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JNNURM: An Opportunity for Sustainable Urbanisation

Field Study Report

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Table of Contents

List of Figures

List of Tables

Abbreviations Used

CAGR	Compound Annual Growth Rate
CDP	City Development Plan
CIDCO	City and Industrial Development Corporation
CSMC	Central Sanctioning & Monitoring Committee
DPR	Detailed Project Report
ESR	Elevated Storage Reservoir
FOP	Financial Operating Plan
HUDCO	Housing & Urban Development Corporation
IL & FS	Infrastructure Leasing & Financial Services
IPT	Intermediate Public Transport
IRDP	Integrated Road Development Project
IRMA	Independent Review & Monitoring Agency
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
LPCD	Litres Per Capita Per Day
MCM	Million Cubic Metres
MIDC	Maharashtra Industrial Development Corporation
MJP	Maharashtra Jeevan Pradhikaran
MLD	Million Litres Daily
MoUD	Ministry of Urban Development
MSEB	Maharashtra State Electricity Board
MSRDC	Maharashtra State Road Development Corporation
MSRTC	Maharashtra State Road Transport Corporation
NGO	Non-Governmental Organisation
NRAP	National River Action Plan
NUTP	National Urban Transport Policy
NWCMC	Nanded Waghala City Municipal Corporation
O&M	Operations and Maintenance
PMC	Project Management Consultant
PWD	Public Works Department
RoB	Railway over Bridge
RuB	Railway under Bridge
SC	Scheduled Castes
SLSC	State Level Steering Committee
SPS	Sewage Pumping Station
ST	Scheduled Tribes
STP	Sewage Treatment Plant
TWIC	Tamil Nadu Water Investment Company
UGD	Underground Drainage
UIG	Urban Infrastructure and Governance

ULB	Urban Local Body
WTP	Water Treatment Plant

1 Background

1.1 Introduction

The aim of the study was to undertake an analysis of sustainability of JNNURM, the largest chunk of public sector funding yet to be channelled into urban India. The focus of this study is on the Urban Infrastructure and Governance (UIG) sub-mission of JNNURM, which primarily focuses on infrastructure. The study sought to ask two key questions of JNNURM:

1. To what extent have considerations of environmental sustainability been incorporated within (explicitly or implicitly) in vision and programme design of JNNURM?

2. To what extent and how were the sustainability goals, as outlined in the vision and programme design, taken into considerations by the cities?

The second question has two parts to it: examination of a select set of City Development Plans (CDP) to assess whether and to what extent concerns of sustainability have been taken into account during the planning process. Secondly, this involved examining in a specific location, through a primary study, whether these concerns have been taken to the implementation stage.

The Secondary Review Analysis Report focused on the first question, and first part of the second question. In order to develop the framework for environmental sustainability of urban infrastructure, literature review was carried out to examine various frameworks, indicators and criterion that exist for urban infrastructure systems in general for specific sectors. The specific infrastructure systems that are reviewed in this study are: Transportation, Water Supply, Sewerage and Sanitation, Solid Waste Management and Drainage, as investments in these systems constitute bulk of JNNURM investments. Relevant urban policy and programmes in India were also reviewed to glean relevant issues/ criteria. Based on this, an initial framework was developed.

Various documents of JNNURM (programme brochure, guidelines and set of reforms) were then reviewed against this framework. Also, the framework was refined to include missing aspects of sustainability as highlighted in these documents. This was followed by a desk review of 20 CDPs developed by various cities, and an analysis sustainability issues have been addressed in these CDPs. The first stage also identified Nanded as an appropriate city for fieldwork. Nanded was selected because of its population size, projects across multiple sectors and high utilisation rate of funds.

This report presents the findings from field work in Nanded. The field study was conducted from 20th November to 30th November 2012.

1.2 Rationale for City Selection

Nanded, located in the state of Maharashtra in India, was selected for the field study. The following parameters were considered while selecting the city:

a. **Size of the City:** It was decided to take a medium-sized city rather a large million plus city. It was felt that it would be difficult to a. understand the complexities of the city and b. analyse all JNNURM projects in a short time period of this study. It was felt that it would be more difficult to isolate impacts of JNNURM, as larger cities tend to ongoing projects funded from different sources. Nanded has a population of 0.55 million (2011 Census) and is spread over an area of about 52 sq.km. Nanded has a total of 11 approved projects under UIG sub-mission of JNNURM.

b. **Sectoral Coverage**: Since the framework for sustainability was cross sectoral, we wanted to select a city that had projects from maximum number of sectors. Except solid waste management, Nanded has JNNURM projects in all relevant sectors (water supply, sewerage, storm water drainage, transportation) apart from solid waste management.

c. **Implementation Status**: Since, one of the main objectives of the field study was to understand sustainability concerns and implications at the implementation level, it was important to select a city where projects have either been fully implemented or are substantially complete. At 98.5%, Nanded has the highest rate of utilisation against the approved cost. According to the Project Management Consultant (PMC), three projects are complete, and the rest are over 95% complete.

d. **Language(s) Spoken:** Finally, since a major part of the field work was based on in-depth interviews, it was important to select a city whose native language team members were familiar with. This narrowed down the choice to a city where spoken language is either Hindi or Marathi. Marathi is the official language of Nanded while both Marathi and Hindi are spoken and understood in Nanded.

1.3 Objectives, Scope and Methodology of the Field Study

The two main objectives of the fieldwork were:

a. To understand major processes undertaken for JNNURM projects at a city level. The major processes included:
    - CDP Preparation and Approval
    - DPR Preparation and Approval
    - Project Implementation
    - Monitoring and Evaluation Mechanisms

b. To assess till what extent 'sustainability' considerations were taken into account during various processes and at different levels.

The other objectives were:

c. To cross check implementation status of the reforms, especially those related to sustainability and assess their impact.
d. To do a quick survey of the implemented projects in order to see their functionality on ground.

e. To examine disjuncture between CDP, planning process on ground and final implementation.

f. To understand how the JNNURM process fits into a larger governance and institutional framework at the city level.

In order to meet the above objectives, fieldwork largely consisted of in-depth and multiple interviews with the key stakeholders involved, e.g. government officials from ULB, district administration and other relevant parastatals, private sector consultants hired by the ULB to assist in planning and implementation, and political representatives and civil society. Interviews were conducted with the Deputy Commissioner, who was executing the JNNURM in the Corporation and is the only government official who has been there since the beginning of the JNNURM project; Municipal Commissioner and District Collector; Department Heads within Municipal Corporation, who are in-charge of the execution of specific projects; and representatives of the Project Management Consultants, who are responsible for the overall coordination and execution of the JNNURM projects. Besides these, meetings were also conducted with stakeholders peripherally involved in CDP preparation, project preparation and implementation; these included Engineers from the Maharashtra Jeevan Pradhikaran (MJP), political representatives and representatives from Sachkhand Gurudwara. List of people met and interview formats are given in the Annex. A reconnaissance survey of the city and site visits were carried out to assess the condition of urban services in the city, and also examine various JNNURM projects.

The scope of the field study was limited to projects implemented under UIG component of JNNURM.

2 Overview of Nanded

2.1 Location and Linkages

With an area of 51.76 square kilometres, Nanded city is the headquarters of Nanded district in the Marathwada region of the state of Maharashtra. It is the second largest urban centre in the Marathwada region after Aurangabad. The closest metropolitan centres are Aurangabad, Hyderabad, and Nagpur. Nanded is connected to other urban centres including Bhokar, Latur, Hadgaon, Madgaon, Purna, etc. by road. It lies on the Mumbai-Secunderabad railway line and has direct rail connectivity to Mumbai, Secunderabad, and Delhi. Nanded city has an airstrip which was recently converted into a minor airport with the help of the Maharashtra Industrial Development Corporation (MIDC). The closest regular airports are at Aurangabad and Hyderabad.

2.2 Geographic Features

Nanded lies in the Godavari basin, and the river splits the city into two parts. The city is located in the Deccan Plateau roughly at an elevation of 489 metres above sea level. The temperature in the city ranges from 18°C to 46°C. Rainfall is also scant due to its location and except for two to three months of the southwest monsoon, the city remains relatively dry. However, the fertile black cotton soil in the Deccan Plateau has led to agriculture playing a major role in the development of the city and the district.

2.3 Historical Importance

History of the Nanded city dates back to over 7 centuries. The city has several places of historic importance, most significant being the Takhat Sachkhand Shri Hazur Abchalnagar Sahib Gurudwara (Sachkhand Gurudwara). It is one of the five Takhats[1] of Sikhism, built in the memory of Shri Guru Gobind Singh, the tenth and last living Guru of the Sikhs before the consecration of Guru Granth Sahib. The other places of historic and religious importance include eight other Gurudwaras connected with events in the life of Shri Guru Gobind Singh. River Godavari that flows through the city also is of religious importance. As stated later in the report, the location of Sachkhand Gurudwara was critical to Nanded being part of JNNURM.

[1] Takhats are five gurudwaras which are 'the seats of power' of the Sikh religion.

2.4 Evolution of Urban Form

The city of Nanded is divided into two parts: Old Nanded Town (20.62 sq.km) located north of the Godavari and Waghala area along with newly merged six villages (31.14 sq.km) in the south, also which were merged with Nanded in 1997[2]. These two divisions of the city are popularly known as North and South Nanded. North Nanded is further bifurcated by the Manmad-Secunderabad railway line. Most of the government institutions, commercial areas and the Sachkhand Gurudwara lie between the river and the railway line. This is also the most densely populated area in the city.

The past decade has seen significant in areas north of the railway line as well as South Nanded. South Nanded hosts the MIDC and CIDCO areas where most of the current industries are located. The growth of South Nanded has been fuelled by the establishment of several educational institutions and the establishment of a new railway station at Maltekdi (NWCMC, 2006).

2.5 Demographic and Social Profile[3]

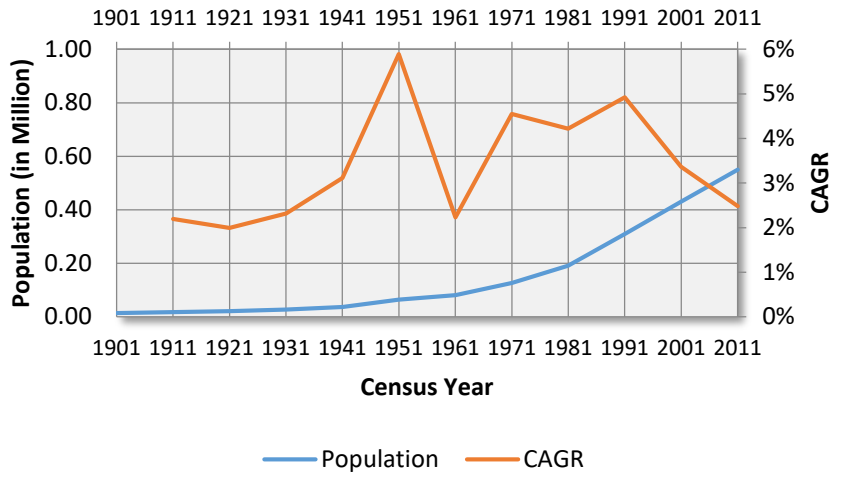
Population of Nanded was 4,30,733 in 2001 and 5,50,564 in 2011 indicating a CAGR of 2.48 per cent in the last decade. Compared to previous decades, there has been a decline in both CAGR and decadal growth rates in the last two decades. This decline is despite the fact that the administrative boundaries were expanded to include Waghala and other surrounding areas during the same time period.

