteria analysis by TISS students (cf. S. Krishnan and G. Balamurugan 2011), infrastructure vulnerability, and high-density built-up areas, and areas with high levels of deprivations. The resulting map shows generally low levels of flooding risk in the city, as a whole. One of the areas of moderate risk, however, consists to a large extent of slum areas as defined by the KDMC database, which implies that flooding risks may affect slum households more than households in other areas. The railway infrastructure also goes through an area of moderate risk.

34 A publication by one of their students has come out on KDMC flooding risks: S. Krishnan and G. Balamurugan, 2011, FLOOD RISK MAPPING: Kalyan - Dombivli Region, Mumbai using Remote Sensing and GIS techniques, VDM Verlag Dr. Müller.

Figure 8: Planning, implementation and progress monitoring procedures in BSUP program Maharashtra



Source: City and Slum boundaries - KDMC database (2007); Ikonos satellite image; Flood risk map by TISS (Krishnan, 2011)
 Map design and conception: Karin Pfeffer (2013); Coordinate System: UTM WGS 1984 Zone 43 N

Spatial Knowledge Management in the City: Spatial Perspectives and Participation in Knowledge Production, Exchange and Use?

The E-governance programme in Kalyan- Dombivili is the main local knowledge production system to be put in place through the government. It consists of management information systems for internal monitoring, government to citizen interaction through websites providing information and citizen facilitation centres, and citizen to government interaction through grievance redressal systems through both internet and mobile phone channels.

5.1. Discourses and Rationales for Introducing ICT-GIS-Based KM in Urban Governance; Boundaries, Work Processes, Mapping Needs

Local initiatives in installing knowledge management systems are taking place against the backdrop of a large variety of ICT initiatives within India at various scale levels (generally called e-governance). The different scale levels of putting such systems in place include national and state-level, as well as local governments in urban and rural areas.

A number of national and state level government initiatives in India have been taken in the past two decades. The most important with an urban focus are the National Urban Information System (NUIS) initiative by central government (2006), the National SDI initiative and the related Geo-portals at state level (Georgiadou, Puri and Sahay 2005), the National E-governance Plan (Ministry of Communications and IT), and the e-governance benchmarks established by the Ministry of Urban Development (MoUD 2010) (see Richter, in preparation)³⁵. These benchmarks are

35 Website: Ministry of Urban Development launched National Urban Information System (NUIS) Scheme in March, 2006 to develop GIS databases for 137 towns / cities in the country in two scales i.e., 1:10,000 and 1:2000. As on date the total number of towns in NUIS Scheme is **152**. Apart from spatial data, the Scheme has another component i.e. National Urban Data Bank and Indicators (NUDBI). The spatial and attribute databases thus generated will be useful for preparing Master/Development plans, detailed town planning schemes and serve as decision support for e-governance. The total outlay of the scheme is Rs. 66.28

crores designed to streamline operational efficiency at local level, transparency and accountability. They have become part of the mandatory conditions for the JNNURM programme, and specific guidelines have been developed for important basic services (MoUD, 2010).

Among anti-poverty programmes specifically, the JNNURM for urban development (2005-2010) and the RAY (currently starting up) scheme – elaborated in more detail in section 3 – are two programmes which explicitly mention mapping slum areas and using spatial knowledge in tackling poverty issues (ICT-based). JNNURM (focusing on both infrastructure as well as poverty issues) has made it a mandatory condition that local governments install ICT-GIS-based systems to monitor their own work (KDMC, 2007) and be more efficient.

In KD, the main discourse behind the introduction of spatial knowledge management systems (e-governance) was to streamline work processes and make their administration and revenue collection more effective, and to improve their relations with other levels of government, citizens and the private sector. KDMC was an early initiator, and became the model for other local governments in Maharashtra state; currently being rolled out by state government. One of the main discussions concerns the length of time needed for processing administrative procedures as well as the high levels of corruption attached to them (generally in India). E-governance was considered to be able to provide improvements in both areas. Transparency is further underpinned by the Right To Information (RTI) Act and improvements in accountability are supposed to be supported by grievance redressal systems, and consultation mechanisms built into processes of designing City Development Plans.

A second level of discourse is provided by the JNNURM and other national programmes (such as RAY). Such

Crores of which 75% will be borne by the Central Govt. and the 25% will be the State. The work of spatial data will be undertaken by the Survey of India, Dehradun, the National Mapping Agency. The **Memorandum of Understanding** was signed between Ministry of Urban Development and the National Mapping Agency in March 2006 for NUIS Scheme. In Maharashtra, Pune, Bhiwandi, Nashik, Pimpri Chinchwad, and Thane are participating. Tamil Nadu is not participating in the Scheme.

programmes make the introduction of digitization and spatialized information by local governments mandatory; although the former is not under discussion, interviews with national officials indicate that ideas about the advantages of geographic information systems remain very general, and little technical knowledge exists among many government officials (Richter, conference presentation). The main idea is that local government will have better information for local administrative procedures and for monitoring, and in RAY the idea of community-consultations for slum mapping has been included (http://mhupa.gov.in/ray/Planning_guidelines2012.pdf). The idea of strategic urban planning from the local government perspective is less prevalent, because KDMC has no mandate to do this – only the MMRDA has the mandate for such wider initiatives. KDMC is strategic in terms of infrastructural ‘projects’ in the context of the CDP; especially since JNNURM has provided a framework in which such initiatives are valued and recognized (and financed).

Poverty and needs assessment mapping is included mainly in the

- Determining geographic boundaries as a precondition for planning effectively and changing boundaries as part of an urban development discourse;
- Poverty and needs assessment mapping and location of facilities.

According to a report by the Government of India (GOI, 2010), property tax assessment and collection, birth and death registration, water supply and citizen grievance registration are the areas receiving most attention in the context of e-governance. We are including these areas (except for birth and death registrations), as well as issues of addressing poverty through initiatives towards slums³⁶. These issues are linked to our focus in Chance2Sustain; the property tax collection is linked to land use (and the lack of land registration, and commercialisation of urban land markets); it is also linked to the financial viability of urban local governments, and serves as condition for obtaining large-scale JNNURM grants from Central government (WP2, WP6). Slum initiatives are linked to the issue of what happens to sub-standard settlements in urban development processes (through government programmes) (WP3), and

36 Although slum initiatives are prevalent, they have not been the target of e-governance initiatives much. This may change in the near future with the implementation of Rajiv Awas Yojana central government program, the guidelines for which require development of GIS databases of slums and residents. (Sources: Times of India Feb 15, 2010 “For accurate data, govt plans to map slums” and GOI Rajiv Awas Yojana - Guidelines for Slum Free City Planning. M. o. H. a. U. P. Alleviation.

citizen grievance registration is linked to the question of how ‘participatory’ feedback from different groups of citizens can improve transparency and accountability by local governments (WP5)³⁷. The TP department in KD uses Autocad drawn maps for planning schemes, which are not yet available as GIS layers (PAG, 2010)³⁸.

5.2. Knowledge Management in Urban Planning in the City: Actors and Networks

Municipalities are both producers and users of (spatial) information, but the relationship is complex and needs to be unravelled. Two main issues arise as indicated above: to what extent is an ICT/GIS system installed for producing and using information within local government (LG; MIS), and to what extent is ICT-based information incorporated into the work practices of the various line departments providing services to citizens (G2C, C2G)?

The e-government initiative in KDMC was started in 1999, and its main elements were in place in 2002. These consisted of an internal IT infrastructure consisting of the IT department established in Kalyan with a back-up server in Dombivili and connections to the CFCs at the administrative ward level and an enterprise information portal for external relations. Further, a large number of software modules were introduced for reorganizing major basic services as well as for internal management information purposes. At the start a monitoring/advisory board of experts (including academic experts) was established to oversee the process.

37 In fact, participatory is increasingly not the right term to use for our purposes. The interaction between government and citizens/residents can be through ‘invited spaces’ for consultation and feedback (the latter includes grievances), which concur with the notion of ‘participatory’. However, voluntary provision of geographic information (VGI) by citizens can work through ‘claimed spaces’ or ‘negotiated spaces’ (Baud and Nainan 2008).

38 To obtain information on local government workings, our main methodology has been to work with local governments, specifically with the KDMC (and three other cities in Karnataka and Maharashtra which provided comparisons), as well as with civil society organizations and household surveys. We have utilized participatory workshops in each location, in which two types of actors at least were involved. These yearly workshops were held in a specific city between 2007-2010, and provide the basis for results mentioned in the case study. We have also accessed information from the municipal corporations, and citizen feedback. The specifics of these methodologies are indicated in the relevant sections.

The *internal IT infrastructure* was designed to change the way that data collection, storage, use and exchange would take place, as well as the way work processes are organized. The first phase consisted of computerization and digitization of service delivery through the development of information modules (MainNET; earlier KNet). The IT department in KDMC was set up and mandated to develop LG information infrastructure, and to coordinate the input of information by the line departments in KDMC. It did this in conjunction with the private sector, by setting out a tender for a PPP with a private sector company, which would supply 'hardware, software, implementation and training' (KDMC 2000)³⁹. Each line department was supposed to provide information sets to be developed into modules for the CFCs. Information sets can now be used by citizens for obtaining administrative information, for feedback on existing services (grievances), and for tracking progress of applications by citizens (KDMC 2006)⁴⁰.

The second phase would consist of linking the administrative databases produced through the software modules with a *GIS system*, i.e. linking records to the geographical features of the GIS layers created by another private sector company NIIT with the IT and line

departments (following JNNURM guidelines). However, the GIS system, put in place by NIIT, has not yet been linked up, which means that a central component of the ICT system does not function yet⁴¹.

The main actor in the KDMC e-government process currently is the *head of the IT Department*, together with the *KDMC Commissioner*. The Commissioner delegated the role of project manager of this initiative to the head of the IT Department, retaining only a strategic monitoring role and influence towards external relations, once the initiative was established and financing had been obtained from higher levels of government⁴². For internal *ICT infrastructure* implementation the Head of the IT Department coordinates activities. These consisted of: establishing project contract terms with the private companies ABM and NIIT, internal reporting systems, external advisory committee, establishing software package specifications with the private company and the heads of line departments, reviewing the project progress and goals, reorganizing the work processes, and obtaining recognition for the project externally.

39 A company called ABM was selected in the process (Advent Business Machines Ltd.)

40 Information sets include forms which can be downloaded from the Corporation website by citizens for administrative purposes, the billing forms produced (property tax, water, etc.). However, in practice not all departments have accepted such information sets for their work processes (PAG, 2010).

41 The implementation of the GIS system was tendered by KDMC and awarded to NIIT India GIS Ltd. in December 2006, and Quickbird data for GIS layer creation became available in 2007.

42 This involved choosing advisory Expert Committee members, reporting annually on implementation, incorporating Central government JNNURM funding for the initiative, and realizing state-wide replication of the KDMC model of e-government, and in discussions on determining KDMC IP ownership rights of the software packages developed.

Table 12: E-governance implementation and involved actors

Internal IT infrastructure + links to citizens	IT department Kalyan, back-up in Dombivili, ABM Ltd., CFCs
Software modules	All line departments in KDMC Corporation, ABM Ltd., IT department, expert committee
Citizen Facilitation centres (6)+ head office	Ward offices, IT department
Enterprise information portal	IT Department
External advisory system	Expert committee, IT Dept. Head, Commissioner
GIS-system	NIIT Ltd., IT Department, National gov. through JNNURM guidelines
*up-scaling: replication of software programme across other LGs of Maharashtra	IT Dpt head, ABM, state government of Maharashtra

* introduced around 2002

The private company ABM is crucial in the *software programme* implementation; although officially a contractor, the company maintains long-term involvement through its ownership of the source code (IP rights), the long-term delegation of personnel to KDMC, and their involvement in the rollout to other LGs in Maharashtra. The company was contracted to provide hardware for the internal infrastructure, a software package with modules for each of the line departments, implementation of infrastructure and software package, and training for the staff. The company worked closely with the IT Department head and the heads of line departments in developing software specifications, re-engineering work processes, and setting up an issue log of system malfunctions.

An *Expert Committee* of eight Greater Mumbai Area experts was installed to promote external validation and expertise for the complex project. It was concerned to ensure maximum added value for KDMC in the tools, functions and products generated, and that gains in time and cost reduction would be maximized (KDMC 2000; KDMC 2001) (quoted in Ahluwalia 2012). They particularly influenced the issue of ownership rights to the software package developed by ABM for KDMC, supporting the notion that the private company had the main right of ownership. In the period between 2000-2006 their meetings were regular; since then the advisory committee has become dormant.

The initiatives of *internal IT infrastructure, developing software* modules for departmental services and the *setting-up of CFCs* required cooperation between the IT Department and the line Departments. The private company, the IT and line department heads met weekly for a year to develop and implement software modules for KDMC; developing the contents, the level of difficulty for citizens in using the modules and the internet interface established for administrative processes. The head of the IT department played a strategic role in keeping this process going, as not all departments were in favour of such implementation. For instance, in the Property tax assessment and collection department, one module produced prospective assessments of property values digitally, easing yearly workloads in determining annual valuable rates for each plot (ARV) (Ahluwalia, 2012: 80).

