City Development Plan

KOLAR, Madhya Pradesh

Prepared by:

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Submitted to:

URBAN ADMINISTRATION & DEVELOPMENT DEPARTMENT
Government of Madhya Pradesh, Bhopal

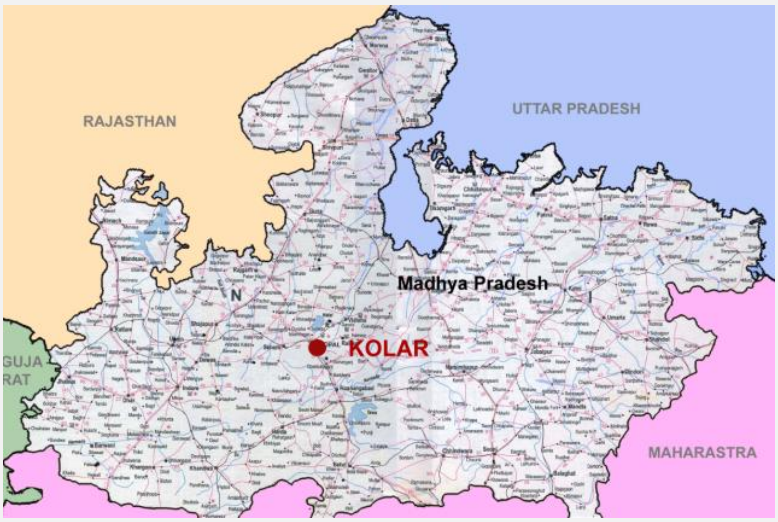
PROJECT CO-ORDINATION

CMAMP

CITY MANAGER'S SSOCIATION
MADHYA PRADESH

KOLAR MUNICIPAL COUNCIL

District: Bhopal
State: Madhya Pradesh



EXECUTIVE SUMMARY

1 Background

Urban Administration and Development Department, GoMP has initiated City Development plans for various cities in Madhya Pradesh. Amongst those cities Kolar has been identified as the one of project cities for City Development Plan.

The goals of a CDP include a collective city vision and action plan aimed at improving urban governance and management, increasing investment to expand employment and services, and systematic and sustained reductions in urban poverty. It is expected that the CDP will result in strategic platform which facilitates development, decision-making, investment programming, the engagement of out side partners and the efficient allocation of resources and, in city ownership of their own economic and social development process.

2 City Profile

Kolar is a town and Municipal Council in Bhopal district in the Indian state of Madhya Pradesh. Kolar Nagar Palika has been formed on November 2006 covering 21 surrounding settlements Kolar Nagar Palika has an area of 5017.61 hectares which has been divided into 21 municipal wards.

Kolar is very well-known for large influx of migrant workers from the adjoining regions and from adjoining states creating uncontrollable development of Jhuggi Jhopries, slums and unauthorized colonies everywhere which is also creating an alarming situation for M.P.

3 Demography

As of 2001 India census, Kolar had a population of 24302, having male population of 14856 and female population of 13519. In 2002, 4 villages have been amalgamated to the Kolar to form new Kolar Development area. Since past trends are not available for Kolar Municipal area, the population projections done in Detailed Project Report for Solid Waste Management is considered for base year population which is again cross verified with Voter' s list for data authentication. Official website of Kolar Municipal Council itself specifies the 2005 population as 85000.

Population projection by various methods for Kolar

Year	Population projections	Growth rate	Population as per SWM DPR
2001	28375	---	28375
2009		---	95643
2010	99628	15.0	NA
2015	122382	4.2	119554
2025	150653	2.1	149443
2035	185453	2.1	NA

Source : Analysis by consultants

4 Economic Profile

Town has a large area of 50.17 sq kms with large parts consisting of rural villages. Residential and industrial areas are occupying only 9.42 sq kms and hence have huge potential for future development due to abundant land availability. Kolar is basically a residential urban agglomeration town depends on Bhopal for economic activities. Quality of living is poor compared to Bhopal city due to the presence of large slum pockets. Employment opportunities are poor in this city since town has no industrial areas developed within its limit. Town has a large area of 50.17 sq kms with large parts consisting of rural villages. Residential and industrial areas are occupying only 9.42 sq kms and hence have huge potential for future development due to abundant land availability. The work force participation rate in Kolar is 35 percent which is higher than the Bhopal district urban and MP state urban WFPR.

5 Physical Infrastructure: Water Supply

Town has no dedicated water supply scheme initiated as on today. Water supply for the town is served by 2 bore well sources for drinking and 2041 hand pump sources for both drinking and non drinking purposes. Bore wells are laid in the year 2007 located at a distance of 2.5 Kms from Nagar Palika office.

Sarvadram A & B sector has one ground storage reservoir (GSR) and one elevated storage reservoir (ESR), supplies water to that area with the help of 305 household service connections. Further, Fine Avenue colony has one sump which supplies water to the colony through 176 household service connections.

Also some other colonies have been provided with the GSR and ESR for direct water supply services. Remaining areas are served with the help of 215 Mini Syntex tanks placed mainly in slum areas having varying capacities

of 5000 litres (96 Nos), 3000 litres (94 Nos), 2000 litres (4 Nos), 1000 & 5000 litres (21 Nos).

Since the town has no main trunk line and distribution lines, water is being supplied with the help of Tanker Lorries. Total number of trips of the water tankers supplied to the entire kolar municipal council region is about 140 nos.

Overall water quantity of 8 lakh litres is being supplied everyday and on an average 28 litres per capita per day (LPCD) is being supplied by taking into consideration the 2001 population of 28375 which is quite low.

In order to prevent the existing water scarcity, Hand pumps of 2041 nos are laid all over the municipal area in which 80 percent pumps are in slum areas itself as indicated by the municipal officials. Chlorination treatment method is being adopted by the Municipal council to treat water in all the storage tanks.

6 Physical Infrastructure: Sewerage

Town has no comprehensive under ground sewerage scheme as on today. Town has sewer network of about 2 Kms which are not integrated. Municipal council has proposed to lay sewer line for a length of 1 Km. No connection charges are levied by the council from the users as on today. Town as on today has no public toilets / Pay & Use toilets.

7 Physical Infrastructure: Storm Water Drainage

Down stream channel from Kalisot dam traverse through the town is the major drainage channel helps in draining the town during rainy season. In addition, Storm water also gets drained with the help of Abbas Nagar Nallah and Akbarpur nallah. To prevent water logging problems, Municipal council has constructed 130 meter RCC drain in Salaiya gram village, 150 meter RCC lining along Mandagini channel.

Further, Council has proposed 300 meter RCC drain in Gram Hinothiya and has plans to construct additional 200 meter lining work along Mandagini channel.

8 Physical Infrastructure: Solid Waste Management

Kolar town generates around 29.48 Metric ton of Garbage per day at the rate of 291 grams per capita per day (as per 2010 population of 99600). Waste is being collected in all the 21 wards but none of these wards have Door-Door collection and Waste segregation practice.

Kolar has disposal site at a distance of 5 Kms from Kolar CMO office. Currently, the disposal site has no treatment facilities and the waste is being dumped without treatment.

Solid waste management DPR of Rs. 2.75Cr. has been prepared by Kolar Nagar Palika which outlines the current situation regarding solid waste collection and disposal and the future proposal.

The major issues related to all physical infrastructure facilities are:

- Town has not adopted Door-Door Collection and Waste Segregation system
- Town has no waste treatment plant.
- Town has inadequate vehicle capacity for transporting the waste to the disposal site.
- Collection efficiency is low.
- Town has staff inadequacy and most of the conservancy workers are temporary workers

9 Physical Infrastructure requirements

The following table gives the population and future demand assessment for different infrastructural facilities.

Demand Supply Gap – Future Assessment

Particulars	2010-11	2015-16	2025-26	2035-36	2040-41
Kolar projected population	99628	122382	150653	185453	205761
Water Supply MLD					
Kolar water demand @ 135 lpcd for towns less than 50,000 population (15% loss considered)	15.47	19.00	23.39	28.79	31.94
Existing and proposed Supply in MLD	0.8	11.95	11.95	17.50	17.50
Gap	14.70	7.00	11.40	11.30	14.40
135 lpcd is proposed in Water Supply DPR prepared under UIDSSMT for ultimate 2040 pop - 110000					
Water Treatment Plant capacity in MLD					
Demand for treatment plant capacity	15.47	19.00	23.39	28.79	31.94
Treated water supply	0.0	11.95	11.95	11.95	11.95
Gap	15.47	7.05	11.44	16.84	19.99
Sewage generation					
Kolar sewage generation	12.4	15.2	18.7	23	25.6
Kolar proposed Sewage Collection	0.0	0.0	0.0	0.0	0.0
Gap	12.4	15.2	18.7	23	25.6
STP capacity in MLD					
Capacity of treatment plant demand	0.0	0.0	0.0	0.0	0.0
Gap	12.4	15.2	18.7	23	25.6

Solid waste generation					
Per capita waste in grams per day	291	315	348	384	424
Kolar waste generation in MT	29.0	38.6	52.4	71.2	87.3
Growth rate assumed	2.00%				

10 Traffic and Transportation

Kolar town is situated approximately 15 kms to the south of the Bhopal city. Kolar is well connected to the mother city Bhopal by Kolar road network Kolar due to its close proximity to Bhopal has very good regional road network connectivity. Kolar is located at a distance of 20 Kms from Bhopal Raja Bhoj Airport.

The total road Length within Kolar Municipal area is 187.32 Km. Out of 187.32 km road length, 8.124 km is a kutcha pathway. In addition, 6.867 Km Kolar road passes through the town maintained by State Highways.

Kolar has per capita road length (1.96 meters) more than the prescribed norm of 1.5 meters.

Major issues related to traffic and transportation is as follows:

- Most of the roads are kutcha other than roads in close proximity to Kolar road.
- Town has no Bus stand and bus shelters.
- Town has inadequate public transport system
- Kolar road connecting Bhopal, the Capital City is narrow and encroached creating congestion and the road is in bad condition.
- Intersections are poor in geometrics.

11 Street lights

Kolar has 1394 street lights positioned all over the Municipal area in which 1010 lights are 40 W tube lights, 210 lights are 250 W Sodium Vapor lamps and 174 lights are 150 W Sodium Vapor lamps. . As a part of energy saving mechanism, Municipal Council has placed 3 timer switches and nearly 30 tube lights have electronic chokes.

Major issues related to street lights are as follows:

- 27% of the existing lights are high power consuming light fittings.
- Town has 6320 electric poles but only 1394 poles have light fittings.

12 Slums and Urban poverty

There are 13 slum pockets in Kolar with population of 15013 whose details are shown below.

Slums and slum population in Kolar

S.No	Slums	Population
1	Damakheda - A	2356
2	Damakheda - B	570
3	Banskhedi	614
4	Hinotiya Alam	514
5	Gehunkehra	3682
6	OM NAGAR	323
7	Abbas Nagar	760
8	Akabarapur - 1	5236
9	Akabarapur - 2	958
10	Ambedkar Nagar	NA
11	Priyanka Nagar	NA
12	Slum no 12	NA
13	Slum no 13	NA
	Total	**15013**

Source: Data collected from officials at Kolar Nagar Palika

Major issues related to street lights are as follows:

- Slums are not yet documented for Housing and Infrastructure status assessment
- Town hasn't undertaken BPL survey till today.

13 Financials of Kolar Municipal Council

Kolar is a newly established Municipal Council formed in 2006. Hence, the Municipal finances of Kolar for the last two years i.e. 2008-09 and 2007-08 have been reviewed

Kolar Municipal Council has shown surplus funds in the last two years. The revenue has grown at 149% in the year 2008-09 over the previous year. The expenditure too has grown at 138% in the year 2008-09 over the previous year. It may be noted that since Kolar is a newly formed Municipal Council the past two year financial trend will not reflect the potential revenue in the coming years.

Municipal Taxes account for only 18% of the total income of Kolar Municipal Council (KMC) for the year 2008-09. This is attributed to the non-assessment of all the properties in the Municipal Council area, non imposition of taxes for the services and poor service delivery.

Property tax is levied at the rate of 1% of rental value for residential properties and 2% of the rental value for commercial properties. The Municipal Council is carrying out survey of the properties within the municipal area to bring all the properties within the tax assessment. The ratio of arrear collection to current demand collection for the on an average is 53:47 for the last two years which shows that there is a consistent delay in recovery of current year demand raised every year.

Grants account for about 78% and 57% of the total income of the Municipal Council for the years 2007-08 and 2008-09 respectively.

Octroi accounts for about 19% of the total grants to the Municipal Council for the year 2008-09.

Revenue Expenditure accounts for about 51% of the total expenditure on an average for the period between 2007-08 and 2008-09.

Establishment expenses account for 42% of the revenue expenditure on an average for the period between 2007-08 and 2008-09. Salary expenses of sanitation department and public works department accounts for 52% and 10% of the total salary expenditure respectively. Salary expenditure of councilors, other staff, park, library etc. accounts for 29% of the total salary expenditure.

Operation and maintenance expenditure accounts for about 52% of the revenue expenditure on an average for the period between 2007-08 and 2008-09.

14 Cost Recovery of Services

There is no tax on water supply. However, charges are collected towards supply of water in tankers. The cost recovery for provision of water supply is very low at 32% for the year 2008-09.

Cost Recovery for water supply services (in Rs. Lakhs)

Water Supply	2004-05	2005-06	2006-07	2007-08	2008-09
Cost incurred in service provision	21.94	26.52	28.45	36.45	34.79
Direct recoveries	6.14	5.35	5.87	4.28	6.38
% cost recovery	**28%**	**20%**	**21%**	**12%**	**18%**

Source: compiled from Municipal Accounts, Kolar Municipal Council

Cost recovery is only 20% for water supply services and for other services it is less than 9%. Collection efficiency is very poor for property tax and water tax. The ratio of current collection to arrear collection needs to be improved.

Issues related to the cost recovery of the services:

- Cost recovery is only 32% for water supply services and for other services it is 10% for the year 2008-09.
- No water tax is imposed and water charges are collected depending on supply of water through tankers.
- Survey of properties within the Municipal Council is presently underway and presently large numbers of properties within the Council are not assessed for tax collection.
- Grants and transfers account for about 57% of the total revenue while municipal taxes account for only 18% of the total revenue for the year 2008-09. The share of municipal taxes to the total income need to be improved.
- Capital expenditure is skewed towards road and storm water drain works and other infrastructure services requiring investments need to be considered.
- Salary accounts for 42% of the total revenue expenditure and the same need to be curtailed in the coming years.

15 Institutional Reforms

Only four positions are filled in Kolar Municipal Council and the Council is in the process of inducting additional staff on permanent basis. Except for the 4 permanent employees all the departments are managed by temporary workers.

Implementation of Reforms is critical for achieving self sustainability for the ULB and hence mandatory and optional reforms need to be implemented in a phased manner within the scheme period. The broad area of reforms along with the action plan is presented below:

Reforms and Action Plans for Kolar Municipal Council

Particulars	Presents status	Proposed
Property Tax	Only online form is provided with JPEG format	• Online payment of Tax • Property Tax calculator with the help of which Assessee can work out the tax rate applicable for his/ her Property. • Defaulter's list to be posted on website to ensure greater compliance • Kiosks at various places to pay taxes online • Listing of collection centres, Facilitation

		centres for Property tax collection online • Online information for administrators for better monitoring
Water Supply and Other Utilities	Only new connection form has been made available.	• Online payment for water tax • Filing request for new water connection • Online request for water tanker if required.
Citizens' Grievance Monitoring	Online filing of complaints by citizens	• Status of complaint and action taken report to be made online • Citizen Service centers and call centers to be setup for processing of all application forms and address grievances. • Categorization of complaints in the online format department wise for speedy action – Drainage, encroachment, health, roads, water, street light, solid waste, tax, illegal construction etc.
Procurement and Monitoring of Projects • E-procurement • Project/ward works	Provision of Tender and community participation notices (currently, there has been no information provided)	• Display of tenders by department, including the tender documents, online submission of tenders. E-tendering for all tenders to ensure transparency • E-procurement for empanelment, registration and selection of vendors for various works, goods • Online Project Monitoring system to check planned vs. achieved progress of work from various sites to control time overruns • Integration with the Financial Management system to control cost overruns
Building Plan Approval	Building plan approval form available online for download	• Online status of building plan approval, layout approval • Request for survey, reconstitution of plots • Formats for AutoDCR in website and automatic approval of the plans using software to facilitate speedy approval of building plans. Users shall upload the AutoCAD drawing of the plan on the website. • Formats for alteration to the existing buildings
Advertisement	Nil	• Details of advertisement boards/ hoardings in each ward with the details about the agency name, dimension of the board, status of the approval, cost of advertisement based on the zones and area, termination date, and facility for online auction of advertisement space.

Public Health Management • Licenses • Solid Waste • Management	Nil	• Online filing and processing of D&O, PFA trade license • Request for sullage lorry • Complaints and request for street sweeping, dustbins by citizens
GIS Mapping	Nil	Mapping of the following: • ULB and ward boundaries • Road and street layer • Property layer • Household & demographic • Water supply network • Sewerage network • Street lighting • SWM • Storm water drains

Source: Compiled from Municipal Accounts, Kolar Municipal Council

16 Stakeholder Consultation

The Consultant had consultations with administrative members, senior citizens and with members of various para-statal agencies. Further, the Consultant had interviewed cooperators, random surveys and interviews with slum dwellers to understand ward level issues and identifying projects for the same.

17 SWOT Analysis of City

Strength:

- Kolar lies in close proximity to the capital city, Bhopal.
- Kolar has fairly good access to regions by Road, Rail and Air
- Cheap residential town compared to nearby metropolitan area.
- Water source in close proximity – Kolar dam.

Weakness:

- Town has no comprehensive water supply and sewerage system as on today.
- Town has no treatment facilities for solid Waste management.
- Poor financials deters Municipal Council from taking Capital Intensive projects
- Poor road network and transport facilities

- Lack of updated property survey and register resulting in low tax collections.

Opportunities

- Satellite town of Bhopal
- Proposed Comprehensive water supply scheme under UIDSSMT.
- Creating environment friendly town by creating state of art infrastructure, developing green spaces and preserving water bodies.
- Large Municipal area and presence of undeveloped land parcels.

Threats:

- Burgeoning Slums
- Health hazard due to absence of proper sewerage, sanitation and storm water drains
- Haphazard growth and unplanned development

18 Vision Statement

Stakeholder's Consultations and Focus Group Discussions held in Kolar municipal council have resulted in identifying and formulating City Vision for future development.

City Vision:

To become a self sustainable Urban Growth Centre with proper community development and hassle free connectivity systems.

19 Environment Improvement and Energy Efficiency

On the basis of the existing situation analysis and basic calculation, issues related to energy efficiency in possible sectors were identified.

Sector	Energy Saving Potential	Projects
Physical Infrastructure		
Water Supply	• Pumping motor- more efficient • Pumping loss- due to HP used and hours of operation. • Friction loss- old pipes, effective diameter and material of pipe. • Physical losses	• Water supply Network improvement project. • Water Treatment plant project • Provision of Water meters for water audit.

Sector	Energy Saving Potential	Projects
Sewerage and sanitation	• 16 MLD generation per day • Manure can be secondary outcome.	• Sewage treatment plant project • Sewage Pumping Station with pumping main
Solid waste management	• 5.0 MT of solid waste is generated currently which is less for waste to energy plant.	• Development of land fill site for Non renewable inert waste • Upgradation of Compost Plant project
Street lighting	• Solar street lighting • Use of efficient CFL and SV lamp instead of current lighting system.	• Street Illumination as per Demand Scheme

20 Project Costing and Phasing

Project costing and Phasing under current and constant prices have been carried out. The details are presented in the Chapter on Capital Investment Plan. (in Rs. Lakhs)

Sectors for City Investment Plan	A + B + C Estimated cost in lakhs	PHASE -A 2011-12to 2015-16	PHASE- B 2016-17 to 2025-26	PHASE -C 2026-27 to 2035-36
Water Supply	13285.16	5591.46	3317.70	4376.00
Sewerage & Sanitation	7365.52	3267.52	782.50	3315.50
Storm Water Drainage	11309.02	733.47	7630.55	2945.00
Solid Waste Management	784.09	359.62	140.23	284.23
Roads, Traffic and Transportation	7485.23	1474.89	2727.68	3282.67
Street Lighting	532.68	253.19	158.51	120.98
Socio-Economic Infrastructure	1040.00	372.50	592.50	75.00
Slums & Urban Poverty	1801.56	900.78	900.78	0.00
Total	**43603.26**	**12953.43**	**16250.45**	**14399.38**

21 Financial Operating Plan

The projects under City Development Plan will be funded as follows:

80% of the project cost by the State Government and 20% of the project cost by the Kolar Municipal Council. Projects under Slums and Urban Poverty (Housing component) have been considered to be funded in the ratio of 80:10:10 with respect to State Government: ULB: Self Contribution.

Financial Operating Plan after taking up all the projects

Financial Operating Plan under Full Reform Scenario Rs. Lakhs.	2011-12	2012-13	2013-14	2014-15	2015-16	Total
Project Cost	5000.30	5380.65	782.41	1118.18	370.82	12652.36
Contingency	250.02	269.03	39.12	55.91	18.54	632.62
Cost escalation	150.01	327.68	72.55	140.34	59.06	749.64
Sub-total	**5400.33**	**5977.36**	**894.08**	**1314.43**	**448.42**	**14034.62**
Funding						
Central Government contribution @80%	4320.26	4781.89	715.26	1051.54	358.74	11227.70
State Government contribution @10%	540.03	597.74	89.41	131.44	44.84	1403.46
Municipality contribution including public deposits for Water Supply and Sewer scheme @10%	540.03	597.74	89.41	131.44	44.84	1403.46
Financial Operating Plan						
Surplus of Municipality	1143.08	958.22	513.59	615.23	713.18	3943.31
Less contribution of Kolar Municipality towards projects	540.03	597.74	89.41	131.44	44.84	1403.46
Less O&M due to new projects	9.86	29.42	526.00	579.96	627.38	1772.61
Opening Balance	0.00	593.20	924.26	822.44	726.27	
Net Surplus/ Deficit	593.20	331.07	-101.82	-96.17	40.96	**767.23**
Closing Balance	**593.20**	**924.26**	**822.44**	**726.27**	**767.23**	

Funding Option	Contribution as % of project cost
Central Government	80%
State Government	10%
Kolar Municipality	10%

22 Alternate Options for funding the projects

Kolar Municipal Council has limited financial resources for funding the projects identified. Hence alternative funding sources need to be identified. The possible funding alternatives are presented below:

Loans and Internal Accruals

Maximum surplus generated by Kolar Municipal Council is Rs. 127.28 Lakhs. The maximum loan which can be raised by the Council is Rs. 300 Lakhs, after Considering Debt Service Coverage Ratio 0f 1.25. Hence, fund raising

capacity of Kolar Municipal Council through loans is limited in the present scenario.

With the implementation of reforms, if the internal accruals and the debt repayment record of Kolar Municipal Council improve, then further loans can be availed on the strength of the new projects to be implemented.

Pooled Financing Mechanism

There are two types of financing mechanism under the pooled funding mechanism:

i. A "blind pool", where a bond bank raises sufficient funds based on its own credit rating and then on lends to the local body; and

ii. A "project-specific pool", where several projects are pooled and lumped together in a bond issuance, thereby significantly reducing transaction costs and improved pricing.

In order to reduce transaction costs and improved pricing, these kind of funding mechanism operated by Tamilnadu Urban Development Fund (TNUDF) and Karnataka Urban Infrastructure Development Finance Corporation (KUIDFC). With the help of project specific pool mechanism, the 14 Urban Local Bodies of Tamilnadu state pooled some water and sanitation projects under a special purpose vehicle called the Water and Sanitation Pooled Fund (WSPF) and rose about Rs. 300 milllion from the bond market at an interest of 9.2% in the year 2002.

Similar funding mechanism can be considered for less credit worthy borrowers like Kolar Municipal Council which has a poor debt repayment record.

Nodal Agency/ State Government Agencies Funding

- In certain places are taken up by the railways and flyovers and other roads by the state PWD. E.g. ROB's, Flyovers etc.
- Low cost sanitation projects can be funded by NGOs and State Government with the Municipal council contributing to a portion of the cost and acting as a facilitator in implementation.

Public Private Partnership (PPP)

Public Private Partnership projects are gaining importance in recent years even with smaller municipalities. Parking lots, solid waste management, hospitals and even slum redevelopment programmes have been implemented under PPP wherein the private sector develops the facility, operates for a specified concession period and transfer the facility back to the local body. Though large scale participation of private sector is lacking in water supply schemes, Chandrapur Municipal Corporation has implemented water supply scheme under PPP.

Tertiary Water Treatment of Sewage in Surat

Surat Municipal Corporation has adopted the PPP route, on Design Build Finance Operate and Transfer (DBFOT) basis for a concession period of 20 years under PPP, for setting up of a tertiary sewage treatment plant to treat secondary treated water from Bamroli Sewage Treatment Plant

Water Distribution in Chandrapur

Water distribution for the local community was therefore handed over to the private sector participant in order to reduce huge water losses and increase coverage and service delivery efficiencies. Both distribution of water to existing users as well as the maintenance of the Filter Plant was entrusted to the private player.

The initial investment of the project was Rs 3.0 Crs. The private party injected Rs 50 lakhs and raised another Rs 2.5 Crs by selling 50% equity on a premium. The revenue sharing arrangement for the private player was -

- Private player to collect tariff charges
- Revenue sharing arrangement, such that private player makes a total payment of Rs 1.59 Cr. to the municipal corporation in 10 years
- Private player allowed to increase tariff charges by 10% every 3 years

However, technical supervision to be done by the CMC Nodal Engineer with a regular program of inspection of the filter plant, every 3 to 4 days.

The private party initially planned on a break-even in the third year of operations but due to steep rise in electricity charges (35% increase in three years) the break even was delayed by a year. The operational efficiencies after appointment of the private sector participant are reduction in Non revenue water through technical solution, improvement in pumping efficiency; streamlining the water tax and 95% cost recovery, increase in per capita supply. Also the other neighbouring cities also requested private party to employ the same activities in their respective cities.

Development of Parking Lots under PPP

Brihanmumbai Municipal Corporation (BMC) and Jaipur have developed a multi-storeyed mechanised parking lot on a PPP basis. Mumbai has provided at Bhulabhai Desai Road and at Jaipur there are five sites for development of parking lots under PPP.

Other PPP projects

- Management of Municipal Solid Waste in Delhi, Bangalore, Chennai, Jodhpur and Sirsa.
- Construction of Bus terminals at Dehradun, many cities in the state of Gujarat and Amritsar on PPP.
- Thriupur water supply and sewer project on BOOT basis.

- Alandur underground sewerage scheme under which the Public participation in the scheme by financial contribution in the form of upfront payment for service connections.

Other sources of project funding

The municipal council can leverage its land assets for implementation of projects through private sector participation. Alternatives include granting higher Floor Space Index, Transfer of Development Rights for raising funds for projects.

However this depends on the real estate demand in the region Energy Efficiency Projects especially in Street lighting and Solid waste management and waste recovery are eligible for availing carbon credits (Certified Emission Reductions) which are tradeable. However, the projects should be large enough for application for CERs under Clean Development Mechanism

23 Supervision of capital works and maintenance

Appointment of Project Management Consultants for Implementation

Kolar Municipal Council lacks trained manpower to carryout supervision of the projects, monitoring of the quality of work within the stipulated costs and without delays is a challenge. Appointment of Project Management Consultants for monitoring of the projects is essential.

Turnkey contracts with minimum years of operation obligation

With the Municipal councils lacking skilled staff in design, execution and operation and maintenance, project contracts can be structured as turnkey contracts with the contractor be made responsible for design, construction and operation and maintenance for a specified number of years, say, 5 years. During the O&M phase, the contractor can train the municipal council employees to undertake O&M in subsequent years.

Induction of Technical staff

Induction of trained and skilled manpower is essential in municipal councils as they are responsible for service delivery of basic infrastructure facilities – Water Supply, Sewer, Roads etc. In Municipal Council there are no skilled staffs for each sector and only one Civil Engineer is employed. Also, the training needs to be imparted to the staff of the municipal council in technical areas, administration, IT tools and Management Information Systems.

Outsourcing of municipal functions

To maintain a lean organisation, Municipal councils can outsource some of its functions for a fixed consideration. This improves efficiency and reduces the burden on the municipal council. Some of the areas where outsourcings of the functions are practiced are:

- Street lighting

- Solid waste management
- O&M of parks
- Accounting

Even O&M for water treatment and distribution systems, sewer treatment and distribution systems, tax collection can also be outsourced to improve efficiency and ensure effective service delivery.

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Abbreviations:

ASHRAE	American Society of Heating, Refrigerating and Air-conditioning Engineers
BEE	Bureau of Energy Efficiency
BOLT	Built Operate Lease Transfer
BOOT	Build Own Operate Transfer
BOT	Built Operate Transfer
BPL	Below Poverty Line
BT	Bitumen
CAGR	Compound Annual Growth Rate
CC	Cement Concrete
CDP	City Development Plan
CIP	City Investment Plan
CPHEEO	Central Public Health and Environmental Engineering Organisation
DBFOT	Design, Build, Finance, Operation and Transfer
DFID	Department for International Development
DISCOM	Division Support Command
DPR	Detailed Project Report
DU	Dwelling Unit
EE	Energy Efficient
ESCO	Energy Service Company
ESR	Elevated Storage Reservoir
EWS	Economically Weaker Section
FOP	Financial Operating Plan
GIS	Geographic Information System
GoMP	Government of Madhya Pradesh
GSR	Ground Storage Reservoir
HH	Households
HVAC	Heating, Ventilation, and Air Conditioning

IHSDP	Integrated Housing and Slum Development Programme
INR	Indian Rupees
IREDA	Indian Renewable Energy Development Agency
JnNURM	Jawaharlal Nehru National Urban Renewal Mission
KMC	Kolar Municipal Corporation
Kms	Kilometres
LED	Light-Emitting Diodes
LIG	Low Income Group
LL	Lakh Litres
LMV	light Motor Vehicle
Lpcd	Litres per Capita per day
MLD	Million litres per day
MP	Madhya Pradesh
MP/ MLA	Member of Parliament/ Member of Legislative Assembly
Mt	Metres
NGO	Non Governmental Organisation
NH	National Highway
O&M	Operation & Maintenance
OHT	Overhead Tank
PCU	Passenger Car Unit
PHED	Physical Health and Engineering Department
PPP	Public Private Partnership
PVVNL	Paschimanchal Vidyut Vitaran Nigam Limited
PWD	Public Works Department
RE	Renewable Energy
SC	Scheduled Caste
SPV	Special Purpose Vehicle
sq.m.	Square Metre
ST	Scheduled Tribe
STP	Sewage treatment plant.
SWM	Solid waste management
SWOT	Strength, Weaknesses, Opportunities and Threats.
UADD	Urban Administration and Development Department
UDPFI	Urban Development Plans, Formulation and Implementation
UGD	Under Ground Tank
UGSS	Under Ground Sewerage System
UIDSSMT	Urban Infrastructure Development Scheme for Small and Medium Towns

USAID	United States Agency for International Development
WFPR	Work Force Participation Rate
WHO	World Health Organisation

Acronyms:

Kutchha	Temporary
Semi Pucca	*Semi Permanent*
Pucca	*Permanent*
Para Transit	*Modes of intermediate public transport like Auto rickshaws, cycle rickshaws, minidors*
Rickshaw	*3 wheeler motorized vehicle.*
Nallah	*Sewage Disposal Channels/ Strom Water Drainage Channels*
Jhuggi Jhopries	*Slum Hutments*
Chowk	*Intersection of two lanes*
Nagar Palika	*Municipal Corporation*
Lok Nirman	*Public Welfare*

1 Project Background

In order to meet the growing demands of infrastructure and service delivery, GoI as well as GoMP have initiated a number of programmes. GoI has initiated schemes like Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT) and Integrated Housing and Slum Development Programme (IHSDP). After initiating the aforesaid programmes the assessment of the performance of the ULBs and their capacity for exploiting the aforesaid resources was done. However it was found that in order to reap the entire benefits of the schemes there is necessity of a strategic framework for converging and co-ordinating various development inputs towards positioning the city on a development path. Such a scheme or plan may also help in accessing GoI / GoMP funding for development programmes.

Hence UADD Urban Administration and Development Department, GoMP has initiated City Development plans for various cities in Madhya Pradesh. Darashaw & Co. Pvt Ltd has been appointed to provide consulting services for preparation of City Development Plan of Kolar Municipal Council.

1.1 City Development Plan

City Development Plan (CDP) is both a perspective and a vision for the future development of a city.

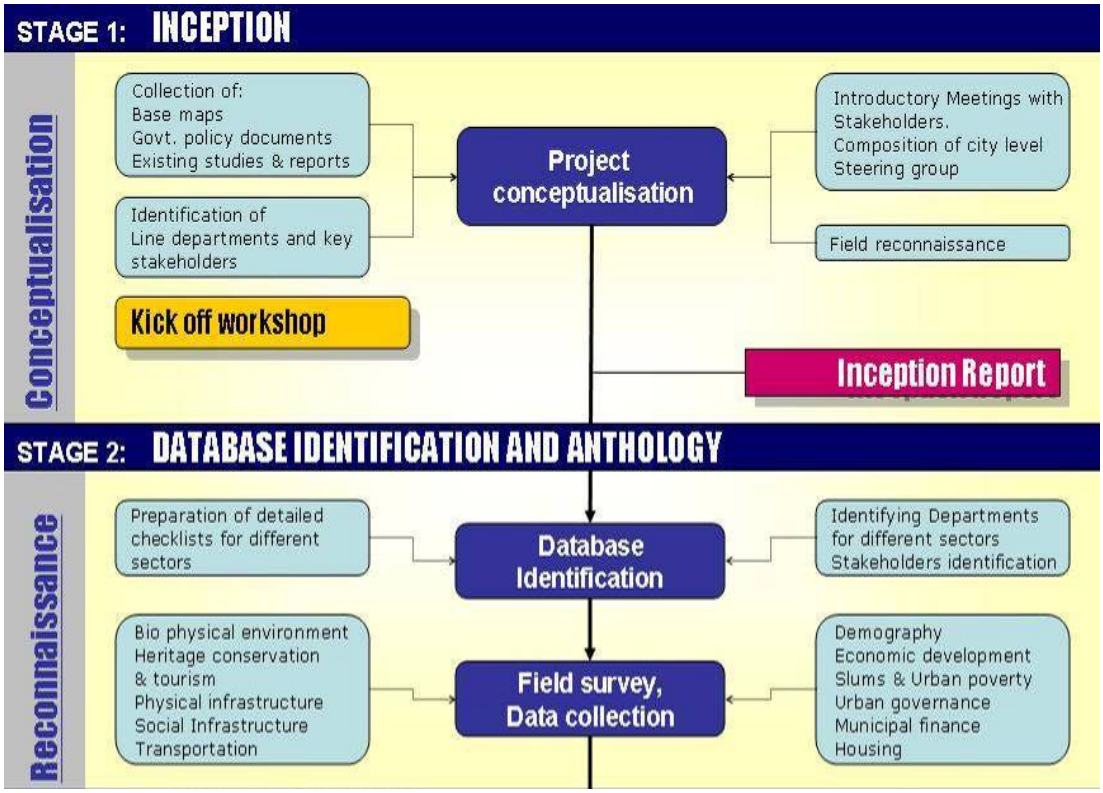
CDP is a vision document outlining vision, strategies and tasks for the city's preferred future with focus on the issues of greatest local concern for livability and the implied requirements in terms of enhancing city productivity, reducing poverty, improving urban governance and management and enhancing financial sustainability. It presents the current stage of the city's development. It sets out the directions of change. It identifies the thrust areas. It also suggests alternative routes, strategies, and interventions for bringing about the change. It provides a framework and vision within which projects need to be identified and implemented. It establishes a logical and consistent framework for evaluation of investment decisions.

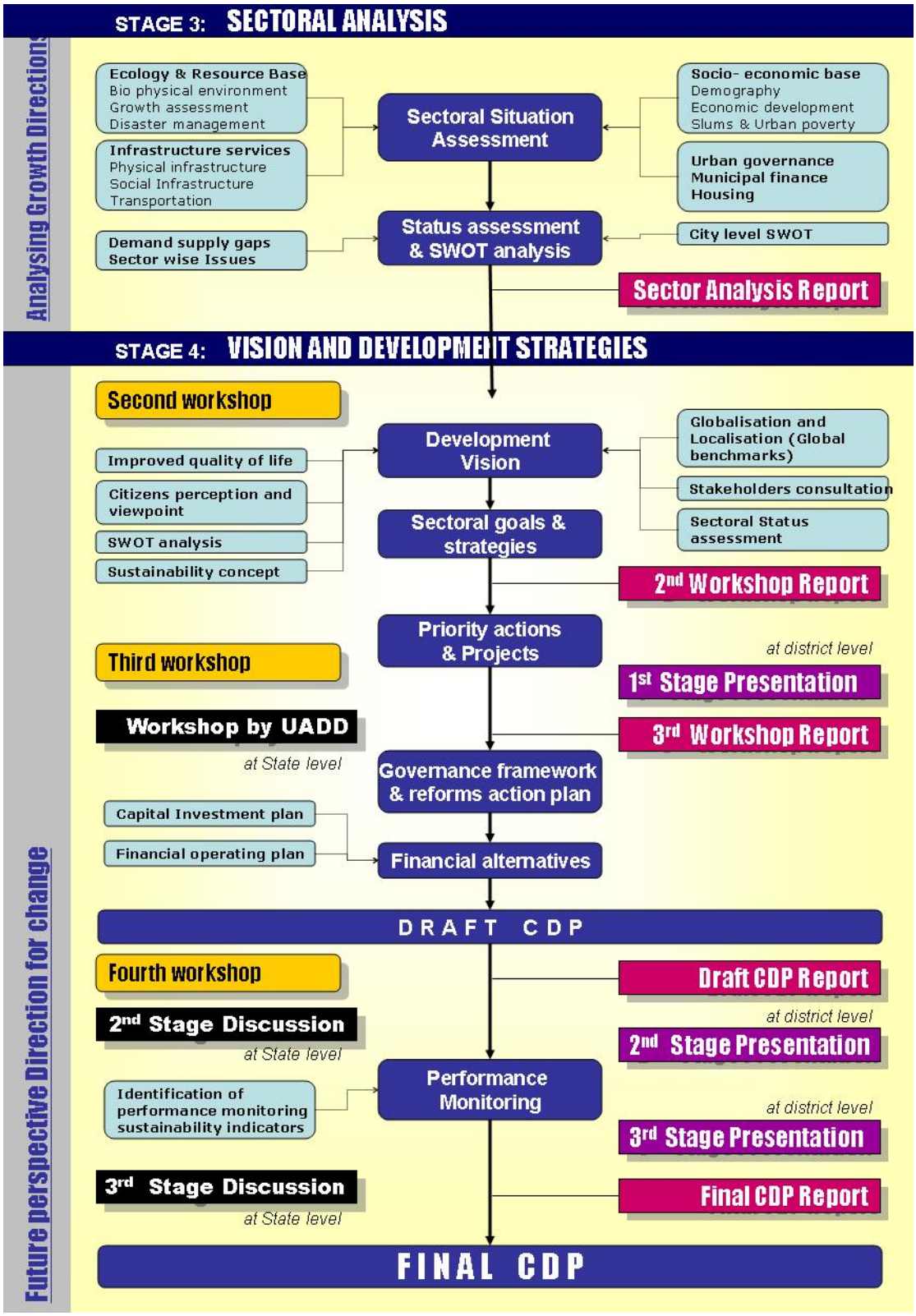
Preparation of the CDP will consist of city development strategies that come out of a structured consultative process. The process will enable elected representatives, key staff of MC departments, parastatal agencies and other institutions, policy makers and the citizens to participate and plan for spatial, social and economic development of the concern cities. A City Development Plan (CDP) will present both a vision of a desired future perspective for the city and the ULB's strategic framework of sectoral plans translated into actions that define on how the ULB, together with other stakeholders, intends to work towards achieving their long-term vision in the next thirty years.

1.2 Approach and Methodology

Evolving and conceptualizing a precise methodological framework is crucial as it guides the task of preparing the City Development Plan (CDP) in a phased and planned manner. The study methodology outlines the various tasks to be carried out in the preparation of City Development Plan (CDP) for Kolar Municipal Council, Madhya Pradesh.

The whole exercise is divided into four stages, which are further subdivided into tasks and several sub-tasks or activities within them. Figure below shows the adopted study methodology and is followed by a brief description on each of the stages.

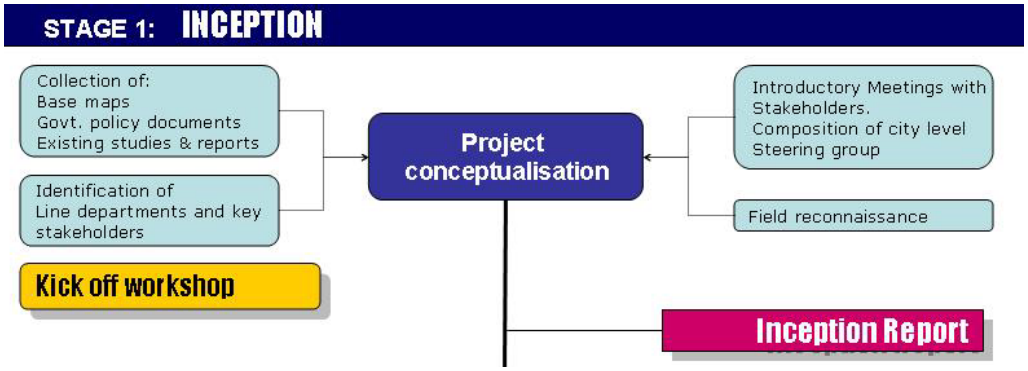



STAGE 3: SECTORAL ANALYSIS
Analysing Growth Directions
Ecology & Resource Base
Bio physical environment
Growth assessment
Disaster management
Infrastructure services
Physical infrastructure
Social Infrastructure
Transportation
Demand supply gaps
Sector wise Issues
Sectoral Situation Assessment
Status assessment & SWOT analysis
Socio- economic base
Demography
Economic development
Slums & Urban poverty
Urban governance
Municipal finance
Housing
City level SWOT
Sector Analysis Report
STAGE 4: VISION AND DEVELOPMENT STRATEGIES
Second workshop
Improved quality of life
Citizens perception and viewpoint
SWOT analysis
Sustainability concept
Development Vision
Sectoral goals & strategies
Globalisation and Localisation (Global benchmarks)
Stakeholders consultation
Sectoral Status assessment
2nd Workshop Report
Priority actions & Projects
Third workshop
at district level
1st Stage Presentation
Workshop by UADD
at State level
3rd Workshop Report
Governance framework & reforms action plan
Capital Investment plan
Financial operating plan
Financial alternatives
Future perspective Direction for change
DRAFT CDP
Fourth workshop
Draft CDP Report
2nd Stage Discussion
at State level
at district level
2nd Stage Presentation
Performance Monitoring
Identification of performance monitoring sustainability indicators
at district level
3rd Stage Presentation
3rd Stage Discussion
at State level
Final CDP Report
FINAL CDP

1.2.1 Inception stage

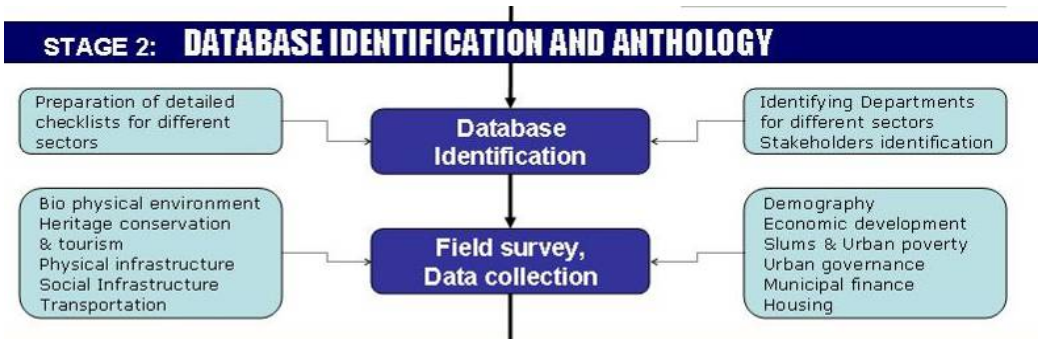
This stage included Data collection, field reconnaissance and Identification of key stakeholders for the Project. Discussions were held with the key stakeholders and a Kick off workshop was organized involving all the stakeholders.

The outcome of the meeting and preliminary assessment for the municipal area has been detailed out in the Inception report. The Inception report was submitted by the consultants to UADD and the Municipal Council on 12th November 2009.



1.2.2 Database Identification and Anthology

A detailed checklist was prepared for all the sectors and the data was collected from different departments and parastatal bodies. Additionally Field surveys were also conducted to understand the onsite conditions.



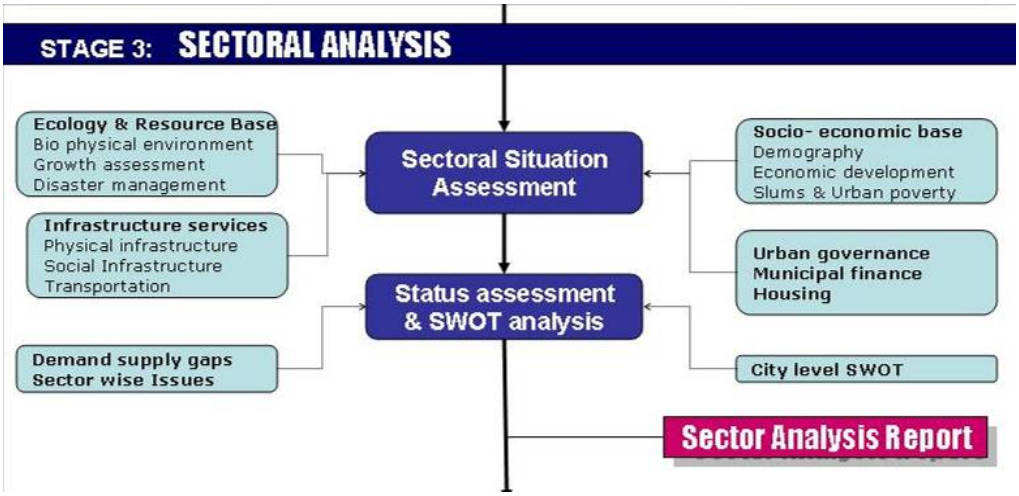
1.2.3 Sectoral Analysis

- **Task 01: Sectoral Situation Assessment**

This is the first task in the Stage Three on Sectoral Analysis. All the information collected by Secondary sources has been analysed to arrive at

present development status at an urban area level. The Analysis includes all the sectors as mentioned below:

- Ecology and resource base
- Socio- economic base
- Infrastructure services
- Housing
- Urban governance
- Municipal finance



- **Task 02: Status Assessment and SWOT Analysis**

In order to develop a better understanding of the different sectors, Status Assessment has been carried out on the basis of different parameters. Status assessment has been carried out considering demography, economic base, finance, physical and environment issues, infrastructure, institutions and universalities of services to all the communities.

This has given the existing status of different sectors and subsequently helps in arriving to SWOT analysis of all the sectors. The SWOT analysis helped us to arrive at the Problems and key Issues for all the Sectors.

From the above findings, Consultant has prepared City profile consisting of the assessment of the existing situation in all the sectors identified during first workshop. The Sector Analysis Report presenting the finding of Sectoral situation assessment and SWOT Analysis was submitted to the Municipal council and UADD on 09th January, 2010.

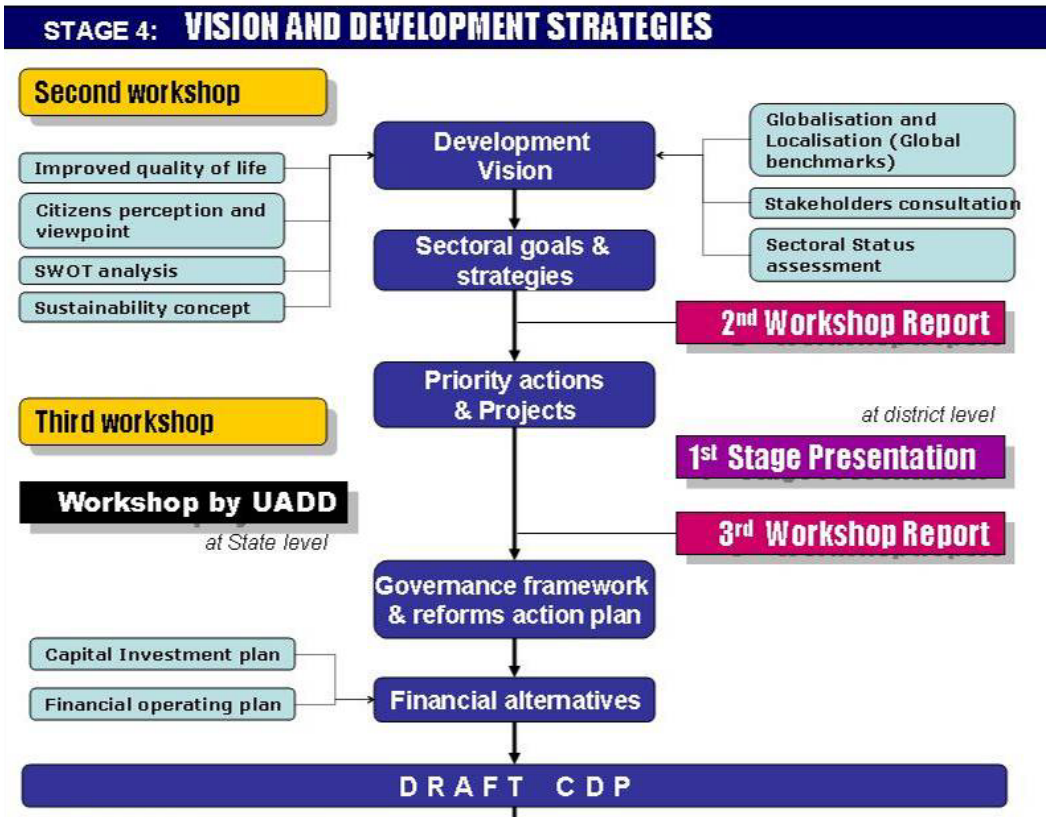
1.2.4 Vision and development objectives

Consultant conducted the second workshop to develop city vision and sector goals. For this city profile and sectoral analysis prepared in Sector Analysis

report were presented to the stakeholders and their inputs on vision and development objectives that include strategies, priorities and major actions that may be required in the next five years to move towards the vision 2040.

