

ANNEX D City Development Plan
for Varanasi, 2041 (Final City
Development Plan), March 2015

1 City Development Plan (CDP) for Varanasi の概要

Varanasi の CDP の概要は以下のとおり。

正式名称	City Development Plan for Varanasi in 2041 (2041 年を目標年度とした都市開発計画)
策定の背景	JNNURM による都市の改善を推進するために、MOUD と MOHUPA は世銀の資金援助を得て、「Capacity Building of Urban Development (CBUD)」というプロジェクトを開始した。このプロジェクトでは、インド全国から 30 の都市を選んで、City Development Plan を策定することになり、Varanasi 市はこの中の都市に選定された。Varanasi 市の CDP は、ローカルコンサルタントに委託し、2015 年に策定された。
CDP の構成	Ch1:Project Background Ch2:Introduction to City Ch3:Demographic Profile Ch4:Economic Profile Ch5:Physical Planning and Growth Management Ch6:Social Infrastructure Ch7:Assessment of Urban Services Ch8:Traffic and Transportation Ch9:Housing and Urban Poverty Ch10:Baseline Environment :Urban Environment and Disaster Management Ch11: Climate Change and Sustainable Development Ch12: Culture Resources, Heritage and Tourism Ch13: Assessment of Institutions, Systems and Capacities Ch14: Municipal Finances Ch15: SWOT analysis Ch16: Stakeholder Consultation Ch17: Sector Plans, Strategies and Investment Plan Ch18: Financial Operating Plan Ch19: Review and Monitoring Framework
環境分野の課題	<p>【上水道分野】</p> <ul style="list-style-type: none"> 給水管のなかには、埋設後 100 年を超えるものがあり、地下深くに埋設されているため、その更新が困難である。また給水管の敷設記録がなく、どれが新しく、どれが古いのかもわからない。 特に新しく開発した地域では、貯水タンクの容量が不足している。 無収水の割合が、58%と高い 上下水道料金の改定が、政治家の反対により行えない。 Jal Kal は、電気代を支払っておらず、財務資料は本当の維持管理状態を反映していない。 Jal Kal は、昔は独立した機関であったが、今では VMC の一部署であり、組織制度上の統合が必要。 将来計画中の Sarnath の WTP の用地問題がある。 <p>【下水道分野】</p> <ul style="list-style-type: none"> 既存の下水システムは非常に古く、壊れかかっている。 下水道の普及率が低い。 下水道へのごみの投棄により、下水道の容量が大幅に不足し、その結果、汚水が道路にあふれる状態が発生している。

	<ul style="list-style-type: none"> • 汚水発生量の半分は、処理されずに河川に放出されている。 • 上水と下水別の経理口座がなく、実態が不明。 • 複数の部署が関与しているため、その連携が必要。 • 上下水道別の、請求額と徴収額の記録がない。 <p>【排水分野】</p> <ul style="list-style-type: none"> • 既存の排水ネットワークは著しく不十分である。 • ごみの投棄による排水路の閉塞が、雨水の排水量を著しく減少させている。 • 都市化が原因となって、自然の排水能力も減少させている。 • 排水路が下水道に接続されており、特に雨季には、STP の処理能力を超えて、下水が流入している。 <p>【廃棄物分野】</p> <ul style="list-style-type: none"> • 全てのサービスレベル指標は、MOUD 目標の値に達していない。 • 民間委託をしていた業者から引き取った多くの収集車両の状態が悪く、利用されることなく、放置されている。 • 収集・運搬されたごみは、処分場において、単純に撒きだされているだけで、衛生的で管理されて埋立てが行われていない。 • VMC は制度上収集料金を集めることができるにも関わらず、住民からごみ料金を集めていない。 • 巡礼者による、おびただしい数の巡礼品の河川への投棄が、汚染の原因となっている、またガートへ集まる人骨の焼却灰の捨て場がなく、川へ流されている。
改善の目標	<p>【上水道分野】</p> <ul style="list-style-type: none"> • 配管による各戸給水率 100% • 24 時間連続給水の確立 • 基準に沿った水質の確保 • 無収水率を 20%に削減 • 水道料金の改定により、料金徴収により O&M 費 100%を賄う。 <p>【下水道分野】</p> <ul style="list-style-type: none"> • 下水道網カバー率 100%の達成 • 未処理汚水のガンジス河への放流停止 • 処理水の再利用 • スラム地区や観光エリアにおけるトイレの整備 <p>【廃棄物管理分野】</p> <ul style="list-style-type: none"> • 各戸収集と発生源分別の導入と効率的な廃棄物管理の達成 • 廃棄物中間処理場の整備 • 科学的最終処分（衛生埋立）の実施 • ごみ収集料金によって O&M 費を賄う。 <p>【排水分野】</p> <ul style="list-style-type: none"> • 適正な排水システムの整備による排水効率の改善 • 既存排水システムの回復 • 排水路の閉塞箇所と浸水地域の最小化

2 City Development Plan for Varanasi



**City Development Plan for
Varanasi, 2041
(Final City Development Plan)**

March 2015

Supported under

**Capacity Building for Urban Development
project (CBUD)**

A Joint Partnership Program between

Ministry of Urban Development, Government of India

and

The World Bank



CRISIL Risk and Infrastructure Solutions Limited

Ministry of Urban Development

Capacity Building for Urban Development Project

City Development Plan for Varanasi – 2041

Final City Development Plan

March 2015

“To revive the glory of Varanasi by conserving and promoting its heritage and protecting its cultural and traditional environs to boost tourism and employment, provide quality urban services, accountable governance to enhance the quality of life of residents”





Consulting Firm:

CRISIL Risk and Infrastructure Solutions Limited

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The Ministry of Urban Development (MoUD) has launched the Capacity Building for Urban Development (CBUD) project – supported by the World Bank – to give a thrust to implementation of reforms proposed to be undertaken by urban local bodies. The CBUD project has identified issues for intervention and areas of technical assistance that are required in 30 cities across the country that were identified under the project for Technical Assistance. Formulation of new/revised city development plans (CDP) is one such initiative. First-generation CDPs were prepared for most of the cities under the JnNURM/UIDSSMT programme of GoI; these are proposed to be revised under this project as per the revised CDP guidelines issued by MoUD in April 2013.

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Abbreviations

ALV	Annual Letting Value
ARV	Annual Rental Value
ASI	Archaeological Survey of India
AVP	Aawas Vikas Parishad
BHEL	Bharat Heavy Electricals Limited
BHU	Banaras Hindu University
BOD	Biochemical oxygen demand
BOT	Built Operate Transfer
BPL	Below Poverty Line
BRTS	Bus Rapid Transit System
BSUP	Basic Services to the Urban Poor
CAA	Constitution Amendment Act
CAGR	Compounded Annual Growth Rate
CAPEX	Capital Expenditure
CBD	Central Business District
CBUD	Capacity Building for Urban Development
CDP	City Development Plan
CDRI	Climate and Disaster Resilience Index
CDS	Community Development Societies
CEPT	Centre for Environmental Planning and Technology
CETP	Centralized Effluent Treatment Plant
CFP	City Financial Plan
CIP	Capital Investment Plan
CMO	Chief Medical Officer
CMP	Comprehensive Mobility Plan
CNG	Compressed Natural Gas
CPCB	Central Pollution Control Board
CPHEEO	Central Public Health and Environmental Engineering Organisation
CPWD	Central Public Works Department
CRIS	CRISIL Risk and Infrastructure Solution
CSP	City Sanitation Plan
CWR	Connecting Water Resources
DCB	Demand Collection Balance
DCR	Development Control Rules
DEAS	Double-Entry Accounting System

DIC	District Industrial Centre
DLB	Directorate of Local Bodies
DLW	Diesel Locomotives Works
DPR	Detailed Project Report
DUDA	District Urban Development Authority
ESI	Employee's State Insurance
ESR	Elevated Storage Reservoir
EWS	Economically Weaker Section
FAR	Floor Area Ratio
FOP	Financial Operating Plan
FSI	Floor Space Index
GDP	Gross Domestic Product
GHG	Green House Gases
GIS	Geographic Information System
GOI	Government of India
GSR	Ground Storage Reservoir
GWP	Greenhouse Warming Potential
HPEC	High Powered Empowered Committee
IAS	Indian Administration Service
IDA	International Development Association
IESD	Institute of Environment And Sustainable Development
IHSDP	Integrated Housing and Slum Development Programme
IIT	Indian Institute of Technology
INTACH	Indian National Trust for Art and Cultural Heritage
IPCC	Intergovernmental Panel on Climate Change
IPT	Intermediate Para Transit
IRC	Indian Road Congress
ISI	Indian Standards Institute
ITS	Intelligent transportation system
JICA	Japan International Cooperation Agency
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
KAVAL	Kanpur Agra Varanasi Allahabad Lucknow
LAD	Local Area Development
LAN	Local Area Network
LIG	Low Income Group
LPCD	Litres per Capita per Day
MLA	Member of Legislative Assembly
MLD	Million Litres per Day



MOUD	Ministry of Urban Development
MPN	Most Probable Number
MSW	Municipal Solid Waste
NBC	National Building Codes
NDMA	National Disaster Management Authority
NGO	Non-Governmental Organization
NHAI	National Highway Authority of India
NIDM	National Institute for Disaster Management
NMT	Non-Motorised Transport
NOC	No Objection Certificate
NRW	Non- Revenue Water
NSDP	Net State Domestic Product
NUM	New Urban Mission
NUPAM	National Urban Poverty Alleviation Mission
NUSP	National Urban Sanitation Policy
NUTP	National Urban Transport Policy
OHT	Over Head Tank
PHE	Public Health Engineering Department
PIU	Project Implementation Unit
PMU	Project Management Unit
PPP	Public Private Partnership
PWD	Public Works Department
RAY	Rajiv Awas Yojna
RCC	Reinforced Cement Concrete
RDF	Refuse Derived Fuel
RFP	Request For Proposal
ROB	Rail Over Bridge
ROW	Right Of Way
SCADA	Supervisory Control and Data Acquisition
SJSRY	Swarna Jayanthi Shahari Rozgar Yojana
SPM	Suspended Particulate Matter
SSI	Small Scale Industry
STP	Sewerage Treatment Plant
SUDA	State Urban Development Authority
SWM	Solid Waste Management
SWOT	Strength, Weakness, Opportunity and Threat
TCPD	Town and Country Planning Department
TCPO	Town and Country Planning Office

TDR	Transfer of Development Rights
TPD	Tonnes per day
UDPFI	Urban Development Plans Formulation and Implementation
UGD	Underground Drainage
UGR	Underground Reservoirs
ULB	Urban Local Body
ULCRA	Urban Land Ceiling and Regulation Act
UMT	Urban Mass Transit
UPPCB	Uttar Pradesh Pollution Control Board
UPSIDC	Uttar Pradesh State Industrial Development Corporation
UPSRTC	Uttar Pradesh State Roadways Transportation Corporation
UTTIPEC	Unified Traffic and Transportation Infrastructure Planning & Engineering
VAT	Value Added Tax
VDA	Varanasi Development Authority
VDR	Varanasi Development Region
VMC	Varanasi Municipal Corporation
VNN	Varanasi Nagar Nigam
WTP	Water Treatment Plant

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Executive summary

In order to give an impetus to reforms under JNNURM, the MoUD and Ministry of Housing and Urban Poverty Alleviation (MoHUPA) have launched a new project called "Capacity Building of Urban Development" (CBUD). The project has been launched with support from The World Bank (WB), under which the City Development Plan (CDP) preparation for 30 cities was awarded to M/S CRISIL Risk and Infrastructure Solutions Limited. Varanasi is one of these 30 cities.

The 1st generation CDP for Varanasi was prepared in 2006 by the Varanasi Municipal Corporation (VMC). The revision of CDP for the Varanasi city has been prepared in keeping with the objectives of the CBUD project to address the major constraints of urban development and specifically focus on the capacity building requirements for successful urban management and poverty reduction across the selected ULBs in India.

Varanasi, also known as Benares, or Kashi, is a city on the banks of the river Ganga in Uttar Pradesh. It is considered to be one of the holiest of the seven sacred cities (Sapta Puri) in Hinduism and Jainism, and played an important role in the development of Buddhism as well. It is considered one of the oldest continuously inhabited cities in the world and the oldest in India.

In the sense of its importance to the Hindu religion and culture, its regional influence extends to the entire country. Varanasi is part of a pilgrimage route that most Hindus believe should be taken once in life time to perform rites for their ancestors. This route starts at Rameshwaram-Gaya-Allahabad-Varanasi and then culminates again at Rameshwaram. Varanasi has also been traditionally looked at as part of a holy trinity of three cities namely, Varanasi-Allahabad-Gaya. For the Buddhists, Samath in Varanasi is an important part of the Buddhist circuit. However, for the purpose of a more practical assessment of Varanasi as an urban centre, its region can be said to extend up-till its development region.

Varanasi is well connected by road, rail and airways with other parts of the country. The road distance from major cities is Delhi-820 km, Lucknow-286 km and 122 km from Allahabad. There are three national highways i.e. NH-2, NH-56 and NH-29 and four state highways i.e. SH-87, SH-73, SH-74 and SH-98 passing through the heart of the city.

Apart from religious activities, Varanasi has been a centre of spiritual and educational activities since time immemorial. These activities have played an important role in shaping the character of this religious and pilgrimage town. Apart from this, primary economic activities such as horticulture (for betel leaves and mangoes) and household industry (silk weaving) are major occupations. These activities are not just mere providers of job for the city but they have created a level of specialization by which the product is known by the city. For example, banarasi langda aam, banarasi paan or banarasi saree. The overall economy of the city is dependent on tourism and tourist related activities.

Varanasi grew as an important industrial centre and is famous for its silk industry, perfumes, ivory works, and sculpture. The district has 6 industrial areas and parks, covering approximately 600 acres of land. 83% of the total land has been utilized for developing industrial units/firms, while the remaining land has been used for developing services and common facilities such as parks and open spaces. Varanasi holds approximately 3% of the total industrial setups in the state.

Varanasi is one of the largest urban centers and fast-growing cities in the state. According to Census 2011, the city had a population of 11.98 lakhs. The population of Varanasi city grew from 10.9 lakhs in 2001 to 11.9 lakhs in 2011 at a growth rate of 10%. VMC population accounts for 2% of the total

state's population and 33% of the Varanasi district population. Work participation rate (which is defined, as the percentage of total workers including main and marginal to total population) of Varanasi city for 2011 is 35 percent. This is an increase of 7 percent from 2001. Due to increase in population (natural and migration) and increase in employment opportunities the number of workers has increased by 24% over the last three decades. However, the work participation rate is low compared to the national average (40%), but more than the state (33%) as per 2011 census

Given this scenario, there is need to develop physical and social infrastructure of the city, the industrial corridors and mass transit facilities to connect the residential zones to the employment zones. In light of this through participatory development of CDP for Varanasi the vision has been formulated as "**To revive the glory of Varanasi by conserving and promoting its heritage and protecting its cultural and traditional environs to boost tourism and employment, provide quality urban services, accountable governance to enhance the quality of life of residents.**"

The sectors such as water supply, sewerage and sanitation, solid waste management, storm water drainage, traffic and transportation, urban poverty and slum improvement, local economic development, urban environment, social infrastructure, and tourism and heritage management are covered under the development goals to realize the vision. The development goals have been framed on the basis of priority areas, to achieve the Vision for the city and to meet the desired sector specific service level benchmarks and indicators. Thus the sector specific development goals have been substantiated with detailed action plan.

The project identification has been carried out on the basis of demand-gap analysis and on the basis of discussion with officials of various departments, organisations, associations, NGOs etc. A 3 days focused group discussion was carried out to involving various stakeholders, to further enhance the public participation process. The sector strategies and action plans have been finalized based on these discussions. The goals and service outcomes are envisaged to be implemented by 2021 as an immediate priority. The projects identified involve rehabilitation of existing infrastructure systems and augmentation of the capacity to meet the demands of future population.

- **Water supply**

In case of water supply, the key problem is old and dilapidated distribution network, high NRW level (58%), low cost recovery, and low quality of water supplied. As per our assessment the city requires about 487 MLD of water by the end of 2041 to meet the demand of 2041. In addition, to provide continuous water supply, the city would require a SCADA system.

- **Sewerage and Sanitation**

The key issues in case of sewerage and sanitation are lack of underground drainage (UGD) system and sewerage treatment facility. Only 40-45% of the VMC area is covered with UGD network. Ongoing works under JICA and JNNURM need to be expedited. Further, the sanitation facilities in slums and public toilets in tourist places need to be addressed by VMC.

Therefore, VMC should develop new sewerage systems in the city. As per the gap analysis, there is need to revamp entire sewerage collection system and pipelines for reuse of treated water need to be laid.

- **Solid waste management**

Solid waste management service levels are very low. The city needs an integrated solid waste management system. Currently, waste is being transported from secondary collection points to the dumping grounds. It has been proposed to procure equipment to improve waste management conditions, completion of construction of treatment plant and landfill.

- **Storm water drains**

As per assessment of storm water drainage network, the city does not have a separate storm water drainage network. The city lacks branch drainage network. Trunk network was laid in under JNNURM. It has been proposed to lay 1160 km of branch network to improve water logging situation in the city. The action plan includes development of storm water drainage rehabilitation plan, and desilting of existing drains.

- **Traffic and transportation**

The city does not have 100% coverage of Cement Concrete /Bitumen Tar surface roads. Pedestrian safety and increasing accident rate are the other major concerns. Lack of foot over bridges and zebra crossing on major congested roads is an issue in the city. The city doesn't have a proper public transport system. All the major roads have on-street parking, which reduces the effective right of way.

It has been proposed to improve the existing roads, widen some roads, lay roads in areas not yet covered, improvement of junctions, multilevel car parks, rail over bridge, widening of road under rail, procurement of busses, construction of bus and truck terminal, flyover and a mass transport proposal in old city area

- **Housing and basic services for urban poor**

25% of city's population lives in slums and basic amenities are lacking. Close of 8000 dwelling units were constructed under various central and state government schemes. The strategy outlined focuses on achieving by 2021, 100% housing for the urban poor; access to water supply, open drains, sanitation, 100% coverage of CC roads to UGD Access to health and education facilities. Some provision has also been made for imparting skills to slum dwellers.

Action plan include categorization of slums, integrated development of slums through adoption of slum networking strategies and rehabilitation of slums through development of Pucca housing, construction of housing, providing access to health and education by implementing health action plan and education action plan as well as livelihood restoration through activity centers and skill development programme

- **Social infrastructure**

The key challenges in social and cultural infrastructure space are lack of adequate education infrastructure for pre-primary, primary, and higher secondary education. Further there is a need for development of health care infrastructure at both neighborhood and city level. Further, Socio-cultural infrastructure such as community centers is to be developed. The requirement for development of schools, hospitals, socio cultural facilities and parks and playgrounds have been assessed as per the URDPFI guidelines. Animals like Cows or Bulls are often found on the busy streets of the Varanasi. Due to the moving traffic they get injured some times and are unable to move from their places. Stray animals are one of the issues of the Varanasi city. Some shelters could be developed for the stray animals.

- **Urban environment, disaster management and heritage management**

The city has tremendous number of heritage structures. In view of heritage aspect of the city, establishment of heritage cell at VMC headed by an architect; creation of heritage fund to undertake small scale restoration works of the identified heritage structures; preparation of DPRs for restoration and refurbishment of listed heritage structures, and identification, notification and restoration of non-ASI protected heritage sites has been proposed.

Varanasi has a large number of water bodies, which need to be protected and conserved. The key goal here is to ensure preservation of water bodies; improve ground water recharge and invest in beautification at the water bodies

The action plan includes mapping of water bodies, eviction of encroachments, and construction of rainwater harvesting pits, implementing pollution mitigation strategies, and diligent impact assessment and monitoring for infrastructure projects.

To cope up with the natural and manmade disasters in the city, establishment of Disaster management cell at VMC with emergency response system has been proposed

- **Local economic development**

In order to boost the regional and local employment potential in the city, development of a dedicated weavers' park has been strategized. Further, relocation of wholesale market warehouse in old city area has been proposed.

- **Tourism sector development**

Tourism is one of the most important economic sectors for Varanasi. It employs more than 30% of the city's population. The city has many prominent tourist spots. Hence, it has been proposed to provide basic amenities such as drinking water, sanitation and changing room facilities on all tourist spots, developing new attractions such as sound and light show, and 'Bunkar City', linking Ghats to make them pedestrian friendly, improving Pankrosi Yatra sthals, aesthetic lighting of Ghats, and renovation of 'Galis' among other things

VMCs Financial Assessment

Revenue Income of VMC has a CAGR of approximately 28% over the analysis period (2008-9 to 2012-13). The property tax, water charges and tax, and building permission fees are 3 biggest contributors to VMC's RI with each contributing on an average 13%, 18% and 7% respectively to the RI pool.

Water charges and tax is the highest contributor to VMC's Tax Revenue, contributing 54% to the total tax income. Its contribution in Revenue Income has been around 19%. Property tax contributes 36% of total tax revenues.

On the expenditure side, the revenue expenditure has increased from Rs 8,098 lakhs in 2008-09 and Rs 19,349 lakhs in 2012-13 registering a CAGR of 24%. Composition of Revenue expenditure over the recent years has changed compared to the average trend on account of increase in O&M cost. The salary expenditure as a percentage of total revenue expenditure declined since 2009, from 78% in 2008-09 to 54% in 2012-13.

The analysis of revenue income and expenditure demonstrates that revenue account of VMC has been in surplus, barring the year 2008-09, over the analysis period. This indicates the sufficiency of Revenue Income to meet the Revenue Expenditure on regular basis. On an average, the operation ratio is 0.87 it indicates the VMC is able to manage the Revenue Expenditure. The surplus amount is being transferred to the capital account in order to carry out the capital expenditure in the city.

VMC has not taken any loans or municipal bonds during the review period. Capital Expenditure (CE) consists of regular capital works as well as capital works funded by specific grants / scheme e.g. JNNURM. The VMC's capital expenditure increased from Rs.12,965 lakhs in 2008-09 to Rs. 26,404 lakhs in 2012-13, registering a CAGR of 17%.

Investment Requirements and City Investment Plan

The investment requirement has been identified to implement the sectoral action plans and included in the city investment plan (CIP). CIP is prepared in line with the identified vision for the city through a comprehensive process of gap assessment and through stakeholder consultation. This assessment has also based on identified sector specific strategies, implementation actions, and associated reforms with specific inputs from stakeholders too. The strategies adopted primarily have three dimensions: improving the service delivery by efficiency measures, improving service delivery by creating infrastructure assets: and improving the governance aspects. The total estimated capital investment required for providing efficient services to the present population and future population of the city by the year 2041 is Rs. 8,894 crores. A total of Rs. 6,905 crores are proposed for investment by 2021 to cater to infrastructure requirement. The Table 1 presents the summary of sector-wise total investment need and investments.

Table 1: Investment Requirements and City Investment Plan

Sr.No	Sector	Short Term	Long Term	Total investment
		2021	2021 – 2041	
(investment in Rs. Crores)				
1	Water Supply	469	304	773
2	Sewerage & Sanitation	997	483	1,480
3	Solid Waste Management	102	197	299
4	Roads & Urban Transport	1,390	424	1,814
5	Drains	541	105	646
6	Urban poor	1,900	-	1,900
7	Socio-cultural and heritage management	612	255	867
8	Environment and disaster management	492	98	590
9	Local economic development	140	30	170
10	Tourism	240	49	289
11	Urban Governance	22	44	66
Total Investment Estimated		6,905	1,989	8,894

- VMC:** VMC would be responsible for planning, operation, and maintenance of water supply, sewerage system, SWM, SWD, municipal roads, parks, and playgrounds. VMC would be the implementing agency for the projects identified in the above mentioned sectors. In the overall investment, VMC has to contribute 53% of total investment.
- State Public Works Department:** PWD would be responsible for construction of flyovers and bridges. Hence PWD has been identified as the agency for flyovers and bridges. In overall investment, PWD has to contribute 4% of total investment.
- State Irrigation Department:** Irrigation Department would be involved in the projects related to Varuna river. In overall investment, state Irrigation Department has to contribute 5% of total investment

- Department of Education and health:** The state department for education and health would be responsible for development of the education and health facilities identified as per the URDPFI guidelines. In the overall investment, the education department has to contribute 7% of the total investment and health department has to contribute 5% of the total investment.
- Uttar Pradesh State Roadways and Transportation Corporation: UPSRTC** shall be responsible for procurement of buses, and construction of bus terminals. In the overall investment, the UPSRTC has to contribute 4% of the total investment.
- Varanasi Development Authority (VDA):** VDA undertakes all the activities related to land use, zoning, development, implementation of DCRs, and providing building permission. It also prepares DP for the city at an interval of every 10 years. It also has to make sure that all regulations and building bylaws are being adhered to.
- District Urban Development Authority: DUDA** would be responsible for planning, designing, and constructing slum households. In the overall investment, DUDA has to contribute 21% of total investment. It has to contribute 4% of the total investment.
- Uttar Pradesh State Tourism Department: UPSTD** would be responsible for construction, operation and maintenance of tourist points within the state. Hence APTDC has been identified as responsible agency for the tourism development projects identified in the CDP. In the overall investment, UPSTD has to contribute 3% of total investment.
- Uttar Pradesh State Industrial Development Corporation: UPSIDC** is responsible for provisioning of industrial parks and allied infrastructure. In overall investment, UPSIDC's share is 1%.

The agency wise investment has been summarised in the Table 2:

Table 2: Agency wise investment

Sr. No	Name of Agency	2021		2041	
		Investment Estimated in Rs. Crore	%	Investment Estimated in Rs. Crore	%
1	VMC	3,277	47%	4,701	53%
2	PWD	210	3%	320	4%
3	Irrigation Department	350	5%	350	4%
4	Health and education department and UPSIDC	412	6%	623	7%
5	VDA	275	4%	325	4%
6	UPSRTC	254	4%	404	5%
7	DUDA	1,900	28%	1,900	21%
8	Tourism department	230	3%	271	3%
	Total	6,905	100%	8,894	100%

VMC Investment

The overall the investment required for the year 2041 is Rs 8,317 crores. However, VMC would be responsible to take-up the projects worth Rs 4,359 crores and the remaining investment to be taken-up by the Parastatals/state government departments. The sector wise breakup of VMC's investment for 2021 and 2041 has been presented in the Table 3.