Fig. 1: Growth of Population in Nanded-Waghala (1901-2011)

[2] Nanded-Waghala City Municipal Corporation (NWCMC) was established on 26th March 1997 by merging Nanded Municipal Council and adjoining Waghala Municipal Council. The other areas that were merged include villages of Vasarni, Kautha, Asarjan, Fatehjangpur, Asadwan, and CIDCO and HUDCO colonies. According to the city officials, the two municipal councils were merged so that Nanded becomes a Corporation and also because Waghala Municipal Council was not able to cater to the needs of the areas developed by CIDCO.

[3] Unless otherwise mentioned, the information and data in this section is from drawn from Census 2001 and 2011 data.

Nearly half of the growth during the decade 1991-2001 was due to natural growth, and other half due to migration and reorganisation of municipal limits. The primary migration stream (56%) was from within the district, followed by 33% from within the state. Primary reasons of migration included: moving with household, work and marriage.



Source: Census of India (1901-2011).

Sex ratio in the city in 2001 was 916, below the Maharashtra average of 922. Scheduled Caste (SC) and Scheduled Tribe (ST) comprise of 12 per cent and 2 per cent respectively of the total population (Census 2001). The overall population density of the city in 2011 comes to be around 106 persons per hectare. The population distribution is not even across the city and this figure is higher for North Nanded where the overall density is around 210 persons per hectare (NWCMC, 2006). The part of the city between the Godavari and the railway line has even higher population densities of around 300 persons per hectare.

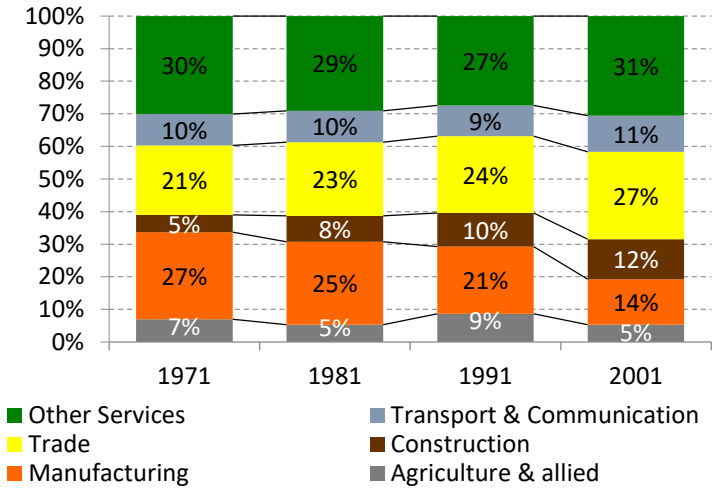
The average household size for the city stands is 5.92, which is higher than the national average of 5.3. While the 2001 Census reported the total number of households in the city as 72,733, the number of households in 2010 was 91,809 (NWCMC, 2010).

According to the Census 2011, the effective literacy rate, which takes into account those above the age of 7 in the city, was 87.40%. Disaggregating by gender, the literacy rate was 92.68% for males and 81.74% for females.

2.6 Economy

Till recently, the economy in Nanded was strongly dependent on the textile mills in the area and agriculture. During the 1980's, the textiles sector had provided jobs to around 10,000 people (NWCMC, 2006). However, the advent of liberalization resulted in the decline of the textile industry in Nanded, similar to the story of textile mills in other parts of the country.

Fig. 2: Workforce Composition in Nanded-Waghala (1971-2001)



Source: Census of India, 2001.

In 2001, workforce participation rate was 24 per cent; a slight decline from 1991. Tertiary sector accounts for bulk (81%) of the employment. Pilgrim tourism and commerce account for a significant portion (NWCMC, 2006). Employment in manufacturing and primary activities has declined over the years.

2.7 Institutional and Governance Framework

While NWCMC is the chief government body responsible for planning and development in the city, including provisioning and maintenance of infrastructural services in the city, there are other agencies which share these functions with NWCMC. The following table lists out the various agencies involved in different sectors and services.

Earlier, Maharashtra Jeevan Pradhikaran (MJP) was responsible for the planning and implementation of water supply and sanitation projects, while the ULB was responsible for operation and maintenance. However, interviews revealed that the role of MJP is more akin to that of a consultant, and it steps in only on the request of the ULB. The implementation is done by a ULB department, and officials from MJP are sent on deputation there. MSRTC is responsible for all aspects of public transportation, including planning, implementation, operation and maintenance. The new development plan will be prepared by a team from the state level MoUD department, who will be sent on deputation to Nanded. NWCMC is responsible for most roads in the city, except for specific roads for which the PWD is responsible.

Table 1: Institutional Framework in Nanded-Waghala				
S.No	**Service/ Function**	**Planning & Design**	**Implementation**	**Operation & Maintenance**
1.	Development Plan preparation (Land Use zoning and regulations)	Town Planning Department, Government of Maharashtra	NWCMC	-
2.	Water Supply	MJP/NWCMC	MJP/NWCMC	NWCMC
3.	Sewerage and Sanitation	MJP/NWCMC	MJP/NWCMC	NWCMC
4.	Storm Water Drainage	NWCMC	NWCMC	NWCMC
5.	Solid Waste Management	NWCMC	NWCMC	NWCMC
6.	Roads and Bridges	NWCMC/PWD	NWCMC/PWD	NWCMC/PWD
7.	Street Lighting	NWCMC	NWCMC	NWCMC
8.	Urban Transportation	MSRTC	MSRTC	MSRTC
9.	Slum Development	NWCMC	NWCMC	NWCMC
Source: NWCMC, 2006				

2.8 Status of Infrastructural Services

This section presents a summary of the status of relevant infrastructure systems in Nanded city. This section only highlights the key points; the detailed tables have been presented in the Annex 1.

2.8.1 Water Supply

The city sources water from the Vishnupuri Dam on river Godavari, 10 km away. Total water allocation to the city is of the order of 18.5 MCM. According to Census 2001, 69 per cent households had access to water within premises, 18 per cent had water near their premises while for 13 per cent of the households had to access water from far away. According to ULB, in 2005-06, almost 45% households had access to piped water supply network; the piped network coverage has increased to 77% households in 2012 (NWCMC, 2006; NWCMC, 2012). The per capita supply has increased from 70 lpcd to 110 lpcd during the same time period. Water drawal from the source has also increased from 54.5 MLD to 90 MLD in this time period.

2.8.2 Sanitation and Sewerage

According to Census 2001, nearly 21% of the population had to resort to open defecation; this number is much higher than the national average. Only 50 per cent of the houses had access to water closets in 2001. Sewage generation in Nanded was estimated to be 40 MLD in 2006. Nanded had an underground sewerage system designed and developed by MJP in 1969-71 for a maximum load of 10 MLD. In 2006, 36% properties were connected to underground sewerage network. NWCMC had received assistance of about 130 million to prevent pollution of Godavari River under the National River Action Plan of Government of India. The project components included interception and diversion of sewage and construction of sewage treatment plant. The sewerage system was proposed to be completely refurbished, extended and augmented under the JNNURM.

2.8.3 Storm Water Drainage

The storm water drainage system in Nanded comprised of about 261 km of roadside drains against 415 km of roads in 2006. In addition, there are about 12.5 km of nallahs that drain into the river Godavari. The city, especially the old city area is prone to frequent floods because of low and high flood lines extending into that area. The other areas in Nanded are prone to flooding during monsoons due to an inadequate storm water drainage network.

2.8.4 Solid Waste Management

Total waste generation in Nanded is of the order of 250 MT per day (Eco Save Systems Private Limited, 2010) with per capita generation of waste being 354 gms per day. Source-wise generation of waste reveals that 74 per cent of waste is generated from domestic sources, followed by about 23 per cent from commercial establishments including hotels and restaurants; about 300 kg of bio-medical waste is generated per day in Nanded (NWCMC, 2006). Most of the street sweeping, collection and transportation activities are outsourced to a private contractor and the Municipal Corporation's role is largely confined to monitoring contractor's activities. Estimates reveal that collection efficiency is about 75 per cent of the waste generated. The collected solid waste is disposed in a dumping ground of 3.32 Ha. No treatment facility is available with the city.

2.8.5 Transportation

The total road length in Nanded city is about 415 km, out of which about 43 per cent was un-surfaced. The surfaced roads were of a bad quality. Lack of connectivity across the river and railway line had resulted in high population density in the core city area. Before the implementation of JNNURM projects, there were 2 bridges over Godavari, and 2 Rail over Bridges (RoB) and 1 Rail under Bridge (RuB).

There is no clear hierarchy of roads, especially in the core city area are inadequate and the roads lack pedestrian facilities and signage. The Development Plan[4] had laid out a clear hierarchy of roads with specific width specified, but it had not been possible so far to widen the roads due to issues of road widening. NWCMC had initiated Integrated Road Development Program (IRDP) with technical and financial assistance from MSRDC; the program covered strengthening of, widening and improvement of about 35 km of important city roads at an estimated cost of about ` 1120 million (` 112 Crore).

The public transportation is limited in Nanded. Besides private vehicles, the citizens depend on IPTs including auto rickshaws, cycle rickshaws and jeeps. Bus service was started in Nanded by MSRTC but curtailed down due to heavy losses incurred as a result of inadequate road infrastructure and operations. The service has been restarted after procurement of 30 buses under JNNURM.

[4] A Development Plan indicates the manner in which the use of land shall be regulated and/ or carried out (MRTP, 1966).

3 JNNURM in Nanded

3.1 Selection of Nanded in JNNURM

Nanded is famous for the Sachkhand Gurudwara (dedicated to Guru Gobind Singh), and is one of major pilgrimage destination for Sikhs. The year 2008 marked 300 years of Guru Gobind Singh's ascension and the consecration of the Guru Granth Sahib, and it was decided to Gur-ta-Gaddi tercentenary celebrations in Nanded.[5] It was anticipated that approximately 3 - 5 million people from India and globally would attend it. It was felt that there were inadequate infrastructure facilities in the city to host an event of this scale, and hence there was a need for massive infrastructure expansion, and also a slew of temporary arrangements.