- **Task 01: Development Vision**

This marks the beginning of Stage Four on Strategies and Projects. The first task in this stage was the generation of future development Vision for the Urban local body. The development Vision was decided on the basis of Stakeholders and citizens perception about their city, Sectoral status assessment and SWOT analysis. The development vision guides all the subsequent stages and will help achieve it harmoniously. This plan also incorporates the concept of Sustainability and aim at improved quality of life for the citizens.



- **Task 02: Sectoral Goal and Strategies**

On the basis of the sectoral issues identified along with the status assessment, the sectoral goals and strategies were made to overcome those issues. And these strategies were applied to different sectors on the basis of the sectoral vision which may be linked to the development vision.

Institutional reforms were identified which can be implemented during the scheme period. The reform measures include various e-governance applications which the ULB should adopt in a phased manner. The reform areas like

Migration to Double Accounting System, Computerisation of Records, E-Governance applications - Registration of Births and Deaths, E-procurement etc., Revision of property tax guidelines and migration to self assessment of property taxes, Community Participation in budgeting and ULB functioning and Involvement of private sector in infrastructure projects and service provision shall be recommended to be adopted.

The Consultant has used the JNNURM toolkit for CDP as a guideline document while preparing the CDP.

During embarking on the journey of developing CDP document for Madhya Pradesh state, Consultant has tried to capture the "big picture"-that is; the CDP documents and vision statements prepared nationally and internationally by various agencies in general to understand the new concepts and approach in formulating development plans. The consultant has reviewed case studies on CDP documents prepared nationally and internationally for adopting best practices.

Energy Efficiency

While preparing the City Development Plan the Consultant has laid greater stress on Energy efficiency measures for sustainable development. Energy efficiency potential assessment has been attempted to identify the potential energy efficient measures for the city. Assessment of present street lighting infrastructure, possibility of replacing them with energy efficient lamps and the cost analysis also has been done.

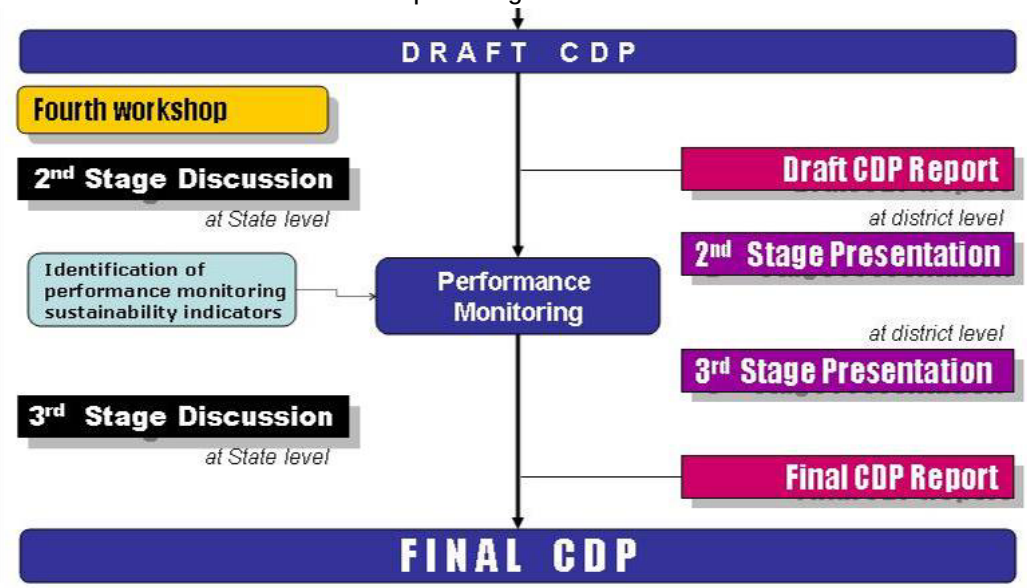
- **Task 03: Priority Actions and Projects**

The strategies have further been translated into projects for different sectors. The projects will be then phased on the basis of demand and stakeholders priorities.
The Consultant has put stress on the recommendations and reforms to be undertaken by the Municipal Council for Energy efficiency concepts.
The Consultant has conducted the third workshop to evaluate strategies from the perspective that will help to achieve vision and sector goals. Consultant has also formed consensus from the various groups to evaluate the strategies, programs and project that will come under city development plan for the city.

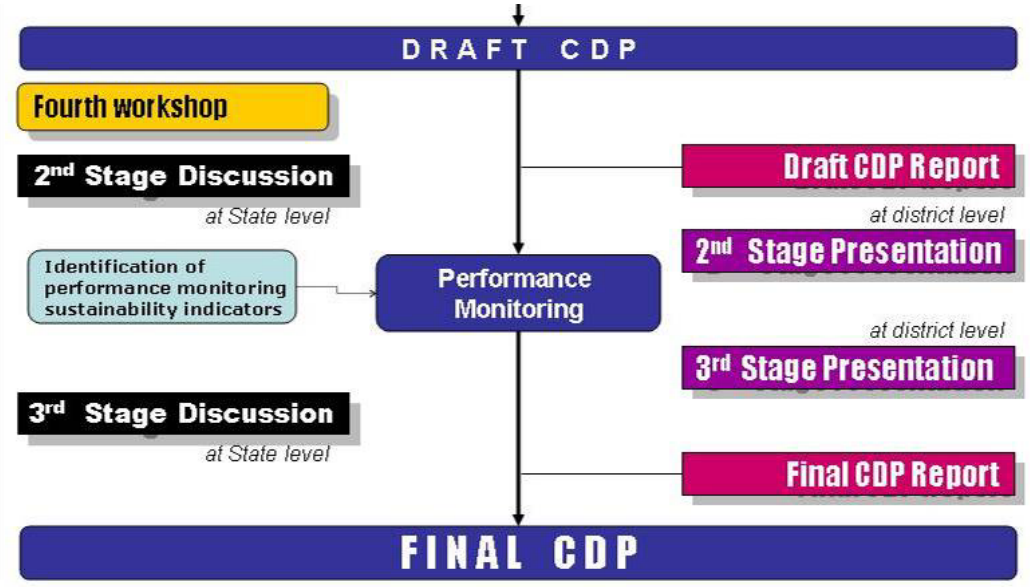
- **Task 04: Financial alternatives**

The Consultant has made projections under the ideal scenario i.e. with reforms being implemented. With the implementation of reforms, the extent to which revenue maximization and expenditure minimization can be possible has been worked out.
The Consultant has also worked out the cost of projects and has determined the financial requirements for meeting the demand for infrastructure and services. The Consultant has determined the phasing to be adopted so that the financials of the ULB is not burdened while at the same time the objectives of provision of basic services are met. Consultant has also carried out life cycle O&M costs and analysed the impacts on finances and of not doing the project.

The Consultant has identified the projects which can be implemented under PPP model. Various PPP models like BOT, BOOT, BOLT etc. will be explored. The Consultant has rich experience in working on BOT projects and has come out with unique models where the State Government funding for the project becomes very minimal. The possibility of replicating these models in these ULBs has been explored and other funding options like public borrowing and pool finance have also been considered. The Consultant has prepared the Capital Investment Plan and Financial Operating Plan for the ULB.



The consultant has conducted the fourth workshop in Kolar municipal council with stakeholders and municipal officers. Consultant presented the draft city development plan of Kolar with city investment plan and financial operating plan. Discussion held with the stakeholders held during workshop helped to categorize and further prioritize the capital investment required for Kolar. Hon. Chief Officer, Kolar municipal council addressed the stakeholders regarding the purpose of the workshop and insisted suggestions required for city development plan of Kolar.



Details regarding all the stakeholder workshops are discussed in the Annexure.

2 Town Profile

Kolar is a town and Municipal Council in Bhopal district in the Indian state of Madhya Pradesh. Kolar, popularly known as Satellite town of Bhopal is located at 23°10" North latitude and 77°25" east longitudes.

2.1 Profile of the town

Kolar town is located at a distance of 15 kms from Bhopal City- 'the city of lakes'. Kolar is very well-known for large influx of migrant workers from the adjoining regions and from adjoining states creating uncontrollable development of Jhuggi Jhopries, slums and unauthorized colonies everywhere.

Kolar Nagar Palika has been formed on 11th November 2006 covering 21 surrounding settlements namely Akbarpur, Chichli, Sankhedi, Salaiya, Bairagarh Chichali rural, Bairagarh Chichli urban, Hinotiya Alam, Gehun Kheda, Suhagpur, Inayatpur, Rasuliya Inayatpur, Satgarhi, Doulatpur, Semri Kalan, Imaliya Zargar, Pipaliya Kesho, Dehri Kalan, Kankariya, Banjari, Damkheda and Nayapura (Kolar). Kolar Nagar Palika has an area of 5017.61 hectares which has been divided into 21 municipal wards.

2.2 Regional setting

Kolar is located in Bhopal District is a district of Madhya Pradesh state in central India. The city of Bhopal serves as its administrative headquarters of this district.

The district has an area of 2,772 km², and a population 1,836,784 (2001 census). Bhopal District is bounded by the districts of Guna to the north, Vidisha to the northeast, Raisen to the east and southeast, Sehore to the southwest and west, and Rajgarh to the northwest.

Table 2-1: Bhopal District Profile

Bhopal District Area	2772.40 sq.km
Population (Census 2001)	1.84 million
Rural Population	0.36 million
Urban	1.48 million

The city of Bhopal lies in the southern part of the district, and the majority of the population resides within Bhopal municipality. The town of Kolar lies to the south of Bhopal city.

Being a capital city of state district is the major centre in terms of administrative headquarters of the state and as a district. City is in and out

surrounded by lakes and biodiversity, and is hence Bhopal known as the city of lakes. In terms of industrial potential, Bharat Heavy Electrical Limited has provided the major contribution for the district of Bhopal.

Bhopal is a major centre for the agriculture sector with two numbers of agriculture produce markets which provides the storage for food and fertilizers in order to supply to the surrounding tehsils and regions.

2.3 Location, Linkages and connectivity

Kolar town is situated on the south of the Bhopal city at 23°10" North latitude and 77°25" east longitudes.

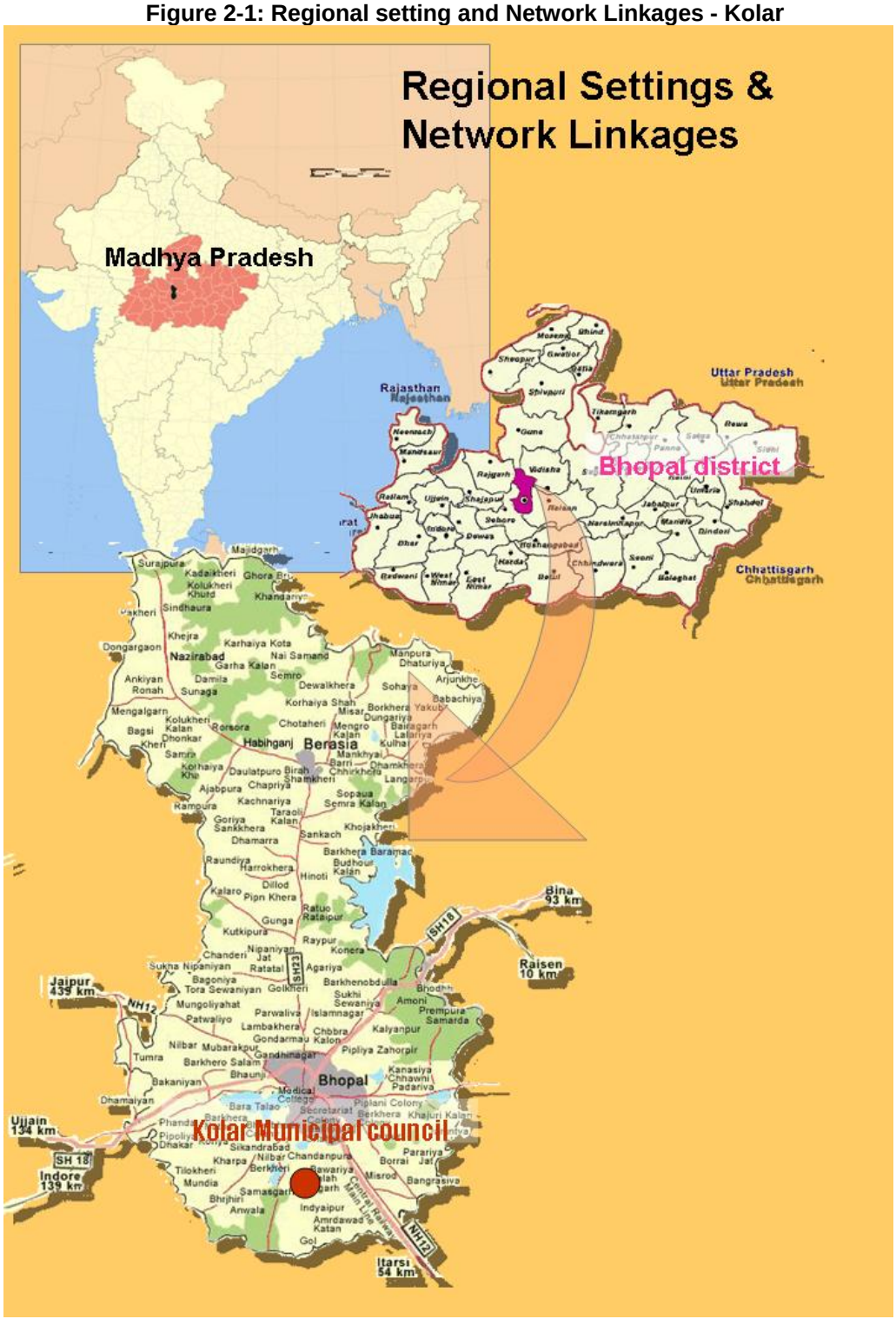
Kolar dam lies to the south of Kolar city. The town is bound by agricultural lands and hilly terrain towards the south. There are some water bodies and hillocks on the west of the town. Bhopal Itarsi railway line passes near the town towards the east. National Highway 12 (NH- 12) runs parallel to the railway line and lies to the east of the town.

Kolar is well connected to the mother city Bhopal by Kolar road network. Bhopal is a transit point for travel between Indore, Sehore, Hosangabad, Raisen, Kolar, Vidisha and Sanchi. Two important National Highways NH-12 and NH-86 intersect each other at Bhopal connecting Jaipur, Jabalpur, Dewas and Raisen. Hence, Kolar due to its close proximity to Bhopal has very good regional road network connectivity.

Kolar itself has no railway link but is located nearer to two major railway junctions namely Habibganj at a distance of 7 Kms and Bhopal railway junction at a distance of 12.5 kms. Bhopal is an important rail junction in Central India, because of its location almost midway between Bangalore (South), Mumbai (West), Calcutta (East) and New Delhi (North).

Kolar is located at a distance of 20 Kms from Bhopal Raja Bhoj Airport. It is located 15 km north-west of Bhopal city on National Highway 12 connecting Bhopal to Jaipur.

Figure 2-1: Regional setting and Network Linkages - Kolar



2.4 Municipal area

Kolar Nagar Palika has an area of 5017.61 hectares which has been divided into 21 municipal wards. Kolar Nagar Palika was formed on 11th November 2006 covering 21 surrounding settlements enlisted in table given below.

Table 2-2: Area details for kolar municipal council

No.	Name of the Village added to form Kolar Municipal Council	Area in Ha
1	Hinotia Alam	323.58
2	Nayapura	156.93
3	Gehukheda	125.19
4	Suhagpur	179.31
5	Semrikala	189.12
6	Dehrikala	330.42
7	Piplia Kesho	246.77
8	Imliya Jargar	89.90
9	Kakriya	127.78
10	Raduliya Jargar	122.27
11	Inayatpur	137.63
12	Bairagadh Chachali	470.79
13	Satgadhi	645.46
14	Daulatpur	267.63
15	Damkheda	349.19
16	Akbarpur	169.41
17	Chichali	578.77
18	Banjaari	207.61
19	Salaiya	171.30
20	Sankhedi	128.55
Total		**5017.61**

2.5 Physiographic and Landform

- **Geology and soil type**

The top portions of the hillocks generally consist of hard red soil, mixed with basaltic boulders. Black cotton soil is seen at various depths from 1 to 3.0m. The soil in and around is alluvial land. The soil is conducive for agriculture and is appropriate for Rabi and Kharif crop harvesting.

- **Climate and Rainfall**

Kolar is hot in summer and cool in winter. Maximum average temperature in summer is 45°c & minimum average temperature in winter is 6 - 7°C. Summer nights are mainly cool and pleasant.

- **Wind Direction**

Winds are predominant from the west and southwest during the monsoon. The presence of the lake creates numerous and varying microclimates.

3 Demography

As per 2001 India census, Kolar had a population of 28375, having male population of 14856 and female population of 13519. Kolar Municipal council was formed in 2006 covering 21 surrounding settlements.

3.1 Population Density

The total population Kolar is approximately 99628 as on 2010. The total area is 50.17 sq. km. The population density in Kolar Municipal council is 1906 persons / sq km. The detail of ward wise density is discussed below in Chapter 5.

3.2 Population Growth Trend

As Kolar municipal council has been formed recently, the past trend of population growth is not available for Kolar town. However, census population of villages, which have been added to form Kolar municipal council, as per census 2001 have been mentioned in the table given below.

Table 3-1: Population details of Kolar Municipal area – 2001.

Settlements in Kolar Municipal area	House-holds 2001	Population 2001	Male Population 2001	Female Population 2001
Akbarpur	470	2416	1264	1152
Chichli	63	337	186	151
Sankhedi	62	292	152	140
Salaiya	97	653	351	302
Bairagarh Chichali rural	221	1406	749	657
Bairagarh Chichli urban	133	748	385	363
Hinotiya Alam	100	652	356	296
Gehun Kheda	234	1129	605	524
Suhagpur	95	487	258	229
Inayatpur	91	601	306	295
Rasuliya Inayatpur	5	21	11	10
Satgarhi	11	43	23	20
Doulatpur	49	240	118	122
Semri Kalan	107	693	364	329
Imaliya Zargar	30	177	90	87
Pipaliya Kesho	64	317	167	150
Dehri Kalan	23	126	64	62

Settlements in Kolar Municipal area	House-holds 2001	Population 2001	Male Population 2001	Female Population 2001
Kankariya	22	139	73	66
Banjari	939	4080	2138	1942
Damkheda	2402	10240	5350	4890
Nayapura (Kolar)	745	3578	1846	1732
Kolar Municipal area	**5963**	**28375**	**14856**	**13519**

Source: Census of India 2001 and data obtained from Kolar Municipal Council

3.3 Population Projection

3.3.1 Population projections as per studies and reports

- **Population projections done in DPR for Solid Waste Management**

Detailed Project Report has been made for Solid Waste Management of Kolar Nagar Palika. According to the projections done by the DPR the population of the town in 2015 and 2025 will be 119554 and 149443 respectively.

Table 3-2 : Population projection- Solid waste - DPR

Year	Population
2015	119554
2025	149443

Source : DPR for solid waste Management, Kolar

- **Population projections done in DPR for Comprehensive Water Supply Scheme**

Due to absence of past trends the population projection for water supply scheme in DPR is done on basis of current number of voters and extrapolation of that number as per the ratio of voters to the total population in Madhya Pradesh. Then the population is projected as per the state decadal growth rate. The population as per the DPR is as shown in table.

Table 3-3 : Population projection- Water Supply -DPR

Year	Population
2025	75000
2040	110000

Source : DPR for solid waste Management, Kolar

3.3.2 Population Projections done for Kolar City Developed Plan

Since past trends are not available for Kolar Municipal area, the population projections done in Detailed Project Report for Solid Waste Management is considered for base year population which is again cross verified with Voter' s list for data authentication. Official website of Kolar Municipal Council itself specifies the 2005 population as 85000 which are shown in Table 3-4.

Table 3-4 : Existing Population

Year	Population
2001	28375
2005	85000

Source : http://mckolar.com/pro.htm

Total voters in Kolar Municipal area is 46200 in 2009. By assuming 20% of those whose name is not included in the voter list, the total voters comes around 55500 which is almost 60 percent1 of the projected 2009 population i.e. 95643. Hence we have considered 2010 base year population as 99,600.

Even though, annual compound rate of growth has decelerated from 2.41% to 2.18% between 1981 and 2001 in Madhya Pradesh, it is appropriate to consider higher growth rate of 4.2% for Kolar Municipal area (nearly 200% due to the factors like urban agglomeration, newly carved municipal area, availability of land etc) up to 2015 and it is assumed to get reduced to half to match the current growth rate of Madhya Pradesh from 2015 onwards as shown below.

Table 3-5 : Population projection details

Year	Population projections	Growth rate	Population as per SWM DPR
2001	28375	---	28375
2009		---	95643
2010	99628	15.0	NA
2015	122382	4.2	119554
2025	150653	2.1	149443
2035	185453	2.1	NA

Source: Analysis by Consultant team

The Population projections arrived here is analogous with the projections done in Detailed Project Report for Solid Waste Management and hence the same has been adopted for future planning purposes.

3.4 Issues

- After formation of Kolar municipal council there has been considerable increase in the population, i.e. it has been increased four times since 2001 due to merger of surrounding villages.
- Sudden increase in the population of Kolar causes a lot of pressure on Infrastructure services and reduces the quality of services available.
- Large scale migration from Bhopal to Kolar has caused haphazard growth and planning of towns leading to illegal colonies and development. This has also resulted in uneven distribution of population density in different wards.

[1] *Voter's population in MP is 64%.*

4 Socio-Economic Profile

The socio economic profile of Kolar is discussed as follows. This includes Social indices and Economic development profile.

4.1 Social Indices

4.1.1 Gender Ratio

Gender ratio in Kolar Municipal area is much higher than the Bhopal district urban and MP state urban gender ratio. However, Gender ratio in the case of SC population is lower than the SC gender ratio of Bhopal district urban and MP state urban gender ratio as shown in Table 4-1.

Table 4-1: Gender ratio and its comparison

Particulars	Population	Population below 06	SC
Male	14856	2384	1658
Female	13519	2191	1483
Gender ratio in Kolar	910	919	894
Gender ratio in Bhopal urban district	898	928	909
Gender ratio in MP state urban	898	907	907

Source : Census of India, 2001

4.1.2 Literacy Rate

As per census 2001, Literacy levels in Kolar Municipal area is lower than Bhopal urban district and MP state urban literacy levels. In Kolar Municipal area, 77 percent of total population (excluding 0-6 years of age) are literates of which male accounted for 85 percent and female accounted for 69 percent. Literacy levels in Kolar and its comparison with state urban and district urban figures are shown in Table 4-2

Table 4-2: : Literacy levels & comparison

Literacy levels	Total	Male	Female
Kolar	77.10	84.54	68.91
In Bhopal urban district	79.59	85.39	73.09
In MP state urban	79.39	87.39	70.47

Source : Census of India, 2001

4.1.3 Average Household Size

As Kolar municipal council was formed after the Census 2001, the household size estimated from the population of the villages which were agglomerated to form the Kolar Municipal Council. Average household size is 5 persons per

household estimated after the census 2001 information. The slum household size is 6 persons per HH as per the information provided by municipal officials.

4.1.4 Social Composition

As per census 2001, SC population is about 11 percent of the total population whereas ST population comes around 6 percent of the total population as shown in Table 4-3.

Table 4-3: Social Composition

Social Composition	Male	Female	Total	% share to total
SC Population	1658	1483	3141	11.07
ST Population	876	828	1704	6.01
Others	12322	11208	23530	82.93
Total Population	**14856**	**13519**	**28375**	**100.00**

Source : Census of India, 2001

4.2 Economic Base of the town

The economic activities in the town are mainly agriculture, trade and commerce. This town provides cheap and affordable housing for workers working in Bhopal.

4.2.1 Work Force Participation Rate (WFPR)

The work force participation rate in Kolar is 35 percent which is higher than the Bhopal district urban and MP state urban WFPR as shown in Table 4-4. Further, its dependency on primary sector is 23 percent of the total work force which is high compared to district urban and state urban primary sector work force share. It reflects that kolar even though it has been declared as urban has rural economic characteristics.

In addition, non workers percentage to total population is low when compared to Bhopal district urban and state urban non workers share to total population.

Table 4-4: WFPR and its comparison – 2001

Area	Indicator	Primary	Household Industry	Others	Total workers	Non workers
Kolar	% to total workers	22.6	1.0	76.4		
Bhopal urban district		1.8	2.2	96.0		
In MP urban		11.6	6.6	81.8		
Kolar	% to total population	7.8	0.3	26.4	34.6	65.4
Bhopal urban district		0.5	0.7	28.4	29.6	70.4
In MP urban		3.6	2.0	25.1	30.6	69.4

Source : Census of India, 2001

4.2.2 Occupational pattern

Out Of the total workforce, around 78.99% of workers are main workers and 21.01% are marginal workers. The majority of main workers are involved in tertiary sector. The classification of workers as per census 2001 is as below:

Table 4-5: Classification of Workers - 2001

		(2001 census)	% to total workers	% to total Population
Main workers	Primary sector	1460	14.87	5.15
	Secondary sector	79	0.80	0.28
	Tertiary sector	6216	63.31	21.91
	Total main workers	7755	**78.99**	27.33
Marginal workers		2063	21.01	7.27
Total workers		**9818**	**100.00**	**34.60**
Non workers		**18557**		**65.40**

Source: Census of India, 2001

4.2.3 Industrial Activities

Town has no major industries within its vicinity however there are industrial units in nearby Mandideep which provides direct and indirect employment to Kolar and Bhopal residents.

4.2.4 Trade and Commerce

For trade and commerce, Kolar city is largely dependent on the capital city of Bhopal. As it is only 10 km away from Bhopal, large number of daily commuters depends upon the capital city for employment. Bhopal being an capital city and district centre has two number of agriculture produce markets which provides the storage and distribution of grains and fertilizers to the surrounding region.

4.2.5 Tourism

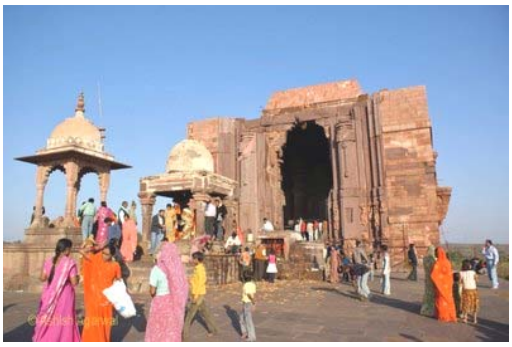
Kolar itself has no tourist destinations whereas it has some tourist spots in its proximity.

Table 4-6 Tourist spots around Kolar

Place	Distance from Municipality	Specialty
The Upper Lake	15 Km	The city of lakes
Kerwa Dam	5 km	Picturesque picnic spot
Sanchi stupa	74 Km	Buddhist Monuments
Bhojpur	26 Km	Remains of magnificent Shiva Temple and Cyclopean dam dated 1010-53 A.D.
Bhimbetka	46 kms	A world heritage site exhibiting the earliest traces of human life in India;
Islam Nagar	21 Kms	Chaman Mahal built by an Afghani king

Sanchi Stupa

Bhopal, The city of Lakes



Bhojpur temple

Islam Nagar

4.3 Issues

- Town does not have any major industrial activity to support the large tertiary sector of working population.
- Town does not have major tourism places to support economy.
- For trade and commerce, Kolar is largely dependent for capital city of Bhopal. Town lacks the major potential for trade and commerce.

5 Physical Planning & Growth Management

Kolar is a rapidly growing city situated to the south of Capital city of Bhopal. Kolar was formed in 2006 and its population is growing at a very fast rate due to affordable housing it provides as compared to that in Bhopal.

5.1 Spatial growth and Distribution

The total area of Kolar Municipal council is 50.17 sq km, with a population of 95644 as on 2009. The overall density of Kolar Municipal council is 1906 persons/sq. km. The spatial distribution of population is presented in form of population density and percentage share of population in each ward.

Ward No. 04 has the maximum population density followed by ward No 08 and ward No 01 In terms of population share, ward No 12 has the maximum population share followed by ward No 05.

Table 5-1 : Ward wise population details

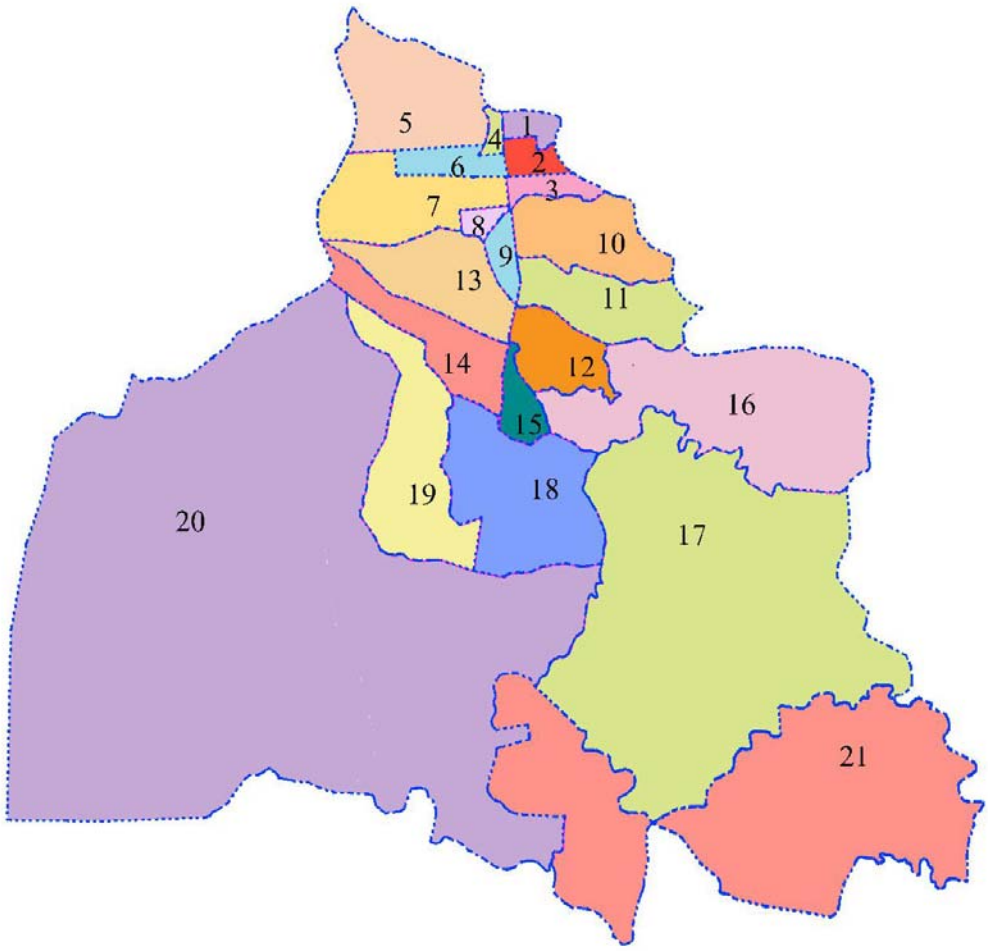
Ward No	Area in Sq. Km	Population 2009	Pop density persons / Sq.Km	% share
1	0.16	4921	31068	5.1
2	0.19	4725	25246	4.9
3	0.20	1333	6836	1.4
4	0.08	5080	65053	5.3
5	1.43	9764	6813	10.2
6	0.29	2790	9578	2.9
7	1.14	3526	3096	3.7
8	0.10	5678	54724	5.9
9	0.20	4409	22538	4.6
10	0.99	5680	5747	5.9
11	0.98	3402	3477	3.6
12	0.65	12400	19177	13.0
13	1.03	3375	3264	3.5
14	0.88	3426	3894	3.6
15	0.27	2565	9421	2.7
16	3.17	7040	2223	7.4
17	8.23	2205	268	2.3
18	1.92	5761	3005	6.0
19	1.69	5124	3041	5.4
20	19.96	1357	68	1.4
21	6.63	1083	163	1.1
Total	**50.17**	**95644**	**1906**	**100.0**

Source: Area computed from Kolar digitized map and ward wise population obtained from Solid Waste Management Detailed project Report for Kolar Municipal area

5.2 Kolar Ward Delineation Map

The ward delineation map of Kolar is as below

Figure 5-1: Ward wise map of Kolar Municipal area



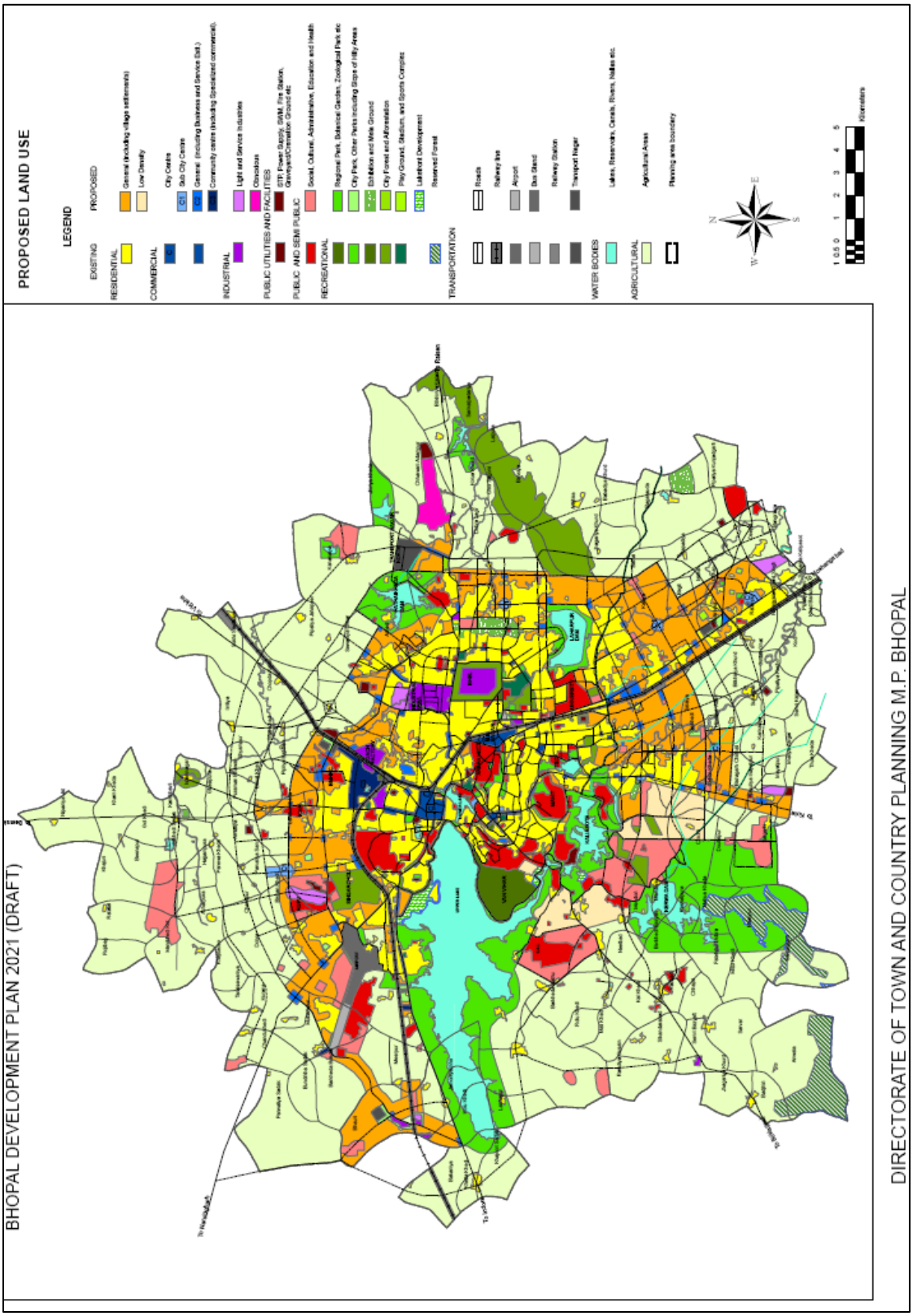
5.3 Land Usage and Land Use classification

5.3.1 Kolar Master Plan

Kolar Municipal area has no Master Plan (both existing and proposed) as on today. Kolar comes under the jurisdiction of Bhopal Planning area. Kolar was a part of Bhopal master plan proposal when the draft master Plan was released for public comments and objections. However, final Bhopal Master Plan released recently hasn't included Kolar Municipal area for final proposals. The landuse map of Bhopal- draft Master Plan prepared by Town and Country Planning, Bhopal is shown below.

5.4 Illegal Colonies

Due to its close proximity to the Bhopal, the major concern for Kolar is the large scale of illegal colonies and encroachments. There has been large influx of migrant workers from the adjoining states creating uncontrollable development of Jhuggi Jhopries, slums and unauthorized colonies every here and there which is also creating an alarming situation for M.P. Govt. as well as for the Municipal Council Kolar from social aspects, to provide civic amenities and rehabilitation for this population which is the biggest challenge for the future of Kolar. The Kolar road has been encroached by the shops and residential buildings throughout the stretch of 3-4 km. However the legal actions have been initiated by state government by providing the legal notices to remove the encroachment along the roads.


PROPOSED LAND USE
LEGEND
EXISTING
PROPOSED
RESIDENTIAL
General (including village settlements)
Low Density
COMMERCIAL
City Centre
Sub City Centre
General (including Business and Service Est.)
Community centre (including Specialized commercial)
INDUSTRIAL
Light and Service Industries
Obnoxious
PUBLIC UTILITIES AND FACILITIES
STP, Power Supply, SWM, Fire Station, Graveyard/Cremation Ground etc
PUBLIC AND SEMI PUBLIC
Social, Cultural, Administrative, Education and Health
RECREATIONAL
Regional Park, Botanical Garden, Zoological Park etc
City Park, Other Parks including Slope of Hilly Areas
Exhibition and Mela Ground
City Forest and Afforestation
Play Ground, Stadium, and Sports Complex
Lakefront Development
Reserved Forest
TRANSPORTATION
Roads
Railway line
Airport
Bus Stand
Railway Station
Transport Nagar
WATER BODIES
Lakes, Reservoirs, Canals, Rivers, Nallas etc.
AGRICULTURAL
Agriculture Areas
Planning area boundary
Kilometers
BHOPAL DEVELOPMENT PLAN 2021 (DRAFT)
DIRECTORATE OF TOWN AND COUNTRY PLANNING M.P. BHOPAL

5.5 Future Growth and Possibilities

5.5.1 Development potentials

Located in close proximity to the capital city, Bhopal makes it easily accessible and supports the town's economic potential. Further, good access by road, rail and air is also the major strength and potential of the town. Town has around 50 sq. km area and enough land is still available for future development of the town. Further, it has Kerwa dam in its close proximity for its water supply requirements.

The present trend of development of Bhopal city shows that there is a natural tendency for people to reside towards the southern direction of Bhopal. Hence Kolar lying to the south of Bhopal has a high development Potential owing to all the above mentioned factors

5.5.2 Development Constraints

Burgeoning Slums, Health hazard due to absence of proper water supply, sewerage, sanitation and storm water drains along with Haphazard growth and unplanned development if not addressed could be the major constraint in the future for the development of this area.

5.6 City Specific Strategies and Action Plans

- Kolar region immediate require the area development plan or provisions under the Bhopal master plan. Due to its close proximity to Bhopal, it has been growing haphazardly causing stress on the service provision and infrastructure.
- Area development plans can provide the land use planning and future requirement accordingly with appropriate residential density. It shall also include the possible institutional inventions at district and state level for development of Kolar.
- Provision and implementation of development control regulations under the municipal council region in order to achieve the planned and controlled development.
- To control the haphazard growth, provisions for resettlement and rehabilitation of slums with land tenure and housing shall be incorporated for area development plan for Kolar.

6 Physical Infrastructure

6.1 Water Supply

6.1.1 Water Supply System

Town does not have any dedicated water supply scheme initiated as on today. Water supply for the town is served by borewells and handpumps. The details of water supply sources, storage and water availability is discussed as below:

6.1.2 Source for Water supply

The source of drinking water supply for Kolar Municipal council is borewells and handpumps. The entire water supply system is dependent majorly on groundwater. The ground water source is depleting at faster pace and there is need to shift to the surface drinking water source. The nearest surface drinking water source is from Kolar Dam which is 35 km from Kolar.

There are 2 bore wells for drinking and 2041 hand pumps for both drinking and non drinking purposes. Bore wells are laid in the year 2007 located at a distance of 2.5 Kms from Nagar Palika office.

6.1.3 Water Supply treatment and distribution

Chlorination treatment method is being adopted by the Municipal council to treat water in all the storage tanks. Since the town has no main trunk line and distribution lines, the water from 2 borewells is being supplied with the help of Tanker Lorries.

6.1.4 Water Distributions Arrangements

Water supply for the town is served by borewell. On an average 8 litres per capita per day (LPCD) is being supplied by taking into consideration the 2010 population of 99644. The details of water supply sources, storage and water availability is discussed as below

Table 6-1: Water Supply system in Kolar

Description	Details
Source of Water Supply	Bore well, Hand pumps and Tanks
Water Supply Agency	Kolar municipal Council
Distribution Network in Kms	35 kms
Description regarding Storage	Capacity in Lakh Litres
• *OHT No.01, 02 and 03*	*2 LL each*
• *Sump (4 Nos)*	*4 LL*
• *Total Storage Capacity*	*10 LL*
Description regarding Connections	
• *Domestic*	*481 Nos*
• *Commercial*	*Nil*
• *Total connections*	*481 Nos*
No of mini syntax tanks	246 Nos
No of Hand Pumps	212 Nos
Tube well	9 nos.

6.1.5 Quantity and quality of Water in Distribution System

There are 9 tube wells for drinking and 212 hand pumps for both drinking and non drinking purposes.

There is huge scarcity of water and some areas are served with the help of Mini Syntax tanks placed by the Municipal Council. Some of areas are also being served by tankers.

As of now there is no treatment plant for treatment of water before provision to the residents. However Chlorination treatment method is being adopted by the Municipal council to treat water.

6.1.6 Internal Distribution Networks

Sarvadram A & B sector has one ground storage reservoir (GSR) and one elevated storage reservoir (ESR), which used to supply water to that area with the help of 305 household service connections. Further, Fine Avenue colony has one sump which supplied water to the colony through 176 household service connections.

Colonies like Orchid palace has one GSR and one ESR, Sumitra Parishar has one GSR and one ESR, Banjara D sector has one GSR and one ESR and Fortune has one GSR and one GSR used for supplying water to the respective areas.

Remaining areas are served with the help of 246 Mini Syntax tanks placed mainly in slum areas having varying capacities of 5000 litres (96 Nos), 3000 litres (94 Nos), 2000 litres (4 Nos), 1000 & 5000 litres (21 Nos).

Since the town has no main trunk line and distribution lines, water is being supplied with the help of Tanker Lorries whose details are listed below:

Table 6-2: Water Supply system in Kolar

S. No	Tanker capacity in litres	No of trips per day	Water source
1	6000	60	From Inayatpur bore well
2	12000	6	From Inayatpur bore well
3	5000	20	From Private bore well
4	5000	20	From Private bore well
5	5500	30	From Private bore well

Source : Data collected from Engineering section, Kolar Nagar Palika

In order to prevent the existing water scarcity, Hand pumps of 2041 nos are laid all over the municipal area of which 80 percent pumps are in slum areas as indicated by the municipal officials.

Sarvadram A & B sector has 305 household service connections and Fine Avenue has 176 household service connections. Rs. 2000 is being charged for providing a household service connection and a monthly flat rate of Rs.150 is being charged for each connection.

6.1.7 Comparative Analysis with UDPFI, CPHEEO Guidelines

Following table provides the comparative analysis for water supply project with CPHEEO and UDPFI guidelines. It also compliances the service level benchmarking performance indicators provided under the SLB toolkit from Ministry of Urban Development.

Table 6-3: Performance Indicators

S. No	Indicators	Unit	Current Status	Normative Standard
1.	Daily per capita supply	Litres	8	135
2.	Roads covered with distribution network	Percent	Nil	> 100
3.	Storage capacity with respect to current supply	Percent	125	33
4.	Storage capacity with respect to proposed supply for the next fifteen year period	Percent	41.5	33
5.	Available Treatment capacity with respect to supply	Percent	0	100
6.	Assessments covered by service connections	Percent	2.5	85
7.	Proportion of non domestic service connections	Percent	0	>5

Source: Computed based on the data collected from Kolar Municipal Council

6.1.8 Water Supply Projects

In order to address water scarcity problem in Kolar, Water supply scheme under UIDSSMT has been proposed and the project cost is Rs.36.6796 crore for the entire scheme.

The water supply scheme has been designed for the horizon year of 2040 for the population of 1, 10,000. The major components of water supply scheme proposed are as follows:

- Intake well at Inayatpur with capacity of 17.50 MLD
- Rapid Gravity Treatment Plant – 11.95 MLD
- Clear water sumps and pump house including for Treatment Plant
- Water supply main (400 mm to 200 mm) from treatment plant to OHT at Kolar – 7.3 km
- Feeder mains in Kolar town – 95.644 km
- Storage tanks – 3 OHT with total capacity of 4000 KL.

6.1.9 Present and Future Demand and Supply Gaps

Table 6-4 : Demand assessment for water supply

Particulars	**2010-11**	**2015-16**	**2025-26**	**2035-36**	**2040-41**
Kolar projected population	99628	122382	150653	185453	205761
WATER SUPPLY DEMAND					
Water Supply MLD	**2010-11**	**2015-16**	**2025-26**	**2035-36**	**2040-41**
Kolar water demand @ 135 lpcd for towns less than 50,000 population (15% loss considered)	15.47	19.00	23.39	28.79	31.94
Existing and proposed Supply in MLD	0.80	11.95	11.95	17.50	17.50
Gap	14.7	7.0	11.4	11.3	14.4
135 lpcd is proposed in Water Supply DPR prepared under UIDSSMT for ultimate 2040 pop - 110000					
Water Treatment Plant capacity in MLD	**2010-11**	**2015-16**	**2025-26**	**2035-36**	**2040-41**
Demand for treatment plant capacity	15.47	19.00	23.39	28.79	31.94
Treated water supply	0.0	11.95	11.95	11.95	11.95
Gap	15.47	7.05	11.44	16.84	19.99
11.95 MLD WTP is proposed for Intermediate stage in water supply DPR prepared under UIDSSMT					
Water Distribution Network Kms	**2010-11**	**2015-16**	**2025-26**	**2035-36**	**2040-41**
Existing and proposed distribution length in Kms	0.0	95.6	95.6	95.6	95.6
Road length in Kms (existing and proposed)	179.0	183.6	226.0	278.2	308.6
Gap	179.0	87.9	130.3	182.5	213.0

Per Capita road length of 1.5 meter is considered for road length calculation *95.645 Km distribution length is proposed in Water Supply DPR prepared under UIDSSM*					
Water Service connections	**2010-11**	**2015-16**	**2025-26**	**2035-36**	**2040-41**
No of Assessments	20000	24568	30243	37229	41306
No of service connections	481	12284	22682	31645	35110
% service connections existing & proposed	2.4	50.0	75.0	85.0	85
Gap	82.6	35.0	10.0	0.0	0.0
Assessments increased on the basis of Assessment / population ratio					
Service connections are proposed to be 85% by 2035-36.					
Storage capacity	**2010-11**	**2015-16**	**2025-26**	**2035-36**	**2040-41**
Existing & Proposed Storage Capacity in MLD	1.00	4.96	4.96	4.96	4.96
Storage capacity demand in MLD	3.94	3.94	3.94	5.78	5.78
Gap in MLD	2.9	-1.0	-1.0	0.8	0.8
3.959 MLD Storage tanks are proposed in Water Supply Scheme prepared under UIDSSMT					

6.1.10 SWOT Analysis- Water supply

Strengths	**Weaknesses**
• Kolar dam as the nearest source of surface water.	• Town does not have comprehensive water supply system as on today. • Low Per capita supply
Opportunity	**Threats**
• DPR for water supply already prepared Citizens provided willingness to pay after direct pipeline service made available	• Tariff revisions may face opposition from the citizens after provision of supply through pipe. • Huge ground water depletion\ • Low quality in terms of salt contents

6.1.11 Issues

- There is a large scale of demand supply gap, which is likely to widen drastically in future with respect to increase in population.
- Major source of drinking water is the groundwater as entire demand is compensated through direct supply from bore wells. There is need to shift to treated surface water supply to control the ground water depletion.
- Moreover, to sustain the service level cost recovery is the major challenge for municipal council.
- Per capita supply is low (8 lpcd) against the standard norm of 135 lpcd.

- Household Service coverage is low (2.5%).
- Town has no distribution network and the water is being supplied with the help of tanker Lorries.

6.1.12 City Specific Strategies and Action Plans

- **Goals and Service Outcomes**

Considering the above challenges, the following goals for different horizon years have been identified in the following table. The water supply coverage and access to piped water supply in Kolar needs to be enhanced to 100% by the year 2040. The per capita water supply should be maintained at an acceptable level by increasing hours of supply to 4 hours a day by 2020, and subsequently achieve 24 hours water supply daily by 2030. There is an urgent need to lower the Non revenue to 20% by the year 2020, and 15% by the year 2030 and achieve 100% O&M cost recovery by the year 2020.

Table 6-5: Goals & Service Outcomes for Different Horizon Years

Sr. No	Component	Horizon Period		
		2020	2030	2040
1	Network Coverage	100%	100%	100%
2	Access to piped water supply	100%	100%	100%
3	Per Capita Supply	135	135	135
4	Hours of Supply	4 hours daily	24 hours daily	24 hours daily
5	24x7 Water Supply	-	All wards	All wards
6	Quality of Water	As per WHO Standards	As per WHO Standards	As per WHO Standards
7	Non Revenue Water	20%	15%	15%
8	O&M Cost Recovery	100%	100%	100%

- **Strategies and Action Plan**

Considering the current challenges and identified goals, a robust strategy for water supply should be adopted to create a water efficient city in Kolar. Detailed strategy is furnished below which covers policy level planning, reforms, institutional strengthening, source augmentation and service delivery aspects.