Introducing CFCs meant that residents could interact with KDMC for administrative procedures through their local CFC or online. ABM trained the staff of the different departments and CFCs in using the software packages, as well as the soft skills needed to interact with residents coming to CFCs. This was done early in the programme, but was not continued despite staff turnover.

Main drivers

The original driver behind the spatial information system installation was the Commissioner in KDMC at the beginning of the 2000s. His interest and initiative led to both the local programme as well as to the idea of replicating it in other LGs in Maharashtra. However, Commissioners are shifted every 3-4 years, so that continuity is never ensured. Currently that Commissioner is in the Urban Department of the State. The main idea behind the installation was the innovative character of e-governance and the applications like MIS for the various LG services, which would improve revenues, service quality and provide for feedback from residents. Especially IT applications in property tax assessment and collection were expected to increase revenue and make work processes more effective and efficient. Later national policy through JNNURM supported the local initiative, as reflected in the KDMC City Development Plan of 2007, which states that the JNNURM guidelines also make e-governance mandatory; it states specifically that the GIS application will “assist all departments in creating a powerful decision supports system” (CDP 2007).

5.3. Knowledge Building, Use and Contestation, Exchange

5.3.1. Knowledge/Information Production and ICT-GIS Systems for Urban Strategies

In this section, the information and knowledge products produced within KDMC are discussed and summarized in Table 13.

The IT department contracted a database with 26-33 layers created within a GIS system through NIIT, which can be used both internally as well as to some extent by outsiders accessing the website (KDMC mapviewer). It contains data for sector one and two (out of 7), pertaining to the historical centers of Kalyan and Dombivili (building footprints, slums, streets, street lights, pipelines etc.), as well as incorporating 10% of the complete property polygon database⁴³. The property layer is not publically visible, as the fact that it is not completely up to date may lead to complaints by residents (personal communication).

43 The rest of the properties have not yet been entered into a digital system.

The TP department produces printed land-use maps as development plans. The department does not collect or use digitized information, but knows about the IT Department's activities. The TP Department's main tasks are land acquisition (for government purposes), building approval, building completion approvals, land survey, and issuing Non Objection Certificates (as a part of CDP) in KDMC, and property valuations (Saharan, 2012 fieldwork report). Nevertheless, the creation of the GIS database also involved the digitization of future land use as mentioned in the CDP, shown in Figure 1.

KDMC has implemented several anti-poverty programmes requiring information collection, including National Slum Development Program (NSDP), Valmiki Ambedkar Awas Yojana (VAMBAY), Swarna Jayanti Shahari Rojgar Yojana (SJSRY), Slum Redevelopment Scheme (SRS), and RAY, mentioned earlier. The Revised CDP identifies 74 notified slums, within a total of 263 slums inside KDMC boundaries (Revised CDP 2011).

The poverty cell within the Slum Improvement Board produces information for obtaining anti-poverty programme grants from Central government. It provides loans and grants to self-help groups (SHG) under the SJSRY programme. It carried out a below-poverty-line (BPL) survey among households in 2005, and based on that 10,195 candidates were selected for assistance. This list of beneficiaries no one is willing to show. The criteria used to put households on the lists are officially 515 Rs./month/person. However, this is such a low figure that very few people be eligible. Councilors have provided LG with beneficiaries to be included. Such information is difficult to access and evaluate as records are maintained mostly in analogue files.

Within the PWD an Executive BSUP Engineer is in charge of coordinating the implementation of the national BSUP mission locally (c.f. section 3). This includes working with private planning consultants, construction contractors, and oversight of construction work and progress. Most of the related information is prepared and stored in analogue files as well as in widely used desktop applications.

Finally, as already mentioned in section 3, the most recent scheme for mapping the urban poor set up by the Central Government – i.e. RAY – is being prepared for KDMC by a special cell set up for this purpose⁴⁴. A KDMC slum survey was done in January 2011, which estimated that 263 slum settlements in the KDMC area exist, with around 91,488 households (Revised CDP, 2011; Saharan 2012; see also section 3.2). The use of GIS has been specifically mooted as mandatory within the RAY programme⁴⁵. In KDMC two private sector mapping agencies are currently working on pilot projects in A (eastern part of KDMC area) and D (south-

western part of Kalyan centre) wards⁴⁶. They are carrying out household surveys and mapping lack of infrastructure (digitally) as basis for the activities to be implemented (Revised CDP, 2011).

The Assessment and Collection (AC) Department (AC; of property tax) has digitized its database, but it has not been linked to a GIS system or remote sensing images. Whereas previously analogue ledgers existed with the information on the valuable rates for properties, now digital databases exist at the CFCs as well as the Head office of KDMC. Entries made in the CFC automatically go back to the head office and are available on both locations.

The Water Department is supposed to carry out its billing through e-modules. These were prepared by ABM under the e-government initiative, but have not been accepted and implemented by the Water Department. The Audits of 2007 and 2010 show that both paper-based and digital systems are used, but are in disarray (PAG, 2010). Mainly, the staff has not accepted use of the digital information system, and there is lack of transparency in its use.

The main conclusion is that the Commissioner and head of the IT Department have been driving forces to introduce computerization and digitized databases in KDMC. This

44 For RAY in KDMC a technical cell has been made of the following members:

- a. HoDs of some departments
- b. GIS experts
- c. Town Planning Experts
- d. Project Engineers
- e. Community development members (NGOs)
- f. Training experts

45 The RAY Guidelines (page 5/32) specify in methodology section – “Development of Slum Map of every slum within the city and its fringes using GIS with CARTOSAT II images, ground level spatial data collected through total station survey, collating spatial information with respect to plot boundaries, network of basic infrastructure like roads, sewerage, storm drainage and water lines, etc and superimposing this on the satellite image and importing them into GIS platform as the first step towards the preparation of Slum Development Plans and Slum Free City Plan. This may be undertaken with the help of technical partners of NRSC/ISRO/other technical institutions/agencies”.

46 In RAY, slums are categorized – tenable, semi-tenable and un-tenable. Tenable slums can either be on reserved land, in which case the housing has to be developed on a relocation basis. If the land-use is residential, then in-situ development can take place. In KD presently 10 projects are dealing with in-situ development as well relocation. Some of these were listed earlier in other programmes (Saharan field report 2012).

initiative was strengthened by the changes introduced under the national JNNURM programme providing funding for selected cities in India.

The adoption of computerization and digitized databases is still not introduced across the board in KDMC either for internal use (MIS) or for interaction with residents (G2C). Two private sector companies have been heavily involved in implementation, and ownership of the software modules developed remains disputed between KDMC and the companies. Although initially the impetus within KDMC was strong to introduce digitization of databases and the use of GIS, this process has been slowed down by such disputes,

so that partial implementation has occurred, linking of databases is still underway and remains difficult for technical as well as organizational reasons.

Organizationally, management and monitoring of the new systems retains problems. Some departments contest the installation of digital systems, and implementation is uneven. Generally, the digital monitoring sections of the software programmes have not been activated, so that anomalies in data entry and changes in data cannot be traced (PAG, 2010). Finally, there is a lack of security in using and exchanging access codes of department staff, so that no monitoring can be done of staff data entries and

Table 13: Knowledge production by IT department and other line departments in KDMC

	Map/database development	Service module development	Software used	Private sector involvement	Expertise KDMC staff
IT Department	Mapviewer, with database online	Mapviewer on website of KDMC	Developed locally, Oracle and ArcGIS; now rolled out across State Mah.	Extensively; knowledge transfer limited	Mainly for data entry Maintenance of the server, network and database
TP Department	Paper maps produced by state government officials (through private sector consultants); KDMC receives only paper copy	City Development Plan and detailed project reports (private consultant)	Autocad?	Yes, for producing the plans	Unknown
Poverty cell (BPL-SHG)	Paper maps exist, very detailed;	Not digital	None	Private banks extend loans to beneficiaries	Not applicable
RAY technical cell	In progress at administrative ward level	Geodatabase of slum maps; to be prepared by consultants	ArcGIS, remote sensing software	2 private companies	Not yet
AC Department	Digitized database; Digitized base map incomplete No links or use of satellite images	Six modules for residents for downloading forms and making payments	Developed by ABM	Strong; modules developed by ABM	Data entry, calculation of AVR, printing bills, sending reminders.
Water Department	??	Existing	Not used properly;	ABM	Data entry, but not utilized according to guidelines



changes, irregularities cannot be traced, undermining the potential of reducing corruption practices (PAG, 2010).

CFCs as a decentralized interface system within the city for residents to interact with government officials have been introduced widely.

5.3.2. Knowledge Use, Exchange and Contestation in Urban Decision-Making Processes

In 5.3 an example of initiating ICT-GIS initiatives within and through local government are presented. It concerns the joint effort of IT and AC department (assessing and collecting property tax). A second example concerns citizen feedback systems (grievance redressal systems) discussed in section 5.4.1; both obtain information from residents and streamline government maintenance of local services⁴⁷. ICT-GIS initiatives aimed at 'slum-free cities' and basic service for the urban poor (BSUP, BPL, MHADA programmes, RAY) have already been discussed in detail in section 3.

IT Dept., Assessment and Collection of Property tax Department (ACD)

This section describes how informatization has changed work processes within KDMC. The AC department is interesting because property tax collection is a strong revenue base for local government, and city growth and land use have to follow existing rules and regulations⁴⁸.

The workflows and processes of an AC department, defined by Gol, are "inclusion of new assessees, change of ownership, serving of the demand notices, acceptance, disposal and monitoring of petitions and appeals, maintenance of appropriate and correct records and timely revision of guidelines as when required" (Gol, 2010). Earlier manual maintenance of the properties database took up a lot of staff time and 'led to malpractices' (KDMC, 2003). Property tax calculations were based on complex formulae with subjective parameters, with lack of transparency for residents (KDMC, 2002). The private sector company developed a tax module standardizing calculations of the ratable values of properties (ARV), streamlining work processes (KDMC, 2003). Decentralization through the CFCs also increased effectiveness, as residents could reduce the time needed to pay their bills substantially. Finally, national benchmarks from the MoUD set standards for LG⁴⁹. When the software was developed, the head of the AC department was fairly unresponsive, and the IT Department and Commissioner had to assert their prerogative to prevent

delays. Automating calculations and standardized forms reduced input and data management duties for staff, and led to a major decrease in manpower (KDMC 2002).

Work processes have changed in several ways; the software programme is used extensively to determine payment rates and bills. However, ward supervisor still manually distribute bills because they know the addresses of properties (there is no address system with universal coverage). Properties that have to be newly registered can follow two processes; self-assessment or physical measurement on location by a Ward Superintendent¹. In the latter case, the information is collected and processed manually into the digital database. In the former case, owners can choose between manual or online submission. Ward supervisors are responsible for verifying the data submitted, but no written procedures for uncovering faulty self-assessments exist at KDMC. Processing time has been substantially reduced - from 110 to 21 days (KDMC 2002b).

In conclusion, the following major changes can be seen in the *re-engineered work process* of property registration and tax collection, based on incorporating expert and codified knowledge from KDMC staff and private company:

- staff has been reduced from 62 to 24 people
- time needed to register properties for tax assessment reduced from 110 to 21 days

47 Linked to this analysis are the results of a participatory spatial information production workshop carried out by the UvA, ITC, SPA, and the KDMC (cf. Martinez et al. 2011).

48 The Government of India (2006) indicated a number of problems around existing ways of collecting such taxes, with which computerization is supposed to deal:

- "administrative deficiencies, partly on account of the inbuilt deficiencies in the assessment systems [...] and partly due to poor administrative systems in place, [... thus displaying] the present property tax systems have the following problems/drawbacks:
- Scope for subjective assessments in a corruption-prone environment
- Scope for excessive use of discretionary powers leading to possible collusion between the assessor and assessee
- Non-transparency in the assessment process
- Higher social costs due to litigation, and consequent delayed recovery of taxes
- Lack of a systematic computerized database - resulting in a large proportion of the properties being outside the tax net.
- Lack of efficient mechanisms for detecting and follow up on defaulters."

49 The Gol's Handbook on Service Level Benchmarks (2006) provides guidelines to assess the effective implementation of these processes.

- taxable rates (ARV) are established yearly for all properties registered
- ARVs are generated automatically, eliminating staff idiosyncrasies in setting them
- payments can be made locally (CFCs), are implemented immediately; can be done throughout the year
- demand notices for paying taxes are generated automatically, but still delivered by hand – this is still an issue for information transparency.

In terms of knowledge use, exchange and contestation, standardizing ARV rates has improved, and staff idiosyncrasies in calculating rates largely eliminated. However, the unsecured access of staff to the data systems means security is not optimal and software systems designed to monitor accuracy and changes in information are not activated. **Verification** systems to double-check information provided by residents are not in place, either through remote sensing image analysis or overall systematic physical verification. Audit reports suggest that residents and staff use their knowledge of ‘informal practices’ to reduce tax rates and input alternative data into the digital system.

Data organization concerning properties has improved strongly, as KDMC data is stored in a central server connected with the CFCs, allowing data to be shared quickly throughout the city. The data have become more timely and readily available to staff and residents.