Preparations for Gur-ta-Gaddi started in 2002 and several consultations were held. The stakeholders included State Minister Ashokrao Chavan, Gurudwara Board, District Collector, Municipal Commissioner, Mayor and representatives from other agencies/ departments like PWD, Irrigation Department, MJP, Town Planning Department, etc. A private consultancy firm, Fortress Financial Services Limited, was hired as a consultant for preparation of the process plan (outlay). A plan for an estimated outlay of ` 8170 Million (817 Crores) was presented to the public in August 2003. The plan had three sets of proposals: Gurudwara development (estimated at ` 2600 Million), City Wide Infrastructure (`3920 Million), and other infrastructure specifically for the event (`1650 Million). It is not clear whether the feedback from public was taken on board.

In 2004, the Process Plan Report was submitted to the State Government. Realising that it did not have the financial resources to fulfill all demands, the State Government asked the Central Government for assistance. The then Chief Minister (Ashokrao Chavan) made a presentation about the requirements to the Prime Minister. Presentations were also made to the Planning Commission and Ministries of Tourism, Culture, Urban Development and so on. It was hoped that Central Government would fulfil 50% of the requirements, and the NWCMC would have to spend around 10 - 15%.

Around the same time, the Central Government was in the process of launching JNNURM, and it was decided to include Nanded as one of the select mission cities, under the religious/ historic category. It was decided that infrastructure development in the city that would cater both to the tourists and help in overall development of the city would be

[5] Gur-ta-Gaddi celebrations were spread over one week from 24th October 2008 to 31st October 2008. The events included: holy bath at the river Godavari, processions and commemorating consecration of Guru Granth Sahib and Guru Gobind Singh's demise.

funded by JNNURM, and state government could provide for development of camp-sites and other event specific requirements.

3.2 The Planning Process

As stated above, the planning for city wide infrastructure had already begun prior to JNNURM. The earliest consultations were held in 2002, and Fortress Financial had already been hired.
Once Nanded became eligible for funding under JNNURM, earlier plans for infrastructure redevelopment were revisited. Also, various processes, including preparation of City Development Plan (CDP), required for JNNURM were put in place.

While the initial plans were revised to meet the long term requirements of the city and also satisfy requirements for JNNURM, the short term requirements of Gur-ta-Gaddi event were also kept in mind.

The ULB felt that Fortress Financial Services would not have the capacity to plan for both the event and JNNURM; however, it was also felt that if a new consultancy would be hired, continuity with previous work would be lost. Therefore it was decided to hire a new consultancy firm, who would work in conjunction with Fortress. Hence, IL & FS was selected from the set of empanelled consultants to work on JNNURM, including preparation of CDP. Fortress continued to work on projects undertaken for the Gur-ta-Gaddi event, under the district administration. IL &FS worked with the ULB on CDP preparation, and was later hired as the PMC, and was responsible for DPR preparation and project execution.

The process of CDP preparation under JNNURM started with a consultation led by the Municipal Commissioner and District Collector. The participants included: members of NWCMC, heads of various other departments including PWD, Irrigation, MJP and MSEB, builders, developers, NGOs, and other professionals (doctors, academicians, etc.). The inputs of the group were sought on city vision, development issues, reform agenda and slum improvements. Based on this consultative workshop, city vision was formulated and subsequently, strategies and projects were decided. However, there is no mention of any other consultation being organised to present strategies and proposed projects to the general public. According to the various respondents, CDP was prepared by the Consultant based on the existing data provided by the corporation and it was presented and approved in the general body meetings of the Corporation.

3.3 Project Preparation and Approval

The CDP gave prime importance to water supply and sanitation, road widening and riverfront development. Except for solid waste management sector, all other proposals in the CDP were converted into DPRs and were approved.

Detailed Project Reports (DPRs) for ten projects were prepared and presented for approval and sanction of funds under JNNURM. These included one for roads, one for bridges, one for riverfront development, one for storm water drainage, two for water supply and four for sewerage. The DPRs were prepared by different Consultants and managed by the PMC, IL&FS.

Details of DPRs prepared for different sectors are presented in the next section. While briefly discussing the existing situation and issues of the sectors the DPRs focussed on the engineering details of the proposed projects and their financial requirements. The DPRs were first approved by a State Level Steering Committee (SLSC) and then by the Central Sanctioning and Monitoring Committee (CSMC).
A total of 11 projects (DPR on roads was divided into two projects) were approved under the JNNURM. In addition to these, 30 buses were also procured under JNNURM; however, there is apparently no DPR for that. The Central Government website on JNNURM also does not list out this project under Nanded.

The key details of the projects are presented in the table below:

Table 2. Details of Approved Projects in Nanded

S.No	Sector	Project Title	Approved Cost (in Million Rupees)	Current Status
1.	Water Supply	Augmentation to water supply system in North Nanded	908.7	Under Progress
2.		Augmentation to water supply system in South Nanded	494.5	Under Progress
3.	Sewerage	Sewerage system – North Nanded Zone I	402.5	Under Progress
4.		Sewerage system – North Nanded Zone II	488.9	Under Progress
5.		Sewerage system – North Nanded Zone III	393.1	Under Progress
6.		Sewerage system – South Nanded	409.3	Under Progress

7.	Transportation	Improvement of movement network (Package I)	610.8	Under Progress
8.		Improvement to movement network (Package II III & IIIB)	2149.7	Under Progress
9.		Improvement to movement network – Structures (Package III B)	581.5	Completed
10.		Procurement of buses	NA	Completed
11.	Storm Water Drainage	Storm water disposal and management in North Nanded	457.3	Under Progress
12.	Development of Heritage Areas	Godavari riverfront development	431.3	Completed
	Total (excluding buses)		7327.7	

In addition to JNNURM projects, several other projects were undertaken under Gur-ta-Gaddi event. These include: redevelopment of gurudwara premises, campsites development (including providing amenities at the campsite), airport, railway station, PWD roads and hospital renewal. Also, land acquisition had to done for various JNNURM projects, but these were not part of JNNURM funding.

3.4 Project Implementation

The initial aim was to complete implementation of all projects within 2-3 years of the launch of JNNURM so that projects would be completed in time for the Gur-ta-Gaddi celebration in 2008. After approval of DPRs, requests inviting expression of interests were released in the press, and six well reputed firms were hired. However, the prices quoted by these firms were nearly 100% higher than the DPR costs. Hence this process was scrapped and the projects were divided into smaller packages and tenders were floated. There was yet another iteration of rebundling of projects before the figures quoted by consultants were in compliance with the approved costs of the DPR. The tenders were evaluated and approved by the Standing Committee of the Municipal Corporation and contracts were awarded. The implementation has been monitored by the IL&FS. Monthly evaluation of projects was also done by Independent Review and Monitoring Agency

(IRMA) appointed by the Government of Maharashtra. In the case of Nanded, Shrikhande Associates was appointed as IRMA.

Three projects (roads and structures, riverfront development and procurement of buses) have been completed and are operational. A majority of the roads (of those listed both DPRs) are almost complete and operational. Water supply and sewerage projects are nearing completion and will be fully operational by March 2013.

3.5 Implementation of State and ULB Level Reforms

All state level reforms, except for reforms in rent control, have been implemented. At the ULB level, all reforms apart from 100% recovery of O&M costs of water supply and solid waste management through levy of reasonable user charges have been implemented. User charges have been revised but the corporation has not been able to recover full O&M costs through that.

Annex 2 gives details on implementation of each of the state and ULB levels reforms that were to be implemented as a pre-condition to JNNURM funding.

3.6 Comment on the JNNURM process

It seems from the interviews that process laid down in the overall JNNURM guidelines and various toolkits have been followed to more or less extent. However, one can see that the capacity of the ULB was limited, and as admitted by them, it would not have been able to fufill the requirements of JNNURM on their own. Hence external consultants were hired. The fieldwork team was repeatedly referred to the consultants for various pieces of information. It is not clear whether the ULB was able to monitor the progress adequately.

3.7 Challenges Faced During the Process

Overall JNNURM was perceived to have a large and positive impact on development of the city. This was felt that JNNURM had accelerated the speed of progress and infrastructure creation in the city; it was felt that without JNNURM a small city like Nanded could never have been able to create such infrastructure. Implementation of large scale projects helped in capacity development of the city officials and the reform agenda under JNNURM allowed the ULB to modernize its functioning and put in laws and practices which would promote development of the city over a larger term.

The key respondents were asked about the challenges they faced during JNNURM, right from planning to implementation stage. The key challenges that emerged from the interviews are listed below:

a. **Unfamiliarity with CDP as a Planning Instrument:** The first challenge was that no one understood what a CDP was and what it should contain. In Nanded, officials understood it as Master Plan or Development Plan. During pre-JNNURM discussions, Secretary (Urban Development) explained the purpose and structure of the CDP. In December 2005, toolkits on CDP and project preparation were given. Thereafter, the concepts of CDP, FoP, etc. got clarified and the same were prepared through discussions in General Body Meeting, Standing Committee, etc.

b. **Availability of Data:** Another major challenge was the absence of data, especially digital records with the municipal corporation. There were no digital maps showing the infrastructure of the city e.g. one did not know the exact location of underground water supply pipes. Without this information, it became much harder to prepare the CDP and DPRs. This resulted in delay in the execution and completion of the projects and increased the cost as well. The lack of e-governance was also cited as a major impediment.

c. **Institutional Capability:** Earlier, NWCMC possessed only a limited capacity amongst its staff. Since most of the development work done earlier had been executed by agencies other than the NWCMC, there was limited knowledge on project execution. The scale of the projects for the JNNURM was much larger than previous projects.

d. **Financial Capability:** NWCMC had limited financial capacity to even meet the 10% contribution. Recovery of O&M costs (increased after JNNURM projects) is also a challenge.

e. **Process of Land Acquisition:** Various projects, especially the road widening projects, required land to be acquired from the public. According to the municipal corporation that while there were a lot of protests initially; the public was convinced after some time. However, we also heard contradictory reports that in some places land was forcefully acquired, with assistance from the police.

f. **Non-availability of Resources:** The city was short of construction materials and labourers to execute such large infrastructure projects in limited time period.

g. **Tight and Inflexible Deadlines:** While JNNURM deadlines were in 2012, the city wanted to finish all major projects in 2008 in time for the Gur-*ta-Gaddi* events. This

put a lot of pressure on the municipal corporation, and others involved in the execution.

h. **Inter-departmental Coordination:** Due to deadlines, all projects had to be taken up simultaneously, which required a lot of inter-departmental coordination, which had earlier been lacking in the ULB.

i. **Civic Sense:** According to some government officials, some of the initial aims of the project were thwarted because of lack of civic sense. For example, even though separate bicycle tracks were created on various roads, the cyclists did not use these tracks.

4 Investments in Infrastructure and Services

Permissible sectors in JNNURM include water supply, sewerage and sanitation, storm water drainage, solid waste management and transportation. This section presents findings from sectoral projects in Nanded against the sustainability framework developed in the first stage of this study. The tables list different sustainability issues raised in CDP, DPRs or the interviews. The issues highlighted in CDP are in red, those in DPR in green, and those that emerge out of interviews are in blue. The issues are further divided on the basis of whether they are mentioned as a concern, proposed as a strategy or have been carried forward to execution. The framework has been presented again in Annex 4.