The following are brief outline of the projects which have to be taken up:

Comprehensive Water Sector Development Plan

To meet the future projected water demand of Kolar, a water supply scheme has been prepared under UIDSSMT, which has not been implemented yet. KMC should ensure that the scheme is implemented at a fast pace.

Lowering the connection costs and simplifying the procedure

The connection costs are acting as an entry barriers, especially for the poor to enter into the water supply system. In addition to that, tedious documentation process further deteriorates the situation. To enhance the access to piped water supply system, the connection costs should be reduced and the documentation procedures should be simplified.

Reducing Unaccounted for water

Leak detection studies, rehabilitation of old pipe lines should be undertaken. By legitimizing illegal connections, the Council can achieve a reduction in revenue loss to the extent of 5 – 10 percent in a short term. At a later stage removal of public water connections should be encouraged.

Energy Audit Studies

The Council should carry out a detailed energy audit of all the water supply pumping and distribution system to address the problems associated with energy.

Water Quality Studies and Monitoring

Presently water quality studies are not undertaken. However it is suggested that water analysis should be undertaken and upgraded in phases. The Council should purchase latest equipments to set up laboratories for analysis of chemicals and heavy metals. In further phase, water quality equipment may be installed online at storage reservoirs.

Human Resources Development

Widespread investments in the water supply sector without sufficient attention to human resource development results in poor sustainability of system. Recognizing the urgent need for capacity building at different levels in water supply sector, Council should propose to develop human resources in their organization.

6.2 Sewerage and Sanitation

6.2.1 Existing Sewerage Systems in Kolar

Town does not have underground sewerage system as on today. However there is sewer network of about 2 Kms within the town which is not integrated. Recently, Municipal council has laid sewer network of 1 Km covering Fine Avenue Phase II area, 100 meters connecting Fine Avenue (phase I) to Lalitha

nagar, 100 meters in Alisha Nagar, 100 meters connecting Sarvadram C sector to Cauvery and 100 meters in Sainath colony. Further, Municipal council has proposed to lay sewer line in Sourabh nagar for a length of 1 Km. No connection charges are levied by the council from the users as on today. Town as on today has no public toilets / Pay & Use toilets.

6.2.2 Means of Sewage disposal

As mentioned in the earlier section, Kolar town does not have underground drainage system. The current sewage disposal system is through septic tanks and soaks pits provided within the residential premises. Sewage disposal has been in open plots in some part of the city. Ultimately the sewage flows through open channel and disposes into the nallah within the city.

6.2.3 Household Toilets (Dry Latrines and Flush Latrines)

As per the information provided by municipal council there are around 8000 number of properties which have individual household toilets. However in slum areas there are 2000 number of dwelling units provided with individual toilets connected to the soak pits.

6.2.4 Public Toilets

There is absence of public toilets and pay-use toilets in Kolar city. The city requires the public toilets facilities at major areas of public use in Kolar, like commercial markets, bus stations and other public places.

6.2.5 Comparative Analysis with UDPFI and CPHEEO Guidelines.

The UIDSSMT report for underground sewerage network and treatment has been prepared as per the CPHEEO manual on sewerage and sewerage treatment.

As per CPHEEO manual and UDPFI guidelines wastewater generation is assumed as 80% of the water supply rate i.e. 108 lpcd has been adopted.

UDPFI guidelines suggest small and medium towns may encouraged to for adopting low cost sanitation technologies with technical assistance from urban local bodies and involvement of NGO's in actual implementation of such programmes. Low cost sanitation projects can be encouraged the Kolar as there is no underground sewerage network and the town has the discrete settlement. In that context city investment plan has made provisions for sewerage network and low cost sanitation.

Table 6-6: Performance Indicators- Sewerage system

Sr.No	Performance Indicator	Benchmark	Status
1	Coverage of Toilets	100%	50%
2	Coverage of Sewerage Network	100%	0%
3	Collection Efficiency of Sewerage Network	100%	0%
4	Adequacy of Sewage Treatment Capacity	100%	0%
5	Quality of Sewage Treatment	100%	NA
6	Extent of Reuse and Recycling of Sewage	20%	0%
7	Extent of Cost Recovery in Wastewater Management	100%	NA
8	Efficiency in redressal of Customer Complaints	80%	ND
9	Efficiency in Collection of Sewage Water Charges	90%	NA

6.2.6 Sanitation Projects

The Kolar Municipal council has submitted the UIDSSMT report to state level nodal agency for providing and laying of sewerage system. The total estimated cost of the project was Rs.772.52 Lacs for the design year 2037-38. As per the information from municipal officials, the approval is pending from the central government.

Proposed project will enable Municipal council to collect the sewerage and storm water otherwise flowing on the surface and carry it to a suitable place for providing desired treatment before wastewater being finally disposed off to river. The design period of the project is of 30 years. Aerated lagoon has been provided for treatment of sewage. Salient features of the proposals are as follows:

- Provision of sewer lines of diameters ranging from 150 mm to 600 mm as per IS 1536-1989
- Civil structures like manholes
- Construction of aerated lagoon for 16.875 MLD capacity.

6.2.7 Present and Future Demand Supply Gaps

Following table provides the present and Future Demand Supply Gaps for sewerage sector in Kolar. As there is complete absence of Underground Sewer Network, Kolar city requires immediate actions on the provision of sewerage and sanitation facility.

Table 6-7: Demand Supply Gap - Sewerage system

SEWERAGE DEMAND					
Sewage generation	**2010-11**	**2015-16**	**2025-26**	**2035-36**	**2040-41**
Kolar sewage generation	12.4	15.2	18.7	23.0	25.6
Kolar proposed Sewage Collection	0.0	0.0	0.0	0.0	0.0
Gap	12.4	15.2	18.7	23.0	25.6

STP capacity in MLD	2010-11	2015-16	2025-26	2035-36	2040-41
Capacity of treatment plant demand	0.0	0.0	0.0	0.0	0.0
Gap	12.4	15.2	18.7	23.0	25.6
Sewer connections	**2010-11**	**2015-16**	**2025-26**	**2035-36**	**2040-41**
Proposed connections under UGSS	0	0	0	0	0
Demand for sewer connections	14000	17197	21170	26060	28914
Gap	14000.0	17197.5	21170.2	26060.4	28914.1
Sewer Network in Kms	**2010-11**	**2015-16**	**2025-26**	**2035-36**	**2040-41**
Sewer Network in Kms (Proposed)	0.0	0.0	0.0	0.0	0.0
Sewer Network Demand	179.0	183.6	226.0	278.2	308.6
Gap	179.0	183.6	226.0	278.2	308.6

6.2.8 SWOT Analysis

Strengths	**Weaknesses**
• Kolar has good natural slope • Land available for sewage treatment plant • Many household covered under individual toilets	• There is complete absence of sewerage system. • There is no treatment plant for treating the sewerage generated. • Absence of public toilet facility in entire town • Low public awareness within citizens • Existing sewer lines drain sewage into the nearby nallahs without treatment.
Opportunity	**Threats**
• DPR for waste water services already prepared • Funds from state government can be made available for provision of public toilets and services in slums. • Introduction of sewer charge services.	• Health hazards due to open drainage and sanitation services • Ground water contamination owing to high density of septic tanks

6.2.9 Issues

- There is absence of hygienic and safe method of sewerage disposal in the town.
- The major mode of disposal is septic tanks which is a cause of concern due to the potential threat it poses for polluting the groundwater.

- Groundwater contamination is a potential threat which will also affect the drinking water quality as the entire water supply system as on date is dependent on ground water sources.
- Existing sewer lines drain sewage into the nearby nallahs without treatment.
- Town lacks public conveniences / sanitation facilities.
- The service level cost recovery is going to be the major challenge for municipal council.
- Wide spread practice of open defecation.

6.2.10 City Specific Strategies and Action Plans

- **Goals and Service Outcomes**

Considering the above challenges, the following goals for different horizon years have been identified. The sewerage coverage and access in Kolar needs to be enhanced to 80% by the year 2020, and 100% by the year 2030. By the year 2020, 100% of the wastewater should be treated. In addition to that, 100% O&M cost recovery is achieved by the year 2020.

To enhance the coverage of safe sanitation facilities, following goals have been identified for different horizon years.

Table 6-8: Goals & Service Outcomes for Different Horizon Years

Sr. No.	Component	Horizon Period		
		2020	2030	2040
1	Network Coverage (Access)	80%	100%	100%
2	Treatment and Disposal	100%	100%	100%
3	Recycle and Reuse	-	100%	100%
4	Recovery of O&M Costs	100%	100%	100%
5	Public convenience facilities coverage	75%	90%	100%

- **Strategies and Action plan**

Considering the current challenges and identified goals, a robust strategy for sewerage is adopted to achieve 100% sewerage system. The following are brief outline of the projects which have to be taken up:

Comprehensive Sewerage Master Plan

To meet the current gap and future requirements for Kolar it is proposed to carry out studies and prepare a comprehensive Sewerage Master Plan.

Sewerage Quality Studies and Monitoring

The Sewerage quality analysis needs to be undertaken. It is proposed to purchase latest equipments to establish laboratories for analysis of chemicals and heavy metals.

Human Resources Development

Widespread investments in the sewerage sector without sufficient attention to human resource development results in poor sustainability of system. Recognizing the urgent need for capacity building at different levels in sewerage sector, it is proposed to develop human resources in their organization.

6.3 Solid Waste Management

6.3.1 Quantity of Waste Generated

Kolar town generates around 29.48 Metric ton of Garbage per day at the rate of 291 grams per capita per day (as per 2010 population of 99600).

6.3.2 Constituents of Municipal Waste

There is no information available on the constituents of municipal solid waste as such from Kolar municipal council. But after the discussion with municipal officials and their perception, the organic waste constitutes about 60% as Kolar being the major residential area, 20% plastic and 20% for other unidentified solid waste.

6.3.3 Primary and secondary collection

Waste is being collected in all the 21 wards but none of these wards have Door-Door collection and Waste segregation practices. Road side bins of 74 Nos have been placed all over the town, each having the capacity of around 3.5 ton for waste collection.

6.3.4 Waste Storage and Segregation

As a part of collection system, 35 pushcarts and 3 cycle rikshaws are engaged in primary waste collection. Kolar Municipal council has temporary staff strength of 2 sanitary inspector, 4 Darogha, 12 head Sweepers and 126 conservancy workers, involved in road sweeping and Soild waste collection. 12 members are involved in waste transportation and disposal which includes 3 drivers and 9 conservancy workers.

In addition, 1 supervisior and 16 workers are temporarily engaged by the Kolar Municipal Council for Sewer cleaning.

6.3.5 Processing and Disposal

Three tractor trailers are in operation for secondary waste collection system and disposal, each makes 3 trips a day. Kolar has disposal site at a distance of 5 Kms from Kolar CMO office. Currently, the disposal site has no treatment facilities and the waste is being dumped without treatment.

6.3.6 Reuse and Recycle

As of now there is no reuse and recycling practice from Kolar municipal council.

6.3.7 Vehicles for solid waste collection and Transportation

35 pushcarts and 3 cycle rickshaws are engaged in primary waste collection. Three tractor trailors are in operation for secondary waste collection system and disposal.

6.3.8 Estimation of Waste Collection

Current estimation of solid waste collection has been mentioned below after considering the 0.4 adjustment factor for number of tractor trailer trips.

Table 6-9: Vehicles deployed for Secondary waste collection & disposal

Vehicle type	Number	Trips	Capacity after 0.4 adjustment factor	Volumetric capacity in Ton
Tractor trailer	3	6	0.8	14.4
Total waste disposed on open land				**14.4**

Source : Kolar Municipal Council

6.3.9 Comparative analysis with UDPFI guidelines

Following table provides the comparative analysis with UDPFI and CPHEEO guidelines

Table 6-10 Performance Indicators

Indicators	Unit	Current Status	Normative Standard
Waste generation per Capita per day	Grams	291	350-450
Collection efficiency	Percent	50	100
Door to Door collection efficiency	Percent	Nil	100
Conservancy staff per Km (including temporary workers)	Persons	1	2
% capacity of Fleet vehicles to waste generated	Percent	8.2	

Source: computed based on the data collected from Kolar Municipality

6.3.10 Present and Future Demand and Supply Gaps

Following table provides the information on the estimation of waste collection, in terms of number of solid waste container required, on the certain norms on the composition of the solid waste and collection practices.

Table 6-11 Demand supply gap for solid waste management

S. No	Description of Parameters	Norms	2010-11	2015-16	2025-26	2035-36	2040-41
1	MSW generation Projection in all Residential Households(TPD)		29	38.6	52.4	71.2	87.3
2	Biodegradable content composition (TPD)	50% by weight of total MSW	14.5	19.3	26.2	35.6	43.65
3	Non Biodegradable (Recyclable, Recoverable, for RDF etc)(TPD)	35% by weight of total MSW gen/day	10.15	13.51	18.34	24.92	30.555
4	Bulk density of MSW (T/m3)	0.4 T/ m3	0.4	0.4	0.4	0.4	0.4
5	Storage volume for Biodegradable waste (m3)	TPD/Density	36	48	66	89	109
6	50% additional storage volume to avoid spillage(m3)	50%	18	24	33	45	55
	Total Biodegradable storage volume(m3)		**54**	**72**	**98**	**134**	**164**
7	Requirement of 1100 liters HDPE R.C wheely bin containers						
	For Storage Volume (Nos)	Storage Volume/ Bin Capacity	49	66	89	121	149
	Spare at (Nos)	10%	5	7	9	12	15
	Total Bins (1100 ltr)		**54**	**73**	**98**	**133**	**164**
8	With Bulk density of 0.4 T/m3 Storage volume for Non Biodegradable waste(m3)	TPD/Density	25	34	46	62	76
9	50% additional storage volume to avoid spillage(m3)	50%	13	17	23	31	38
	Total Non Biodegradable MSW volume(m3)		**38**	**51**	**69**	**93**	**115**

S. No	Description of Parameters	Norms	2010-11	2015-16	2025-26	2035-36	2040-41
10	Requirement of 660 liters HDPE R.C wheely bin containers						
	For Storage Volume (Nos)	Storage Volume/ Bin Capacity	58	77	104	142	174
	Spare at (Nos)	10%	6	8	10	14	17
	Total Bins (660 ltr) (Nos)		**63**	**84**	**115**	**156**	**191**
Requirement of wheely bin R.C containers for storing waste collected from HTH from residential House hold							
1100 liters capacity (Nos):		Say	**60**	**80**	**100**	**140**	**170**
660 liters capacity (Nos):		Say	**70**	**90**	**120**	**160**	**200**

Following table provides the future demand and supply gaps for municipal solid waste management. Per capita grams solid waste generated has been increased by 2% per year with 2010-11 as base year. Along with it the number of pushcarts and sweepers required for municipal solid waste has been estimated with consideration of certain norms and standards.

Table 6-12 Demand supply gap for solid waste management equipments

S. No	Description of Parameters	Norms	2010-11	2015-16	2025-26	2035-36	2040-41
1	Per capita waste in grams per day	Growth rate assumed is 2% per year	291	315	348	384	424
2	Kolar waste generation in MT		29.0	38.6	52.4	71.2	87.3
3	Total Length of Roads(Km)		179	183	226	278	308
4	Road length to be swept manually(Km)		179	183	226	278	308
	▪ Daily sweeping of length of road (Km)	60%	108	111	136	167	185
	▪ Alternate day sweeping (Km)	20%	36	37	45	56	62
	▪ Once a week sweeping (Km)	20%	36	37	45	56	62
5	Sweepers Requirement at average of 1/ 750 running mt length / day on both sides sweeping	1 per 750 running Meter					
	▪Daily(Nos):	216 Km	144	148	182	223	247
	▪ Alternate day(Nos):	72 Km or 36 Km/daily	24	25	30	38	42
	▪ Weekly(Nos):	72 Km or 12 Km/daily	7	8	9	11	12

S. No	Description of Parameters	Norms	2010-11	2015-16	2025-26	2035-36	2040-41
6	Sweepers Requirement for Street sweeping (Nos)		175	181	221	272	301
7	Push carts at 1 for gang of 2 workers(Nos)		88	91	111	136	151
8	Existing number of pushcarts		35	35	35	35	35
9	Gap of pushcarts		53	56	76	101	116
10	Spare at (Nos)	10%	9	9	11	14	15
Total no of pushcarts requirement for street sweeping(Nos)			**62**	**65**	**87**	**115**	**131**

6.3.11 Proposed Scheme of Solid Waste Management

Solid waste management DPR has been prepared by Kolar Nagar palika which outlines the current situation regarding solid waste collection and disposal and the future proposal. The proposal for Solid waste management of Kolar town has been proposed at the project cost of 2.75 crores. The major components of project as per the DPR are summarized as below:

It is proposed that the entire city will have segregation of solid waste at source, door to door collection of Solid waste generated, transportation and disposal at landfill site. There will be segregation centres for segregation of waste and treatment.

- Vehicles for transportation of solid waste –25 cycle rickshaw, 150 hand carts, 16 LMV, 2 container carrier with tractor, and 3 JCBs.
- 200 solid waste containers and 1 weigh bridge.
- Development of landfill site
- Development of segregation centre

6.3.12 SWOT Analysis

Strengths	**Weaknesses**
• Strong citizens desire for Kolar to be a clean city • Sufficient labour available to handle the MSW of Kolar	•Town does not have door to door collection system •No segregation at source •Council does not in compliance with MSW handling rules, 2000.

Opportunity	Threats
• Scope of PPP in terms of collection, transportation and disposal of waste.	•Lack of public awareness for use of polythene. •Health hazards due to negligence for cleanliness •Availability of land for treatment and disposal

6.3.13 Issues

- Town has not adopted Door-Door Collection and Waste Segregation system
- Town has no waste treatment plant.
- Town has inadequate vehicle capacity for transporting the waste to the disposal site.
- Collection efficiency is low.
- Town has staff inadequacy and most of the conservancy workers are temporary workers

6.3.14 City Specific Strategies and Action Plans

- **Goals and Service Outcomes**

The local body should effectively involve the private sector in delivering the solid waste management service. The rationale for private sector participation includes attracting project funding, new technology, cost savings and service delivery improvements.

Table 6-13: Goals & Service Outcomes for Different Horizon Years

Sr. No.	Component	Horizon Period		
		2020	2030	2040
1	Door to Door Collection	100%	100%	100%
2	Source Segregation	100%	100%	100%
3	Secondary Collection	100%	100%	100%
4	Treatment & Disposal	100%	100%	100%
5	Cost Recovery Mechanism	100%	100%	100%
6	Private Sector Participation	Partial	Full	Full

In order to achieve above outcomes, and to address above discussed deficiencies in each of the solid waste management component have been identified and the strategies for improvement both in physical and financial terms are elaborated in the following sections.

Strategies and Action plan

Storage of Waste at Source

Highest priority has to be accorded for Segregation & Storage at source irrespective of the area of generation so as to facilitate an organized and environmentally acceptable waste collection, processing and disposal. Source segregation of Recyclables and biodegradable (organic waste) will not only provide an efficient way for resource recovery, but will also substantially reduce the pressure and pollution in Landfill sites.

Collection Deficiencies

The following measures have been recommended for improving the primary collection practices of Kolar.

- Phased implementation of 'Door to Door collection System' through community organizations by mobilizing, facilitating, organizing and supporting community activities with the help of local NGOs.
- Installation of 'Community Storage Bins' in areas where house-house collection cannot be implemented.
- Expanding the 'Voluntary Garbage Disposal Scheme' for more number of restaurants/hotels and commercial establishments.
- Placement of dumper containers sufficient in number at markets for ensuring that all the vendors place the waste in the containers.
- Persuading the hospitals / clinics to be part of the existing bio-medical waste management facility in the suburbs of the city.

It is recommended to collect Non-bio degradable waste separately from premises where door-to-door / kerb side collections are organized. Primary Collection system should be initiated by introducing Multi-bin carts (Push carts / Tricycles), semi mechanized systems like refuse collectors. Separate collection vehicles should collect the non-biodegradable waste stored in separate bin.

Secondary waste Collection & Transportation

Key information on vehicle movement and deployment is not clearly monitored by ULBs. In view of the criticality of this information in assessing the collection and disposal efficiency of the local body, it is recommended that a standard register at the disposal site and transfer station be maintained. The register should contain information on each of the vehicle trips at both the locations and the origin of waste collection. A summary of this information would be prepared at the end of the day, to be verified by the health officer. In order to address the collection gap, it is recommend procuring new vehicles, loaders and placers.

Processing & Disposal

The characteristics and quantity of solid waste generated in the city primarily influence the disposal options. Considering these aspects, it is recommended to develop a landfill site for safe disposal of solid waste of Kolar. The disposal strategies for Kolar will be to:

Compost the organic fraction of the waste

- Sanitary land filling of inorganic fraction of waste and the compost rejects
- Encouraging local level aerobic vermi composting
- Educating the community on 4R strategy (Reduce, Reuse. Recycle and Recover)
- The capital investment for the proposed interventions is presented in the investment plan.

6.4 Storm Water Drainage

6.4.1 Existing Drainage System

Downstream channel from Kaliyasot dam traverse through the town is the major drainage channel helps in draining the town during rainy season. In addition, Storm water also gets drained with the help of Abbas Nagar Nallah and Akbarpur nallah. To prevent water logging problems, Municipal council has constructed 130 meter RCC drain in Salaiya gram village, 150 meter RCC lining along Mandagini channel.

Further, Council has proposed 300 meter RCC drain in Gram Hinothiya and has plans to construct additional 200 meter lining work along Mandagini channel.

6.4.2 Major Water Bodies

There are two nallahs flowing through the city Abbas Nagar Nallah and Akbarpur nallah. Apart from these two nallah there are no major water bodies.

6.4.3 Primary, Secondary and Tertiary Drains

The Abbas nagar nallah, Akbarpur nallah and Kalyasot dam channel flowing through the town acts as a primary drains. The water from secondary and tertiary drains throughout the town is disposed off in these nallahs. The secondary and tertiary drains are majorly kutcha drains collecting the waste water from houses and disposing to primary drain and water bodies.

6.4.4 Flood prone areas

There are no flood prone areas as such in Kolar region as downstream channel from Kaliyasot dam traverse through the town is the major drainage channel helps in draining the town during rainy season.

6.4.5 Flooding in catchments of major nallah

As per the information provided by municipal officials, no major flooding is observed since past 15 years in any catchment area of nallahs.

6.4.6 Comparative Analysis with UDPFI, CPHEEO Guidelines

There are no guidelines for comparison storm water drainage but the estimations have been made on the basis of certain thumb rules and experience of the other cities.

Table 6-14 : Comparative guidelines for storm water drainage

Indicator	Benchmark	Status
Coverage of Storm Water Drainage Network	100%	Nil
Incidence of water logging/ flooding	Zero	Zero

6.4.7 SWOT Analysis

Strengths	**Weaknesses**
• No flood prone areas in the city • Natural slope towards nallah	• Primary drains contaminating the storm water collected through natural drainage system. • Disposal of solid waste into the nallah
Opportunity	**Threats**
• Scope for reuse and recycle of storm water drainage and its usage for water recharge of existing lakes	• Health hazards due to negligence for cleanliness • Lack of public awareness for use of polythene and its disposal in drains. • Availability of land for treatment and disposal

6.4.8 Issues

- Entire waste water has been flowing along with the primary drains through major nallahs thereby contaminating the storm water collected through natural drainage system.
- Disposal of solid waste in major nallahs causing the water logging and pollution of water.
- There is no recycle or reuse of storm water drainage for agriculture or other purpose

6.4.9 City Specific Strategies and action plan

- **Goals and service outcomes**

To enhance the coverage of storm water drains, following goals have been identified for different horizon years.

Table 6-15: Goals & Service Outcomes for Different Horizon Years

Sr. No.	Component	Horizon Period		
		2020	2030	2040
1	Network Coverage (Access)	50%	75%	100%
2	Recycle and Reuse	-	100%	100%
3	Recovery of O&M Costs	100%	100%	100%

- **Strategies**

Primary Drain Rehabilitation and Improvement Program

The drains are inadequate to handle the flash floods as they are not systematically designed and are not fully constructed in some sections. A significant reduction in depth and width are noticed due to situation and encroachment of drain bunds. To alleviate these, a rehabilitation and improvement program is recommended. The program would aim at the following:

- Improvement measures such as widening and deepening and construction of Sidewalls
- Construction of side walls to confirm to uniform cross-section in built up areas
- Diversion of drains at critical sections
- Construction of cross- drainage works

Conservation of Water Bodies

As discussed, conservation of water bodies is an immediate priority for Kolar. Though initiatives are being undertaken, a large-scale program is pertinent to restore the water bodies to their original shape and conserve them as recharge structures.

Protection of Environmental Resources

The first and foremost intervention is the protection of environmental resources. Protection of water bodies, waterways and open spaces from further encroachments would be carried out in a co-ordinated way.

6.5 Traffic and Transportation

6.5.1 Existing traffic and transportation scenario

Being the close proximity to Bhopal, the major traffic and congested road is the Kolar Road which is encroached by commercial and residential properties. Apart from main road (Kolar Road) there no major traffic in the Kolar town. Most of the traffic is towards Bhopal with para-transit and personal vehicle mode of transportation.

Encroachment on Kolar Road:

Kolar municipal council has carried out survey in order the estimate the encroached properties along the Kolar Road. The actual Right of Way (ROW) is 150 ft. Kolar Municipal council has done survey for 65ft right and 85 ft to the left from centre line of the road. The estimated numbers of encroachments are 140 Nos identified during the survey.

6.5.2 Agencies in traffic and transportation

The traffic system is regulated under the Bhopal district office of Madhya Pradesh Transport Department. The inter city public transport system is operated by private operators as there is no bus stand provision in Kolar.

6.5.3 Travel Characteristic

Kolar town is situated approximately 15 kms to the south of the Bhopal city. Kolar is well connected to the mother city Bhopal by Kolar road network. Bhopal is a transit point for travel between Indore, Sehore, Hosangabad, Raisen, Kolar, Vidisha and Sanchi. Two important National Highways NH-12 and NH-86 intersect each other at Bhopal connecting Jaipur, Jabalpur, Dewas and Raisen. Hence, Kolar due to its close proximity to Bhopal has very good regional road network connectivity.

Kolar itself has no railway link but is located nearer to two major railway junctions namely Habibganj at a distance of 7 Kms and Bhopal railway junction at a distance of 12.5 kms. Bhopal is an important rail junction in Central India, because of its location almost midway between Bangalore (South), Mumbai (West), Calcutta (East) and New Delhi (North).

Kolar is located at a distance of 20 Kms from Bhopal Raja Bhoj Airport. It is located 15 km north-west of Bhopal city on National Highway 12 connecting Bhopal to Jaipur.

6.5.4 Public Transport

Kolar is connected with Capital City, Bhopal by Mini buses and by local public transport buses but its frequency is quite low. Other than Mini buses, it is connected to Bhopal by para-transit systems. For Regional connectivity, it depends on Bhopal for all three modes of transport system (Bus, Rail and Air). However, the town requires more public transportation since the population is growing so haphazardly and rapidly.

6.5.5 Bus Stand infrastructure

Kolar has no bus stand infrastructure and it does not have any bus shelters on the kolar road.

6.5.6 Traffic Management and Circulation

- **City level road network**

The total road Length within Kolar Municipal area is 187.32 Km. Out of 187.32 km road length, 8.124 km is a kutcha pathway. In addition, 6.867 Km Kolar road passes through the town maintained by State Highways. Ward wise Road length and its indicators are shown below. Overall, Kolar has per capita road length (1.96 meters) more than the prescribed norm of 1.5 meters. Further, the town has insufficient road density i.e. 3.7 Km per Sq. Km.

Table 6-16 : Ward wise road details in Kolar Municipal area

Ward No	Road length in KM	Area in Sq.Km	Road length per Sq.Km	Population 2009	Per Capita Road length in meters
1	1.62	0.16	10.2	4921	0.33
2	3.82	0.19	20.4	4725	0.81
3	1.53	0.20	7.8	1333	1.15
4	0.83	0.08	10.6	5080	0.16
5	6.26	1.43	4.4	9764	0.64
6	1.21	0.29	4.1	2790	0.43
7	6.36	1.14	5.6	3526	1.80
8	4.60	0.10	44.3	5678	0.81
9	4.65	0.20	23.8	4409	1.06
10	9.77	0.99	9.9	5680	1.72
11	19.83	0.98	20.3	3402	5.83
12	11.83	0.65	18.3	12400	0.95
13	5.11	1.03	4.9	3375	1.51
14	3.91	0.88	4.4	3426	1.14
15	7.28	0.27	26.8	2565	2.84
16	33.96	3.17	10.7	7040	4.82
17	18.66	8.23	2.3	2205	8.46
18	29.22	1.92	15.2	5761	5.07
19	10.16	1.69	6.0	5124	1.98
20	6.70	19.96	0.3	1357	4.94
21	0.00	6.63	0.0	1083	0.00
Total	**187.32**	**50.17**	**3.7**	**95644**	**1.96**
Kolar road length in Km			**6.867**		

Source: Area and road length computed from Kolar digitized map and ward wise population obtained from Solid Waste Management Detailed project Report for Kolar Municipal area

6.5.7 Inter City Transport

There is no public inter-city bus transport facility in the city of Kolar. Looking at the current scenario of occupation pattern there is no immediate need of intra-city bus transport as such for the Kolar city. But, as daily a large scale of working population is traveling towards Bhopal, Kolar is in immediate need of intercity bus transport system, either in assistance with the Bhopal municipal

council or initiated by urban local body itself, in order to provide flexible transport facility for commuters between Kolar and Bhopal.

6.5.8 Intermediate Public Transport

Kolar city working population depend upon the capital city of Bhopal, hence there is immediate need to provide effective transport facility from Kolar to Bhopal in order to reduce the congestion of private vehicles at Kolar Road. Kolar has no bus stand infrastructure and it has no bus shelters also on the Kolar road. Kolar is connected with Capital City, Bhopal by Mini buses and by local public transport buses but its frequency is quite low. Other than Mini buses, it is connected to Bhopal by para-transit systems. For Regional connectivity, it depends on Bhopal for all three modes of transport system (Bus, Rail and Air).

6.5.9 Parking Requirements

There is no provision of parking spaces at major commercial spaces causing congestion at major junction. The irregular parking is affecting width of major commercial roads reducing it to the narrow roads for traffic movement.

6.5.10 Present and Future Demand and Supply Gaps

Following table provides the information of present and future demand and supply gaps for roads in Kolar city. The road length demand has been estimated on the bases of 1.5 km of road length per capita.

Table 6-17 : Demand supply gap for roads

Particulars	2010-11	2015-16	2025-26	2035-36	2040-41
Kolar projected population	99628	122382	150653	185453	205761
Road network in Kms	**2010-11**	**2015-16**	**2025-26**	**2035-36**	**2040-41**
Existing road network in Kms	179.0	179.0	179.0	179.0	179.0
Road length demand in Kms	179.0	183.6	226.0	278.2	308.6
Gap in Kms	0.0	4.6	47.0	99.2	129.6

6.5.11 Comparative analysis with UDPFI, other guidelines

The demand and supply gap estimated above based on the Indian Road congress, service level benchmark of urban transport issued from ministry of urban development Government of India.

Table 6-18 : Comparative guidelines for roads

Type of Roads	Norms		Current Status	
	ROW	Carriage way	ROW	Carriage Way
Arterial Road	50-60 m	21 m	30 m	10 m
Sub-Arterial Road	30-40 m	14 m	20-25 m	3-7 m
Collector Street	20-30 m	10.5 m	10 m	3-5 m
Local Street	10-20 m	7.5 m	7-8 m	NA

During the visual survey of roads, there is absence of footpaths along the major roads as UDPFI mentioned that there is need of footpath of at least 1.5 m with capacity of 800 persons in both directions.

6.5.12 SWOT analysis

Strengths	**Weaknesses**
• Kolar road as major connectivity to the capital cit y of Bhopal •Huge potential to develop in terms of transport services	•Encroachment in Kolar road thereby narrowing it •Most of the roads are kutcha roads •Absence of organized para-transit and public transport facilities •No parking provisions
Opportunity	**Threats**
• Development along Kolar road •Intangible benefit for real estate sector along kolar road •PPP participation for parking and public transport services	•Encroachments along Kolar Road •Funds unavailability for road construction and maintenance

6.5.13 Issues

- Most of the roads are kutcha other than roads in close proximity to Kolar road.
- Town has no Bus stand and bus shelters.
- Town has inadequate public transport system
- Kolar road connecting Bhopal, the Capital City is narrow and encroached creating congestion and the road is in bad condition.
- Intersections are poor in geometrics.

6.5.14 Key Challenges

Kolar has inadequate public transport system combined with absence of Bus stand and bus shelters. The Main arterial road of Kolar connecting the capital

city Bhopal, is narrow and encroached creating congestion. Most of the roads in the town are Kutcha and in bad condition. The road intersections are poor in geometrics.

Given the complexity of the problem, it is evident that is isolated solutions directed at one or two facets such as building flyovers, road widening etc., will at best assuage the problem temporarily but will not be able tackle the problem comprehensively. Only a multifaceted approach duly integrating land use with transportation at the planning stage as a long term measure to structurally integrate this sector with the overall growth of the Urban Area will be able to give best benefits at least possible cost. It is felt that an overall vision and strategies for the sector formulated with concerted and sustained campaign duly addressing issues as under will be able to address transportation related problems comprehensively.

6.5.15 City Specific Strategies and Action Plans

- **Goals and service outcomes**

To improve the status of Transportation services in the city following goals have been identified for different horizon years.

Table 6-19: Goals & Service Outcomes for Different Horizon Years

Sr. No.	Component	Horizon Period		
		2020	2030	2040
1	Road network as a % of total area	10%	15%	15%
2	Share of Public Transport	50%	75%	100%
3	Traffic Management with signal provisions	100%	100%	100%
4	Sidewalks length to Total road length	50% of the requirement	75% of the requirement	100% of the requirement
5	Effective Parking policies	25% of the requirement	60% of the requirement	100% of the requirement
6	Road accidents	25% reduction	50% reduction	70% reduction

- **Strategies and Action plan**

- Short term measures including immediate trouble shooting actions and Traffic Management actions such as intersection improvement, signalisation etc., to be taken up regularly. These measures should be taken up on a continuous basis as the travel characteristics and loading of different links, intersections etc., and change very frequently owing to natural growth and changes in land use.
- Medium term action plan aimed at development of transport infrastructure over a perspective plan period of 5-10 years to bring about coordinated development among different components. These measures typically will include various infrastructure projects, which will be directed at network

improvements such as parallel roads, link roads, slip roads, bridges and Flyovers.

- Long-term action plan aimed at development of structure plan for the Urban Area with Transit as one of the lead components, which will direct the urban growth so as to bring about a structural fit between transit infrastructure and Urban Growth. This will also examine a comprehensive multi-modal public transit system to bring about the most optimal mix of commuting within the Urban Area and thus providing a sustainable transit solution.

6.6 Streetlighting

6.6.1 Existing Situation of Street Lights

Kolar has 1394 street lights positioned all over the Municipal area in which 1010 lights are 40 W tube lights, 210 lights are 250 W Sodium Vapor lamps and 174 lights are 150 W Sodium Vapor lamps. As a part of energy saving mechanism, Municipal Council has placed 3 timer switches and nearly 30 tube lights have electronic chokes. Total 6320 electric poles are in place all over the municipal area as indicated by the Municipal officials. As discussed earlier the present status of street lighting can be summarized as in the table.

Table 6-20 : Connected load details.

40 W Tube Lights		
Number of lamps	1010	nos
Wattage of each lamp	40	W
Total Load	40400	W
250 W Sodium Vapor Lamps		
Number of Lamps	210	nos
Wattage of each Lamp	250	W
Wattage of Ballast	30	W
Total Wattage of 1 lamp	280	W
Total Load	58800	W
150 W Sodium Vapor Lamps		
Number of Lamps	174	nos
Wattage of each Lamp	150	W
Wattage of Ballast	30	W
Total Wattage of 1 lamp	180	W
Total Load	31320	W
Total Connected Load	**130520**	**W**

6.6.2 Present and Future Demand and Supply Gaps

Demand Assessment for Kolar for current (2010-11), intermediate (2025-26) and ultimate year (2040-41) period under Street lighting sector has been worked out and is tabulated below.

Table 6-21 : Demand assessment for Street lighting sector

Street Lighting	2010-11	2015-16	2025-26	2040-41
Kolar existing lights	1394	1394	1394	1394
Road length in Kms	179.0	183.6	226.0	278.2
Street light demand @ 1 light per 30 m	5967	6119	7533	9273
Gap	4573	4725	6139	7879

6.6.3 Comparative Analysis with UDPFI

Following table provides the performance indicators for street lights estimated on the basis of norms and standards from certain experiences and thumb rules, as there are no UDPFI guidelines for street lights.

Table 6-22: Performance Indicators regarding Street Lighting

Indicators	Unit	Current status	Norms /Standards
Spacing between lamps (including kutcha roads)	Meters	128	30
Proportion of tube lights W.R.T to total	Percent	73	60
Proportion of high power fixtures W.R.T to total	Percent	27	40
Proportion of energy saving light fittings to total	Percent	2	100

Source : computed based on the data collected from Kolar Municipal council

6.6.4 SWOT analysis

Strengths	**Weaknesses**
• Huge scope for development in terms of street light services	• Large spacing of street lights • High consumption of light • Lack of street light service • Less staff for street light and fire fighting services
Opportunity	**Threats**
• Energy saving initiatives can be implemented • Energy auditing	• Power thefts through street lights • Lack of monitoring and regularization

6.6.5 Issues

- Spacing between lights is around 128 meters against the standard spacing of 30 meters
- 27% of the existing lights are high power consuming light fittings.
- Town has 6320 electric poles but only 1394 poles have light fittings.

6.6.6 City Specific Strategies and Action Plans

- ### Energy Efficiency Initiative

Increasing energy efficiency will assist the ULB's and municipalities in expanding infrastructure and improving services for public (especially in context of energy price increases), and shift activities to more sustainable directions. It generates environmental benefits through reduced emissions of greenhouse gases and local air pollutants. It also stimulates new services, creating value and local jobs. Improving energy efficiency both by reducing quantities of energy consumed and by changing processes, offers a powerful tool for achieving sustainable development by reducing the need for investment in energy infrastructure and by cutting fuel costs.

- ### Recommendations for Replacement of Street Lights

Replacement of 1010 40 W Tube light with 8W LED lights or 28 W T5 lights

The table below shows the investment analysis and payback for replacing the 300 nos 40 W tube lights.

Table 6-23 : Investment analysis and payback (40 W tube lights)

Sr. No.	Type of Fixture	Calculation	Unit	Tube light 40 W	LED 8 W	T5 28W
				[A]	[B]	[C]
1	Working Hours/Day	-	Hrs/Day/ Fixture	10	10	10
2	Power Consumption	-	KW/Day/ Fixture	0.4	0.08	0.28
3	Annual Power Consumption	[2] x 365	KW/Annum /Fixture	146	29.2	102.2
4	Power Saving	[A]-[B], [A]-[C]	KW/Annum/ Fixture	0	116.8	43.8
5	Total Nos of Fixtures		Nos	1010	1010	1010
6	Total Power Saving	[4] x [5]	KW/ Annum	0	117968	44238
7	Monetary Saving	3.10x [6]	Rs/ Annum	0	365700.8	137137.8
8	Life of Lamp	-	Years	2.2	12	5
9	Cost of Lamp	-	Rs/lamp	0	-	
10	Replacement Cost	[5] x [9] x 12/ [8]	Rs/12 Yrs	0		
11	Cost of Fixture	-	Rs/Fixture	1500	4500	3000
12	Total Cost of Fixtures	[5] x [11]	Rs	1515000	4545000	3030000
13	Maintenance Cost	-	%	10	0.5	0.5
14	Total	[12] x	Rs/12 Yrs	151500	22725	15150

Sr. No.	Type of Fixture	Calculation	Unit	Tube light 40 W	LED 8 W	T5 28W
	Maintenance Cost	[13]/ 100				
15	Maintenance Cost	[14]/12	Rs/Yr	12625	1893.75	1262.5
16	Salvage Value of HPSV Fixture @ 50%	[12A] x 0.5	Rs	-	0	
17	Net Investment	[10] + [12] – [16]	Rs	1515000	4546893.75	3030000
18	Net Saving	[7] - [15]	Rs/Annum	-	363807.05	135875.3
19	Payback Period	12 x [17]/ [18]	Month	-	149.98	267.60

Source: Analysis by consultants

Replacement of 174 Nos 150 W High Pressure Sodium Vapor with 55 W LED lights

The table below shows the investment analysis and payback for replacing the 174 nos 150 W HPSV lamps.

Table 6-24 : investment analysis and payback (150 W HPSV lamps)

Sr. No.	Type of Fixture	Calculation	Unit	HPSV 150 W	LED 55 W
				[A]	[B]
1	Working Hours/Day	-	Hrs/Day/Fixture	12	12
2	Power Consumption	-	KW/Day/Fixture	1.8	0.66
3	Annual Power Consumption	[2] x 365	KW/Annum/ Fixture	657	240.9
4	Power Saving	[A]-[B], [A]-[C]	KW/Annum/ Fixture	0	416.1
5	Total Nos of Fixtures		Nos	174	174
6	Total Power Saving	[4] x [5]	KW/Annum	0	72401.4
7	Monetary Saving	2.75x [6]	Rs/Annum	0	199103.85
8	Life of Lamp	-	Years	2.2	12
9	Cost of Lamp	-	Rs/lamp	0	-
10	Replacement Cost	[5] x [9] x 12/ [8]	Rs/12 Yrs	0	
11	Cost of Fixture	-	Rs/Fixture	6000	15000
12	Total Cost of Fixtures	[5] x [11]	Rs	1044000	2610000
13	Maintenance Cost	-	%	10	0.5

Sr. No.	Type of Fixture	Calculation	Unit	HPSV 150 W	LED 55 W
14	Total Maintenance Cost	[12] x [13]/ 100	Rs/12 Yrs	104400	13050
15	Maintenance Cost	[14]/12	Rs/Yr	8700	1087.5
16	Salvage Value of HPSV Fixture @ 50%	[12A] x 0.5	Rs	-	0
17	Net Investment	[10] + [12] – [16]	Rs	1044000	2611087.5
18	Net Saving	[7] - [15]	Rs/Annum	-	198016.35
19	Payback Period	12 x [17]/ [18]	Month	-	158.23

Source: Analysis by consultants

Replacement of 210 Nos 250 W High Pressure Sodium Vapor with 130 W LED lights.

The table below shows the investment analysis and payback for replacing the 210 nos 250 W HPSV lamps

Table 6-25 : investment analysis and payback (250 W HPSV lamps)

Sr. No.	Type of Fixture	Calculation	Unit	HPSV 250W	LED 130 W
				[A]	[B]
1	Working Hours/Day	-	Hrs/Day/Fixture	12	12
2	Power Consumption	-	KW/Day/Fixture	3	1.56
3	Annual Power Consumption	[2] x 365	KW/Annum/ Fixture	1095	569.4
4	Power Saving	[A]-[B], [A]-[C]	KW/Annum / Fixture	0	525.6
5	Total Nos of Fixtures		Nos	210	210
6	Total Power Saving	[4] x [5]	KW/ Annum	0	110376
7	Monetary Saving	2.75x [6]	Rs/ Annum	0	303534
8	Life of Lamp	-	Years	2.2	12
9	Cost of Lamp	-	Rs/lamp	550	-
10	Replacement Cost	[5] x [9] x 12/ [8]	Rs/12 Yrs	630000	
11	Cost of Fixture	-	Rs/Fixture	8000	32000
12	Total Cost of Fixtures	[5] x [11]	Rs	1680000	6720000
13	Maintenance Cost	-	%	10	0.5
14	Total Maintenance Cost	[12] x [13]/ 100	Rs/12 Yrs	168000	33600
15	Maintenance Cost	[14]/12	Rs/Yr	14000	2800
16	Salvage Value of HPSV Fixture @ 50%	[12A] x 0.5	Rs	-	840000

Sr. No.	Type of Fixture	Calculation	Unit	HPSV 250W	LED 130 W
17	Net Investment	[10] + [12] – [16]	Rs	2310000	5882800
18	Net Saving	[7] - [15]	Rs/Annum	-	300734
19	Payback Period	12 x [17]/ [18]	Month	-	234.73

From the above recommendations we can achieve a total savings of around 300745 KW per annum and monetary savings of Rs 8, 62,557 per annum.

6.7 Fire fighting services

Kolar municipal council provides the fire services in order to avoid anthropogenic hazards like fire etc. Two fire tenders have been purchased this year (2009-10) by Kolar Municipal Council.

6.7.1 Vehicle and Equipments for fire fighting and rescue operations

Municipal Council has purchased 2 fire tenders (one small and one big) for Rs. 13 lakhs. Other than this, Municipal council has one JCB and one Electric pole vehicle for debris removal and street light repairing respectively.

6.7.2 Operational Systems

Fire system is in complete operational system to control the anthropogenic hazard and fire mishap for Kolar Municipal Council. However, the urban local body requires the training and capacity building to improve the fire operational system in terms of manpower and management.

7 Socio-Economic Infrastructure

7.1 Health

7.1.1 Health Facilities

There are 7 hospitals and 11 dispensaries in Kolar. The total bed capacity in Kolar is 210 beds. The capacity of all the hospitals in Kolar and details are given as below. Kolar has no facilities for specialized healthcare facilities. For specialized healthcare people have to depend on Bhopal.

Table 7-1 : Existing health Facilities

Sr. no.	Name of Hospital	Ward No.	No of beds
1	Government Health centre	9	5
2	Anupam Hospital	11	15
3	Mishra Hospital	15	10
4	Harshiddhi hospital	10	40
5	Matruchaya Hospital	2	20
6	J. K. Hospital	10	100
7	Aadhale Netralya and Nursing home	10	20
	Total		**210**

Source: DPR for Solid waste management, Kolar Nagar Palika

Kolar has sufficient health infrastructure facilities to cater present population whereas it needs to be strengthened to cater the future population demand.

7.1.2 Basic Health Indicators

There is no information available in relation to basic health indicators specific to Kolar municipal council. Following table provides the health indicators of the state of Madhya Pradesh.

Table 7-2 : Basic Health Indicators

Health Indicator	Details
Number of births per 1000 population in given year	30.2
Number of deaths per 1000 population in given year	9.8
Infant mortality rate	82

7.1.3 Medical Facilities Provided By Municipal Body

There are no medical facilities provided by urban local body as of now. Kolar municipal council has proposed the hospital at Nayapura but the work has not been started yet.

7.1.4 Role of Municipal Council in Health Programs

The department of public health and family welfare is responsible for the health related factors in the state of Madhya Pradesh. This department organizes several health campaigns initiated by state and central government and monitors the health indicators of the state. Major role of the municipal council is to assist the state official in the health campaigning and awareness programmes launched for the citizens. However, basic health facilities are provided through district hospital in Bhopal and Public health Centres administered by Public Health and Family Welfare Department of State Government. Looking at the development of Kolar and its future growth prospects, it is important to initiate and strengthen the health facility services from municipal council itself to provide the effective health services to the citizens of Kolar.

7.2 Overall Education Facilities and Teachers in Town

Kolar has altogether 42 schools spread over 21 wards. The wardwise distribution of schools is listed below.

Table 7-3 : Existing health Facilities

Ward No	No of Schools	Ward No	No of Schools	Ward No	No of Schools
Ward no 1	2	Ward no 8	2	Ward no 15	4
Ward no 2	3	Ward no 9	2	Ward no 16	3
Ward no 3	4	Ward no 10	6	Ward no 17	3
Ward no 4	2	Ward no 11	4	Ward no 18	1
Ward no 5	2	Ward no 12	2	Ward no 19	2
Ward no 6	5	Ward no 13	2	Ward no 20	3
Ward no 7	2	Ward no 14	5	Ward no 21	3
				Total no of Schools - 62	

Source: Data compiled from DPR for Solid waste management, Kolar Nagar Palika

Out of 62 Schools, Kolar has one Government High school in Akbarpur and 4 middle schools in Beragadh, Salaiya, Hinothiya Alam and in Semrikala. Municipal area has 10 primary schools whose locations are listed below.

- Sarvadram A sector
- Sarvadram B sector
- Banjari
- Om Nagar

- Suhagpur
- Pipaliya Kesho
- Gram Chichli
- Doulatpur
- Inayatpur
- 610 quarters

In addition, Kolar has 3 Madarsas and one Mansarovar College.

7.2.1 Literacy Indicators

As Per census 2001, Literacy levels in Kolar Municipal area is lower than Bhopal urban district and MP state urban literacy levels. In Kolar Municipal area, 77 percent of total population (excluding 0-6 years of age) are literates of which male accounted for 85 percent and female accounted for 69 percent. Literacy levels in Kolar and its comparison with state urban and district urban figures are shown in table.

Table 7-4: : Literacy levels & comparison

Literacy levels	Total	Male	Female
Kolar	77.10	84.54	68.91
In Bhopal urban district	79.59	85.39	73.09
In MP state urban	79.39	87.39	70.47

Source : Census of India, 2001

7.2.2 Education Facilities Provided by Municipal Council

There are no educational facilities provided by Kolar Municipal Council. All the schools and colleges administered by state education department of Madhya Pradesh.

7.3 Recreational Facilities

Parks in approved layouts are under implementation in Sarvadram B sector and in Mandagini colony. Town has one community hall in Akbarpur in ward No. 16 and one market in Lalitha Nagar. New Municipal Office building is proposed in 1.28 hectares in ward No. 18. Kolar has two dams in its proximity but it lacks recreational facilities like child playgrounds, parks and water fountains etc.

Municipal Council has no Slaughter house, no commercial complexes for revenue generation, no Cinema halls for entertainment purposes.

7.3.1 Sports Facilities

At present, there are no sports facilities in Kolar town. A sports city is being constructed by ministry of sports and youth welfare, on 172 acres (0.70 km2) of land in Satgadhi, near the southern suburb of Kolar, and is expected to get completed by 2013. The project involves construction of an international cricket stadium, a tennis complex and an aquatic complex at par international

standards, accompanied by an indoor stadium with facilities for Basketball, Volleyball, Badminton, Gymnastics etc. as well as outdoor sports fields for Netball, Volleyball, etc. Administrative Buildings and hostels for players and coaches will also be constructed.

7.4 Comparative Analysis with UDPFI

7.4.1 Demand and Supply Gaps for Health Facilities

Following table provides the information on the comparative analysis with UDPFI guidelines and the demand and supply gap for social infrastructure in Kolar Municipal Council.