The **usefulness** of the system has increased as coordination and manipulation of data have increased. **Cost-effectiveness** has increased, with the reduction of staff seen locally as benchmark. However, the private company contractors are now major cost factors. Revenue collection has also increased substantially (revised CDP, 2011). The information produced is ‘**meaningful**’, and used for calculations in the City Development Plan (CDP). In terms of *organizational changes and sharing information*, the digitization process streamlined data management and information infrastructure. However, barriers still remain in linking the databases to geographical information systems (GIS) limiting their usefulness for verification and monitoring processes and identifying spatial patterns.

5.4. Spatial Knowledge Produced through Citizen Participation Processes

In this section we present two examples of participatory spatial knowledge construction from both

the perspective of citizens as well as the perspective of government officials.

5.4.1. Citizen Feedback to Government: Grievance Redressal Systems in KDMC

E-grievance redressal systems are part of “public feedback mechanisms” designed to government, increasing accountability and transparency (Martinez et al. 2011). They are also considered part of participatory mechanisms of accountability to citizens, which have as starting point that citizens should be encouraged to help monitor the quality of service delivery (Cavill and Sohail, 2004; WDR 2004). However, critiques of grievance redressal systems have indicated that such processes become depoliticized and individualized, and exclude some areas because they are unconnected to digital systems (Martinez et al. 2011).

We examine the data produced by the KDMC grievance redressal system during 2007, to analyze and compare it with other data sets for its potential use as citizen feedback to local government. Martinez et al. (2011) provides more details of the methods used. The analysis of how the complaints were delivered to the local government in 2007 shows that more than 90% of all complaints in KDMC are delivered by hand; only 6% are submitted online and a negligible number of people used the phone to file a complaint. These results might indicate that citizens still prefer to deliver complaints personally, or have limited access to ICT, or lack awareness of the possibility of submitting complaints online.

Table 14 shows the frequency and types of complaints in 2007. Four types of complaints were registered; drainage, water supply, storm water drainage and encroachments. While the first three deal with malfunctioning of government services, complaints about encroachment refer to the displeasure of activities by other residents.

With respect to water supply, about 60% of the complaints concern ‘no water supply’, ‘shortage in water supply’ and ‘leakage in water lines’, while the major problems of drainage address the cleaning and maintenance of the drainage infrastructure, i.e. the cleaning of septic tanks (70%) and obstructed or overflowing open gutters (18%). The issue of storm water drainage also refers to maintenance, specifically cleaning open storm water drainage systems (75%) (Martinez et al. 2011). Numerous complaints were made about encroachments. Citizen complaints concerned unauthorized constructions, stalls or

**Table 14:** Distribution of complaints by type

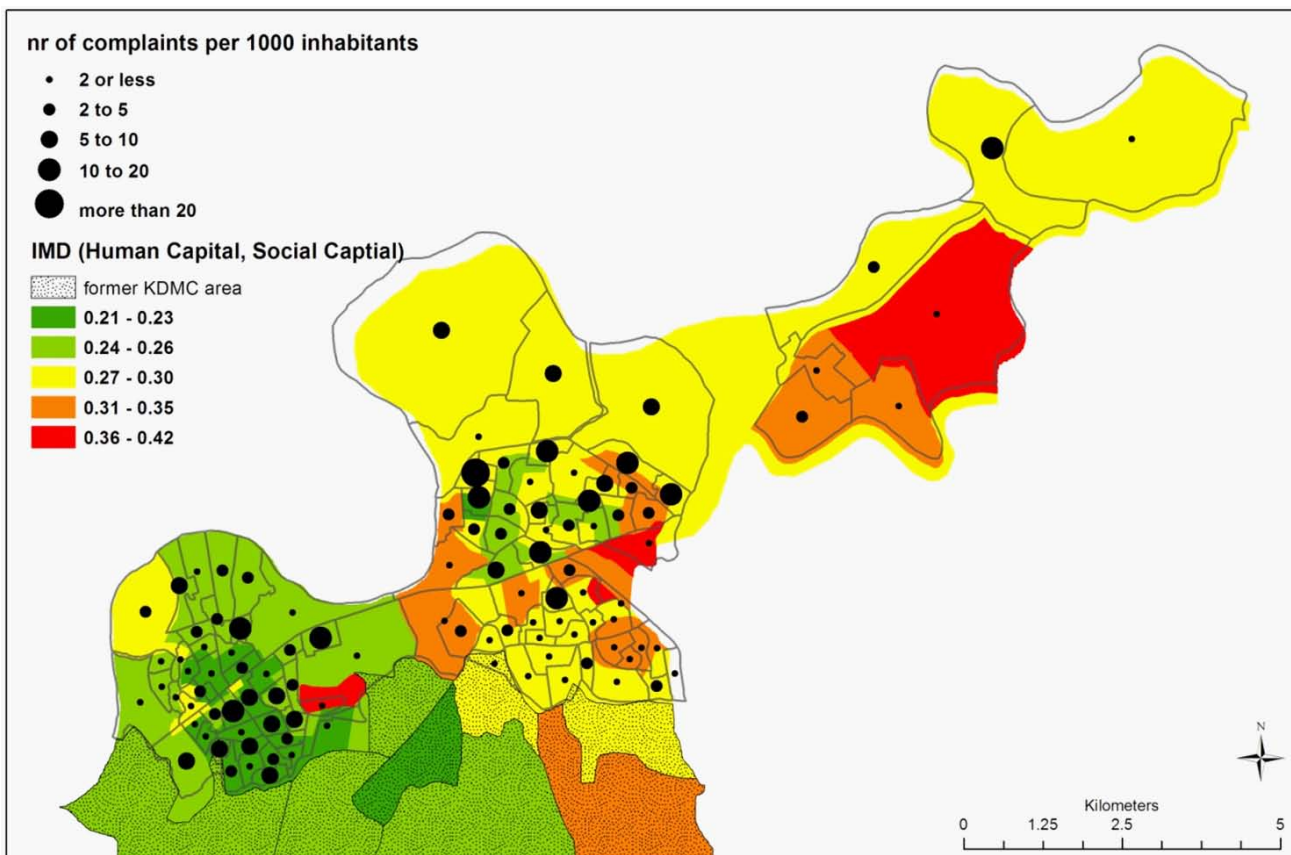
type	number	%
drainage	1378	47.2
water supply	803	27.5
storm water drainage	89	3.1
encroachment	647	22.2
Total	2917	100.0

Source: CARE module, 2007

selling activities along roads and footpaths. The descriptions showed that in many cases these activities were not against the rules. The results suggest that the pressure is exerted by mostly middle-class citizens' demands that officials enforce or create regulations to deal with encroachments, slums, hawkers, and beggars.

Figure 9 shows that complaints are not concentrated in the most deprived areas according to the IMD (based on human and social capital). When these maps were shown to city officials, politicians and self-help groups from poorer areas, most people did not feel that they accurately reflected the areas in the city with the greatest need for improvements. This suggests that the e-grievances redressal system does not necessarily capture the requirements of those in most need, but rather those with the greatest capacity for expressing their felt wishes through an ICT tool.

Figure 9: Overlay of complaints as graduated colour (aggregated to 2007 EW boundaries) and Index of Multiple Deprivations (IMD) as graduated symbols (matched to the 2001 EW boundaries); the grey areas no longer belong to KDMC (see further Martinez et al. 2011)



Source: KDMC, 2007; Census of India 2001

Conception and Design: Karin Pfeffer and Javier Martinez (2011); Coordinate System: UTM WGS 1984 Zone 43 N

Note: High values in IMD (ranging potentially from 0 [deprivation in all aspects] to 1 [no deprivation]) indicate a high multiple deprivation index. Boundary shifts due to inaccuracy of scanned maps derived from KDMC.

The mismatch between actually deprived areas and 'self-expressed need areas' probably reflects different strategies open to households to cope with the absence or malfunctioning of urban services and the differential capability to exert pressure on local government officials. Whereas middle-class residents are more likely to use new ICT tools to express their wishes, the traditional methods of slum residents and low-income groups reflect their dependence on political and patronage channels, and a collective approach rather than individual feedback (cf. van Dijk 2009; van Teeffelen and Baud 2011). Therefore, one needs to be cautious when analyzing grievance redressal system databases as potential platforms for participatory processes within the city (c.f. Martinez et al, 2011). The validity of such information feedback systems in reflecting actual needs and the extent to which they contribute to more participatory processes and accountability may be lower than one would expect.

Turning finally to C2C mobilization (C2C), we have already shown that social media can play an interesting role in bringing out social knowledge that otherwise is less widely available (Pfeffer et al., 2012). However, in KD no such initiatives are known, although in Mumbai many virtual networks exist that are active in mobilizing (mainly middle-class) citizens (e.g. AGNI, Karmayog).

5.4.2. Participatory Knowledge Production with Local Officials

In the KD study area we have also experimented with participatory workshops to elicit tacit knowledge of local officials in terms of high-priority sectors and geographical areas that require particular attention. Figure 11 illustrates the most important areas and sectors to be addressed by local government. For more information on the experiment see also Pfeffer et al. (2011). The experiment has shown that this way of participatory local knowledge construction unravels relevant insights into the knowledge of and priorities given by local officials and MC.

In our research spatial knowledge management (SKM) has been defined as a configuration of 1) discourses about spatial knowledge management, 2) actors producing and using spatial knowledge in their work processes, 3) the coalitions and networks among actors, including power relations and contestations, and 4) the spatial knowledge platforms and products which are produced and utilized (ICT-GIS-based products; maps) and 5) the changes in processes and outcomes resulting from the use of (digitized) spatial knowledge (Baud et al., 2013). The extent to which SKM includes participatory processes was part of

our question. In the table below, the development of SKM in KD is summarized, linking ICT-GIS based systems and processes more integrally to the domains being analyzed in the other WPs.

5.4.3. Drawing Conclusions Concerning SKM: Changes in Processes and Outcomes Related to Spatial Knowledge Management Implementation

The use of GIS and ICT is given great expectations in the literature: greater transparency, equity, competences (efficiency and effectiveness), legitimacy and accountability towards citizens (McCall and Dunn 2012). Before discussing these issues systematically, two other issues have also arisen from our fieldwork, namely the limited extent of information sharing between LG departments and that existing information and knowledge is not used for strategic planning purposes in KDMC. Where trend analysis is done, it is separated from the departments responsible for implementation, and/or from the political process in which decisions are made. The question is whether existing possibilities for trend analysis can be linked more strategically to those groups actually responsible for changes in policy or its implementation?

In the following paragraphs we analyze the three main processes studied within local government (property tax collection, anti-poverty initiatives and grievance systems) against the criteria set out in the literature defining spatial knowledge management systems and the extent of their 'participatory' character (see Table 15).

We earlier defined a spatial knowledge management system as a configuration of 1) discourses on spatial knowledge management, 2) actors producing and using spatial knowledge in their work processes, 3) their coalitions and networks, including power relations and contestations, and 4) the spatial knowledge platforms and products which are produced and utilized (geo-ICT, GIS-based products) and the 5) changes in processes and outcomes associated with the use of (digitized) spatial knowledge (cf. Baud et al. 2011; Pfeffer et al 2012; van Buuren 2011).


Our findings show that the discourses on spatial KM are promoted through higher scale government levels – national and state, and draw on a discourse of city development strategies (efficiency, effectiveness, changing urban land markets, slum-free cities) assumed to be an integral part of geo-ICT knowledge systems.

At the level of local government generally, there is little understanding of the components of a digitized spatial knowledge system, nor of the GIS software intricacies or hardware requirements (cf. Richter forthcoming). In KDMC as main actor in the LG system, there is a strong focus on developing a digitized spatial knowledge management system primarily as management information system (property tax collection, grievances). The IT department

plays a lead role in such initiatives, and other line departments are much less interested in uptake of the software developed specifically for their departments (water). As digital KM systems are being rolled out across the state to local governments, analyzing local – provincial level government networks should provide new insights on multi-level governance.

Table 15: Spatial knowledge management in KDMC

SKMS	Economic growth	Substandard settlements/ poverty	Water governance (environm.)
Types of knowledge included	Private sector knowledge, technical-economic-financial information, political information	City planning information; zoning, redevelopment goals, embedded-political knowledge; embedded-technical knowledge	Technical drinking water info; information on water consumption; economic info, political information
Spatialisation of data bases	Plans for zoning and land use; prepared by private consultants	information not spatialized; rather procedures.	Water networks main spatial data; water sourcing, waste water disposal
Knowledge-building processes	PPPs in mega-projects; private consultants; rarely local community knowledge included	Developers and city officials included in redevelopment plans concerning provision of basic services to the urban poor; local inhabitants often not aware, or only leaders aware; guidelines not necessarily consistent through time	K-D technical expertise (private sector) and political stakeholders; academic consultants (coastal management plan)
Organization and management: Transparency, accountability	Information management and plans influenced by political processes; no transparency wanted by developers; accountability towards own company, shareholders, higher public authorities	Slum boards; politicians, local leaders; Little transparency towards inhabitants, little accountability towards inhabitants	Broader networks of stakeholders; organization controlled by political processes (e.g. concerning introduction of water meter) transparency variable
Political priorities (setting)	Coalition of public authorities 'visioning their city'	Resettlement goals, slum-free cities; international programmes	Water for all (24/7 water supply); maintaining water as resource?
Participatory processes	Processes with local inhabitants limited; consultation with respect to water project?	Limited, unless mandates by financing organizations; probably public consultation when implementing RAY	public grievance system



The spatial information products generated are 'administrative' databases or contain administrative information. There is no initiative yet to utilize such sources of information for more strategic monitoring or planning purposes.