In Nanded, the overall goal for infrastructure sectors is 'to carry out integrated infrastructure development with a focus on strengthening existing systems, augmentation, equitable coverage and sustainability'. Similarly, the strategy for infrastructure development is stated as 'integrated development of infrastructure with specific attention on rehabilitation and refurbishment of existing systems, augmentation, better operation & maintenance, institutional development and capacity building for better O & M and sustainability'.

4.1 Water Supply

4.1.1 CDP Details

The key issues highlighted in CDP include inefficient distribution system, lack of proper zoning, illegal connections, leakages, head-loss, contamination, high power consumption and limited coverage of the population. The following strategies were proposed for the water supply sector:

- Benchmarking and strengthening the existing system
- Increasing system efficiencies and operational performance
- Developing O&M for better management
- Enhancing the revenue management system
- Undertaking training and capacity building for core team
- Augmenting the existing system to cater to entire population and the floating population

The water supply projects proposed in CDP had two sub-components: system augmentation and System Refurbishment.

4.1.2 DPR and Project Details

Two DPRs for the water supply were prepared by the Tamil Nadu Water Investment Company (TWIC). DPRS both for North and South Nanded proposed the establishment of 18 ESRs, 11 for North Nanded and 7 for the South. The DPRs also included rehabilitation of the existing WTPs and the extension of water supply lines (total length of 36.29 kilometres. The estimated project cost was ` 908.5 million (` 90.85 Crores) for North Nanded and ` 399.8 million (` 39.98 Crores) for South Nanded. The final outcome was to be able to provide 135 lpcd to the entire population of the city.

4.1.3 Implementation Status

Overall, 90% of the work has been completed with both the new WTPs that have been constructed in working order. The transmission and distribution system for North Nanded and the rehabilitation of the existing system for South Nanded have been completed.

4.1.4 Sustainability Analysis

Table 3: Overall Sustainability Analysis of Water Supply Sector in Nanded

Component	Criteria	Summary of issues highlighted in various documents and meetings
Environmental	Resource Use/ Source	**Concerns** • Leakages in existing system • Inefficient power consumption **Strategies** • Water audit to estimate extent of NRW and leakage detection • Exploring the possibility of rainwater harvesting • Reuse and recycling of water • Rehabilitation of old pipes and energy consuming pumping systems
	Waste/ Sink	
	Sustainability of Source/ Sink	**Implementation** • Water reservation from Godavari has been done to assure source of water
Design and Technology	Performance (Coverage,	**Concerns**

Table 3: Overall Sustainability Analysis of Water Supply Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
	Quality, Reliability)	• Coverage of the existing system provides is 40% of the population and is restricted only to North Nanded • Inadequacy of storage and distribution system • Poor quality water provided **Strategy** • Extending service to uncovered areas through augmentation and benchmarking of system **Implementation** • Increase in per capita water supply • Increased reliability from increased storage capacity
	Efficiency	**Concerns** • Inefficiency in system and operational performance • Low pressure in pipes and pumping stations **Strategies** • Leakage detection and reduction program • Rehabilitation of pumping stations to increase efficiency **Implementation** • Rehabilitation of old pipes to increase efficiency
	Adaptability	
Social and Public Health	Equity	**Concern** • Limited water supply coverage in declared and undeclared slums **Strategies** • Ensure equitable distribution of water supply; • Increase water supply system coverage of slum households • Provision of public stand posts
	Reduction in Diseases	
Economic	Per capita investments	**Strategies** • Different alternatives for distribution network considered

Table 3: Overall Sustainability Analysis of Water Supply Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
	Operations and Maintenance	**Concern** • Household connections are not metered **Strategies** • Better revenue management system • Regularisation of illegal connections • Increase in water charges and special water tax • Comprehensive operations manual **Implementation** • Upwards revision of tariff • Increased recovery due to increased number of connections • Efficiency in recovery to meet O & M expenses • ESRs to help reduce energy costs
Process	Interlinkages with other sectors	
	Integration	
	Capacity Development	**Strategies** • Municipal staff training • Core strengths in O&M for better management
	Monitoring and Evaluation	**Strategies** • Leak detection program to be conducted by NWCMC on a regular basis **Implementation** • Flow meters to be installed at pumping station and reservoir inlet

The above table shows that quite a few concerns around sustainability have been taken into account, especially around issues of coverage and equity, operational inefficiencies and O & M. Capacity Building has been realised as an issue, and one component vis. a vis. leakages has been identified for regular monitoring. However, there are some limitations to understanding of sustainability. Source sustainability is largely understood to be reservation of water at certain sources, rather than long term ecological sustainability of the source. Operational inefficiencies of the system are considered; however inefficiency of the overall design of the system is not considered. Only the alteration of distribution network considered, not alternative technologies.

4.2 Sanitation & Sewerage

4.2.1 CDP Details

The CDP identified the following key issues in the sanitation and sewerage sector: limited coverage of sewerage system with frequent blockages and leakages, inadequate capacity of the system, mixing of sewage and storm water, and ground and surface water pollution, inadequate slum sanitation. Specific strategies for sanitation and sewerage in the CDP include:

- Examining options for integration of the existing system with the proposed system
- Preparation of a Sewerage Master Plan (including a slum sanitation plan)
- Provision of low cost decentralised sanitation for the fringe and under-developed areas and slum areas with a possibility of integrating them with the sewerage system in future
- Preparation of comprehensive operations manual and training of municipal staff in operations
- Capacity development of municipal staff for management and outsourcing some of the specific services

The CDP only mentions an underground drainage (UGD) project for sewerage as per the Master Plan prepared by the MJP for North Nanded and South Nanded. No further details of the project are given in the CDP.

4.2.2 DPR and Project Details

A total of 4 DPRs were prepared, 3 for North Nanded and 1 for South. While the DPRs for the North Nanded were earlier prepared by the MJP and later vetted by the IL&FS under the JNNURM, DPR for the South Nanded was prepared by TWIC. Total cost of 4 DPRs was estimated to be 2314.8 million.

The DPR for South Nanded was for the creation of a STP of 30 MLD capacity at Maltekdi. In addition, 51.3 km of sewer lines were to be laid down, and 2 SPSs with a total capacity of 33.3 MLD were to be created.

For North Nanded, 3 DPRs were developed for three zones. Earlier, it was planned to construct 3 STPs. However, due to non-availability of land, one STP was finally proposed taking into account the total capacity required for the three zones. This was created alongside the existing one at Bondar. In addition, sewer lines were also laid in areas which were previously uncovered.

4.2.3 Implementation Status

Out of the four projects sanctioned, projects for South Nanded have been completed, while projects for North Nanded are still in progress.

4.2.4 Sustainability Analysis

Table 4: Overall Sustainability Analysis of Sanitation and Sewerage Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
Environmental	Resource Use/ Source	**Concerns** • Land as an issue during implementation **Strategies** • Recognition of increase in waste water due to expansion of waste water • Consideration of energy concerns of the proposed system • Recommended recycling and reuse of water
	Waste/ Sink	**Concern** • Capacity of the treatment plant is far below the peak load leading to pollution of ground and groundwater **Strategies** • Considered alternative methods of treatment and best possible method was chosen • Considered reuse of effluents for irrigation and manure
	Sustainability of Source/ Sink	
Design and Technology	Performance (Coverage, Quality, Reliability)	**Concerns** • Capacity of STP far below the peak load • Choking and breaching throughout the sewerage system **Strategies** • Decentralised low cost sanitation methods for slums and fringe areas with possibility of incorporation in the mainstream system
	Efficiency	**Concern** • Blockages resulting in inefficient functioning

Table 4: Overall Sustainability Analysis of Sanitation and Sewerage Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
		Strategy • System designed to maximise gravity flow, resulting in reduced energy consumption
	Adaptability	**Implementation** Ensured continued functioning of STPs during power cuts by provisioning of diesel generators
Affordability		**Strategy** • Subsidized sewerage connections to be made available to urban poor
Social and Public Health	Equity	**Concern** • Limited slum sanitation and public conveniences **Strategy** • Slum sanitation program to be implemented
	Reduction in Diseases	**Strategy** • Provision of closed sewer lines to reduce incidence of diseases • Sewer Lines separated from storm water drains
Economic	Per capita investments	**Strategies** • Consideration of low cost sanitation methods • Different technologies of treatment considered
	Operations and Maintenance	**Concerns** • Recognized O & M as a critical challenge • Lack of access to sewer lines (due to encroachments) makes routine O & M difficult **Strategy** • Challenge to be addressed by converting sanitation into revenue generating service • Increase in current sewerage charges • Revenue to be generated by connection charges and sale of manure and treated water • Comprehensive operations manual and municipal staff training
Process	Interlinkages with other sectors	**Strategy** • Took existing and upcoming road networks into account before planning new sewer lines
	Integration	**Strategy**

Table 4: Overall Sustainability Analysis of Sanitation and Sewerage Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
		• Assessment of existing system for integration with NRAP project
	Capacity Development	**Strategy** • Municipal staff training
	Monitoring and Evaluation	

From the above table, one can assess that most of the concerns of sustainability are related to incomplete coverage, collection and treatment capacities of the system. Resource flows of constraint of energy and water have been considered, and hence recycling of water and increasing of operational efficiencies have been considered. Though land has also been considered an issue, it is primarily due to the land acquisition problems, and not from the perspective of natural resource constraint. O &M has been raised as a major concern, and multiple strategies have been suggestion to address this issue. Though low cost sanitation options were considered, much of the money has been allocated to laying of sewer lines, and construction of STP. Technological options were mostly considered for alternative designs of STPs. Though integration with NRAP has been considered, it is not clear whether this integration has happened on the ground.

4.3 Storm Water Drainage

4.3.1 CDP Details

The city, especially the old city area is prone to frequent floods because of the topography of the area. The other areas in Nanded that are also prone to flooding during monsoons due to an inadequate storm water drainage network. The key issues identified in CDP included limited and unplanned drainage network along the roads, and flooding and water stagnation. The strategies proposed for the sector included:

- Preparation of Master Plan for drainage to examine options for maximising drainage
- Development of an adequate storm water drainage network in a scientific manner
- Exploration of possibility of rainwater harvesting at the micro and macro levels
- Restructuring of the existing system and integration with the new system
- Differential strategies for high flood prone areas

- Curbing the indiscriminate development along the banks of river Godavari and near Asna river
- Upstream flow management and removal of obstructions in the river (upstream and downstream)
- Provision of storm water drains in slum settlements to avoid water logging and associated nuisance.

In terms of project identification, the CDP proposes only a storm water drainage project and gives no further details.