Table 7-5: Demand & supply gaps for health facilities

Particulars	2010-11	2015-16	2025-26	2035-36	2040-41
Kolar projected population	99628	122382	150653	185453	205761
HEALTH INFRASTRUCURE DEMAND					
Particulars	**2010-11**	**2015-16**	**2025-26**	**2035-36**	**2040-41**
Intermediate hospital demand	1	1	2	2	2
Intermediate hospital existing	1	1	1	1	1
Intermediate hospital Gap	**0**	**0**	**1**	**1**	**1**
No of dispensaries required	7	8	10	12	14
No of dispensaries existing	11	11	11	11	11
Dispensaries Gap	**-4**	**-3**	**-1**	**1**	**3**
No of beds existing	210	210	210	210	210
Bed req. @ 1 per 500 person	199	245	301	371	412
Bed requirements Gap	**-11**	**35**	**91**	**161**	**202**

7.4.2 Demand and Supply Gaps for Education

Table 7-6: Demand & supply gaps for education facilities

Particulars	2010-11	2015-16	2025-26	2035-36	2040-41
Kolar projected population	99628	122382	150653	185453	205761
No of primary schools existing	10	10	10	10	10
Demand for primary schools	20	24	30	37	41
Primary School Gap	**10**	**14**	**20**	**27**	**31**
Middle school	4	4	4	4	4
Higher Secondary School	1	1	1	1	1
No of higher secondary and middle schools existing	5	5	5	5	5
Demand for Higher Secondary schools	13	16	20	25	28
Higher Secondary School Gap	**8**	**11**	**15**	**20**	**23**
Existing colleges	1	1	1	1	1
Demand for colleges	1	1	1	1	2
Colleges Gap	**0**	**0**	**0**	**0**	**1**
RECREATIONAL FACILITIES DEMAND					
Parks in Hectares					

Particulars	2010-11	2015-16	2025-26	2035-36	2040-41
Area demand for recreational spaces in Hectares	139	171	211	260	288
Community Hall existing	1	1	1	1	1
Community hall demand	7	8	10	12	14
Gap	6	7	9	11	13

7.5 SWOT Analysis

Strengths	**Weaknesses**
• Potential to develop as health and education centre near to Bhopal • Political willingness to develop the sport city near to Kolar	• Town lacks sufficient number of bed capacity in hospitals • Insufficient number of primary and secondary schools • Inadequate recreational and public places • Less number of community halls • Absence of tourism facility or picnic spots
Opportunity	**Threats**
• PPP possibility in health and education sector • State government commitment for health and education services • Right of children for free and compulsory education act will provide free education for poor children • Community participation fund for social development	• High cost of health facilities by PPP may hinder health services to poor • Lack of monitoring and regularization • Inadequate implementation capacity

7.6 Issues

- Town has insufficient beds capacity
- Town has no Multi-specialty hospital and specialized health care facilities for which it depends on Bhopal.
- Town has insufficient primary and Higher Secondary schools
- Existing higher schools are predominantly middle schools which need to be upgraded.
- Town has inadequate recreational spaces like parks and multiplexes
- Town has inadequate community gathering halls
- Picnic spots like existing two dams are untapped for attracting tourists.

7.7 City Specific Strategies and Action Plans

Provision of health facilities in the city:

- Primary health centres and basic services like maternal hospital shall be established in Kolar, as citizens have to depend on health facilities at Bhopal for these facilities. Also the establishment of special treatment hospitals under the Municipal council in order to provide additional services apart from basic health services to the citizens of Kolar. Also there can be establishment of children hospital to monitor the infant mortality and morbidity rates.
- Establishment of municipal hospital will reduce the burden of the government hospital in Bhopal there by citizens need not be depend on the capital city for special treatment facilities.

Initiation of health campaign from municipal council

- Municipal council can initiate the different health campaigns throughout the year and create the public awareness for prevention of diseases especially during monsoon season.

Education facilities:

- There shall be the provision of primary and secondary education facilities from the Municipal council in order there by increasing the literacy rate of the city.
- Encourage the non governmental organization for education in slum region in order to provide affordability to slum children.

Literacy campaigning from municipal council:

- Municipal council shall initiate the literacy campaigning and spread the awareness of education especially in the slum region. Municipal council shall initiate the awareness programmes related to “Right to Education” and its importance to all citizens.

Effective funding pattern for Health and Education sector.

- Municipal council shall earmark the separate fund allocation for education and health services for effective administration of the these basic facilities.
- Municipal council can levy the health and education charge in order to provide efficient health and education services.
- Urban local body can initiate the Public Private Partnership model for education and health services with effective private sector participation.

8 Slums and Urban Poverty

8.1 Poverty in Kolar Town and Slum population

Kolar Municipal Council was formed in 2006. So far there is no survey conducted on the Poverty mapping of the town as well as mapping of the slums. There is not much information available regarding the slums and Urban poor in the town. However whatever information is available through secondary sources and through reconnaissance survey is discussed in following sections.

8.2 Slums in Kolar

As per the information given by municipal officials there are 13 slum pockets in Kolar whose details are shown below. However as per the observations of the Consultants the population of slums in the town is much higher than the below mentioned.

Table 8-1 : Slums and Slum Population in Kolar

S.No	Slums	Population
1	Damakheda - A	2356
2	Damakheda - B	570
3	Banskhedi	614
4	Hinotiya Alam	514
5	Gehunkehra	3682
6	OM NAGAR	323
7	Abbas Nagar	760
8	Akabarapur - 1	5236
9	Akabarapur - 2	958
10	Ambedkar Nagar	NA
11	Priyanka Nagar	NA
12	Slum no 12	NA
13	Slum no 13	NA
	Total	**15013**

Source: Data collected from officials at Kolar Nagar Palika

8.3 General Characteristics of the Slums

As per Census of India, the slum areas are broadly defined as :-

i. All specified areas in a town or city notified as 'Slum' by State/Local Government and UT Administration under any Act including a 'Slum Act'.

ii. All areas recognized as 'Slum' by State/Local Government and UT Administration, Housing and Slum Boards, which may have not been formally notified as slum under any act;

iii. A compact area of at least 300 persons or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities.

Following observation are derived from site visits of Slums in Kolar. There is no secondary information on the slums in Kolar.

8.4 Status of Slums

All the slums mentioned above section are notified slums. However as per the information provided by municipal officials 20% slums are illegal slums in Kolar.

8.5 Land Ownership and Tenure Status

Land ownership is the major concern for slum regions in the city. There 610 number of quarters resettled in the Abbasnagar, Omnagar, Maskhedi and Guhukheda regions.

8.6 Urban Basic Services in Slums

There is lack of basic services in the slum region of Kolar. There are 2000 slums properties are connected through soak pits and septic tanks. The water supply to the slum region is through tankers only. There are no public toilet facilities in slum regions. There are 610 new dwelling units settled at various region of Kolar city.

8.7 Social Security Schemes and Beneficiaries

There are some Social security schemes which are available to citizens of Kolar. These schemes are related to Pensions for Senior citizens, physically challenged and widows. Rs 150 per month is available as pension to the pensioners.

8.8 SWOT analysis

Strengths	**Weaknesses**
• Availability of funds for slums and urban poor • Resettlement of slums of Bhopal in Kolar with land tenure	• Large no. of burgeoning slums causing lack of sanitation service • Lack of social security

Opportunity	Threats
• Creating slum free cities through state and central policies on urban poverty	• Increasing no. of illegal slums • Health hazards • Threats to social security due to illiteracy and unemployment

8.9 Issues

- Slums are not yet documented for Housing and Infrastructure status assessment.
- The infrastructure status in slums is very poor and dismal.

8.10 City Specific Strategies and Action Plans

- ### Key Challenges

More than half of the population in Kolar living in slums, urban poverty is a major issue confronting the area. With constantly increasing influx of migrants the infrastructure facilities in slums is dismal.

- ### Poverty Reduction Strategic Plan

The goals formulated to achieve the vision are:

- All poor will have access to qualitative and affordable basic services
- 100 % literacy
- Universal access to primary health care and no one should die of preventable diseases
- Livelihood to all urban poor
- Affordable Housing

The strategy formulated for reducing poverty in Kolar area includes:

- Community empowerment
- Linking livelihoods to city's economy
- Development of housing through partnerships – PPP
- Formulation of Notification and De-notification Policy
- Relocation of slums located in hazardous and vulnerable Areas
- Provision of basic infrastructure - both physical (water, roads, sanitation and sewerage) and social infrastructure (clinics, schools, training facilities, etc).

9 Environmental Status

All living and non living things along with the surrounding atmosphere in an urban area constitutes urban environment. Ironically, all these three ingredients in the environment have the ability to cause effect over each other, even by slight change and process of cycle. Thus the intersection and overlap of the natural environment, the built and socioeconomic environment constitutes the urban environment.

9.1 Flora and Fauna

There were no records found regarding the flora and fauna in the region of Kolar Municipal Council.

9.2 Pollution Level (Air, Water, Soil)

Air Pollution: There were no records found for air pollution level at Municipal council level and no survey carried for monitoring the air pollution. But it can be observed that due to increase in vehicles and industrialization the pollution level is increasing severely. Kolar is hot in summer and cool in winter. Maximum average temperature in summer is 47 c & minimum average temperature in winter is 6 c. Summer nights are mainly cool and pleasant. The average annual rainfall is 1000 mm.

Water pollution: major source of drinking water is from ground water as the Kolar municipal council is providing the water through tankers to entire city of Kolar. Hence the ground water is decreasing severely and there is immediate need to monitor the ground water level of Kolar.

There have been no records found in Kolar municipal council regarding the water pollution in Kolar.

However as per the study conducted by Madhya Pradesh pollution control board, Kolar dam water is polluted by man made activities kinds, that is sewage waters and natural contaminants. Cu, Fe and Mn levels detected are 7.0,0.54 and 0.84 ppm respectively.

Soil Pollution: there were no records found in relation to the soil pollution in town. Kolar region is predominantly an agriculture region hence excessive use of fertilizers may contaminate the soil in the region. The geological formations underlying the Bhopal area are largely red sandstone strata, with the depth of the rock varying according to the slopes. The top portions of the hillocks

generally consist of hard red soil, mixed with basaltic boulders. Black cotton soil is seen at various depths from 1 to 3.0 m.

9.3 City Green Spaces

Open spaces are getting reduced due to encroachments and illegal construction due to the absence of proper planning documents to regulate the growth the development. Overall, Town has inadequate recreational spaces. There is lack of monitoring and regularization of green spaces in Kolar City.

9.4 Water Front Development and Conservation

Kolar town has inadequate supply of water in terms of quality and quantities. Kolar is still dependent on hand pumps and stand posts for drinking water even though it has sources like Kerwa dam located nearby. Kaliyasot dam once the source of irrigation up to Laharpur is now contaminated. Hills around this dam are mostly encroached by slum pockets.

Ground water sources are over exploited in Kolar due to absence of comprehensive water supply scheme by means of 2041 manual public hand pumps and private bore wells.

Kaliyasot dam and Shahpura Lake acts as a source for ground water recharge located nearer to Kolar Municipal area and it should be protected for improving the ground water recharge and in turn reducing the ground water extraction.

9.5 Urban Environment

9.5.1 Land Use

Town is witnessing haphazard growth due to the absence of proper development / Master Plan. Kolar in fact comes under the jurisdiction of Bhopal Planning area. However, Bhopal Master Plan released recently hasn't included Kolar Municipal area even though Kolar Municipal area was there in the draft master plan released for public comments and objections.

9.5.2 Anthropogenic hazards

In order to avoid anthropogenic hazards like fire, Municipal Council has purchased 2 fire tenders (one small and one big) for Rs. 13 lakhs. Other than this, Municipal council has one JCB and one Electric pole vehicle for debris removal and street light repairing respectively.

9.5.3 Urban Environment Quality

- **Access to water**

Kolar town has inadequate supply of water in terms of quality and quantities. Kolar is still dependent on hand pumps and stand posts for drinking water even though it has sources like Kerwa dam located nearby. Kaliyasot dam once the source of irrigation up to Laharpur is now contaminated. Hills around this dam are mostly encroached by slum pockets.

- **Availability of open spaces**

Open spaces are getting reduced due to encroachments and illegal construction due to the absence of proper planning documents to regulate the growth the development. Overall, Town has inadequate recreational spaces.

- **Access to sewerage and sanitation**

Kolar has no sewer network. Waste gets disposed either in community septic tanks or in individual septic tanks. Community Sanitation facilities are inadequate. Sewer lines laid here and there are ultimately draining the sewage into the natural drainage channels without treatment causing health hazards.

- **Waste Management systems**

Town has not adopted Door to Door waste collection system and waste segregation system due to absence of waste treatment plant in the disposal site. Collection efficiency is just 50% resulting in garbage pileup at the collection points and road side bins causing environmental pollution.

9.6 Existing Environmental Regulations

Table 9-1 Urban Environment Quality Check

Urban Environment Quality check	Parameters	Unit	Coverage	Norm
Access to drinking Water	Per Capita Supply	percent	8	135
Access to sewerage and Sanitation	Assessments having sewer connections	Percent	1	70
Waste Management system	Door-Door collection efficiency	Percent	Nil	100
Waste Management system	Waste Segregation efficiency	Percent	Nil	100
Waste Management system	Treatment plant capacity to waste generated (organic)	Percent	Nil	100

Source: Analysis based on the data collected from Kolar municipal Council.

9.7 SWOT Analysis

Strengths	Weaknesses
• No industrial pollution as of now • Scenic beauty at Kolar dam hence potential for tourism development • Low pollution level with respect to capital city of Bhopal • Good ambient air quality	• No environmental compliance system from urban local body • Lack of monitoring system for pollution control
Opportunity	**Threats**
• Clean air and surrounding can provide good potential for developing a livable city • State's policy implementation for ecotourism in Kolar and surrounding region.	• Lack of public awareness regarding environment management • Increasing population and unhygienic practices

9.8 Issues

- There is no environmental compliance system at municipal council level
- Lack of air, water and soil pollution monitoring causing the health hazards to the citizens.
- Waste management is not as per SWM rules causing pollution.
- Inadequate Recreational spaces for citizens of Kolar.
- Public health is under threat due to absence of basic infrastructure facilities.

9.9 City Specific Strategies and Action Plans

- In order to control the environmental pollution, Municipal council shall initiate the awareness campaigns for plantation and other pollution control strategies.
- Municipal council can set the environmental monitoring kit at major junction where the vehicle traffic is very high, in order to monitor the air and noise pollution.
- Water pollution can be monitored by conducting regular water quality testing of ground water samples and the level of the same.
- There is need of municipal level policy for urban greening of the town with review and monitoring provisions.

10 Heritage and Conservation

10.1 Heritage Structures

There are no as such heritage structures under the jurisdiction of Kolar municipal council. Kolar town is having the famous historical monuments of archeological importance at Kolar Dam.

10.2 Existing Heritage Regulations

At present there is no state archeological legislation for heritage structure in the state of Madhya Pradesh. The important heritage structures are directly under archeological survey of India. However different state authorities have provided certain provision for heritage structure preservation in the state of Madhya Pradesh. Town and country planning act- 1973 and Bhumi Vikas Niyam have provided the legal provisions to protect and preserve the heritage structures in the state of Madhya Pradesh.

10.3 Heritage Issues

There is need to identify and locate the heritage structure in and around Kolar region in order to provide potential to the tourism sector of the region.

10.4 Tourism Potential of Kolar

There is no tourism potential in Kolar but only the Kolar dam provides the tourism attraction to the Kolar region. Apart from Kolar Dam there is no major tourism potential in the Kolar municipal council jurisdiction.

10.5 Possibility of Tourism Circuits at Regional Level

Kolar itself has no tourist destinations whereas it has some tourist spots in its proximity.

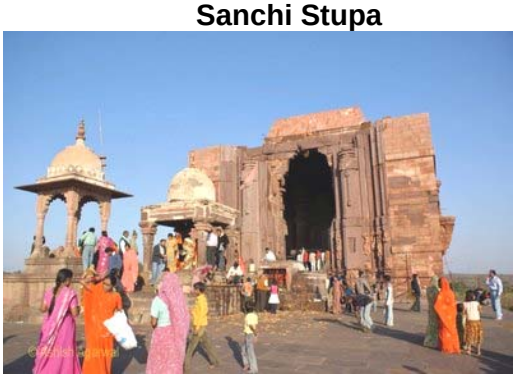
Table 10-1 Tourist spots around Kolar

S. No.	Place	Distance from Municipality	Specialty
1	The Upper Lake	15 Km	The city of lakes
2	Kerwa Dam	5 km	Picturesque picnic spot
3	Sanchi stupa	74 Km	Buddhist Monuments

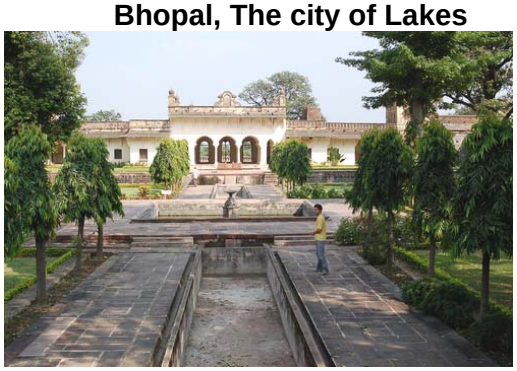
S. No.	Place	Distance from Municipality	Specialty
4	Bhojpur	26 Km	Remains of magnificent Shiva Temple and Cyclopean dam dated 1010-53 A.D.
5	Bhimbetka	46 kms	A world heritage site exhibiting the earliest traces of human life in India;
6	Islam Nagar	21 Kms	Chaman Mahal built by an Afghani king

Sanchi Stupa

Bhopal, The city of Lakes



Bhojpur temple



Islam Nagar

10.6 Comparative Analysis with UDPFI Guidelines

There are no comparative guidelines available for tourism and heritage structure. However, the analysis has been done for the tourism and heritage structure based on the other cities experiences and certain assumptions.

10.7 SWOT analysis

Strengths	Weaknesses
• Close proximity to capital city of Bhopal	• Absence of any heritage structure • Lack of infrastructure for tourism • No identification of tourism spots
Opportunity	**Threats**
• PPP for tourism • State's policy implementation for ecotourism in Kolar and surrounding region.	• Lack of public awareness regarding tourism potential

10.8 Issues

- Town has not identified its heritage and tourism potential.
- Kolar town has no support infrastructure provisions for surrounding tourism place in Bhopal.

10.9 City Specific Strategies and Action Plan

- Kolar city can Identify tourism potential in and around the Kolar region and provide the supporting infrastructure for surrounding tourism regions like Bhopal.
- The Kerwa dam is nearest tourist spot which can be tapped for developing the tourism potential in the surrounding region.
- Kolar itself has no tourist place but being the its close proximity to capital city of Bhopal, Kolar can provide supporting infrastructure in terms of Hotels and resorts to the tourists coming in Bhopal.

11 Institutional Framework

Kolar Municipal Council consists of 21 wards and has a 21 member elected council and a President. The administrative wing is headed by the Chief Municipal Officer. The total number of permanent staff in Kolar Municipal Council is only 4.

11.1 Kolar Municipal Council Structure

11.1.1 Organization

The Executive wing is headed by the Chief Municipal Officer. There are seven departments in Kolar Municipal Council. They are:

- Sanitation
- Lok Nirman (PWD)
- Water Supply Department
- Fire Department
- Revenue Department
- Sanitation Department
- Administrative Department

However only there are only four permanent staff in Kolar Municipal Council. They are:

- Chief Municipal Officer
- Accounts Officer
- Revenue Inspector
- Sub Engineer

11.1.2 Staff Strength

Only four positions are filled in Kolar Municipal Council and the Council is in the process of inducting additional staff on permanent basis. The present staff and the positions proposed to be filled in the near future are presented below.

Table 11-1: Present Staff Strength

Sr. No.	Designation	Total sanctioned posts	Filled posts	Vacant posts
A	General Administration			
1	Chief Municipal Officer	1	1	-
2	Chief Accountant	1	1	-
3	Cashier	1	-	1

Sr. No.	Designation	Total sanctioned posts	Filled posts	Vacant posts
4	Typist	3	-	3
B	Revenue Department			
5	Revenue Sub-Inspector	1	1	-
6	Assistant Revenue Inspector	2	-	2
7	Typist	1	-	1
9	Bill Collectors	15	-	
C	Fire Department			
10	Driver	3	-	3
11	Fire Man	3	-	3
12	Line Man	4	-	4
13	Electrician	8	-	8
D	Lok Nirman (PWD)			
14	Sub Engineer	1	1	-
15	Assistant Engineer	2		2
16	Typist	1		1
17	Time Keeper	2		2
18	Clerk	1		1
E	Water Supply Department			
19	Water Supply Officer	1		1
20	Pump Operator	7		7
21	Typist	1		1
22	Line Man	6		6
F	Sanitation Department			
22	Sanitary Inspector	1	-	1
23	Sanitary Worker	4	-	4
24	Sweeper	50	-	50

Source: compiled from data collected from Kolar Municipal Council

Except for the 4 permanent employees all the departments are managed by temporary workers.

11.1.3 Functions of Various Departments

Kolar Municipal Council has 7 departments. The functions of each of the departments are presented below:

- **Water Supply Department**

The water supply department is responsible for supply of water to the residential and non-domestic connections. However about 400 connections are only provided by the Municipal Council. 99% of the water supply is provided through water tankers.

- **Sanitation Department**

Kolar Municipal council has temporary staff strength of 2 sanitary inspector, 4 Darogha, 12 head sweepers and 126 conservancy workers, involved in road sweeping and solid waste collection. 12 temporary workers are involved in waste transportation and disposal which includes 3 drivers and 9 conservancy workers. In addition, 1 supervisor and 16 workers are temporarily engaged by the Kolar Municipal Council for sewer cleaning.

- **Lok Nirman (PWD) Department**

This department is headed by a Sub Engineer. This department is responsible for undertaking all construction work viz. roads, drainage and buildings.

- **Revenue Department**

This department is headed by a Revenue Sub Inspector. This department is responsible for collection of taxes, fees, rentals and other revenue of the Municipal Council. The Revenue Sub Inspector is supported by bill collectors who are temporary workers.

- **Fire Department**

Responsible for street lighting and fire safety. All the staff of this department are temporary workers.

- **General Administration Department**

This department is responsible for the miscellaneous day to day administrative functions in the Municipal Council. The Chief Municipal Officer is the head of this department and also all other departments. The Accounts wing also falls under this department. The Accounts wing is responsible for upkeep and maintenance of all the accounts of the Municipal Council. The Accounts wing is headed by the Chief Accountant and is assisted by peons who are temporary workers.

11.2 Institutions Responsible for Service Delivery

The Municipal Council is responsible for planning and design, construction and operation and maintenance of all infrastructure services viz. water supply, roads, solid waste management, storm water, street lighting and fire fighting services. The Public Health Engineering Department (PHED) if required deputes their staff for implementation of water supply schemes in Municipal Council. The

Town and Country Planning Department is responsible for preparation of development plans for the various municipal areas.

11.2.1 Town and Country Planning Department

Town and country planning department of Madhya Pradesh has been governed under the Housing and Environment department and enacted by Madhya Pradesh Town and Country Planning act 1973. This department provides the planning functions of regional and urban regions as per the rules mentioned under Madhya Pradesh Land Development Rules, 1974. Main functions are preparation of Development Plan and its modification. Apart from this it prepares regional development plan, monitoring and enforcement of various schemes such as integrated development of small and medium towns and urban infrastructure development scheme for small and medium towns.

11.2.2 Development Authority

Development authorities in Madhya Pradesh are incorporated by the government of state of Madhya Pradesh in 1973 in place of city improvement trust under town and country planning act. It is the implementing agency of development plan prepared under T & CP department. The major task of this authority is construction of residential/ housing societies but along with it has undertaken the several development projects like construction of roadways, traffic square areas lakes and gardens.

11.2.3 Public Health Engineering Department

Public health engineering department is one of the major department of the state of Madhya Pradesh as it is not only directly responsible for the provision of the public health but also carries the water supply and sewerage and sanitation projects in entire state. Major infrastructure projects under urban infrastructure are implemented by public health engineering department both in the urban and rural areas.

It has been divided into three zones, Kolar city comes under the Bhopal region of public health engineering department. But after 74th constitutional amend Kolar municipal council shall carry the entire urban infrastructure provision to the citizens under its jurisdiction including capital projects, Operations and Maintenance. Public Health Engineering Department provides the technical assistance to Kolar Municipal Council.

11.2.4 Madhya Pradesh Housing Board

Madhya Pradesh Housing Board was established under Madhya Pradesh Griha Nirnam Mandal Adhiniyam, 1972. the major objective of Madhya Pradesh Hosing Board is to monitor and satisfy the housing demand in the state. It

carries the functions like building housing colonies with efficient infrastructure. Housing Board also constructs the commercial, retail and other types of buildings for Health, Education and cultural activities. Madhya Pradesh Griha Nirman Manal Regulation, 1998, State Housing and Habitat Policy 2007 are the major act and policy which govern department.

11.2.5 Madhya Pradesh Pollution Control Board

The Madhya Pradesh Pollution Control Board has been vested with considerable authority and responsibility under various environment legislation to prevent the pollution. M.P. Pollution Control Board presently looks after the implementation of following Acts:

- Water (Prevention & Control of Pollution) Act,1974
- Water (Prevention & Control of Pollution) Cess Act, 1977
- Air (Prevention & Control of Pollution) Act, 1981
- Environment Protection Act ,1986 (certain sections)
- Public Liability Insurance Act, 1991

The main objective of M.P. Pollution Control Board is to maintain water, air and soil in healthy and usable condition for various purposes. There are 10 Regional Offices, 4 Sub Regional, 3 Single Window System,2 Monitoring Centre equipped with trained personnel and sophisticated instruments, are constantly keeping watch on environmental activities in the state to attain the objectives.

Major functions of the boards are to reduce, control and monitor the state environmental pollution in terms of air, water and soil. Also it provides several consents for industries to establish and operate in order to maintain the environmental compliance within the state.

Kolar Municipal Council is directly accountable to the Bhopal regional office in terms of drinking water quality standards at source, intermittent and consumer level.

11.3 Role of Private Sector in Infrastructure Service Provision

There is no role of private sector in service provision or infrastructure creation at Kolar. The role of private sector is restricted to social sector – Education and Healthcare. Even outsourcing of activities such as street light provision, solid waste collection and transportation which are common among small municipal councils is not practiced at Kolar.

11.4 Issues

- Large number of vacant post represents there is inadequate staff in Kolar municipal council.
- Lack of co-ordination between different departments of state and Kolar municipal council for administration and regulation of functions and services.
- Absence of training and capacity building for staff in order to improve the service delivery to the citizens.

11.5 Prioritised Action Plan

Though it is imperative to implement all the reform measures mandated under the JnNURM scheme, the areas that require immediate attention are mentioned below:

11.5.1 Property assessment

Survey of properties need to be carried out as an immediate priority to bring all the properties within the municipal council under tax assessment. Properties which are currently exempted from payment of taxes need to be brought under the tax umbrella.

11.5.2 Survey of assets

Survey and valuation of assets shall bring in accountability and also in aiding migration to double entry accounting system. It will also help the municipal council in exploiting the land bank and also in raising funds from external sources.

11.5.3 Improvement in collection efficiency and cost recovery

The collection efficiency and cost recovery for services is very low in Kolar. This will act as a dis-incentive for the municipal council to undertake new projects to improve service delivery. Hence, the collection efficiency need to be drastically improved coupled with imposition of reasonable rates for each of the services provided by the municipal council for long term financial sustainability.

11.5.4 Municipal Capacity Building

Capacity Building needs to focus on all the stakeholders to cover areas of policy facilitation, system of restructuring, organisation development, and training and knowledge management.

The general experience with municipal management in India has been that there is a vast pool of personnel of municipal employees but most of them lack proper education and training for doing justice to their functional responsibilities. Today management of complex urban living is an astounding

task requiring a host of qualified personnel. Effective management depends upon adequate availability of administrative, professional and technical personnel.

Capacity building is a process of acquiring new ideas and knowledge to strengthen an organization's vision, structure, direction and talent and enable it to contribute to common goals. In the case of ULBs, capacity building is expected to make the administrative machinery more efficient, accountable, people-friendly, responsive and transparent with a view to improve the delivery of services to the people.

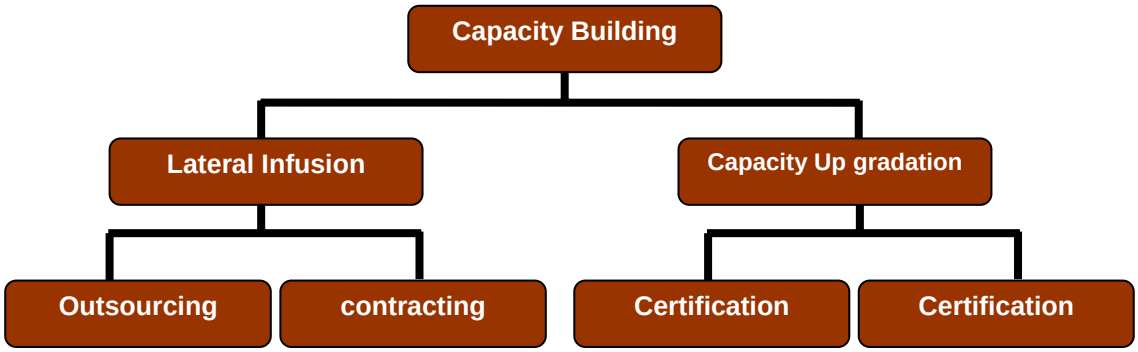
The two important components of capacity building are:

1. Human Resource Development: A progressive enhancement of latent capabilities and talents; establishment of optimal staffing incentives, structures and appropriate monitoring and development of skills to ensure the organization's growth from within to achieve its objectives.
2. Training: Systematic instruction and practical experience in a profession or occupation with a view to achieving the greatest proficiency in it.

Based on our understanding of the sector, capacity building of ULB needs a holistic approach beyond regular training to include strengthening of:

- Managerial capacity: Recruitment, performance appraisal, day-to-day operations, efficiency, accountability, responsiveness.
- Technical capacity: Improved skills, to perform regular functions and to design and implement new projects.
- Financial capacity: Resource generation, investment efficiency, rules, regulations.
- Institutional capacity: Institutional arrangements, organizational reforms and restructuring, autonomy.

Capacity Building Approach for Kolar Municipal Council.



11.5.5 Additional strategies

- Initiate and implement e-governance
- Capacity building through training programmes

- The municipal council must develop proper indicators for evaluating their performance.
- Need to develop systems for information collection and dissemination.
- The focus of municipal council should be on delivery of public services.
- Property mapping of the existing development and updation from time to time

12 Investment Plan and Financial Strategies

For a city to have sustainable growth and development, its financials should be sound and self sustaining with minimum dependence on grants/ external sources. Kolar is a newly established Municipal Council formed in 2006. Hence, in this Chapter the Municipal finances of Kolar for the last two years i.e. 2008-09 and 2007-08 have been reviewed. The problem areas requiring immediate attention have also been highlighted.

12.1 Financials of Kolar for last two years

The Financials of Kolar Municipal Council for two years i.e. 2007-08 and 2008-09 is presented in the Table below.

Table 12-1 : Municipal Finances of Kolar (in Rs. Lakhs)

Sr. No.	Particulars	2007-08	2008-09
Income Heads			
A	**Municipal taxes and rates**	**44.20**	**176.77**
1	*City Development surcharge*	0.00	34.57
2	*Property tax*		
a	Total of Dues of last year	18.20	49.10
b	Collections in the present year	17.51	42.56
3	*Integrated tax*	5.70	17.15
4	*Water tax*	0.54	28.44
5	*Other taxes*	2.25	4.95
B	**Receipts under Special Acts**	**0.00**	**0.02**
C	**Income from other sources**	**31.81**	**85.85**
1	Water deposits and other fees	0.00	9.87
2	Building construction permission fees	6.28	9.31
3	Development charges	21.10	46.61
4	Other non-tax income	4.42	20.06
D	**Grants and Aids/contribution**	**298.71**	**541.79**
1	Octroi	99.67	100.79
2	Road construction/Repairs/Special	9.73	78.07
3	Basic	100.35	50.00
4	State Finance Commission	21.94	20.02
5	12th Finance commission	8.45	25.36

Sr. No.	Particulars	2007-08	2008-09
6	Community participation/MP/MLA fund	22.87	94.02
7	Slum development/ Slum Housing project	9.08	69.73
8	Water crisis	9.00	27.50
9	Social Security/Old age pension/National Family Pension scheme	9.91	30.34
10	Other grant and aid	7.71	45.96
E	**Miscellaneous**	**2.85**	**128.62**
1	Stamp duty collections	0.00	125.48
2	Others	2.85	3.14
F	**Extraordinary and Loans**	**6.45**	**22.51**
	Total Income	**384.01**	**955.56**
	Opening Balance	**17.79**	**50.21**
	Grant Total	**401.81**	**1005.77**
Expenditure Heads			
G	**General Adminstration and collection**	**22.17**	**33.02**
H	**Public conveniences/facilities**	**15.08**	**67.33**
1	Fire fighting	0.00	7.02
2	Street lighting	15.08	60.31
I	**Public Health and facilities**	**198.39**	**249.41**
1	Water Supply	106.03	133.76
2	Sanitation	77.99	97.71
3	Other facilities	14.37	17.94
J	**Public works**	**88.88**	**304.88**
1	Roads and drains	77.86	288.79
2	Buildings	1.64	1.63
3	Other public works	9.37	14.46
K	**Community/Public education**	**9.56**	**121.44**
1	Slum up gradation	0.00	76.43
2	Pension (Social security)	0.00	21.48
3	Other community facility expenses	9.56	23.53
L	**Miscellaneous**	**7.20**	**38.38**
M	**Extra ordinary and Loans**	**10.33**	**22.21**
	Total Expenditure	**351.60**	**836.67**
	Surplus/ Deficit	**32.41**	**118.89**
	Closing Balance	**50.21**	**169.09**

Source: Compiled from Municipal Accounts, Kolar Municipal Council

Kolar Municipal Council has shown surplus funds in the last two years. The revenue has grown at 149% in the year 2008-09 over the previous year. The expenditure too has grown at 138% in the year 2008-09 over the previous year. It may be noted that since Kolar is a newly formed Municipal Council the past two year financial trend will not reflect the potential revenue in the coming years.

12.2 Analysis of Revenue Income

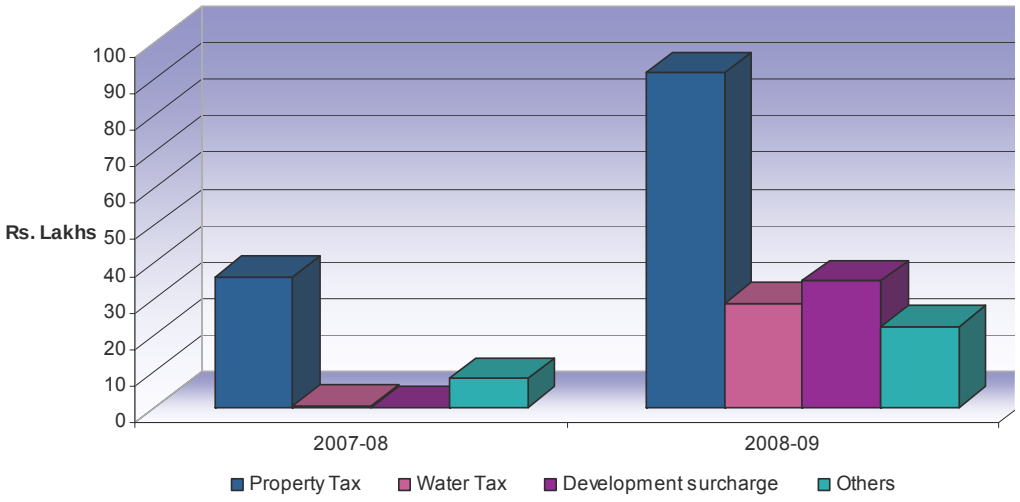
Municipal taxes, non-tax revenues, loans and grants are the different sources of revenue for Kolar Municipal Council. The analysis of revenue under the various heads in the last two years is presented below.

12.2.1 Municipal Taxes

Municipal Taxes account for only 18% of the total income of Kolar Municipal Council (KMC) for the year 2008-09. This is attributed to the non-assessment of all the properties in the Municipal Council area, non imposition of taxes for the services and poor service delivery. The Municipal taxes levied include:

- Property Tax
- Water Tax
- City Development surcharge and
- Others – Integrated tax, vehicle tax, education surcharge etc.

Figure 12-1 : Municipal Taxes



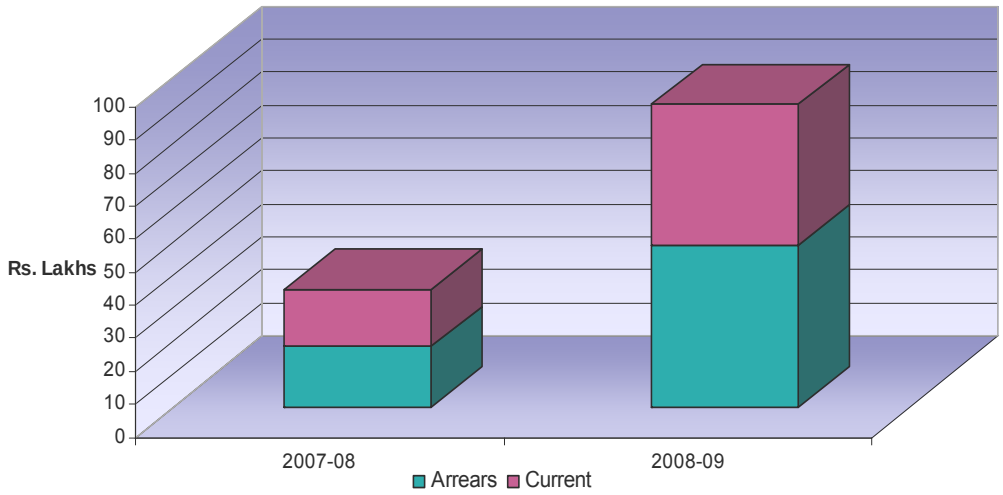
Source: compiled from Municipal Accounts, Kolar Municipal Council

Property tax accounts for 52% of the municipal taxes, while water tax and development tax account for 16% and 20% of the municipal taxes respectively for the year 2008-09.

- **Property tax**

The Municipal Council is carrying out survey of the properties within the municipal area to bring all the properties within the tax assessment. Property tax is levied at the rate of 1% of rental value for residential properties and 2% of the rental value for commercial properties.

Figure 12-2 : Arrear and Current Property Tax Collection



Source: Compiled from Municipal Accounts, Kolar Municipal Council

As seen from the Figure above it is clear that there is a delay in the recovery of property tax. The ratio of arrear collection to current demand collection for the on an average is 53:47 for the last two years which shows that there is a consistent delay in recovery of current year demand raised every year.

- **Water tax**

At present there is no separate tax on water supply. However, charges are collected for water supply through tankers to various wards. The water charges collected for the year 2008-09 is Rs. 28.44 lakhs.

- **Integrated tax**

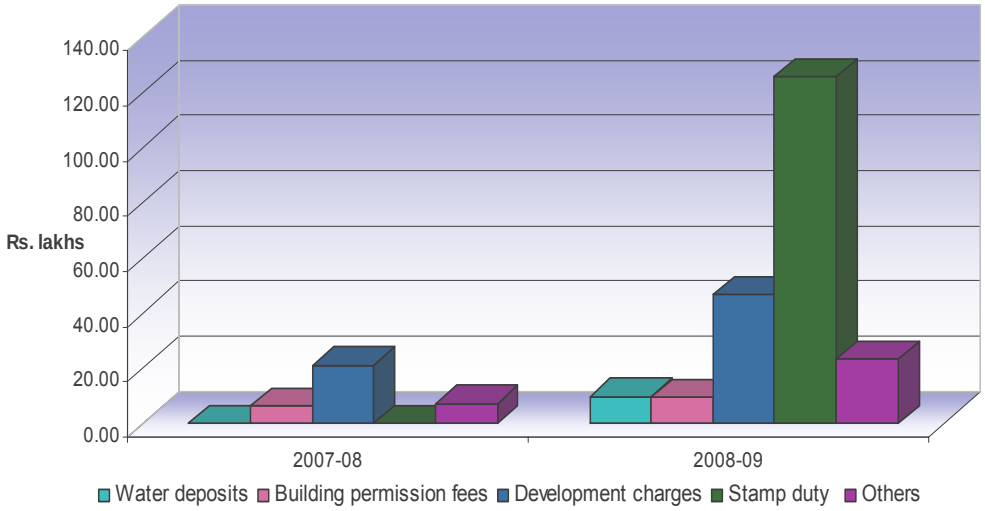
Tax towards street lighting, fire fighting and sanitation is levied at the rate of Rs. 150 per year is levied on all the properties.

12.2.2 Non-Tax Income

The non-tax incomes of Kolar Municipal Council include the following:

- Development charges
- Water deposits
- Shop rent
- Other income comprising advertisement fee, contractor deposit etc.

Figure 12-3 : Non-tax Income



Source: Compiled from Municipal Accounts, Kolar Municipal Council

- **City Development charges**

City Development charges are one time charges on the property. They are levied at the rate of Rs. 2 per Sq. Ft for residential properties and Rs. 4 per Sq. Ft for commercial properties.

- **Others**

Other income includes Education cess, water charges, advertisement fee and Bazaar fees. Education cess is levied at the rate of 2% of the property tax and it accounts for 4% of the municipal taxes for the year 2008-09. Advertisement fee is levied at the rate of Rs. 75/ Sq. m for the hoardings.

Kolar Municipal Council collects charges for installation of new water connections, rain water harvesting and meter installation. Kolar Municipal Council also levies charges towards new building construction permission. Stamp duty accounts for 59% of the non-tax revenue of Kolar Municipal Council for the year 2008-09.

12.2.3 Municipal Revenue Income

The revenue of Kolar Municipal Council has been grouped under the heads tax income, non-tax income, transfers including grants, loans and other capital receipts as follows:

Table 12-2 : Municipal Revenue of Kolar (Rs. Lakhs)

Revenue heads	2007-08	2008-09
Tax	44.20	176.77
Non-tax	34.65	214.49
Transfers including grants	298.71	541.79
Loans	10.33	22.21

Source: Compiled from Municipal Accounts, Kolar Municipal Council

Grants and transfers account for about 57% of the total income for the year 2008-09 while municipal taxes account for only 18% of the total revenue. The revenue from taxes needs to be enhanced in the coming years.

12.3 Analysis of Revenue Expenditure

The analysis of expenditure under the various heads in the last two years is presented below.

Revenue expenditure of Kolar Municipal Council can be broadly brought under the following heads:

- Establishment (wages and salaries)
- Operation and maintenance
- Extraordinary and loans

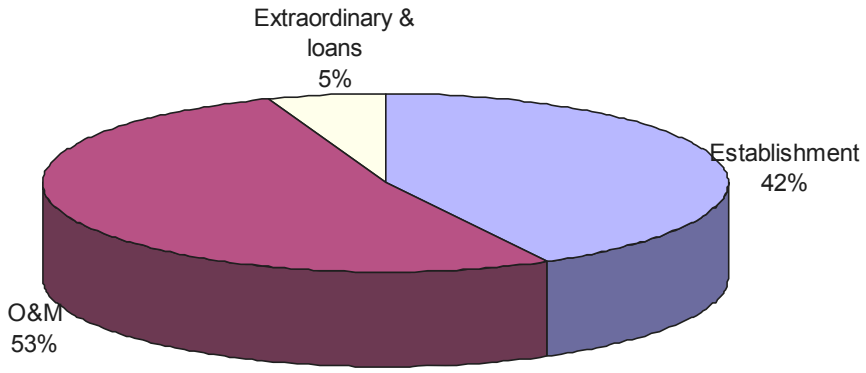
Table 12-3: Revenue Expenditure of Kolar (in Rs. Lakhs)

Revenue Expenditure	2007-08	2008-09
Establishment	94.12	157.85
Operation and maintenance	85.47	225.86
Extraordinary and loans	10.33	22.21
Total	**189.91**	**405.92**

Source: compiled from Municipal Accounts, Kolar Municipal Council

Revenue Expenditure accounts for about 51% of the total expenditure on an average for the period between 2007-08 and 2008-09.

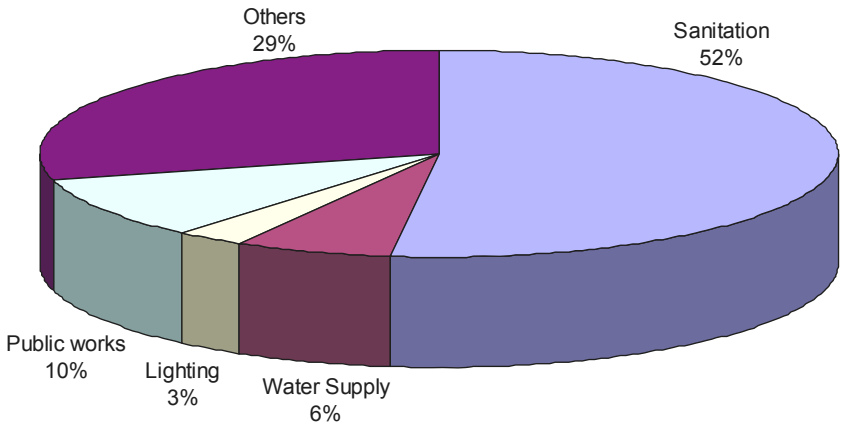
Figure 12-4 : Average break-up of Revenue Expenditure



12.3.1 Establishment (wages and salaries)

Establishment expenses account for 42% of the revenue expenditure on an average for the period between 2007-08 and 2008-09. Salary expenses of sanitation department and public works department accounts for 52% and 10% of the total salary expenditure respectively. Salary expenditure of councilors, other staff, park, library etc. accounts for 29% of the total salary expenditure.

Figure 12-5 : Average break-up of Salary Expenditure



Source: compiled from Municipal Accounts, Kolar Municipal Council

12.3.2 Operation and maintenance

Operation and maintenance expenditure accounts for about 52% of the revenue expenditure on an average for the period between 2007-08 and 2008-09.

12.3.3 Others

Other expenditure includes loans, advances, advertisement expenditure and accounts for 5% of the total revenue expenditure for both 2007-08 and 2008-09.

12.4 Capital Income

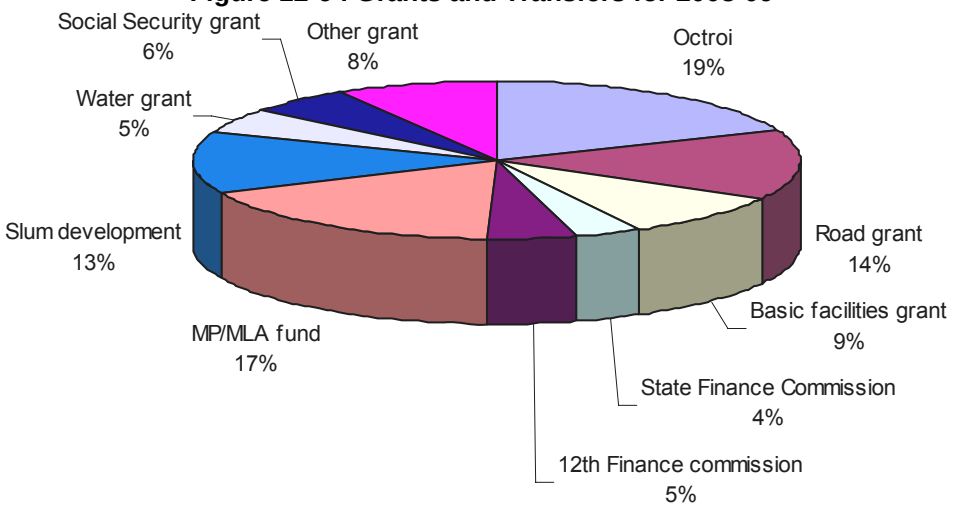
12.4.1 Grants including transfers

Grants account for about 78% and 57% of the total income of the Municipal Council for the years 2007-08 and 2008-09 respectively. The various grants and transfers to the Municipal Council are:

- Octroi grant
- Basic grant

- Road maintenance grant
- State Finance Commission
- 12th Finance Commission
- MP/ MLA fund
- Slum development grant
- Water supply grant
- Social Security/Old age pension/National Family Pension scheme
- Others

Figure 12-6 : Grants and Transfers for 2008-09



Source: compiled from Municipal Accounts, Kolar

- **Octroi grant**

Octroi accounts for about 19% of the total grants to the Municipal Council for the year 2008-09.

- **Basic Facilities grant**

This grant being provided to the ULBs primarily for sanitation and solid waste management accounts for 9% of the total grant of the Municipal Council for the year 2008-09.

- **Road Maintenance grant**

This grant being provided to the ULBs primarily for new road construction and maintenance of roads. Road maintenance grant accounts for 14% of the total grant of the Municipal Council for the year 2008-09.

- **State Finance Commission grant**

State Finance Commission grant account for 4% of the total grant of the Municipal Council for the year 2008-09. The State Finance Commission grant is provided to ULBs to meet their capital and O&M expenditure.

- **12th Finance Commission grant**

The 12th Finance Commission grant is provided by the Central Government to the ULBs through the State Government. The grant accounts for 5% of the total grant of the Municipal Council.

- **Slum Upgradation grant**

Kolar received Rs. 69.73 lakhs towards rehabilitation of slums for the year 2008-09 and it accounted for 13% of the total grant of the municipal council.

- **Other grant**

Other grants include MP/ MLA grant, water grant, social security grant and they account for 17%, 5% and 6% of the total grant respectively for the year 2008-09.

12.4.2 Loan details

Kolar Municipal Council has availed loan from banks and institutions for funding capital works and purchase of assets. The loan details are as follows:

Municipal Council has availed advance of Rs. 25 lakhs from All India Local Self Government (AILSG) for water supply pipeline. The loan and interest amount will be directly deducted from the Octroi.

The Municipal Council has availed a loan of Rs. 8.3 lakhs for purchase of three tractors. The loan is repayable in 36 Equated Monthly Installment (EMI) beginning December 2007. The loan is obtained from SBI, Indore at 15.75% rate of interest.

The Municipal Council has also availed loan of Rs. 15.83 lakhs towards purchase of fire fighting vehicle and sky ladder for street lighting in February 2008. The rate of interest is 14.75% and the loan is repayable in 36 months.