Local communities are holders of community-based and embedded knowledge from practice. However, they are not usually recognized as such or included in the spatial knowledge management systems of local government. Mainly middle-class residents generate and provide community-embedded knowledge to local government through grievance systems, but do not have the power to force LG to take up grievances effectively. Weaker economic groups or socially marginalized groups do not work through digital systems. Drawing out both residents as well as political representatives' knowledge from lived practice is quite possible, as shown by the participatory workshops held in KD (cf. Pfeffer et al 2011). However, it is not general practice in the city.

Citizen to citizen initiatives are not common in KD to our knowledge. However, community-generated digital networks exist in Mumbai and are active in generating knowledge about spatial and political issues there (AGNI, Karmayog). This does not yet seem to have spread to the whole agglomeration.

Local government works closely with private sector companies in developing hardware networks and software modules for the SKM system. The private sector is a primary producer of spatial knowledge, utilizing lists, paper maps, remote sensing images, and other sources of data. Ownership of software modules is strongly contested between both actors, and the private sector seems quite strong (PAG, 2010). The private sector also refuses to 'empower' local government staff by providing continuity in training, to a level of competence that they become independent of the private company's technical assistance.

However, within LG street-level bureaucrats resist the introduction of digital databases with some success. The fact that the property tax database has not yet been linked to the base-map of the GIS system makes tracing discrepancies in property tax information difficult, and the fact that monitoring systems in the software have not been 'turned on' means that the transparency of changes made in billing and payments is non-existent (cf. PAG, 2010; PAG 2007).

The main change found in LG due to ICT-GIS based systems is in the increased information provided through the KDMC website, and the much greater efficiency and effectiveness of administrative procedures through the CFCs. Paying taxes has become much more standardized (transparent) and quicker for citizens, and more effective for local government in generating revenues. In contrast, the paper lists of the BSUP programme remain unavailable to anyone, despite contestations by councilors about their outcomes.

We can draw the following conclusions about the extent to which knowledge management systems are participatory. In the current LG spatial knowledge management system, urban residents are largely excluded from major forms of participation or consultation. There is outreach through the decentralized CFCs, but the only feedback to government is through grievances, ward councilors or self-help groups. That system is utilized mainly by the middle-class residents, and excludes other social groups. In anti-poverty programmes, political representatives are included to some extent, but contest information provided by LG.

Private sector actors have access to and control knowledge of contents and technical systems underpinning spatial information systems, and reduce empowerment of LG staff or others. For citizens, there is more transparency in the calculation of taxes, but little or no empowerment. It can be said that there is greater respect for entitlements, as the calculation methods are now standardized and interfered with less. Only volunteered geographic information provides the possibilities for empowerment at a collective level. The sources of knowledge included are obtained through administrative procedures and do not include lay knowledge, with the exception of grievances. The lack of training among LG staff reduces the possibilities for increased competences in GIS within local government, although a build-up of soft skills has been put in place initially.

The main changes in outcomes are found to some degree in legitimacy (tax calculations) and accountability (Grievances, website). These initiatives are most favourable for middle-class citizens. The lack of transparency within the BSUP programmes and databases suggest that neither poor households nor their political representatives are experiencing benefits from the new knowledge information systems currently being set up, or have not yet managed to increase their accountability.

6

The Role of the City Government Finances and Venues of Participation within the Decentralization Process

6.1. KD finances: Capital Investments, Running Budgets

The income of KD shows a surplus in regular revenues and expenditures in the period covered by the NIUA report. However, in terms of capital investment, the Corporation shows an increasing deficit related to the large projects it plans to finance and implement (see Section 2). This implies that funding from other sources such as the JNNURM and the MMRDA programmes are needed to support KD's plans, as is indicated in the CDP 2007 and the WB report on cities

in the MMRDA area (WB, 2011). KDMC has also decided to revise property tax rate and water tariffs to meet expenditures of loan repayment and operation and maintenance costs in these areas. The WB report from 2011 (WB, 2011) suggests that KDMC will need an aggressive financial strategy to obtain sufficient capital to pay back the loans it is making for the new projects. This implies, as suggested in the report, that the collection of revenues still needs further improvement and that other sources of revenue such as user charges need to be increased to cover capital costs. The e-governance system is designed among other uses, to facilitate the streamlining, of such revenue collection and monitoring.

Table 16: Kalyan Dombivili Finances 2002-2007

Summary Of Finances (Rs.in Crores)	Year				
	2002-03	2003-04	2004-05	2005-06	2006-07 (Budgeted)
REVENUE ACCOUNT					
Income	132.57	148.82	167.55	189.58	207.48
Expenditure	105.74	124.92	142.92	149.44	165.94
Status (Surplus)	26.83	23.90	24.63	40.14	40.14
CAPITAL ACCOUNT					
Income	4.22	5.57	6.31	5.87	7.25
Expenditure	27.74	30.86	33.93	40.30	49.81
Status (Deficit)	-23.52	-25.29	-27.62	-34.43	-42.56
ADVANCES, INVESTMENTS AND DEPOSITS					
Income	15.37	18.35	18.28	30.96	22.31
Expenditure	14.32	17.58	19.27	31.68	22.34
Status (Deficit/ Liability)	-1.05	-0.77	0.99	0.72	0.03
Overall Status	2.26	-2.16	-2.00	6.43	-0.99

Source: NIUA KD CDP Appraisal Report (2008)

6.1.1. Budgeting Processes (Composition and Distribution) within KDMC Region

Municipal budgeting and accounting process at KDMC has been adopted from the Bombay Provincial Municipal Corporations Act of 1949 (BPMC Act 1949). The section no. 95 to 104 of the BPMC Act particularly deals with the type of budgets to be prepared and roles and responsibilities of the various officials and committees. Following the Act, KDMC prepares five types of budgets, which are; A-Budget, B-Budget, C-budget, P-Budget, and Gender budget. A-budget captures income and expenditure details, both for the head office and of the ward committee offices for all municipal works, except for transportation, water supply, drainage and sewerage. Further for the existing seven ward committee offices within KDMC separate budgets exist (A, B, C, D, F, G, and H); A-budget prescribes an expenditure limit up to worth Rs.5 lakhs regarding operation and maintenance works. The B-budget captures income and expenditure details regarding transportation. Similarly, C-budget captures income and expenditure details related to water supply, drainage and sewerage service. P-budget incorporates special provisions for backward areas, not having municipal services. P-Budget is also a part of mandatory reforms prescribed by the JNNURM policy of the Govt. of India. Gender budget on the other hand deals with projects related to women and child welfare within KDMC. These budgets are further divided under two broad heads a) project works and b) works from own funds. Project works are grant-funded works.

Regarding budgetary composition, each budget types are composed of incomes from several sources. These sources could be own source revenues like fee of several types, service charges, taxes including taxes on property, revenue from land conversion, cess of various types, grants from various sources and loans which could be both inter-governmental or market borrowings. The share of income from these sources in total income varies every year, depending on both the efficiency of KDMC in recovering user fees, taxes, cess etc. and support from higher level government institutions. Budgetary compositions, for preparing annual budgets, are worked out yearly, based on past year's budget and possibilities of increase in revenue from various sources mentioned above. KDMC's commissioner plays a key role in preparing such projections. These projections are, however, also discussed with the members of the Standing Committee.

The Standing Committee comprises 16 elected members appointed from within the General Body of the Corporation. The current ruling coalition in the KDMC

(Shivsena+ Bhartiya Janata Party) also has the highest representation in the Standing Committee. Other parties have their respective shares in the Committee, based upon their representation in the General Body. The Standing Committee appoints one of its own members to be the Chairman. The proposal before the Standing Committee is decided by a majority of vote of the members present. When there is an equality of votes the presiding authority has a right of a second or casting vote (KDMC website).

Regarding budgetary allocations, each department allocates funds across two major heads: capital works and revenue works. Revenue works comprise previously committed / dedicated expenditures on operation and maintenance of services and other administrative expenditures which include salaries of KDMC staff. Capital works are new expenditures or previously committed expenditures on new services and require budgeting. Budgetary allocation across capital works involves a long process and several key actors. Firstly the individual departments within KDMC allocate budgets for development works relating to their department depending upon previous year's finances and on the projected availability of revenues for the next financial year. Individual department budgets also get shaped by the elected representatives who raise demand for budgets within their constituencies by raising local issues with the concerned department. Budgets from these individual departments get compiled into one document at the Municipal Commissioner's office. The municipal commissioner takes a stock of the possible sources of revenues for the next fiscal year and discusses further changes in the departmental budgetary allocations with individual departments. However, it is the Standing Committee that deliberates and decides the allocation of funds across various projects within respective departments of KDMC. The selection of projects is done based upon their importance.

The budget prepared by the standing committee is then placed in the General Body for discussions. Here the budget takes its final form. After a round of deliberations, the budget is approved for the implementation. This process, however, does not consider the politics of budgetary allocation. Funds across various projects do not always get allocated on a majority vote basis within the Standing Committee. Further, during General Body meetings, all the elected members' suggestions might not be taken seriously. This particularly came out during discussions with the opposition party representatives in the Standing Committee and also with a Media representative from TV today. It was made aware during these discussions that for the 2013-14 fiscal year, 58

projects across various services received fund allocation which were of prime importance for the majority coalition within the Standing Committee. Out of these 58 projects, 22 are road projects which mainly fall within those constituencies from where the ruling coalition members are elected. The opposition party members, both in the Standing Committee and the General Body could not do much about it except reducing the size of allocation to the tune of 150 Crores from the total allocation for roads during the fiscal year 2013-14 (interviews with the Opposition party members 2013). This highlights the fact that spatial dimension of budgetary allocation is highly influenced by the elected representatives who are part of the ruling coalition.

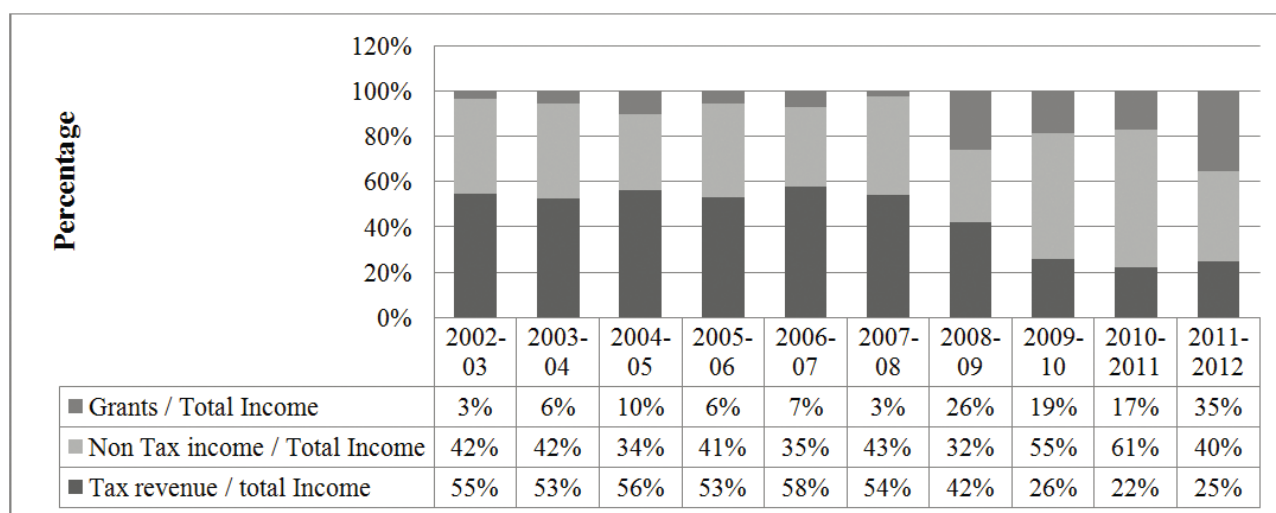
Another important factor that decides the spatial allocation of local budgets is the provisions within the master plan document. It was revealed during discussions with the elected Councillors during the pilot field visit (2012) that if there are certain provisions within the master plan related to the extension of urban area and location of major facilities like industries, school, hospitals, roads and like, then it is highly likely that funds are allocated for those spatial locations and related to those project, subjected to the approval of those projects by the Standing Committee. Lastly, readiness of the elected councillors in identifying operation and maintenance (O&M) works within their constituencies also affects distribution of funds reserved for O&M works. This means that if a councillor identifies the list of works to be done, and gets his/her file prepared before other councillor does, there is a higher probability that he/she can avail funds for those works.

6.1.2. Role of Higher Level Governments in Investment Decision Making within KDMC

A careful analysis of municipal budgets of past 10 years reveals that the share of own source income (calculated as sum of tax and non-tax revenues) in the total income of KDMC has decreased drastically from 97 percent in 2002-03 to 65 percent in 2011-12 (see Figure 10). Further, the share of grants in total income of the KDMC has increased from 3 percent in 2002-03 to 35 percent in 2011-12 with a simultaneous decrease in share of tax revenue from 55 percent to 25 percent during the same period. Moreover, analysing source and purpose of such grants reveals a sharp decrease in the share of unconditional grants in total grants from 31 percent in 2002-03 to 8 percent in 2011-12. This highlights an increasing role played by higher level governments in local body's investment decision making.