4.3.2 DPR and Project Details

The DPR for storm water drainage was prepared by Shah Technical Consultant Private Limited, Mumbai. Total investment proposed under DPR was of the order of ` 457.3 million and the same was approved for the sector. The DPR covers only North Nanded (approx. 20.62 sq.km).

The proposed storm water drainage system would primarily augment and strengthen the existing network. In addition, it would provide for storm drains in previously uncovered areas while trying to control flooding in low-lying areas through the construction of interceptor and conveyor drains. The project aim to extend the coverage to 100% in North Nanded.

4.3.3 Implementation Status

95% of the project has been completed and the remaining is expected to be finished by the end of January.

4.3.4 Sustainability Analysis

Table 5: Overall Sustainability Analysis of Storm Water Drainage Sector in Nanded

Component	Criteria	Summary of issues highlighted in various documents and meetings
Environmental	Resource Use/ Source	**Concerns** • Unorganised development and obstructions in the riverine region • Indiscriminate development needs to be curbed • Construction activities leading to clogging of drains
	Waste/ Sink	**Concern**

Table 5: Overall Sustainability Analysis of Storm Water Drainage Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
		• Sewerage mixed with storm water drainage and discharged into the Godavari **Strategy** • Proposed separation of storm water drainage and sewerage network to reduce river pollution and flooding in the core city
	Sustainability of Source/ Sink	
Design and Technology	Performance (Coverage, Quality, Reliability)	**Concern** • City prone to floods due to natural topography and inadequate storm water drainage network **Strategy** • Master Plan proposed for drainage to maximize drainage network and address localised flooding and major flooding • Full coverage in North Nanded which is prone to flooding **Implementation** • Efficient drainage and reduced flooding after project became operational
	Efficiency	**Implementation** • Augmentation of existing system done along with development of natural channels
	Adaptability	
Social and Public Health	Equity	**Strategy** • Provision of storm water drains in slum settlements to avoid water logging
	Reduction in Diseases	**Concerns** • Health hazards due to flooding and water stagnation in monsoons **Strategy** • Importance of clearing stagnant water realised • Mix of open and closed drains designed to optimize for reduction in health hazards and easy maintenance

Table 5: Overall Sustainability Analysis of Storm Water Drainage Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
Economic	Per capita investments	
	Operations and Maintenance	**Strategy** • O & M given consideration with acknowledgement of necessity of manpower and machinery • Funds have been identified, and are to be drawn from property taxes • Regular maintenance work to be done to keep nallahs desilted • O & M Manuals to be prepared by PMC and handed over to NWCMC upon completion of project
Process	Inter linkages with other sectors	**Strategy** • Examined linkages with the current and proposed road sections
	Integration	
	Capacity Development	**Concern** • Acknowledgement of lack of manpower for O & M
	Monitoring and Evaluation	

The above table shows that a range of sustainability concerns have been considered: obstruction of natural flow of water, incomplete coverage, pollution and O & M. However as it is evident from table, the solutions mostly lie within the remit of existing conventional systems.

4.4 Solid Waste Management

4.4.1 CDP

Key issues identified in solid waste management include: inadequate collection efficiency, limited capacity of landfill site, no scientific method of treatment and disposal, and no segregation of waste.

Key strategies proposed for solid waste management included:

- Comprehensive study for solid waste management
- Segregation at source and separate management of segregated waste
- Waste minimisation and decentralised options for waste management
- PPP based disposal of waste from slaughter houses/ meat and poultry shops
- Segregated management of bio-medical waste and review and augmentation of existing incinerator capacity

The project components for solid waste management in CDP comprised of procurement of vehicles and infrastructure development, composting and landfilling of waste, and community awareness and training.

4.4.2 DPR and Project Details

DPR for the solid waste management sector was not prepared and the sector was not taken up for implementation. It is not clear why the sector was not taken up for DPR preparation and implementation.

A project on solid waste management being undertaken under the aegis of the Maharashtra Swarna Jayanthi Nagarothan Maha Abhiyan. DPR has been prepared and the project will be implemented in association with a private consultant.

4.4.3 Sustainability Analysis

Table 6: Overall Sustainability Analysis of Solid Waste Management Sector in Nanded

Component	Criteria	Summary of issues highlighted in various documents and meetings
Environmental	Resource Use/ Source	**Concern** • High energy usage of system **Strategy** • Recycling of waste materials • Improved technology leading to reduction of land required for sanitary landfill
	Waste/ Sink	**Concerns** • No segregation of waste or treatment **Strategies**

Table 6: Overall Sustainability Analysis of Solid Waste Management Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
		• Segregation followed by treatment of organic and recyclable waste • Only inert and non-recyclable materials to be deposited in landfill
	Sustainability of Source/ Sink	
Design and Technology	Performance (Coverage, Quality, Reliability)	**Concerns** • Limited collection and no safe disposal **Strategies** • Increase collection and ensure safe disposal **Implementation** • Collection efficiency rose to 80-85% after engaging a private contractor
	Efficiency	**Strategy** • Implementation of segregation, recycling and reuse of waste material
	Adaptability	
Accessibility		
Social and Public Health	Equity	**Strategy** • Slum adoption scheme for solid waste management **Implementation** • Subsidized user charges for residents of slums
	Reduction in Diseases	
Economic	Per capita investments	**Strategy** • Study to develop suitable/ appropriate basket of cost-effective options
	Operations and Maintenance	**Strategy** • Private contractor to be responsible for O & M • O & M to be paid for by cost recovered through recycling and sale of RDF and manure **Implementation** • Private contractor appointed for O & M and is paid for by user charges

Table 6: Overall Sustainability Analysis of Solid Waste Management Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
Process	Interlinkages with other sectors	
	Capacity Development	
	Monitoring and Evaluation	

Like other sectors, issues of coverage, operational efficiencies and O & M are considered for solid waste management. Also importance of segregation and recycling has been highlighted. However, it is not clear whether issue of waste management was taken seriously as this sector did not receive any funding under JNNURM,

4.5 Transportation

4.5.1 CDP Details

Key issues in transportation included: Lack of surfaced roads, inadequate maintenance of existing roads, lack of road capacities all leading to congestion, encroachments on to the roads, limited connectivity between North and South Nanded and lack of public transport, parking and a traffic management system.

Specific strategies for roads and structures included:

- Widening, improving and strengthening the existing roads to meet Master Plan proposals
- Applying best geometric, functional, drainage, safety and urban design parameters in road development
- Identification of specific bottlenecks and projects to address them
- Provision of parking facilities

Project components in CDP included road upgradation and surface improvement, new road development, road widening, construction of bridges and structures, development of public transport, truck terminus and parking infrastructure.

4.5.2 DPR and Project Details

Two DPRs were prepared for the transportation sector, one for the roads and one for the structures (bridges). DPR on structures proposed construction of one bridge over Godavari rives and one rail-over-bridge over railway line near Hingoli gate. The other DPR on roads proposed redevelopment of 38 roads (43.8 km).

The DPRs built upon the framework that the CDP and the Development Plan had created. However, when the designs of the road section were sent for approval to the Central Authority, it was rejected for its standard practice. It was then advised that the same be redesigned keeping in mind policies such as the National Urban Transport Policy (NUTP). The road sections were then redesigned as segregated road sections keeping in mind the above parameters. Following the completion of the roads and structures part of the project, O & M manuals were created by the PMC, IL & FS which would help in the maintenance and upkeep of the structures. Strangely, the DPRs did not carry any mention of addition to the bus fleet.

4.5.3 Implementation Status

Land acquisition for road widening was the primary problem that was faced during the time as opposition from the citizenry was widespread. Road widening would prove to be a major problem due to encroachments and a few of the conflicts regarding land acquisition even went to court. As the projects were commenced, the existing poor infrastructure and the construction work caused a great deal of difficulty for the public. Even after the completion of the projects, proper usage of segregated roads was not to be seen resulting in either misuse or damaging of the cycle tracks that had been laid. The extent of the public transport system also was not enough to achieve the goals of the CDP in engaging a modal shift.

Implementation of two out of the three projects has been completed. The two structures planned for – bridge over Govardhan Ghat and RoB at Hingoli Gate have been in use. Buses have also been procured and are in operation.

4.5.4 Sustainability Analysis

Table 7: Overall Sustainability Analysis of Transportation Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
Environmental	Resource Use/ Source	**Strategies** • Road improvement propositions prioritised and phased to ensure desired densities • Environmental assessment of the proposed roads and structures • Preparation of an Environmental Management Plan • Materials required for construction abundantly available in the area
	Waste/ Sink	**Concern** • Pollution, especially when exacerbated by congestion, was recognized as a problem during planning **Strategy** • Optimal roads designed to reduce congestion
	Sustainability of Source/ Sink	
Design and Technology	Performance (Coverage, Quality, Reliability)	**Concerns** • No public transport • No pedestrian facilities, signages, etc. **Strategies** • Widen, improve and strengthen existing roads • Increased linkages between North and South Nanded • Drainage links studied to address flooding problems • Design takes into account safety of pedestrians, cyclists and motorcyclists **Implementation** • Segregated road sections as proposed by the NUTP undertaken for implementation (After reviews of the initial proposal from the Centre) • Reduction in congestion
	Efficiency	**Concerns** • Bad geometrics and limited road capacities **Strategies**

Table 7: Overall Sustainability Analysis of Transportation Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
		• Best geometrics and functional parameters • Bottlenecks to be removed • Surface improvement and road redevelopment • Design to lead to reduction in congestion
	Adaptability	
Accessibility	Affordability	
	Coverage	**Implementation** • Better connectivity between North and South Nanded • No bus network in most areas • Lack of adequate number of personnel for operations • Poor quality of roads led to reduction of operating buses
	Quality	**Strategy** • Comfort of the users taken into account
Social and Public Health	Equity	**Concerns** • Unsurfaced roads in slums **Strategy** • Proper roads to be provided in slum settlements • Segregated roads to provide equitable space allocation to all users
	Reduction in Diseases	**Strategy** • Safety parameters to be included • Reduction in congestion and increased usage of public transport leads indirectly to a reduction in pollution **Implementation** • Reduction in number of accidents
Economic	Per capita investments	
	Operations and Maintenance	**Concern** • Manpower and machinery are lacking for maintenance **Strategies** • Lifecycle Cost Analysis was supposed to be done • O & M given importance in the FOP and provisions calculated

Table 7: Overall Sustainability Analysis of Transportation Sector in Nanded		
Component	**Criteria**	**Summary of issues highlighted in various documents and meetings**
		• Choice of appropriate materials used such that pavements do not need periodic maintenance unless severely damaged **Implementation** • O & M Manuals prepared and submitted to the Corporation by IL & FS for roads and structures project • Training has also been imparted for the same
Process	Interlinkages with other sectors	**Strategy** • Storm water drains to be constructed on either side of road to stop flooding
	Integration	**Strategy** • Integration with proposals of the Development Plan of Nanded, Development Plan roads
	Capacity Development	**Concern** • Lack of capacity to maintain and run public transport
	Monitoring and Evaluation	

While concerns of public transport and pedestrians have been raised, most of the discussion has remained focussed around roads. For a large part, concerns like coverage, quality and efficiency have been discussed only in relation to roads. Like other sectors, O & M has been highlighted as a major concern. The fieldwork team could not find evidence of Environmental Assessment and Environmental Management Plan. The claim of reduction in congestion and number of accidents could not be verified. Only efficiency of road network has been considered. This is not clear what is meant by Lifecycle Cost Analysis.