12.5 Capital Expenditure

12.5.1 Level of aggregate investment in urban infrastructure

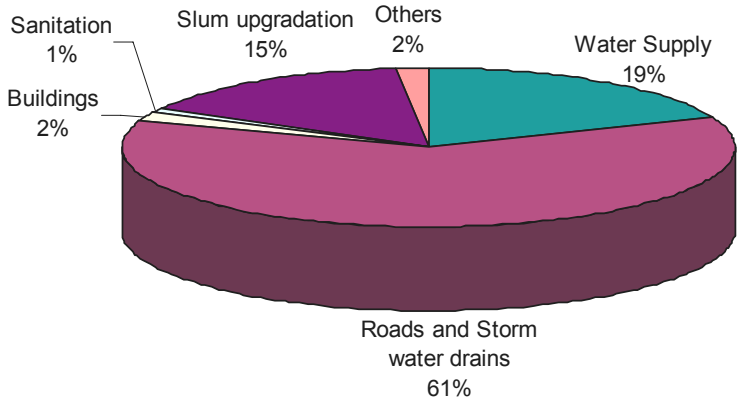
Expenditure on capital works account for about 49% of the total municipal expenditure of Kolar Municipal Council for the year 2007-08 and 2008-09. The capital expenditure is towards road construction, water supply, storm water drain, building works and slum rehabilitation. The break-up of capital expenditure for the last five years is as follows:

Table 12-4: Expenditure on capital works (in Rs. Lakhs)

Capital works	2007-08	2008-09	Sector-wise total
Water Supply	67.86	43.59	111.45
Roads and Storm water drains	77.55	287.99	365.54
Buildings	1.64	8.82	10.46
Sanitation	4.61	0.19	4.81
Slum upgradation	1.34	90.33	91.67
Others	8.68	0.56	9.24
Total	**161.68**	**431.48**	**593.16**

Source: compiled from Municipal Accounts, Kolar Municipal Council

Figure 12-7 : Capital expenditure sector-wise for the last two years



Source: compiled from Municipal Accounts, Kolar Municipal Council

12.6 Key Financial Indicators

For a municipal council to undertake additional capital works, improve service delivery and to be financially sustainable it should be able to achieve 100% recovery of the costs incurred towards provision of water supply, sewer, sanitation, street light and other services.

12.6.1 Water Supply

There is no tax on water supply. However, charges are collected towards supply of water in tankers. The cost recovery for provision of water supply is very low at 32% for the year 2008-09.

Table 12-5: Cost Recovery for water supply services (in Rs. Lakhs)

Water Supply	2007-08	2008-09
Cost incurred in service provision	38.17	90.17
Direct recoveries	0.54	28.44
% cost recovery	**1%**	**32%**

Source: compiled from Municipal Accounts, Kolar Municipal Council

From the above table it is clear that the municipal council need to take drastic measures to impose reasonable rates for water supply to improve cost recovery for water supply services in the coming years. It is expected that Municipal Council will levy fixed charges on properties for water supply once the scheme gets implemented.

12.6.2 Sanitation, Street lights and Fire

Municipal Council levies Rs. 150 per property per annum towards street light, sanitation and fire services. The cost incurred for provision of the above mentioned services and the revenue collected in lieu of the same shows that the direct cost recovery for the year 2008-09 is only 10%. For the year 2008-09 the tax collected is Rs. 17.14 lakhs while the cost incurred for the services is Rs. 166.19 lakhs.

Hence, Kolar Municipal Council needs to impose separate taxes for street lighting, sanitation at reasonable rates to ensure direct cost recovery for each of these services.

12.7 Key Issues and Conclusion

- Cost recovery is only 32% for water supply services and for other services it is 10% for the year 2008-09.
- No water tax is imposed and water charges are collected depending on supply of water through tankers.
- Survey of properties within the Municipal Council is presently underway and presently large number of properties within the Council is not assessed for tax collection.
- Grants and transfers account for about 57% of the total revenue while municipal taxes account for only 18% of the total revenue for the year 2008-09. The share of municipal taxes to the total income need to be improved.
- Capital expenditure is skewed towards road and storm water drain works and other infrastructure services requiring investments need to be considered.
- Salary accounts for 42% of the total revenue expenditure and the same need to be curtailed in the coming years.
- The expenditure on capital works is skewed towards road works and storm water drains which accounts for about 61% of the total capital expenditure in the last two years.

12.8 City Specific Strategies and Action Plans

The city specific strategies and action plans prepared after the analysis of demand and supply gap of all the sectors with consideration of population projection through out the phase periods. The city investment plan has been prepared for three periods (five years each) and investment has been prioritized in order to balance the financial capacity and major capital investment projects required for Kolar city development. Financial viability in terms of financial operating plan has been explained under next chapter of this report.

- **Capital investment Plan (C.I.P):**

Phase-wise capital investment plan has been shown in the table given below:

Table 12-6: Phase-wise city investment for Kolar (in Rs. Lakhs)

Sectors for City Investment Plan	A + B + C Estimated cost in lakhs	PHASE -A 2011-12to 2015-16	PHASE- B 2016-17 to 2025-26	PHASE -C 2026-27 to 2035-36
Water Supply	13285.16	5591.46	3317.70	4376.00
Sewerage & Sanitation	7365.52	3267.52	782.50	3315.50
Storm Water Drainage	11309.02	733.47	7630.55	2945.00
Solid Waste Management	784.09	359.62	140.23	284.23
Roads, Traffic and Transportation	7485.23	1474.89	2727.68	3282.67
Street Lighting	532.68	253.19	158.51	120.98
Socio-Economic Infrastructure	1040.00	372.50	592.50	75.00
Slums & Urban Poverty	1801.56	900.78	900.78	0.00
Total	**43603.26**	**12953.43**	**16250.45**	**14399.38**

Following table provides the list of projects phase-wise in details with the sectors of physical and social infrastructure, urban renewal and urban poverty.

Table 12-7: Phase-wise projects - physical and social infrastructure, urban renewal and urban poverty.

Sector - Physical Infrastructure	Project List	Phasing							Implementing Agency
		Estimated cost in lakhs	2011-12to 2015-16	2016-17 to 2020-21	2021-22 to 2025-26	2026-27 to 2030-31	2031-32 to 2035-36	2035-36 to 2040-41	
Water Supply	Proposed Water Supply Scheme	3668.0	3668.0	0.0	0.0	0.0	0.0	0.0	PHE/KMC
	Construction of additional OHT of 1.8 MLD for 2040-41 demand	180.0	0.0	0.0	0.0	0.0	180.0	0.0	PHE/KMC
	Laying new 87 Km distribution network by 2020-2021	3745.0	1872.5	1872.5	0.0	0.0	0.0	0.0	KMC
	Laying 62 Km between 2021-22 and 2030-31	2495.0	0.0	0.0	1247.5	1247.5	0.0	0.0	KMC
	Laying 62 Km between 2031-32 and 2040-41	2495.0	0.0	0.0	0.0	0.0	1247.5	1247.5	KMC
	Providing Water Meters to 5100 households by 2020-21	102.0	51.0	51.0	0.0	0.0	0.0	0.0	KMC
	Providing Water Meters to 14670 households by 2030-31	293.4	0.0	0.0	146.7	146.7	0.0	0.0	KMC
	Providing Water Meters to 15340 households by 2040-41	306.8	0.0	0.0	0.0	0.0	153.4	153.4	KMC
	Total for Water Supply Works	**13285.2**	**5591.5**	**1923.5**	**1394.2**	**1394.2**	**1580.9**	**1400.9**	
Sewerage and sanitation	Implement the U.G sewer system	772.5	772.5	0.0	0.0	0.0	0.0	0.0	PHE/KMC
	Laying additional 67 Km sewer network by 2020-21	2480.0	2480.0		0.0	0.0	0.0	0.0	KMC
	Creating Additional 9 MLD in treatment capacity by 2040-41	665.0	0.0	0.0	0.0	665.0	0.0	0.0	PHE/KMC
	Laying additional 40 Km sewer network between 2021-22 and 2030-31	1565.0	0.0	0.0	782.5	782.5	0.0	0.0	KMC
	Laying additional 48 Km sewer network between 2031-32 and 2040-41	1868.0	0.0	0.0	0.0	0.0	934.0	934.0	KMC
	Construction of 10 Public toilets (4 nos at ward 10, 3 nos at ward 9, 3 nos for ward 15)	15.0	15.0	0.0	0.0	0.0	0.0	0.0	KMC
	Total for Sewerage and Sanitation Works	**7365.5**	**3267.5**	**0.0**	**782.5**	**1447.5**	**934.0**	**934.0**	

Sector - Physical Infrastructure	Project List	Phasing							Implementing Agency
		Estimated cost in lakhs	2011-12to 2015-16	2016-17 to 2020-21	2021-22 to 2025-26	2026-27 to 2030-31	2031-32 to 2035-36	2035-36 to 2040-41	
Storm Water Drainage	Creating 26 Km Storm water drains by 2015-16	733.5	733.5		0.0	0.0	0.0	0.0	KMC
	Creating 240 Km Storm water drains by 2020-21	6770.6		6770.6					KMC
	Creating 61 Km SWDs between 2021-2022 and 2030-31	1720.0	0.0	0.0	860.0	860.0	0.0	0.0	KMC
	Creating 74 Km between 2031-32 and 2040-41	2085.0	0.0	0.0	0.0	0.0	1042.5	1042.5	KMC
	Total for Storm Water Drainage Works	**11309.0**	**733.5**	**6770.6**	**860.0**	**860.0**	**1042.5**	**1042.5**	
Solid Waste Management	Proposed Solid Waste Management Scheme	275.0	275.0	0.0	0.0	0.0	0.0	0.0	KMC
	Tractor trailor (5 nos) with capacity of 2 ton for SWM till year 2020-21	14.4	14.4	0.0	0.0	0.0	0.0	0.0	KMC
	Tractor trailor (5 nos) with capacity of 2 ton for SWM till year 2030-31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	KMC
	Tractor trailor (7 nos) with capacity of 2 ton for SWM till year 2040-41	0.0	0.0	0.0	0.0	0.0	0.0	0.0	KMC
	Compactor of 8 ton capacity for SWM till 2020-21 (1 nos.)	20.0	20.0	0.0	0.0	0.0	0.0	0.0	KMC
	Compactor of 8 ton capacity for SWM till 2030-31 (2 nos.)	20.0	0.0	0.0	20.0	0.0	0.0	0.0	KMC
	Compactor of 8 ton capacity for SWM till 2030-31 (3 nos.)	20.0	0.0	0.0	0.0	0.0	20.0	0.0	KMC
	Road sweepers (5 nos) for 2020-21 for mechanical road sweeping	37.5	18.8	18.8	0.0	0.0	0.0	0.0	KMC
	Road sweepers (6 nos) for 2030-31for mechanical road sweeping	45.0	0.0	0.0	22.5	22.5	0.0	0.0	KMC
	Road sweepers (8 nos) for 2040-41for mechanical road sweeping	60.0	0.0	0.0	0.0	0.0	30.0	30.0	KMC
	Household segregation bins of 143950 Nos from 2010-11 to 2020-21	36.0	18.0	18.0	0.0	0.0	0.0	0.0	KMC
	Household segregation bins of 271910 Nos from 2020-21 to 2030-31	68.0	0.0	0.0	34.0	34.0	0.0	0.0	KMC
	Household segregation bins of 428980 Nos from 2030-11 to 2040-41	107.3	0.0	0.0	0.0	0.0	53.6	53.6	KMC
	Procuring protective gears (gumboots, gloves and masks) for 180 nos workers once in 2 years	81.0	13.5	13.5	13.5	13.5	13.5	13.5	KMC
	Total for Solid waste Management Works	**784.1**	**359.6**	**50.2**	**90.0**	**70.0**	**117.1**	**97.1**	

Sector - Physical Infrastructure	Project List	Phasing							Implementing Agency
		Estimated cost in lakhs	2011-12to 2015-16	2016-17 to 2020-21	2021-22 to 2025-26	2026-27 to 2030-31	2031-32 to 2035-36	2035-36 to 2040-41	
Roads	Creating 26 Km new roads between 2010-11 and 2020-21,	585.0	292.5	292.5	0.0	0.0	0.0	0.0	PWD/KMC
	Implementation of road project (upgradation of existing municipal roads of Kolar)	492.1	492.1	0.0	0.0	0.0	0.0	0.0	PWD/KMC
	Creating 47 Km new roads between 2021-22 and 2030-31	1057.5	0.0	0.0	528.8	528.8	0.0	0.0	PWD/KMC
	Relaying existing 102 Km BT roads after every three years till 2020 (cosidering 50% roads as CC	775.2	387.6	387.6	0.0	0.0	0.0	0.0	PWD/KMC
	Relaying existing 126 Km BT roads after every three years till 2030 (cosidering 50% roads as CC	1596.0	0.0	0.0	798.0	798.0	0.0	0.0	PWD/KMC
	Relaying existing 154 Km BT roads after every three years 2040 (cosidering 50% roads as CC	1950.7	0.0	0.0	0.0	0.0	975.3	975.3	PWD/KMC
	Total of Road Works	**6456.4**	**1172.2**	**680.1**	**1326.8**	**1326.8**	**975.3**	**975.3**	
Traffic & Transportation	Creating new bus terminal for kolar (4 Acres)	435.6	0.0	435.6	0.0	0.0	0.0	0.0	MPSRTC/KMC
	Creating separate bus shelters along Kolar road (7 nos.) by 2020-21	14.0	14.0	0.0	0.0	0.0	0.0	0.0	MPSRTC/KMC
	Renovation of bus shelters during 2020- 2030	3.5	0.0	0.0	3.5	0.0	0.0	0.0	MPSRTC/KMC
	Renovation of bus shelters during 2030- 2040	5.3	0.0	0.0	0.0	0.0	5.3	0.0	MPSRTC/KMC
	Kolar Road improvement scheme (7kms)- creating the foothpath on both sides by 2020-21	140.0	70.0	70.0	0.0	0.0	0.0	0.0	KMC
	Kolar Road improvement scheme (7kms)- creating central median with landscaping by 2020-21	7.0	7.0	0.0	0.0	0.0	0.0	0.0	KMC
	Conversion of Kutcha road network 18.82 Km WBM into Pucca road network by 2020-21	423.5	211.7	211.7	0.0	0.0	0.0	0.0	KMC
	Total Traffic and Transportation	**1028.8**	**302.7**	**717.3**	**3.5**	**0.0**	**5.3**	**0.0**	

Sector - Physical Infrastructure	Project List	Phasing							Implementing Agency
		Estimated cost in lakhs	2011-12to 2015-16	2016-17 to 2020-21	2021-22 to 2025-26	2026-27 to 2030-31	2031-32 to 2035-36	2035-36 to 2040-41	
Street Lighting	Replacing 1010 tube lights of 40 W with 8W LED	45.5	45.5	0.0	0.0	0.0	0.0	0.0	KMC
	Replacing 150 W 174 Nos SVL with 55W LED	26.1	26.1	0.0	0.0	0.0	0.0	0.0	KMC
	Replacing 250 W 210 Nos SVL with 130W LED	58.8	58.8	0.0	0.0	0.0	0.0	0.0	KMC
	Installing 5430 8W LED from 2010-11 to 2020-21	245.6	122.8	122.8	0.0	0.0	0.0	0.0	KMC
	Installing 1580 8W LED from 2020-21 to 2030-31	71.5	0.0	0.0	35.7	35.7	0.0	0.0	KMC
	Installing 1885 8W LED from 2030-31 to 2040-41	85.3	0.0	0.0	0.0	0.0	42.6	42.6	KMC
	Total for Street Lighting	**532.7**	**253.2**	**122.8**	**35.7**	**35.7**	**42.6**	**42.6**	
Sector - Socio-Economic Infrastructure									
Parks and Playgrounds	Creation of 21 Parks/Playgrounds in all the wards (total 21 Nos)	105.0	52.5	52.5	0.0	0.0	0.0	0.0	KMC
Burial Ground Improvement	Improving infrastructure facilities in all Burial grounds (3 Nos)	30.0	15.0	15.0	0.0	0.0	0.0	0.0	KMC
	Gasifier Crematorium at one Burial ground	50.0	50.0	0.0	0.0	0.0	0.0	0.0	KMC
Daily and Weekly Market	Developing a new Weekly Market	50.0	50.0	0.0	0.0	0.0	0.0	0.0	KMC
Tourism Development	Tourism development in Kaliyasot Dam and Kolar Dam by creating check dams and recreational spaces and parks (grant from	80.0	80.0	0.0	0.0	0.0	0.0	0.0	Tourism
Slaughter House	Development of a new Slaughter House	100.0	100.0	0.0	0.0	0.0	0.0	0.0	KMC
Community Hall	Creation of one Community Hall every 5 years	150.0	25.0	25.0	25.0	25.0	25.0	25.0	KMC
Municipal Building	Development of New Municipal Building in 1.28 Ha land in Ward No. 18	225.0	0.0	225.0	0.0	0.0	0.0	0.0	KMC
Capacity Building	E-Governance	250.0	0.0	250.0	0.0	0.0	0.0	0.0	KMC
	Total for Socio Economic Infrastructure Works	**1040.0**	**372.5**	**567.5**	**25.0**	**25.0**	**25.0**	**25.0**	
Slums and Development	Housing Component	1801.6	900.8	900.8	0.0	0.0	0.0	0.0	KMC
	Total Slum Works (Slum Improvement scheme for slums (Approx Population: 15013))	**1801.6**	**900.8**	**900.8**	**0.0**	**0.0**	**0.0**	**0.0**	
Grand Total for all Infrastructure Works		**43603.2**	**12953.4**	**11732.8**	**4517.7**	**5159.2**	**4722.7**	**4517.5**	

13 Investment Prioritization Plan

13.1 Project Identification

Projects identified for each sector have been enlisted in the earlier chapter with phase wise manner of implementation. Project identification for Kolar City Development Plan has been made on the basis of future demand and supply gap analysis for each sector of physical and social infrastructure. Also for institutional strengthening the reforms related to urban governance also has been introduced under the urban renewal section.

Project identification has been done following sectors:

- Water supply
- Sewerage and sanitation
- Storm water drainage
- Municipal solid waste
- Roads
- Traffic and Transportation
- Streetlights
- Social-economic sectors
- Urban Renewal
- Slum Improvement

13.2 Basis for Project Identification

Identification of projects for Kolar city development has been done after future demand and supply gap analysis of physical and social infrastructure. After estimating the gap, in order to prioritize the projects for Kolar, consultants had several discussions with municipal officials and stakeholder through workshops and official meetings. After the discussion it has been concluded that the major area of sector for development is the water supply system of Kolar. As of now there is no reliable system of water supply for citizens of Kolar. Hence there is urgent need of capital investment for water supply scheme of Kolar. Apart from water supply, effective municipal solid waste management and basic sanitary services in slum regions have been identified on the basis of legal binding of Municipal solid waste handling rules 2000 and basic services to the urban poor.

Apart from future demand and supply gap analysis, the basis for project identification was the mandatory and optional reforms mentioned under the Jawaharlal Nehru National Urban Renewal Mission (JnNURM). These reforms were requiring in order providing the effective service delivery of basic services and management from urban local bodies the urban population.

13.3 Projects for System and Infrastructure Augmentation

Kolar being a newly formed Municipal council will require the immediate infrastructure augmentation projects especially in the sector of water supply and municipal solid waste management. Following list of projects will provide the infrastructure augmentation projects for development of Kolar city.

Table 13-1: projects for infrastructure augmentation

Sector	Projects
Water Supply	Proposed Water Supply Scheme
	Construction of additional OHT of 1.8 MLD for 2040-41 demand
Sewerage and sanitation	Implement the U.G sewer system
	Construction of 10 Public toilets (4 Nos at ward 10, 3 Nos at ward 9, 3 Nos for ward 15)
Solid waste management	Proposed Solid Waste Management Scheme
Roads, Traffic and Transportation	Creating 26 Km new roads between 2010-11 and 2020-21,
	Implementation of road project (upgradation of existing municipal roads of Kolar)
	Creating new bus terminal for Kolar (4 Acres)
	Creating separate bus shelters along Kolar road (7 nos.) by 2020-21
Street lighting	Installing 5430 8W LED from 2010-11 to 2020-21
	Installing 1580 8W LED from 2020-21 to 2030-31
	Installing 1885 8W LED from 2030-31 to 2040-41
Urban Poverty	Total Slum Works (Slum Improvement scheme for slums (Approx Population: 15013))

13.4 Projects for System and Infrastructure Refurbishment

Project identified for infrastructure refurbishment includes the relaying of roads, renovation of future bus terminals and replacing the existing street lights with energy savers. Following list provides the information on the projects under infrastructure refurbishment for Kolar City Development Plan.

Table 13-2: projects for infrastructure refurbishment

Sector	Project Component
Water Supply	Laying new 87 Km distribution network by 2020-2021
	Laying 62 Km between 2021-22 and 2030-31
	Laying 62 Km between 2031-32 and 2040-41
	Providing Water Meters to 5100 households by 2020-21
	Providing Water Meters to 14670 households by 2030-31
	Providing Water Meters to 15340 households by 2040-41
Sewerage and storm water drainage	Laying additional 67 Km sewer network by 2020-21
	Laying additional 40 Km sewer network between 2021-22 and 2030-31

Sector	Project Component
	Laying additional 48 Km sewer network between 2031-32 and 2040-41
	Creating 240 Km Storm water drains by 2020-21
	Creating 61 Km SWDs between 2021-2022 and 2030-31
	Creating 74 Km between 2031-32 and 2040-41
Solid waste management	Tractor trailer (5 Nos) with capacity of 2 ton for SWM till year 2030-31
	Tractor trailer (7 Nos) with capacity of 2 ton for SWM till year 2040-41
	Compactor of 8 ton capacity for SWM till 2020-21 (1 nos.)
	Compactor of 8 ton capacity for SWM till 2030-31 (2 nos.)
	Compactor of 8 ton capacity for SWM till 2030-31 (3 nos.)
	Road sweepers (5 Nos) for 2020-21 for mechanical road sweeping
	Road sweepers (6 Nos) for 2030-31for mechanical road sweeping
	Road sweepers (8 Nos) for 2040-41for mechanical road sweeping
	Household segregation bins of 143950 Nos from 2010-11 to 2020-21
	Household segregation bins of 271910 Nos from 2020-21 to 2030-31
	Household segregation bins of 428980 Nos from 2030-11 to 2040-41
	Procuring protective gears (gumboots, gloves and masks) for 180 Nos workers once in 2 years
Roads, Traffic and Transportation	Relaying existing 102 Km BT roads after every three years till 2020 (considering 50% roads as CC roads)
	Relaying existing 126 Km BT roads after every three years till 2030 (considering 50% roads as CC roads)
	Relaying existing 154 Km BT roads after every three years 2040 (considering 50% roads as CC roads)
	Renovation of bus shelters during 2020- 2030
	Renovation of bus shelters during 2030- 2040
	Conversion of Kutcha road network 18.82 Km WBM into Pucca road network by 2020-21
Street lights	Replacing 1010 tube lights of 40 W with 8W LED
	Replacing 150 W 174 Nos SVL with 55W LED
	Replacing 250 W 210 Nos SVL with 130W LED

13.5 Other Development Projects

Other development projects include the socio-economic infrastructure projects like development of recreational spaces, schools and hospitals, burial ground and tourism related development.

Table 13-3: other development projects

Sector	Projects
Socio-Economic	Creation of 21 Parks/Playgrounds in all the wards (total 21 Nos)
	Improving infrastructure facilities in all Burial grounds (3 Nos)
	Gasifier Crematorium at one Burial ground
	Developing a new Weekly Market
	Tourism development in Kaliyasot Dam and Kolar Dam by creating check dams and recreational spaces and parks (grant from Department of Tourism)
	Development of a new Slaughter House
	Creation of one Community Hall every 5 years
Urban Governance	Development of New Municipal Building in 1.28 Ha land in Ward No. 18
	E-Governance
Urban Poor	Slum Improvement scheme for slums (Approx Population: 15013))

13.6 Sector wise Project Identification and Costing

13.6.1 Water Supply

In order to address water scarcity problem in Kolar, Water supply scheme has been proposed and the project cost is Rs.36.67 crores for the entire scheme. This water supply scheme is proposed under the UIDSSMT scheme. The proposed scheme includes the construction of intake well of 17.50 MLD, rapid gravity filter plant of 11.95 MLD, water supply main of 7.3 km and feeder main of 95.644 km. also it has proposed the provision of OHT of 3 nos. with 4000KL capacity each.

Apart from above detailed project, as per the demand supply gap there shall be the construction of additional 87 km line of distribution network till 2020-21.

Table 13-4: Estimated Project Cost of various works under Water Supply

Sr. No.	Project List	Estimated cost Rs. Lakh	Implementing agency
1	Proposed Water Supply Scheme	3667.96	PHE/KMC
2	Construction of additional OHT of 1.8 MLD for 2040-41 demand	180	PHE/KMC
3	Laying new 87 Km distribution network by 2020-2021	1872.5	PHE/KMC
4	Providing Water Meters to 5100 households by 2020-21	51	KMC
	Total for Water Supply Works	**5771.46**	**KMC**

It is suggested that Council has to undertake water audit, energy audit and leak deduction studies to minimize Unaccounted Water Flow (UFW) and minimize the energy expenditure. The goals and service outcomes based on the proposed strategy for the horizon period is presented in Table below.

Table 13-5: Goals and Service outcomes related to Water Supply sector

Goals	2010-11	2020-21	2030-31	2040-41
Network Coverage	0%	80%	100%	100%
Access to piped water supply	0%	80%	100%	100%
Per Capita Supply (LPCD)	8	135	135	135
Hours of Supply	0	4 hours daily	24hours daily	24 hours daily
24x7 Water Supply	NIL	-	21 wards	21 wards
Quality of Water	NA	As per Stds	As per Stds	As per Stds
Non Revenue Water	50%	20%	15%	15%
O&M Cost Recovery (As on 2008-09)	32%	100%	100%	100%

Table 13-6: Project implementation schedule for water supply

Project list	Phasing				
	2011-12	2012-13	2013-14	2014-15	2015-16
Proposed Water Supply Scheme					
Construction of additional OHT of 1.8 MLD for 2040-41 demand					
Laying new 87 Km distribution network by 2020-2021					
Providing Water Meters to 5100 households by 2020-21					

To address the issue of system rehabilitation, mapping and establishing a GIS system is pertinent to detail out system location, characteristics, age and condition. This would enable identifying dilapidated sections of the network and those that require replacement.

13.6.2 Sewerage and Sanitation

Under Sewerage and Sanitation, Kolar Municipal council has already proposed the underground sewer project under UIDSSMT scheme. This scheme shall be implemented with the laying of 107.21 km UG sewer line, Providing STP in the form of aerated lagoons 16.875 MLD.

In addition to it there shall be the provision of community toilets for sanitation function in different parts of the Kolar Municipal Council. Following are the proposed location for the 10 nos. of community toilets:

Table 13-7: Provision of community toilets with cost

Sr no	number of community toilets	number of wards	Cost in Rs. Lakh	Implementing agency
1	4	10	6.0	KMC
2	3	9	4.5	KMC
3	3	15	4.5	KMC
Total	**10**	**34**	**15.0**	**KMC**

Table 13-8: Estimated Project Cost of various works under sanitation services.

Sr. No.	Project List	Total (2011-2016) Rs. In Lakh	Implementing agency
1	Implement the U.G sewer system	772.52	PHE / KMC
2	Laying additional 67 Km sewer network by 2020-21	2480.00	PHE / KMC
3	Construction of 10 Public toilets (4 nos at ward 10, 3 nos at ward 9,3 nos for ward 15)	15.00	KMC
	Total for Sewerage and Sanitation Works	3267.52	

Table 13-9: Goals and Service outcomes related to Sewer and sanitation services.

Goals	2010-11	2020-21	2030-31	2040-41
Network Coverage (Access)	0%	80%	100%	100%
Treatment and Disposal	0%	100%	100%	100%
Recycle and Reuse	0%	-	100%	100%
Recovery of O&M Costs	0%	100%	100%	100%
Public convenience facilities coverage	10%	75%	90%	100%

The project implementation for the community toilets and the underground sewer system will be for the initial two year as it should be implemented immediately. Following table represents the project implementation schedule for the sewer services.

Table 13-10: Project implementation schedule for Sewer and sanitation services

Project List	2011-12	2012-13	2013-14	2014-15	2015-16
Implement the U.G sewer system					
Construction of 10 Public toilets (4 Nos at ward 10, 3 Nos at ward 9, 3 Nos for ward 15)					
Utility Mapping					

13.6.3 Solid Waste Management

Kolar town generates around 29.48 metric ton of Garbage per day at the rate of 291 grams per capita per day. Waste is being collected in all the 21 wards but none of these wards have Door-Door collection and Waste segregation practices. Road side bins of 74 Nos have been placed all over the town, each having the capacity of around 3.5 ton for waste collection.

Currently in phase I (2010-11 to 2015-16), the following projects have been proposed to be implemented.

Table 13-11: Estimated Project Cost of various works under municipal solid waste management.

Sr. No.	Project List	Total (2011-2016) Rs. In Lakh	Implementing agency
1	Proposed Solid Waste Management Scheme	275.00	KMC
2	Tractor trailer (5 Nos) with capacity of 2 ton for SWM till year 2020-21	14.38	KMC
3	Compactor of 8 ton capacity for SWM till 2020-21 (1 Nos.)	20.00	KMC
4	Road sweepers (5 Nos) for 2020-21 for mechanical road sweeping	18.75	KMC
5	Household segregation bins of 143950 Nos from 2010-11 to 2020-21	17.99	KMC
6	Procuring protective gears (gumboots, gloves and masks) for 180 Nos workers once in 2 years	13.50	KMC
	Total for Solid waste Management Works	**359.62**	**KMC**

Table 13-12: Goals and Service outcomes related to Municipal solid waste management

Goals	2010-11	2020-21	2030-31	2040-41
Door to Door Collection	0%	100%	100%	100%
Source Segregation	0%	100%	100%	100%
Secondary Collection	30%	100%	100%	100%
Treatment & Disposal	0%	100%	100%	100%
Cost Recovery Mechanism	0%	100%	100%	100%
Private Sector Participation	NIL	Partial	Full	Full

The strategies to achieve the above mentioned projects and the proposed time frame are presented in Table.

Table 13-13: Project implementation schedule for municipal solid waste management

Project List	Phasing				
	2011-12	2012-13	2013-14	2014-15	2015-16
Proposed Solid Waste Management Scheme					
Tractor trailer (5 Nos) with capacity of 2 ton for SWM till year 2020-21					
Compactor of 8 ton capacity for SWM till 2020-21 (1 Nos.)					
Road sweepers (5 Nos) for 2020-21 for mechanical road sweeping					
Household segregation bins of 143950 Nos from 2010-11 to 2020-21					

Project List	Phasing				
	2011-12	2012-13	2013-14	2014-15	2015-16
Procuring protective gears (gumboots, gloves and masks) for 180 nos workers once in 2 years					

13.6.4 Roads, Traffic and Transportation

Kolar has no Comprehensive Traffic and transportation plan for managing the traffic and Transportation for present as well as for future years. Traffic Management measures adopted as on today would sustain only for a shorter period of time.

Kolar town is situated approximately 15 kms to the south of the Bhopal city. Kolar due to its close proximity to Bhopal has very good regional road network connectivity. Kolar is connected with Capital City, Bhopal by Mini buses and by local public transport buses but its frequency is quite low. Kolar has no bus stand infrastructure and it has no bus shelters also on the Kolar road.

Table 13-14: Estimated Project Cost of various works under Roads, Traffic and Transportation Works

Sr. No	Project List	Total (2011-2016) Rs. In Lakh	Implementing agency
1	Creating 26 Km new roads between 2010-11 and 2020-21,	292.50	KMC
2	Implementation of road project (up gradation of existing municipal roads of Kolar)	492.06	KMC
3	Relaying existing 102 Km BT roads after every three years till 2020	387.60	KMC
Total of Road Works		**1172.16**	KMC
4	Creating separate bus shelters along Kolar road (7 nos.) by 2020-21	14.00	KMC
5	Kolar Road improvement scheme (7kms)- creating the footpath on both sides by 2020-21	70.00	KMC
6	Kolar Road improvement scheme (7kms)- creating central median with landscaping by 2020-21	7.00	KMC
7	Conversion of Kutcha road network 18.82 Km WBM into Pucca road network by 2020-21	211.73	KMC
Total Traffic and Transportation		**302.73**	KMC
Total for Road, Traffic & Transportation		**1474.89**	KMC

Apart from the above mentioned works, the following are proposed to be implemented by 2039-40;

- Relaying 26 Km roads after every three years after its implementation

- Creating 47 Km new roads between 2021-22 and 2030-31
- Relaying existing 102 Km BT roads after every three years till 2020
- Relaying existing 126 Km BT roads after every three years 2030
- Relaying existing 154 Km BT roads after every three years 2040

Table 13-15: Goals & Service outcomes related to Roads, Traffic, Transportation

Goals	2010-11	2020-21	2030-31	2040-41
Road network (in Kms)	0	204.8	252.1	293.4
Traffic Management with signal provisions	0%	100%	100%	100%
Sidewalks length (in Kms)	0	102	189	293
Cost Recovery Mechanism	0%	100%	100%	100%
Private Sector Participation	NIL	Partial	Full	Full

The proposed time frame is presented in Table below.

Table 13-16: Project implementation schedule for Roads, Traffic and Transportation

Project List	2011-12	2012-13	2013-14	2014-15	2015-16
Creating 26 Km new roads between 2010-11 and 2020-21,					
Implementation of road project (upgradation of existing municipal roads of Kolar)					
Relaying existing 102 Km BT roads after every three years till 2020					

13.6.5 Street Lighting

The present Street Lighting infrastructure at Kolar consists of 40 W tube lights, 250 W and 150 Sodium Vapor lamps and high mast lamp. The following measures have been identified to be implemented in a phase wise manner up till 2040.

Installation of Energy Saver street lighting system in Kolar would ensure that the Municipal Council pays leaner electricity bills, and since the savings would have a direct effect on the economics of Kolar Municipal Council Accounts, the implementation has been suggested to be implemented in the initial years itself.

Following are the projects which are proposed to be implemented in the next 5 years;

Table 13-17: Estimated Project Cost for street lighting

Sr. No.	Project List	Total (2011-2016) Rs. In Lakh	Implementing agency
1	Replacing 1010 tube lights of 40 W with 8W LED	45.47	KMC
2	Replacing 150 W 174 Nos SVL with 55W LED	26.11	KMC
3	Replacing 250 W 210 Nos SVL with 130W LED	58.83	KMC
4	Installing 5430 8W LED from 2010-11 to 2020-21	122.79	KMC
Total for Street Lighting		**253.19**	

The strategies to achieve the above mentioned projects and the proposed time frame are presented in Table below

Table 13-18: Project implementation schedule for street lighting

Project List	2011-12	2012-13	2013-14	2014-15	2015-16
Replacing 1010 tube lights of 40 W with 8W LED					
Replacing 150 W 174 Nos SVL with 55W LED					
Replacing 250 W 210 Nos SVL with 130W LED					
Installing 5430 8W LED from 2010-11 to 2020-21					

13.6.6 Other Identified Projects

- **Socio-Economic infrastructure projects**

Socio-Economic Infrastructure works like creating new Parks and Playgrounds, construction of community hall, slum improvement works, Gassifier, renovation of slaughter houses, improving infrastructure facilities in burial ground sites, upgrading the daily and weekly markets and Tourism Development are proposed based on demand supply gap analysis, based on rapid urban assessment and on the basis of the suggestions given by review committee members.

Also the education and health infrastructure has been covered under these other projects, wherein the two higher secondary schools and one hospital have been proposed under the priority list of the project identification.

Table 13-19: Estimated Project Cost for socio-economic infrastructure

Project List		Total (2011-2016) Rs. In Lakh	Implementing agency
Parks and Playgrounds	Creation of 21 Parks/Playgrounds in all the wards (total 21 Nos)	52.50	KMC
Burial Ground Improvement	Improving infrastructure facilities in all Burial grounds (3 Nos)	15.00	KMC
	Gasifier Crematorium at one Burial ground	50.00	KMC
Daily & Weekly Market	Developing a new Weekly Market	50.00	KMC
Tourism Development	Tourism development in Kaliyasot Dam and Kolar Dam by creating check dams and recreational spaces and parks (grant from Department of Tourism)	80.00	KMC
Slaughter House	Development of a new Slaughter House	100.00	KMC
Community Hall	Creation of one Community Hall every 5 years	25.00	KMC
Total for Socio Economic Infrastructure Works		**372.50**	

Table 13-20: Project Implementation Schedule for socio-economic infrastructure

Project List	2011-12	2012-13	2013-14	2014-15	2015-16
Creation of 21 Parks/Playgrounds in all the wards (total 21 Nos)					
Improving infrastructure facilities in all Burial grounds (3 Nos)					
Developing a new Weekly Market					
Tourism development in Kaliyasot Dam and Kolar Dam by creating check dams and recreational spaces and parks (grant from Department of Tourism)					
Development of a new Slaughter House					
Creation of one Community Hall every 5 years					

- **Preparation of Master Plan / Area Development Plan**

Town is witnessing haphazard growth due to the absence of proper development / Master Plan. Kolar in fact comes under the jurisdiction of Bhopal Planning area. Bhopal Master Plan released recently hasn't included Kolar Municipal area even though Kolar Municipal area was there in the draft master plan released for public comments and objections. Either it shall be incorporated in the Bhopal master plan with proper provision or separate master plan or area development plans shall be prepared for the development of the Kolar region. However, in order to achieve the appropriate development with land use provisions, separate master for Kolar region shall be prepared which will incorporate the entire municipal council area and the surrounding growth centres, apart from Kolar itself.

Table 13-21: Estimated Project Cost for Master Plan/ Area Development Plan of Kolar region

Project List for Landuse and Growth Management	Estimated cost in lakhs	Implementing agency
Preparation of Master Plan/ Area Development Plan	50.00	T & CP Dept.

Table 13-22: Project Implementation Schedule for preparation of master plan/ area development plan of Kolar region.

Project List	Phasing				
	2011-12	2012-13	2013-14	2014-15	2015-16
Preparation of Master Plan/ Area Development Plan					

13.6.7 Slum Development for Urban Poor in Kolar

There 13 nos of slum pockets in Kolar with population of around 15013. As per the analysis for slums of Kolar, there is no documentation of slum households and infrastructure status in the slum areas. Also there is no BPL survey conducted yet. Meanwhile, there is need for the poverty mapping to analyze and heave the issues related to slum pockets of Kolar.

Following are the projects identified for slum development of urban poor in Kolar:

Table 13-23: Estimated Project Cost for Slum development in Kolar

Sr. No	Project List	Total (2011-2016) Rs. In Lakh	Implementing agency
1	Housing Component	900.78	KMC
Total Slum Works (Slum Improvement scheme for slums (Approx Population: 15013)		**900.78**	**KMC**

The project implementation schedule for the slum development for urban poor of Kolar shall be as follows:

Table 13-24: Project Implementation Schedule for slum improvement in Kolar

Project List	2011-12	2012-13	2013-14	2014-15	2015-16
Housing component					

13.7 City Investment Plan

Table 13-25: Capital investment plan phase wise for all sectors

Sector	Estimated cost in lakhs	2011-12to 2015-16	2016-17 to 2020-21	2021-22 to 2025-26	2026-27 to 2030-31	2031-32 to 2035-36	2035-36 to 2040-41
Water Supply	13285.2	5591.5	1923.5	1394.2	1394.2	1580.9	1400.9
Sewerage &Sanitation	7365.5	3267.5	0.0	782.5	1447.5	934.0	934.0
Storm Water Drainage	11309.0	733.5	6770.6	860.0	860.0	1042.5	1042.5
Solid Waste Management	784.1	359.6	50.2	90.0	70.0	117.1	97.1
Roads, Traffic Transport	7485.2	1474.9	1397.4	1330.3	1326.8	980.6	975.3
Street Lighting	532.7	253.2	122.8	35.7	35.7	42.6	42.6
Socio-Economic Infra	1040.0	372.5	567.5	25.0	25.0	25.0	25.0
Slums & Urban Poverty	1801.6	900.8	900.8	0.0	0.0	0.0	0.0
Total	**43603.3**	**12953.4**	**11732.8**	**4517.7**	**5159.2**	**4722.7**	**4517.5**
% share		**29.7**	**26.9**	**10.4**	**11.8**	**10.8**	**10.4**

13.8 Financial Operating Plan

The Financial Operating Plan (FOP) assesses the financial strength of the Council to implement the identified projects. The Financial Operating Plan (FOP) forecasts the municipal finances on the basis of certain assumptions on income and expenditure. The primary objective of the FOP is to ascertain the investment sustenance capacity of the council to undertake various projects.

13.8.1 Projection of Financial Statement

The analysis of the financials of Kolar Municipality is presented in earlier sections. Since Kolar Municipality came into being only in 2006, the financials

are available for only two years. The past trends in growth rates in revenue income and expenditure are assumed to continue over the next 5 years. No new revenue sources such as user charges for UGD etc. are envisaged under this scenario. Based on the past trends the projection of financials of Kolar Municipality is prepared for the period 2009-10 to 2015-16.

Table 13-26: Projected Financial Statement under "No Reforms" Scenario in Lakhs

SN	Particulars	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
i	**Income**							
A	Municipal Taxes and rates							
1	City Development Surcharge	47.52	48.95	50.41	51.93	53.48	55.09	56.74
2	Property Tax							
a	Arrears	52.54	56.21	60.15	64.36	68.87	73.69	78.84
b	Current	45.54	48.73	52.14	55.79	59.69	63.87	68.34
3	Integraged tax	18.35	19.64	21.01	22.48	24.05	25.74	27.54
4	Water Tax	31.28	34.41	37.85	41.64	45.80	50.38	55.42
5	Other taxes	5.45	5.99	6.59	7.25	7.97	8.77	9.65
B	Reciept under special acts	0.02	0.02	0.02	0.02	0.02	0.02	0.02
C	Income from other sources-(non tax income)							
1	Water Deposits & other fees	10.56	11.30	12.09	12.94	13.84	14.81	15.85
2	Building construction permission fees	10.24	11.27	12.39	13.63	14.99	16.49	18.14
3	Development charges	51.27	56.40	62.04	68.24	75.07	82.57	90.83
4	Other non tax income	21.06	22.12	23.22	24.38	25.60	26.88	28.23
D	Grants & aids/contribution							
1	Octroi	101.9	103.0	104.2	105.4	106.5	107.7	108.9
2	Road construction/Repairs/ Special	85.88	94.46	103.9	114.3	125.7	138.3	152.1
3	Basic	52.50	55.13	57.88	60.78	63.81	67.00	70.36
4	State finance commission	15.48	15.48	15.48	15.48	15.48	15.48	15.48
5	12th finance commission	27.90	30.69	33.75	37.13	40.84	44.93	49.42
6	Community participation/MP/ MLA fund	103.4	113.7	125.1	137.6	151.4	166.5	183.2
7	Slum development/Slum housing project	76.70	84.37	92.81	102.0	112.3	123.5	135.8
8	Water Crisis	30.25	33.28	36.60	40.26	44.29	48.72	53.59

SN	Particulars	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
9	Social Security/Old age pension/National Family Pension scheme	31.86	33.45	35.12	36.88	38.72	40.66	42.69
10	Other grant and aid	48.26	50.67	53.20	55.86	58.66	61.59	64.67
E	Miscellaneous							
1	Stamp duty collections	125.4	125.4	125.4	125.4	125.4	125.4	125.4
2	Others	3.30	3.46	3.63	3.82	4.01	4.21	4.42
F	Extraordinary and loans	23.64	24.82	26.06	27.36	28.73	30.17	31.67
	Total Income	**1020.4**	**1083.1**	**1151.2**	**1225.1**	**1305.4**	**1392.7**	**1487.6**
ii	**Expenditure**							
A	General administration and collection	36.32	39.95	43.95	48.34	53.18	58.50	64.35
B	Public conviniences and facilities							
a	fire fighting	7.51	8.04	8.60	9.20	9.85	10.54	11.27
b	Street lighting	66.34	72.98	80.27	88.30	97.13	106.84	117.53
C	Public health and facilities							
a	water supply	143.12	153.14	163.86	175.33	187.61	200.74	214.79
b	sanitation	104.55	111.87	119.70	128.08	137.04	146.64	156.90
c	other facilities	19.20	20.54	21.98	23.52	25.16	26.92	28.81
D	Public works							
a	Roads and drains	303.23	318.39	334.31	351.03	368.58	387.01	406.36
b	Buildings							
c	other public works	15.91	17.50	19.25	21.17	23.29	25.62	28.18
E	Community/public education							
a	Slum upgradation	80.25	84.26	88.48	92.90	97.55	102.42	107.54
b	Pension(Social security)	22.55	23.68	24.87	26.11	27.41	28.79	30.22
c	Other community facilities expenses	24.71	25.94	27.24	28.60	30.03	31.53	33.11
F	Miscellaneous	42.22	46.44	51.08	56.19	61.81	67.99	74.79
G	Extraordinary and Loans	23.32	24.49	25.71	27.00	28.35	29.76	31.25
	Total Expenditure	**889.2**	**947.2**	**1009.2**	**1075.7**	**1146.9**	**1223.2**	**1305.1**
	Surplus/ Deficit	**131.1**	**135.9**	**141.9**	**149.3**	**158.4**	**169.4**	**182.5**

13.8.2 Assumptions for other sources of Revenue income

The assumptions for the projection of revenue and expenditure are as follows:

Table 13-27 : Assumption for Income

Particulars	Growth Rate-(%)	Projected growth Rates (%)	Notes
Octroi	1%	1%	Growth rate for the two year data is only 1% hence same assumed for the future projections.
Integrated Tax	201%	7%	Rs.120/Property with an increase of 15% every 3 years
Development Charges	121%	10%	Development Charges has been fluctuating. Hence a nominal rate of 13% has been assumed.
City Development Surcharge	NA	3%	As CDS is related to the area of the property, nominal increase of 3% has been assumed
Other non-tax income	354%	5%	354% increase seems very higher for projection hence 5% increases with 2008-09 as base.

Source: Analysis based on past financials provided by Kolar Municipal Council

13.8.3 Assumptions for other sources of Revenue Expenditure

The Operation and Maintenance Expenditure under both the scenarios will remain the same as in both the cases. The assumptions for revenue expenditure projection for five years are presented below.

- **Current Revenue Expenditure**

  - The administration expenses like Salary expenses for Councilor, others in administrative department, have been assumed to be growing at 10%.
  - Under Public conveniences and facilities fire fighting and street lighting are assumed the growth rate of 7% and 10% respectively as the financial information is available only for two years.
  - Under Water Works Department, Purchases and Maintenance have been assumed to be growing at 5%.
  - Under the public health and facility the expenses for the basic services like water supply, sanitation and other facilities has been projected as 7%. There shall be significant efforts shall be made in order to reduce the operating expenses of the services by conducting the energy audits etc.,
  - The expenses the public works shows the inconsistent trend hence assumed the projection of 10% with the scale of the operations.
  - The expenses for community and public education which includes the slum up gradation and social security have been assumed to be increasing at 5% growth per year.

Table 13-28 : Assumption for Revenue Expenditure

Particulars	CAGR-(%)	Projected Growth Rates (%)
General administration and collection	49%	10%
Public conveniences and facilities (fire fighting & street lighting)	Inconsistent Trend	10%
Public health and facilities (water supply, sanitation, other facilities)	25%	7%
Public works (Roads, Drains and Buildings)	Inconsistent Trend	5%
Community and public education	Inconsistent Trend	5%

Source: Analysis based on past financials

13.9 Capital Expenditure And O&M For New Projects

The cost of capital works sector-wise have been elaborated in earlier sections. The projects for Kolar Municipal Council has been worked out based on estimated demand supply analysis of various physical and social infrastructure requirements of the city and feedback of stakeholders consultation on the city's needs for the next 5 years. The projects identified are vital for meeting the basic requirements of the town as per the infrastructure standards. In the event of the town not undertaking the project, the key problems would be poor infrastructure resulting in poor service delivery and loss of potential revenue from new revenue streams like UGD. To overcome these issues the framework for FOP is developed taking into account existing strengths of the town and also reducing the inefficiencies in the system.

Phasing of the identified projects is done based on demand supply gap analysis, project prioritization based on stakeholder consultation and financial sustainability for taking up the projects. The summary of capital costs for the first phase i.e 2011-12 to 2015-16 and the phasing is presented below:

Table 13-29 : Capital Expenditure in the first phase in Rs lakhs

Sector	2011-12	2012-13	2013-14	2014-15	2015-16	Total Investment
Water Supply	2860.23	2911.23	0.00	0.00	0.00	**5771.46**
Sewerage & Sanitation	1633.76	1633.76	0.00	0.00	0.00	**3267.52**
Storm Water Drainage	146.69	146.69	146.69	146.69	146.69	**733.47**
Solid Waste Management	69.72	65.22	69.72	65.22	89.72	**359.62**
Roads, Traffic and Transportation	139.35	153.35	488.45	100.85	592.91	**1474.89**
Street Lighting	96.14	83.39	24.56	24.56	24.56	**253.19**
Socio-Economic Infrastructure	83.50	33.50	88.50	33.50	133.50	**372.50**
Slums & Urban Poverty	300.26	300.26	300.26	0.00	0.00	**900.78**
Sub total	**5329.65**	**5327.40**	**1118.18**	**370.82**	**987.38**	**13133.43**

Assuming contingency of 5% of project cost and cost escalation at the rate of 3% year on year the total project cost is Rs. 14034.62 lakhs.

The Operation and Maintenance Expenditure for the new projects have been assumed as % of the project cost. The O&M expenditure for the period between 2011-12 and 2015-16 for new projects is presented below:

Table 13-30 : O&M Expenditure for new projects in Rs. Lakhs

Sector - Physical Infrastructure	O&M as % of Capital Expenditure	2011-12	2012-13	2013-14	2014-15	2015-16
Water Supply	6%	0.0	0.0	346.3	363.6	381.8
Sewerage & Sanitation	4%	0.0	0.0	130.7	137.2	144.1
Storm Water Drainage	4%	0.0	5.9	12.0	18.3	24.9
Solid Waste Management	10%	7.0	13.8	21.5	29.1	39.5
Roads, Traffic and Transportation	3%	0.0	4.2	9.0	24.1	28.3
Street Lighting	3%	2.9	5.5	6.5	7.6	8.7
Total		**9.9**	**29.4**	**526.0**	**580.0**	**627.4**

The O&M expenditure for social infrastructure is assumed to be met by the revenues from the same.