KDMC deals with various levels of governments and their agencies while performing its mandatory and obligatory functions (CDP 2012; SLB Action Plan 2011). At the level immediately above the local level, MMRDA influences KDMC's action through its various policies and programmes related to socio-economic development within MMR. MMRDA also helps KDMC with untied grants and loans for implementing various urban development programmes. For the financial year 2012-13 there is a provision of approximately Rs. 62 Crores for the development of existing rail system, sewerage and slum housing within KDMC.

Figure 10: Share of various sources of revenues in total income of KDMC



Source: KDMC Budgetary data for the respective years; author's own analysis

Further higher is the State Government of Maharashtra (GoM), which not only shares its revenues with KDMC through the State Finance Commission, but also provides assistance through its various policies, programmes in the form of grants, loans, and direct service provision. For the financial year 2012-13, a provision of around Rs. 90 Crores has been made within the KDMC budget as a grant from the State Government. A major component of this grant comes in the form of Maharashtra Swarna Jayanti Urban Development programme for the KDMC area. Further a sum of almost Rs. 96 Crore has been envisaged as a loan under the same programme.

At the highest level of formal institutions is the Central Government (GoI) which shares revenues from the common pool and also provides assistance through its various Ministries/ agencies and their schemes. In particular, MoUD, Ministry of Housing and Urban Poverty Alleviation (MoHUPA), and the Ministry of Railways are key institutions that either provide policy and budgetary support to the KDMC or directly facilitate urban services within KDMC area. Within the last three financial years (2010-2013), the Central Government has shared almost Rs. 47 Crores in total with the KDMC as Finance Commission grant (KDMC Budgets). Further, the MoUD, as a part of the JNNURM grant, has shared a sum of Rs. 83 Crore with the KDMC in the financial year 2012-13 for the improvement of sewerage service. MoUD has also shared a sum of Rs. 80 Crore in the financial year 2012-13 as JNNURM loan. Likewise, MoHUPA has also shared a sum of Rs. 69 Crore in the financial year 2012-13 as Basic Services for the Urban Poor grant.

A detailed study of share of grants from MMRDA, GoM and GoI in the total grants (both conditional and

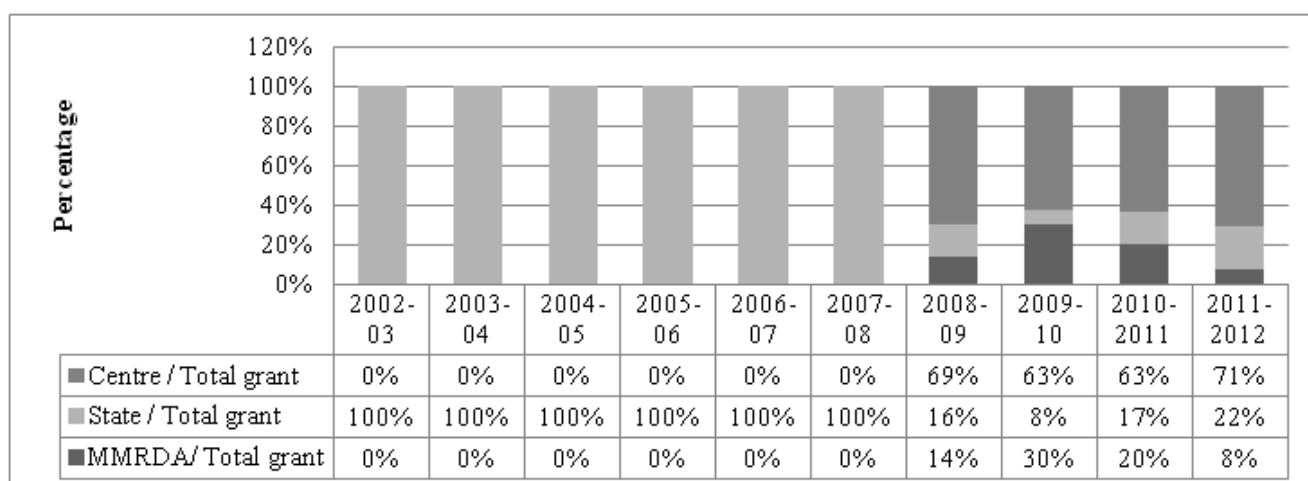
unconditional) provided to the KDMC during the last 10 years reveal an interesting picture. Figure 11, highlights the relative share of grants from respective sources in total grants and brings out the significant role played by GoI grants since 2008-09. Further, MMRDA also had some share in the total grants during 2008-09 to 2010-11.

6.1.3. A Detailed Budgetary Analysis

KDMC's income and expenditures have increased almost six times during 2002-03 to 2011-12. While income rose to Rs. 1135 Crores from roughly 171 Crores, expenditure went up from Rs. 178 Crores to Rs. 1261 Crores during the same period. Per capita income for KDMC has increased almost 4.5 times from Rs. 1,612 per capita in 2002-03 to Rs. 9,110 per capita in 2011-2012. Likewise, per capita expenditure has increased almost 5 times from Rs. 1,678 in 2002-03 to Rs. 10,121 in 2011-12. These real per capita values show convincingly that unlike other Municipal Corporations in India, KDMC has a growing per capita income and expenditure.

An analysis of the expenditure side of the KDMC budget reveals an interesting pattern of the share of expenditure on basic services. Considering water supply, drainage and sewerage in the pool of basic services and interpreting expenditure pattern over the past 10 years, it appears that the share of expenditure on sewerage has increased from 1 percent of the total expenditure in 2002-03 to 8 percent of the total expenditure in 2011-12. This increase happened with a simultaneous decrease in the share of expenditure on water supply from 19 percent to 13 percent during the same period. However,

Figure 11: Share of grants from various sources in total grants



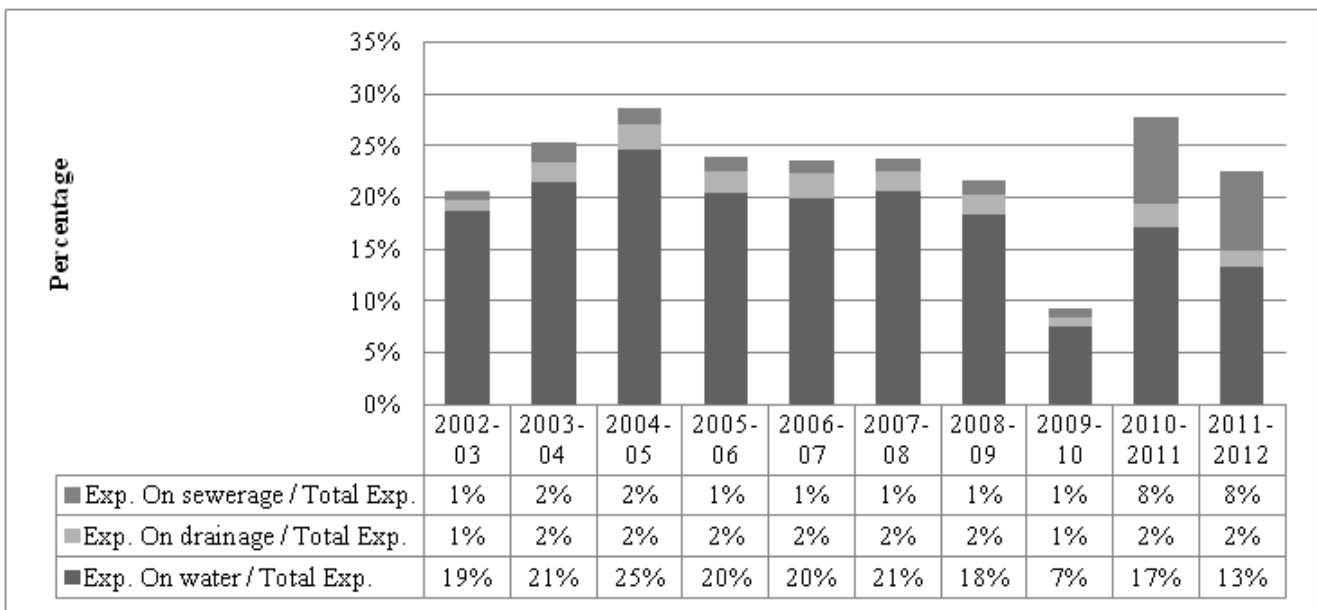
Source: KDMC budgetary data for 2002-2012; author's own analysis

expenditure on drainage as a proportion of total expenditure remained constant throughout the past decade in between 1 percent to 2 percent as illustrated in Figure 12.

Figure 13 compares this trend on basic services with per capita expenditure on basic services, revealing further interesting results.

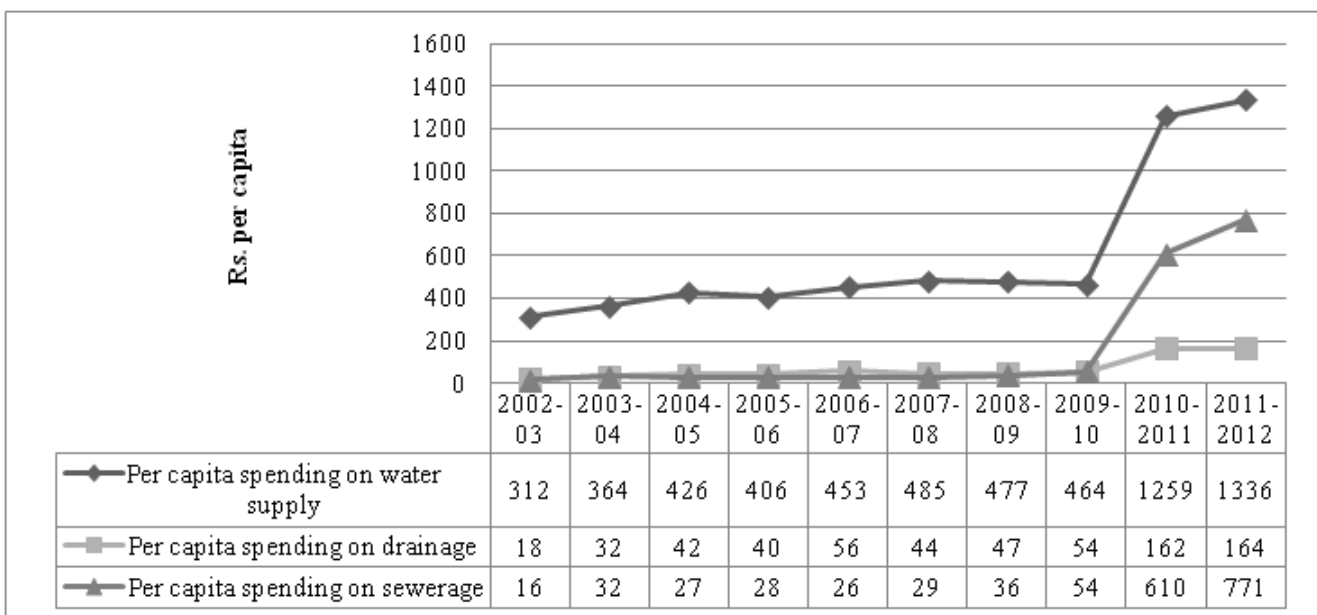
Although there is a declining trend in the share of expenditure on water supply in total expenditure, in real per capita terms, the expenditure has increased drastically from Rs. 312 in 2002-2003 to Rs. 1336 in 2011-12 per person. This attributes to the fact that the although expenditure on water supply services has increased significantly in real value terms from Rs. 33 Crore to Rs. 166 Crore during this period compared to the small

Figure 12: Expenditure on basic services as a parentage of total expenditure



Source: KDMC budgetary analysis

Figure 13: Per Capita expenditure on basic services



Source: KDMC budgetary data; author's own interpretation

growth in population from 1,047,297 in 2002 to 1,246,000 in 2011, the total expenditure of KDMC in real terms increased dramatically from Rs. 178 Crore in 2002-03 to Rs. 1261 Crore in 2011-12. A more significant change is visible in the case of sewerage where per capita expenditure rose from Rs. 16 in 2002-03 to Rs. 771 in 2011-12. A detailed study of capital receipts, CDP documents (CDP 2006, CDP 2012) and City Sanitation Plan (2011) sheds more light on such a change by highlighting the role played by JNNURM grants in setting up 150 MLD water treatment plant, addressing issues with the existing water supply network within KDMC area and construction of sewerage treatment plants along with pumping stations and augmenting existing sewerage network.