Table 3: Sector wise breakup of VMC investment

Sector	2021 (Investment estimated in Rs. Crores)	2041 (Investment estimated in Rs. Crores)
Water supply	469	773
Sewerage & Sanitation	997	1481
Urban Roads, Traffic & Transport	926	1090
Storm Water Drains	541	646
Solid waste management	102	299
Urban environment	140	240
Social Infrastructure, Heritage and Socio Culture	21	21
Local economic development	45	75
Urban Governance	22	66
Tourism	10	10
Total investment	3277	4701

VMC Investment capacity and Financial Operating Plan

The overall investment estimated is Rs. 3277 crores (on constant prices). However, as per the current prices, the estimated investment would be Rs. 3879 crores (which includes the cost escalation and physical contingencies). It is observed that with grant support, VMC can implement projects worth Rs. 1572 crores only. Based on the availability of grants, VMC can take up priority projects in the area of sewerage and sanitation, solid waste management, and traffic and transportation. Thus there is need to augment investment capacity by implementing revenue enhancement measure and implement mandated reforms to enable it to access state and central grants i.e. achieve improved case investment capacity.

The investment capacity of VMC is assessed through a financial operating plan (FOP)¹, which gives a multi-year forecast of finances for the medium term. In line with the phasing of identified projects in the capital investment (CIP), the FOP has been generated for the same period for VMC. A salient feature of the FOP is that all outstanding dues, including debt and non-debt liabilities if any, are also taken into account. Accordingly, the annual accounts of VMC for the period between the financial years 2008-09 and 2012-13 were used to determine past trends for both revenue and expenditure items and to arrive at appropriate growth assumptions for each of the income and expense items. After forecasting the revenue account, the CIP has been loaded on to cash flow. The FOP is generated to assess the investment sustaining capacity of VMC.

The project funding structure comprises grants under the New Urban Mission framework² (accounting for 70% of the funding as per JNNURM structure has been assumed); internal surplus and debt are considered to meet the balance fund requirement. The level of investment that VMC can sustain is determined by studying the overall surpluses/year-to-year opening balance and debt-service coverage ratio (DSCR). A spread sheet FOP model has been customized to depict the financial

¹ For the preparation of FoP for VMC, we have adopted the methodology as provided in the revised CDP toolkit.

² Based on the past trends, it is assumed the funding structure would remain same as it was in the JNNURM.

³ Census of India

⁴ Service Level Benchmarking – General information of city

⁵ Based on the past trends, it is assumed the funding structure would remain same as it was in the JNNURM.

⁶ Ward wise area is not available with VMC

⁷ Population data for Varanasi UA before 1991 is not available as UA was declared in 1991.

position of VMC. The investment sustaining capacity of VMC is assessed based on the FOP assumptions. The model was used to calculate the overall surpluses under various scenarios involving combinations of internal revenue improvement, state support, financing terms, etc.

Given the existing financial position of VMC, the revenue and capital accounts of VMC are projected against the growth scenario. The FOP is generated from the sustainable investment point of view in line with the current growth trends against the identified investment.

Given the importance of Varanasi city in the region, it is very important to improve the basic infrastructure facilities and tourism related to attract tourists and investment and industries in the city and further to boost the economic development in the region.

Therefore, VMC should aim to implement the improved case investment capacity (Rs. 1290 crores) with grant support for state and central governments. Following key steps to be taken by VMC to achieve the improved case scenario investment:

- On immediate basis, reforms are to be implemented in property tax to improve the coverage and collection efficiency; the reforms could be policy levels change to streamline the department.
- Water and sewerage tariff structure is to be revised immediately. VMC should explore the volumetric tariff structure for the metered water connections.
- VMC should levy the user charges on SWM services – VMC may explore this initiative as part of property tax.
- VMC should explore the outsourcing of certain function to reduce establishment expenditure.
- VMC should ensure that the contractor carries out the O&M of the assets (WTP, STP, and SWM plant) for a period of 5-8 years after the completion of test run.
- VMC should curtail the regular capital expenditure over the next 5-10 years. VMC should take up only priority works in wards.
- VMC should explore the PPP route to implement either the projects or project components.

Thus the CDP embodies the approach methodology and implementation action which can facilitate the development of the Varanasi city. However to facilitate this there is also need to streamline and strengthen the institutional arrangements to implement the development plan. In this context it is important that requisite institutions system and capacities are in place. The VMC has over the years undertaken several initiatives to reform the urban governance and implement reforms at the city level. However there is need to further and deepen these initiatives, these and associated aspects are also discussed in the report

1. Project background

1.1 Context

The need for an overall urban improvement and development to sustain the economic growth momentum post the liberalization era first found its expression in the mandate of JNNURM launched by the Government of India in 2005. The project endeavored to bring about an improvement in urban quality of life and make them as investment destinations. The programme derived its initial rationale from the "National Common Minimum Programme" of the Government of India that laid stress on expansion of physical infrastructure and therefore, comprehensive urban renewal and slum development could be taken up. The second rationale for such a large scale programme was derived from India's International commitment to achieving the Millennium Development Goals and therefore, the Government of India (GoI) proposed to

- facilitate investments in the urban sector; and
- strengthen the existing policies in order to achieve these goals.

In recognition to the above mandate, the JNNURM programme was conceived. The scale of the programme was aimed to be in a mission mode primarily to make the cities to realize their full potential and become engines for growth. It was opined that the urban sector contributes to over 50% of the country's Gross Domestic Product (GDP) and therefore, focused attention is required for urban infrastructure development.

As already mentioned above, the JNNURM is the first flagship national programme for urban development of this nature and size by the Government of India. The programme sought to bring about a change in the very manner of looking at urban development. It recognized the importance of two major aspects for urban development in the country including

- the need for urban infrastructure improvement in order to improve quality of life and sustain the local economy as well as to attract more investments; and
- the need for investment for carrying out the urban infrastructure improvements.

In doing the above, the programme brought about the necessary awareness among the Urban Local bodies (ULBs) for planning and implementation of projects, need for systematizing the urban services and their management, the need for involving stakeholders in project planning and raising revenues for the urban areas that can sustain the urban infrastructure. Significant emphasis was given to urban governance reforms and the need to link reforms with investments. Assistance therefore, to the state governments and ULBs was proposed to flow through a reforms linked plan. Introduction of such reforms were considered crucial for developing sustainable infrastructure that would include,

- efficient management of created physical assets so as to increase self-sustainability and
- enhance efficient service delivery.

Both these aspects were to be achieved through the agenda of reforms in the cities.

Progress

Over the past seven years, the programme has committed over Rs 286 billion for 552 projects involving a total investment of over Rs 620 billion. Some of the **key achievements** of the project include:

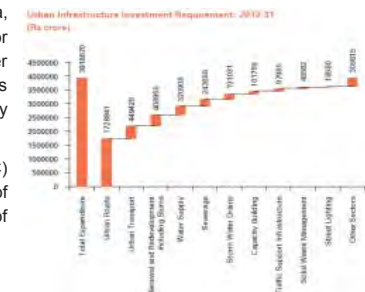
- The mission has been successful in catalyzing multi-year investments and reformed development in urban infrastructure.
- There has been visible improvement in the delivery of municipal services in many cities.
- Some cities have prepared development/master plans for the first time. There is also greater awareness in the ULBs for the need to develop systematic plans for improvement in infrastructure. There is also an increase in aspiration levels among communities and there is a demand for better infrastructure and services.
- Several projects especially in transport sector have been taken up within the JNNURM framework that has significantly improved the quality of life in the cities.
- There has been good progress in implementation of reforms at policy level at state and central level. Most of the states have framed their policies on reforms and started implementing the same. ULBs are started implementing the reforms in the areas of accounting and e-governance

While there has been significant change in the urban sector due to JNNURM at the same there has been **challenges** which needs to be addressed going forward

- CDP was seen as an investment plan for projects in the immediate term and not as a vision document for the city with very limited cities revising the same.
- While preparing the CDP, consultations with the stakeholders was limited and mostly restricted to the line departments and parastatal agencies.
- The pace of project execution has been found to be slow. Some states have been able to take greater advantage of the programme than others.
- Cities have also not been very successful in leveraging JNNURM funds to raise finances on their own or to attract private or PPP-based investment.
- The ULBs are not in a position to take over all the functions mentioned under 12th schedule of 74th CAA at present. Most ULBs are also not in a position to take over functions like roads and bridges, water supply sewerage, drainage and urban forestry due to their present incapacity to do so.
- Institutional strengthening and capacity buildings initiatives are yet to initiate in most of the ULBs. Most of the ULBs are facing capacity related issues such as lack of staff (staff recruitment has not been carried since long)

The Planning Commission of Government of India, through a committee has devised a framework for NUDM. This framework has been prepared after studying and analyzing the success and challenges arising from JNNURM-I and the initiatives taken by other Ministries in Urban Development.

The High Powered Empowered Committee (HPEC) report further identified about Rs 39 lakhs crores of investment in infrastructure in the urban areas of India.



1.2 Revised CDP under CBUD Project

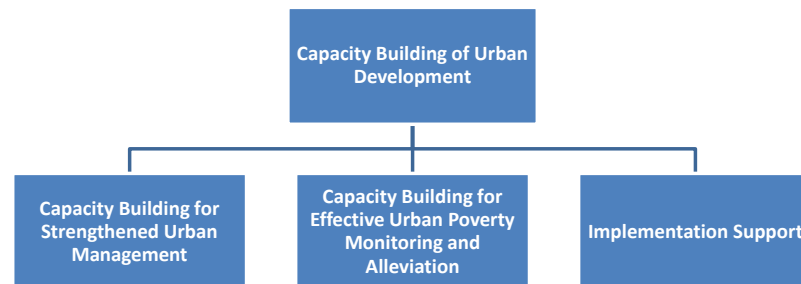
1.2.1 CBUD Programme

In order to give an impetus to reforms under JNNURM, the MoUD and Ministry of Housing and Urban Poverty Alleviation (MoHUPA) have launched a new project called “**Capacity Building of Urban Development**” (CBUD). The project has been launched with support from The World Bank (WB). The GoI has received the financing from the WB/International Development Association (IDA) towards CBUD project. The broad aim of the CBUD project is to address the major constraints of urban development and specifically focus on the capacity building requirements for successful urban management and poverty reduction across the selected ULBs in India.

The project will contribute to GoI's overarching objective of creating economically productive, efficient, equitable and responsive cities. Achieving this objective, will help sustain high rates of economic growth, accelerate poverty reduction, and improve services, especially to the urban poor.

The project has following three components:

Figure 1: CBUD Project components



- 1. Capacity Building for Strengthened Urban Management.** This component is aligned with the infrastructure and governance sub-mission of JNNURM and will thus support technical assistance across the several urban management topics.
- 2. Capacities Building for Effective Urban Poverty Monitoring and Alleviation these capacity building initiatives are** aligned with the basic services to the urban poor sub-mission. They reflect the need for building information systems, sharing experiences, and designing strategies on urban poverty alleviation.
- 3. Implementation Support.** This component will support a national Project Management Unit (PMU) for providing overall technical and managerial support during the implementation of the Programme. The PMU will have a critical role in promoting and support the project.

1.2.2 Preparation of Revised CDP under CBUD Programme

In order to identify broader issues for intervention and areas of assistance pertaining to development of city, City Development Plans (CDPs) which were already available for most of the cities under the

JNNURM is required to be revised as per the revised CDP Guidelines (April 2013) issued by Ministry of Urban Development.

The MoUD has identified 30 cities across India under the CBUD project to facilitate the support. The MoUD invited proposals and entrusted CRISIL Risk & Infrastructure Solutions with the responsibility of preparing the City Development Plan.

1.3 Revised CDP Guidelines – Key Areas of Emphasis

The revised guidelines issued by MoUD further incorporates additional aspects which broadly are as follows and these aspects shall be covered while preparing both the Fresh and Revised CDP

- Formation of CDP Committees – Policy and Technical
- Inclusion of Heritage, Health and Education sector in the CDP
- Stress on infrastructure management aspects
- Outcome parameters of projects
- Revenue enhancement initiative, Expenditure management initiatives and Asset management initiatives
- Special emphasis on PPP projects
- Transit oriented development.

Apart from the above points, some of the other key areas of importance in the revised guidelines are as follows.

1.3.1 Vision Led Planning

The revised guidelines specify that unlike the past CDPs the vision for city need to be more detailed. They need to be based on understanding the SWOT for the city, the needs and priorities of the people of the city. The people must be encouraged at workshops and consultation sessions to visualize their future of the city, their aspirations and the consequent growth that they anticipate in the city. This vision finally can be translated into respective sectoral visions.

1.3.2 Resource based planning

Every city in India in the context of its regional location has particular strengths in terms of its resource endowments. Such resources need to be assessed and their strengths realized for city development. The approach for plan preparation could be: a) national resource led planning for cities endowed with natural resources like water bodies) OR b) Economy based (for an industrial or trading city), OR c) Tourism based for heritage cities OR d) combination of the above. This helps in settling the city apart from the rest. This approach can be identified based on:

- Existing city strengths and its opportunities,
- Regional role of city in the context of state development, and
- Needs of the city.

1.3.3 Participatory Approach

As already mentioned above, the revised CDP guidelines have specified that the CDP be treated as a “living document”. For this periodic revision and update of the CDP is necessary. Such revisions have to and must be conducted with a participatory planning approach. The CDP outlines that Local

area plans need to be prepared in consultation with the ward committees to fulfill the expectations of the citizens. Also, the guidelines specify that such an approach is necessary to ensure equity concerns and poverty issues are integrated in the CDP. Consultations also need to be carried out at every stage of the plan preparation and implementation. The citizens must be able to prioritize and choose their needs for infrastructure development.

1.3.4 Equity concerns, poverty and local economy development

Poverty and local economy development go hand in hand. Understanding of the local economy would help in devising appropriate infrastructure development strategies that can help in/be conducive to the growth of local economy and thereby nurture local talent and resources. These need to be given adequate focus in the present CDP exercises and therefore help in not just local economy development but also in regional economy development.

The 12th five year plan has also started a mission for National Poverty Alleviation (NUPAM) for targeting housing and poverty alleviation based on recommendations of the NUPAM identifying the issues of poverty and housing in city and implementation status of programmes such as RAY, IHSDP, etc. Integration of these aspects would be crucial in making the CDP relevant to state and central government policies.

1.3.5 Capacity Building in ULB

The ULBs presently face serious human resource shortage for planning, development and urban management activities (including operations and maintenance, monitoring and evaluation, financial management and procurement). This issue has been highlighted by the study on appraisal of JNNURM projects as well. The guidelines have proposed that the CDPs must address this issue as to the gaps in such capacity can be addressed.

Also, it has been suggested in the guidelines that urban reforms need to be done with greater participatory approach. The strategies to arrive at the vision for the city should be linked to the reform agenda. ULBs should be asked to furnish the reforms and propose a time line to achieve the same. Administrative and structural reform should be made mandatory and carried out as soon as possible. Financial thresholds need to be decided and adhered to in terms of the central assistance under JnNURM being given as a soft loan or a grant. This approach would help in designing an appropriate capacity building strategy.

1.3.6 Sectoral Action Plans with Goal Oriented Targets

The revised guideline specifically also lay out the need for preparation of sectoral action plans that have targets that are oriented towards specific goals. Action plans are specifically required for sectors including Local Economic Development Plan, Infrastructure Development Action Plan, Housing and poverty alleviation action plan, City Mobility Plan, Heritage Management Plan (Where needed), Financial Management Plan, Institutional and Capacity Building Action Plan and Environment Management Plan (including disaster management). Such sectoral plans would be based on clearly identified goals. Also, Inter-sectoral as well as intra-sectoral linkages need to be addressed through the CDP.

1.3.7 Monitoring and Evaluation Arrangements

The guideline clearly spells out the need for monitoring and evaluation at regular intervals as to the extent of implementation of the CDP. Also, development of such monitoring arrangements would go a long way in securing community participation who can be involved in the process of monitoring.

1.4 Objective of the assignment

The CDP aims to identify an integrated solution to the challenges facing the city. It recognizes the economic growth strategy as well as the actions that would be required by various agencies to ensure the sustainable development of the city. The CDP is the ULB's strategy that presents the vision of a desired future for the city, and the mission statements on how the ULB, together with other stakeholders, intends to work towards achieving this long-term vision. The City Development Plan incorporates the assessment of city on majorly four levels: Socio Cultural and Economic Environment; Physical Environment; Infrastructure Services and Institutions; Urban Poverty and Heritage.

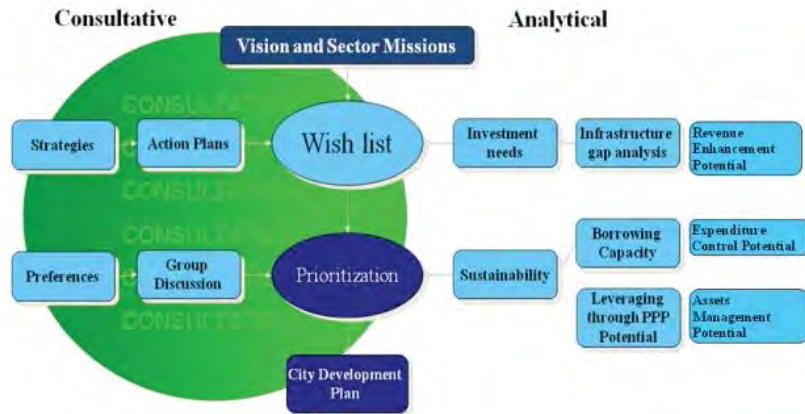
The primary objective of this assignment is – to revise and update the existing CDP. The scope of work in brief shall entail –

- Profiling the present status of the city, giving an **in-depth analysis** of its demographic, economic, financial, infrastructure, physical, environmental and institutional aspects
- Based on the above analysis, the consultant shall develop a perspective and a **vision for the city**, which would be prepared in consultation with its relevant stakeholders. In order to achieve the vision, a **formulation strategy for bridging the gap** between where the city is at present and where it wishes to reach need to be prepared.
- The CDP should provide for a **City Investment Plan (CIP)**, based on which the concerned ULB will be able to access funds under central/ state government schemes as well as from own and other sources based on priority actions and projects identified in the CDP.
- The document should also provide **Financial Operating Plan (FOP)** to direct the ULBs for mobilizing various financial resources to implement the identified projects. The inter-sectoral and intra-sectoral issues need to be addressed by the CDP.
- Preparation of the CDP will consist of city development strategies that will emerge out of a **structured consultative process**. The process will enable elected representatives, key staff of departments of Municipal Corporation/ Municipal Council, Para stalal agencies and other institutions, policy makers and the citizens to participate and plan for spatial, social and economic development of the concern cities.
- The CDP has to adhere to the latest revised toolkit prepared by the MOUD for CDP preparation published on its website www.jnnurm.nic.in in Dec 2009 or later.

1.5 Approach and Methodology

The approach to the assignment is based on consultative and analytical assessment of the existing situation. The inputs from stakeholders were used to prioritize areas of development and to formulate the strategies in order to make the revised CDP an implementable document.

Figure 2: CDP Approach



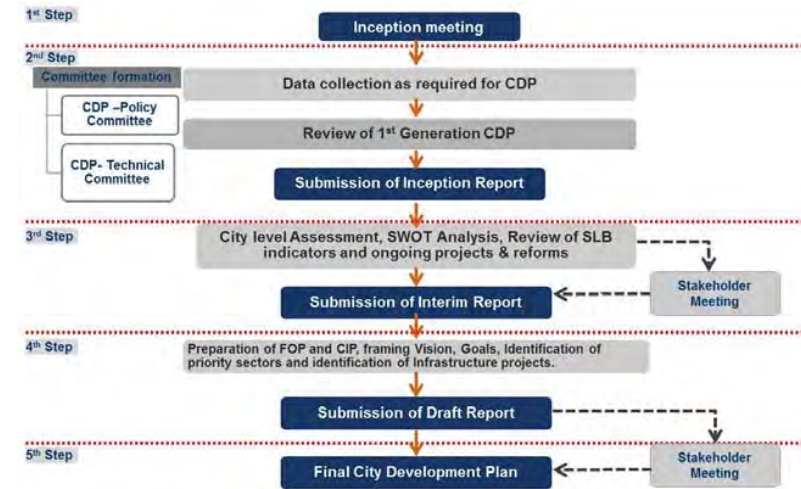
The Revised CDP was prepared for the period of next 30 years, i.e. 2041. It is a forward-looking consensus program for the city that outlines the path with respect to the following aspects:

- **Infrastructure Development** – Assessment, gap analysis, arriving at investment requirement (short term and long term) and prioritization of various services provided by Municipal Corporation - water supply, sewerage, storm water drainage, roads, traffic & transportation, street-lighting, solid waste management, firefighting, education, health, etc.
- **Slum Development** – Prepare a programme for the development of slum pockets in the city. This includes access to all the basic services as well as housing for urban poor.
- **Economic Development** – The revised CDP will focus critically on tapping the existing potential and identifying key economic development opportunities for the city.
- **Social Development** – The revised CDP will take into account the social development needs of the city such as the need for hospitals, education institutes, and recreational centres.
- **Institutional Development** – Assessment of capacity-building required for ULBS to undertake development of city.
- **Financial sustainability** -The revised CDP will assess the revenue sources, areas of expenditure and current and future investment requirement of the city. Based on this, it would arrive at a sustainable investment capacity and would suggest measures to improve revenues and control expenditures.
- **Reform Assessment plan** –The revised CDP will also discuss status of various reforms undertaken by the ULBS to bring about improvements. These reforms are in the areas of accounting, e-governance, property tax, user changes, building byelaws, etc.

Moreover, the approach will be based on the philosophy of developing workable solutions.

The methodology undertaken for the work of preparation of Revised CDP is provided in Figure 3. Broadly there were five stages in a sequential order to undertake this work.

Figure 3: Revised CDP Preparation Methodology



1.6 Brief on 1st Generation City Development Plan

The 1st generation CDP takes a comprehensive view of the city of Varanasi and projects a vision of an economically vibrant, culturally rich, and liveable tourist city. The vision statement reflects the desires and aspirations of the citizens.

The concerns of Varanasi as a tourist destination, a culturally significant heritage destination, and provision of adequate infrastructure facilities, urban renewal of inner city, intensification of economic regeneration, improving quality of life in slums and the urban poor have been taken into consideration. The sectoral strategies have been articulated to achieve the overall vision for the city.

The identification of the project was done in a systematic manner, wherein existing deficiencies and future shortfall/requirements were identified and then the projects were proposed. The project structuring in terms of breakup between various sectors and agencies, and the two sub-missions was done. Phasing has also been indicated over the entire period of JNNURM.

The CDP was approved and projects worth Rs. 3072 Cr. were proposed. Of this, projects worth Rs. 1178 crores are currently being implemented. The projects are in the area of water supply, sewerage, solid waste management, storm water drainage, and housing for the urban poor.

The key facts at the time of preparation of first generation CDP are in Table 4:

Table 4: Key facts in 1st generation CDP

S. No.	Particular	Details			
Demographic					
1	Population (2001)	1,202,443*			
2	Population estimated in 2006, 2011, 2021 and 2031 and the method adopted	2006	2011	2021	2031
		1,370,785	1,535,279	1,965,157	2,572,356
3	Area of ULB (sq.km)	79.79			
4	Population of Slums (2001/06)	2001		2006	
		453,222		516,648	
Service Levels					
1	Water Supply (Coverage, Supply Levels, Treatment adequacy)	Coverage	NA		
		Per capita water supply	250 LPCD		
		Treatment capacity	280 MLD		
2	Sewerage (Coverage, Treatment adequacy)	Coverage	30%		
		Treatment adequacy	38%		
3	SWM (Door to door collection levels, scientific disposal, collection efficiency)	Door to door collection	0%		
		Scientific disposal	0%		
		Collection efficiency	Data not available		
4	Storm Water Drainage (coverage)	No dedicated storm water drainage network			
5	Roads/ Traffic/ Transportation	Kuchha Roads	8%		
		Black Topped Road	55%		
		Other roads	35%		

*As per census 2001, Varanasi Municipal Corporation population was 10,91,918

1.6.1 Projects proposed in 1st generation CDP

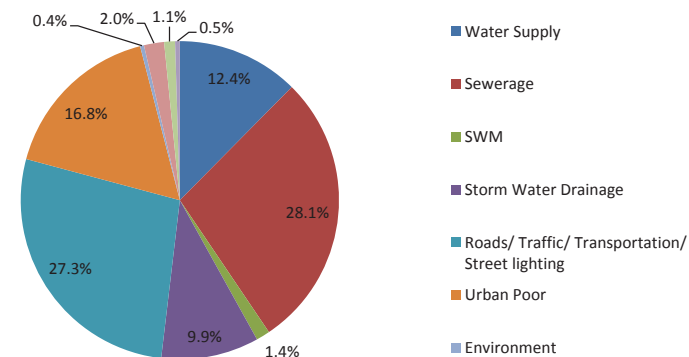
The CDP envisaged projects along with the strategic direction to improve the urban services in the city. The projects were finalized based on the stakeholder consultations. The projects were water supply, sewerage, storm water drainage, solid waste management, roads, tourism, heritage, reforms and basic services to urban poor. The sector wise projects identified and investment envisaged has been presented in the Table 5.

Table 5: Projects proposed in 1st Generation CDP

S. No.	Sector	Investment Envisaged (Rs in crores)
1	Water Supply	381.35
2	Sewerage	864.40
3	SWM	43.08
4	Storm Water Drainage	305.15
5	Roads/ Traffic/ Transportation/ Street lighting	838.61
6	Urban Poor	516.47
7	Environment	12.22
8	Urban Renewal	62.71
9	Heritage and tourism	34.00
10	Reforms	14.69
	Total	3072.59

The estimated investment required for the identified projects would be Rs. 3072 crores. The sewerage projects accounts for 28% of the total investment followed by roads and transportation sector which accounts for 27% of the total investment.

Further, the urban poor sector accounts for 17% of the investment; Water supply accounts for 12% of the investment; storm water drainage sector accounts for 10% of the investment. The rest of the investment is towards solid waste management, tourism, institutional strengthening, and urban environment. The breakup of the proposed investment has been presented in the Figure 4.