13.10 Sustainability of Municipality without Implementation of Reforms

As seen in 18.1 above the surplus generated by Municipal Council for the period between 2011-12 and 2015-16 is only Rs. 801.73 lakhs. The sustainability of the Municipal Council to undertake new projects is as under:

Table 13-31 : Sustainability without Reforms

Sustainability under "No Reform" Scenario	Value	Units
Total project cost for phase-I	14034.62	Rs. Lakhs
O&M for the new projects for five years	1772.61	Rs. Lakhs
Five year net revenue surplus of Kolar Municipality under"base case scenario"	801.73	Rs. Lakhs
Sustainability of project cost under "No Reform" scenario	**-6.92%**	**% of project cost**

Without implementation of Reforms Kolar Municipality will not be able to sustain the Operation and Maintenance expenditure of new projects proposed.

13.11 Financial Operating Plan (FOP) Considering Reform Measures

This FOP is based on a whole range of assumptions related to income and expenditure. These are critical to understand the financial projections worked out, sustenance of the projected increase in revenue and expenditure under various scenarios and surplus thus generated. The assumptions would help in understanding the extent of investment sustenance for future projects envisaged. On the basis of two year financial information the projection for the income and expenditure has been calculated under "No Reform" scenario for the financial sustainability of the urban local body.

From the above, it is clear that the ULB need to undertake reforms for sustainable operations. Hence, two levels of reforms have been considered viz. Partial Reforms and Full Reforms.

Scenarios	Details
"Partial Reforms" Scenario	Implementation of all the projects with partial implementation of Reforms
"Full Reforms" Scenario	Implementation of all the projects with complete implementation of Reforms

The key reforms are highlighted in the Table below. The total reforms suggested have been elaborated in the chapter, "Reforms and Resource Mobilization"

Table 13-32: Key Reforms

Particulars	Current practice	Reform suggested
Revision in Property tax rates	Adhoc revision	15% increase in every 3 years
Service level coverage (water supply - no. of assessments)	3% coverage at present	85% coverage by 2015-16
Revision in initial deposit for New Water Connections	No fixed fee	Rs.4000 as advance for water connection with 15% increase every 3 years for each new connection
Revision in Water Charges	No water tax at present. Water charges collected for water supplied through tankers	Rs. 60 per month with 15% increase every 3 years
Revision in Initial Deposit for New UGD Connections	No UGD currently	Rs.4000 as advance deposit with 15% increase every 3 years for each new connection
Revision in monthly user charges for UGD	No UGD currently	Rs. 60 per month with 15% increase every 3 years
Revision in User charges towards Sanitation, Street Lighting and Fire Fighting	Rs.120 collected per annum. Adhoc revision	15% increase every 3 years

13.11.1 Partial Reforms Scenario

In the "Partial Reforms Scenario" the present levels of collection efficiency and lower tax rates for water supply and sewer are considered. Similarly advanced deposit charges for water and sewer connections are not considered. The collection efficiency of about 60% has been considered in this case. Reform measures towards direct cost recovery and collection efficiency upto 85% are not considered in this case. Routine revenue expenses including Operations and Maintenance of existing assets and new assets created have also been considered and loaded to the FOP. Revenue surplus thus generated indicates Council's capacity to service the usual capital expenditure in the normal course of running its operations.

13.11.2 Full Project with Reforms Scenario

In the "Full Project with Reforms" scenario advance deposits for water and sewer connections as per practices prevalent in other municipalities of similar profile are considered. Similarly water and sewer taxes prevalent in other municipalities of similar profile have been considered. The collection efficiencies are assumed to gradually improve to the level of 85% over the period of five years. The implications on the investment and borrowing capability of the Council for all the identified projects are worked out.

13.11.3 Revenue Income

In case of taxes and non-tax revenue such as property taxes, water charges and sewerage charges where the base and basis of revenue is fairly well known and predictable, the likely revenue is forecast based on certain assumptions regarding growth in number of assessment, revision in average revenue per property (for property taxes), revision in charges/Tariffs (water charges and sewerage). The assumptions with regard to forecasting income from property tax, water charges and sewerage charges are presented below.

- **Property Taxes**

Table 13-33 : Key assumptions for forecasting income from Property Taxes

Description	Current Level	Base Case Scenario	Investment Scenario
Annual Growth in Number of Assessment	No data available	Projected based on the annual CAGR + 1% of the projected property assessment for un-assessed Properties	Projected based on the annual CAGR + 1% of the projected property assessment for un-assessed Properties
Property Tax charges	1% of rental value for residential and 2% for commercial properties	Rs. 650 with an increase of 15% every 3 years	Rs. 650 with an increase of 15% every 3 years

Description	Current Level	Base Case Scenario	Investment Scenario
Periodic Increase in Average Revenue per property (%)	----	15% increase in every 3 years	15% increase in every 3 years

- **Water Charges**

Table 13-34 : Key assumptions- forecasting income from Water Charges

Description	Current Level	Partial Reforms Scenario	Full Reforms Scenario
% OF WATER CONNECTIONS TO PROPERTY TAX ASSESSMENT			
2008-09	3%		
By 2015-16		85%	85%
INITIAL DEPOSIT FOR NEW WATER SUPPLY CONNECTIONS (Rs. per connection)			
Domestic (Rs.)			
From 2008-09 till 2011-12	Rs.550		
From 2012-13		Rs.2000	Rs.4000
Increase		15% increase every 3 years	15% increase every 3 years
Non-Domestic (Rs.)	Nil	Rs.4000	Rs.7000
Rate of increase		15% increase every 3 years	15% increase every 3 years
WATER CHARGES (per month)			
Domestic (Rs.)			
2008-09	Nil		
After Water Supply scheme implementation		Rs. 30	Rs. 60
Rate of increase		15% increase every 3 years	15% increase every 3 years
Non-Domestic (Rs.)			
2008-09	Nil		
After Water Supply scheme implementation		Rs.45	Rs.90
Rate of increase		15% increase every 3 years	15% increase every 3 years

- **Sewerage Charges**

Table 13-35 : Key assumptions forecasting income from Sewerage Charges

Description	Current Level	Partial Reforms Scenario	Full Reforms Scenario
Number of UGD Connections	Nil	85% of Total Number of Property tax assessment	85% of Total Number of Property tax assessment
Assumed Ratio of Domestic and Non-Domestic to the total UGD Connections	Nil	90:10	90:10
MONTHLY USER CHARGES (Note: Monthly User charges would be collected after the UGD Project is completed)			
Domestic (Rs./Month.)			
2008-09	Nil		
After Sewer scheme implementation		Rs.30	Rs.60
Rate of increase		15% increase every 3 years	15% increase every 3 years
Non-Domestic (Rs./Month.)			
2008-09	Nil		
After Sewer scheme implementation		Rs.45	Rs.90
Rate of increase		15% increase every 3 years	15% increase every 3 years
DEPOSIT FEE /CONNECTION			
Domestic (Rs.)	Nil	Rs.2000	Rs.4000
Rate of increase		15% increase every 3 years	15% increase every 3 years
Non-Domestic (Rs.)	Nil	Rs.4000	Rs.7000
Rate of increase		15% increase every 3 years	15% increase every 3 years

13.12 Partial Reform Scenario

In the "Partial Reforms" Scenario, the finances of Council are forecast for the next 5 years considering about 60% collection efficiency for Water Supply, Sewer and Property Tax. The rates of taxes and deposits are also assumed to be less compared to Full Reforms Scenario. Revenue surplus thus generated indicates Council's capacity to service the usual capital expenditure in the normal course of running its operations The revenue surplus position of the Council over the next 5 year period upto 2015-16 is presented below.

Table 13-36 : Financial Operating Plan for Partial reforms Scenario (Rs. In Lakhs)

Sr No	Particulars	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
i	Income							
A	Municipal Taxes and rates							
1	City Development Surcharge	47.52	57.1	67.22	73.56	75.77	82.63	85.11
2	Property Tax							
a	Arrears	101.15	106.20	111.51	127.83	141.39	148.45	170.18
b	Current							
3	Integraged tax	24.72	25.96	34.55	34.83	36.65	43.56	44.45
4	Water Tax	31.28	34.41	37.85	41.64	82.01	94.73	108.51
5	Other taxes	5.45	5.99	6.59	7.25	7.97	8.77	9.65
B	Receipt under special acts	0.02	0.02	0.02	0.02	0.02	0.02	0.02
C	Income from other sources-(non tax income)							
1	Water Deposits & other fees	0.00	0.00	254.69	199.91	22.73	27.45	28.82
2	Building construction permission fees	10.24	11.27	12.39	13.63	14.99	16.49	18.14
3	Development charges	51.27	56.40	62.04	68.24	75.07	82.57	90.83
4	Other non tax income	21.06	22.12	23.22	24.38	25.60	26.88	28.23
D	Grants & aids/contribution							
1	Octroi	101.92	103.07	104.23	105.40	106.58	107.78	108.99
2	Road construction/Repairs/ Special	85.88	94.46	103.91	114.30	125.73	138.31	152.14
3	Basic	52.50	55.13	57.88	60.78	63.81	67.00	70.36
4	State finance commission	20.02	20.02	20.02	20.02	20.02	20.02	20.02
5	12th finance commission	27.90	30.69	33.75	37.13	40.84	44.93	49.42
6	Community participation/MP/ MLA fund	103.42	113.76	125.14	137.65	151.42	166.56	183.22
7	Slum development/Slum housing project	76.70	84.37	92.81	102.09	112.30	123.53	135.88
8	Water Crisis	30.25	33.28	36.60	40.26	44.29	48.72	53.59
9	Social Security/Old age pension/National Family Pension scheme	31.86	33.45	35.12	36.88	38.72	40.66	42.69
10	Other grant and	48.26	50.67	53.20	55.86	58.66	61.59	64.67

Sr No	Particulars	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
	aid							
E	Miscellaneous							
1	Others	3.3	3.46	3.63	3.82	4.01	4.21	4.42
F	Extraordinary and loans	23.64	24.82	26.06	27.36	28.73	30.17	31.67
G	Sewer Tax	0.00	0.00	0.00	0.00	82.01	94.73	108.51
H	Sewer Connection Deposit	0.00	0.00	254.69	199.91	22.73	27.45	28.82
	Total Income	959	935.81	1011.1	1098.6	1181.6	1256.3	1332.2
ii	**Expenditure**							
A	General administration and collection	36.32	39.95	43.95	48.34	53.18	58.5	64.35
B	Public conveniences and facilities							
a	fire fighting	7.51	8.04	8.60	9.20	9.85	10.54	11.27
b	Street lighting	66.34	72.98	80.27	88.30	97.13	106.84	117.53
C	Public health and facilities							
a	water supply	143.12	153.14	163.86	175.33	187.61	200.74	214.79
b	sanitation	104.55	111.87	119.70	128.08	137.04	146.64	156.90
c	other facilities	19.2	20.54	21.98	23.52	25.16	26.92	28.81
D	Public works							
a	Roads and drains	288.79	288.79	288.79	288.79	288.79	288.79	288.79
b	Buildings							
c	other public works	15.91	17.5	19.25	21.17	23.29	25.62	28.18
E	Community/ public education							
a	Slum upgradation							
b	Pension(Social security)	22.55	23.68	24.87	26.11	27.41	28.79	30.22
c	Other community facilities expenses	24.71	25.94	27.24	28.60	30.03	31.53	33.11
F	Miscellaneous	42.22	46.44	51.08	56.19	61.81	67.99	74.79
G	Extraordinary and Loans	23.32	24.49	25.71	27.00	28.35	29.76	31.25
H	Additional O&M Expenditure due to new Projects	0	0	0	0	0	0	0
	Total Expenditure	**794.54**	**833.3**	**875.3**	**920.6**	**969.6**	**1022.65**	**1079.99**
	Surplus/ Deficit	**103.81**	**125.1**	**660.2**	**588.5**	**388.0**	**453.1**	**529.3**

13.12.1 Sustainability under Partial Reform Scenario

As seen above, the total revenue surplus of Municipal Council under "Partial Reform" scenario for five years upto 2015-16 is Rs. 2619.25 lakhs. This revenue surplus can sustain 6.03% of the total project cost envisaged. The sustainability under this scenario is presented below.

Table 13-37 : Sustainability under partial reforms scenario

Sustainability under "Partial Reforms" Scenario	Value	Units
Total project cost for phase-I	14034.62	Rs. Lakhs
O&M for the new projects for five years	1772.61	Rs. Lakhs
Five year net revenue surplus of Kolar Municipality	2619.25	Rs. Lakhs
Sustainability of project cost under "Partial Reforms" scenario	**6.03%**	**% of project cost**

13.13 "Full Reforms" Scenario

In the "Full Reforms" scenario, the finances of Council are forecast for the next 5 years considering about 85% collection efficiency achievement gradually over a period of five years for Water Supply, Sewer and Property Tax. The rates of taxes and deposits are taken based on charges prevalent in towns of similar profile elsewhere in the country. The Full Project scenario envisages public contribution substantially for water supply and sewer and also direct cost recovery to the extent of Revenue surplus thus generated indicates Council's capacity to service the usual capital expenditure in the normal course of running its operations The revenue surplus position of the Council over the next 5 year period upto 2015-16 is presented below.

Table 13-38 : Financial Operating Plan for Full reforms Scenario (Rs. In Lakhs)

Sr. No	Particulars	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
i	**Income**							
A	Municipal Taxes and rates							
1	City Development Surcharge	47.52	57.1	67.2	73.56	75.77	82.63	85.11
2	Property Tax							
a	Arrears	101.15	106.20	128.57	138.23	149.96	157.82	179.60
b	Current							
3	Integraged tax	24.72	25.96	34.55	34.83	36.65	43.56	44.45
4	Water Tax	0.00	0.00	0.00	0.00	106.62	129.17	153.72
5	Other taxes	5.45	5.99	6.59	7.25	7.97	8.77	9.65
B	Reciept under special acts	0.02	0.02	0.02	0.02	0.02	0.02	0.02
C	Income from other sources-(non tax income)							
1	Water Deposits &	0.00	0.00	497.8	390.74	44.42	53.65	56.32

Sr. No	Particulars	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
	other fees			1				
2	Building construction permission fees	10.24	11.27	12.39	13.63	14.99	16.49	18.14
3	Development charges	51.27	56.40	62.04	68.24	75.07	82.57	90.83
4	Other non tax income	21.06	22.12	23.22	24.38	25.60	26.88	28.23
D	Grants & aids/contribution							
1	Octroi		103.07	104.23	105.40	106.58	107.78	108.99
2	Road construction/ Repairs/ Special	85.88	94.46	103.91	114.30	125.73	138.31	152.14
3	Basic	52.50	55.13	57.88	60.78	63.81	67.00	70.36
4	State finance commission	20.02	20.02	20.02	20.02	20.02	20.02	20.02
5	12th finance commission	27.90	30.69	33.75	37.13	40.84	44.93	49.42
6	Community participation/MP/MLA fund	103.42	113.76	125.14	137.65	151.42	166.56	183.22
7	Slum development/Slum housing project	76.70	84.37	92.81	102.09	112.30	123.53	135.88
8	Water Crisis	30.25	33.28	36.60	40.26	44.29	48.72	53.59
9	Social Security/Old age pension/National Family Pension scheme	31.86	33.45	35.12	36.88	38.72	40.66	42.69
10	Other grant and aid	48.26	50.67	53.20	55.86	58.66	61.59	64.67
E	Miscellaneous							
1	Stamp duty collections							
2	Others	3.30	3.46	3.63	3.82	4.01	4.21	4.42
F	Extraordinary and loans	23.64	24.82	26.06	27.36	28.73	30.17	31.67
	Sewer Tax	0.00	0.00	0.00	0.00	106.62	129.17	153.72
G	Sewer Deposit Income	0.00	0.00	497.81	390.74	44.42	53.65	56.32
	Total Income	**867.06**	**924.07**	**2018.38**	**1878.85**	**1483.23**	**1637.88**	**1793.17**
ii	**Expenditure**							
A	General administration and collection	36.32	39.95	44	48.34	53.18	58.5	64.35
B	Public conveniences and facilities							
a	fire fighting	7.51	8.04	8.60	9.20	9.85	10.54	11.27
b	Street lighting	66.34	72.98	80.27	88.30	97.13	106.8	117.53

Sr. No	Particulars	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
							4	
C	Public health and facilities							
a	water supply	143.1	153.1	164	175.33	187.6	200.74	214.79
b	sanitation	104.5	111.9	120	128.08	137	146.64	156.9
c	other facilities	19.2	20.54	22	23.52	25.16	26.92	28.81
D	Public works							
a	Roads and drains	288.79	288.79	288.79	288.79	288.79	288.79	288.79
b	Buildings							
c	other public works	15.91	17.5	19.3	21.17	23.29	25.62	28.18
E	Community/public education							
a	Slum upgradation							
b	Pension(Social security)	22.55	23.68	24.87	26.11	27.41	28.79	30.22
c	Other community facilities expenses	24.71	25.94	27.24	28.60	30.03	31.53	33.11
F	Miscellaneous	42.22	46.44	51.08	56.19	61.81	67.99	74.79
G	Extraordinary and Loans	23.32	24.49	25.71	27.00	28.35	29.76	31.25
	Total Expenditure	**794.54**	**833.35**	**875.30**	**920.63**	**969.65**	**1022.65**	**1079.99**
	Surplus/ Deficit	**72.53**	**90.72**	**1143.08**	**958.22**	**513.59**	**615.23**	**713.18**

13.13.1 Sustainability under Full Reform Scenario

As seen above, the total revenue surplus of Municipal Council under "Full Reform" scenario for five years upto 2015-16 is Rs. 3943.31 lakhs. This revenue surplus can sustain 15.47% of the total project cost envisaged. The sustainability under this scenario is presented below.

Table 13-39 : Sustainability under full reform scenario

Sustainability under "Full Reforms" Scenario	Value	Units
Total project cost for phase-I	14034.62	Rs. Lakhs
O&M for the new projects for five years	1772.61	Rs. Lakhs
Five year net revenue surplus of Kolar Municipality	3943.31	Rs. Lakhs
Sustainability of project cost under "Full Reform" Scenario	**15.47%**	**%**

13.14 Funding Option for Kolar Municipality

Based on the assessment of Kolar Municipality under three scenarios viz. Without Reforms, Partial Reforms and Full Reforms it can be seen that even with partial implementation of Reforms the Municipality can sustain about 15% of the project cost. Hence, on a conservative level, the following funding option can be adopted for Kolar Municipality.

Funding Option	Contribution as % of project cost
Central Govt.	80%
State Govt.	10%
Kolar Municipality	10%

13.15 Optimal Financial Operating Plan for Kolar Municipality

The financial sustainability analysis has been carried out for the Municipal council under "Business as Usual" and "Full Project with Reforms" scenario. The proportion of the project cost which the ULB can support under each of the scenarios is arrived at.

Table 13-40 : Optimal financial operating plan for Kolar

Financial Operating Plan under Full Reform Scenario	2011-12	2012-13	2013-14	2014-15	2015-16	Total
Project Cost	5000.30	5380.65	782.41	1118.18	370.82	12652.36
Contingency	250.02	269.03	39.12	55.91	18.54	632.62
Cost escalation	150.01	327.68	72.55	140.34	59.06	749.64
Sub-total	**5400.33**	**5977.36**	**894.08**	**1314.43**	**448.42**	**14034.62**
Funding						
Central Government contribution @80%	4320.26	4781.89	715.26	1051.54	358.74	11227.70
State Government contribution @10%	540.03	597.74	89.41	131.44	44.84	1403.46
Municipality contribution including public deposits for Water Supply and Sewer scheme @10%	540.03	597.74	89.41	131.44	44.84	1403.46
Financial Operating Plan						
Surplus of Municipality	1143.08	958.22	513.59	615.23	713.18	3943.31
Less contribution of Kolar Municipality towards projects	540.03	597.74	89.41	131.44	44.84	1403.46
Less O&M due to new projects	9.86	29.42	526.00	579.96	627.38	1772.61

Financial Operating Plan under Full Reform Scenario	2011-12	2012-13	2013-14	2014-15	2015-16	Total
Opening Balance	0.00	593.20	924.26	822.44	726.27	
Net Surplus/ Deficit	593.20	331.07	-101.82	-96.17	40.96	767.23
Closing Balance	**593.20**	**924.26**	**822.44**	**726.27**	**767.23**	

From the above it is clear that the Municipal council will be able to fund 10% of the project cost and also meet its O&M obligation under "Full Reforms" scenario. Since public contribution is envisaged in funding water supply and sewer scheme, PPP model can be considered for implementation and O&M.

Proven model that can be considered is the Water Supply Scheme under PPP implemented in Khandwa town in Madhya Pradesh. The project cost of Khandwa water supply scheme is Rs. 106.72 Crores of which the Central and the State Government contributions are 80% and 10% respectively. The remaining 10% is to be borne by the Concessionaire viz. Vishwa Infrastructure, Hyderabad. The O&M shall be the responsibility of the Concessionaire and the Concession period is 25 years.

13.16 Alternative funding options for the identified projects

Kolar Municipal Council has limited financial resources for funding the projects identified. The Municipal Council may not be able to avail funds for all the projects identified. Hence alternative funding sources need to be identified. The possible funding alternatives are presented below:

13.16.1 Loans and Internal Accruals

Maximum surplus generated by Kolar Municipal Council is Rs. 127.28 Lakhs. Considering Debt Service Coverage Ratio 0f 1.25, the maximum loan which can be raised by the Council is Rs. 300 Lakhs. Hence, fund raising capacity of Kolar Municipal Council through loans is limited in the present scenario.

With the implementation of reforms, if the internal accruals and the debt repayment record of Kolar Municipal Council improve, then further loans can be availed on the strength of the new projects to be implemented.

13.16.2 Pooled Financing Mechanism

Tamilnadu Urban Development Fund (TNUDF) and Karnataka Urban Infrastructure Development Finance Corporation (KUIDFC) are two entities which brought out an innovative funding mechanism for projects i.e. "Pooled financing". Pooled Financing are of two types (i) a "blind pool", where a bond bank raises sufficient funds based on its own credit rating and then on lends to the local body; and (ii) a "project-specific pool", where several projects are

pooled and lumped together in a bond issuance, thereby significantly reducing transaction costs and improved pricing. Tamilnadu Fund used the second arrangement, wherein 14 Urban Local Bodies of the state pooled some water and sanitation projects under a special purpose vehicle called the Water and Sanitation Pooled Fund (WSPF) and raised about Rs. 300 million from the bond market at an interest of 9.2% in the year 2002.

Similar funding mechanism can be considered for less credit worthy borrowers like Kolar Municipal Council which has a poor debt repayment record.

`Nodal Agency/ State Government Agencies Funding

- Municipal Councils like Kolar with their limited financial resources are not in a position to fund ROBs and flyover projects. ROBs in certain places are taken up by the railways and flyovers and other roads by the state PWD.
- Low cost sanitation projects can be funded by NGOs and State Government with the Municipal council contributing to a portion of the cost and acting as a facilitator in implementation.

13.16.3 Public Private Partnership (PPP)

Public Private Partnership projects are gaining importance in recent years even with smaller municipalities. Parking lots, solid waste management, hospitals and even slum redevelopment programmes are implemented under PPP wherein the private sector develops the facility, operates for a specified concession period and transfer the facility back to the local body. Though large scale participation of private sector is lacking in water supply schemes, Chandrapur Municipal Corporation has implemented water supply scheme under PPP.

- **Tertiary Water Treatment of Sewage in Surat**

Surat Municipal Corporation has adopted the PPP route for setting up of a tertiary sewage treatment plant to treat secondary treated water from Bamroli Sewage Treatment Plant to supply Industrial Grade Water to Pandesara Industrial Estate and Surat Municipal Corporation on Design Build Finance Operate and Transfer (DBFOT) basis for a concession period of 20 years under PPP.

- **Water Distribution in Chandrapur**

The objective of the project was to reduce huge water losses, to the tune of around Rs 1.83 crores) every year, and increase coverage and service delivery efficiencies to the 3,00,000 population of Chandrapur town. Water distribution for the local community was therefore handed over to the private sector participant i.e M/s Gurukripa Associates & Contractors Pvt. Ltd. in 2004 successfully. Both distribution of water to existing users as well as the maintenance of the Filter Plant was entrusted to the private player. Additionally, the private player was required to:

Lay one km additional line every year – thus expanding distribution

- All the employees would be the private company's own employees (Chandrapur Municipal Corporation(CMC) was short of manpower at the time and would therefore place their own manpower at other places in the corporation requiring additional deployment)
- Technical supervision to be done by the CMC Nodal Engineer with a regular program of inspection of the filter plant, every 3 to 4 days
- The initial investment of the project was Rs 3.0 Crs. The private party injected Rs 50 lacs and raised another Rs 2.5 crs by selling 50% equity on a premium. The revenue sharing arrangement for the private player was -
- Private player to collect tariff charges
- Revenue sharing arrangement, such that private player makes a total payment of Rs 1.59 Cr. to the municipal corporation in 10 years
- Private player allowed to increase tariff charges by 10% every 3 years

The private party initially planned on a break-even in the third year of operations but due to steep rise in electricity charges (35`% increase in three years) the breakeven was delayed by a year. The operational efficiencies after appointment of the private sector participant is highlighted below:

Table 13-41 : Operational Efficiencies after appointment of Private Sector

Before appointment of the private sector participant	After appointment of the private sector participant
Leakages-the main problem (56 leakages to main water supply line)	• Leakages removal through technological solution
Low discharge	• Replacement of rusted pipes (about 50 km) • Replacement of Pipelines leading to improved carriage capacity and extending water supply to additional households
Low pump efficiency (repairs at every 3-4 months)	• Oil lubrication system of pumps modified to water lubrication and preventive maintenance initiated • Pump breakdown and repairs frequency changed from about quarterly to almost nil • Breakdown time brought upto 24-48 hours from one week
Low water tax collections	• Streamlining of water tax collection system with improved quality of supply. • Recovery % of water tax improved from 60% to 95% • No of complaints reduced from 100 to 10
More complaints from users	• Per capita supply of water increased from 70 lpcd to 135 lpcd • The private player has received requests from other neighbouring cities to run this pilot there also.

Before appointment of the private sector participant	After appointment of the private sector participant
	• Even where the private company was not required to expand coverage (in a year), consumers started coming to the private player on their own with offers to fund the cost of laying distribution pipelines themselves if the private party would distribute water to them also.

- **Development of Parking Lots under PPP**

  - Brihanmumbai Municipal Corporation (BMC) has developed a multi-storied mechanized parking lot on a PPP basis at Bhulabhai Desai Road, Mumbai
  - BMC is also in the process of developing seven mechanised parking lots at Dadar, Borivali, Kurla, Powai, Matunga on PPP basis
  - Jaipur Municipal Corporation has commissioned a study for development of parking lots under PPP at 5 sites in Jaipur

- **Other PPP projects**

  - **Municipal Solid Waste management** projects under PPP have been implemented in Delhi, Bangalore, Chennai, Jodhpur and Sirsa
  - **Bus terminals** at Dehradun, many cities in Gujarat and Amritsar on PPP
  - **Thriupur water supply and sewer project** on Build Own Operate and Transfer basis - Water supply infrastructure to draw raw water and distribute for industrial and demestic users
  - **Alandur underground sewerage scheme** – Public participation in the scheme by financial contribution in the form of upfront payment for service connections
  - **Desalination Plant** at Chennai to treat 100 MLD sea water by reverse osmosis on Design Build Own Operate and Transfer basis for 25 years.

The above projects highlight the importance of private sector involvement in implementation of various projects. The number PPP projects till date under JNNURM in various sectors are as follows:

Table 13-42 : PPP Projects implemented under JNNURM

Sector	Number	Cost (Rs. Crores)
Water Supply	3 (Project related)	246.61
Sewerage	1 (Project related)	31.47
Solid Waste Management	17 (Operation and Maintenance)	873.91
MRTS	1 (Project related)	476.15

Source: JNNURM

PPP projects bring in the much required funds for the project, reduce project delays, and improve operational efficiencies and quality of service delivery. Further, municipal councils should not be involved in maintenance of parks, schools, hospitals; recreational facilities as these facilities can be developed on commercial formats successfully with private sector participation and the

councils shall focus its efforts towards provision of basic infrastructure facilities. With PPP gaining importance even in the provision of basic infrastructure, the municipal councils shall play the role of facilitator in implementation of these projects.

- **Town Planning Schemes**

"Gujarat Model" of land pooling for implementation of infrastructure projects has helped the state to achieve urbanization at a faster rate than the rest of the states in the country. While the urban development Acts in the rest of the country focus on direct acquisition of land from owners, the Gujarat Town Planning and Urban Development Act, 1976, lays down the town planning or TP scheme procedure for land acquisition. Under the TP scheme, 40 per cent of the land in the area earmarked for infrastructure development is 'pooled' in from land owners. The rest 60 per cent of land remains with the owners, which they are allowed to sell or else develop in accordance with the urban development scheme. In this way, land owners are not forced to sell land to the urban development authority at cheap rates. As land prices shoot up, sometimes by 10-20 or even 100 per cent, with the development of infrastructure in the area, owners are not averse to 'pooling' in 40 per cent of their land. According to authorities, there have been instances where entire villages have approached the AUDA for including their land under a TP scheme.

From the 40 per cent land 'pool', 20 per cent is earmarked for development of road network, five-eight per cent for garden and lake developments, another five-eight per cent for construction of houses for economically weaker sections, and the remaining five-eight per cent is auctioned by the urban development authority. Money raised from the auctioned land helps cover infrastructure development expenses like the cost of laying of roads, gardens, lakes, flyovers, etc.

- **Other sources of project funding**

  - The municipal council can leverage its land assets for implementation of projects through private sector participation. Alternatives include granting higher Floor Space Index, Transfer of Development Rights for raising funds for projects. However this depends on the real estate demand in the region
  - Energy Efficiency Projects especially in Street lighting and Solid waste management and waste recovery are eligible for availing carbon credits (Certified Emission Reductions) which are tradeable. However, the projects should be large enough for application for CERs under Clean Development Mechanism

13.17 Supervision of capital works and maintenance

13.17.1 Appointment of Project Management Consultants for Implementation

Kolar Municipal Council lacks trained manpower to carryout supervision of the projects and monitoring of the quality of work within the stipulated costs and without delays is a challenge. Appointment of Project Management Consultants for monitoring of the projects is essential.

13.17.2 Turnkey contracts with minimum years of operation obligation

With the Municipal councils lacking skilled staff in design, execution and operation and maintenance, project contracts can be structured as turnkey contracts with the contractor be made responsible for design, construction and operation and maintenance for a specified number of years, say, 5 years. During the O&M phase, the contractor can train the municipal council employees to undertake O&M in subsequent years.

13.17.3 Induction of Technical staff

Induction of trained and skilled manpower is essential in municipal councils as they are responsible for service delivery of basic infrastructure facilities – Water Supply, Sewer, Roads etc. In Kolar Municipal Council there are no skilled staffs for each sector and the City Engineer is the only technical person with a planning background. Training also needs to be imparted to the staff of the municipal council in technical areas, administration, use of IT tools and Management Information Systems.

13.17.4 Outsourcing of municipal functions

To maintain a lean organization, Municipal councils can outsource some of its functions for a fixed consideration. This improves efficiency and reduces the burden on the municipal council. Some of the areas where outsourcing of functions is practiced are:

- Street lighting
- Solid waste management
- O&M of parks
- Accounting

Even O&M for water treatment and distribution systems, sewer treatment and distribution systems, tax collection can also be outsourced to improve efficiency and ensure effective service delivery.

14 Urban Reforms and Resource Mobilization

Urban reforms are the main focus of good governance and service delivery to the inhabitants of the urban area. Several initiatives and reforms have been taken up at the national level and state level. These reforms need to be replicated and implemented by the ULBs completely in a time bound manner.

Under the Urban Local Bodies level, reforms viz., E-Governance, shift to Accrual based double entry accounting, property tax (85% coverage) and property tax collection efficiency (90%) have been committed. 100% cost recovery for water supply and solid waste services have been committed to be achieved in the year 2020-21. Internal earmarking of funds for services to Urban Poor has been done and provision of Basic services to urban poor has been committed to be achieved in the year 2012. Public Private Partnership should be encouraged through outsourcing in solid waste management, street light maintenance, STP maintenance and hiring of vehicles. Few of the suggested reforms have been implemented to some extent though at the ULB level further refinement and qualitative implementation needs to be carried out.

Implementation of Reforms is critical for achieving self sustainability for the ULB and hence mandatory and optional reforms need to be implemented in a phased manner within the scheme period. Some of the reform initiatives are already underway in the ULB with assistance from the State Government. The present status of the reforms is elaborated in this chapter.

14.1 Reforms and measures for Kolar Municipal Council

- Financial and Accounting Reforms
- Institutional reforms
- E-Governance in Urban Local Bodies.
- Reforms in physical infrastructure

14.1.1 Financial Reforms:

As a part of financial reforms, tax mobilization reforms in tax and non tax collection needs to be taken up for improving the financial position of the Corporation. The reform process of tax collection should be comprehensive and should focus on structural and systematic changes so that the increase in efficiency is sustained. This is vital for achieving self-sufficiency and improving its financial health to make it possible for the ULB to undertake various projects for the welfare of the people.

The revenue department of Kolar Municipal Council is responsible for collection of various taxes and charges from its citizens including raising the demand for key revenue items like property tax, Integrated tax, Development charges, water charges etc., There is only one permanent sub-inspector heads the revenue department and is supported by bill collectors who are temporary workers.

Since, the Kolar Municipal Council has been recently formed in year 2006, the assessment of properties under the Kolar municipal council jurisdiction, area of 5017.61 hectares and 21 municipal wards, still under the process. However the water tax is collected in the form of charges collected for supply of water through tankers to various wards.

There is need to record the arrears for the other taxes like integrated tax, which is Rs.150 for all the properties levied combine towards street lighting, fire fighting and sanitation.

from the financial analysis, the Kolar Municipal Taxes account for only 18% of the total income of KMC for the year 2008-09. This is attributed to the non-assessment of all the properties in the Municipal Council area, non imposition of taxes for the services and poor service delivery.

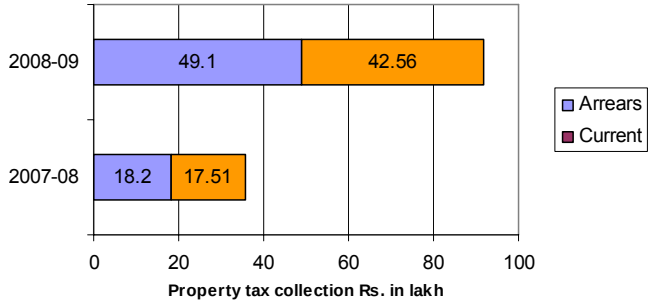
14.2 Property Tax Reforms:

One of the most important reforms which is existent in major schemes is that the corporation should strive for improving the property tax coverage ratio to 85% and collection efficiency to 90% within the scheme period. The process should be comprehensive and should focus on structural and systematic changes so that the increase in efficiency is sustained.

14.2.1 Present Status:

- Property taxes are one of the important sources of revenue for Kolar Municipal Council accounting for more than 52% of the total municipal tax income.

Figure 14-1 : Proper tax collection for KMC



- The graph of the property tax collection for the two years shows that the ratio of arrear collection to current demand collection for the on an average is 53:47 for the last two years which shows that there is a consistent delay in recovery of current year demand raised every year.

The assessment of properties is going on in order to incorporate them under property tax levied under the Kolar municipal council jurisdiction.

- Presently there is no computerization of property records.
- Kolar Municipal Council will require the assistance of State Government agencies in implementation of area based tax system, as the Municipal Council staff is not equipped to implement the same.
- Kolar Municipal Council will require the assistance of State Government agencies in GIS based property mapping, migration to self assessment of property tax.

14.2.2 Strategies and measures

Proper implementation of reforms is a pre-requisite for healthy revenue generation. Healthy growth in number of assessments, updated tax demand, periodic revisions and high collection efficiency is important for strong growth in property tax collection.

Hence the following reforms have been suggested to bring about improvement in property tax collection.

Table 14-1 : Suggested Property taxes Reforms

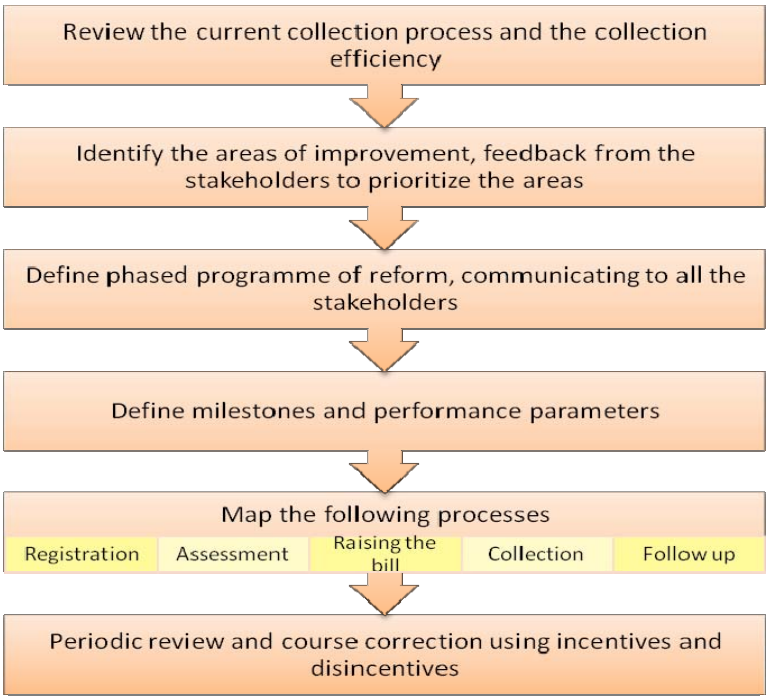
- Mandatory Implementation of Revision of Property Tax once in every five years is required.
- Digitization of the property maps through GIS to identify un-assessed and under assessed properties is required.
- GIS based mapping system is advisable for each property identified on GIS (Whether it is residential, commercial or industrial).
- The above database can be crossed checked with the data from various governmental authorities/sources such as Income Tax, Profession Tax, and Mandatory Implementation of Revision of Property Tax once in every five years is required.
- Computerization of records of encroached properties, action taken, list of encroachers through MIS would enable linking the same with GIS.
- Making the payment of property tax more convenient for the assessees through the use of various alternative modes can be explored through a decentralized approach such as:
  1. *Through banks*
  2. *Through Post Offices, Bus terminus, Kiosks et .*
  3. *Through online payment through using internet.*
  4. *Through ECS/ EFT*
- Using special schemes and incentives to encourage people to make the payment of property tax before the lapse of the due date can be considered. Rebates can be offered for advance payment of property taxes.
- The Council can do more initiatives to increase the number of self assessed tax payers by creating well awareness among the people themselves about the social

responsibility of paying tax in time.

- Collection of arrears through innovative means such as community participation and fast track litigation methods need to be attempted. Law enforcement powers should be given to the Council to compel payment of taxes and other charges levied by them.
- Improve enforcement against defaulters by modifying byelaws with adequate recourse to ULB within the current framework for enforcing disconnections on defaulters.
- PSP involvement in computerization, billing, collections and survey of properties can be explored.
- Rewarding collection efforts of the employees to encourage more aggressive collection.
- List of consistent major defaulters can be published in the notice board of the Corporation office. This can be resorted in the case of extreme default.
- Suitable legislation at state level to ensure that in the case of disputed property tax the assessee should first pay the tax under protest and then can take the necessary legal recourse as done in customs/excise duties can be considered.
- Considering the future expansion of the council and its properties the possibility of introducing additional collection centers to enable the citizens to pay the taxes can be looked into.
- Late payment of property tax after the grace period can be penalized with nominal charges as being done in the case of insurance payments etc.

A possible approach for the reform process can be as follows: -

Figure 14-2 *:* A possible approach for the Property tax reform



The time schedule of implementation of the reform programme can be accurately mapped out only after the detailed review of the property tax collection process. The study of

I. Registration process

II. Assessment process

III. Bill Raising process

IV. Collection process

V. Follow up process

Will take a substantial amount of time and has to be properly structured. It is advisable that Kolar Municipal Council uses the services of a consultant with relevant expertise so as to ensure an objective and sustainable reform process.

With respect to the measures for improving the collection efficiency especially in the property department, the following measures can be implemented: -

- Using GIS and satellite imagery to digitize the property map of Kolar Municipal Council. This will ensure that the property assessment is accurate and speedy. Moreover the cost of processing the property tax dues will also reduce drastically. This will also ensure that the assesses will not be able to falsify their property details.

- Implementing a scheme of Voluntary disclosure and payment of the overdue payments, with an amnesty from penalties and interest.

- Implementing a scheme of incentives for the collection department and the employees based on their efficiency in collection from the territory under their purview.

- Exploring the option of outsourcing the assessment and /or the collection activity to a private party. This alternative needs to take into consideration the legal provisions governing the collection of property tax by the municipal council, in other words we need to check whether such an arrangement is allowed by legislation. Moreover a comprehensive structure of checks has to be put into place before initiating such a relationship to ensure integrity and accuracy in reporting and transaction.

- Initiating alternative modes of payment of property tax by the assesses, including: -

a. Online payment through
    i. Credit card
    ii. Bank Account
b. Payment in bank branches
c. Payment in mobile vans, with designated days for different areas

14.3 Accounting reforms:

The administrative section is responsible for maintenance of all income and expenditure statements, payment, preparation and implementation of budget. However the system of accounting is based on accrual accounting system since the council established. Presently they do not have fully computerized accounts department.

Table 14-2 : Suggested Accounting Reforms

- There is need for the ULB to update it accounts to the latest year to provide a complete, updated details on the financial health of the ULB. Hence accounts needs to be finalized within the year itself instead of a year later as seen currently. This would enable the ULB to identify the revenue gaps, financial commitments and costs of various services and take remedial measures to regain its financial health.
- As a part of a larger accounting reform process at the State level, it is suggested that the ULB can include disclosures in its Annual Accounts and other published documents details on cost recovery of essential services through direct “user charges”, indirect “taxes” and Environmental status report.
- Above suggested information can be made available to the public through various channels in simple effective language to facilitate substantial/full recovery of O&M costs of the various essential services such as Water Supply, Solid Waste Management, etc. e.g. Details on the website, distribution of pamphlets, Involving S.H.Gs/NGOs/Woman Groups for spreading awareness, Public announcements etc.
- The awareness creation at various levels will increase the “willingness to pay” actions of the citizens of the area.
- The audited annual accounts can contain ULB Discussion and Analysis Report (UDAR) providing a holistic view on the financial health, quality of service level rendered, initiatives taken/proposed by the ULB to improve the city, areas of concern, targets and action plan to achieve the same etc. This report along with the Urban Performance indicators can provide a qualitative edge to the accounting and financial reporting system that can go a long way towards achieving high levels transparency, accountability and easy and smoother facilitation of the reform process required. Thus the support from the stake holders of the city would become easier if the awareness is created with these qualitative reports being prepared and shared with the key stake holders of the city.

14.4 Institutional Reforms:

The Institutional reforms suggested for Kolar Municipal Council can be broadly divided into the following heads:

- Training and Capacity Building for administrative staff and elected officials
- Private Sector Participation
- User charges
- E-Governance

14.4.1 Training and Capacity Building for administrative staff and elected officials:

There is need to provide training for administrative as well as elected member in the fields of HRD training, computer training imparting the all the clerks, accounting training, and other training areas of solid waste management, water supply and sanitation particularly for technical areas. The state government should provide the necessary support in order to bring the capacity building for the Kolar Municipal Council.

It is recommended that the periodicity of the training shall be coupled with more qualitative in-depth focus on the type of training offered. This would result in increased awareness among the administrative staff on various issues there by enhancing their productivity and creating awareness about their responsibility towards the public. For both elected and administrative members educational and awareness tours can be organized to understand the best practices in various services of other ULBs.

Consumer Grievance Redressal System (CGRS):

The consumer grievance Redressal system process assists the urban local bodies in improving their services in the following manner:

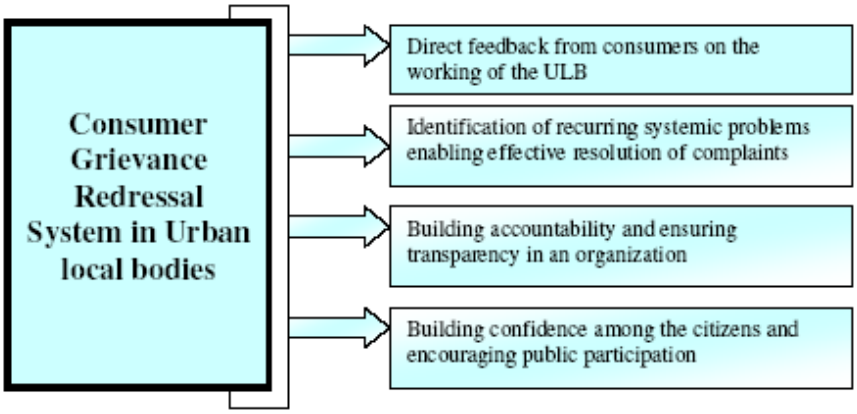
Citizens ⟶ municipal Council:

Consumers/ citizens voice their grievances and thus provide valuable feedback to municipal council regarding the quality of services delivered.

Municipal Council ⟶ citizens:

Besides addressing the complaints, the feedback given by consumer/ citizens helps the municipal bodies to analyze the quality of their services and become aware of any deficiency in their services. This helps in improving the efficiency, accountability, responsiveness and transparency of municipal council. All this will lead to improved service quality.

Figure 14-3 *:* Benefits of consumer grievance redressal system



Source: Framework for effective consumer grievance redressal system, MOUD, GOI

14.4.2 Private sector participation:

Kolar is basically an agricultural town which has huge potential for growth. This town provides cheap and affordable housing for workers working in Bhopal. Private Sector Participation in infrastructure projects and Civic services can be actively pursued in Kolar. The objectives for initiation of PSP in Infrastructure projects / Civic Services are:

- To reduce government grant funding for infrastructure projects
- To reduce the burden on the ULB to undertake large infrastructure projects
- To increase coverage of services in areas of water supply, sewerage and solid waste management
- To hasten the development of the region
- To improve efficiency of operations

Some of the sectors which can be considered for Private Sector Participation are:

1. Solid Waste Management
2. Water Supply Scheme
3. Sewage Treatment Plant
4. Housing for poor
5. Public Transport Initiation Project
6. Vocational Training Institutes

Table 14-3 : Areas of Privatization

- **Solid Waste Management**

Options for Private Sector Participant to invest in Solid Waste Management Project in Kolar are:

- Production of manure from waste
- Conversion of biogas plant into waste to energy plant when the solid waste generation reaches 100tonnes/ day in future.

- **Water Supply Scheme**

  In India, Private Sector Participation in water supply schemes has not taken off fully. However, Private Sector Participation for distribution and Operation and Maintenance can be considered in future.

  Private sector Participation in service delivery, collection of bill (participation can be in the form of performance contracting.)

- **Sewage Treatment Plant**

  Private Sector Participant can be invited to setup treatment plant for generating bio-energy and bio fertilizer. PSP in Sewage Treatment can be taken up actively in Kolar.

- **Housing for poor**

  Dharavi model for providing housing for poor can be considered under

PSP. Under this model, land occupied by slum dwellers will be developed for residential, commercial and recreational purposes and the occupants will be provided alternate housing if the developer is provided additional FSI.

- **Transportation**
  Projects on BOT basis can be considered in areas of Para transit system, construction of ROBs, construction and management of pay and park parking lots.

14.4.3 User Charges

The approach for this reform initiative will start from the review of all municipal services and then selecting the services in which the council can levy user charges (if not already levied) with the objective that the full cost of operation and maintenance or recurring cost is collected within next five years.

- **Present Status**

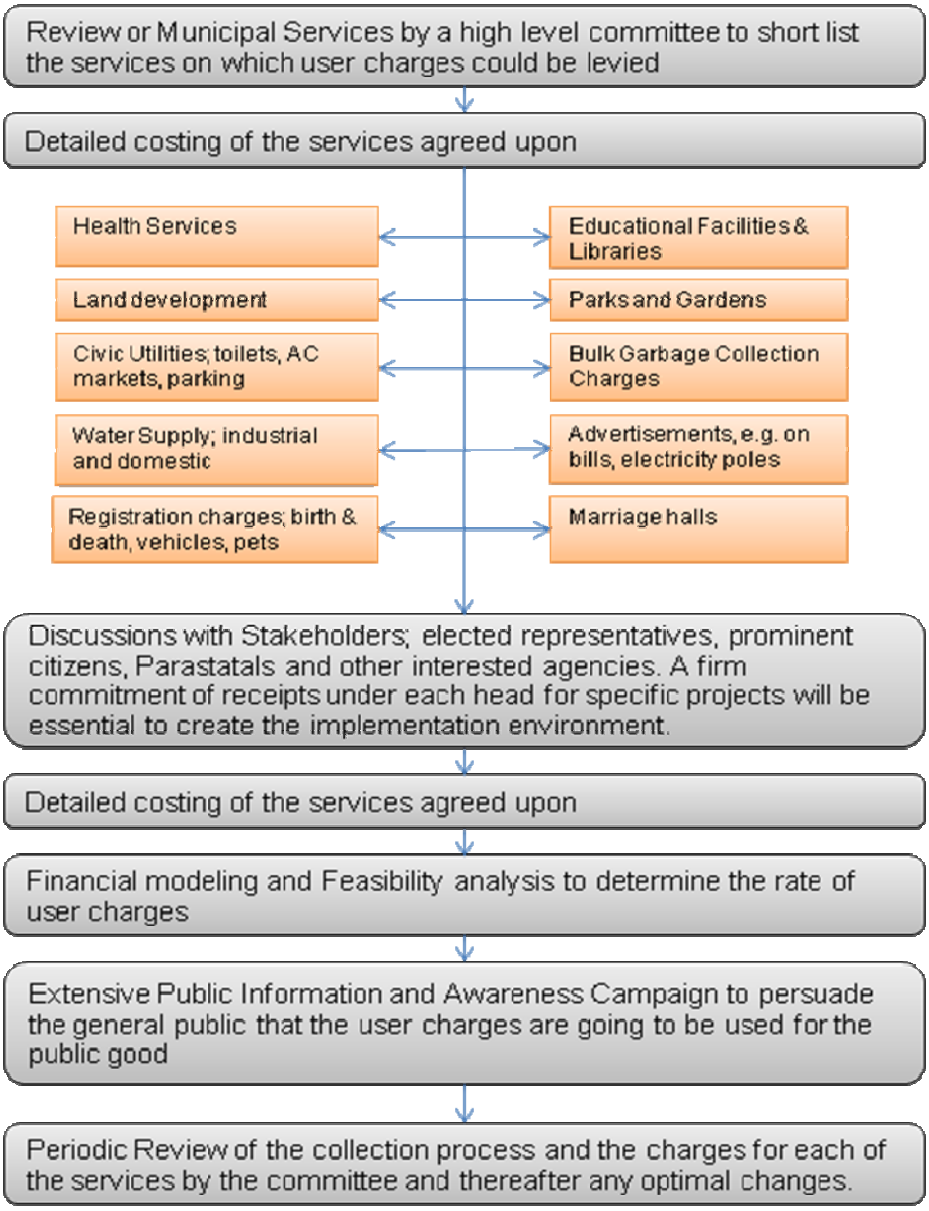
Currently only property tax is the only direct income for Kolar municipal council. The water tax is collected only from the bulk supply through tankers to several parts of the city. For implementing the new project there will be necessary to revise the user charges for the respective services, in order to sustain and maintain the operation of the services.