Extending the definition of basic services by including education, basic services for the poor (including slum dwellers) and local roads and analysing the trend for the past 10 years reveals that the share of basic services for the poor in the total expenditure has increased significantly. At 0.6 percent of the total expenditure in 2002-03, the share of basic services for the urban poor has increased up to around 19 percent of the total expenditure in 2011-12 (Figure 14). A closer look at this increase in the share reveals that it has also been influenced by the JNNURM grants, and likewise, the trend is more visible after 2007-08 (KDMC budgetary data). While the share of operation and maintenance component of this expenditure (which was spent mainly on maintenance of hospitals and dispensaries and primary education) decreased from 55 percent during 2008-09 to 17 percent during 2011-12, the capital

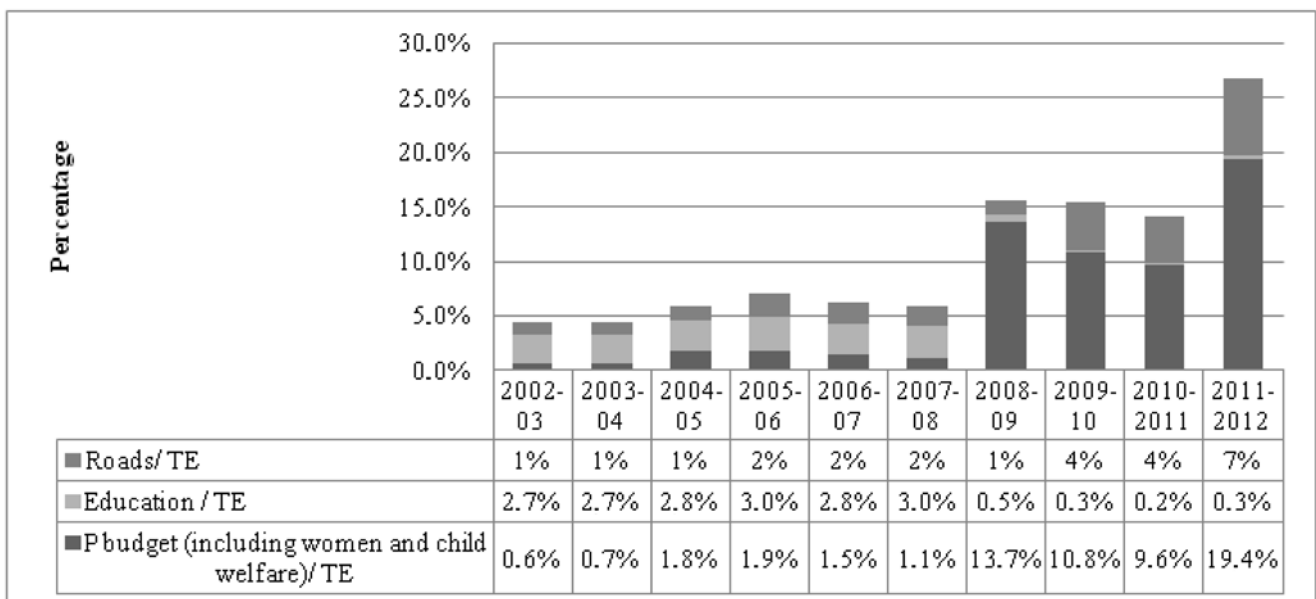
expenditure component of the P-budget (which included mainly the grant funded works on slum housing – BSUP, and sanitation within slums –Nirmal MMR) increased from 45 percent in 2008-09 to 83 percent in 2011-12.

In summary, the analysis of annual budgets for the past 10 years from 2002-03 to 2011-12 highlights the increasing role played by grants and non-tax revenues in influencing both income and the expenditure of KDMC. On the expenditure side, a sharp increase can be noticed in expenditure across water supply, sewerage and basic services for the urban poor which include slum housing and slum sanitation. This trend attributes to the budgetary support from the Central and State governments and from the Metropolitan authority in the form of both grants and loans.

6.2. Financial Arrangements for Water Related Infrastructure and Budgetary Commitments for Millennium Development Goals

An analysis of the composition of sources of income for the basic services reveals an interesting pattern. In the case of water supply, the total income from various sources has increased from Rs. 21.79 Crores during the financial year 2002-03 to 183.54 Crores in 2011-12. The analysis highlights that until 2009-10, own source revenues (water

Figure 14: Per Capita expenditure on basic services



Source: KDMC budgetary data; author's own interpretation

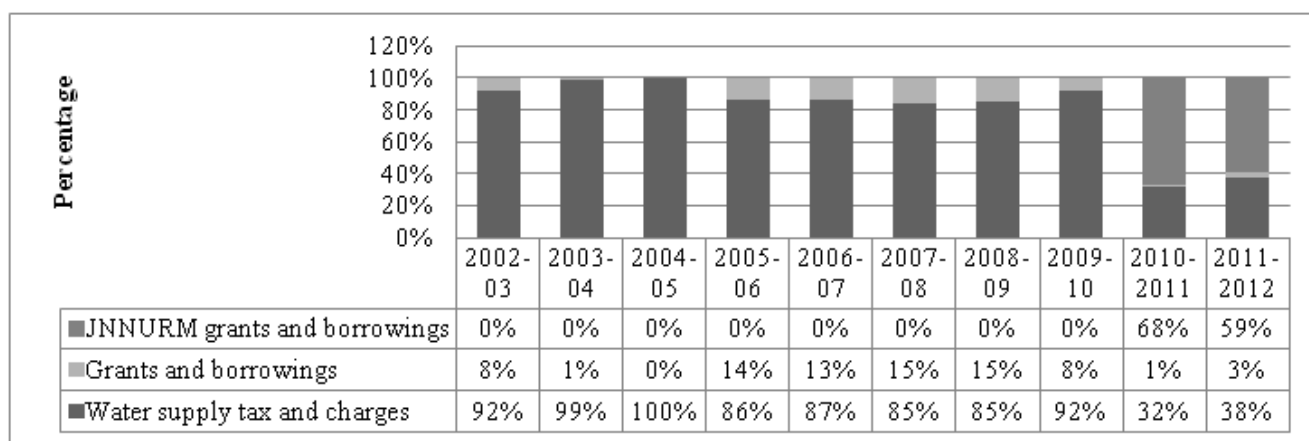
supply tax and charges) remained a dominant source of income for funding the water supply operations. Such contribution from own source revenues ranged from 85 percent to 100 percent during these years. However, since 2010, there is an emerging share of JNNURM grants and loans contributing more than half of the total income for water supply services (Figure 15).

Regarding sewerage services, the total income from various sources has increased from Rs. 4.57 Crores to 109.05 Crores. The analysis highlights that until 2007-08, drainage tax and benefit tax remained main source of income for the service provision. However, for 2008-09 and 2009-

10, their contribution to the total income for sewerage services declined to 85 percent. Subsequent to this, from 2010-11 onwards their contribution declined drastically with the JNNURM grants and remained below 20 percent levels as shown in Figure 16.

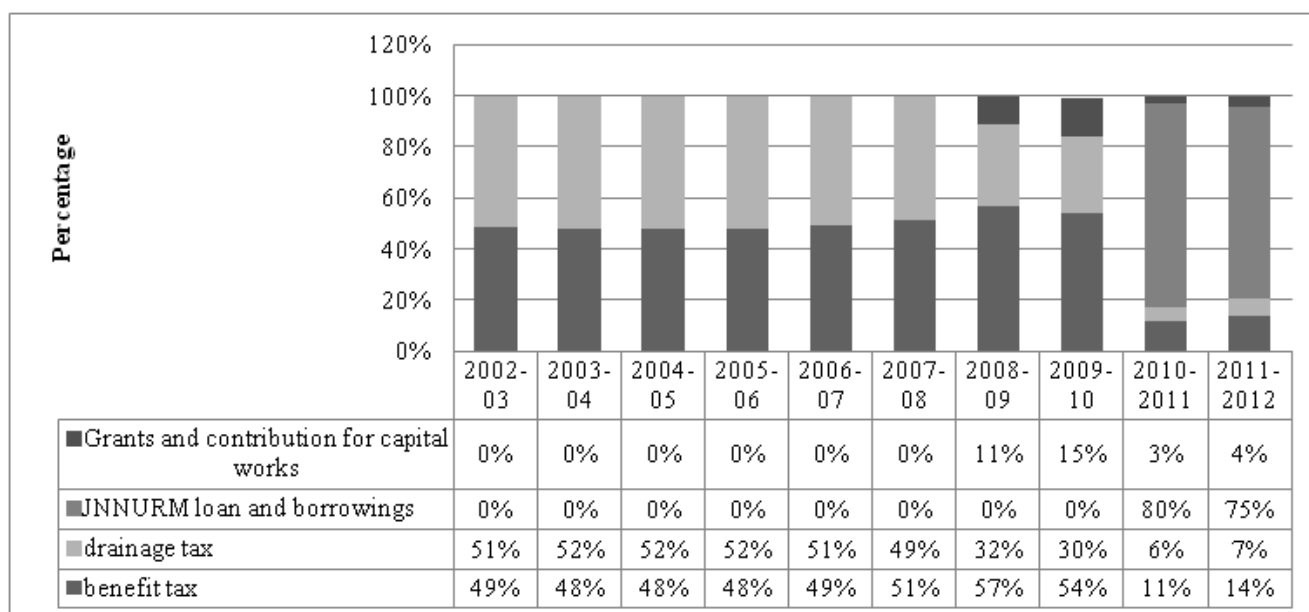
While understanding the composition of sources of income for basic services, an interview was conducted with the decision makers regarding their understanding on MDGs during field visit in October 2012. It was not a surprise that none of the standing committee members have heard of Millennium Development Goals. However, while posing similar questions with the KDMC officials (non-elected), it

Figure 15: Financial arrangements for water supply services within KDMC



Source: KDMC Budgetary data for 2002-12; own interpretation

Figure 16: Financial arrangements for sewerage services within KDMC



Source: KDMC Budgetary data for 2002-12; own interpretation

was revealed that KDMC has put in place a framework for achieving service level benchmarks (SLBs) stipulated by Gol and GoM which works as a proxy to MDGs. An analysis of the proposed allocation for the next five years 2011-12 to 2015-16 reveal that sewerage service commands major expenditure amongst other services, except for the financial year 2011-12 (SLB Action Plan 2011). These expenditures are proposed for augmenting coverage of waste water network services, collection efficiency of waste water network, adequacy of waste water treatment capacity and extent of reuse and recycling of treated waste water. Regarding water supply, continuity of supply services for 24 hrs, 7 days a week comes out to be a major focus with its higher budgetary allocation (Rs. 50 Crores spread across 2011-12 and 2012-13) amongst other works. Regarding drainage and solid waste, the focus area of investments would be coverage of storm water drainage network and efficiency of collection of solid waste (see Figure 17). However, as this document was prepared in 2011, it is not possible to capture budgetary allocation for these SLBs up to the duration the budgetary data is available data, i.e. 2011.

6.3. Links between Urban Planning Processes and Financial Decision Making in KD

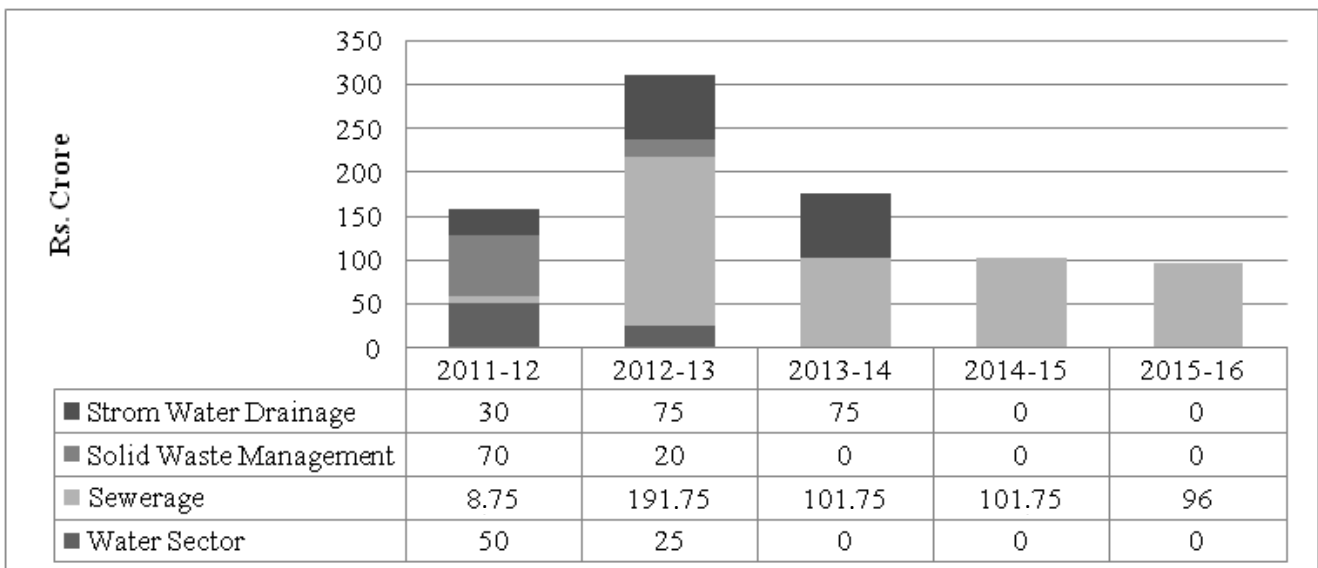
Urban planning, being one of the mandatory services rendered by the KDMC, has a similar role in the process

of municipal budgeting as any other service provision has. This particularly came out during discussions with the head of the TP department of KDMC during the recent ?. This therefore means that town planning as a process has no other implications for municipal budgeting apart from contributing to municipal revenues from various sources. An analysis of the budget for the past 10 years (2002-03 to 2011-12) reveals that the contribution from TP department ranged from 3 percent (during 2003-04) to 10 percent (during 2006-07) of the total income by KDMC. Major sources of revenue for the department are; development charges, recovery of fines under MRTP Act, building permissions and plan scrutiny.