Figure 4: Sector wise distribution of investment proposed in 1st generation CDP

1.6.2 Brief scenario after 1st generation CDP

Projects worth Rs. 3072 Cr. were proposed in the 1st generation CDP, across various sectors. Of this investment worth Rs. 1178 Cr. was approved and the projects are currently being implemented. The details of these projects are in the Table 6.

Table 6: Project implementation status as on September, 2014

Sr. No.	Sector	Investment approved (Rs. crores)	Financial Progress in %	Actual Physical Progress in %
1	Water Supply	406.28		
A	Water Supply Component Priority of Varanasi	111.02	95	90
B	Water Supply Part-II of Cis-Varuna area	86.10	60	62
C	Water Supply Component (priority-II) for Trans-Varuna Area of Varanasi City	209.16	44	40
2	Sewerage	309.12	75	57
3	SWM	48.67	64	70
4	Storm Water Drainage	191.62	86	86
5	Urban Poor	174.44	90	47
	Total	1130.13		

Source – Project Implementation Status – Uttar Pradesh, MOUD, Government of India

1.7 Key process undertaken for City Development Plan Preparation Process

The Varanasi CDP revision process was started in September 2013, when the inception meeting was organized on 6th September 2013 at Varanasi. The objective of the meeting was to discuss with the VMC/parastatal officials the CDP preparation process and the role of the ULB and other line departments in the preparation process. Also, the relevance of various technical committees was explained as envisaged in revised CDP Toolkit.

1.7.1 List of meetings

The list of meeting carried out during the CDP revision process with ULB officials, parastatal agencies, city stakeholders, Technical Advisory Committee of MoUD have been outlined in Table 7

Table 7: List of meetings during CDP revision process

Sr.No.	Meeting	Date and Venue	Participants
1	Inception meeting	Nagar Nigam Varanasi Office, Sigra on 6th September 2013 at 12:00 PM	VMC officials and CRIS team
2	Stakeholder consultations (One to one interactions)	October and November 2014	Officials from parastatal agencies, city level stakeholders
3	1 st City level stakeholder workshop	18th December 2013 at Nagar Nigam Varanasi office.	Honorable Mayor, VMC Assistant Municipal Commissioner, Nodal Officer, VMC officials, line department officials, community organizers, businessmen and CRIS team
4	Focused Group Discussion	17 th and 19 th September 2014 at Varanasi Development Authority Office.	CRIS team, CBUD Officials along with VMC officials. Detailed discussion on the issues in the city were discussed with various stakeholders of the city
5	Discussion with Honorable Mayor and VMC officials on Draft report	11 th December 2014 at Varanasi Nagar Nigam Office.	CRIS team made presentations to VMC officials and identified issues and projects were discussed.
6	Meeting with Honorable Mayor and VMC officials.	17 th January 2015	Meeting with various VMC officials and Mayors office was done. Data used in the CDP was circulated in various offices for cross checking.
7	Technical Advisory Committee (TAC) meeting on the Draft CDP	28 th January 2015 at 313 – B, committee room, Nirman Bhawan, New Delhi	TAC committee members and CRIS team. The minutes of the meeting have been provided in Annexure.
8	Meeting with Honorable Mayor and VMC officials.	17 th February 2015	Meeting with various VMC officials and Mayor's office was done. Discussion on incorporation of the comments received from VMC was done and the data collection was done
9	Final stakeholder workshop	20 th March 2015 at Varanasi Nagar Nigam Office	Assistant Municipal commissioner, VMC officials, CRIS team and various stakeholders of the city.

1.7.2 Data collection

Secondary data on various sectors had been collected from the respective departments such as VMC, DUDA, Jal Nigam, VDA, Regional Transport Office - Varanasi, Regional Tourism Office – Varanasi, Uttar Pradesh State Road Transport Corporation and Uttar Pradesh Pollution Control Board. Other major documents such as Master Plan, 2031, detailed project reports of various urban services, municipal budget, draft slum free city plan of action and physical progress of on-going projects was collected. CRIS team has carried out the consultations with various stakeholders of the city and carried out City level assessment which includes the Strength, Weakness, Opportunity and Threat (SWOT) analysis.

1.7.3 Status of formation of CDP Policy and Technical Committee

The VMC has formulated both policy and technical committees in line with the Government of India's revised tool kit for CDP preparation. Besides the policy level committee, the five technical committees have also been formed in Varanasi such as land use and infrastructure, municipal institutional strengthening, environment sustainable development and disaster management, social and livelihoods and economic development, Heritage and conservation and culture and tourism development. The details of the policy and technical committees have been provided in Annexure 20.1.2

1.7.4 Stakeholder's consultation

- **Kick off meeting:** In Varanasi, the process of Revision of CDP had commenced in September 2013. CRIS team has conducted an inception meeting with VMC officials on 6th September 2013 to appraise on the revision of CDP process and the way forward. Subsequently, the review of 1st generation CDP has been carried out and inception report has been submitted to MoUD and VMC on 30th September 2013

Figure 5: Kick off meeting



- **Interim meeting:** To ensure a participatory and inclusive development process CRIS team carried out wide range of stakeholder consultations and focus group discussions with the city stakeholders of the city. The exercise involved mapping of the key stakeholders in the city followed by discussions on city level issues. One to one consultations were carried out with the Government officials, business and trade organisations, academicians and community based organisations (CBOs).

Further, CRIS in association with VMC organised a city level stakeholder workshop on 18th December 2013 at VMC. The objective of the workshop was to discuss about status and performance of service delivery mechanism in Varanasi, City SWOT analysis, to understand aspirations of the citizen on city development and framing of the vision for Varanasi city.

- To ensure a participatory and inclusive development process CRIS team carried out wide range of stakeholder consultations and focus group discussions with the city stakeholders of the city. The exercise involved mapping of the key stakeholders in the city followed by discussions on city level issues. One to one consultations were carried out with the Government officials, business and trade organisations, academicians and community based organisations (CBOs), weavers, boatmen, pandas etc.
- **Meeting with Mayor and VMC officials:** Before submitting the draft CDP, a meeting was held in Honorable Mayor's office on 16th June 2014 to discuss the broad nature of projects. The projects and strategies suggested were incorporated in the draft CDP report. The report was submitted in June 2014.
- **Meeting with VMC officials on 14th August 2014:** After submission of draft CDP, to discuss the project proposals a meeting under the chairmanship of Honourable Municipal Commissioner was held. The meeting was attended by senior VMC and parastatal officials. Feedback and comments from the stakeholders was noted and the revised report was submitted.
- **Focused group discussions:** FGDs were held from 16th to 19th September 2014 in Varanasi. Six sector-wise sessions were held. A sector-wise presentation was given to the stakeholders and their feedback was sought. Detailed feedback has been enclosed in the annexure.

Figure 6: Focused Group Discussion with Various Stakeholders of the City





- Final Workshop:** Final workshop was held on 20th March 2015 in Varanasi Municipal Corporation office. The workshop was chaired by Mr. B.K Dwivedi, Additional Commissioner, Varanasi Municipal Corporation and coordinated by Mr. Atul Gautam, Urban Planning Officer, PIU Cell of VMC. The participants included officials from various departments of VMC, Jal Sansthan, Jal Kaal, other parastatal agencies, NGO, RWA, business representatives and other stakeholder, the minutes of the meeting and detailed list of participants is attached in the annexure.

Figure 7: Final Workshop



2. Introduction to city

Varanasi, also known as Benares, or Kashi, is a city on the banks of the river Ganga in Uttar Pradesh. It is considered to be one of the holiest of the seven sacred cities (Sapta Puri) in Hinduism and Jainism, and played an important role in the development of Buddhism as well. It is considered one of the oldest continuously inhabited cities in the world and the oldest in India. The city of Varanasi is archaeologically proven to have been continuously inhabited by humans since ca 800 BCE and is therefore described as one of the ancient most continuously living cities in the world. The leading prophet of Jainism, Parshvanatha, was born in Varanasi in the 8th century BCE. Later, Mahavira (599-527 BCE), the last in the line of Jain prophets (or Thirthankara-s as they are called) also made his imprint on the cultural arena of the city.

In the early medieval period, Varanasi had been passed from one ruler to another --- from Maukharis of Kannauj to Gurjara Pratiharas (9th century). Finally in the early 11th century, the city came under Gangeyadeva, king of Kannauj. It was from the 17th century that larger colonies of Maharashtra Brahmins began to settle here, and with them came Vedic learning as well. After 1680, the Marathas replaced the Rajputs as major donors to the three holy places, Varanasi, Allahabad and Gaya. A fresh wave of cultural renaissance overtook Varanasi during the 18th century under the influence of the Marathas (1734-1785) who substantially rebuilt the city.

The face of the sacred city also changed considerably under the British rule. The urban area of the city continued to develop along the river southward and westward. Masonry bridges were built on the Ganga and the Varuna rivers. Many ponds like Benia, Maidagin and Macchodari and Godaulia Nala (rivulet) were drained and replaced by parks or streets, while many houses were demolished to widen the roads in the centre of the city. Broad roads were cut through the city where formerly there had been narrow lanes. The Dashashvamedha-Luxa Road was built running west from the river toward the Cantonment train station (now called Varanasi Junction). The north-south artery called Chauk was cleared through the business district. Slowly the city came to have its present shape. In 1916, the Viceroy of India, Lord Hardinge, laid the foundation stone of what would become one of the largest and most beautiful universities in Asia, the Banaras Hindu University. Since 1947 no substantive change in the urban fabric and city morphology is recorded. On 15th October 1949 the district of Varanasi assumed its present form and area by the merger of the erstwhile Varanasi State (Kashiraj), and the city of Varanasi became the district headquarters.

2.1 Regional Setting

Varanasi is one of the most important pilgrim centres of North India along the River Ganges. It derives its sanctity from the presence of Lord Vishwanath and the River Ganges and is considered the place to attain salvation from life and death. In the sense of its importance to the Hindu religion and culture, its regional influence extends to the entire country. Varanasi is part of a pilgrimage route that most Hindus believe should be taken once in life time to perform rites for their ancestors. This route starts at Rameshwaram-Gaya-Allahabad-Varanasi and then culminates again at Rameshwaram. Varanasi has also been traditionally looked at as part of a holy trinity of three cities namely, Varanasi-Allahabad-Gaya. A visit to Varanasi is incomplete without a visit to Allahabad and Gaya. For the Buddhists, Sarnath in Varanasi is an important part of the Buddhist circuit. However, for the purpose of a more practical assessment of Varanasi as an urban centre, its region can be said to extend up-till its development region.

2.2 Administrative boundary

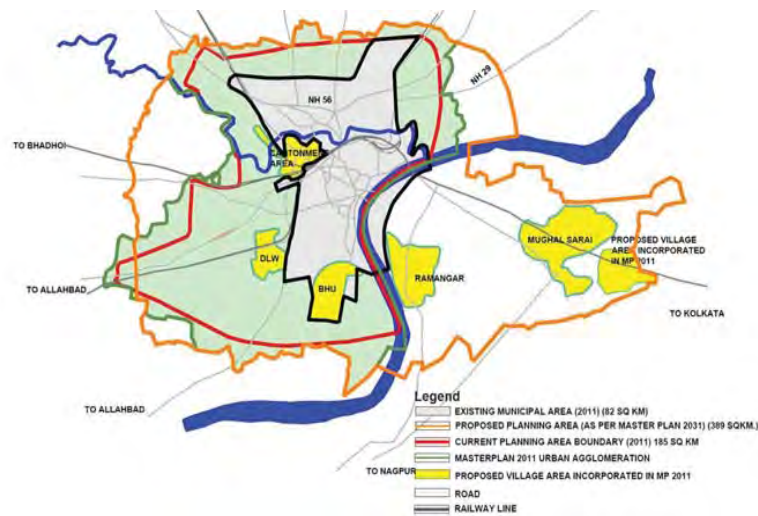
The draft Master Plan 2031 formulated by the Varanasi Development Authority (VDA) defines the Varanasi Development Region (VDR), which has an area of 793 Sq. Km. The list of towns in Varanasi UA along with number of households and population is enclosed as Annexure - II to the report. Varanasi UA comprises of and Varanasi Municipal Corporation area.

Table 8: Spatial Units- Varanasi Development Region

Spatial Unit	Area (Sq. Km)	Administrative Components
Varanasi Municipal Corporation (VMC)	82.1	90 Wards
Varanasi Urban Agglomeration (VUA)	112.26	VMC and Asapur, Bhagawanpur, Chandpur, Chhitpur, Kakarmatta, Kotwa, Lahartara, Lerhupur, Maheshpur, Maruadih, Maruadih Railway Settlement, Phulwaria, Ramnagar, Salarpur, Sarai Mohana, Shiydaspur, Sir Gobardhan, Susuwahi and Varanasi Cantonment Board
Varanasi Master Plan - Operative Area	246.46	
Total Varanasi Development Region (VDR)	793	

Source: Master Plan for Varanasi 2031, Varanasi Development Authority

Figure 8: Regional Setting and Administrative Boundaries of Varanasi



Map Source: OpenStreetsMap

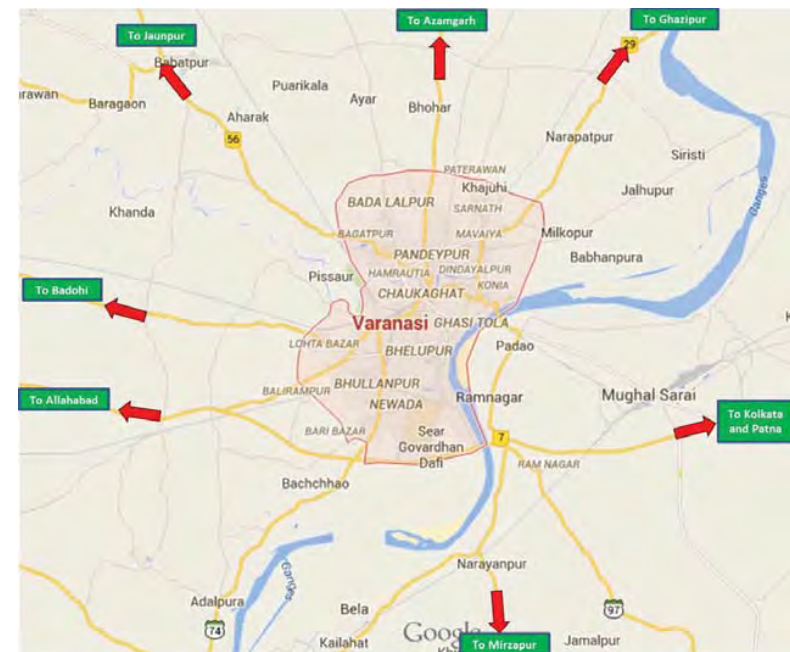
2.3 Location and connectivity

Varanasi is well connected by road, rail and airways with other parts of the country. It falls on the latitude and longitude of 25.2820° N, 82.9563° E. The road distance from major cities is Delhi-820 km, Lucknow-286 km and 122 km from Allahabad. There are three national highways i.e. NH-2, NH-56 and NH-29 and four state highways i.e. SH-87, SH-73, SH-74 and SH-98 passing through the heart of the city. The linkages provided by the National highways include:

- NH 2- G.T. Road from Mughal Sarai to Allahabad;
- NH 29- Varanasi to Gorakhpur, Kushinagar; and
- NH 56- Varanasi to Jaunpur Lucknow.

These National Highways and state highways have high passenger traffic as these roads provide a good connectivity to the surrounding areas in the U.P. state as well as to metropolitan cities like Delhi and Kolkata. The Grand trunk road or NH-2 forms the main transportation spine of the city. A bypass is being constructed along the Eastern edge of the city to relieve the burden off NH-2. Another ring road is under consideration along the Western edge of the city to divert the traffic and provide better connectivity to the newer developments coming up in the Trans Varuna Region. The road linkage to surrounding area is given in Figure 9

Figure 9: Road linkages

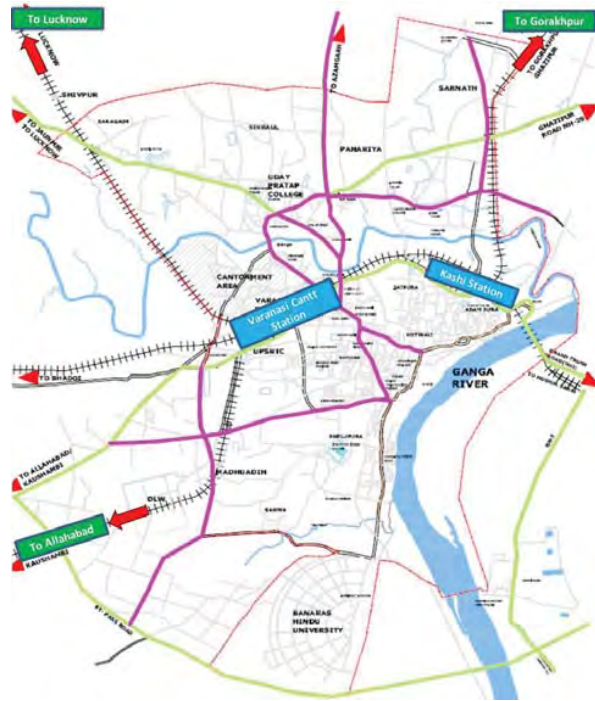


Map Source: Google Maps

2.3.1 Railways

Varanasi is well connected by railways with broad gauge. There are three rail lines entering to the city from Lucknow, Bhadoi and Allahabad and is diverted in two lines to Gorakhpur and Mughal Sarai. The city lies on Delhi-Kolkata rail route of North Eastern Railways, which is the broad gauge. A rail line connects the town with Sarnath, located 13 Km north-east of the city. Sarnath is from where Gautama Buddha first taught the Dharma and where the Buddhist Sangha came into existence through the enlightenment of Kondanna. The other cities having good connectivity through railways are Patna, Guwahati, Chennai, Mumbai, Gwalior, Meerut, Lucknow, Kanpur and Allahabad.

Figure 10: Rail linkages



Map Source: OpenStreetMaps

2.3.2 Airport

The town also has an airport at a distance of about 24 km away from the city. There are flights to Varanasi from Agra, Bhubaneswar, Kolkata, Delhi, Gorakhpur, Khajuraho, Lucknow, Mumbai, Raipur and Kathmandu (Nepal). It is on a regular aviation route of Delhi to Kolkata and Bhubaneswar.

2.4 Defining the study area

The study area for the preparation of the City Development Plan as per the directions of the Ministry of Urban Development extends until the Varanasi Urban Agglomeration (VUA) area. This is to plan for the city in the context of its immediate region. However, for the purpose of the Capital Investment Plan (CIP) and the Financial Operating Plan (FOP), only projects falling under the VMC limits will be considered. For instance, the water supply demand will be estimated for the population in VUA; however, CIP and FOP will be prepared for population within the VMC limits.

Table 9: Study Area

Spatial Unit	Area (Sq. Km)
Varanasi Municipal Corporation (VMC)	82.1
Varanasi Urban Agglomeration (VUA)	112.26

Source: Master Plan for Varanasi 2031, Varanasi Development Authority

2.5 Physical setting

2.5.1 Topography and geology

The city of Varanasi is located in the middle Ganga valley of North India, in the Eastern part of the state of Uttar Pradesh, along the left crescent-shaped bank of the river Ganges. The river system consists of the mighty Ganga and Gomti. Rivers Varuna, Asi, Banganga, Chandra Prabha and Karmanasa are tributaries of the Ganga, that drain the area.

Geologically, Varanasi is situated in the fertile alluvial Gangetic plains and is under laid with sediments deposited in successive stages. Layers of clay, fine sand, and clay mixed with kankar and stone bazzari is met with during drilling operations.

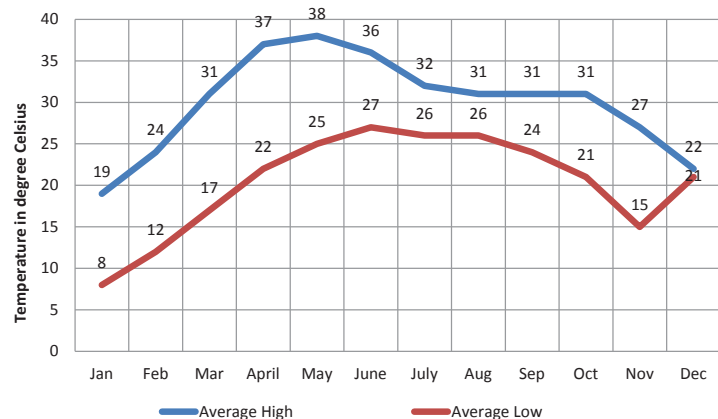
2.5.2 Climate

Varanasi experiences a humid subtropical climate with large variations between summer and winter temperatures. The dry summer starts in April and lasts until June, followed by the monsoon season from July to October. The temperature ranges between 22 and 46 °C in the summers. Winters in Varanasi see very large diurnal variations, with warm days and downright cold nights. Cold waves from the Himalayan region cause temperatures to dip across the city in the winter from December to February and temperatures below 5 °C are not uncommon. General wind direction is westerly and south-westerly. The average annual rainfall is 1,110 mm (44 in) with large proportion of its occurring during the months of July to September. Fog is common in the winters, while hot dry winds, called 'loo', blow in the summers. In recent years, the water level of the Ganges has decreased significantly; upstream dams, unregulated water extraction, and dwindling glacial sources due to global warming may be to blame.

Table 10: Climate data, 2013

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average high	19	24	31	37	38	36	32	31	31	31	27	22
Average low	8	12	17	22	25	27	26	26	24	21	15	21
Precipitation mm	19	13	10	5	9	10	320	260	231	38	13	4

Source: India Meteorological Department

Figure 11: Temperature variation, 2013

Source: India Meteorological Department

2.5.3 Agriculture, mineral and industry

Agriculture: Varanasi is famous for the production of Mangoes (Langra Variety) in very large quantity. The region is also famous for the Banarasi paan leaf (betel leaf) and khoa that is the milk product. A detailed assessment of the horticultural potential of the city and its region has been done in Chapter 3.

Minerals: There are no major minerals found in Varanasi district. Sand is the only minor mineral in Varanasi. In 2011, close to 393 tonnes of sand was produced from the Varanasi district.

Manufacturing: Though Varanasi is not a major industrial hub, however, the Indian Railways' diesel locomotive factory contributes to the local economy. In addition, BHEL, a large power equipment manufacturer, also runs a plant here.

2.5.4 Water resources

Being located on the banks of river Ganga, Varanasi is blessed with a perennial water source. In addition, the Assi and Varuna rivers pass through the city and merge into river Ganga. There are

close to 88 kunds in Varanasi. These kunds are an effective means of drainage in the city. However, due to encroachment and climatic change several kunds have dried up. There are around 100 Kunds in Varanasi but only 88 remains till date. As per the master plan 2011, in the landuse 3% of the total area constitutes the water body and others which makes 273.5 Ha.

2.5.5 Forest resources

Over the decades, the forest cover has increased in Uttar Pradesh from 10.9% in 1950-51 to 17.5% in 2001. As per the Uttar Pradesh ENVIS Centre under the Ministry of Environment and Forests, Government of India, the total forest cover (assessed through satellite imagery) across Uttar Pradesh is 13,746 km² and across Varanasi district 12 km². However, Varanasi city does not have dense forest cover. A further assessment of the urban green situation in Varanasi has been done in Chapter 11.

3. Demographic profile

The chapter presents a detailed overview of the demographic profile of the city and its overall position with reference to the state and district. It also describes the population growth trends, spatial distribution and other demographic characteristics of the city. In addition to that, based on the past trends and potential of the city, the future population has been estimated through various scientific methods.

3.1 Background

Uttar Pradesh is India's most populous state. The state however, has tremendous development potential due to its extensive land and water resources and its human resources. The demographic profile of the state and Varanasi city has been discussed in this chapter.

3.2 Population and Urbanization

As per Census 2011, the population of the state was 19.98 crore showing an increase of 20% from 2001. During 1991-2001 decade, there was 26% increase in population. The pace of urbanization has historically been lower in the state as compared to the national average. The urbanization in 2001 was 20.8% and grew to 22.3% in 2011. The number of urban centres with more than one lakh population has grown slowly over the last thirty years. The growth of urban centres with population less than five thousand have, on the other hand, have grown more significantly and these centres have grown in larger numbers in the western part of the state. Of the 71 districts, only eight districts have more than 40% urbanization. Out of which Ghaziabad has the highest urbanization with more than 68% of its population living in urban areas, while Varanasi with 43% urbanization level is the seventh most urbanized district in Uttar Pradesh.

Table 11: Ten Most Urbanized Districts - Uttar Pradesh, 2011

Sr. No.	Districts	Total	Urban	% Urban	% State Urban
1	Ghaziabad	46,81,645	31,62,547	67.6	7.1
2	Lucknow	45,89,838	30,38,996	66.2	6.8
3	Kanpur Nagar	45,81,268	30,15,645	65.8	6.8
4	Gautam Buddha Nagar	16,48,115	9,74,309	59.1	2.2

Key facts in 1st generation CDP

- VMC had a population of 10.91 lakhs as per Census 2001 and the population was growing at a rate of 18%. The city had an average population density of 13,300 persons per sq. km, spread across an area of 82.1 sq. km.
- The sex ratio of Varanasi was 876 which was lower compared to the prevailing sex ratio of the state (898) and Varanasi district (904).