5 Key Findings

5.1 Specific Sectoral Actions

Interviews with people and analysis of DPRs reveal that following specific activities/ projects were undertaken to ensure sustainability:

a. Tree Plantation along road side
b. Segregation of Traffic by having dedicated lanes for motorised vehicles, cycles, parking, pedestrians and hawkers.
c. Extension of sewerage and storm water drainage to reduce both surface and ground pollution
d. Replacement of old pumps/ pipes to reduce energy consumption and increase efficiency
e. Installation of Energy Efficient Street Lights

5.2 Cross Sectoral Concerns/ Issues

a. O & M: While O & M was clearly recognised as an issue, it is not apparent how this concern was going to be addressed. It is not clear either from the CDPs or from interviews what was the assumption behind the O & M costs. As a response to meeting these costs, various user charges and taxes have been levied. Once more it is not clear whether these would be sufficient. Also, as a solution to undertaking maintenance of the STP, the plan is to outsource the operation, but the incentives for private party to do so is not clear.

While O & M manuals for certain components like bridges, flyovers, STP are being prepared by the consultants, the procedure for other parts of the systems is not clear. Also, apart from the components that are being outsourced, it is not clear who will be responsible for O & M.

b. Coverage: Given the service deficit, coverage is given importance at all levels, especially for water supply and sanitation. Coverage is an overarching concern with the ULB. Interestingly, according to one of the respondents, increasing coverage of sewerage and storm water drainage was addressing the concern of environmental sustainability. This is partially true since the waste water flows into open drains, resulting in both ground water pollution, and also in public health hazards.

c. **Equity:** The ULB is cognisant of challenges of urban poverty, and is taking steps that various services are accessible to them. It is too early to access the efficacy of these steps.

d. **Efficiency:** Various ULB officials expressed concerns with energy efficiency of various systems. The concrete action taken to address this concern was to refurbish old pumps.

e. **Pollution:** As mentioned elsewhere, concerns of pollution were taken into consideration

5.3 Tools and Methods

a. **Water and Energy Audits:** Water and energy audits have been carried out.

5.4 Process

a. **Importance of National Policy/ Directive:** While CDP does not mention any integration with national level policy, interviews revealed otherwise. NUTP and issues addressed therein were constantly raised. However, National Urban Sanitation Policy was not mentioned, but NUSP came into being much later than NUTP. There was also a close co-relation between concerns that have been raised in the JNNURM documents were the ones most recognised at city level e.g. O & M, coverage.

b. **Limited Understanding and Capacities:** The government officials accepted the limited capacity within the ULB. It was put forward as a reason for hiring private consultants for planning and execution. However, it means that ULB may not have been able to assess the outputs of consultants. Moreover, it is not clear what the hand-over process is. Perhaps, from the perspective of sustainability, there was limited understanding of sustainability among the private consultants, infact the initial impression is that understanding of consultants was more limited than that of the ULB.

c. **Interlinkages and M & E:** M & E and Recognition of Inter-linkages is nearly completely missing.

5.5 Understanding of ‘Sustainability’

Before asking specific questions about sustainability, most of the key respondents were asked a general question whether concerns of sustainability had been taken on board. While some respondents were unable to answer a broad question like this, the most response was related to the concern of O & M. Thus, this limited field work shows that sustainability has been appropriated by concerns of financial sustainability.

When they were asked specifically about environmental sustainability, the answers were varied, but among those concerns of water pollution stood out.

5.6 Assumptions of Certain Technology

Specific questions were asked regarding technological options; it was however not clear how specific technologies had been selected. Some of the interviews seemed to indicate that officials were surprised that there was a choice available.

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Annex 1: Current Status of Infrastructural Services in Nanded

A. Water Supply

Parameter	2005	2012
COVERAGE		
Household Coverage (%)	69	77
Per Capita Supply (lpcd)	70	110
Number of Connections	29,850	46,000
Households served	29,205	NA
Number of stand posts	1,472	652
Households served by stand posts	21,744	NA
SOURCE		
Source	Godavari (Vishnupuri Dam)	Godavari (Vishnupuri Dam)
Distance to Source (km)	10	10
Water Allocation (MCM)	18.5 MCM	NA
Water Abstracted (MLD)	54.5	90
Number of bore wells	91	NA
Estimated Supply from bore wells (MLD)	9	NA
DISTRIBUTION AND TREATMENT		
Number of Treatment Plants	3	5
Installed Treatment Capacity (MLD)	99	169
Number of ESRs	10	36
Total Storage Capacity	15.35	61.88
Water Supplied (MLD)	51	NA
FINANCIAL		
Extent of NRW (%)	NA	31
O&M Costs (lakh)	` 43 million	` 133.5 million
Water Tariff (` per annum)	NA	1500 for households 750 for urban poor 6000 for commercial establishments

B. Sanitation and Sewerage

Parameter	2006
Waste Generation (MLD)	40

COVERAGE	
No. of connections	23,120
Household Coverage (%)	36
No. of Public Convenience Units	41 (323 connections)
COLLECTION AND TREATMENT	
Length of system (km)	425
No. of SPSs	2 (Old Mondha, Chauphala Sul Tekdi)
Capacity (MLD)	13
No of STPs	2 (Bondar, CIDCO)
Treatment Capacity (MLD)	15

C. Solid Waste Management

Parameter	2006
Waste Generated (TPD)	149
Per Capita Waste generated (gpcd)	284.32
Collection efficiency (%)	75
No of open dustbins	530
No of containers	10
No of vehicles in possession	20
No of dumping grounds	1
Area (Ha)	3.32

D. Transportation

Parameter	1998	2006
Length of roads		415 kms
NWCMC Roads		400 kms
PWD Roads		15 kms
Surfaced roads		43%
No of buses plying	40	4
No of routes	49	
No of trips	368	
Route length	7876 kms daily	
No of employees	250	
No of employees per vehicle	6.25	
Assistance under IRDP	` 1120 million (112 crores)	

Length of proposed roads	35 kms	

Annex 2: Status of Implementation of State and ULB Level Reforms under JNNURM

A. State Level Reforms

Reform	Status
74th Constitutional Amendment Act – Transfer of 12th Schedule Functions	Achieved
74th CAA – Constitution of a District Planning Committee	Achieved
74th CAA – Constitution of a Metropolitan Planning Committee	Achieved
Transfer of City Planning functions	Achieved
Transfer of Water Supply & Sanitation	Achieved
Reforms in Rent Control	Not achieved
Rationalization of Stamp Duty	Achieved
Repeal of ULCRA	Achieved
Enactment of Community Participation Law	Achieved
Enactment of Public Disclosure Law	Achieved
Source: http://jnnurm.nic.in/wp-content/uploads/2012/06/NANDED1.pdf, last accessed on 7th December, 2012.	

B. ULB Level Reforms

Reform	Status
E-Governance	Achieved
Municipal Accounting	Achieved
Property Tax	Achieved • All exemptions eliminated • Property tax coverage increased to 94% (84,559 out of 90,000 properties covered) • Collection was 55.6% at the start of the mission and 83% for the year 2010-11
Revision of user charges and recovery of O&M	Partially Achieved *Water Supply* • In 2005-06, O&M expenses were ` 43 Million (4.3 Crores) and recovery through water charges was of the order of 23.32% • In 2011-12, O&M expenses were ` 133.4 Million (13.34 Crores) and recovery through water charges has been 78.41% *Solid Waste Management*

	• Till 2011-12, the expenses for SWM were recovered as part of property tax • From 2012-13 onwards, monthly user charges for SWM are being levied at following rates: o Residential – ` 60 o Small shops – ` 150 o Hotels – ` 500 – ` 1500 o Hospitals – ` 450 to ` 750 o Function halls – ` 1500 • It is expected to meet the O&M expenses of ` 100 million (` 10 Crores) on SWM through the above charges
Internal earmarking of funds for services to urban poor	Achieved • Separate budget for the poor from 2008-09 onwards • Allocation and expenditure on delivery of services to the urban poor is more than 25% of the total municipal budget
Provision of basic services to urban poor	Achieved • Under BSUP, ` 10,010 Million (1001 Crores) have been sanctioned for construction of 26,000 houses and related infrastructure including water supply, sewer, streets, street lighting, individual toilets, health care facility, anganwadi, school, etc. • Out of this, `2500 Million (250 Crores) is being utilised for provision of basic services
Revision of building bye-laws for streamlining approval process	Achieved • New DCR adopted • Auto DCR process started
Revision of building bye-laws for rainwater harvesting	Achieved • DCR amended and rain water harvesting made mandatory (GR dated 11th Feb. 2010)
Earmarking at least 20-25% of development land in all housing projects (both public and private agencies) for EWS/LIG housing	Achieved • DCR amended and provision made

Simplification of legal and procedural frameworks for conversion of agricultural land to non-agricultural purposes	Achieved
Bye-laws for reuse and recycle of wastewater	Achieved • DCR amended and reuse of waste water made mandatory (GR dated 11th Feb. 2010)
Administrative reforms	Achieved • Decentralisation of municipal services at zonal level • Six zonal offices are established and are functional
Structural reforms	Achieved
Encouraging public-private partnership	Achieved • Solid waste management including door-to-door collection, street sweeping, disposal, etc. outsourced to private agency • Collection of garden fee, parking fee, etc.
Source: http://jnnurm.nic.in/wp-content/uploads/2012/06/ULB-Level.pdf, last accessed on 7th December, 2012.	