- **Strategies and measures**

There is a need to introduce in phases “User Charges” for various infrastructure amenities provided by the Council. Cross subsidization of tariff, Innovative product structuring and community participation are some of the measures which could be explored to provide services for the urban poor.

In the light of the above limitations, the ULB needs to explore the option of introducing user charges in other areas too. For the proposed UGD collection of user charges for meeting O & M expenses becomes imperative. Some of the suggested areas are user charges from commercial entities and institutions for solid waste management to be extended to residential areas in phases after proper awareness is created at all levels.

A tentative approach towards implementation of this reform is described in figure below:



The reform is based on the World Bank method of financing municipal infrastructure projects, where by the local body pays for the capital cost and the beneficiaries pay for the operations and maintenance cost. Accordingly the project is implemented only after a commitment by the beneficiaries that they will pay the user charges. This also ensures that the project will not go to waste afterwards because of lack of public commitment to pay the charges. But the prerequisite for such a model is that the executing authority has to create a participatory environment and a public consensus about the payment of the user charges. This is essential because of the inherent politicizing nature of the general public, especially where a public body is concerned.

14.4.4 E-governance:

E-governance is the application of information & communication technologies to transform the efficiency, effectiveness, transparency and accountability of informational & transactional exchanges with in government, between govt. & govt. agencies of National, State, Municipal & Local levels, citizen & businesses, and to empower citizens through access & use of information.

- **Present Status:**

Kolar municipal council has website for online official information of the ULB. It has following information:

- History of Kolar and Details about its councilors and administrators. Information of department and organization. However there is limited information on the employer's directory. Services provided by Kolar Municipal Council.
- Application forms (.JPEG format) related to Building Plan Approvals, property tax, birth/Date certificate form, application for water connection, and application for shop and company registration. Information related to basic services like roads, water supply, solid waste management and storm water drainage.

- **Strategies and measures**

At ULB level, an e-governance shall serve the following three basic requirements in a user friendly manner

- Information to the office bearers for their effective discharges of their duties, safeguard the assets of the municipality and for future planning and development of their city.
- Information to councilors to do effective service delivery to their constituents.
- Information to public to pay their duty, update the information on assessment and to get the right services of the ULB in time.

Table 14-4 : Reforms in Urban Governance:

Particulars	Present status	Proposed
Property Tax	Only online form is provided with JPEG format	• Online payment of Tax • Property Tax calculator with the help of which Assessee can work out the tax rate applicable for his/ her Property. • Defaulter's list to be posted on website to ensure greater compliance • Kiosks at various places to pay taxes online • Listing of collection centres, Facilitation

Particulars	Present status	Proposed
		centres for Property tax collection online • Online information for administrators for better monitoring
Water Supply and Other Utilities	Only new connection form has been made available.	• Online payment for water tax • Filing request for new water connection • Online request for water tanker if required.
Citizens Grievance Monitoring	Online filing of complaints by citizens	• Status of complaint and action taken report to be made online • Citizen Service centers and call centers to be setup for processing of all application forms and address grievances. • Categorization of complaints in the online format department wise for speedy action – Drainage, encroachment, health, roads, water, street light, solid waste, tax, illegal construction etc.
Procurement and Monitoring of Projects • E-procurement • Project/ward works	Provision of Tender and community participation notices (currently, there has been no information provided)	• Display of tenders by department, including the tender documents, online submission of tenders. E-tendering for all tenders to ensure transparency • E-procurement for empanelment, registration and selection of vendors for various works, goods • Online Project Monitoring system to check planned vs. achieved progress of work from various sites to control time overruns • Integration with the Financial Management system to control cost overruns
Building Plan Approval	Building plan approval form available online for download	• Online status of building plan approval, layout approval • Request for survey, reconstitution of plots • Formats for Auto DCR in website and automatic approval of the plans using software to facilitate speedy approval of building plans. Users shall upload the AutoCAD drawing of the plan on the website. • Formats for alteration to the existing buildings
Advertisement	Nil	• Details of advertisement boards/ hoardings in each ward with the details about the agency name, dimension of the board, status of the approval, cost of advertisement based on the zones and area, termination date, and facility for online auction of advertisement space.

Particulars	Present status	Proposed
Public Health Management • Licenses • Solid Waste • Management	Nil	• Online filing and processing of D&O, PFA trade license • Request for sullage lorry Complaints and request for street sweeping, dustbins by citizens
GIS Mapping	Nil	• Mapping of the following: • ULB and ward boundaries • Road and street layer • Property layer • Household & demographic • Water supply network • Sewerage network • Street lighting • SWM • Storm water drains

14.5 Reforms in physical information:

Table 14-5 : Reforms proposed in physical infrastructure

Sectors	Proposed
Water supply	• Service coverage of water connections to be increased from current 4% to 80% by 2020-21 • Water supply charges and connection charges need to be revised on periodic basis ie once in 5 years to fund its future investments in water supply. • Monthly service charges for the consumers can be increased minimum of 15% every 5 years. • For funding its investments in water supply, the Council can consider alternative payment structures for water. It could offer one-time payment options, where the connection fee is bundled with usage fees for a number of years. The packages could be made attractive by offering suitable levels of discounts. This could result in reduction in collection risk and reduced cost of billing and collections. • For reducing operating and maintenance costs, water leakage audit, installation of leak detection equipment and replacement of pipes needs to be done on regular basis. • It may be mentioned that the percentage of non-revenue water is ascertained based on the condition assessment of the water supply system. It is necessary to carry out a detailed study to estimate the non-revenue losses to enhance the efficiency of the water supply system. In addition, the council has to under take a series of initiatives to arrest illegal water connections and enhance the coverage of House Service Connections (HSC). • Privatization in routine maintenance relating to water supply such as

Sectors	Proposed
	hand pumps can be considered • Periodic technical training to its engineering cell is required. • Implementation of 24/7 water supply system with the main features of: – *Anytime full availability of water.* – *Confessional water user charges to slum dwellers and higher charges for commercial users.* – *Reduction of water wastages and unaccounted water flow by installing water audit equipments, energy saving equipments, water metering and conducting periodic water audits, energy audits etc.* – *Water quality monitoring system on daily basis.*
Sewerage system	• Implementation of underground sewerage system with coverage upto 80%. • Sewer Connection charges to the users can be increased once in five years for better revenue generation. • Monthly service charges for the consumers can be increased minimum of 25% every 5 years. • To improve the collection levels of monthly charges, the Council could look at providing an incentive and penalty structure for payment of charges and privatize the collection system. • Periodic technical training to its engineering cell is required in O&M of Sewage Treatment Plant, Pumping Stations and Sewer Networking System.
Solid waste management	• Door to door collection of garbage at household level and segregation of waste at source need to be implemented after creating suitable awareness level • Gradual and phased introduction of user charges initially for commercial areas later to be extended to residential zones can be considered in later years after proper The Council can identify the ways to generate revenue from Solid Waste by selling compost at market. • Privatization of services for the following activities should be • undertaken to reduce the establishment charges and O&M charges of Council: – *Door to door collection of domestic waste* – *Door to door collection of commercial waste, construction waste and Market waste.* – *Setting up and operation and maintenance of waste treatment plants.* – *Supplying vehicles on rent* – *Transportation of waste on contract basis.*
Street lights	• As a measure to save energy, the Council has put in use Energy efficient lamps. (installing 5430 new street lights with 8 W LED till

Sectors	Proposed
	2020-21.) • The council shall replace its other existing nonenergy saving lamps to energy saving lamps. • Meeting the norms of one pole per 30 meters by 2020-21 • Energy Audit needs to be conducted periodically. • Private parties can be involved for financing, operation and maintenance of energy efficient street light projects to reduce the cost incurred for the same.
Roads	• Relaying Bitumen roads once in three years with patch works to be undertaken based on the need in between years • Future roads to be laid with dedicated service lanes. • Relaying roads with recyclable materials like fly ash, can be explored.

14.6 Status of Mandatory Reforms

The property registry is not updated and survey need to be carried out to bring all the properties under the municipal tax assessment. Municipal Council has not carried out valuation of assets and valuation is a pre-requisite for migration to a Double Entry Accounting system. Presented below is the status of the Municipal Council vis a vis the reform measures enlisted under the JnNURM scheme.

Table 14-6: Reform Status and Action Plan

Reforms	Status	Action Plan
Property Tax Reforms		
Survey of Properties	Survey of properties not carried out by the Municipal Council.	Survey to be carried out to bring all the properties in Kolar under tax assessment.
Collection Efficiency	Collection efficiency is very low. Ratio of arrears collection to current year demand collection is very high consistently.	Present property tax structure to be reviewed and stringent measures for tax recovery to be implemented.
Computerisation of Records for Property Tax management	Computerisation of property tax records yet to be done.	State Govt. can assist in Computerisation of records.
GIS based property mapping	Yet to be implemented.	State Govt. assistance required to implement it across municipal councils.
Service Provision and User charges		
Water Supply Service	Cost recovery is only 32%.	Comprehensive Water supply system to be implemented in Kolar.

Reforms	Status	Action Plan
Sewerage Treatment Service	No sewer network.	Sewer network covering all properties to be provided.
Solid Waste Management Service, Street lighting	No treatment of solid waste. 10% cost recovery.	Comprehensive SWM to be implemented. User charges to be increased.
Audits and surveys to check theft and losses	Not undertaken.	Staff to be trained to carry out checks and audits.
E – Governance		
Computerisation of Records	No Computerisation.	Computerisation of all records and departments to be taken up. Staff to be trained. Even accounts are not computerized.
E-Procurement	Nil	Considering the low level of personal computer penetration and internet users in Kolar, E procurement and online bill payment can be considered for long term goals.
Online payment of bills	Nil	
Accounting Reforms		
Valuation of assets and liabilities	Nil	Need to be taken up as immediate priority.
Migration to Double Entry Accounting System	Nil	Migration to double entry shall be taken up as short term goal with plan for implementation within the next five years.
Revamp of the Public Financial Management (PFM) cycle, which includes internal controls	Nil	Assistance and training to be provided by the state government.
Financial Management		
Review of Rentals from Municipal Properties and Fees for various services in line with the prevailing market rates	Nil	Assistance and training to be provided by the state government.
Monitor and Control of Revenue Expenditure	Nil	Assistance and training to be provided by the state government.
Prioritisation of expenditure on capital works in line with the infrastructure needs of the region	Nil	Assistance and training to be provided by the state government.
Efficient Management of Grants, Loans and Deposits	Nil	Assistance and training to be provided by the state government.

Reforms	Status	Action Plan
Internal Earmarking for basic services		
Identification of BPL Families	Slum population details not available.	Survey to be done for Identification of slum population
Provision of basic services – Water Supply, Sanitation, Health, Education	Housing projects to be identified under IHSDP.	To be implemented under IHSDP.
Budgetary Earmarking and Actual Spending for provision of basic services	Budget earmarking and spending not done.	Schemes for urban poor to be prepared every year, budgeted and implemented.
Impact evaluation of the schemes and implementation strategies for monitorable output indicators for each of the services	Nil.	Framework for implementation and implementation strategies can be provided by state government.

Source: Darashaw Analysis

14.7 Status of Optional Reforms

Table 14-7: Optional reforms status

	Optional Reforms	Status
1	Introduction of Property Title Certification System in ULB	No
2	Revision of Building Bye Laws	No
3	Simplification of legal and procedural framework for conversion of agricultural land for non-agricultural purposed	No
4	Earmarking 25% developed land in all housing projects for EWS/ LIG	No
5	Introduction of Computerized process of Registration of land and property	No
6	Administrative Reforms	No
7	Structural Reforms	No
8	Encouraging PPP	No

14.8 Issues

As mentioned earlier also the Kolar Municipal Council has been formed recently in year 2006, which requires several support and reforms for strengthening and capacity building of municipal council. Following are the major issues:

- Lack of adequate and skilled number of staff for administrative purposes
- Lack of funds from state government in order to implement the reforms
- Poor financial status of urban local body
- Absence of vision for Kolar Municipal Council

- Large number of urban poor living in slum areas with inadequate services
- Encroachments and illegal colonies

14.9 City Specific Strategies and Action Plans

City Specific Action Plans have been elaborated in the above table of reforms status and action plans with long term and short term strategies. Though it is imperative to implement all the reform measures mandated under the JNNURM scheme, the areas that require immediate attention are mentioned below:

- **Property assessment**

Survey of properties need to be carried out as an immediate priority to bring all the properties within the municipal council under tax assessment. Properties which are currently exempted from payment of taxes need to be brought under the tax umbrella.

- **Survey of assets**

Survey and valuation of assets shall bring in accountability and also in aiding migration to double entry accounting system. It will also help the municipal council in exploiting the land bank and also in raising funds from external sources.

- **Improvement in collection efficiency and cost recovery**

The collection efficiency and cost recovery for services is very low in Kolar. This will act as a dis-incentive for the municipal council to undertake new projects to improve service delivery. Hence, the collection efficiency need to be drastically improved coupled with imposition of reasonable rates for each of the services provided by the municipal council for long term financial sustainability. Overview

- **Reforms and measures for Kolar Municipal Council**
  - Financial and Accounting Reforms
  - Institutional reforms
  - E-Governance in Urban Local Bodies.
  - Reforms in physical infrastructure

15 City Vision

Stakeholder's consultations and surveys held in Kolar town have resulted in identifying and formulating the City Vision for future development. The vision statements expressed by the citizens during stakeholders meeting is shown below:

Table 15-1: Vision statements expressed by stakeholders during consultation

Vision for 10 years	Vision for 20 years	Vision for 30 years
▪ Provision of basic services like road, water supply, sewerage system. ▪ Need for water conservation	▪ Four laning of all the major roads	▪ Urbanization through central policies
▪ Removal of encroachments, need arrangements to conserve water and create river front development	▪ City should become role model in development process and in improvement of health services	▪ Community development along with recreational provisions
▪ Six laning of roads, health facilities in the Kolar region ▪ Supply of water from Kolar Dam	▪ Expansion of city limits with proper planning	▪ -
▪ Provision of basic services like road, water supply, sewerage system	▪ Setting-up of community hall, small scale industrial development, Government hospital	▪ Creating sports ground and state-of-the-art communication services
▪ Clean city vision, clean water supply, proper roads	▪ Economic development, development of industrial units for employment generation and creating awareness related to education, health and environment	▪ Integrated public transport system in the city
▪ Removal of encroachments ▪ Inclusion of Kolar city under Bhopal Municipal Council for proper development	▪ To attain self sustainable growth and develop haven for the common man to live happily	-

Provision of sustainable physical, socio-economic infrastructure and efficient city management came across as a vision of nearly all the stakeholders.

15.1 Vision Statement for Kolar City

A vision is a statement of where the city wishes to go, within a given timeframe, and is often expressed in terms of clear expectations. The vision statement for Kolar defines the potential of the city and reflects its unique attributes in terms of comparative and competitive advantages, values and preferences of the city's residents, relationship of the city to the state, national and global economies, and of course, the history and physical characteristics of the city. Kolar city vision aligns stakeholders' energies to work cohesively for the development of the city. Being its close proximity to the capital city of Bhopal, the vision of the Kolar city shall be the in the context of sustainable growth centre. Vision statement for Kolar city development plan is as follows:

City Vision:

To become a self sustainable Urban Growth Centre with proper community development and hassle free connectivity systems.

15.2 Key Priorities

The CDP process of Kolar has undergone extensive consultative process with its key stakeholders in prioritizing the key sectors for investments and reform initiatives. The priorities of the national and state governments including the international developmental trends and have been considered in prioritizing these critical sectors, presented below.

- Water Supply
- Sewerage
- Solid Waste Management
- Traffic and Transportation
- Storm Water Drainage

Annexure 1 : Stakeholders Consultation

The success of the City Development Plan depends on the extent of people participation. As it is very rightly said "Planning is an exercise 'For' the people, 'Of' the people and 'By' the people."; people perception and views should be given an important position in any development programme as the whole exercise is done for the common good of the people.
According to the TOR, the Consultants organized three workshops with the assistance from ULB. The purpose, process and outcomes of the workshops are discussed as below.

1. Formation of Steering Group

A Steering Group comprising of the Municipal Council staff, Elected Representatives of the Council, various line departments, NGOs, Press etc. was formed. The minimum number of members of the Steering Group was set at 15. The Steering Group members shall participate in the discussions at every stage during the course of preparation of the City Development Plan. The Steering Group members of Kolar town are as follows:

- Chief Municipal Officer, Kolar Municipal Council
- President, Kolar Municipal Council
- Vice President, Kolar Municipal Council
- Sub Engineer, Kolar Municipal Council
- SDO, Town and Country Planning
- SDO, Police
- Sub Engineer, Capital Project Administration (CPA)
- SDO – Capital Project Administration (CPA)
- Mr. M. Kailashnath, In-charge, Madhya Pradesh Electricity Board, Kolar
- SDO, Public Health Engineering Department (PHED)
- SDO, Public Works Department (PWD)
- President, City Development Foundation
- Doctor, Anupam Hospital
- Mr. D. P. Dwivedi, Senior Citizen
- Mr. Rajendra Nath Awasthi, Senior Citizen
- Mr. Mahesh Kumar Vishwakarma, MLA
- Mr. Sanjay Kumar Patil, Member, United People's Welfare Society (Ekta Jankalyan Samithi)

- Mr. R. K. Singh, (Retd. Asst. Statistical Officer, Department of Economics and Statistics)

2. First kickoff workshop

According to the TOR, the Consultants organized the First Kickoff Workshop with assistance from ULB. The aim of the workshop was to familiarize various stakeholders with the purpose, process and expected outcomes of the CDP. Stakeholders included elected representatives, Mayor/ President, Municipal Commissioner and people from local departments like PWD, Traffic & Transportation, Tourism Department, Town and Country Planning Department, District Urban Development Agency (DUDA).

The Steering Group members, elected members, staff of the municipal council and the general public were invited for the kick off workshop. The Kick off workshop was held in Kolar Municipality on 27.10.2009 where large number of stakeholders including the elected representatives and key administrative staff members and NGOs / Women groups were present.

The Consultants made a presentation on the concept of CDP, its principles, process and the Approach in Hindi. The stakeholders were invited to express their views about the city, the problem areas and to share their vision for the city. The views of some of the stakeholders were also recorded.

The initial findings of the surveys conducted are explained in subsequent paragraphs.

- **Problems highlighted in the stake holder's meeting:**

The problems and issues identified by the elected representatives and administrative staff and NGO/ Woman Groups/ SHGs are encapsulated as under:

1. Water supply for Kolar town is provided by tankers since town has no main / distribution lines. City has Kolar dam water source located nearby. Water main from this source to Bhopal passes through this town without supplying water to the wayside settlements.
2. Town has no comprehensive under ground sewerage scheme.
3. Town has no Public Conveniences to prevent open defecation.
4. Bhopal slums were rehabilitated in Kolar Municipal areas without providing basic Infrastructure facilities.
5. Kolar is connected with Mother city, Bhopal mainly by mini buses. City requires Bus Rapid Transit systems for cheap and hassle free transport.
6. Internal roads are in bad condition which needs to be developed in a comprehensive way by creating missing links, creating kutcha BT / CC roads etc.
7. Linkages to rural settlements need to be strengthened and widened.
8. Unemployment is major issue.
9. Limited recreational facilities such as parks, playgrounds, libraries etc
10. The proposed sports village project is very much delayed which needs to be completed swiftly.

11. City has no Slaughter houses, community halls benefiting the public
12. Town has no Treatment plant for decomposing Bio-degradable waste and scientific landfill site for Non-biodegradable waste. Waste segregation and Door-Door collection is not in practice.
13. Kolar is connected to the Mother city only by road network by Kolar road

Suggestions given by the elected representatives and administrative staff and NGO/Woman Groups/SHGs are encapsulated as under:

1. Providing water from Kolar dam for the city by implementing the proposed Water Supply Scheme under UIDSSMT swiftly.
2. Providing Street Lighting on the connecting bridge.
3. Providing Comprehensive Under ground drainage facilities
4. Creating Health Infrastructure facilities
5. Public playgrounds and Stadium has to be developed. Sports village needs to be developed without delay.
6. Water harvesting schemes can be initiated
7. Approach road to village areas needs to be widened.
8. More Slum redevelopment schemes need to be proposed and implemented.

- ## Findings of City opinion survey

As explained above, the City opinion surveys were conducted during the Kickoff Meeting. Overall 90 - 100 surveys were conducted with stake holders of Kolar town to ascertain their views on the problems and prospects and vision for the city. The findings of the survey are as follows.

The data and opinion provided by various stake holders of Kolar town based on City Opinion survey was examined, analyzed and studied to identify the problems and understand people's expectations on the future development of the city. The survey details, findings and inputs were keyed in to understand the important issues, prioritize the problems facing the city and evolve a broad vision to enable a planned progressive development of Kolar area.

- ### Features/Characteristics of Kolar

Features / Characteristics of Kolar town have been identified from various stakeholder groups and from our surveys and the same are listed below:

1. It is a developing satellite town adjoining Bhopal city but is less congested as compared to Bhopal city.
2. The city is very calm and peaceful inspite of being very near to the capital city of Bhopal.

3. Employment opportunities are poor in this city since town has no industrial areas developed within its limit.
4. Kolar dam water source is in close proximity to the city. However the water from this dam is not provided to the city.
5. Town has a large area of 50.17 sq kms with large parts consisting of rural villages. Residential and industrial areas are occupying only 9.42 sq kms and hence have huge potential for future development due to abundant land availability.

- **Kolar in comparison with other towns**

An attempt has been made to compare Kolar town with surrounding towns and metro cities in city opinion surveys and the opinions gathered from various stakeholder groups are listed below

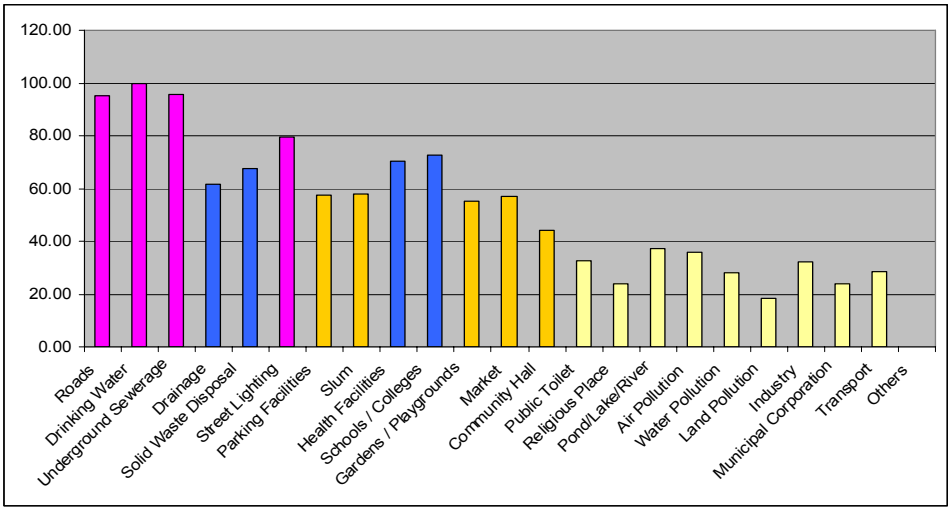
1. Town has no comprehensive water supply, sewerage, Solid Waste Management systems like in nearby Bhopal.
2. Town is connected only by road network unlike in Bhopal where all modes of transport (Road, rail and air) is available.
3. Kolar is basically a residential urban agglomeration town depends on Bhopal for economic activities.
4. Kolar town is a calm, quiet and peaceful town compared to other towns nearby.
5. It is less congested and has low population density when compared to Bhopal city.
6. The infrastructure facilities are very poor and undeveloped compared to Bhopal city.
7. Kolar has potential for future planned development due to closeness to Bhopal city as well as due to large area of the town.
8. Quality of living is poor compared to Bhopal city due to the presence of large slum pockets.

- **Problem areas - ranking**

During City Opinion Surveys, Stakeholders have been asked to rank problem areas pertaining to Physical infrastructure, Social Infrastructure and Environmental issues, which is presented in a scale of 0-1002 scores in the figure below.

[2] *High score represents sector having problem of high intensity and low score represents sector having problem of less intensity.*

Problems Identified by the Stakeholders



Problem areas			
1	Drinking Water	13	Gardens / Playgounds
2	Underground Sewerage	14	Pond / Lake / River
3	Roads	15	Air Pollution
4	Street Lighting	16	Industry
5	Schools / Colleges	17	Public Toilet
6	Health Facilities	18	Transport
7	Solid Waste Disposal	19	Water Pollution
8	Drainage	20	Religious Place
9	Parking Facilities	21	Land Pollution
10	Slum	22	Municipal Council
11	Market	23	Others
12	Community Hall		

- **Sector Prioritization**

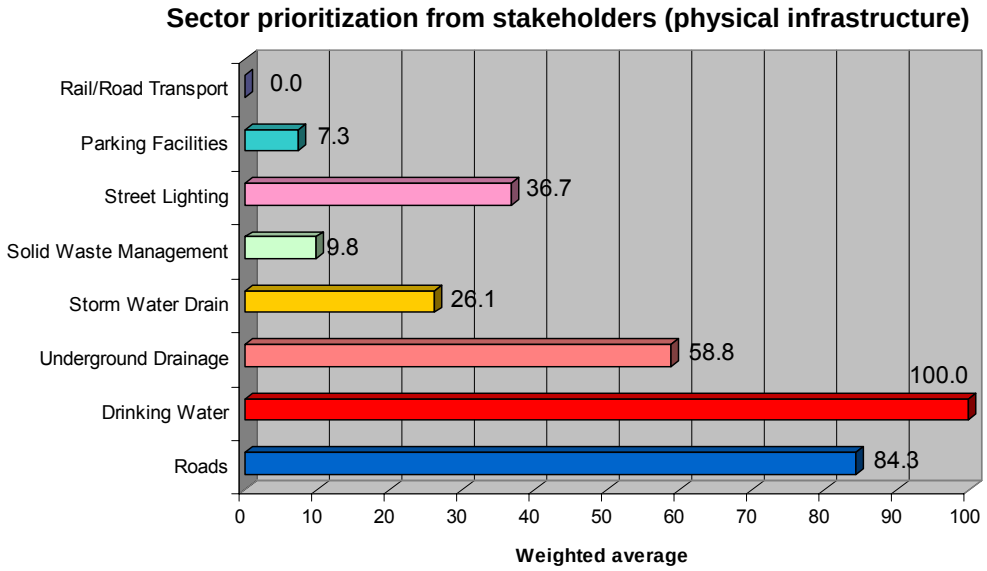
Projects identified in the city development plan cannot be taken all at once for implementation due to constraints like finance, institutional capabilities etc. Thus, phasing of the projects based on stake holder's priority could be a viable option for implementing projects. During City Opinion Surveys, Stakeholders have been asked to prioritize the sectors pertaining to Physical infrastructure, Social Infrastructure and Environment and is presented in a scale of 0-100 [3] scores.

[3] *Sector is highly prioritized by the Stakeholders if it gets 100 score and least prioritized if it gets 0 score.*

- ## Physical infrastructure priority

Based on City Opinion Survey findings, Stakeholders have given priority to the sectors related to Physical infrastructure on the following order:

1. Drinking Water Supply
2. Road Network
3. Under Ground Drainage
4. Street lighting
5. Storm Water Drainage
6. Solid Waste Disposal
7. Parking facilities
8. Transport



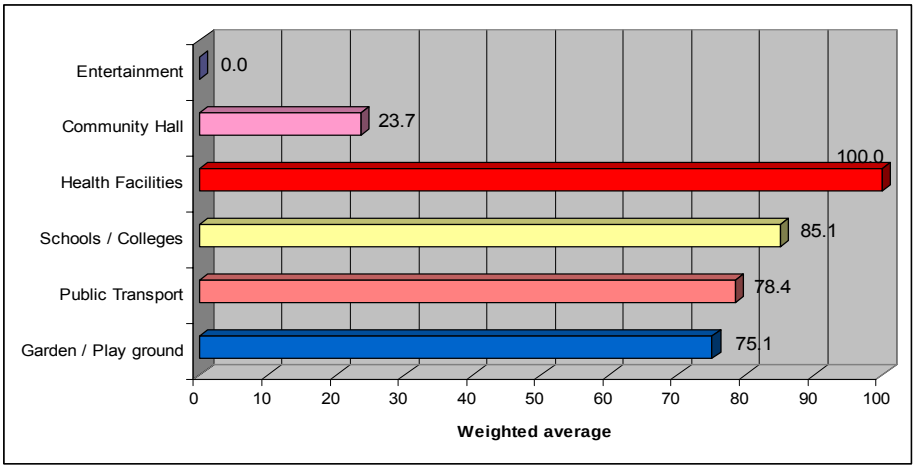
Source : Survey findings

- ## Social infrastructure priority

Based on City Opinion Survey findings, Stakeholders have given priority to the sectors related to Social infrastructure on the following order:

1. Health facilities
2. Schools and Colleges
3. Public Transport
4. Garden / Play grounds
5. Community Hall
6. Entertainment

Sector Prioritization from Stakeholders (Social Infrastructure)



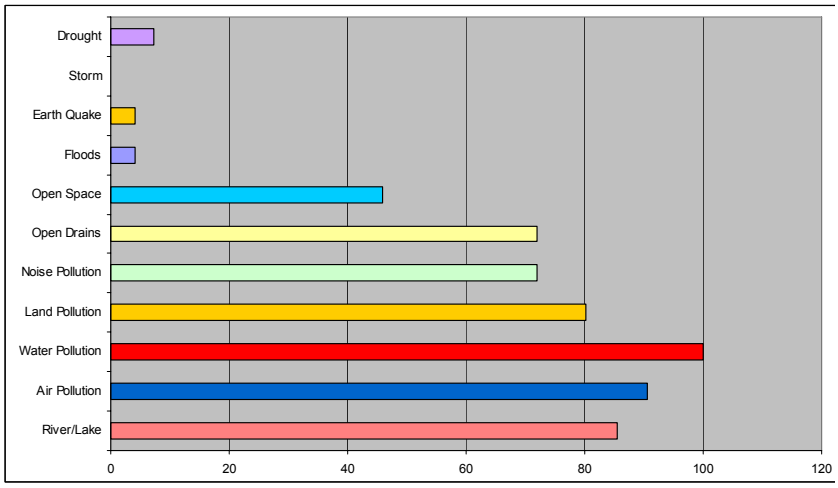
Source : Survey findings

- ## Environmental Issues

Based on City Opinion Survey findings, Stakeholders have given priority to the Environmental Issues on the following order:

1. Water Pollution
2. Air pollution
3. River/Lake
4. Land Pollution
5. Open drainage
6. Noise Pollution
7. Open space (unavailability)
8. Drought
9. Earthquake
10. Flood problem (water logging)
11. Storm

Sector Prioritization from Stakeholders (Environmental Issues)



Source : Survey findings

3. Second Stakeholders workshop

Taking ahead the Stakeholder Consultation process, the Consultants had organized a 2nd Workshop at Kolar on 19th January, 2010. The workshop was aimed at gathering the viewpoints of the stakeholders on the City's Vision. The rationale behind conducting the second workshop was to develop a Vision for Kolar City which is acceptable by and conceived in accordance with the Citizens of Kolar. The copy of City Vision Survey form is attached as Annexure.

The Steering Group members, elected members, staff of the municipal council and the general public were invited for the 2nd workshop. The workshop was held at Kolar on 19th January 2010 where a large number of stakeholders including the elected representatives and key administrative staff members and NGOs/ Women groups and several media representatives were present.

The Consultant made a presentation on the City Profile and the secondary data collected on Kolar and its administration in Hindi. The stakeholders were invited to share their vision for the city. The views of some of the stakeholders were also recorded. Following the presentation, City Vision survey formats in Hindi were distributed to the stakeholders to take individual feedback regarding the city vision.

Stakeholders filling up the survey forms

The Consultants presenting during the 2nd Workshop

Stakeholder's consultations and surveys held in Kolar town have resulted in identifying and formulating the City Vision for future development. The vision statements expressed by the citizens during stakeholders meeting is shown below:

Vision statements expressed by stakeholders during consultation

Vision for 10 years	Vision for 20 years	Vision for 30 years
Provision of basic services like road, water supply, sewerage system. Need for water conservation	Four laning of all the major roads	Urbanization through central policies
Removal of encroachments, need arrangements to conserve water and create river front development	City should become role model in development process and in improvement of health services	Community development along with recreational provisions
Six laning of roads, health facilities in the Kolar region Supply of water from	Expansion of city limits with proper planning	-

Vision for 10 years	Vision for 20 years	Vision for 30 years
Kolar Dam		
Provision of basic services like road, water supply, sewerage system	Setting-up of community hall, small scale industrial development, Government hospital	Creating sports ground and state-of-the-art communication services
Clean city vision, clean water supply, proper roads	Economic development, development of industrial units for employment generation and creating awareness related to education, health and environment	Integrated public transport system in the city
Removal of encroachments Inclusion of Kolar city under Bhopal Municipal Corporation for proper development	To attain self sustainable growth and develop haven for the common man to live happily	-

Provision of sustainable physical, socio-economic infrastructure and efficient city management came across as a vision of nearly all the stakeholders.

4. Third Stakeholders Meeting

A meeting with the top officials of Kolar Municipal Council was held in the Municipal Office Building on 12th January, 2010 to prioritize the projects as per the requirement of the Citizens residing in Kolar.

After preparation of Vision for Kolar City, the Consultants had identified various priority projects in line with the Goals and Strategies envisioned for Kolar City. The priority projects were identified for various sectors namely;

1. Land Use and Growth Management
2. Water Supply
3. Sewerage and Sanitation
4. Integrated Solid Waste Management
5. Traffic and Transportation
6. Storm Water Drainage
7. Street Lighting
8. Socio-economic Infrastructure
9. Urban Governance
10. Urban Finance

The priority projects identified under each category were discussed with the Municipal Council officials to understand their viewpoint on the same. After the discussion, a list of projects under each category was prepared to be included as priority projects under the City Development Plan. The following points were discussed during the meeting;

- Under Water Supply, the officials suggested that while laying new network, priority should be given to laying lines in Ward Nos. 21, 19, 18, 17, 10, 15, 12 and 13.
- Under Sewerage and Sanitation, the officials requested that the Nallah at ward no. 6 where solid waste is dumped should be cleaned.
- The officials also informed that Public Toilets for 1500 households has been approved and would be implemented. The toilets would be built at a cost of Rs. 1 lakh each with contributions from Central Government, State Government and Owners.
- The officials also mentioned that public toilets are necessary in ward nos. 9, 15, 10. However, lack of open space in the area would be a hindrance. The possibility of constructing public toilets at spaces between 2 villages ("Meda") could be explored.
- A 20 Acre land at Khatlikheda (near pumping station) has been proposed by the Municipal Council and is awaiting approval from the District Collector.
- The Chief Municipal Officer felt that the Kutcha Roads in villages have to be converted into puccca roads.
- The officials observed that a bus terminal, which has been proposed at ward no 16 can be included in the CDP.
- 7 Bus Shelters were proposed to be built at Kolar at various places.
- The officials claimed that a Slaughter house at ward no. 12 is required to cater to the sizeable meat market in Kolar.
- An open area in the form of a park / garden is required in every ward.
- The Consultants proposed that the Crematorium should be electrified and was accepted by the Council members.
- The Council members also mentioned that a new website has been launched for Kolar Municipal council; http://mckolar.com/

• Fourth Workshop

The fourth workshop held at Kolar Municipal council on October 20, 2010. The consultants presented the list of project with city investment plan and financial operating plan to the Stakeholders. There was discussion in relation with the probable funding options for capital investment and the reforms required in order to sustain the financial balance of the urban local body.

Stakeholder's present during the 4th Workshop

Special Paper 1

Measures for making Kolar a Sustainable city-

Sustainable city is a city conceived on principles of sustainability, which would address environmental issues plaguing the cities of today

1 Cities and Climate Change

'It is no longer a scientific question as to whether the climate is changing, but the question is the timing and magnitude of Climate Change'

1.1 Climate Change – Relevance and Context

Climate change has origins in anthropogenic activities and is engaging the attention of planners, governments, and politicians worldwide. Climate change is recognized both as a threat and a challenge. The impact of human activities on climate and climate systems is unequivocal. The governments of the countries across the world are engaged in working out the impacts and associated vulnerabilities of their economies to impending projected climate change.

Climate has a significant role in the economic development of India. Many sectors of the economy are climate sensitive. In India, the meteorological records indicate rise in the mean annual surface air temperature by 0.4°C with not much variations in absolute rainfall. However, the rates of change in temperatures and precipitation have been found to be varying across the region. The intensity and frequency of heavy precipitation events have increased in the last 50 years. The tide gauge observations in the last four decades across the coast of India also indicate a rise in sea level at the rate of 1.06-1.25 mm/year. Further, some preliminary assessments point towards a warmer climate in the future over India, with temperatures projected to rise by 2-4 o C by 2050s. No change in total quantity of rainfall is expected, however, spatial pattern of the rainfall are likely to change, with rise in number and intensity of extreme rainfall events.

Climate change is recognized both as a threat and a challenge

The sea level is also projected to rise with cyclonic activities set to increase significantly with warmer oceans. The continuous warming and the changing rainfall pattern over the Indian region may jeopardize India's development by adversely impacting the natural resources such as water forests, coastal zones, and mountains on which more than 70% of the rural population is dependent.

The physiographic features and the geographic location, which control the climate of the country, bestows it with great wealth of its natural resources, surface and ground water availability, forestry and vegetation. The region

abounds in very rich collection of flora and fauna, and some of these locations exhibit a high degree of species endemism and constitute biodiversity hotspots of the world. There is an ever increasing recognition of the need for impact assessment related to climate change and undertaking suitable assignments for reducing projected adverse impacts of climate change.

1.2 Urbanisation and Climate Change perspective

About 30% (285.35 million people, 2001 census) of the Indian population resides in urban areas. In post-independence era while population of India has grown three times, the urban population has grown five times. Urban areas are heavily dependant on fossil fuels (often imported), for the maintenance of essential public services, for powering homes, transport systems, infrastructure, industry and commerce. The fossil fuels are increasingly becoming more expensive due to scarcity of fuel and increase in demand. In addition to this, the environmental and social impacts of the consumption of fossil fuels are increasingly becoming a concern. These impacts include air pollution, global warming, waste disposal problems, land degradation and the depletion of natural resources.

Urbanization and economic development are leading to a rapid rise in energy demand in urban areas. Urban areas have emerged as one of the biggest sources of Green House Gas (GHG) emissions, with buildings alone contributing to around 40% of the total GHG emissions. As per latest UN report one million people are moving to urban areas each week. It is estimated that around two-thirds of the world population will be living in cities in 2050. This requires a tremendous shift in energy resources in urban areas. In recognition of this, various cities around the world are setting targets and introducing polices for promoting renewable energy and reducing GHG emissions. London has announced 20% Carbon emission reduction by 2010; New York and 200 other U.S. cities have set a similar target. Tokyo has announced 20% share of renewable in total consumption by 2020 and Australian government has initiated a Solar Cities programme.

Several Indian cities and towns are experiencing 15% growth in the peak electricity demand. The local governments and the electricity utilities are finding it difficult to cope with this rapid rise in demand and as a result most of the cities/towns are facing severe electricity shortages. There is a need to develop a framework that will encourage and assist cities in assessing their present energy consumption status, setting clear targets for and preparing action plans for generating energy through renewable energy sources and in conserving energy utilized in conducting urban services.

1.3 Sustainable city – the city of Future

In addition to the increasing energy consumption, electricity shortages, depleting natural resources there are other problems like unplanned growth, unmanageable cities and deteriorating quality of life. A one pack smart solution to break from viscous cycle of degenerating cities and unending shortages is growth driven by Sustainability principles.

Sustainable city is a city conceived on principles of sustainability, which would address environmental issues plaguing the cities of today. Sustainable cities make prudent use of available land, encourage energy-efficiency, resource efficiency and promote healthy buildings for users. Traffic clogged city centers are reclaimed for pedestrians, green spaces are preserved and expanded, recycling schemes are promoted, and environment friendly buildings are designed.

What our cities will look like in the future will depend on, how they are planned or, much more important, whether they are planned at all. The key point is that planning and management has a key role in ensuring sustainability.

Many of the problems associated with our cities exist because they have not been planned, or the planning has been ineffective or misdirected and secondly due to due to inefficient management and governance of the cities. Sustainable cities will look at the existing cities and aim at making policy changes and indentify strategies which will improve the status of existing cities and address environmental issues.

Sustainable city is a city conceived on principles of sustainability, which would address environmental issues plaguing the cities of today

Give the background to 'Sustainable City', it is imperative to say that it is a mammoth to recreate and revitalize our cities to "Sustainable city". However, a Journey of 1000 miles begins with a small step. And there are definitely number of short term and implementable strategies which will embark us in the direction Sustainable cities.

This Special paper focuses on two categories of such implementable strategies that can be undertaken by Kolar Municipal Council. These strategies are explained in subsequent sections.

2 Energy Efficiency strategies for the city

The Energy efficiency strategies for city can be broadly categorized under two heads. Strategies and measures applicable at city level for provision of services and strategies applicable at building level

2.1 Energy Efficiency in Kolar Municipal Council

Municipalities are spending large amounts of their revenue on purchasing energy for providing local public services such as street lighting and water supply.

Municipal energy efficiency saves scarce commodities and stretches tight budgets, giving citizens improved access to electricity, water, heat and air conditioning. Energy efficiency in municipal water supply systems can save water and energy while reducing costs and improve service at the same time.

For those bearing the financial responsibility for local public services, efficiency in the provision of energy and water is one of the few cost-effective options available for meeting growing demands for vital services such as electricity, water and wastewater treatment. The budgets for these services often lack funds to invest in improvements, and public entities are looking for ways to finance energy efficiency projects. Among many possible options, performance contracting offers a mechanism for municipalities and public utilities to finance efficiency improvement projects without upfront investment.

Performance contracting became popular because the goods and services associated with the project are paid from the savings accrued from it, which allows municipalities to finance the improvements. Performance contracts are inherently flexible and can be structured to best fit the needs of the involved parties.

Performance contracts often involve an Energy Service Company (ESCO) but sometimes the services can be provided by engineering firms, such as water engineering companies in case of efficiency project involving water supply. However, ESCO participation in the project is beneficial because such companies have managerial, technical and turn-key project implementation skills that often are lacking at the municipalities, combined with the ability to structure project financing. Based on the municipalities' needs, the ESCOs

can finance EE implementation and collect their dues from shared or guaranteed savings accruing from the EE project.

2.1.1 Energy Efficiency Strategies in Municipal Sector

The major energy loads in any are typically the water pumping systems, street lighting, sewage treatment and handling, and electricity distribution. Municipal buildings such as offices, hospitals, schools also contribute to the high municipal energy bills. Therefore, the following systems are those most commonly addressed by a municipal energy efficiency audit:

- Street lighting
- Water Pumping
- Sewage pumping
- Electrical distribution
- Municipal Buildings

- **EE measures in street lighting**

Street lighting is one of the major sources of energy consumption in municipal sector. A comprehensive survey of street lighting systems needs to be conducted and meetings with officials responsible for designing, installation and operation and maintenance are to be conducted. The specifications of types of lamps being used in various roads in the city should be mapped and based on the energy audit of street lighting and the data collected from the Municipal council, appropriate projects can be implemented. There is a good potential of reducing the consumption by installing multitab ballast with astronomical timer switch. The following strategies can be envisaged:-

1. **Replacement of High Pressure Sodium Vapor Lamps with LED lights**

High mast tower lights of 400W, 250 W, 70 W are generally used for street lighting in most of the ULB's which can be replaced with more energy efficient LEDs of 125 W, 70 W and 28 W respectively. A 100% target to replace the high mast tower lights can be set with year wise target. Kolar Municipal council can adopt ESCO model financing for Energy Efficiency street lighting projects.

Strategies

Kolar has 1394 street lights positioned all over the Municipal area in which 1010 lights are 40 W tube lights, 210 lights are 250 W Sodium Vapor lamps and 174 lights are 150 W Sodium Vapor lamps.

Recommendations for Replacement of Street Lights

- *Replacement of 1010 40 W Tube light with 8W LED lights or 28 W T5 lights*
- *Replacement of 174 Nos 150 W High Pressure Sodium Vapor with 55 W LED lights*
- *Replacement of 210 Nos 250 W High Pressure Sodium Vapor with 130 W LED lights*

From the above recommendations we can achieve a total savings of around 300745 KW per annum and monetary savings of Rs 8,62,557 per annum

2. Sensors for Automatic on / off of street lights

Automatic street lights ensure that energy is not wasted by lights turned on during day time. Most of the ULBs predominantly follow manual switching of street lights which results in labour costs, energy wastage and poor efficiency. The best solution is to install automatic sensors.

Mostly in ULBs it has been observed that the operating load remains same throughout the night. Keeping this in mind it is suggested to install the multi tab ballast which varies the load of the lamp according to the traffic load during the night. Multitab ballast comes with a facility of setting the time for which the lamp will run up to its full facility. So during the evening operating hours the timer is set for the full loading of the lamp and during midnight onwards it will be set for 50% loading of the lamp. Astronomical timer switch will help in reducing the wastage of lighting consumption as due to seasonal variation the operating hours of street lighting does change. So the switch doesn't allow street light to get on before the dusk and after the dawn.

Strategies

In Kolar Municipal council it has been observed that the operating load for street lighting remains same throughout the night. In order to reduce the energy load it is suggested to install the multi tab ballast which varies the load of the lamp according to the traffic load during the night.

Multitab ballast comes with a facility of setting the time for which the lamp will run up to its full facility. So during the evening operating hours the timer is set for the full loading of the lamp and during midnight onwards it will be set for 50% loading of the lamp. Astronomical timer switch will help in reducing the wastage of lighting consumption as due to seasonal variation the operating hours of street lighting does change. So the switch doesn't allow street light to get on before the dusk and after the dawn.

• EE measures in water pumping

Water pumping is another energy consuming activity in the municipal sector. According to the BEE estimates approximately 25% of energy savings can be achieved from initiatives in water pumping systems alone.

1. Improvement of Design Efficiency in Pumping System

Strategies

For the propsosed water supply scheme, a detailed study should be conducted to assess the volume of water to be pumped and height at which the pumps need to be located.

The proper designing of the pumping system using the fluid flow analysis softwares can bring out energy savings in running and maintenance of water pump systems to the tune of 20%.

2. Installation of variable speed drivers

Major energy loss is caused due to the improper dimension and adjustments, by properly adjusting the pump speed using variable speed drivers these losses can be reduced.

Strategies

It is expected to achieve around 5% energy savings by installing variable speed drivers in water pumping systems.

2.1.2 Other Energy Efficiency Measures

Sector wise survey (Residential, Commercial, Industrial and Municipal) could be conducted to assess the energy consumption scenario and based upon the survey results various energy efficiency projects can be implemented.

Strategies

The major energy saving measures that can have maximum impact are as follows.

- *Replacement of incandescent lamps with CFL*
- *Replacing the conventional T-12 (40 Watt) copper ballast tube lights with the energy efficient T-5 (28 watt) electronic ballast tube lights. The saving would be around 42% per tube light.*
- *Replacing the conventional ceiling fans which consumes (70-80watt) with energy efficient fans (which consumes 50 watt). The savings will be 37% per fans.*
- *Replacing the existing unitary air conditioners with the BEE star labeled air conditioners.*

The overall electricity savings can be achieved by implementing all the above measures would be approximately more then 20% of the total consumption in various sectors of the city.

2.2 Building Energy Efficiency – Existing policy Framework

In India there are two Building codes (policy frameworks) which deal with the construction of buildings and with Energy efficient design of buildings - the National Building codes 2005 (NBC 2005) and the new Energy conservation of buildings codes 2006 (ECBC 2006). The national building codes only consider regulations in building construction primarily for the purposes of regulating administration , health and safety , materials and construction requirements and building and plumbing services whereas the ECBC 2006 consider energy conservation and energy efficiency in buildings to provide minimum requirement for the energy efficient design and construction of buildings. The NBC 2005 refers to a wide variety of building type and ownership whereas ECBC 2005 only refers to commercial buildings and some building complexes.

The ECBC 2006 mainly considers administration and enforcement, the building envelope, HVAC, service hot water and pumping, lighting and electric power to encourage conservation of energy. These are considered during construction of new buildings and while doing additions to existing buildings.

At present the Energy Conservation Act 2001 empowers the state governments to adjust the codes according to local conditions. This encourages inconsistency in building practices across to country and can lead to huge deviations from the existing codes. There are currently various state designated agencies for implementation of this code. The regulating authority is different for each state and is responsible for enforcing the adapted building codes for that state. Experts check the plans for new buildings or changes to existing buildings and permit the builder to carry out construction if the design meets the code requirements. They are rejected and sent for alteration if they do not meet the requirements. After the building is built it must again be certified as complete by the state designated agency before it is used.

The Bureau of Energy Efficiency is working on certifying Energy Auditing Agencies in order to evaluate buildings energy use, which will enable better regulation of energy conservation in buildings.