The CDP had put forward the following observations:

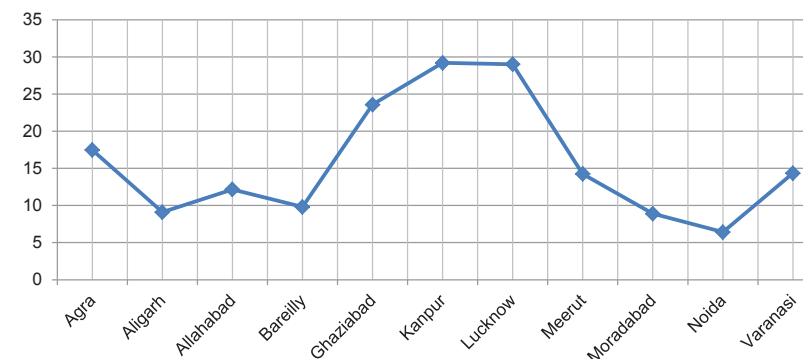
- Population growth has reduced, and growth is primarily on account of natural growth and migration
- Most of the city's population is concentrated in within cis-Varuna area
- Average household size is 7.3
- High floating population (approximately 25,000 per day)

Sr. No.	Districts	Total	Urban	% Urban	% State Urban
5	Meerut	34,43,689	17,59,182	51.1	4.0
6	Agra	44,18,797	20,24,195	45.8	4.5
7	Varanasi	36,76,841	15,97,051	43.4	3.6
8	Jhansi	19,98,603	8,33,484	41.7	1.9
9	Bareilly	44,48,359	15,68,409	35.3	3.5
10	Firozabad	24,98,156	8,33,169	33.4	1.9
	Uttar Pradesh	19,98,12,341	4,44,95,063	22.3	

Source: Primary Census Abstract, Census of India, Uttar Pradesh, 2011

Further, the urban centres in the state have been categorised into municipal corporations, municipalities, and nagar panchayats. As of now, there are 14 municipal corporations, 192 municipalities, and 421 nagar panchayats in the state. Out of 14 municipal corporations, seven municipal corporations, have population of more than one million. The remaining municipal corporations have population between five-nine lakhs. Varanasi city is one among those municipal corporations.

Figure 12: Urban centres in Uttar Pradesh (Population in lakhs)



Source: Primary Census Abstract, Census of India, Uttar Pradesh, 2011

3.2.1 Varanasi district

Varanasi district is an important tourist, heritage, commercial and institutional centre in the state. It is the eighteenth-largest district in the state in terms of population and holds the sixth position in terms of urban population in the state. As per Census 2011, the Varanasi district had a population of 36.76 lakhs, which accounts for 1.84% of the total state population. The population of the district has increased from 31.38 lakhs in 2001 to 36.76 lakhs in 2011, registering a decadal growth of 17.15%. The share of urban population is about 43%, which is higher than the state average of 22%.

There are 39 urban centres in the district. Out of the 39 urban centres, three urban centres account for 80% of the total district urban population. Varanasi city accounts for 75% of the total district urban

population followed by Ramnagar with 3%. Further, Lohta accounts for 2% of the district urban population. Overall, it indicates that Varanasi city holds predominant presence in the district.

3.2.2 Varanasi City

Varanasi is one of the largest urban centers and fast-growing cities in the state. According to Census 2011, the city had a population of 11.98 lakhs. VMC population accounted for 2% of the total state's population and 33% of the Varanasi district population. VMC's population accounts for 3.6% of the urban population of the state and 75% of the urban population of the district. The comparison of Varanasi city's population to the total population and urban population in the state and district is presented in Table 12.

Table 12: Comparative population of Varanasi city

Indicator	Population (In Lakhs)			% of Urban Population w.r.t. total Population	Urban population comparison	Total population comparison
	Total	Rural	Urban			
Uttar Pradesh state	1998	1553	445	22%	3.6%	2%
Varanasi District	36	20	16	43%	75%	33%
VMC	12	-	12	100%	100%	100%

3.3 Population Growth Trend

The population of Varanasi city grew from 10.9 lakhs in 2001 to 11.9 lakhs in 2011 at a growth rate of 10%. The decadal population growth of Varanasi city during 2001-11 was below the national average of 17% and the state average of 20%. The population growth has gradually dropped down from 20% in 1991 to 10% in 2011.

Table 13: Population trend for Varanasi City³

Census Year	Population	Decadal increase	Growth Rate (%)
1971	6,71,934	1,82,070	37%
1981	7,73,865	1,01,931	15%
1991	9,29,270	1,55,405	20%
2001	10,91,918	1,62,648	18%
2011	11,98,492	1,06,574	10%

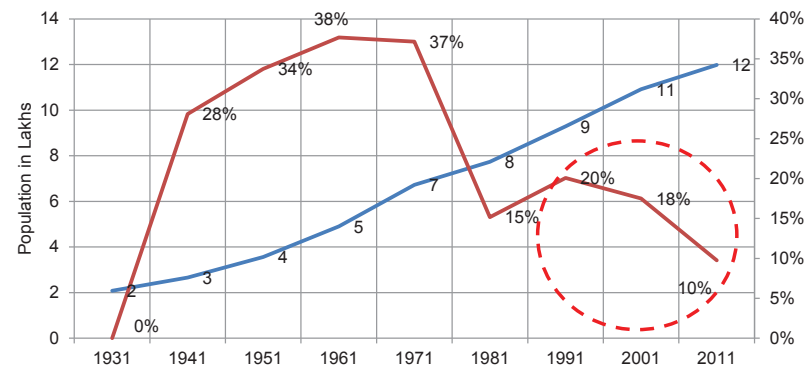
Source: Census of India, Uttar Pradesh, 2011

Decade wise population and population growth has been plotted and shown in the figure below. The population growth in the decade 2001-11 was the lowest since 1981. As the population density within the city is high and the city limits have remained the same, rapid development was witnessed in the peripheral areas outside the city. Hence, the peripheral areas were rapidly growing and witnessed

³ Census of India

good growth in terms of residential development. However, the peripheral areas were outside VMC's jurisdiction.

Figure 13: Population trend in Varanasi city



In Varanasi Urban Agglomeration (VUA), the population in 2001 was 12.03 lakhs and grew to 14.35 lakhs in 2011 at a growth rate of 18%. A comparison of population growth has been showcased in the table below. There has been a decline in the growth rate of population within the municipal corporation limits. In contrast, not only the growth rate increased in the urban agglomeration area, but more specifically in the areas outside the city limits, there has been a tremendous growth in population. This implies a relative saturation of the urban population growth within the city, which is already very densely populated and preference of the people to shift outside the city to less dense areas. During the year 2013, 64.5 lakh tourists have visited Varanasi. Around 5.37 lakh people visit Varanasi every month. Over the period (2003-2012), the number of incoming tourists (domestic and foreign) increased at a CAGR of 9%. The inflow of tourists has consistently remained robust; however, not many initiatives have been taken to improve the existing tourism infrastructure.

Table 14: Varanasi city and UA population analysis

	1991	2001	2011
Varanasi City	929,270	1,091,918 (1.63%)	1,198,492 (0.94%)
Varanasi UA	1,030,863	1,203,961 (1.56%)	1,423,711 (1.69%)
Within UA but outside city	101,593	112,043 (0.98%)	225,219 (7.23%)

Source – Census of India 1991-2011. Note: Figures in parentheses indicate CAGR of population

3.4 Population Density

The population density of Varanasi is 146 persons per hectare. The area of the city has however, remained same at 82.1 sq. Km⁴. The population density in 2001 was 133 persons per hectare. The number of wards in the city has increased from 40 in 1991 to 90 in 2001. Due to some data gaps in the ward areas, the exact density of the population could not be estimated for each ward. Based on discussions with the stakeholders and the VMC officials, it can be concluded that wards in old city area, central and northern peripheral areas have high population density.

Table 15: Ward wise population

Ward No.	Area	Ward No.	Area	Ward No.	Area	Ward No.	Area	Ward No.	Area	Ward No.	Area
1	0.29	16	0.06	31	0.47	46	0.26	61	0.94	76	0.14
2	2.34	17	0.88	32	0.81	47	0.27	62	0.10	77	0.46
3	0.09	18	0.08	33	0.60	48	0.20	63	0.33	78	0.12
4	1.85	19	1.24	34	0.53	49	0.20	64	0.80	79	0.52
5	4.34	20	3.31	35	0.11	50	0.07	65	1.03	80	0.24
6	0.78	21	1.47	36	0.14	51	0.95	66	0.09	81	0.21
7	1.6	22	0.26	37	0.20	52	0.13	67	0.09	82	0.76
8	0.30	23	1.13	38	1.48	53	0.16	68	0.55	83	0.20
9	0.32	24	0.11	39	0.22	54	0.10	69	0.18	84	1.24
10	0.61	25	4.87	40	0.16	55	0.20	70	0.13	85	0.73
11	0.17	26	0.22	41	0.21	56	0.65	71	1.59	86	0.50
12	0.39	27	7.53	42	0.06	57	0.13	72	0.68	87	0.13
13	1.07	28	1.04	43	0.06	58	0.17	73	1.21	88	0.67
14	0.78	29	0.09	44	0.07	59	0.20	74	0.54	89	0.16
15	0.94	30	0.26	45	0.46	60	0.63	75	1.18	90	1.02
										91	0.53

*As per the first generation CDP, there were a total of 91 wards in Varanasi.
**The total area adds up to 65.47 sq. Km, which should be 82.1 sq. Km

The population density of the city has been consistently rising. As per 1st generation CDP, the population density in 1991 was 18,197⁵ persons per sq. Km. The city limit has increased from 56.65 sq. km to 82.1 sq. km.

⁴ Service Level Benchmarking – General information of city

⁵ VMC area was 56.65 sq. km.

Table 16: Population density

Sr. No.	Year	Population density (persons per sq. Km)
1	2001	13,300
2	2011	14,598

Source: Census of India, 2011 and Varanasi Municipal Corporation

Like most urban areas in India, Varanasi too has to confront intense development pressures. The impact of these pressures is harder in the old city centre where every inch is constructed and where the population density is very high (400 to 500 persons/ per ha). This is creating pressures for substituting existing spacious architectural forms with optimal space utilization plans. Parks are becoming smaller and giving way to concrete residential or commercial structures.

3.4.1 Population Distribution⁶

84% of the population presently resides within the Municipal Corporation area. Ramnagar and Maruadih railway station are the other populous areas.

Table 17: Distribution of Population in Varanasi UA

Name	Households	Population	Distribution of Population
Asapur (CT)	971	6,153	0.4
Bhagawanpur (CT)	1,232	7,269	0.5
Chandpur (CT)	1,050	6,427	0.5
Chhitpur (CT)	1,925	12,156	0.9
Kakarmatta (CT)	1,141	7,377	0.5
Kotwa (CT)	834	5,825	0.4
Lahartara (CT)	792	5,124	0.4
Lerhupur (CT)	1,057	6,934	0.5
Maheshpur (CT)	866	5,553	0.4
Maruadih (CT)	1,689	11,228	0.8
Maruadih Railway Settlement (ITS)	3,284	14,298	1.0
Phulwaria (CT)	3,282	20,466	1.4
Ramnagar (NPP)	7,729	49,132	3.5
Salarpur (CT)	1,656	10,126	0.7
Sarai Mohana (CT)	761	4,824	0.3
Shivdaspur (CT)	2,614	16,405	1.2
Sir Gobardhan (CT)	1,708	11,350	0.8
Susuwahi (CT)	1,781	10,454	0.7

⁶ Ward wise area is not available with VMC

Name	Households	Population	Distribution of Population
Varanasi (CB)	2,760	14,119	1.0
Varanasi (M Corp.)	190,835	1,198,491	84.2
TOTAL	227,967	1,423,711	100.0

Source: Primary Census Abstract, Census of India, 2011

3.5 Average Household Size

As per census 2011, the total number of households in Varanasi city was 190,835 and the average household size of Varanasi city was 6.6. The average household size is higher as compared to the state average of 6 and national average of 4.9. The average household size in Varanasi has constantly remained high. Between 2001-2011 period, the number of households increased by 25% as compared to 10% increase in population indicating a probable increase in nuclear families.

Table 18: Average Household Size- Varanasi UA (2011)

Name	Households	Population	Average Household Size
Asapur (CT)	971	6,153	6.3
Bhagawanpur (CT)	1,232	7,269	5.9
Chandpur (CT)	1,050	6,427	6.1
Chhitpur (CT)	1,925	12,156	6.3
Kakarmatta (CT)	1,141	7,377	6.5
Kotwa (CT)	834	5,825	7.0
Lahartara (CT)	792	5,124	6.5
Lerhupur (CT)	1,057	6,934	6.6
Maheshpur (CT)	866	5,553	6.4
Maruadih (CT)	1,689	11,228	6.6
Maruadih Railway Settlement (ITS)	3,284	14,298	4.4
Phulwaria (CT)	3,282	20,466	6.2
Ramnagar (NPP)	7,729	49,132	6.4
Salarpur (CT)	1,656	10,126	6.1
Sarai Mohana (CT)	761	4,824	6.3
Shivdaspur (CT)	2,614	16,405	6.3
Sir Gobardhan (CT)	1,708	11,350	6.6
Susuwahi (CT)	1,781	10,454	5.9
Varanasi (CB)	2,760	14,119	5.1
Varanasi (M Corp.)	190,835	1,198,491	6.3
TOTAL	227,967	1,423,711	6.2

Source: Primary Census Abstract, Census of India, 2011

3.6 Literacy Rate

The literacy rate in Uttar Pradesh as per 2011 Census was 70%. While this is still below the national average of 74%, there has been an increase of 13 percent points from 2001. Similarly, the literacy rate in Varanasi district has also increased by around 10% (from 66% in 2001 to 76% in 2011). The literacy rate in Varanasi district is higher than the state average. The literacy rate in Varanasi city in 2011 was 79% which showed a slow growth of 2% since 2001.

Table 19: Literacy rates

	2001	2011	% change in literacy rate
Uttar Pradesh	56%	70%	13%
Varanasi District	66%	76%	10%
Varanasi UA	-	79%	-
Varanasi city (VMC limits)	77%	79%	2%

Source – Primary Census Abstract, Census of India, Uttar Pradesh, 2011

3.7 Sex Ratio

As per the census 2001, the sex ratio (female population per 1000 male) in Varanasi city was 876 and as per census 2011, it has now increased to 887 per 1000 males. The sex ratio of Varanasi UA was also 887 in 2011. In comparison, the sex ratio of Uttar Pradesh was 902 in 2011. The sex ratio of Varanasi district was much higher than state average and Varanasi city. It was 904 in 2001 and increased to 913 in 2011.

Table 20: Sex ratio

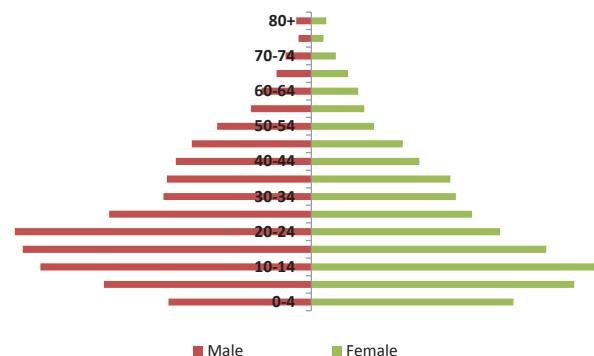
	2001	2011
Uttar Pradesh	898	902
Varanasi District	904	913
Varanasi UA	-	887
Varanasi city (VMC limits)	876	887

Source – Primary Census Abstract, Census of India, Uttar Pradesh, 2011

3.7.1 Age Sex Pyramid

The details of the age-sex composition by five-year age groups of the sampled population are shown in Figure 14. The proportion of population below 15 years and above 60 years constitutes 32.1 and 7.3 percent respectively. There are more children below 15 years (32.5%) among males than females (31.9%), while there is only a marginal difference of less than one percentage point among males and females in the proportion of the 60 plus population.

Figure 14: Age sex pyramid



3.8 Language

Since Varanasi is part of the Hindi heartland, most of the population is Hindi-speaking, i.e., ~ 80%. The second-most common language is Urdu, which is spoken by 19% of the population.

3.9 Scheduled Caste and Scheduled Tribe Population

The scheduled caste population in Uttar Pradesh increased from 3.51 Cr. in 2001 to 4.13 Cr. in 2011 at a growth rate of 18%. In Varanasi city, the percentage of scheduled caste population increase at the rate of 5. The scheduled tribe population in the state, on the other hand, increased substantially from 1.07 lakh to 11.34 lakhs. This is because of transfer of 10 castes from scheduled caste list to scheduled tribe list in Uttar Pradesh. Due to the same reason, the percentage growth appears to be much higher for Varanasi District and Varanasi city.

Table 21: SC and ST population

	2001		2011		Percentage (%)	
	Scheduled caste	Schedule d tribes	Scheduled caste	Scheduled tribes	Scheduled caste	Schedule d tribes
Uttar Pradesh	3,51,48,377	107,963	4,13,57,608	11,34,273	2.07	0.06
Varanasi District	4,35,545	769	4,86,958	28,617	13.53	0.79
Varanasi UA	-	-	1,12,247	8,507	7.88	0.60
Varanasi city (VMC limits)	78,426	483	82,190	6,595	6.86	0.55

Source – Primary Census Abstract, Census of India, Uttar Pradesh, 2011

3.10 Migration

The total state migration is 2.94% of the migration which happened in India. Varanasi District has experienced a 10.7% of the state's migration. Varanasi district does not attract many residents from other states of the country. 85% of the migrant population in the district is from within the state. Out of this, 69% are from the rural areas pointing primarily to distress migration.

Table 22: Migrants in Varanasi District

Category		Number	Per cent
Migration Trend In India	Total	314,541,350	100%
Total State Migration	Total	9,255,257	2.94%
Total District Migration	Total	990,312	10.7%
Last Residence of Migrants			
Total Migration Within the state but outside the place of enumeration	Total	841,766	85%
Rural Migration Within the state but outside the place of enumeration	Rural	580,818	69%
Urban Migration Within the state but outside the place of enumeration	Urban	260,947	31%

Source: Census of India

3.11 Key observations

- Varanasi is one of the largest urban centers and fast-growing cities in the state. According to Census 2011, VMC population accounted for 2% of the total state's population and 33% of the Varanasi district population.
- VMC's population accounts for 3.6% of the urban population of the state and 75% of the urban population of the district.
- The population of Varanasi city is characterized by three typologies of population including, a) the population which has resided within the old city for generations and are likely to continue living there, b) the population moving to the newly developed areas outside the city limits which largely comprise of migrants, and c) the floating tourist population. A particular lacuna in the demographic study above is the lack of study of the density pattern in the city. This could not be done due to non-availability of accurate data for density in the city.
- The population density of the city is high .i.e. 14,600 persons/sq. Km. Some methodology must be adopted to decongest the conjusted areas. For this a detailed study must be conducted.
- Though the household size has come down from 2001 level, but it is still higher than state and national average.
- The sex ratio is much lower than the district, state and national average
- Migration to Varanasi is mostly from within the state. Of which, 69% are from rural areas within the state.

- Around 5.37 lakh people visit Varanasi every month. Over the period (2003-2012), the number of incoming tourists (domestic and foreign) increased at a CAGR of 9%. The inflow of tourists has consistently remained robust; however, not many initiatives have been taken to improve the existing tourism infrastructure.

3.12 Population Projections

The population projections would play a vital role in the assessment of future needs for the city. The projected population would assist in estimating the demand for water supply, sewerage, solid waste management and social infrastructure facilities such as schools, hospitals and parks in the ensuing years. In addition, the population projections have been carried out for the study area for the next 30 years using various methods. The following sections would describe the method adopted for population projections and recommended population projections for the study area.

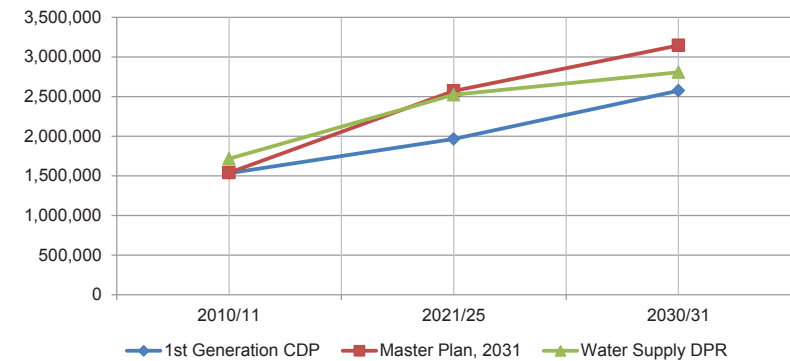
3.12.1 Methodology Adopted For Estimation of Population

The population projections for Varanasi has to consider different factors including, a) the population growth trends of the city as well as the villages and small towns in the urban agglomeration area, b) the migration of population for work, and c) tourist traffic that is high due to it being a major pilgrimage centre. The proximal townships of Ramnagar and Mughalsarai, both of which lie across the Ganga River, east of Varanasi, complement the growth of the Varanasi region.

In addition, the future growth potential of the city due to coming up of industrial/infrastructural projects has also been considered for population projections. For example, it is expected that the Varanasi being one of the nodes on the eastern dedicated freight corridor, would have an increase in industrial activity in the region. This improvement of industrial activity would fuel the growth of population in the city.

In order to estimate the population for the next 30 years, initially the population projections finalized in the 1st generation CDP, water supply project and Master Plan, 2031 were reviewed. The review indicates that the projected population in the 1st - generation CDP was lowest of the three and population projected in Master Plan was the highest as the population projected in the Master Plan, 2031 is for the planning area .i.e. 246 sq. Km. The trends in population projections in various studies have been provided in the Figure 15.

Figure 15: Population projections comparison



The base data used for population projection is the data obtained from the Census of India. This data provided the numeric basis for benchmarking the actual population and its decadal growth for the past decades. Different population projection methods like polynomial, arithmetic, incremental, geometric and exponential method have been used to estimate future population. The projected population by different methods is given Figure 16.

Figure 16: Population projection – Varanasi UA

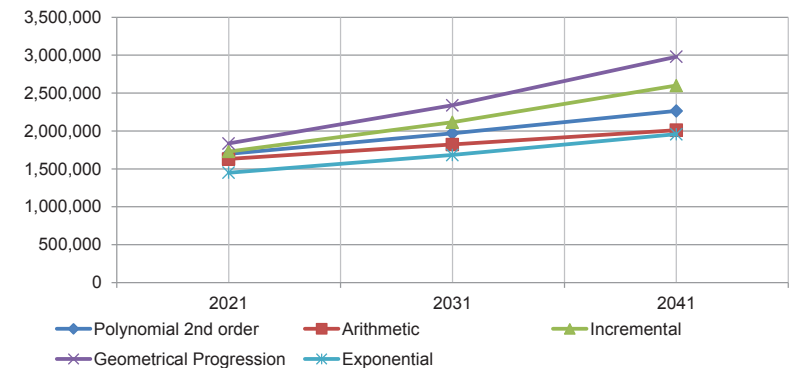


Table 23: Population projection – Varanasi UA

Method	2011	2021	Decadal growth	2031	Decadal growth	2041	Decadal growth
Polynomial 2 nd order	14,23,711*	1,844,494	30%	2,140,645	16%	2,460,640	15%
Arithmetic		1,772,821	25%	1,979,559	12%	2,186,298	10%
Incremental		1,879,397	29%	2,299,288	22%	2,825,756	23%
Geometrical Progression		1,995,169	40%	2,541,819	27%	3,238,246	27%
Exponential		1,938,017	65%	2,353,881	21%	2,858,981	21%

*As per Census of India, 2011

Source – CRIS Analysis

As per VMC, the population for the city in 2013 was 13.3 lakhs. For the last three decades, the decadal growth rate of population of Varanasi city has been declining continuously. However, the population growth rate increased over the last two decades for Varanasi UA. The year on year population growth rate for Varanasi city declined from 1.6% in 1981-91 decade to 0.9% in 2001-2011 decade and for Varanasi UA increased from 1.6% in 1991-01 to 1.7% in 2001-11⁷.

3.12.2 Basic Assumptions for Population Projection

While adopting the population for the next three decades, the following factors were considered which would influence the city's future growth:

- Urbanization trends in the district and the city;
- With high prospects of industrial development in the area, the population in the VUA is expected to grow at a higher rate
- Spatial growth pattern and scope of vertical development;
- The city population will remain stagnant and will continue to grow at a CAGR of 1%-2%.
- The population growth in UA over the last decade was 18%. It is expected to increase further and peak by 2021 and population growth shall reduce and stabilize by 2041
- The population projection as per 1st generation CDP and water supply appear to be very aggressive, so they have not been considered.

3.12.3 Population Projection

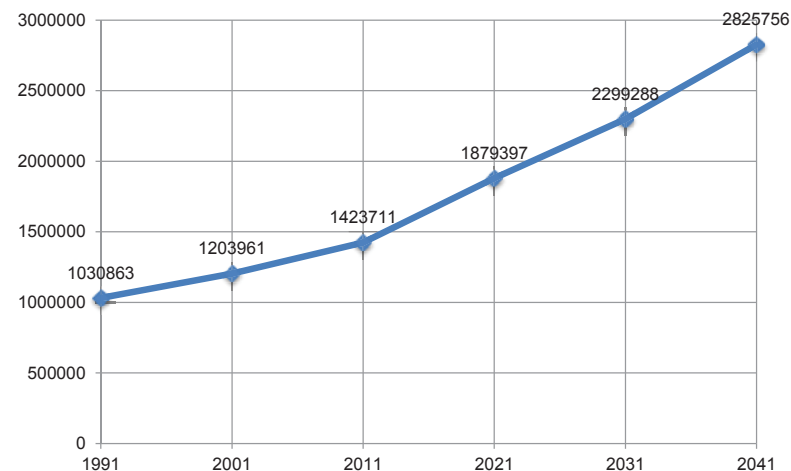
The population projection by polynomial 2nd order, exponential and arithmetic methods give figures lower than the existing population growth rate for the city. On the other hand, population projection by geometric method is very aggressive. It is in fact higher than the population projected by the draft Master Plan, 2031. So these methods cannot be accepted for projecting population. When looked in perspective of the historical growth rate and expected developments in future, the population projected by incremental method appears to be more realistic. **Therefore, the incremental method has been adopted for the purpose of this study.**

⁷ Population data for Varanasi UA before 1991 is not available as UA was declared in 1991.

Table 24: CAGR of projected population⁸

Year	Population	Period	CAGR (%)
1971	671,934		
1981	773,865	1971-81	1.42
1991	1,030,863	1981-91	2.91
2001	1,203,961	1991-01	1.56
2011	1,423,711	2001-11	1.69
2021	1,879,397	2011-21	1.96
2031	2,299,288	2021-31	2.04
2041	2,825,756	2031-41	2.08

Figure 17: Projected Population of Varanasi



⁸ For years 1971 and 1981 the population is for VMC and 1991 onwards population is for Varanasi UA. Varanasi UA was declared in 1991.