Annex 3: Indicators for Sustainability Analysis of JNNURM

Component	Criteria		Water Supply	Sewerage and Sanitation	Storm Water Drainage	Solid Waste Management	Transportation
Environmental	Sustainability of source/ sink		Is the source(s) sustainable? Are they been adequately protected? Is the water being replenished?	Has carrying capacity[6]of sinks been considered (e.g. What is the maximum load that the river can carry?)	Has carrying capacity been considered?	Has carrying capacity been considered?	
	Resource Use/ Source	Water	Have strategies for optimisation of water use been put in place? (e.g. Efficiency and reduction of losses? Recycling? Better Technology? Provision of different, appropriate quality water for different purposes? Recycling?	Covered under water			
		Energy	Is there cognisance of the energy requirements of the entire system? Is there a plan to economise energy used for energy used for sourcing, distribution and treatment? Any plans of bringing down per capita energy use?	Is there cognisance of the energy requirements of the entire system? Is there a plan to economise energy used for transportation and treatment (e.g. pumping sewage)? Any plans of bringing down per capita energy use?	Is there a cognisance of the energy requirements of the entire system?	Is there a cognisance of the energy requirements of the entire system? Is there a plan to minimise energy used for energy used for transportation and treatment? Any plans of bringing down per capita energy use?	Is the cognisance of the energy requirements of the entire system? Is there a plan to shift to more sustainable fuel mix? Are fuels source sustainable? Any plans of bringing down energy use per passenger per kilometre?
		Material	Is this concern mentioned?	Is there this concern mentioned?	Is there this concern mentioned?	Any thought to reduce consumption and waste generation? Any plans of reuse and recycling of materials?	
		Land	Is this concern mentioned?	Is there this concern mentioned? Is the technology use land intensive? If so, what are the plans to reduce land footprint?	Is linkage between urban planning, and disruption of channel realised? Is there plan to protect the "land" around the channels? Will the water disrupt	Is there thought given to how much land will be needed? Any plans of optimisation?	Has the linkage between land use planning and transport been realised? Are there plans to use transport as a means to achieve optimal densities?

[6] It is recognized that carrying capacity is a contested term, and it is argued that there is no fixed carrying capacity, and can be extended with use of technology etc. However, here the term is used to assess whether certain limitations of natural resources.

Component	Criteria		Water Supply	Sewerage and Sanitation	Storm Water Drainage	Solid Waste Management	Transportation
					ecosystems and biodiversity?		
	Waste/ Sink	Wastewater	To be covered in waste water	Are there plans to maximise treatment through a variety of means? What is the quality of effluent been released? Has pollution of ground water aquifers been considered?	Is it recognised that storm water may get polluted either by sewerage or solid waste? Can storm water be prevented from being polluted? Has pollution of ground water aquifers been considered?	Can the amount of water being polluted (through infiltration of solid waste) be minimised? Has pollution of ground water aquifers been considered (in dumping grounds, and land-fill sites?	
		Waste				Are there plans for segregation? Are different chains of waste been treated properly? Has leachate been properly treated?	
		Air Pollution	Is there a cognisance of emissions?	Is there a cognisance of emissions?	Is there a cognisance of emissions?	Is there a cognisance of emissions, especially during treatment? If incineration is used, is it being toxic waste is being separated?	Is there cognisance of emissions?
Design and Technology	Performance	Coverage	Does the system provide clean drinking water to everybody?	Is there a vision or plan to make the city open defecation free? Is there some plan to ensure that all residents (and migrant population) have access to "improved" sanitation facilities? Does sanitation system collects, conveys and treats adequately?	Is there a plan to extend storm water drainage in entire city?	Is there a plan to make provisions for collection of solid waste to be extended to the entire city? Are they plans to ensure safe disposal of all wastes?	Are there plans of making each part of city accessible by public transport? Have feeder services been thought through?
		Quality	Is there a concern for quality of water? Are there any steps being taken to ensure minimum quality of water? Are there minimum standards for duration of	Have any minimum standards been set for provision of sanitation facilities? Has only construction toilet been thought of, or has thought	Are they some criteria for minimum functionality of the system?	Are they some minimum functionality of the system? Is there minimum frequency of waste collection?	Are they certain minimum standards for a. public transport b. roads, especially comfort levels for pedestrians and cyclists?

Component	Criteria		Water Supply	Sewerage and Sanitation	Storm Water Drainage	Solid Waste Management	Transportation
			time the water is being supplied?	been given to disposal system?			
		Reliability	Will there be disruptions in service delivery? Is there plan for O & M systems and procedures?	Will the public/ community toilets remain functional? What is the plan to ensure that a treatment system works? Is there plan for O & M systems and procedures?	Will there be disruptions e.g. flooding? Is there plan for O & M systems and procedures?	Will there be disruptions? Is there plan for O & M systems and procedures?	Will the system deliver function equally for all users? Is it biased towards car users? Will there be disruptions e.g. Jams? Is there plan for O & M systems and procedures?
	Efficiency		Any plans for increasing efficiency of system? (e.g. to reduce non-revenue and unaccounted water? to increase energy efficiency?)	Any plans for increasing efficiency of system?	Any plans for increasing efficiency of system? Any planning of synergising with natural drainage systems?	Any plans for increasing efficiency of system? Segregation? Recycling? Reuse? Has it been considered how efficiency of other systems might be reduced because of solid waste?	Any plans for increasing efficiency of systems? Technology? Better feeder services?
	Adaptability		Has adaptability of infrastructures and plans been considered? Is there a back-up plan if the current sources fail to meet the requirements?	Has adaptability of infrastructures and plans been considered?	Has adaptability of infrastructures and plans been considered? How the system responds to changed pattern of rainfall?	Has adaptability of infrastructures and plans been considered? How the system responds to changed quantity and composition of waste?	Has adaptability of infrastructures and plans been considered? How the system responds to changing modal split?
Social and Public Health	Equity		Is there a cognisance of differential socio-economic conditions of users/ residents? Plan to move to more equitable distribution? How will it be ensured that the urban poor and vulnerable will have access to physical infrastructure and services? Are the steps in line with	Is there a cognisance of differential socio-economic conditions of users/ residents? How will it be ensured that the urban poor and vulnerable will have access to physical infrastructure and services? Are the steps in line with national and state policies?	How will it be ensured that the urban poor and vulnerable will have access to physical infrastructure and services? Are the steps in line with national and state policies?	How will it be ensured that the urban poor and vulnerable will have access to physical infrastructure and services? Are the steps in line with national and state policies?	How will it be ensured that the urban poor and vulnerable will have access to public transport? Is the link between concern between livelihoods and access to transport recognised?

Component	Criteria	Water Supply	Sewerage and Sanitation	Storm Water Drainage	Solid Waste Management	Transportation
		national and state policies? Have issues of affordability been though through?	Have issues of affordability been though through?			
	Reduction in Diseases	Has the linkage between water and health been recognised? Is there some plan to reduce the incidence of relevant diseases?	Has the linkage between sewage and health been recognised? Is there some plan to reduce the incidence of relevant diseases?	Has the linkage between water and health been recognised? Is there some plan to reduce the incidence of relevant diseases?	Has the linkage between pollution and health been recognised? Is there some plan to reduce the incidence of relevant diseases? Specifically, have safety of workers been thought of? Has the concern of dumping sites near poor neighbourhoods been considered?	Is linkage between transportation and health been realised? Have both traffic accidents and emissions been recognised as causes? What is being done to address both?
Economic	Per capita investments	Have capital costs (per capita) across different technology and planning been considered? Is a certain technology or solution assumed? Have life cycle and their replacement cycles have been thought through?	Have capital costs (per capita) across different technology and planning been considered? Is a certain technology or solution assumed? Have life cycle and their replacement cycles have been thought through?	Have capital costs (per capita) across different technology and planning been considered? Have life cycle and their replacement cycles have been thought through?	Have capital costs (per capita) across different technology and planning been considered? Have life cycle and their replacement cycles have been thought through?	Have capital costs (per capita) across different technology and planning been considered? Is a certain technology or solution assumed? Have life cycle and their replacement cycles have been thought through?
	Operations and Maintenance	Is there a Financial Operating Plan to ensure resources for O & M?	Is there a Financial Operating Plan to ensure resources for O & M?	Is there some plan or strategy to take care of O & M?	Is there some plan or strategy to take care of O & M?	Is there some plan or strategy to take care of O & M of different components (road, public transportation? Cost recovery?
Process	Interlinkages with other sectors	Have the interlinkages between sectors identified? Do overall plans and priorities reflect these inter-linkages?	Have the interlinkages between sectors identified? Do overall plans and priorities reflect these inter-linkages?	Have the interlinkages between sectors identified? Do overall plans and priorities reflect these inter-linkages?	Have the interlinkages between sectors identified? Do overall plans and priorities reflect these inter-linkages?	Have the interlinkages between sectors identified? Do overall plans and priorities reflect these inter-linkages?
	Integration	Does CDP refer/ recognise other planning documents (e.g. Master Plan) and relevant policies? Does it	Does CDP refer/ recognise other planning documents (e.g. Master Plan) and relevant policies? Does it	Does CDP refer/ recognise other planning documents (e.g. Master Plan) and relevant policies? Does it	Does CDP refer/ recognise other planning documents (e.g. Master Plan) and relevant policies? Does it	Does CDP refer/ recognise other planning documents (e.g. Master Plan) and relevant policies? Does it take

Component	Criteria	Water Supply	Sewerage and Sanitation	Storm Water Drainage	Solid Waste Management	Transportation
		take heed of them, or are there contradictions?	take heed of them, or are there contradictions?	take heed of them, or are there contradictions?	take heed of them, or are there contradictions?	heed of them, or are there contradictions?
	Capacity Development	Is there recognition of the need for capacity development (implementation, procurement, design, management etc.)? Is there a plan in place to augment capacities? Is there recognition of limitation of capacities outside the public sector (e.g. Vendors/ consultants for design and construction?	Is there recognition of the need for capacity development (implementation, procurement, design, management etc.)? Is there a plan in place to augment capacities? Is there recognition of limitation of capacities outside the public sector (e.g. Vendors/ consultants for design and construction?	Is there recognition of the need for capacity development (implementation, procurement, design, management etc.)? Is there a plan in place to augment capacities? Is there recognition of limitation of capacities outside the public sector (e.g. Vendors/ consultants for design and construction?	Is there recognition of the need for capacity development (implementation, procurement, design, management etc.)? Is there a plan in place to augment capacities? Is there recognition of limitation of capacities outside the public sector (e.g. Vendors/ consultants for design and construction?	Is there recognition of the need for capacity development (implementation, procurement, design, management etc.)? Is there a plan in place to augment capacities? Is there recognition of limitation of capacities outside the public sector (e.g. Vendors/ consultants for design and construction?
	Monitoring and Evaluation	Is the need for M & E recognised? Has a plan been put in place for it?	Is the need for M & E recognised? Has a plan been put in place for it?	Is the need for M & E recognised? Has a plan been put in place for it?	Is the need for M & E recognised? Has a plan been put in place for it?	Is the need for M & E recognised? Has a plan been put in place for it?

Annex 4: Details for Energy and Water Audit

Tamil Nadu Investment Company, which had taken up the mandate for the DPR on the water supply sector, had suo moto decided to conduct water and energy audits on the existing system. The reason was that augmenting the existing system without an analysis of what was wrong with the system would not prove to be fruitful. This would only result in an increased loss of water, a problem that was already plaguing the system. From the point of view of energy requirements, the existing pumping system was woefully inefficient and an inquiry into improving these limitations would have a major impact on the system. The water and energy audits therefore looked at these aspects. After studying the drawbacks of the existing system, several recommendations were integrated into the DPRs for the sector, which were approved by CPHEEO.