2.2.1 Sustainable Construction /Green Buildings

Green Building is the practice of increasing the efficiency while ensuring healthy indoor environment for the buildings by minimizing their use of power, water, and materials, thus reducing building impact on the environment and on the limited resources of the planet, through better site selection, design, construction, operation, maintenance, and dismantling - the complete building life cycle.

In order to encourage green rating practices of buildings, IGBC has come up with LEED rating. Points are given for different criterion at the site planning, building planning and construction, and the building operation and maintenance stages of the building life cycle. The entire constructions for all the new and existing construction can follow the Green Building standards.

The related concepts of sustainable development and sustainability are integral to green building. Effective green building can lead to

- Reduced operating costs by increasing productivity and using less energy and water,
- Improved public and occupant health due to improved indoor air quality, and
- Reduced environmental impact by, for example, lessening storm water runoff and the heat island effect.

Demand Comparison: Conventional Vis a Vis Green Building

	Conventional Building	Green Buildings *
Air-conditioning Cooling Load	150 SFT/TR	600 SFT/TR
Electrical Demand Load	10 WATT/SFT	4 WATT/SFT
Lighting Power Density office area	2 WATT/SFT	< 0.6 WATT/SFT
Lighting Power Density retail area	4 WATT/SFT	< 1 WATT/SFT
Lighting Power Density parking area	1 WATT/SFT	< 0.15 WATT/SFT
Potable Water Demand	45 Liters per day per person	20 Liters per day per person

** - As per the Green measures adopted*

Green buildings are scored by rating systems, such as the Leadership in Energy and Environmental Design (LEED) rating system developed by the Indian Green Building Council, and other locally developed rating systems like GRIHA

Strategies

Green Building Implementation Framework Model for ULB

In order to propagate the energy efficient/ green building in the jurisdiction of Kolar Municipal Council the construction of commercial, industrial and residential complexes /townships as per the green building standards can be made mandatory by ULB or some special financial incentives such as property tax rebates or incentives in

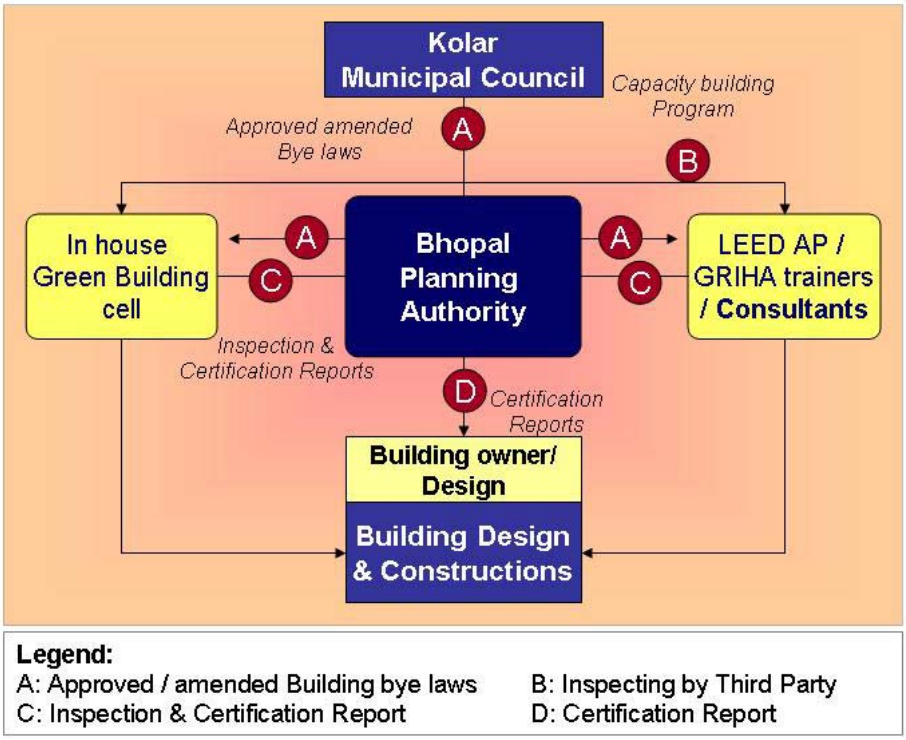
electricity bills etc can be given by the ULB.

For the effective implementation of sustainable construction as per the LEED / GRIHA criteria ULB should set up a Green Building cell which can be a subset of the JNNURM cell, which will consist of members of town planning authority, PWD and ULB who will be trained on Green Building concept and also seek the help of LEED AP or GRIHA certified professionals.

This green building cell will be responsible for the approval of all plans in order to ensure that it is as per the criteria of LEED / GRIHA which can also have a third party inspection from LEED AP / GRIHA certified professionals who in turn will give the certification report to town planning department advising them on any changes to be made in plan if required or recommending approval. The model framework is depicted in Figure below

ULB should conduct an extensive training programme either by GRIHA or IGBC (Indian Green Building Council) for all the local architects and people involved in civil construction in order to do effective capacity building on Green buildings with the help of MNRE.

Figure : Implementation Framework Model for ULB



2.2.2 Steps to be taken for effective implementation of Energy Efficiency in Buildings

Other additional measures which can be taken by Kolar Municipal council are as follows:

Strategies

- *ULB can offer financial assistance for reduction in energy use in lighting systems that go beyond the ASHRAE guidelines. This incentive allows energy efficient lighting to be a cost effective measure, ULB can also offer subsidies for indoors and outdoors solar lighting devices for community and individual users.*
- *As of now there are no subsidies offered for most energy efficient HVAC systems and for the use of natural water coolers. ULB can offer financial incentives for more energy efficient HVAC systems. This encourages their use in new buildings and when retrofitting existing buildings.*
- *Financial assistance or subsidy can be given to solar heating systems in particular which will be preferred option for the city as this technology being suitable for the climate of the city.*
- *ULB by notification in consultation with state government, BEE can amend the energy conservation building codes to suit the conditions and factors prevailing in Kolar.*
- *Direct every owner or occupier of a building or building complex to comply with the provisions of the energy conservation building codes.*
- *Direct, if considered necessary for efficient use of energy and its conservation, any consumer referred to get energy audit conducted by an accredited energy auditor.*
- *Take all measures necessary to create awareness and disseminate information for efficient use of energy and its conservation.*
- *Arrange and organize training of personnel and specialists in the energy conservation techniques for efficient use of energy and its conservation.*
- *Take steps to encourage preferential treatment for use of energy efficient equipment and appliances.*
- *ULB can also work out on possibility of establishing an energy conservation fund with adequate contribution from State government, private entities in city etc in order to enhance the financing of EE projects to be implemented.*

3 Financing Schemes & models

Lack of adequate finance is one of the reasons that even being technically and economically viable, many of the energy conservation or renewable energy projects / programmes do not get implemented. The financing of solar cities is quite challenging as the quantum of finance for various strategies varies from few hundred rupees to several crores of rupees. Therefore a variety of financing institutions and schemes has to be integrated to evolve a feasible financing plan.

4.1 Financing Options

4.1.1 Grants/ finance from central government, state government and international agencies.

There are several central and state government agencies that give grants or create special funds for the purpose of providing finance for various renewable energy and energy efficiency projects. Several international lending and donor institutions such as World Bank, the Asian development bank etc have projects and funds for development of EE and RE projects.

Ministry of Urban Development could also be approached for assistance under their scheme like JNNURM for MSW and STP (Sewerage Treatment Plant) projects. ADB is lending to IREDA for an Integrated Renewable Energy Development Project which has solar roof top as one of the components. Similarly there are bilateral funding agencies like USAID, DFID etc who can finance or give grants to certain projects.

4.1.2 Self financing – recovery of investment through tax or tariffs

Under this model, Nagar Nigam or DISCOM (PVVNL) can allocate funds for development of various projects under solar city programme, which can be through loans. Tax, tariff or user fee collection could be used to self finance the projects.

4.1.3 Project finance

In this model, project work is awarded to private entity on a PPP route and a SPV is established which in turn enters into contract with suppliers and buyers and financial institutions lend to the SPV based on the cash flows of the project. Grid connected solar PV plants and large waste to energy projects can be put up through project financing.

4.1.4 Revolving Fund

A revolving fund (RF) is usually set up to finance an explicit activity/s that is clearly defined by the holders of the fund. RF is one time investment and it can come from multiple sources, the best scenario here is to create a RF from the subsidy amount that is to be obtained. This RF will be maintained by the JNNURM cell.

4.1.5 ESCO Financing

An ESCO designs, implements and finances energy efficiency and energy conservation projects on behalf of its customers on a guaranteed performance basis. The project design is such that the savings will usually be large enough to service the debt assumed to implement the measures and leave a surplus that is shared between the customer and the ESCO. An ESCO risks its payments on the performance of the measures implemented and the equipment installed. Because the payments to an ESCO are contingent upon the magnitude of the actual savings, ESCOs are often called Performance Contractors. Some ESCOs may even finance projects, recovering their investment from the resulting savings. In other words an ESCO is a single-window solution to all aspects of energy efficiency improvement.

A typical ESCO project includes the following elements:

- Investment grade energy audit;
- Identification of possible energy saving and efficiency improving actions;
- Comprehensive engineering and project design and specifications;
- Guarantee of the results by proper contract clauses
- Code compliance verification and guarantee;
- Procurement and installation of equipment;
- Project management and commissioning;
- Facility and equipment operation & maintenance for the contract period;
- Monitoring and verifications of the savings results; and Project financing.

A number of financing options are available for Energy Performance Contract Projects. These include:

- Bank Financing
- Direct Customer Financing
- Public financing (bonds)
- ESCO or third party financing

No matter which option is used to finance the project, the financing of the project is ensured through two main types of contracts:

- Shared Savings, and
- Guaranteed Savings.

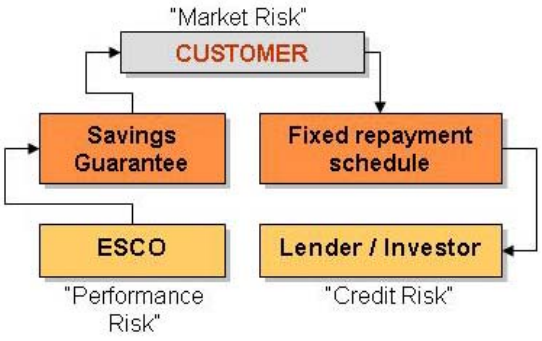
Shared Savings:

Under a shared savings structure the ESCO finances the project, usually by borrowing money from one or more third parties. This structure is much less common than the guaranteed savings structure. In the case of shared savings, the ESCO assumes not only the performance risk, but the financial risk as well (including the underlying customer credit risk). The customer assumes no financial obligation other than to pay a percentage of the actual savings to the ESCO over a specified period of time. This obligation is not considered debt and does not appear on the customer's balance sheet. The portion of savings paid to the ESCO is always higher for shared savings than the guaranteed savings projects, reflecting the ESCO's significantly greater risk and expense for borrowing money.

Since the ESCO is a service company, it typically has few assets that it can offer as a security to a lender. To add to this, the ESCO assumes the risk of non-performance of the measures as well as the credit risk of the customer. This makes borrowings by ESCOs expensive. As a commercial entity, the ESCO has no option but to recover this cost from its customers, and this results in higher share of the savings going to the ESCO: something not quite in the customers best interest. For this reason this model was found to be less attractive as ESCO markets matured. The Guaranteed Savings system overcomes this hurdle.

Guaranteed Savings:

Under a guaranteed savings structure, the customer finances the project in return for a guarantee from the ESCO that the project's energy savings will cover the customer's debt service. Thus, the customer assumes the obligation to repay the debt to a third party financier, which is often a commercial bank or a leasing company. If the project savings fall short of the amount needed for



debt service, the ESCO pays the difference. If the savings exceed the guarantee amount, the customer and the ESCO usually share the excess savings. The size of the share and the method of calculation vary widely, depending on the degree of risk assumed and the extent of services provided by the ESCO.

It is important to note that in a typical guaranteed savings project, the ESCO has no contractual relationship with the bank or leasing company. The ESCO's guarantee is to the customer, and is a guarantee of performance (that the project will result in enough cost savings to repay the loan assumed to finance it), not a guarantee of payment. As a consequence, the bank or leasing company confines its risk analysis to the customer's general credit standing. The financial institution may regard the performance guarantee as a form of credit enhancement.

Energy efficiency in street lighting, water pumping, and cluster based projects in industries are some of the projects that can be implemented in ESCO mode.

4.1.6 Municipal /Energy Efficiency/Carbon Bonds

Issuing bonds makes the most sense when the size of the issuing agency is significant enough to attract investors for financing its ventures. Issuing bonds involves good amount of preparatory work that consist of analyzing and forecasting the projects financial resources, and launching a procedure for getting credit rating from credit agency. Here Nagar Nigam can itself or Madhya Pradesh Urja Vikas Nigam Ltd. (MPUVN) on behalf of Nagar Nigam can issue bonds with state government or IREDA. MNRE guarantee so that the bonds gets placed easily and fund inflow happens in time.

4.1.7 Clean Development Mechanism

If proper documentation and procedures are followed and appropriate steps are taken as per the UNFCCC standards this would act as an excellent source of revenue

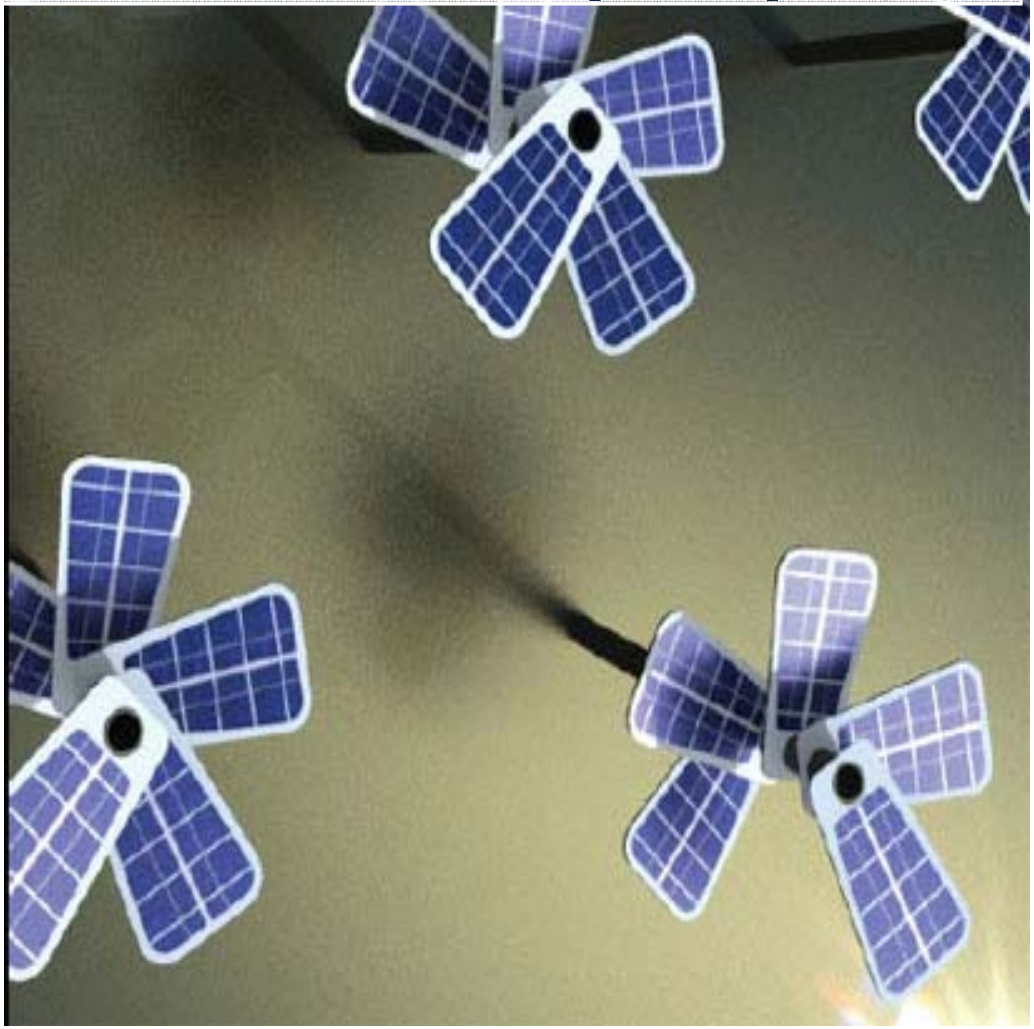
4.2 Implementation Strategy

Table 3-1: Implementation strategy

no	Project	Implementing Agency	Responsible Stakeholder	Financing Model
1	Solar Water Heating Systems	Solar water heating manufacturers /distributors	ULB/DISCOM	IREDA Loans , MNRE Subsidy , Carbon financing, rebate on electricity bills
2	Solar Cookers	Solar Cooker manufacturers /distributors	ULB/State Nodal Agency/Private developer	Carbon financing , MNRE Subsidy
3	Solar Lanterns	Solar Photovoltaic Manufacturers	ULB/DISCOM/ State Nodal Agency	Revolving fund, Carbon Financing
4	Solar Home Lighting Systems			
5	Solar Hoardings			
6	Solar Traffic lights			
7	Solar Street lights			
8	Solar Invertors			
9	SPV Power Plants	Renewable energy project developer (PPP)		Project finance, Carbon financing
10	MSW and STP Power Plant	Renewable energy project developer (PPP) through BOO/BOT basis		Project finance, Carbon financing
11	LED/CFLs instead of incandescent bulbs	ESCO	ULB/DISCOM	Performance contract, carbon financing, rebate on electricity bills
12	Energy efficient electrical appliances such as fans , refrigerators, air conditioners	ESCO	ULB/DISCOM	Performance contract, Bonds, carbon financing, rebate on electricity bills
13	Energy efficient water pumping systems	ESCO	ULB/DISCOM	Performance contract, Bonds, carbon financing, rebate on electricity bills

Special Paper 2

Energy Efficiency in Street Lighting- Kolar



1 Energy Efficiency in Street lighting systems

Municipalities are spending large amounts of their revenue on purchasing energy for providing local public services such as street lighting and water supply. Municipal energy efficiency saves scarce commodities and stretches tight budgets, giving citizens improved access to electricity, water, heat and air conditioning.

For those bearing the financial responsibility for local public services, efficiency in the provision of energy and water is one of the few cost-effective options available for meeting growing demands for vital services such as electricity, water and wastewater treatment. The budgets for these services often lack funds to invest in improvements, and public entities are looking for ways to finance energy efficiency projects.

The major energy loads in any are typically the water pumping systems, street lighting, sewage treatment and handling, and electricity distribution. Municipal buildings such as offices, hospitals, schools also contribute to the high municipal energy bills. Therefore, the following systems are those most commonly addressed by a municipal energy efficiency audit:

- Street lighting
- Water Pumping
- Sewage pumping
- Electrical distribution
- Municipal Buildings

This paper focuses on Energy efficiency strategies for Kolar Municipal council

a. Street lighting in Kolar Municipal council

Kolar has 1394 street lights positioned all over the Municipal area in which 1010 lights are 40 W tube lights, 210 lights are 250 W Sodium Vapor lamps and 174 lights are 150 W Sodium Vapor lamps. As a part of energy saving mechanism, Municipal Council has placed 3 timer switches and nearly 30 tube lights have electronic chokes. Total 6320 electric poles are in place all over the municipal area as indicated by the Municipal officials. The present status of street lighting and its load details can be summarized as in the table below.

Connected load details.

40 W Tube Lights		
Number of lamps	1010	nos
Wattage of each lamp	40	W
Total Load	40400	W
250 W Sodium Vapor Lamps		
Number of Lamps	210	nos
Wattage of each Lamp	250	W
Wattage of Ballast	30	W
Total Wattage of 1 lamp	280	W
Total Load	58800	W
150 W Sodium Vapor Lamps		
Number of Lamps	174	nos
Wattage of each Lamp	150	W
Wattage of Ballast	30	W
Total Wattage of 1 lamp	180	W
Total Load	31320	W
Total Connected Load	**130520**	**W**

b. Energy Efficiency Initiative

Increasing energy efficiency will assist the ULB's and municipalities in expanding infrastructure and improving services for public (especially in context of energy price increases), and shift activities to more sustainable directions. It generates environmental benefits through reduced emissions of greenhouse gases and local air pollutants. It also stimulates new services, creating value and local jobs. Improving energy efficiency both by reducing quantities of energy consumed and by changing processes, offers a powerful tool for achieving sustainable development by reducing the need for investment in energy infrastructure and by cutting fuel costs.

• Recommendations for Replacement of Street Lights

a. Replacement of 1010 40 W Tube light with 8W LED lights or 28 W T5 lights

The table below shows the investment analysis and payback for replacing the 1010 nos 40 W tube lights.

Investment analysis and payback (40 W tube lights)

Sr. No.	Type of Fixture	Calculation	Unit	Tube light 40 W	LED 8 W	T5 28W
				[A]	[B]	[C]
1	Working Hours/Day	-	Hrs /Day / Fixture	**10**	**10**	**10**
2	Power Consumption	-	KW / Day / Fixture	**0.4**	**0.08**	**0.28**
3	Annual Power Consumption	[2] x 365	KW/Annum / Fixture	**146**	**29.2**	**102.2**
4	Power Saving	[A]-[B], [A]-[C]	KW/Annum / Fixture	**0**	**116.8**	**43.8**
5	Total Nos of Fixtures		Nos	**1010**	**1010**	**1010**
6	Total Power Saving	[4] x [5]	KW / Annum	**0**	**117968**	**44238**
7	Monetary Saving	3.10x [6]	Rs/ Annum	**0**	**365700.8**	**137137.8**
8	Life of Lamp	-	Years	**2.2**	**12**	**5**
9	Cost of Lamp	-	Rs / lamp	**0**	**-**	
10	Replacement Cost	[5] x [9] x 12/ [8]	Rs/ 12 Yrs	**0**		
11	Cost of Fixture	-	Rs / Fixture	**1500**	**4500**	**3000**
12	Total Cost of Fixtures	[5] x [11]	Rs	**1515000**	**4545000**	**3030000**
13	Maintenance Cost	-	%	**10**	**0.5**	**0.5**
14	Total Maintenance Cost	[12] x [13]/ 100	Rs / 12 Yrs	**151500**	**22725**	**15150**
15	Maintenance Cost	[14]/12	Rs/Yr	**12625**	**1893.75**	**1262.5**
16	Salvage Value of HPSV Fixture @ 50%	[12A] x 0.5	Rs	**-**	**0**	
17	Net Investment	[10] +[12] – [16]	Rs	**1515000**	**4546893**	**3030000**
18	Net Saving	[7] - [15]	Rs/ Annum	**-**	**363807**	**135875.3**
19	Payback Period	12 x [17]/ [18]	Month	**-**	**149.98**	**267.60**

Source : Analysis by consultants

b. Replacement of 174 Nos 150 W High Pressure Sodium Vapor with 55 W LED lights

The table below shows the investment analysis and payback for replacing the 174 nos 150 W HPSV lamps.

Investment analysis and payback (150 W HPSV lamps)

Sr. No.	Type of Fixture	Calculation	Unit	HPSV 150 W	LED 55 W
				[A]	[B]
1	Working Hours / Day	-	Hrs / Day/ Fixture	**12**	**12**
2	Power Consumption	-	KW/ Day/ Fixture	**1.8**	**0.66**
3	Annual Power Consumption	[2] x 365	KW/ Annum / Fixture	**657**	**240.9**
4	Power Saving	[A]-[B], [A]-[C]	KW / Annum/ Fixture	**0**	**416.1**
5	Total Nos of Fixtures		Nos	**174**	**174**
6	Total Power Saving	[4] x [5]	KW/ Annum	**0**	**72401.4**
7	Monetary Saving	2.75x [6]	Rs/ Annum	**0**	**199103.85**
8	Life of Lamp	-	Years	**2.2**	**12**
9	Cost of Lamp	-	Rs/lamp	**0**	**-**
10	Replacement Cost	[5] x [9] x 12/ [8]	Rs/12 Yrs	**0**	
11	Cost of Fixture	-	Rs/Fixture	**6000**	**15000**
5	Total Cost of Fixtures	[5] x [11]	Rs	**1044000**	**2610000**
13	Maintenance Cost	-	%	**10**	**0.5**
14	Total Maintenance Cost	[12] x [13]/ 100	Rs/12 Yrs	**104400**	**13050**
15	Maintenance Cost	[14]/12	Rs/Yr	**8700**	**1087.5**
16	Salvage Value of HPSV Fixture @ 50%	[12A] x 0.5	Rs	**-**	**0**
17	Net Investment	[10] + [12] – [16]	Rs	**1044000**	**2611087.5**
18	Net Saving	[7] - [15]	Rs/Annum	**-**	**198016.35**
19	Payback Period	12 x [17]/ [18]	Month	**-**	**158.23**

Source : Analysis by consultants

c. <u>Replacement of 210 Nos 250 W High Pressure Sodium Vapor with 130 W LED lights</u>

The table below shows the investment analysis and payback for replacing the 210 nos 250 W HPSV lamps

Investment analysis and payback (250 W HPSV lamps)

Sr. No.	Type of Fixture	Calculation	Unit	HPSV 250W	LED 130 W
				[A]	[B]
1	Working Hours/ Day	-	Hrs/ Day/ Fixture	**12**	**12**
2	Power Consumption	-	KW/ Day/ Fixture	**3**	**1.56**
3	Annual Power Consumption	[2] x 365	KW/ Annum / Fixture	**1095**	**569.4**
4	Power Saving	[A]-[B], [A]-[C]	KW / Annum / Fixture	**0**	**525.6**
5	Total Nos of Fixtures		Nos	**210**	**210**
6	Total Power Saving	[4] x [5]	KW/ Annum	**0**	**110376**
7	Monetary Saving	2.75x [6]	Rs/ Annum	**0**	**303534**
8	Life of Lamp	-	Years	**2.2**	**12**
9	Cost of Lamp	-	Rs/lamp	**550**	**-**
10	Replacement Cost	[5] x [9] x 12/ [8]	Rs/12 Yrs	**630000**	
11	Cost of Fixture	-	Rs/Fixture	**8000**	**32000**
5	Total Cost of Fixtures	[5] x [11]	Rs	**1680000**	**6720000**
13	Maintenance Cost	-	%	**10**	**0.5**
14	Total Maintenance Cost	[12] x [13]/ 100	Rs/12 Yrs	**168000**	**33600**
15	Maintenance Cost	[14]/12	Rs/Yr	**14000**	**2800**
16	Salvage Value of HPSV Fixture @ 50%	[12A] x 0.5	Rs	**-**	**840000**
17	Net Investment	[10] + [12] – [16]	Rs	**2310000**	**5882800**
18	Net Saving	[7] - [15]	Rs/ Annum	**-**	**300734**
19	Payback Period	12 x [17]/ [18]	Month	**-**	**234.73**

From the above recommendations we can achieve a total savings of around 300745 KW per annum and monetary savings of Rs 8, 62,557 per annum.

2 ESCO in street lighting

An Energy Service Company (ESCO) is a business company that develops, installs and finances Projects designed to improve energy efficiency and reduce the maintenance costs for facilities for a period of time. ESCO generally acts as a Project Development Company for a wide range of tasks and assumes the technical and performance risk associated with the Project. Typically, they offer the following services

- Develops, design and finance energy efficiency projects.
- Install and maintain the energy efficient equipment.
- Assume that the project will save the amount of energy guaranteed.

These services are included in the Project's cost and are to be met from the savings generated

The main features of the project besides saving of energy include installation of a central computerized control room through which operation of control boxes can be done remotely and the information of switched off lights, energy readings of different central boxes can be known.

Case example: Vijayawada Municipal Corporation

The VMC is presently spending nearly Rs 60 lakhs annually towards maintenance of street lighting. VMC floated open bids for implementation of energy saving project for Municipal Street Lighting, by inviting ESCO operators, with a contract period of 5 years in January, 2006. This Operation & Maintenance contract invited experienced and qualified bidders to run the street lighting network in the entire City.

In response to the tender, bids were received from five firms of which only two qualified in the technical bid. Out of the above firms, the successful bidder quoted for 41.5% saving of energy and out of it, the firm offered to take 92.7% as their share towards cost of installations and maintenance of street lighting and to transfer 7.3% to VMC. The successful bidder quoted the following conditions

Description	
Expected Energy Savings	41.50%
Percentage share of savings to ESCO on energy units saved	**92.70%**
Percentage share of savings to customer (VMC) on energy units saved	**7.30%**
Percentage share of VMC in terms of percentage of total current consumption [(1) x B)]	**3.03%**
For maintenance of street lighting including labour and materials (to be paid to the bidder by VMC)	**No extra amount**

Contract Economics

During the contract period, the VMC will get Rs.12.00 lakhs per annum as its share in savings and also save Rs.53.00 lakhs in maintenance per annum. Therefore every year, the VMC would get a saving of Rs. 65.00 lakhs per annum. During the five year contract period, the VMC will save Rs.3.25 cores. In addition, after the contract period, VMC will be left with the energy saving equipment worth Rs. 3.00 crores. At the end of 5 years, VMC will get total benefit of Rs. 6.25 crores. Further, after the contract period, the VMC will get annual saving of Rs.170 lakhs in current charges for street lighting. Besides, for savings over and above the assured 42.7%, the VMC will get 75% share and the ESCO will get the remaining 25%.

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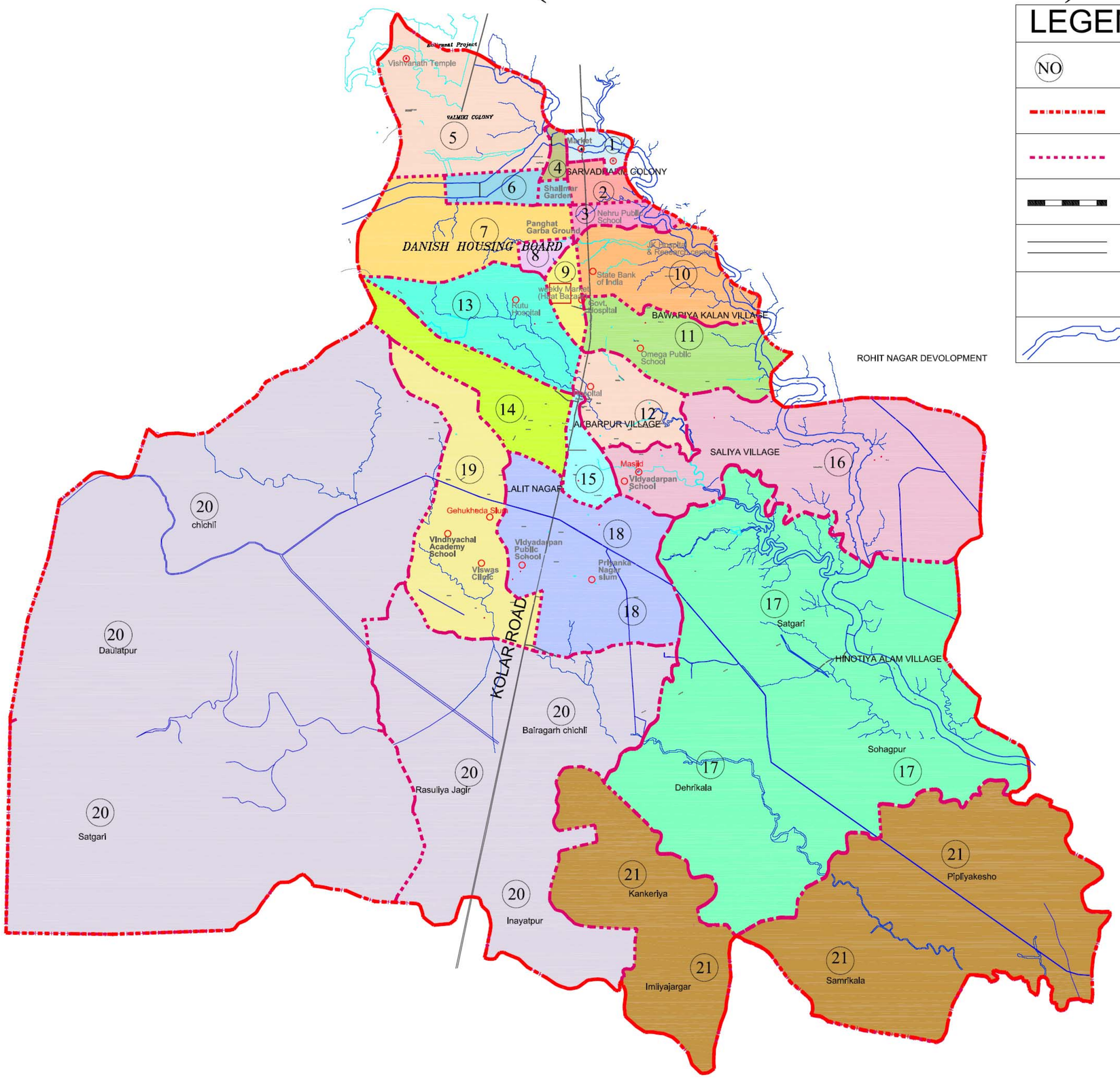
TOWN MAP OF KOLAR (MUNICIPAL COUNCIL)



LEGEND

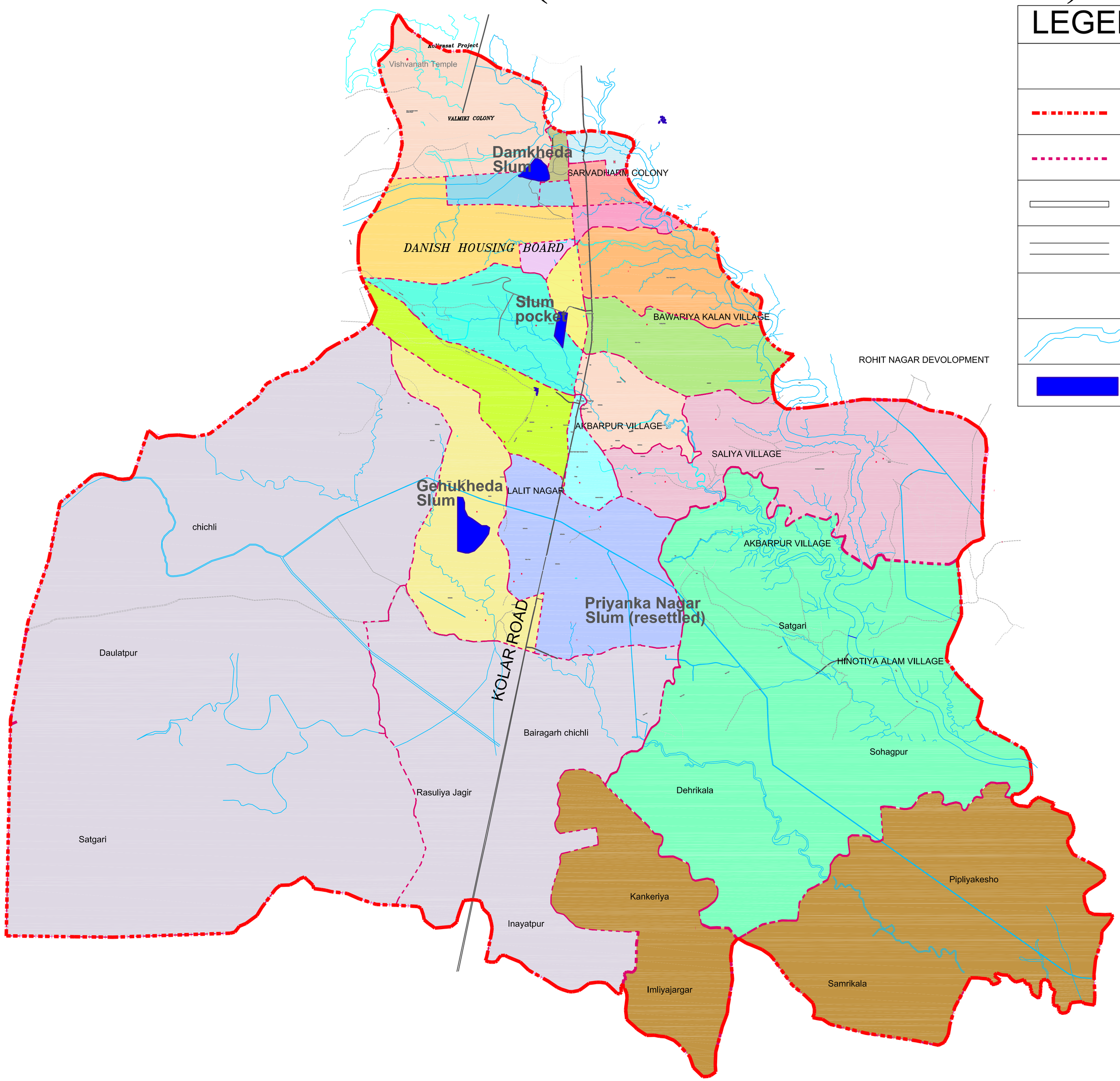
NO	WARD NO.
	MUNICIPAL LIMIT
	WARD BOUNDARY
	RAILWAY LINE
	PUCCA ROAD (METAL ROAD)
	KUCCHA ROAD (UN METAL ROAD)
	WATER BODY

Darashaw & Company Pvt.Ltd

Scale: 0.1 km 0 0.5 km 1.5 km 3.0 km

North

TOWN MAP OF KOLAR (MUNICIPAL COUNCIL)



LEGEND

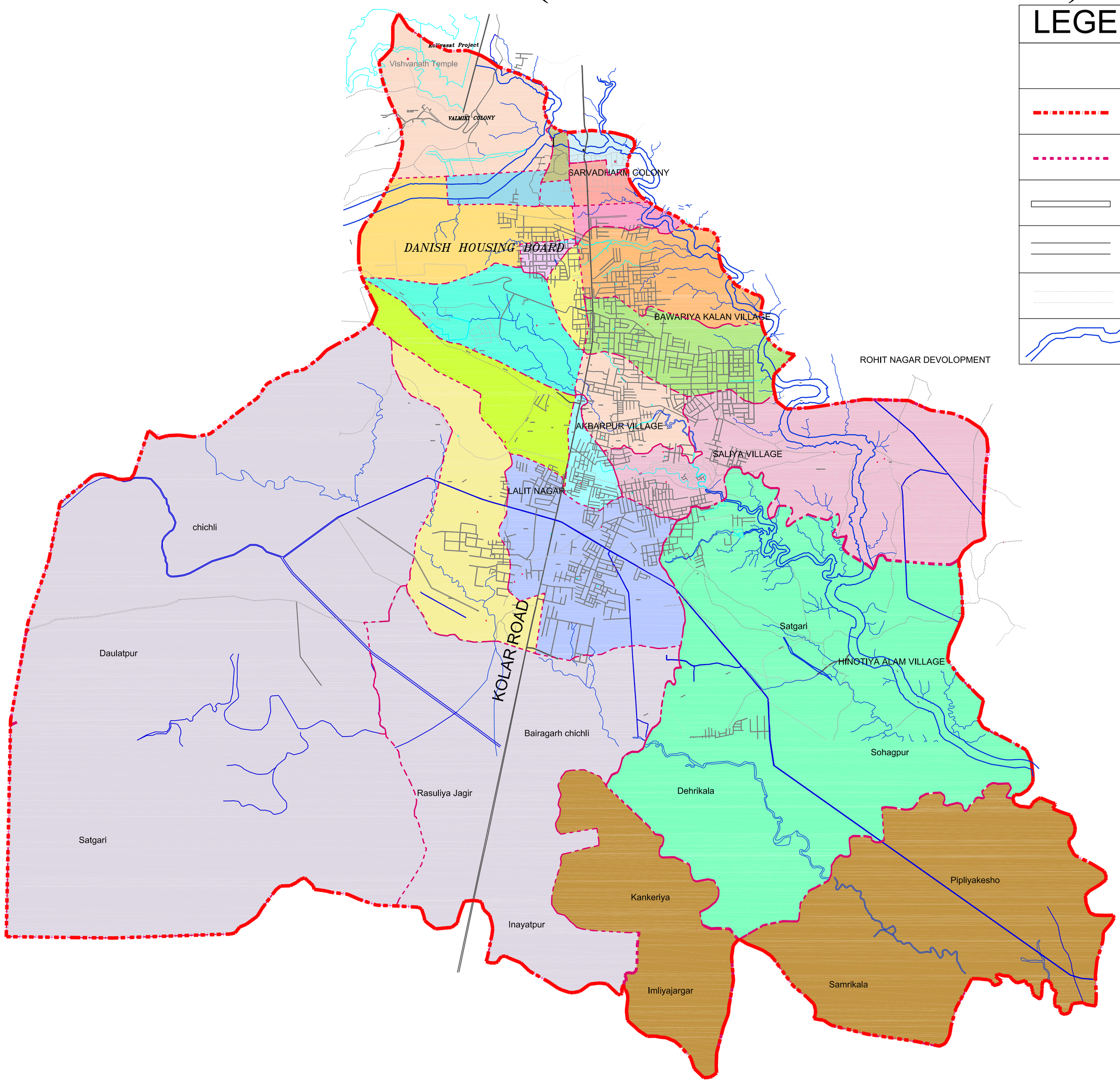
- MUNICIPAL LIMIT
- WARD BOUNDARY
- RAILWAY LINE
- PUCCA ROAD (METAL ROAD)
- KUCCHA ROAD (UN METAL ROAD)
- WATER BODY
- SLUM SETTLEMENT

Darashaw & Company Pvt.Ltd

Scale: 0.1 km 0 0.5 km 1.5 km 3.0 km

North

TOWN MAP OF KOLAR (MUNICIPAL COUNCIL)



LEGEND

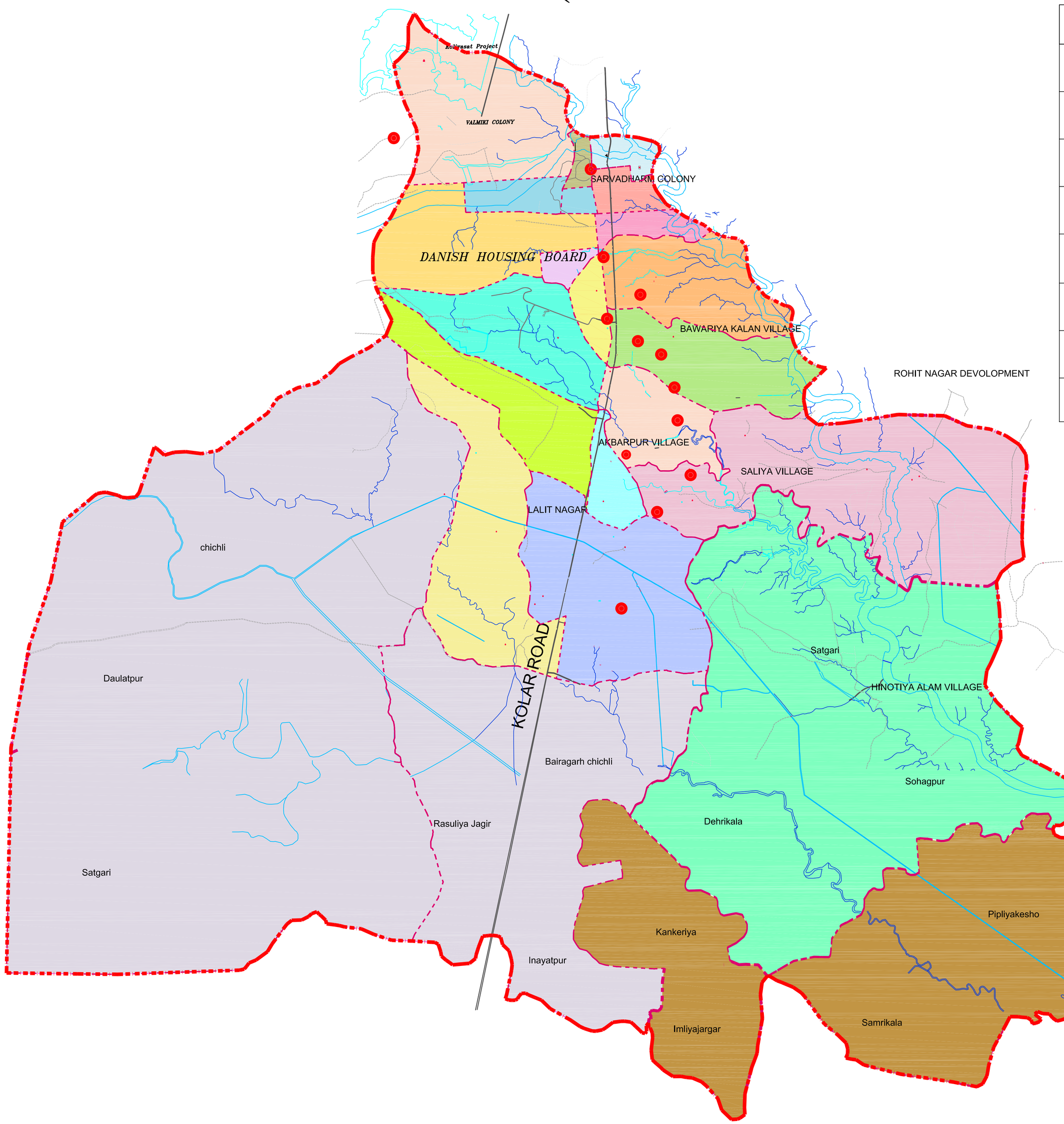
- MUNICIPAL LIMIT
- WARD BOUNDARY
- RAILWAY LINE
- PUCCA ROAD (METAL ROAD)
- KUCCHA ROAD (UN METAL ROAD)
- WATER BODY

Darashaw & Company Pvt.Ltd

Scale: 0.1 km 0 0.5 km 1.5 km 3.0 km

North

TOWN MAP OF KOLAR (MUNICIPAL COUNCIL)



LEGEND

- MUNICIPAL LIMIT
- WARD BOUNDARY
- RAILWAY LINE
- PUCCA ROAD (METAL ROAD)
- KUCCHA ROAD (UN METAL ROAD)
- WATER BODY
- OHT for water supply

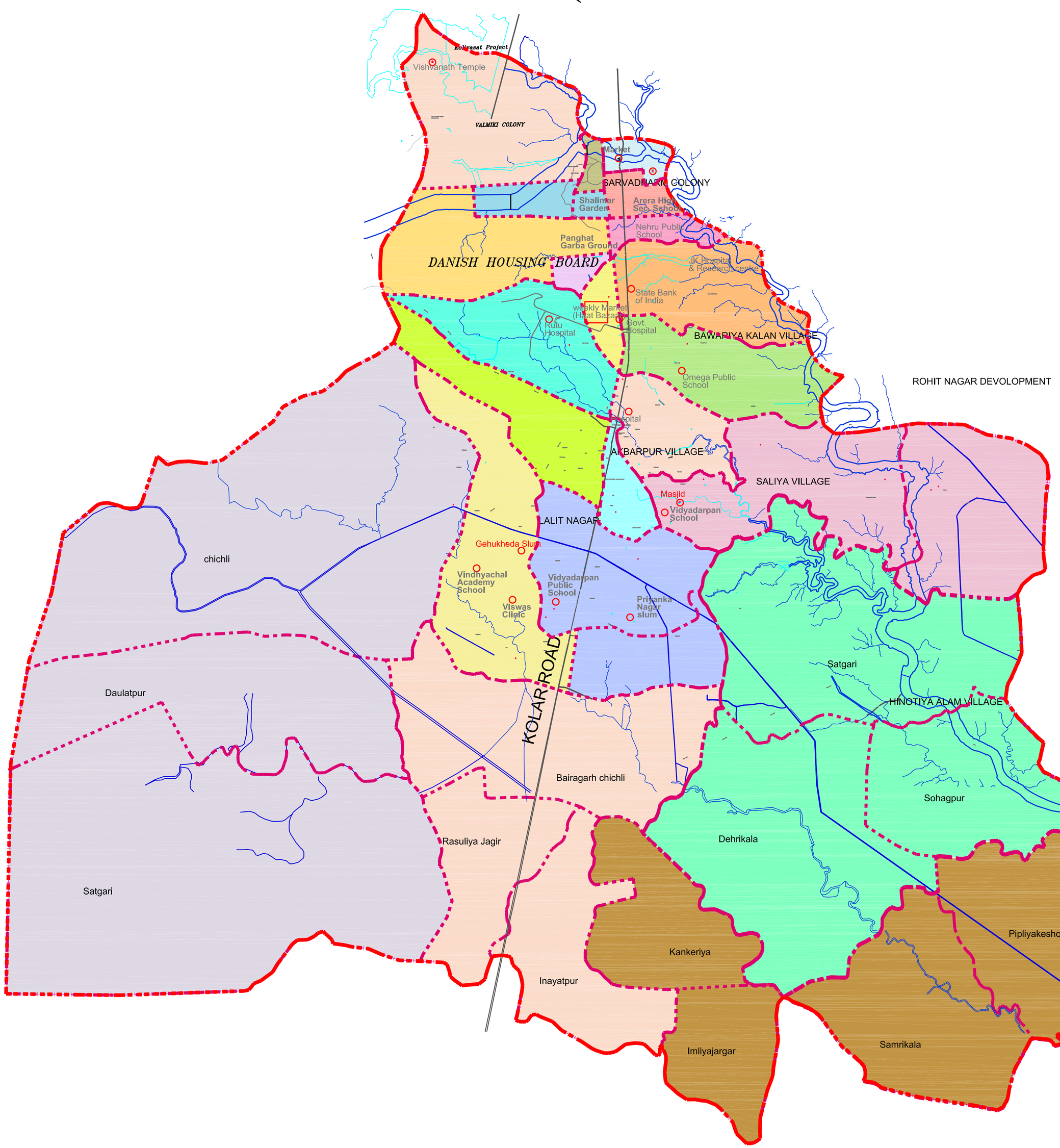
Darashaw & Company Pvt.Ltd

Scale:

0.1 km 0 0.5 km 1.5 km 3.0 km

North

TOWN MAP OF KOLAR (MUNICIPAL COUNCIL)



LEGEND

- MUNICIPAL LIMIT
- WARD BOUNDARY
- RAILWAY LINE
- PUCCA ROAD (METAL ROAD)
- KUCCHA ROAD (UN METAL ROAD)
- WATER BODY

Darashaw & Company Pvt.Ltd

Scale: 0.1 km 0 0.5 km 1.5 km 3.0 km

North

Proposed Network improvement Plan

SARVADHARM COLONY - A

SARVADHARM COLONY B

Network Improvement

Junction Improvement

Ring road development