4. Economic Profile of the Town

4.1 Background

Varanasi has been a centre of religious, spiritual and educational activities since time immemorial. These activities have played an important role in shaping the character of this religious and pilgrimage town. Apart from this, primary economic activities such as horticulture (for betel leaves and mangoes) and household industry (silk weaving) are major occupations. These activities are not just mere providers of job for the city but they have created a level of specialization by which the product is known by the city. For example, banarasi langda aam, banarasi paan or banarasi saree. The overall economy of the city is dependent on tourism and tourist related activities. In this chapter, the economic profile of the town has been studied in detail.

4.2 Overview of economic situation of the state and the district

4.2.1 Uttar Pradesh Economic Profile

Agriculture is the leading occupation in Uttar Pradesh. Wheat is the state's principal food crop and sugarcane is the main commercial crop. About 70% of India's sugar comes from Uttar Pradesh. State industries are localized in the Kanpur region, the fertile Purvanchal lands and the Noida region. The Mughalsarai is home to a number of major locomotive plants. The major manufacturing products include engineering products, electronics, electrical equipment, cables, steel, leather, textiles, jewelry, frigates, automobiles, railway coaches, and wagons. More small-scale industrial units are situated in Uttar Pradesh than in any other state, with 12 percent of over 2.3 million units⁹. With 359 manufacturing clusters cement is top sector of SMEs in Uttar Pradesh. In terms of net state domestic product (NSDP), Uttar Pradesh holds the third largest economy (2011–2012) in India, with an NSDP of INR7080 billion (US\$120 billion).

4.2.2 Industrial Policies and Incentives

4.2.2.1 New Infrastructure & Industrial Investment Policy 2012

In view of major transformation of industrial environment globally and within the country, the Government of Uttar Pradesh has approved and announced the new Infrastructure and Industrial Investment Policy-2012 with an objective of attaining the target of 11.2 percent industrial growth in Uttar Pradesh. Significantly, to make policy execution transparent and effective all supporting Government Orders, Notifications, amendments in Acts, rules and regulations have been made part of policy document¹⁰.

⁹ Uttar Pradesh: State Profile by PHD Chamber of Commerce and Industry

¹⁰ Detailed Policy is available at <http://udyogbandu.com>

4.2.2.2 Uttar Pradesh IT Policy 2012

In the fast paced technology sector such as Electronics and Information Technology, the characteristics which underpin the industry and services are fast technological developments, reducing business cycle times, just-in-time and time to market. The key features include:

- **Interest Subsidy:** 5 percent p.a for a period of 5 years on the rate of interest on loan obtained from Bank/FIs would be reimbursed subject to a maximum of Rs 10 million per annum per unit
- **Stamp Duty:** 100 percent exemption of stamp duty on purchase/lease of land/office space/ building
- **VAT:** IT units having Capital investment of Rs 50 million or above would be allowed Interest free loan equivalent to the amount of VAT and Central Sales Tax deposited every year for a period of 10 years, or 10 percent of annual sales, whichever is lower
- **Provision For Land:** Land at rebate of 25 percent of prevailing rates at Tier II and Tier III cities; Additional FSI :100 percent in TIER II/TIER III cities
- **Industrial Promotion Subsidy:** Subsidy equivalent to 50 percent of incentives admissible for new units would be admissible to existing units if additional capital investment is made for capacity enhancement to an extent of 50 percent or more in a period of three years in Tier II/Tier III cities
- **Plant and Machinery for Captive Power Generation:** Captive Power Generation Plants having minimum capacity of 3 MW, and distributing the Power only within IT/ITeS/Mega Investment Unit zones will be deemed as IT/ITeS units and they would get the incentives available for IT/ITeS units
- **Incentives on Case to Case basis:** Projects proposed above Rs 2 billion shall be considered for special incentives decided by the Empowered Committee
- **Employment Generation:** 50 percent incentive on expenditure on account of contribution towards Employee Provident Fund and Employee State Insurance schemes units employing at least 100 employees and retaining at least 75 percent locals for a period of 5 years, subject to a maximum of 25 percent of Fixed Capital Investment
- **Single Window Clearance:** A Government Body under Chairmanship of Principal Secretary, IT & Electronics, UP for clearances like Pollution, Power Allocation etc
- **Uninterrupted Power Supply:** IT units setup in IT Cities / IT Parks on Independent Feeder shall be provided uninterrupted power supply from State Utility. The cost of provision of separate Feeder from the Transmission substation will be borne by the Unit/IT City/ IT Park
- **IT Corpus:** Each Department shall earmark a minimum of 2 percent or as per directions of Government of Uttar Pradesh from time to time of its Plan budget for IT applications

4.2.2.3 Energy Policy 2009

Uttar Pradesh Energy Policy 2009 is structured with consumers as the focal point & aims at fulfillment of the overall need for universal access and for providing reliable, quality & affordable power. The key features include:

- Access to electricity to all households in next 5 years
- Power demand to be fully met by 2014. Energy and peaking shortages to be overcome and adequate spinning reserve to be available
- Supply of reliable and quality power of specified standards in an efficient manner and at reasonable rates

- Per capita availability of electricity to be increased to over 1,000 units by 2017
- Financial turnaround and commercial viability of electricity sector thereby reducing the financing burden on the state over a period of time while recognizing the fact that during the initial transition period, state support would be a key determinant for the success of entire exercise
- To increase the availability of power by:
 - ◆ encouraging augmentation of environment friendly generating capacity
 - ◆ sourcing competitive and reliable bulk power from sources both within and outside the state
 - ◆ encouraging developers to enter into MoU for generation and supply of power to the state in cases where the developer has tied up or has taken steps to tie up coal, water and has arranged land on his own or with the help of the state government.
- Optimization of generation of existing plants by putting up additional units, through renovation and modernization or by changing configuration of machines in case of plants under commissioning or by allowing alternative fuel for seasonal generating units particularly those based on bagasse or bio mass
- To augment the transmission and distribution capacity and refurbish the existing capacity with a view to improving efficiencies, reliability & quality of supply and reducing losses
- To facilitate consumers benefiting from competition & towards this end encourage private sector participation in all areas viz. generation, transmission, distribution, trading and R&M
- To support the Uttar Pradesh Electricity Regulatory Commission with all policy and other administrative measures with a view to ushering in a rationalized tariff framework with efficient distribution of subsidies

4.2.3 Varanasi District's Economic Profile

4.2.3.1 Varanasi- Industrial Profile

Varanasi grew as an important industrial centre and is famous for its silk industry, perfumes, ivory works, and sculpture. The district has 6 industrial areas and parks, covering approximately 600 acres of land. 83% of the total land has been utilized for developing industrial units/firms, while the remaining land has been used for developing services and common facilities such as parks and open spaces. Varanasi holds approximately 3% of the total industrial setups in the state. The details of the major and small units in Varanasi are provided in Table 25.

Table 25: Industrial Units-Varanasi District

	Head	Unit	Particulars
1.	Registered industrial units	No.	5227
2.	Registered medium and large units	No.	9
3.	Average number of daily workers employed in the small-scale industries	No.	26292
4.	Employment in large and medium industries	No.	4700

Source: DIC-Varanasi

- **Major Units:** There are 9 medium and large-scale units in Varanasi providing employment to 4,700 employees.
- **Industrial Products in Varanasi:** Around 15 industries operate out of Varanasi. The industrial units in Varanasi provide direct employment to 26,292 workers. Repairing and servicing provides the largest source of employment to 5,073 employees; woollen, silk and artificial thread-based clothes industry forms the second-largest source of employment, providing employment to over 4,076 workers. The following Table 26 presents the two-digit NIC-category-wise number of units, capital investment and employment of major industries in Varanasi.

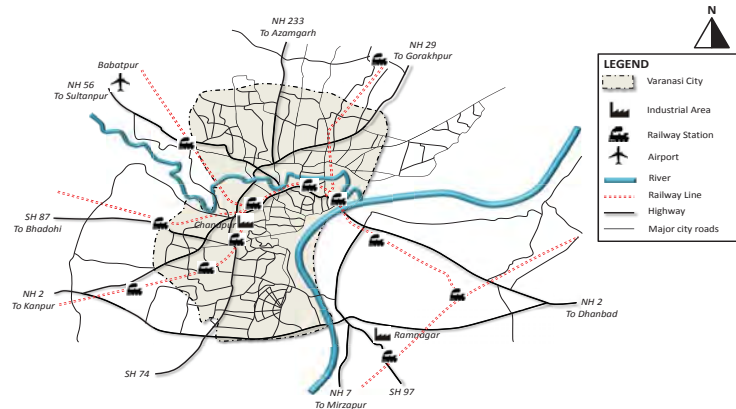
Table 26: Industries By Type-Varanasi District

Nic code no.	Type of industry	Number of units	Investment (lakh Rs.)	Employment
20.	Agro-based	141	14.10	706
23.	Cotton Textile	515	50.61	2576
24.	Wooden, silk and artificial thread-based clothes	813	80.40	4076
25.	Jute and jute-based	25	0.25	100
26.	Readymade garments & embroidery	480	48.035	2401
27.	Wood/wooden-based furniture	485	40.85	2426
28.	Paper and paper products	40	20.80	201
29.	Leather-based	25	10.20	126
31.	Chemical/Chemical-based	430	30.10	2151
30.	Rubber, Plastic & petro-based	60	25.15	301
32.	Mineral-based	310	20.20	1551
33.	Metal-based (Steel Fab.)	415	30.15	2076
35.	Engineering units	510	40.10	2551
36.	Electrical machinery and transport equipment	90	5.20	451
97.	Repairing & servicing	978	128.21	5073
	Total	5,227	544.67	26,292

Source: DIC Varanasi

- **Main Industrial Areas of Varanasi:** There are six industrial areas in Varanasi. All these industrial areas fall within the Varanasi area. The map below shows the location of these industrial areas

Figure 18: Varanasi industrial areas



Source: DIC

The details of these industrial areas are provided in the Table 27.

Table 27: Industrial Areas-Varanasi District

Sr. No	Industrial Area	Land Acquired	No of plots
1.	Agro Park, Karkhiyaon	43.71 hectare	253
2.	Ram Nagar I	123.43 hectare	232
3.	Ram Nagar II	58.27 hectare	382
4.	Vrihat Audyogik Aasthan (Chandpur)	26.06 hectare	79
5.	Laghu Udyogik Aasthan (Chandpur)	10.73 hectare	61
6.	Udyogik Aasthan Prasar, Chiraigaon (Chandpur)	9.42 hectare	50

Source: DIC

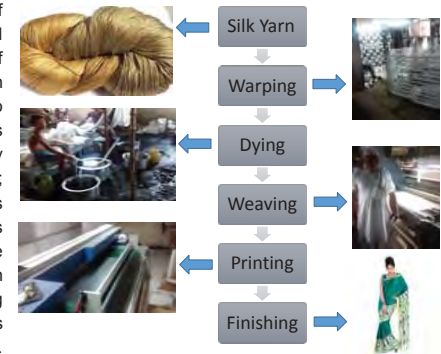
The industrial areas explained above have units of diversified industries other than silk units. The industrial areas are outside the limit of the municipal corporation. The silk units are located in various parts of the cities and are carrying out activities within their homes. The Brief description about the industrial areas is provided below:

- Ram Nagar:** Ramnagar industrial area is developed by the UPSIDC. It is located on NH 2 and is 15 kms from Varanasi. There are 3 industrial areas in Ramnagar i.e. Ramnagar I, Ramnagar II and Karkhiyaon. Different types of industries operating in this industrial area are chemicals, plastics, agro, and cattle file industry. The details of the 3 industrial areas are provided below:
 - Ram Nagar I:** Industrial Area in Ramnagar has been developed on 305 acres of which 205 acres have been made available for allotment after development. There are 232 plots.

- Ram Nagar II:** Industrial Area in Ramnagar has been developed on 144 acres of which 90 acres have been made available for allotment after development. There are 382 plots ranging from 450 square metres to 14000 square metres.
- Ram Nagar Karkhiyaon:** Industrial Area in Ramnagar has been developed on 108 acres of which 90 acres have been made available for allotment after development. There are 253 plots ranging from 800 square metres to 3200 square metres.
- Chandpur:** Industrial Area in Chandpur has been developed on 46 hectares of land by District Industry Centre. There are 190 plots and most of the plots are above 1,000 square metres in area. Different types of industries operating in this industrial area are textile, electronics, plastics, agriculture equipment, and carpet industry.

4.2.3.2 Profile of Silk Weaving Industry:

Silk weaving is one of the major industries of our country and is famous all over the world for its quality. Varanasi accounts for 60% of the total production of silk woven products in India. The silk weaving industry is able to cater to the needs of the domestic as well as the international market. The sector mainly consists of unorganized small units; integrated units are few. The industry uses high amount of bonded labour as the units engaged in the production of silk products are typically set up within households. In Varanasi major areas where silk weaving takes place is Lallanpura. The area has houses equipped with handloom machine.



With time these handloom machine have been added with machanised parts to increase the production. Few hand driven machines are also present in the area. In order to boost the industry government provides electricity at subsidy. It is around Rs. 65 per powerdriven handloom machine. The people working in this handloom industry are working since generations. The skill is transferred from one generation to other, but still some people are moving away as it is low paying job. Hence, some measures should be taken, strategy should be framed, to promote the skill which is needed to work in the handloom industry. The area has a major issue of Noise pollution as the Mechanised Handloom machine produces lot of noise. Further sometimes the silk thread is also dyed in the houses and the water containing chemical based colour mixes into the sewerage, which becomes a source of water pollution. The silk industry is seeing a transformation as manufacturers have started developing various value-added products for exports such as scarf, cushion and stole.



4.2.4 Market Yards

There are two warehouses in Varanasi. One is in village Ramna, which is just outside the city limits on the north eastern border and situated on National Highway 2. The other warehouse is owned and controlled by Food Corporation of India and located near DLW.

Four new ware houses have been proposed in the draft Varanasi Master Plan, 2031. They are proposed on the new 45 m wide ring road (proposed in draft Master Plan, 2031) in village Samo, Varanasi-Ghazipur road in village Sandha, Varanasi-Badhohi marg in village Vitthalpur and Panchkroshi marg in village Hollapur.

4.2.5 Informal Commercial Activity

The informal economy of the Varanasi is mostly concentrated in the old city and for some part spilled from the old city are into the new city ares. The areas under informal economy can be broadly classified into:

1. Local traditional crafts- manufacturing areas.
2. Local Tradetional crafts-retail areas
3. Retail areas for the consumer goods
4. Retail areas for the durable goods
5. Wholesale areas for food grains and spices
6. Local culinary hotspots
7. Street vending areas in almost all neighbouring abutting arterial roads

1. Local Tradetional Crafts Manufacturing Areas

The Old city areas of Kuccha Mahal that lie on the left side of the main artery starting from Maidagin to Asi pockets of traditional goods manufacturers. Some of the notable for locally produced goods are:

- a) Kashipura- known for manufacture of brass and copper utensils and bell making.
- b) Chatha-tale for retail and wholesale of metal and iron monger and wood working products.
- c) Vishwanath gali and for manufacture of stone statues and jewellery.
- d) Jaitpura, peeli kothi and Nati Imli area for handloom weaving and embroidery work
- e) Manikarnika ghat areas for Indian classical music instruments

2. Local Tradetional Crafts- Retail Areas

- a) Chatha Tale for retail and wholesale of Silver, Brass and Copper metal sheet works.
- b) Inner Areas of Raja Darwaja for iron monger and wood working products.
- c) Vishwanath gali for ornaments, bangles, statues, prayer artifacts, musical instruments, perfumes etc.
- d) Thatheri Bazaar for retail of brass and copper prayer objects and utensils, bells and ritual equipment and also traditional Indian sweets and prickles.
- e) Chowk for wholesale and retail of sarees, women's traditional wear and consumer goods, Local culinary hotspots.

3. Wholesale areas for consumer goods

- a) Chaukhamba for local and international publishers.
- b) Harha ka Sarai for wholesale and retail of crockery, plastic, electronics and consumer goods.
- c) Thatheri bazaar for retail of brass and copper prayer objects and utensils bells and ritual equipments.
- d) Kachori Gali for local delicacies like kachori, lassi and sweet meals.
- e) Rani kuan for retail of religious, ceremonial and traditional clothing
- f) Chaukhamba for publishers and retail booksellers.
- g) Main bylanes of Raja Darwaja for retail Retail and wholesale of plastic, cables, pipes, rugs, readymade clothing, school uniforms and related products.
- h) Bulanala for stationery.
- i) Laurabir, Nai Sarak, Luxa, Chetganj, Maldhaiya, Sigra and Lanka areas are notable for centres of consumer goods.

4. Wholesale areas for durable goods

Lahotia near Kabir Chaura, is a wholesale as well as retail market for durable Iron and Steel items. Nakkas adjoining Lahotia is a wholesale as well as a retail market for timber. Jangambari area is a market for wooden furniture and timber. Maldhaiya area is a wholesale of primarily cereals, spices, dry fruits etc.

5. Wholesale areas for food grains and spices

Vishweshwar Ganj is a traditional wholesale market of the city. It lies north of western area of the old city which is located strategically close to NH1. The Vishweshwar ganj market houses both retailers as well as wholesalers of primarily cereals, spices, dry fruits etc.

6. Local culinary hotspots

Varanasi is renowned all over india for its distinctive food and culinary culture. Many areas in the old city like Kachori Gali, Thatheri bazaar, Chauk, Godolia, Vishwanath Gali are renowned locally and nationally for food delicacies not found elsewhere in the country.

7. Street vending areas

Almost all neighbourhoods abutting on city arterial roads in the city have informal vending activities taking place. In most cases these activities encroach upon valuable rights of ways for pedestrians and two wheeler parking creating a complex street experience for all users.

Other than this Varanasi has been a traditional seat for learning and also publishing industry. Some of the name that are world renowned among the publishing world are based out of Varanasi are Motilal Banarasidas, Bhargave Publications, Chaukhambha Publications, Pilgrim Publishers, Indica Publishers, Ratna Press, Tara Press, Thakur Prasad, Vishvidhyala Publication, Gyan Mandal Ltd etc. these publishers mainly deal in books of Indology, Indian Arts & Craft and also Sanskrit & Buddhist Literature.

The areas of retail business in Varanasi city are Chowk, Madanpura, Maidagin, Hadha Sarai, Visheshavrganj, Dal Mandi, Nai Sadak, Gyan Vapi, Vishwanath Gali, Thatheri Bazar, Lahurabir, Godoulia or Dashswamedh Gali and Golghar. In addition, all areas surrounding the main roads in Varanasi are commercial areas. **These areas include retail stores as well as informal type of shopping areas.** Practically all these areas are unplanned. This is because most of the structures exists since early days and front side of these dwellings have been converted into shops which is a common feature in such type of developments of the towns. The haphazard development of shops along roads has created problems of parking and traffic congestions. From the above analysis it can be concluded that the wholesale business is spread out along main roads and petty shops are springing up indiscriminately. Non-availability of parking space for vehicles is also a problem in the retail and wholesale business areas.

4.2.6 Education and Health

The local economy of Varanasi is not restricted to the Silk or Tourism industry. Education and Health sectors are also major income generators to the local economy. Since more than three quarters of the century. Varanasi is an education hub and is famous for four universities which attract a huge number of students and scholars around the world towards the city.

- **Banaras Hindu University** is a public central university located in Varanasi, Uttar Pradesh. Established in 1916, BHU is one of the largest residential universities in Asia, with over 20,000 students
- **Sampurnanand Sanskrit University** is an Asian institution of higher learning located in Varanasi, Uttar Pradesh, India, specialized in the study of Sanskrit and related fields. It was established in 1791.
- **Mahatma Gandhi Kashi Vidyapeeth** is a public university located in Varanasi, Uttar Pradesh, India. It is administered under the state legislature of the government of Uttar Pradesh. It offers a range of professional and academic courses in arts, science, commerce, law, computing and management.
- **Central University for Tibetan Studies** is a university institute founded in Sarnath, Varanasi, India in 1967, as an autonomous organization under Union Ministry of Culture. The CIHTS was founded by Pt. Jawahar Lal Nehru in consultation with Tenzin Gyatso, the Dalai Lama, with the aim of educating the youths of Tibet in exile in Dharamsala and the Himalayan border students, as well as with the aim of retranslating into Sanskrit and translating into Hindi and other modern Indian languages lost Indo-Buddhist Sanskrit texts that now exist only in Tibetan. The city in the last one and a half decade witnessed a rise in colleges and institutes imparting quality education in the fields of business management, information technology and social sciences. There are almost 20 to 30 colleges that impart education in these disciplines.

Apart from the famous universities and education institutes Varanasi is also famous for coaching industry. Varanasi has around 35¹¹ major coaching institutes, mainly imparting the coaching for engineering, medical, IAS, PCS, banks, railways entrance examination for under graduate courses, employing approximately 3,000 people and about 80,000 students are studying in these institutes. Apart from this industry other allied industry such as hostels, laundry, mess, printing, transportation and packaged food industry have also flourished. Hence education sector puts up small influences on the economy of the city.

This city's burgeoning Health sector also contributes positively to the local economy. The health facilities available in Varanasi are a major pull for the people of eastern UP and western Bihar who come here in search of better medical facilities. The reason for patronage by people from these religions has not been sudden, but a gradual process fostered by the presence of the Banaras Hindu University and School of Medical Sciences. In addition to these the Tibetan university has a school of Tibetan Ayurveda and Sanskrit university has come up with a school of traditional Indian Ayurveda that provide ample opportunity for traditional and alternative health system for healing.

4.3 Regional economic development of Varanasi

Varanasi as its regional setting has a very strategic location which gives it a huge potential to grow. Varanasi is well connected by road, rail and airways with other parts of the country. The road distance from major cities is Delhi-820 km, 328 Km from Kanpur, Lucknow-286 km and 122 km from Allahabad. There are three national highways i.e. NH-2, NH-56 and NH-29 and four state highways i.e. SH-87, SH-73, SH-74 and SH-98 passing through the heart of the city.

Delhi being a national capital is the hub of all the central activities and is the connecting point for the international flights. Varanasi gets good connectivity through air, rail and road from here as it is a tourism hub both for international and domestic tourists. Hence its connectivity from Delhi boosts its tourism sector. Also Delhi is a good trading hub, therefore good connectivity with Delhi is providing a good market for selling the handloom manufactured products.

Kanpur is the second largest Industrial City of the Hindu belt in north India. The city is very much famous for its leather tanneries. This makes the city as the major centre for leather and textile industry. In chain of it, several industries grown up which results in cascading effect along with policies of government to accelerate economic growth and development. Industries which are major contributor to the economy in Kanpur are fertilizers, plastics, two wheelers, chemicals, IT, detergent, food packaging and jewelry making. There is huge potential of Varanasi too for the industrialised growth. Hence some industrial corridor could be established between these towns which will give boost to the economy of both of these towns.

Allahabad is known for small scale industries. The Third All India Census for Small Scale Industries shows that there are more than 10,000 unregistered small-scale industry units in the city. An Integrated Industrial Township is also proposed in 1200 acres of area in Allahabad under Dedicated Freight Corridor Corporation of India. Varanasi being 122 Km from Allahabad will definitely get a boost in its economy because of the same reason. Also like Varanasi, Allahabad is also a religious city with Sangam as one of the important pilgrim destination. It also upholds the famous Kumbh Mela. There is a tourist route connecting both town together. This route starts at Rameshwaram-Gaya-

¹¹ Brief Industrial Profile of Varanasi District, MSME, Government of India

Allahabad-Varanasi and then culminates again at Rameshwaram. Varanasi has also been traditionally looked at as part of a holy trinity of three cities namely, Varanasi-Allahabad-Gaya.

4.4 Workforce Participation Rate

The composition of the work force conveys a picture of quality of life people maintain and their social and economic activities, Work participation rate (which is defined, as the percentage of total workers including main and marginal to total population) of Varanasi city for 2011 is 35 percent. This is an increase of 7 percent from 2001. Due to increase in population (natural and migration) and increase in employment opportunities the number of workers has increased by 24% over the last three decades. However, the work participation rate is low compared to the national average (40%), but more than the state (33%) as per 2011 census. Table 28 gives the work force participation in terms of main and marginal workers for last three decades:

Table 28: Work force participation rate of various economic sectors in Varanasi

Category	Number of workers, 1991	Number of workers, 2001	Number of workers, 2011	% growth
Main workers	283,287	314,933	3,39,305	20%
Household Industry Workers among Main Workers	-	-	75,508	-
Marginal workers	4,933	5,938	62,817	-
Total workers	2,88,220	3,20,871	4,02,122	40%
Non-workers	6,41,050	7,71,047	7,96,369	24%

**Source – Census of India, 2011 and 1st generation CDP*

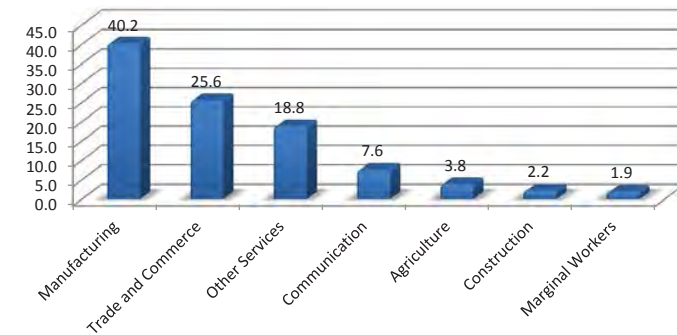
Worker - participated in an economically productive activity during the last one year preceding the date of enumeration

Non-worker - not working at all in any economically productive activity during the last one year preceding the date of enumeration

4.5 Workers Classification

Figure shows the workers classification in Varanasi. Manufacturing employees the maximum workers followed by trade and commerce and other services. Varanasi is an intensely commercial city with streets lined up with small retail shops for tourists. The proportion of workers in other services is also high. In the case of Varanasi, it translates into people providing services to tourists in the form of guides, religious pundits, etc. In the next section, each of the services has been detailed out.

Figure 19: Worker Classification



Source: Economic Census, Uttar Pradesh

4.5.1 Primary Sector

Agricultural activities occupy around 231.92 hectares in the city. Around 4% of the population is involved in agricultural activities in the city. The percentage is very low as the city is sprawling and also due to migration from villages to the city.