6.3.1. Own Sources of Local Revenues for KDMC

The budgetary analysis for past 5 years highlights that the main source of revenue for the corporation remains income from Octroi. Its contribution ranged from 38 percent in 2005-06 to 20 percent during 2009-10. Although Octroi has been abolished since the current financial year (2013-14), there would be local body tax to replace it. The other substantial source of income for the municipal corporation is property tax. The role of grants in particular has increased since 2009-09. Further, the role of JNNURM grants has also increased during the same period in KDMC's total income (Figure 18).

Figure 17: Proposed budgetary allocations for achieving key targets in SLBs across key services



Source: SLB Action Plan document 2011; pp. 43, own analysis

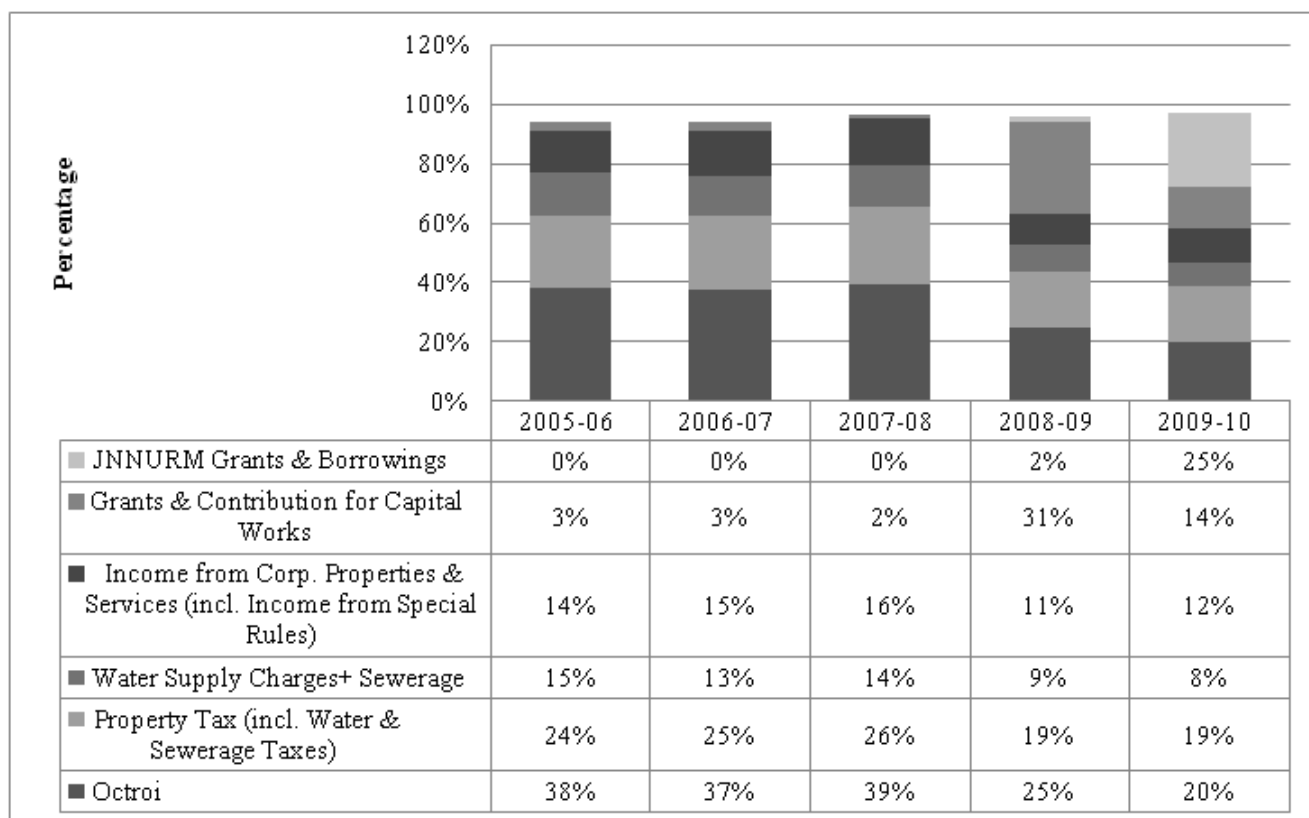
6.4. Public Participation in Decision Making

The survey conducted with the local councillors and with the local residents sheds some light on the extent to which decision-making takes residents' wishes into account, and what spaces for negotiation and participation are open to residents (Pilot field study 2012). The survey highlights that in spite of local residents motivated to participate in the process of bottom up planning; there are no formal mechanisms that ensures this. Local needs are mainly communicated either through the elected representatives or via grievance redressal system, both having their own limitations. Neither of these mechanisms can ensure inclusion of public priorities in the annual budgeting process. While grievance redressal systems do not guarantee that capital investments reflect public grievances better (Martinez et al., 2011), there are issues of moral hazards through investing local councillor fund (Councillor Survey 2012). The later particularly came out while interacting with the local councillors. On asking them three key issues within their wards and three key aspects where they have spend their discretionary fund last year, there are instances of gross mismatch.

Nevertheless, local residents of KD highlight an interesting pattern of local need and their mechanism of bargaining these needs with the local state. While conducting the household survey, resident were categorised based on their household incomes under three broad categories– higher (HIG), middle (MIG) and lower (LIG). The higher income group comprise 23 percent of the respondents (8 households), middle income group comprise 43 percent of the respondents (15 households) and lower income group comprise 34 percent of the respondents (12 households). Interviewing HIG residents, it comes out that most of them have not met the local government during last one year for reasons other than local taxes and are satisfied with the system. However those who have met the local government during past one year either rely on local councillors or prefer contacting the KDMC's head office. The main reason cited by these residents was issues related to the water supply. Respondents further highlight that their problem was resolved during such an interaction.

Majority of the surveyed MIG residents reveal that they have met the local government during last year for purposes other than taxes. Approximately half of the respondents under this category have relied upon their local councillors

Figure 18: Composition of total income



Source: KDMC budgetary data for past 5 years; own interpretation

for resolving their issues. The other half of the respondents contacted the office of the local government (wards committee offices) for their issues. Respondents mention issues related to water, solid waste, sanitation, and drainage to be the reason for their interaction with the local state. Respondents further highlight that these issues were resolved (wholly or partly) during such interactions. However, on asking them about factors that influence their representations, they share mixed opinions. Some believe that no action would be taken by the local government on these representations, other highlight that they lack collective action. Lastly, there are a few who believe that government officials are corrupt. Interviewing LIG residents has shown that most of them have contacted local government once during last one year both by reaching out to the ward level officials and by taking up their issues to the ward councillors, simultaneously. They further mention that their problems were promptly solved. However, those of the few, who have not met the local government during last one year, mention that local government will not take any action on their issues.

In summary, although the household survey reveals an array of mechanisms adopted by the local residents in bargaining local public services with the local state, there are no formal mechanisms of ensuring inclusion of public priorities in local budget making.

The preparation of the CDP in order to obtain central government funding under the JNNURM programme however involved public (stakeholder) consultations and focus group discussions. The process included organising several stakeholder consultations, to which organisations were invited, core groups pertaining to particular sectors, followed by workshops to bring together the stakeholders in one platform and enable them to voice their opinion and come to consensus on strategies and actions for each identified priority sector (CDP 2006, 2012). Further, a citizen survey was also conducted through the KDMC website, wherein opinions from general citizens were invited on a range of issues and their vision for their city sought (revised CDP 2012). The stakeholders comprised NGOs, industry associations,

Table 17: Summary of pilot household survey

Economic class	Number of households	Excerpts
MIG	13	Majority of the respondents reveal that they have met the local govt. during last year for purpose other than taxes. Approximately half of the respondents under this category have relied upon their local councillors for resolving their issues. Rest half of the respondents went up to the office of the local govt. for their issues. The reasons behind such interactions were issues related to water, solid waste, and sanitation. Respondents further highlight that their issues were resolved (wholly or partly) during these interactions. However, on asking them what are those factors that influence their representations there are mixed opinions. Some believe that no action would be taken by the govt., others highlight that they lack collective action. Lastly, there are few who believe that govt. officials are corrupt
HIG	7	Most of the respondents have not met the local govt. during last one year and highlight that they are satisfied with the system. However those who have met the local govt., either rely on local councillors or prefer contacting the head office. The main reason behind these representations cited by them was related to water supply. Respondents also highlight that their problem was resolved during such an interaction.
LIG (including slum households)	10	Most of the respondents have met the local government once during last one year by both visiting ward level offices and meeting their ward councillors. Some of the respondents also went up to the head office. All of the respondents highlight that their problems were solved during such interactions. However, those who have not met the LG, believe that LG will not respond to their problems.

Source: Pilot household survey Vidya Pancholi

educationists, environmentalists, councillors, and representatives of the informal sector. The stakeholder consultations also involved the KDMC officials. For the most recent CDP, three rounds of consultations in the form of workshops and group discussions were held during the period March to May 2012.

The household survey, in particular, reveals that most residents have contacted the local government during last one year and main reason behind such an interaction was issues related to water supply. Further, they reveal that

their issues were resolved during such an interaction. However, those who have not contacted the local government in the past year are either satisfied with the system or they do not have time for such an activity, and even if they participate, no action would be taken up by the local government on their issues / grievances. A number of respondents believe that they lack collective action and therefore they should not raise their issues with the local government. Nevertheless, residents unanimously believe that public priorities are not captured in the local budgets and believe that the process could be more participatory.

7

Conclusions

Kalyan Dombivili is a fringe city in the Mumbai Metropolitan region, which has grown in size beyond expectations in the last decades, outstripping local infrastructure facilities and government capacities. This situation has posed strong challenges to the local government, which had to deal with changing municipal boundaries, little autonomy in the services provided, as these were the mandate of regional institutions, and an immigrant population in search of employment and affordable accommodation. This report has shown developments in the domains covered in the Chance2Sustain programme, and allows us to draw out a number of conclusions on recent developments in KD.

The population in KD remains characterized by socio-spatial segregation, in several urban formations. About 40% of the population lives in slums, a figure which has not changed, as the population has grown. The urban formations (slum, *gautam*, unauthorized and authorized areas) have strong implications for the rights of residents to their way of life, and their relationships with local government. Whereas in slums and *gautams*, residents are strongly dependent on the strength of their municipal councillors, middle-class citizens deal with Corporation officers to solve issues of service delivery. Generally, residents do not mobilize collectively, but prefer using intermediaries to solve the issues they face.


The capacity of local government is changing; it is the driving force behind several large-scale initiatives. First, local government in Kalyan Dombivili is becoming increasingly strategic in expanding its own role. This can be seen both in Corporation efforts to obtain national JNNURM grants for financing projects identified in the City

Development Plan, as well as in the expansion of services under its own aegis (e.g. water and sanitation infrastructure, digitization of administrative information and services). Second, local government is claiming a leadership role in the metro region in the development of ICT-GIS based information systems, where the KD model is being rolled out across all municipalities in Maharashtra.

The JNNURM process sets conditions for funding projects, in terms of quality of local government, which have only been partially met in KD. City Development Plans have been prepared, and public engagement with a highly selected group has been organized. Digitization of internal administrative information has been organized, but the effective internal monitoring and control of tax collection is not complete, with corruptive practices still fairly widespread.

In implementing the large-scale project for expanding water provision and treatment the Corporation works closely with the private sector, which is carrying out the project under a ppp construction. The same applies to the e-governance initiatives, where the private sector is in fact dominant due to its greater capability, and transfers of skills and knowledge are an ongoing issue.

The Corporation has been an early leader in their e-governance initiatives, although these seem to have reached a stage in which not much more progress is being made. Resistance to implementing modules developed across all Corporation departments is linked to existing informal practices, which would be reduced as a result. New political drive is needed in this area to take the Corporation to a next stage.



The financial flows have shifted as a result of such initiatives, with grant flows becoming increasingly important for total revenues, in comparison to tax revenues. The question is whether revenues will increase sufficiently for the sizeable loans taken out for large infrastructure projects to be repaid over a longer period.

The Corporation has undertaken several slum improvement programmes, in which eligibility criteria and benefits differ strongly and usually remain blurred for the people living in slums. Conditions set for proving eligibility are unclear, providing ample space for councilors to negotiate with the Corporation about beneficiaries. Programmes have included basic services, self-help groups, and communal toilet blocks. The system of self-help groups functions most readily in KD. The latest programme RAY requires digital and spatialized information systems, and mapping initiatives are being done by the private sector in great secrecy. Accountability systems for these types of programmes are not in place, and are only partially ensured by local political representatives. Therefore, citizenship rights remain limited for residents outside authorized areas.

Water-related risks include a drainage system, which cannot deal with existing water and waste flows and needs expansion, and moderate flooding risks from high tides and overflowing rivers. Some slum areas are more vulnerable to these risks. Recognition of water-related vulnerabilities is recent, and was triggered by the floods in Mumbai in recent years. A river basin approach at the state level has also been set up under WB auspices, with allocation directives to drinking water, irrigation and industrial usage. Within the municipal area, water is primarily seen as a public good and human right, which also seems to be reflected in the priorities set at the river basin level.