Energy Audit

The Energy audit looked at the reliability of the sources of power, the physical conditions under which the machinery operated and the functioning efficiency of all electro mechanical equipments. All the pumping stations and water treatment plants under the system were covered by the audit. After the detailed study, it was recommended that several old and malfunctioning components -including mechanical equipments such as clear water pumps at the pumping stations - had to be replaced and components added to improve overall efficiency.

Water Audit

The Water audit looked at complementary aspects of the project such as the volume of water that was produced, the volume lost during transmission and identifying areas which needed to be prioritized for actions. Three major proposals made were to provide for bulk metering at strategic locations, rehabilitation of the Distribution Mains and the Water Transmission Mains. A major recommendation that the report makes is that Water Audits need to be run on a continuous basis and that a unit needs to be set up for the same. This would be a major step to be able to have 24/7 water supply. Based on these recommendations, rehabilitation works have been proposed at a cost of 10.95 crores in the DPR, of which 9.74 was approved by the Government.

Annex 5: Interview Formats

Meetings with the Representatives of ULB (NWCMC):

Participants included: Commissioner, Deputy Commissioner, Executive Engineers, Deputy Engineers, others involved in the CDP preparation, project preparation and implementation

Status of Infrastructure

- Institutions involved
- Key numbers on what is available, coverage, per capita supplies, etc.
- Sources of finance

Preparation of CDP

- What was the process followed to prepare the CDP?
    - Vision and strategies
    - Linkage with the Master Plan of the city
    - Any specific considerations while planning the projects
    - Prioritisation of projects
- What was the role of different stakeholders
    - Different government agencies involved and their roles
    - Other stakeholders and their role
    - Role of consultant
    - Selection of consultant
    - Consultation process/workshops and citizen participation
- What challenges did you face while preparing the CDP?
    - Financial
    - Technical
    - Institutional
    - Any other
- What happened after CDP preparation?
    - Monitoring, evaluation and approval at city level
    - Monitoring and evaluation and approval at state and centre level

Transition from CDP to DPRs

- What was the approval and selection process? – Projects were approved first and then DPRs were made or vice-versa?
    - Selection of projects
    - Evaluation of DPRs
    - Approval of DPRs
    - DPRs vs. approved projects?
- What was the DPR preparation process?
    - Selection of consultants and their role
    - Other stakeholders
    - Norms, parameters and checklists used
- How was it ensured that DPRs are aligned to CDP?

Project Implementation

- What is the process for project implementation?
    - Flow of funds
    - Stakeholders involved
    - Tracking the progress
- What is the M & E system?
    - Measuring project outcomes
    - Citizens' involvement
- When did project implementation begin? Time lag?
- How was it ensured that projects are aligned to DPRs and CDP?
- What have been the difficulties while implementing the projects?

Status of Reforms

- What state level reforms have been implemented in Maharashtra and what has been the impact on Nanded?
- What reforms have been implemented in the NWCMC?
- What has been the impact of implementing specific reforms? Revision of user charges, bye-laws for wastewater re-use and rain water harvesting
- What were the difficulties faced while implementation of reforms?

Specific questions on sustainability

- Has resource use in terms water, land, energy and material been considered while CDP and project preparation?
- Were concerns of different wastes: waste water, solid waste and emissions taken into account?
- Are the source(s) sustainable and adequately protected? Has the carrying capacity of the system been considered?
- Apart from coverage, did you consider quality and reliability?
- Are there any plans to increase the efficiency of the system?
- Has adaptability of infrastructure systems been considered?
- Has it been ensured that urban poor and other vulnerable groups get access to the infrastructure and services?
- What measures were taken to enhance the safety and public health?
- Were capital costs across different options considered? Was it ensured to select the option with the lowest lifecycle cost?
- Were the concerns of O&M costs considered and provided for?
- Were inter-linkages among sectors considered while planning for them?
- Was there any effort to integrate different plans for same sector?
- Were there plans made for the capacity development of the ULB?
- Was a system for monitoring and evaluation of projects envisaged?
- Were spatial concerns parts of the CDP dialogue?

Meeting with District Administration

- How was District Administration involved in the preparation of CDP, project preparation and execution?
- Does CDP fit in the overall development plans of the district?
- Were concerns of sustainability taken into consideration while planning for the city under JNNURM?

Meeting with IL&FS

- What was your role during and after preparation of CDP?
- Does IL&FS work in Nanded otherwise also or was involved only for the CDP?
- Was IL&FS involved after the CDP as well? In project preparation, implementation, monitoring and evaluation?
- What was the process adopted for preparation of CDP?
    - Priortisation
    - Public Consultations
    - Capacity Building
- Were sustainability concerns considered while planning for projects?
- What were challenges faced by you during the process?
- Was capacity building of ULB part of the agenda? Do they think they can plan for city on their own now?

Meeting with Corporator/ Citizens' Groups

- Perception about the available infrastructure in the city
- Perception about the CDP in general – are they even aware of it?
- How were the citizens' groups involved in the CDP preparation?
- Do they think their concerns and proposals feature in the final CDP?
- Was there any citizen engagement while planning for projects and implementation of projects?
- Do they think these projects will improve the city and service delivery to the citizens?
- Were sustainability concerns taken into account while preparing the CDP and project proposals?
- What are the perceived problems?

Annex 6: List of People Met

Nanded Waghala City Municipal Corporation (NWCMC)

1. G. Sreekanth, Municipal Commissioner
2. Ratnakar Waghmare, Deputy Commissioner
3. Shattar Gaffur Abdul Sattar, Mayor
4. Raj Kumar Wankhede, Transport Officer
5. M.S. Bashetti, Executive Engineer, Roads and Bridges
6. S.B. Deshmukh, Deputy Engineer, Roads and Bridges
7. S.M. Jadhav, Executive Engineer, Water Supply and Sewerage
8. S.B. Jhavale, Deputy Engineer, Water Supply and Sewerage
9. V.G. Jhavar, Special officer for JNNURM, Water Supply
10. Sanjay Jadhav, Solid Waste Management Official
11. Gandhmar, Solid Waste Management Official
12. Adurkar, Assistant Director, Town Planning
13. Khushal Kadam, Town Planner

District Administration

14. Dheeraj Kumar, District Collector
15. Kiran Girgaokar, Officer, District Planning Committee
16. Banwokar, Nayab Tehsildar
17. Shashi Mohan Nanda, Officer, District Urban Development Authority

Maharashtra Jal Pradhikaran (MJP)

18. Lolapod, Executive Engineer
19. R.S. Badwani, Engineer
20. D.B. Gundu, Engineer

Maharashtra State Road Transport Corporation (MSRTC)

21. N.M Chaurbhuj, Assistant Traffic Supervisor
22. Sachin Chauhan, Assistant Traffic In-charge

Infrastructure Leasing and Financial Services Ltd. (IL&FS)

23. D.K. Singh, Project Manager
24. Naresh Verma
25. Sanjeev Patil
26. Nishant, Assistant Manager
27. M.A. Hafiz, Engineer

Sachkhand Gurudwara

28. D.P. Singh, Superintendent
29. Sharan Singh Sodhi, PRO

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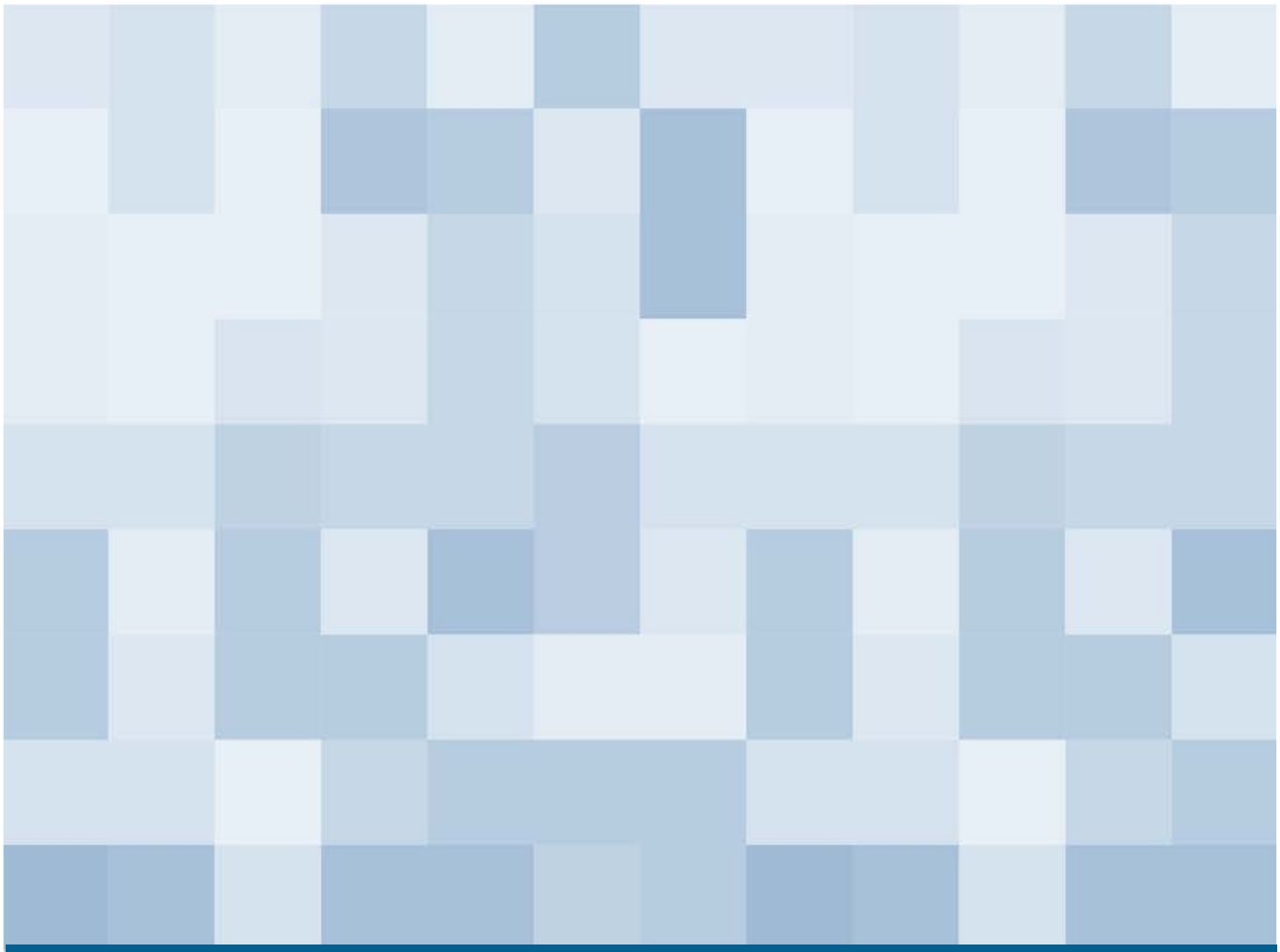

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