4.5.2 Secondary Sector

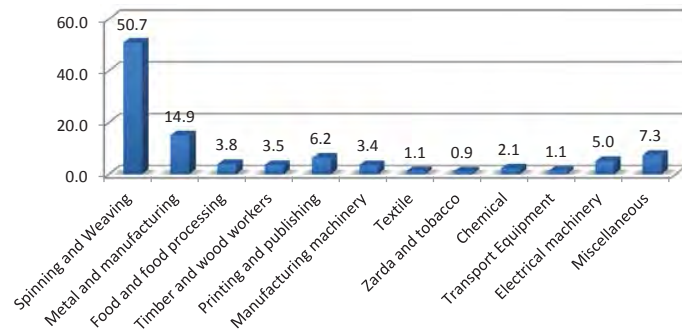
Manufacturing employs 40% of the workers in Varanasi. The Table 29 gives the number of industries as per the 5th and the 6th economic census in Varanasi. It can be seen that the industries without fixed structures have seen a higher growth rate. This trend needs to be paid attention to as it would lead to increase in unorganized manufacturing thereby causing potential damage to environment.

Table 29: Number of Industries

Sr. No.	Category	Number of industries as per 5 th Economic Census	Number of industries as per 6 th Economic Census
1	Outside and inside households with fixed structures	61,805	74,140
2	Outside households without fixed structures	2,410	6,915
	Total	64,215	81,055

Source: Economic Census, Uttar Pradesh

Figure 20 shows the workers within the manufacturing sector. 50% of the workers are employed in the spinning and weaving industries. This shows the importance of these industries in the economy of the city. A detailed description of the weaving industries is already discussed in previous sections. There are around 17000 household establishments in the city.

Figure 20: Workers within Manufacturing Sector

Source: Economic Census, Uttar Pradesh

Table 30: Number of Handicraft Industries

Sr. No.	Category	No. of handicrafts and bigger establishments
1	Establishments employing more than 8 employees	539
2	Handicrafts establishments	16387

Source: Economic Census, Uttar Pradesh

4.5.3 Tertiary Sector

The tertiary sector in Varanasi largely comprises retail trading and commercial activities and other services which together employ nearly 45% of the workers. These activities are very typical of a large pilgrim town such as Varanasi where a number of retail stores abound the old city, on the ghats, along the roads in old city and in the religious complexes. Also, tourist facilities are provided by several people such as guides, tour operators, religious pundits, boatmen giving boat rides to tourists, etc.

4.6 Key Observations

Varanasi as a city has a very vibrant and dynamic economy. It has specialized activities in all three sectors of the economy. In the primary sector, Varanasi is known for its mango and betel leaves, whose taste and flavor are unequalled. In the Secondary sector, the city can boast of a century old tradition of silk weaving which cannot be found anywhere else. In the tertiary sector, the city is a huge attraction for tourists and pilgrims who come here for various religious activities. Varanasi is a major religious and sacred place because of the presence of the River Ganga and the Lord Shiva. It is also an important site for Buddhist, Jains and Muslims. Lakhs of tourists flock the city. Despite these economic strengths, the city lags behind in economic development. This is due to the reasons as explained below.

4.6.1 Infrastructure Improvement

The future growth of the specialized industries in the city depends to a great extent on infrastructure improvements. For instance, the silk weaving industries require better power facilities. The power shortages results in lower production and forcing the workers to opt for other professions. Other requirements include better roads, a common treatment plant, etc. Such requirements are necessary as the industries are facing stiff competition both in domestic as well as international markets.

4.6.2 Facilitating Technology and market access

The major issue related to industrial development enhancing and facilitating technology up gradation. This is a key determinant in meeting the competition for the industries. Ensuring faster pace market access is also necessary.

4.6.3 Organization of informal sector

There are several informal sector activities operational in the city. It is very important to somehow organize these activities. The activities that relate to provision of services to tourist especially need attention. Organized activities for tourists that are monitored and provided at one stop would significantly help the tourists who are usually hassled in the city. Kiosks for service providers could be established.

4.7 Key issues

- **No industrial park for silk industry:** There is a dire need to develop a designated silk park with all ancillary facilities to promote the silk industry. At present the living conditions of the weavers are very low as compared in terms of the quality of life. They live and work at the same place. Many families live in the same neighbourhood as part of the social bonding. The industry representatives are of the view that such an industrial park will reduce their cost of production as there will be improved access to common facilities. Hence a comprehensive plan to uplift the weaver's quality of life and their production should be explored.
- **Inadequate provision for common effluent treatment plant:** Since the dyeing units exits in residential premises within the city the various chemicals generated are discharged through drains, leading to water pollution. The units liable to undertake primary treatment ignore the same due to the high costs involved and space constraints in small-scale industries.
- **Drainage networks are carrying partially treated effluents:** Varanasi's drainage network was designed and built decades ago and is largely choked. Further, the drainage network also carries toxic effluents from the dyeing industry into the River Ganga. Further, the effectiveness and capacity of these drains has been reduced due to the absence of de-silting.
- **Shortage of trained labor:** The silk industry faces huge shortage of skilled labor. The traditional apprentice model used for skill transfer is breaking down. The majority of the workforce is illiterate and has not undergone any formal training, which often impacts the productivity of the industries and product quality as a whole.
- **Inadequate technology and lack of modernization:** The units are using old and obsolete machinery resulting in low-scale production and inferior quality of products which leaves scope for improvement in quality as well as quantity. Being in the residential areas they industries are sharing the commercial electric loads in the household connections which should be checked.

- **Marketing Infrastructure:** The silk industry is constrained by the absence of quality convention/exhibition centres.
- **Issues with existing water network:** The silk/dyeing units situated within the city are using tap water supplied by the corporation for meeting their requirements. The existing distribution lines are 100 years old and are deep down in the ground; these are difficult to maintain and need to be replaced.
- **Sewerage and drainage in industrial areas:** Currently, industrial areas such as Ramnagar and Chandpur have a drainage network. It was designed decades ago and is largely choked. The drainage condition in these industrial areas is poor; most of the drains are open and these areas often face flooding situation during monsoons. The industrial network does not have a CETP. Therefore, the effluents generated by the industries go into the sewerage network without treatment resulting in water pollution.
- **Industrial waste in Varanasi city:** Currently, solid waste management in the Chandpur industrial areas is the responsibility of Sahakari Samiti. The waste generated by industries is thrown in open grounds. This leads to unhygienic conditions and environmental degradation of the surroundings.

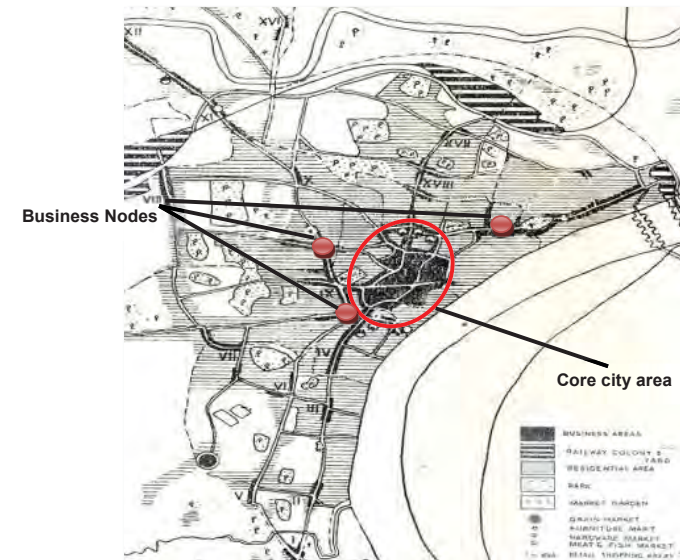
5. Physical planning and growth management

5.1 Background

The city of Varanasi has grown along the arc of the River Ganga. The River Ganga acted as the attraction point in one direction and the growth of the city has taken place in a semi-circular direction. The city has a radial development pattern with areas like the BHU, the Manduadih, Sheopur and Sarnath emerging as the new growth centres in all directions. Over a period of time, with the inclusion of a large number of villages and urban settlement, the city development has resulted in irregularly shaped built up areas along peripheries of the central areas of the city. The coming up of the Diesel Locomotive works and residential colonies over an area of 250 hectare in the Southwest and the Soda Ash factory along the GT road in the East mark the development around the rural city fringe.

The map in Figure 21 shows the structure of the historically existing core city of Varanasi. The central spaces in the core city where all the spinal streets merge formed the business zone, this similar character got continued along these spines and forming smaller business zones at nodes i.e. intersections.

Figure 21: Core city plan



Constituents of planning area

Varanasi can be divided into three settlement typologies namely, the old city area, the central area and the new area. Architecture in the old city area dates back to just after the Afghan invasion, while the central and new city, are less than 150 years old. In the 2nd century, the very first description of Dashashvamedha Ghat is found with reference to the great horse sacrifice ritual performed by the kings of the Naga dynasty. During the Gupta period, 3rd to 6th century AD, the ghats became the centre of economic and cultural activities. In the Gahadavala period (11th-12th century), as many as five ghats were mentioned in several inscriptions, viz. Adi Keshava, Vedeshvara, Kapalamocana, Trilocana and Svapaneshvara. (Source: 1st generation CDP, 2006).

Owing to the fertile land of the region, Varanasi became a commercial centre. This induced growth of the city created a high density core area in the city which today serves as a CBD and also a major heritage tourism attraction.

There are a total of 84 ghats spread laterally abutting the river. Each ghat has its own importance depending upon the kind of function that is performed on the ghat. The city grew following the crescent shape of the river. It was a centre for learning since ancient time and far further more emphasized by the development of BHU (Banaras Hindu University) and Samath on the outer periphery of the city. The city growth was limited by the Varun and Assi on the north and the south and the city grew beyond these limits only after the 20th century. The area beyond Varuna is often terms as Trans Varuna region and on the slouch of Varuna is termed as the Cis Varuna region.

Figure 22: Zones/Areas of Varanasi

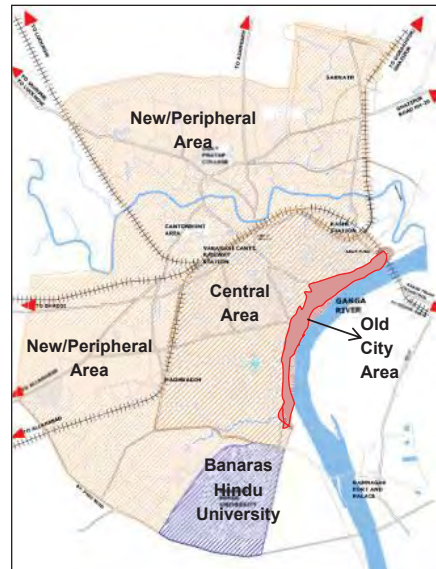


Image Source: archinomy

5.1.1 Old City

The urban character of Varanasi is very complex. The traditional typical old city of Varanasi has undergone transformations over time although still retaining its original character and ethos. The areas adjacent to the Ghats and the old city exhibit dense development due to its proximity to Ghats and their longevity of existence, which have become the cultural fabric of the city.



“The old city of Varanasi is a maze of buildings and narrow streets that run along the length of the bathing ghats. Temples, shrines, dormitory for pilgrims, shops, restaurants and hotels crowd the cramped spaces of the city. Some of the important areas are chachori gali, chowk, Vishwanath gali, Hara ka Sarai, Chatta Tale, Thatheri Bazaar etc. All over the city are Shivalingam shrines that are nestled in corners here and there. None of these lingams are neglected. Every day a devotee will place a new flower on each lingam and perform a short worship. The streets of this city are just wide enough for two people to walk shoulder to shoulder. There are an immense pressures from tourism, economic development and population pressures which are now threatening the unity and integrity of the cultural landscape and atmosphere, and the urban skyline of the ghat area. This increasing population is over burdening the carrying capacity of the urban environment and the river ecosystem and unplanned mass tourism could potentially have a hard impact on the cultural carrying capacity of the old city centre. Social hygiene and sanitation methods too are beginning to bend under the pressure of a growing resident population and a constant large floating population”.



5.1.2 Central City

The areas adjacent to the city core are constantly under great development pressure due to close proximity to the core areas. This is because of availability of all services, cultural attractions and Varanasi is no exception to this. These areas have been categorized as “proximal areas” in developing the growth analysis.

5.1.3 Peripheral areas

The peripheral areas encompassed by the municipal wards have a strikingly different development pattern than the rest of the city. These areas are becoming more popular among the citizens as they provide more organized development pattern with infrastructure being relatively in better conditions. The State Housing Board, through the Varanasi Development Authority, undertakes these developments. The demand for such development is increasing and with the participation of governmental and private development groups, the growth of peripheral areas is likely to be much higher in comparison to other parts of the city. The development in this zone is the most planned and organized in the whole city but there is a relative lack of recreational/green spaces in this zone.



Major catalyst for urban growth will be development of new ring road to the north of the city. Greater urban development will take place along this in the northern part of Varanasi. Along with this development of major road systems connecting to the National Highways on the southern extent of the city is already causing a spurt in development in this area. Combined with plans for a transport nagar in the western extremity of Varanasi and the connectivity across the Ganga to the eastern bank (to Ram Nagar and Mughal Sarai) the growth of urban areas and the population of Varanasi outside the municipal wards are likely to continue to accelerate.

5.2 Spatial growth trends

5.2.1 Evolution of Growth Trends

Among the changes that took place in the latter half of the nineteenth century, one of the most significant is the -increase in the pakka houses which rapidly encroach upon the kachcha houses. Also, all vacant spaces in the immediate neighborhood of the Ganga were filled in by Pakka houses. The two ill-drained areas, formerly occupied by the Godaulia Nala and the Misra Pokhra Jhil (tank) in the south and the Maidagin and Machhodari tank in the north seem to have disappeared. The site of the Maidagin tank gradually came to be replaced by a park known as the Company garden, north of the present a center of the city. The Machhodari tank was drained into the Ganga though an underground channel and its site was turned into a park with a small tank left in the middle.

The Godaulia Nala and other tanks and depressions were filled in and the Dasaswamedh road became an important landmark in the urban landscape of the city. A significant development however, was the development of the cantonment and civil lines areas which lay south and north of the Grand Trunk road. Although established much before, its major development took place in the latter half of the nineteenth century. To cater to the growing needs, suburban bazaars and a few hotels sprang up.

The river Varana was bridged at two points viz. the Chaukaghat and the Civil coizrts. The cantonment area was extended to the north-east of the civil lines in the vicinity of Pandepur and a small bazaar called Hukulganj began to grow on the eastern margin of the civil lines not far from the river Barna

and the Pandepur cantonment. A new jail, many missionary establishments, a few churches and missionary service areas were among the notable additions to the white part of the city. The first railway link came into existence towards the closing decade of the last century. This period thus, is marked in general by the slow growth of the city with no appreciable addition of new areas except by way of building over the gaps and vacant spaces in the outer zones of the city.

The urban area of Varanasi continued to expand along the riverfront through the 19th century. Masonry bridges were built over the Ganga and Varana; ponds like Benia, Maidagin, and Machhodari, and Godaulia Nala were drained and replaced by parks or streets; many houses were demolished so as to permit road widening in the centre of the city. Broad thoroughfares were cut through the city where formerly there had been narrow lanes. The Dashvamedh-luxa road was built running west from the river toward Cantonment Railway Station. The north-south artery called Chauk was cleared through the business district. Slowly the city came to have its present shape. James Prishep, British Assay Master of the Banaras Mint from 1819 to 1830, published the first reliable census of the city and prepared the first map of the city in 1822.

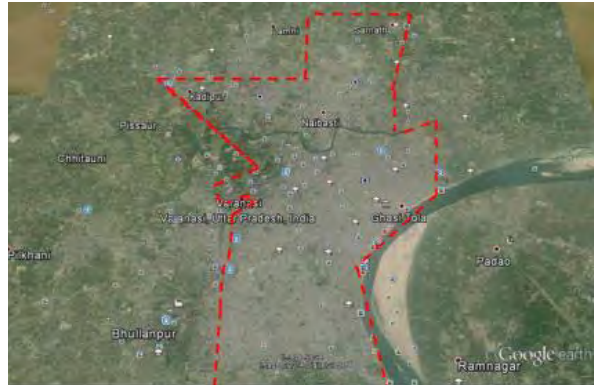
5.2.2 Recent Growth Direction

The introduction of various branches of the Northern and the North eastern railways along with the construction of the railway bridge near Rajghat, installation of water works and provision of improved sewerage and drainage works widely modified the cultural landscape of Varanasi in the last quarter of the nineteenth century. Many educational institutions, various public establishments (such as hospitals, 'anathalays', clubs, dharamshalas) besides other institutes catering for public welfare sprang up throughout the city. The deep devotion of Pt. Madan Mohan Malviya to the cause of learning found expression in the well planned, semi-circular university township in the southwestern extremity of the city. Along the riverside as many as 84 ghats provide magnificent gateways from the river to the interior of the city. The water pumping station at Hhadaini ghat and the Differ in bridge are the other recent additions on the river.

The city has grown in the north and north-west direction .i.e. north peripheral areas as it can be seen in the images below. The images are for the years 2003 and 2013 respectively. In addition, the population density in the central city area appears to have increased. The spatial growth can be observed from the Figure 23 below to be growing towards Sarnath.

Figure 23: Growth direction

2003



2013



Red line indicates the approximate Varanasi city limits

Source – Google Maps

5.2.3 Land Rates

The Varanasi market has seen a substantial escalation of 40 per cent in the last few years and the VDAs' plan to develop the city has also grabbed the attention of investors," says Advitiya Sharma, co-founder and marketing head for Housing.com, a leading real estate portal. The approximate average

range of residential flats today across the city is at Rs 2,600 to Rs 6,000 per sq ft. There are high-end options available in different pockets of the city starting from Rs 8,000 per sq ft.

Land is rarely available within the city are available aplenty outside the city. The land in some areas is as low as Rs 500 to Rs 600 per sq ft. The average land cost in the city is in the range of Rs 1,200 to Rs 2,000 per sq ft. In several high demand and fast developing areas the asking rate has shot up in the range of Rs 2,500-Rs 3,000 per sq ft.

5.3 Land Use Analysis

The Varanasi Development area has been broadly divided into 2 zones: Zone A and Zone B. Zone A comprising of the area to the left of River Ganga (comprising of areas like BHU, Varanasi Municipal area) and Zone B along the right bank of river Ganga(including areas like Ramnagar and Mughal Sarai). As per Master Plan, 1991 of Varanasi, the total area under planning jurisdiction was 14,494.4 ha. Out of this, the total developed area was 11,662.34 ha, which is 80% of the total area. The remaining 20% area is under agricultural belt around the city. Out of the total developed area, residential use constitutes maximum of 38% area (i.e. 5457.24 ha) followed by parks and playgrounds, which constitute 19% (i.e. 2705.76 ha).

The Varanasi Development Authority (VDA) has prepared a Master Plan 2011 for the future development of the city, which states that the total master plan area will increase from 14,494.40 ha to 18449.95 ha. Varanasi Development Authority in its meeting dated 27.5.2009 decided to prepare Master plan – 2031 including zone B (Ramnagar – Mughal Sarai area). The Draft Master Plan for 2031 gives detail of proposed land use for Varanasi and total land developed under various uses.

The following table gives the proposed land use break up as per master plan 2031, and compares it to land use distribution in the Master Plan 2011, with respect to the existing and proposed land use in 1991, 2011 and 2031. The aggregate planning area has been increased to 246 sq. Km from 184 sq. Km.

The Table 31 shows the land use comparison between Master Plan 1991, 2001 and 2031. The increase in actual residential land use has increased by just 0.3%. A significant increase in area under transportation and recreation can be observed. The primary reason for increase is the growing desire of better transportation planning and providing more recreational facilities to the residents. Most of the proposed land uses are in line with the draft URDPFI guidelines, 2014 except land use for industrial and public/semi-public purposes. Cottage industry is predominantly present in Varanasi. Majority of these industries operate from residential, mixed and commercial areas, hence, the actual area under industrial use will be much higher.

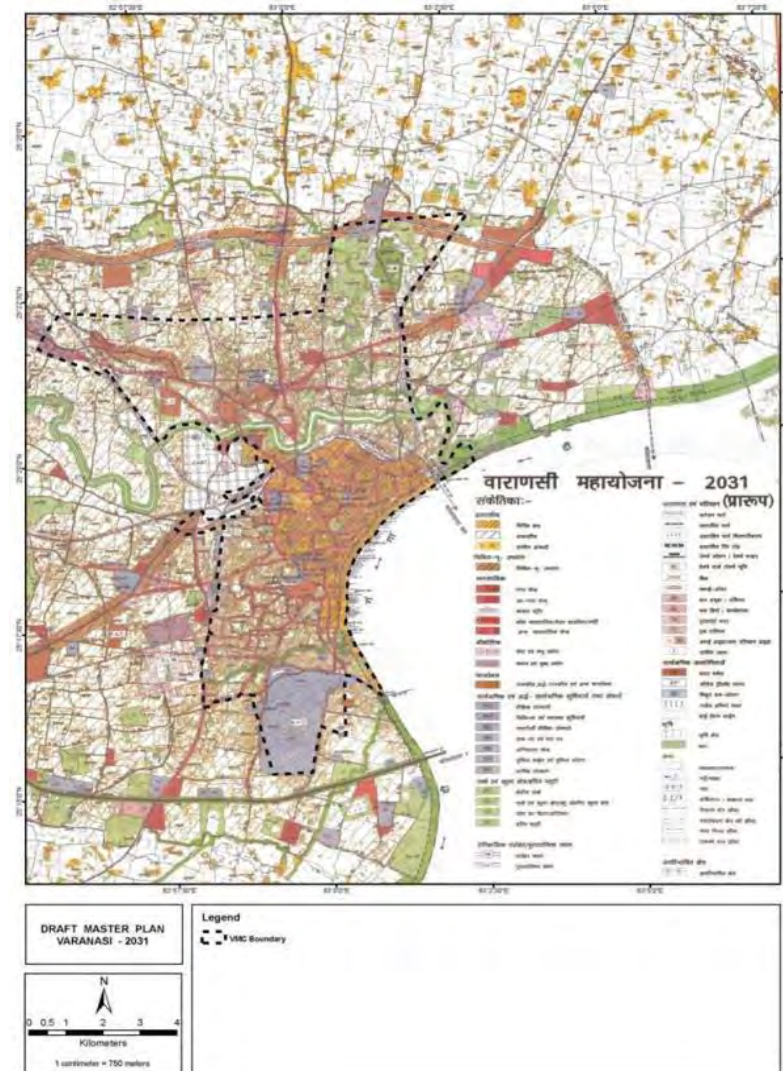
Table 31: Comparison of land use pattern as proposed and actually developed during the 2 master plans

Sr. No.	Land Use	Proposed land use as per draft URDPFI guidelines, 2014	As in 1991 (Master plan, 1991)		Proposed, 2011 (Master plan, 1991)		Actual in 2011 (Master plan, 2031)		Proposed, 2031 (Master plan, 2031)	
			Area (Ha)	%	Area (Ha)	%	Area (Ha)	%	Area (Ha)	%
1	Residential	35-40	5457.24	38	9254.61	50	5476.44	57	9886.54	40
2	Mixed Use	-	-	-	-	-	-	-	759.83	3
3	Commercial	4-5	475.1	3	618.23	3	233.21	2	1099.54	4
4	Industrial	12-14	981.37	7	656.19	4	281.78	3	515.56	2
5	Public - Semi Public	14-16	450.42	3	1413.04	8	719	7	2339.33	9
6	Recreational	20-24	2705.76	19	984.47	5	775.54	8	4652.7	19
7	Services	-	-	-	-	-	-	-	141.2	1
8	Govt. land (including offices)	-	292.18	2	1433.15	8	233.5	2	503.34	2
9	Tourism and Heritage	-	-	-	672.96	4	440.42	5	92.4	0
10	Transportation	15-18	1300.27	9	1460.35	8	1029.5	11	3442.5	14
11	Others	-	-	-	273.5	1	273.5	3	571.05	2
	Total	100	14494.4	100	18449.95	100	9624.13	100	24645.99	100

Source –URDPFI guidelines, 2014, Master Plan 2011 and Master Plan 2031
 *Note: Balance is the Agricultural Land

According to the Draft Master Plan, 2031 total land under residential use has been reduced from 51.6% to 40%. However, area under recreation has been increased from 5% to 20%. Also a new use category of mixed land use has been introduced in the draft Master Plan 2031, which primarily includes the area in the old city. Also, the above mentioned increase in the recreational area as per draft Master Plan, 2031 has not been proposed for the old city and recreational/open space facility continues to be lacking in this area. The land use pattern as per Draft Master Plan, 2031 is in the Figure 24.

Figure 24: Draft Master Plan of Varanasi - 2031



Source – DPR for inclusive urban renewal of Panch Pandav Kund, Pushkar Kund & Trilochan-Gola-Nandeshwar Ghats

5.4 Urban planning functions and reforms

The Urban planning and building regulation functions continue to rest with Varanasi Development Authority in Varanasi. While the VMC has representation on the Plan Sanctioning Committee, there is no active participation of the VMC in the plan preparation process. The VMC currently only provides a No Objection Certificate (NOC) for planning permissions within their jurisdiction. The state government has reiterated that, planning functions shall not be transferred since VDA was constituted under the planning legislations of the state and is best suited to undertake these functions. Creating additional capacities at VMC level may be difficult for these functions.

5.5 Roles and responsibilities of ULB and Parastatals

The Urban planning and building regulation functions continue to rest with the Varanasi Development Authority and the municipal corporation is not responsible for planning and design functions. As mentioned above, that VMC has no active participation in the plan preparation process. Table 32 gives the functions in which the VMC and other parastatals are involved with the VDA. The VDA is also responsible for the planning, design and construction of the urban poor settlements. However, it does not undertake operation and maintenance of the infrastructure created.