The main discourse for introducing ICT-GIS-based knowledge management system in the KD Corporation was to increase efficiency and transparency. The model incorporated both an internal management information system with modules for each department, which can potentially increase efficiency substantially (and have done so for property tax assessment and water billing). In addition to the internal resistance of adopting such digitized systems for administrative and monitoring purposes, residents unwilling to pay taxes also undermine more transparent tax collection systems by negotiating on individual basis with street-level bureaucrats. Nevertheless, standardized property tax assessment modules have shortened time needed for calculations substantially and reduced 'idiosyncrasies'; what remains to be done is stringent digital monitoring by the highest administrators of the Corporation.

The Corporation has increased transparency towards residents by developing a large database providing digitized information through the KD website, through citizen facilitation centres in each ward, and the possibility for residents to provide feedback to local government in the form of grievance redressal systems. However, e-governance channels are mainly used by middle-class residents, whereas slum residents still depend on their political representatives. In KD, mobilization of residents through web-based social media or other virtual channels was not encountered in this fringe city, although it is common within Mumbai city.

Therefore, the main conclusion of this city report is that Kalyan Dombivili is experiencing rapid urban development as fringe city in the metropolitan region, and is becoming a stronger urban centre in its own right in the process. How strong it will become, will depend strongly on the shift to higher government capacity, transparency and greater interaction with residents, and opportunities for residents to mobilize as responsible citizens.

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Annexes

Annexe 1:

The Areas Covered in the Seven Administrative Wards under the 74th Amendment

Economic class	Excerpts
A Ward :	Mohane ,Titwala, Shahad ,Ambivali & Atali.
B Ward :	Umbarde,Sapad,Gouripada,Rambag & Syndicate area.
C Ward :	Dudhnaka,Parnaka,,part area of old Kalyan municipal council Limits.
D Ward :	Kalyan (E), Kolsewadi, Katemanivli, Tisgaon, Khade Golavli,
F Ward :	Atharli, Chole, Khambalpada, Pendse Nagar & part area of old Dombivili council limits.
G Ward :	Ayare, Ramchandra Nager, Gandhi Nagar & part area of old municipal council limits.
H Ward :	Dombivili (West), Kopar, Mothagaon Thakurli, Shivaji Nagar, Maharashtra Kumbhar Khan Pada & west side of Ex. Municipal Limits.

Source: CDP, Kalyan Dombivili, 2007

Excerpt from WB Report (2011)

“Kalyan-Dombivili Municipal Corporation (KDMC)

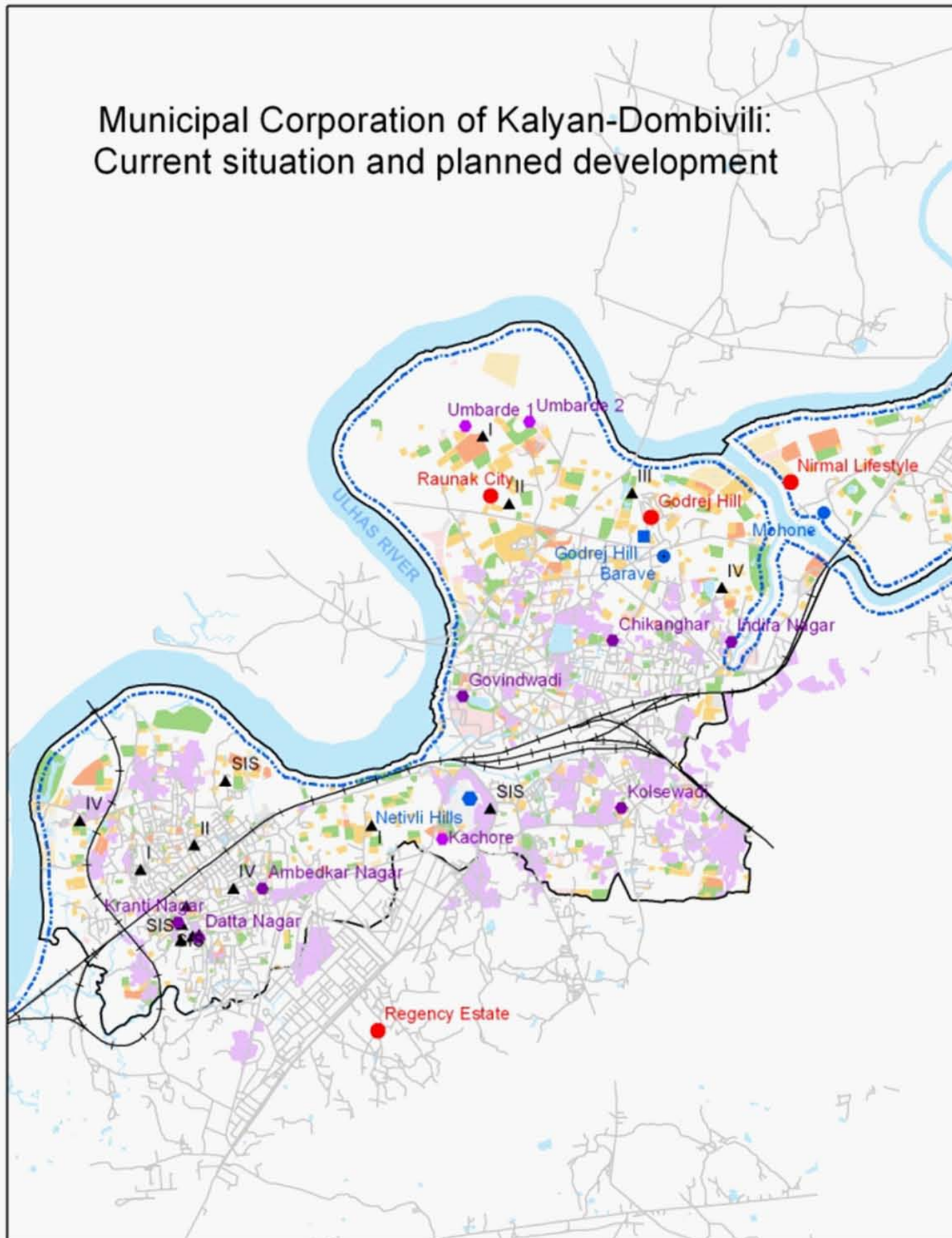
In the case of KDMC, projects relating to Underground Sewerage, Water Supply and Storm Water Drainage have already been sanctioned under JNNURM. These sectors are the priorities identified by the Urban Development Department of the Government of Maharashtra. In the case of KDMC, future priority projects identified include Mobility Plan, Super speciality Hospital and development of a City Park with underground parking. However, there are no detailed feasibility reports or DPRs available for Super Speciality Hospital and the City Park project. In the case of the Rs. 70,000 Mn Comprehensive Mobility Plan, the project is considered too large to be implemented as is and would have to be broken into more manageable components before any detailed review for financing and implementation can be carried out. Therefore, we have conducted a detailed analysis of the water supply project under JNNURM being undertaken presently by KDMC.

The financial viability of the water supply project has been assessed over 18 years, with a 4 year construction period. At the end of 18 years, a terminal value has been incorporated based the earning capacity of the project assets over their residual life. Given the aforementioned costs, revenue, grants, time horizon and terminal values,

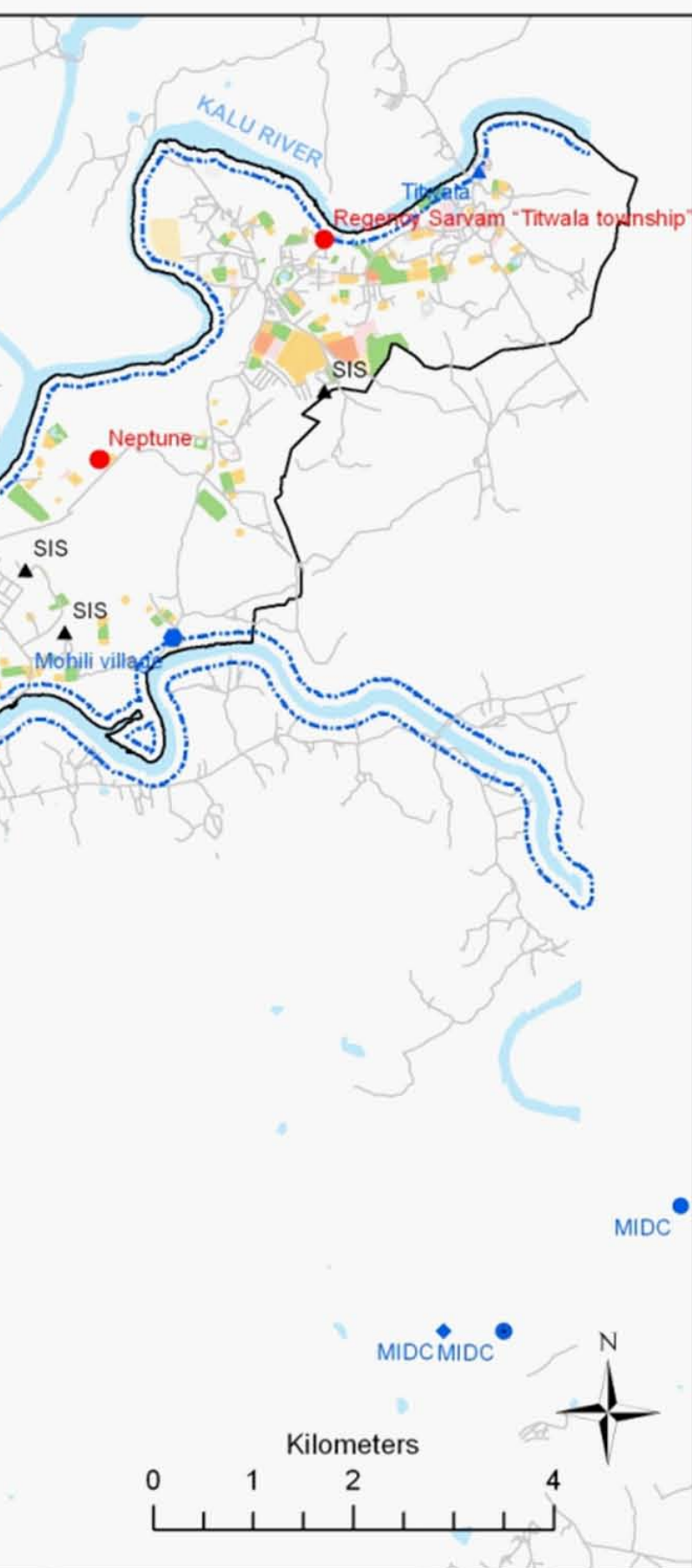
the project is viable on stand-alone basis. This is primarily because of JNNURM grants and tariff rate of Rs. 14/kl, which facilitates recovery of O&M and financing costs. However, the water supply project is currently being implemented by KDMC itself using a mix of JNNURM grants, borrowing from MMRDA and internal accrual. This financing pattern has there been incorporated in our financial analysis.

Our detailed financial analysis revealed that KDMC would be constrained in terms of its cash flows in the event reforms were not implemented aggressively. Further, under the conservative scenario, KDMC would have had difficulty in meeting its commitments (both in the form of internal accruals as well as debt) to ongoing projects as well as JNNURM projects. Therefore, we have proceeded with analysis under the more probable FIAP scenario where it has been assumed that KDMC would pursue reforms aggressively. In such a scenario, KDMC has adequate cash flows to support ongoing projects as well as JNNURM projects. In addition, it is in a position to undertake future projects aggregating to Rs. 5000 Mn and support Rs. 4000 Mn of borrowing for the same projects.” (p. 9-10).

Annexe 2: Figure 5 - Map of Kalyan-Dombivili and changes in the mu



Municipal borders 1992



Legend

- Housing Projects
- ▲ Slum Improvement Schemes

waterbodies

--- Coastal zone regulation

—+— Railway_Line

— Roads

□ KDMC Boundary

Water bodies

Slum

Development Plan

- Undefined
- Commercial
- Public Purpose
- Public Utility
- Recreational
- Residential
- Traffic and Transport
- Water Bodies

BSUP sites

- BSUP site phase 1
- BSUP site phase 2

Water supply locations

- Master balancing reservoir
- Raw water source
- ▲ Source and treatment plant
- ◆ Storage tank
- Water project
- Water treatment plant

Sources: KDMC database (2007), scanned KDMC maps (2006), field work data (2012)

Conception and design: Karin Pfeffer, Isa Baud, Neeraj Mishra and Berenice Bon (2013)

Coordinate System: UTM WGS 1984 Zone 43 N

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Chance2Sustain examines how governments and citizens in cities with differing patterns of economic growth and socio-spatial inequality make use of participatory (or integrated) spatial knowledge management to direct urban governance towards more sustainable development.

Consortium partners: European Association of Development Research and Training Institutes (EADI, Germany), Governance for Inclusive Development (GID) at the Amsterdam Institute for Social Science Research (AISSR-UvA, Netherlands), Centre National de la Recherche Scientifique (CNRS, France), Centro Brasileiro de Análise e Planejamento (CEBRAP, Brazil), Cities for Life Forum (FORO, Peru), Norwegian Institute for Urban and Regional Research (NIBR, Norway), School of Planning and Architecture (SPA, India), University of KwaZulu-Natal (UKZN, South Africa)



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