Table 32: Roles and responsibilities of VMC and parastatals

Sr. No.	Functions of VDA	Planning and design	Construction/ Implementation	O&M
1	Urban Planning and Town Planning	VDA, TCPD	VDA	-
2	Street Lighting*	VMC, VDA, PWD	VMC, VDA, PWD	VMC, PWD
3	Urban Poor Settlements	DUDA, VDA, VMC	DUDA, VDA, VMC, UP Jal Nigam	VMC, Jal Sansthan, UP Jal Nigam

DUDA – District Urban Development Authority, VMC – Varanasi Municipal Corporation, VDA – Varanasi Development Authority, TCPD – Town and Country Planning Department

**in respective jurisdiction*

5.6 Key Issues:

- The areas of Old City have become congested. The area is compact with high density. This leads to chaotic development of the area. Some measures to decongest the area should be explored. A township could be developed at the available land in periphery of the city. In these townships people from the highly congested areas could be relocated by providing some incentives.
- The scope of development within the city is limited due to inavailability of the land. City can explore option of increasing the FAR, but that will again burden the existing supporting infrastructure. Decongestion of the present high density area is also necessary.
- The new development option city has to sprawl out. Other part of the Ganga could be explored if connectivity and allied infrastructure to that area is made better.
- Green areas in the city should be increased. Parks and Playgrounds should be developed. These parks could further be used as underground community parking.

6. Social Infrastructure

This chapter presents a detailed assessment of the social and cultural environment of the city which includes health services, education status and role of various agencies involved in the service provision. The key findings of the analysis indicate the status of Varanasi city in terms of health, education and recreation service provision. The existing facility has been compared with URDPFI guidelines to arrive at the gap in service provisioning.

6.1 Background

This chapter presents a description of the social and cultural resources in the city. Varanasi has for long been a centre for spirituality and learning. The BHU has been its greatest attraction point. This chapter assesses the overall social and cultural resources of Varanasi.

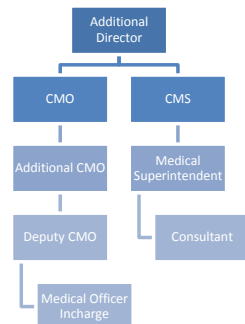
6.2 Health facilities

The Chief Medical officer, Varanasi is responsible for planning, implementation, facilitation, coordination, supervision and monitoring of all activities relating to health in the district. Further, it takes care of all matters relating to primary, secondary and tertiary hospital services and their interface with the tertiary health system.

6.2.1 Existing situation

The public sector health services in Varanasi include facilities of the state Department of Medical, Health and Family Welfare and Varanasi Municipal Corporation, besides Central Government, ESI, railway and Cantonment facilities. There are many private sector facilities (hospitals, nursing homes, and clinics). In addition, there are few charitable hospitals, which provide subsidized health services to the poor.

The institutional arrangement of the healthcare department is as below. At division level, the department is headed by Additional Director and administrative work of each district is looked after by Chief Medical Officer (CMO). The hospitals are headed by the Chief Medical Superintendent (CMS).

Figure 25: Healthcare – Institutional arrangement

6.2.2 Basic public health indicators

The main enteric diseases observed in Varanasi are Diarrhea, Dysentery, Viral Hepatitis, Typhoid, and Gastroenteritis. These diseases are majorly due to the high levels of Nitrate Phosphate and Faecal coliform in the water of Ganga. The underground water supply is also not devoid of its causes of health problems. Sewage mixed with raw water, dilapidated pipes breaking off metal in the main stream of water causes much of the same problems in Varanasi. The quality of health care facility is fairly good. But as the existing facilities are burdened with the population from the patients beyond the city limits, hence the outlook should be to keep the service delivery benchmark at par. The number of hospitals has been mentioned in the Table 33.

Table 33: Healthcare infrastructure in Varanasi

Sr. No.	Type of hospital	Number
1	District hospital (super specialty hospital)	4
2	Health post (primary healthcare centres)	15
3	Small hospitals (30 bed)	8
4	Hospitals for mentally challenged	1
5	Dispensary	2
6	Private	286

Source – Chief Medical Officer, Varanasi

6.2.3 Role of VMC in health programs

Health institutions in Varanasi are primarily being run by the state health department. The VMC has very little role to play in the health sector of Varanasi. Due to lack of staff and medicines, VMC health facilities are not operational. The central and state government health programs are run by the Chief Medical Officer, Varanasi, while VMC is involved in disease prevention such as mosquito control activities.

6.2.4 Key issues

- Lack of para-medical staff in hospitals, which leads to poor working condition for the doctors. Hence impacting the patients directly.
- Inadequate primary and tertiary healthcare facilities, leads to overcrowding at tertiary/super specialty hospitals.
- Facilities such as X-rays, dialysis units, MRI etc. lacking in hospitals, hence public have to go to private practitioners to avail the service.
- Detailed blood examination facilities not available in many hospitals.

6.3 Educational facilities

The city is the regional education hub and pioneer in higher education and graduate programmes in the state. There are several universities and colleges in and around the city.

- **Banaras Hindu University** is a public central university located in Varanasi, Uttar Pradesh. Established in 1916, BHU is one of the largest residential universities in Asia, with over 20,000 students
- **Sampurnanand Sanskrit University** is an Asian institution of higher learning located in Varanasi, Uttar Pradesh, India, specialized in the study of Sanskrit and related fields. It was established in 1791.
- **Mahatma Gandhi Kashi Vidyapeeth** is a public university located in Varanasi, Uttar Pradesh, India. It is administered under the state legislature of the government of Uttar Pradesh. It offers a range of professional and academic courses in arts, science, commerce, law, computing and management

6.3.1 Existing situation

Historically, Varanasi has been an education center in India, drawing students and scholars from across the country. Varanasi has an overall literacy rate of 79% (male literacy: 83%, female literacy: 75%). It has a number of colleges and universities. Other colleges and universities in Varanasi include Sampurnanand Sanskrit University, Mahatma Gandhi Kashi Vidyapeeth, Imania Arabic College, Central Institute of Higher Tibetan Studies (at Sarnath), Kashi Institute of Technology, Varanasi (Kashi IT), Institute of Integrated Management and Technology (IIIT), Udai Pratap Autonomous College, Nav Sadhana Kala Kendra, Harischandra P.G. College, Agrasen Kanya P.G. collage and numerous others.

There are three departments involved in providing education in Varanasi.

- Joint Director, GoUP – Looks after schools affiliated under boards other than UP State Board.
- District Inspector of Schools (DIOS) – Looks after schools affiliated state board for classes 9th and above.
- BSA - Looks after schools affiliated state board for classes 1st to 8th.

Banaras Hindu University

The Banaras Hindu University (BHU) is a public central university located in Varanasi, Uttar Pradesh. Established in 1916 by Pandit Madan Mohan Malviya, The Indian Institute of Technology (BHU), Varanasi is an Institute of National Importance in Varanasi and is one of India's 16 IITs. The BHU is one of the largest residential universities in Asia, with over 20,000 students from over 34 countries.

BHU is organized into 4 institutes and 14 faculties (streams) and more than 140 departments. Several of its colleges, including engineering (IIT-BHU), science, linguistics, journalism & mass communication, performing arts, law, agriculture (IAS-BHU), medicine (IMS-BHU) and Institute of Environment And Sustainable Development (IESD-BHU), are ranked among the best in India. The university's main campus spread over 1,300 acres. BHU maintains its own water supply, sewerage and sanitation, and solid waste management services.

6.3.2 Basic education/literacy indicators

There are 136 government and 158 private schools in Varanasi urban areas. Varanasi urban areas comprise of VMC areas, Baragaon, Gangapur, Varanasi Cantonment Board, Ramnagar, Benipur, etc. VMC population comprises of 75% of the Varanasi urban population. These schools are either private, public or aided schools. The breakup of the type of schools is provided in the Table 34.

Table 34: Schools in Varanasi urban areas

Sr. No.	Category	Government	Private
1	Primary only	99	38
2	Primary and upper primary	3	83
3	Primary, upper primary and secondary	3	9
4	Upper primary only	27	23
5	Upper primary and secondary	4	5
	Total	136	158

Source- District elementary education report card, 2011-12

6.3.3 Key issues

- Lack of basic facilities such as drinking water and sanitation in some schools.
- As per discussion with officials, there is a shortage of land for existing and constructing new schools

6.4 Fire services

The fire services in Uttar Pradesh are being managed by the Uttar Pradesh Fire Service Department. Initially, the fire services of the KAVAL towns of Uttar Pradesh were with the local bodies. It was taken over by the State Government on 26th July 1944 and thus Uttar Pradesh Fire Services was established. The Uttar Pradesh Fire Services, which was established under the Fire Service Act, is working under Uttar Pradesh Police.

There are two permanent and one temporary fire station in Varanasi. The fire stations are located in-

- Chet Gunj
- Bhulupur
- Kashivishwanath Temple (temporary)

The city has 11 functioning motor fire engines and 6 small tenders. To reduce the response time, three more fire stations are planned in Sarnath, Mohan Sarai and Bada Village. Many parts of the old city areas are difficult to access. Also the fire hydrants in these areas are not in useable condition.

Table 35: Organization structure of fire department

Sr. No.	Designation	Sanctioned	Existing
1	Chief Fire Officer	1	1
2	Fire Station Officer	3	2
3	Fire Station Sec. Officer	8	1
4	Leading Fire Men	25	25
5	Fire Service Driver	31	23
6	Firemen	146	136

Source – Fire Station Officer, Chet Gunj

Organization structure

The institutional arrangement of the fire department is as Figure 26. Each fire station is headed by a fire station officer and all fire station officers' report to chief fire officer.

Figure 26: Organization structure - fire services



6.4.1 Key issues

- Shortage of land for new fire stations. The land is to be made available by the district administration.
- As many parts of the city have narrow lanes, fire brigades cannot reach those areas.
- The existing fire hydrants in old city are not in usable condition. City can lay new fire hydrant lines in these areas which could be used in case of disaster.

6.5 Recreation facilities

Sports: Sports facilities are mainly made available in schools to students. Some indoor sports are available in cafes and private places. There is no government or aided sports infrastructure. Varanasi has two clubs .i.e Prabh Narayan Union Club and The Benares Club Ltd., access to which is limited to club members. The draft Master Plan, 2031 has proposed developing three sports stadiums on the outskirts of the city on Azamgarh Marg in village Baniapur, Badohi Rail Marg in village Lakhimpur and Badohi Marg in village Ghatripur. There is a stadium in Sigra and a mini-stadium in Shivpur. The stadiums house facilities for sports like athletics, swimming and volley ball. In addition, some other prominent sports grounds are Dr. Bhimrao Stadium, Baralalpur, UP College and BHU grounds.

A water park is located off the main Allahabad-Varanasi highway near the main access road leading to Varanasi. From the Varanasi railway station, it takes about twenty minutes by taxi.

Malls and parks: There are four malls and many other commercial centres in Varanasi. The malls house retail stores, restaurants, food courts and cinema theatre. The malls are popular with the locals. In addition, there are many parks in Varanasi. These parks are named on the name of popular people who lived in Varanasi and done remarkable things in their life. Some of the main parks are - Machodari Park, Dumraubagh Park, Nehru Park, Shahid Udyan, Rose Garden, Shivala Park and Ravidas Park. Major parks are in fairly good conditions but still they could be developed into beautiful or themed landscapes. Community and smaller parks needs to be lookover as they are not in good conditions.

Museum: Varanasi has two museum .i.e. Sarnath Museum and Bharat Kala Bhavan, BHU. Sarnath Museum is the oldest site museum of Archaeological Survey of India. It houses the findings and excavations at the archaeological site of Sarnath, by the Archaeological Survey of India. The museum has 6,832 sculptures and artifacts. Bharat Kala Bhavan is a roomy museum with a wonderful collection of miniature paintings, as well as 12th-century palm-leaf manuscripts, sculptures and local history displays.

Others: There is a boating club, which offers boating facilities.

6.5.1 Key issues

- There is lack of recreational facilities for tourists like water activities.
- Facilities such as parks, libraries etc. are not properly maintained.
- Sports facilities are grossly lacking across the city. The sports infrastructure is limited to schools.

6.6 Norms and standard as per UDFRI guidelines

The gap analysis in Table 36 is on the basis of only government health institutions, as the break up for private healthcare institutions is not available. All private nursing homes, hospitals etc. are classified under one head.

Table 36: Health - Gap Analysis

Sr. No.	Category	As per draft URDPFI guidelines, 2014	Existing number	Gap
1	Dispensary	1 dispensary for every 15,000 persons	2	123
		Total dispensaries as per norm – 125		
2	Small hospitals (30 bed)	1 hospital for every 45,000 to 1 lakh persons	8	11
		Total hospitals as per norm – 19		
3	Multi-Specialty Hospital	1 hospital with a capacity of 200 beds for every 1 lakh persons	4	15
		Total hospitals as per norm – 19		

Since the number of schools in Varanasi city (VMC limits) is not available, so it has been assumed that 75% of the schools are in Varanasi city. There is shortage of schools; however, there is acute shortage of secondary and senior-secondary schools in Varanasi.

Table 37: Education - Gap Assessment

Sr. No.	Category	As per draft URDPFI guidelines, 2014	Existing number	Gap
1	Primary schools	1 school with a capacity of 500 students for every 5000 persons	235	141
		Total schools as per norm – 376		
2	Secondary and senior secondary schools	1 school with a capacity of 100 students for every 7,500 persons	71	180
		Total schools as per norm – 251		

6.7 Stray Animal

Stray animals are one of the major issues in Varanasi. There is a separate department which takes care of it, but still the problem persists. There are stray animals like cow and buffalows in the Old city areas. They are dominant near the ghat areas and temples where they are fed by the devoties. They sometimes get in between the streets and obstruct the moving traffic. Sometimes they even get wounded when hit by the moving vehicles.

Stray dogs on the streets are also found in the Varanasi City. These dogs live life of scavengers and rely on the food items which are dumped by the residents. The dogs further breed and their number increases considerably. There have been cases of stray dogs biting the residents, which could lead to the critical ailment of rabies. Hence vascinations of the street dogs is very necessary.

Some places in Varanasi have huge population of monkeys especially in old city. Monkeys are known for their mischievous behaviours. They either steal the food items or juggles through the electric cables which serve the area and hurt themselves and disrupt the powersupply of the region. Though these monkeys are harmless but some serious cases of biting is recorded by the residents of the area. Hence monkeys should be taken care by the municipal corporation by relocating them to some area outside the city with good vegetation and by vascinating them.

6.8 NGOs in Varanasi

Varanasi has a big list of Non Government Organisations working for the development ad benefit of Varanasi. There are NGOs working with DUDA for the betterment of the urban poor, NGO working with JICA helping them in managing the solid waste of the city. Further there are NGO which are working for uplifting the poor in terms of providing education, helping them develop skills, child welfare societies, old and destitutes helping societies etc. some of the NGOs working in the Varanasi are listed below:

- Human Vikas Evam Gramotthan Samiti
- Vision Foundation
- Sitic Computer Education Society
- Smile Welfare Society
- Positive Living Society
- Sharp Laboratories Gramodyog Sanstha
- Incredible Indian Society

- Zarnigar Social Welfare Society
- Rukmini Vidyalaya
- Healthy India Foundation
- Drishti
- Raj Kshatriya Siksha Samiti
- The Vivekananda Mission
- Urmila Rastry Sevasamiti
- Vishwanath Welfare Sociey
- Samar Saikshnik Avam Samaj Kalyan Samiti
- National Infotech Society
- Manav Utthan Seva Samiti
- Sankalp
- Vaishali Gramy Vikas Sansthan
- Jan Sasaktikaran Samagik Sanchar Samiti
- Gramin Mahila Kalyan Samiti
- Lokbandhu Rajnarain Samiti
- Parmanand Educational And Welfare Society
- Rajeshwari Research Foundation
- Koshish Institute And Educational Welfare Society
- Babu Bhulan Singh Smriti Seva Samiti
- Rights Organisation
- Chintan Evam Srijan
- Grameen Proudhyogiki Vikash Sansthan
- Sw Ramadhar Rai Shiksha Samiti
- Sparsh Society For Rural Development
- Smt Mulharadevi Memorial Sri Nathji Foundation
- Astha Welfare Society
- Dharma Chakra Mul Boudh Sodh Sansthan
- Delhi Educational Society
- Peoples Organization For Nirmal Pravah
- Swaraj Gramodyog Sansthan
- Sachetak
- Voluntary Society For Training Of Stimulation
- Ramanujam Educational Society
- Society For Welfare Training And Research
- Jiwan Jyoti Christian Hospital
- Prerna Jan Sewa Vikas Samiti Kashi
- Sirjana Sansthan
- Dharma Devi Sewa Samiti
- Indian Heritage Care Society
- Thakur Bari Mahila Vikas Kalyan Samiti
- Balaji Seva Samiti
- Rural Organization For Social Advancement Rosa
- Seva Samiti
- Center For Education And Research
- Shanti Niketan Jan Seva Samiti
- Kashi Sai Foundation Society
- Society For Media And Social Development
- Samvedana Jan Seva Sansthan
- Global Welfare Association
- Rashtriya Vikas Evam Kalyan Samiti
- Vishal Bharat Shansthan
- Lokbandhu Sewa Sansthan
- Akhil Bhartiya Kisan Bunkar Hastshilpi Parishad
- Indology Classics Input Society
- Pragya Educational Society

7. Assessment of urban services

7.1 Delivery of Urban Services

The VMC is responsible for provision of basic services such as water supply, sewerage, SWM, SWD and roads within the VMC limits. The DUDA is responsible for provision of housing in slum areas and the Uttar Pradesh Jal Nigam is responsible for planning and construction of water supply, sewerage and storm water drains. The roles and responsibilities of the ULB and the various parastatals have been summarized in the Table 38.

Table 38: Roles and responsibilities of VMC and parastatals

Sr. No.	Urban infrastructure service	Planning and design	Construction/ Implementation	O&M
1	Water	UP Jal Nigam, Jal Kal (small projects)	UP Jal Nigam, Jal Kal (small projects)	Jal Kal
2	Sewerage and Drainage	UP Jal Nigam, Jal Kal (small projects)	UP Jal Nigam, Jal Kal (small projects), DUDA	UP Jal Nigam, Jal Kal, VMC, DUDA
3	Solid Waste Management	VMC	VMC	VMC
4	Urban Transport	UPSRTC	UPSRTC	UPSRTC
5	Urban Planning and Town Planning	VDA, TCPD	VDA	-
6	Street Lighting*	VMC, VDA, PWD	VMC, VDA, PWD	VMC, VDA, PWD
7	Environment Protection	UPPCB	UPPCB, UP Jal Nigam, Jal Kal, VMC	UP Jal Nigam, Jal Kal, VMC
8	Urban Poor Settlements	DUDA, VDA, VMC	DUDA, VDA, VMC, UP Jal Nigam	VMC, Jal Sansthan, UP Jal Nigam

DUDA – District Urban Development Authority, VMC – Varanasi Municipal Corporation, VDA – Varanasi Development Authority, UPSRTC – Uttar Pradesh State Road Transportation Corporation, TCPD – Town and Country Planning Department

**in respective jurisdiction*

7.2 Water supply

7.2.1 Existing scenario

The Water supply system for Varanasi is more than 100 years old when it was introduced in year 1892. It was designed for a population of 2 lakhs with a treatment plant of 33 MLD constructed at Bhelupur. In the early years, water was being treated through slow sand filters but at the later stage rapid gravity filters replaced them. With increase in population and the corresponding water demand

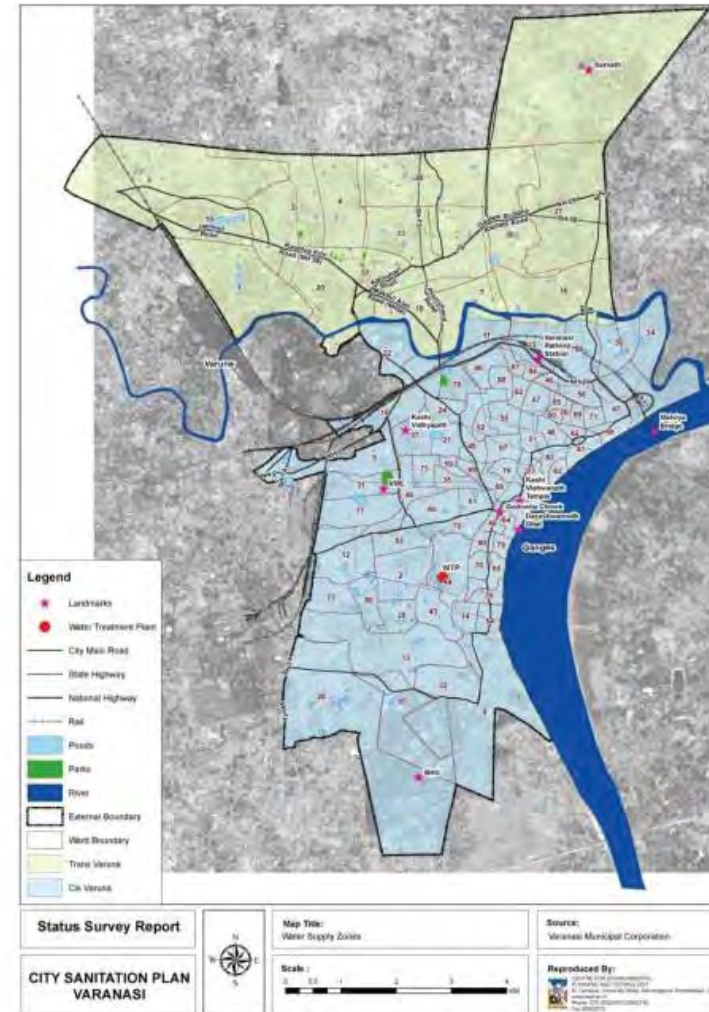
of the city, the capacities of different units were increased from time to time along with reorganization and the extension of distribution system to make equitable distribution of supply and to meet out the demand in different zones.

After the introduction of water supply system, the main reorganization of the system was done in 1954 with per capita water supply at the rate of 200 LPCD and the scheme was executed for 4.60 lakh population. For administration purposes, the whole city is divided into 7 zones, which are as follows:

- Sikraul (Civil lines)
- Cotton mills
- Rajghat
- Benia park
- Neechibagh (Chauk)
- Bhelupur
- London Mission

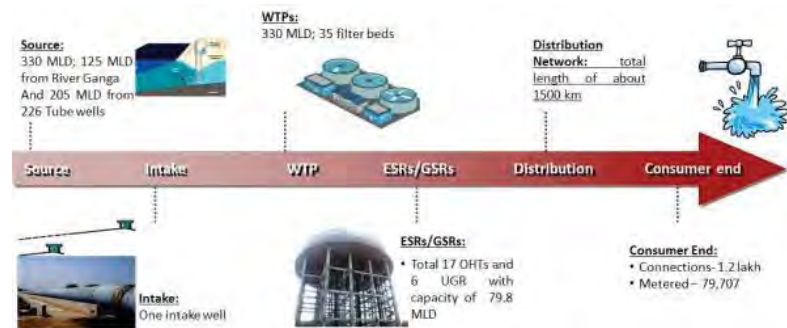
Varanasi is divided into two distinct areas: cis-Varuna and trans-Varuna (Figure). The former comprises the old city and the areas of Lanka towards southwest and the Lahartara zones. The trans-Varuna area consists of Civil Lines and the developing areas of Shivpur, UP College, Pandeypur, and Paharai zones. For the purpose of water supply, the city is divided into 16 water supply zones, of which 5 zones lie in the trans-Varuna area and the remaining 11 lie in the cis-Varuna area.

Figure 27: Water Supply Zones



Source: Draft City Sanitation Plan for Varanasi, CEPT University, 2011

Figure 28: Water supply



7.2.1.1 Water supply source

The water demand of 276 MLD for the city is met by the surface flow of Ganga River and the underground sources. Currently, 205 MLD of underground water is being tapped through 226 tube wells and 125 MLD through surface water. A total of 330 MLD water is tapped, which is 275 LPCD. There is a water storage provision of 80 MLD in Varanasi. The water is stored in 23 Over-Head Tank (OHT) and Underground Reservoirs (UGRs). The reservoirs are spread across the city. The list of reservoirs has been enclosed in the annexure. The present storage available is 79.8 MLD, which is only 58% of the daily demand of 276 MLD in two fillings. The present storage capacity is insufficient to take care of the present as well as the future demand of the city.

7.2.1.2 Distribution system

As per Jal Kal, the water supply distribution network is 1,500 km long¹². However, based on the Interim Report of Non-Revenue Water study being undertaken, the total length of network is 902 Km. The diameter of the pipes varies from 90 to 600mm in different parts of the city and system consists of CI and PVC pipes.

Table 39: Water supply distribution network

Sr. No.	Cis-Varuna	Trans-Varuna	Total
Existing	182	25	434
New network and replacement of ageing network	466	228	694
Total	648	254	902

Source – Interim Report, Non-Revenue Water Study, Varanasi

¹² On discussions with Jal Kal officials, it was revealed that length of distribution network (590 Km) mentioned in the 1st generation CDP is incorrect. The correct length of distribution network is 1500 Km

With increase in the city limits, the distribution system is provided to new extension areas under different development programs. Jal Kal supplies water throughout the year with supply hours varying between 9 and 10 hours a day. However, there are several areas which are still not covered by water supply system. Table 40 gives the areas uncovered by water supply system in both the zones.

Table 40: Areas uncovered from water supply

S. No.	Cis Varuna zone	Trans Varuna zone
1	Lahartara Zone	Shivpur Zone
2	London mission Zone	U.P. College Zone
3	Cotton mill Zone	Pandeypur Zone
4	Jaitpura Zone	Paharia Zone
5	Rajghat Zone	Civil Lines Zone
6	Maidagin Zone	
7	Chowk Zone	
8	Benia Zone	
9	Sigra Zone	
10	Bhelupur Zone	
11	Lanka Zone	

Source: City Sanitation Plan for Varanasi, CEPT University, 2011

7.2.1.3 Water treatment

Due to the natural filtering process, the ground water does not require much treatment. It is only disinfected and supplied. However, the surface water from Ganga River is treated by coagulation, sedimentation, filtration and disinfection and then supplied. The entire 330 MLD of water is treated before supplying.

7.2.1.4 Consumer connection and metering system policy

The total number of connections in Varanasi is 120,784. This represents connection coverage of 69%. The number of metered connections in Varanasi is 66% of the total number of connections. However, all these connections are non-functional. So flats rate bills are generated for all connections.

Table 41: Number of water meters

	Connections	2012-13
1	Metered Connection	
i	Domestic	79,707
ii	Non-domestic	NA
iii	Commercial	NA
iv	Industrial	3,161
2	Total metered connection (i to iv)	82,868
3	Total non-metered connection	37,916
4	Total Connections	120,784

Though the VMC has adopted a volumetric based tariff structure, however, it has not been implemented yet. The flat rate water supply bill is calculated based on ferrule size and different slabs of ARV for residential and commercial property. Currently, water charge is calculated as 12.5% of ARV. This is based on of Notification issued in 1999 by Government of Uttar Pradesh. Thereafter, user charges have been increased 5% at a regular interval of three years. **Owing to such method, water charges of old properties have been reduced irrespective of water use.**

Table 42: Water supply tariff

Sr. No.	Property tax	15 mm	20 mm	25 mm
1	< Rs. 360	576	863	1343
2	Rs. 361 to Rs. 2000	768	1151	1726
3	Rs. 2001 to Rs. 3500	1152	1726	2686
4	Rs. 3501 to Rs. 5000	1535	2206	3261
5	>Rs. 5000	1918	2877	4047
	Volumetric Rate Rs. per KL			3.15

Demand, collection and balance statement

The implementation of user charges and e-governance reforms and strenuous efforts put in by Jal Kal has resulted in increase of the arrears collection by 110% from 2009-10 to 2012-13. This has led to an increase in 72% of the total collection. Though the total demand has come down by 11% over the six year period, the current demand has increased by 71%. The main reason for this is the increase in number of connections. The DCB statement for both water supply and sewerage is given in Table 43.

Table 43: DCB - water supply and sewerage (in Rs. Lakhs)¹³

Head		2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Total Demand	Arrears	2601.74	1803.70	1631.19	1524.23	1408.21	1144.67
	Current	1454.51	1591.72	1845.60	2030.16	2233.17	2482.48
	Total	4056.25	3395.42	3476.79	3554.39	3641.38	3627.15
Collection	Arrears	2206.16	1764.23	571.25	651.76	701.60	1199.73
	Current			1381.31	1494.42	1795.11	2151.95
	Total	2206.16	1764.23	1952.56	2146.18	2496.71	3351.68
Collection Efficiency (%) (Recoverable demand)	Arrears	54.39	51.96	35.02	42.76	49.82	104.81
	Current			74.84	73.61	80.38	90.07

7.2.1.5 Service level status

The existing status of water supply has been compared with the benchmarks for service level benchmarks given by the MoUD. The water supply status is far from desirable at present. The city has

¹³ The water supply and sewerage demand and collection is as per Jal Kal budget. The total demand is not on actuals but an increment over the last year. According to Jal Kal officials, the actual demand would be close to Rs. 90 Cr. Hence, the collection efficiency does not reflect the true picture.

significant proportion of population uncovered by water supply. The most critical aspect however, is the loss of water during distribution, which is around 61%¹⁴. This substantially increases the problem of water supply availability although the city has perennial water source.

Table 44: Service level status - water supply

Sr. No.	Indicators	Outcome	MOUD Benchmark
1	Coverage of water supply connections	69%	100%
2	Per capita supply of water	186 LPCD	135 LPCD
3	Extent of metering of water connections	0%	100%
4	Extent of non-revenue water	58%	20%
5	Continuity of water supply	10 hours	24 hours
6	Efficiency in redressal of customer complaints	96%	80%
7	Quality of water supplied	96%	100%
8	Cost recovery in water supply services	61%	100%
9	Efficiency in collection of water supply related charges	92%	90%

Source – Service Level Benchmark 2013-14

7.2.1.6 Water account – cost recovery

Jal Kal has not been paying its electricity and energy charges as evident from the operating expenses table. Due to this the cost recovery appears to be very high. Based on discussions, it was found out that electricity charges are in the range of Rs. 22-24 Cr. If the electricity charges are added in the O&M expenses, then the cost recovery drops from 98% to mere 61%. Hence, there is need to reduce NRW and rationalize the water charges.

Table 45: Cost recovery - water supply

Particular	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Income (Rs. Lakhs)	2206.16	1764.23	1952.56	2146.18	2496.71	3351.68
O&M Expenses (Rs. Lakhs)	1750.18	2316.80	2190.11	1704.80	2436.86	3428.82
Cost Recovery (%)	126.05%	76.15%	89.15%	125.89%	102.46%	97.75%

Table 46: Operating expenses - water supply

S N	Operating expenses	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
1	Establishment	975.70	1242.29	1467.54	1439.90	1923.43	2777.06

¹⁴ As per Interim Report, Non-Revenue Water Study, Varanasi

S N	Operating expenses	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
2	Supplies and chemicals	130.05	178.28	152.91	115.99	108.91	135.60
3	General Repairs	90.60	150.05	122.26	41.38	82.96	155.72
4	Electricity & Energy	170.32	101.34	24.40	19.40	19.40	19.40
5	Others	383.51	645.80	423.00	88.13	302.86	341.04
6	Total operating expenses	1750.18	2316.80	2190.11	1704.80	2436.86	3428.82

Source – Jal Kal Budget

7.2.2 Water supply future demand

The water supply demand in 2041 is expected to be 448 MLD. This has been calculated for the projected population maintaining a service level of 172.5 LPCD.

Table 47: Water supply future demand

Year	2015	2021	2031	2041
Population	1,590,965	1,879,397	2,299,288	2,825,756
Demand (MLD)	274	324	396	487

Table 48: Water demand projections as per DPR

Year	Population (in lakhs)	Water supply (MLD)
2010	17.16	275
2025	25.23	403
2040	33.67	528

7.2.3 Critical analysis of water supply post 1st generation CDP

The 1st generation CDP was prepared in year 2006. The box below provides an overview of the water supply system at the time of preparation of the 1st generation CDP.

Key features of water supply system:	
Sources of water supply	280 MLD water supplied to the city with 50% through tube wells and 45% from Ganga river. Remaining 5% was supplied by publicly and privately owned 1559 hand pumps. Raw water was lifted and pumped at Bhadeni raw water pumping station.
Water treatment	River water was treated at two water treatment plants at Bhelupur water works of 60 MLD and 250 MLD. Water treatment comprise of rapid sand filters, and clear water sumps. Out of 9 beds of old WTP, only 5 were in working conditions.
Storage	Water from treatment plants was pumped to 17 overhead tanks of 17.8 MLD capacity and 7 underground reservoirs with a total storage capacity of 62 MLD spread over various locations, from where it was

	distributed through pipelines. The total capacity of these reservoirs was 79.8 MLD.
Distribution system	The distribution network was 590 Km.
Household connections	There were a total of 80,000 metered connections
Per capita consumption	Average per capita consumption of water was estimated as 288 LPCD.
User charges	Not available
Quality of water	Quality of water in Varanasi was far below the ISI standards and even after implementation of GAP, some researchers have declared that Ganga water in Varanasi is not fit even for human bathing. The main reason for the pollution of Ganga water was the pollution coming from industries and urban wastewater was very significant. Municipal sewerage contributed to 79% of the total pollution load.
Cost recovery	Not available
Collection efficiency	Not available

The CDP assessed the water demand-supply assessment for the year 2031 based on the population projection. It assessed a demand of 551 MLD for the city areas including the floating population in the year 2031. Considering the existing sources, it showed a deficit of 391 MLD*.

Accordingly, to improve the water supply system, the CDP envisaged an investment Rs. 381 crores covering following aspects: renovation of existing system, network expansion of transmission mains; construction of storage tanks and water treatment plant, and metering of individual houses metering.

**Assuming that some of the existing facilities would complete their design period during the implementation of the program and in case renovation/ rehabilitation is not undertaken Water production will decrease with time*

7.2.4 Institutional framework for water supply system

Jal Ka under VMC operates and maintains the water supply system of Varanasi, and Jal Nigam is responsible for planning, procurement, and project implementation. Jal Kal is now a part of VMC, though it continues to have a large amount of autonomy with regards to administrative and financial functions. Jal Kal is also responsible for billing and collection of user charges. The accounts of Jal Kal are now in process of being merged with that of VMC's.

7.2.5 Key issues

- Some of the distribution lines are as old as 100 years and are deep down in the ground; these are difficult to maintain and need to be replaced. It is not known how much is new network and how much is replacement

- Storage capacity is insufficient in the new extension areas of the city.
- Non-revenue water is high at ~58%.
- There is delayed and minimal revision in user charges tariff schedule due to political resistance.
- As Jal Kal has not been paying electricity charges, the cost recovery indicator does not reflect the true picture.
- Jal Kal, which was earlier an independent body, is now a part of VMC, thus institutional-level issues need to be addressed
- Land acquisition of WTP in Sarnath. The title is with VMC however, there is opposition from the local population.

7.2.6 Ongoing projects

In order to meet the existing deficiencies and growth needs of the city, augmentation of water supply system was conceived. The yield of current tube wells would keep reducing over the years.

Hence under JNNURM, the projects in the water supply sector mainly include the augmentation of water resources, distribution network and increasing the number of storage facilities. The list of current projects has been given in the Table 49.

Table 49: Ongoing projects - water supply

Sr. No.	Project name	Expected outcome of the project	Date of completion
1	Renovation of intake wells	Increase in raw water availability	Completed
2	Procurement of water tanker and tractor		Completed
3	Rehabilitation of water treatment plant		31 st December 2014
4	Rising mains	Increase in raw water availability	31 st December 2014
5	Construction of OHT	Increase in storage capacity	31 st December 2014
6	SCADA system	Monitoring of NRW	31 st December 2014
7	Laying of pipelines	Increase in distribution network	31 st December 2014
8	Installation of water meters	Reduce NRW and bring parity in paying as much water consumed	31 st December 2014
9	Installation of tube wells	Increase in raw water availability	31 st December 2014

Under JNNURM three projects are being taken up –

1. Priority I Phase I (Cis-Varuna)
 - a. Augmentation of intake wells at Badhaini by 25 MLD. Existing capacity of the intake well is 100 MLD
 - b. New raw water main from Badhaini intake well to Bhelupur WTP. Length of pipe 1600 m
 - c. Total refurbishment of WTP at Bhelupur. Existing capacity is 250 MLD
 - d. Storage - OHT – 17 new tanks and CWR – 27 new

2. Priority I Phase II
 - a. New and replacement of distribution network in cis-Varuna. Length of network is 466 Km
 - b. Procurement of water meters – 2 lakhs
3. Priority II (Trans-Varuna)
 - a. 100 MLD intake well at Chandravati. To cater to the future needs, the intake well may be augmented to 200 MLD
 - b. Tube wells – 10 new and 4 rebore
 - c. 16 Km raw water rising main to Sarnath
 - d. 100 MLD WTP in Sarnath
 - e. Feeder main to storage reservoirs – 28 Km
 - f. Storage – OHT – 26 new and refurbishment of 6 existing and 30 new CWRs
 - g. Distribution network – 228 Km

7.3 Sewerage and sanitation

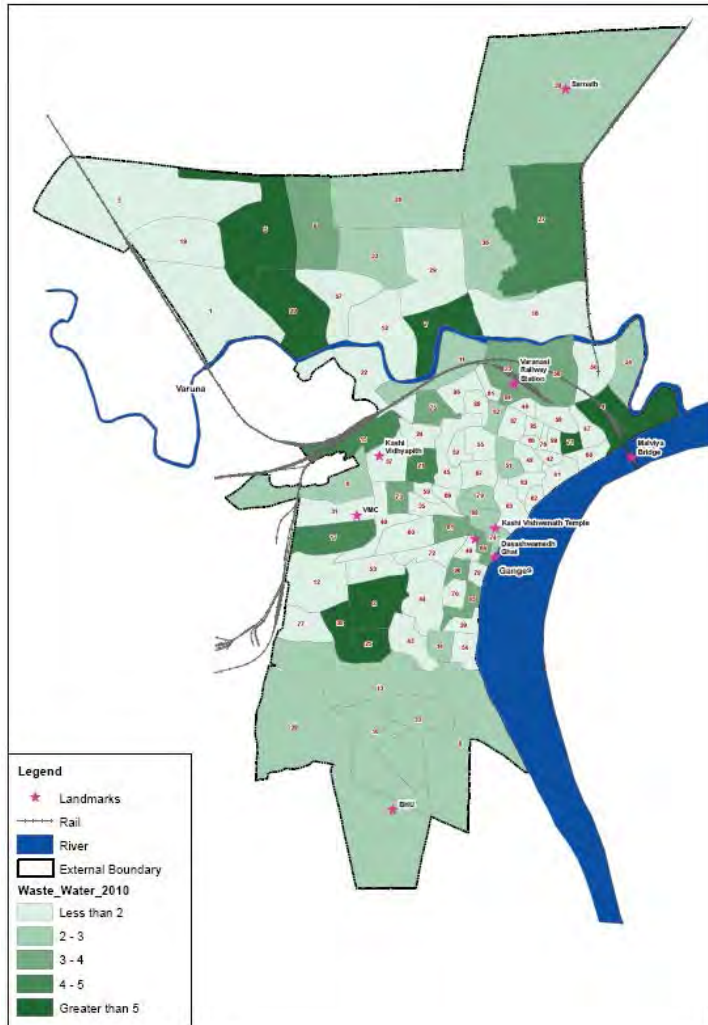
7.3.1 Existing sewerage and sanitation system

The existing city's sewerage system was designed exclusively to carry domestic sewage only, but owing to the traditional pattern of open drains laid in the core city area storm water also enters the trunk sewer directly or through manholes and branch sewers. This leads to tremendous pressure on the sewerage network, especially during monsoons. Due to combined system, the STPs' become ineffective during rainy season leading to more pollution of River Ganga and Varuna. Apart from that the areas, which are not served by the sewer network, discharge the sewage directly into River Ganga, Varuna or Assi Nalla, polluting the rivers.

7.3.1.1 Sewerage generation and collection system

Total sewage generated in the city is 225 MLD of which only 97 MLD is treated in Sewage Treatment Plants (STPs) and the remaining 130 MLD is directly discharged into River Ganga and Varuna through open drains.

Figure 29: Waste Water Generation



Source: City Sanitation Plan, CEPT University, 2011

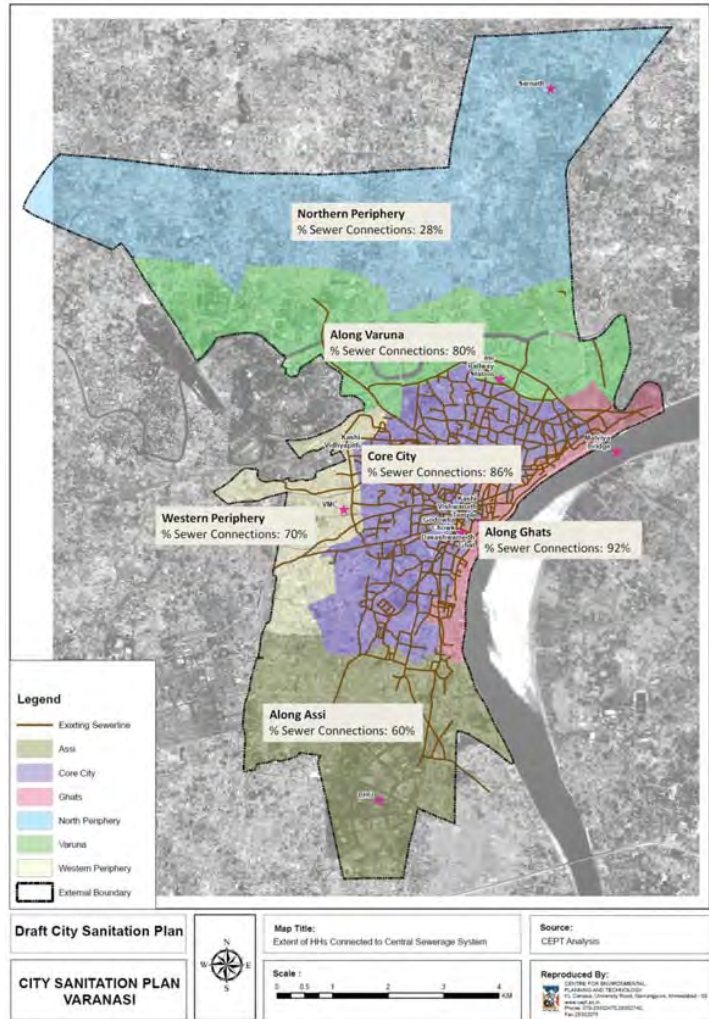
7.3.1.2 Sewerage network and collection system

The sewerage network is divided into two zones: cis-Varuna and trans-Varuna. Currently, the existing system is partly over ground and underground. Just over 30% of the city is covered with sewerage network, which means that the remaining households are either connected through septic tanks, pits, or service latrines or do not have access to toilets. Most of this 500 Km long network caters to the old city, comprising mainly of the Ghat area. 18%¹⁵ of the total households do not have access to independent, shared, or community toilets. The trans-Varuna area is completely without sewerage. However, projects are being undertaken to cover trans-Varuna with underground sewerage network.

Since, the existing sewer lines in the city are more than 100 years old so it is prone to choking and leakages. Due to presence of silt and garbage in the sewer lines, the carrying capacity gets drastically reduced resulting in choking and the overflowing of sewage on the roads. The natural water bodies and the river Ganges in the city are in a critical state due to the quantum of untreated sewage and waste entering the rivers on a daily basis.

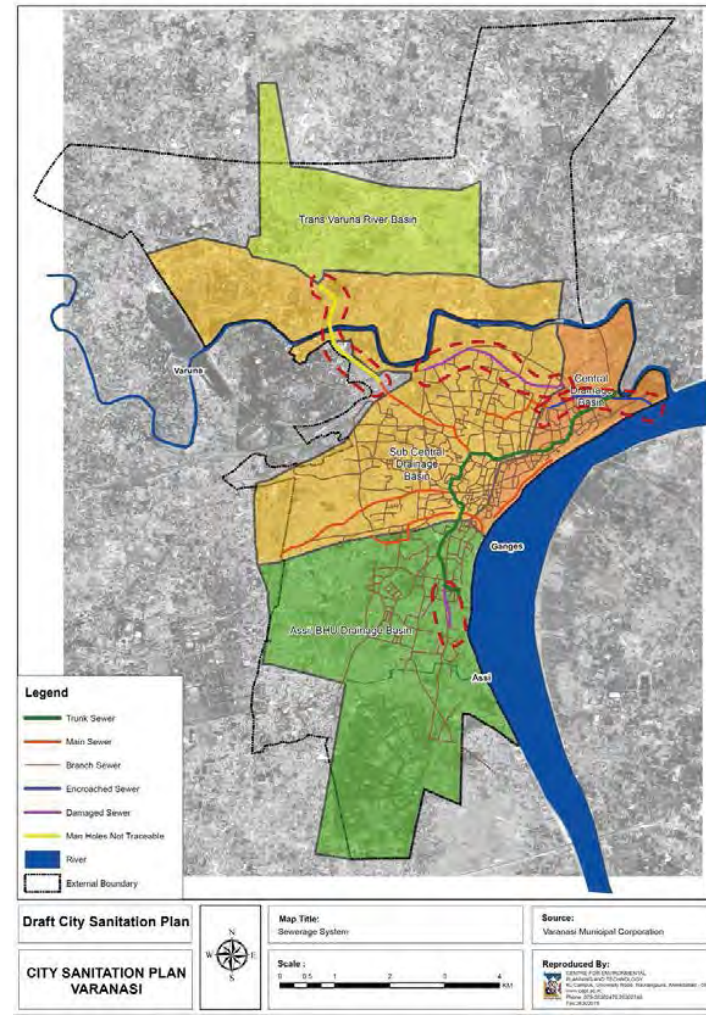
¹⁵ Draft Slum Free City Report, Varanasi

Figure 30: Varanasi sewerage zones



Source – City Sanitation Plan, Varanasi

Figure 31: Sewerage Coverage



Source – City Sanitation Plan, Varanasi

7.3.1.3 Sewerage treatment

There are three sewage treatment plants at present located at **Bhagwanpur, Dinapur and Diesel Locomotive Works (Railways)**. The Bhagwanpur and Dinapur STPs are operated by Ganga Pollution Unit while the DLW STP is operated by railways. The total capacity is that of 102 MLD (3 STPs). The facility at Bhagwanpur handles 9.8MLD.

Table 50: Sewerage treatment plants

Sr. No.	Location	Capacity
1	Dinapur	80
2	Bhagwanpur	9.8
3	DLW	12
	Total	101.8

Out of the total sewage generated 50% gets treated in the STPs. The remaining sewage is directly discharged into open drains leading to the River Ganges.

At present the treated sewage from Dinapur and Bhagwanpur STPs is used for irrigation. However, since the treatment capacity is not adequate a large fraction of generated sewage remains untreated and is discharged directly in river Ganges.

7.3.1.4 Service level indicators

The service level benchmarks show that the existing status of sewerage and sanitation is quite poor. The capacity of sewerage treatment is very poor and the collection efficiency of sewerage network is only 50%, which implies that half proportion of sewerage is disposed in drains and to the river without treatment.

Table 51: Service level benchmarks - Sewerage

Sr. No.	Indicators	Indicators	MOUD Benchmarks
1	Coverage of toilets	82%	100%
2	Coverage of sewerage network services ¹⁶	78%	100%
3	Collection efficiency of sewerage network	50%	100%
4	Adequacy of sewerage treatment capacity	50%	100%
5	Quality of sewerage treatment	100%	100%
6	Extent of reuse and recycling of sewerage	0%	20%
7	Extent of cost recovery in sewerage management	55%	100%
8	Efficiency in redressal of customer complaints	95%	80%
9	Efficiency in collection of sewerage related charges	92%	90%

¹⁶ As per SLB the coverage is 78%; however, based on discussions during FGDs the officials claimed the actual coverage is 30%.

7.3.1.5 Present sanitation level

Most of the city is currently covered with septic tanks as sewerage network covers just over 30% of the city. However, there is no scientific method to collect and treat waste from septic tanks. Household septic tanks, in most households, are not cleaned at regular intervals, leading to poor treatment of the sewage. At present, the septage generated is cleaned by sweepers manually with spades and shovels and collected in tractor trolleys. The septage is then disposed-off, arbitrarily, on city outskirts. The whole practice of septage management hence, at present, poses a great risk to human health as well as to water and land environment. The present practice of septage management involves a lot of human interface is almost similar to manual scavenging.

The overflows of septic tanks are often connected to storm drains or disposed-off into nearby fields, leading to serious surface or land pollution.

7.3.1.6 Sanitation Situation in Varanasi

As per the city sanitation plan of Varanasi, 'of the 423 cities being ranked for the levels of sanitation Varanasi fares at 331. It is under the red category which means that it is on the brink of public health and environmental —emergency and needs immediate remedial action'.

Table 52: Sanitation score of Varanasi according to the NUSP

Attributes	Total points	Varanasi
Output related	Open defecation free cities Proportion of waste/waste water storm water safely treated	50 9.164 (18.38%)
Process related	All treatment plants are in place	30 10.60 (35.33 %/)
Outcome related	Improvement from baseline, water quality, disease pattern etc	20 7.3(36.5%)

Source: City Sanitation Plan for Varanasi, CEPT University, 2011

Table 53: Distribution of toilets in Varanasi

Sr. No.	Type of facility	Number
1	Community toilets	96 (Sulabh-72, Refrozen-6, ADS-6, NEDA-12)
2	Public toilets	12 (Around Ghats)
3	Public Urinals	75
4	Open Defecation	15% of the city's population
5	Mobile toilets	3

Source: City Sanitation Plan for Varanasi, CEPT University, 2011

7.3.1.7 Demand and supply gap of household toilets

As per the household survey undertaken for preparing draft City Sanitation Plan, Varanasi a total of 20,049 slum households do not have access to toilets. In addition, 3,143 non-slum households do not have access to toilets. So the total gap of household toilets is 23,192. As per the CSP, Public conveyance system may be broadly classified as **Community Toilets, Public Toilets, and Public Urinals**. The details of these are presented in the sections below. In Varanasi there are different service providers for each category of toilets. Sulabh International, NEDA, VNN, Advances sanitation welfare society and Refrozen Suidha provide the facilities for toilets in the city.

Table 54: Gap in access to toilets

Total HHs in Varanasi MC Areas	HHs Non Slums	HHs in Slums	HHs Connected to Sewerage System	HHs without Toilets within their premises
243782 (2010)*	156496*(2010)	87286** (2010)	103743***	23496*** (Non-Slum) 13244*(Slums)

Source: City Sanitation Plan for Varanasi, CEPT University, 2011

Community Toilets

Community toilets are the toilets which have been constructed in the city to provide access to toilets to the urban poor. These are provided in slums and areas inhabited by the economically weaker sections to provide access to toilets to these sections. Community toilets in Varanasi are operated by Sulabh International Ltd., NEDA, Advance Sanitation Welfare Society, Refrogen Suvridha, and DUDA. However, DUDA has handed 33 facilities to Sulabh and 4 to NEDA. A charge of Rs.30/HH is collected for the use of such community toilets. Condition of many of these toilets is not satisfactory. Further, many of the CDS households are not willing to pay the charges for use of the toilet facilities.

Table 55: Service provider of Community Toilets

Sr. No.	Name of service provider	No of Toilets
1	Sulabh International	72
2	NEDA	12
3	Advance Sanitation welfare Society	6
4	Refrogan Suvridha	6
Total		96

Source: City Sanitation, CEPT University, 2011

Public toilets are the toilets built in tourist and public areas. One of these places is the Ghats, where there are 12 toilets, each of which is operated by Sulabh International. A charge of Rs. 2 is collected for the use of these toilets. The details of the public toilets are further elaborated in the Table 56 attached.

Table 56: Toilets along the Ghats

Sr. no	Location	Capacity (seat)
1	Assi Ghat	10
2	Chowki Ghat	10
3	Hanuman Ghat	10
4	Scindiya Ghat	10
5	Manikarnika GHat	10
6	Dashashwamedh ghat	20
7	Khrikiya Ghat	5
8	Malviya Bridge	10

Sr. no	Location	Capacity (seat)
9	Rajghat	10
10	Prahlad Ghat	10
11	Trilochan ghat	10
12	Gai Ghat	10

Source: City Sanitation, CEPT University, 2011

Table 57: Access to various types of toilets in Notified Slums from HH survey

Cluster Name	HH	Population	% Septic Tank	% Sewerage Connection	% Open Defecation	% Community
Northern Periphery	17641	135210	49.7%	22.4%	23.8%	4.2%
Varuna	22619	161578	5.4%	71.4%	23.2%	0.0%
Assi	9587	75252	8.7%	32.6%	39.1%	19.6%
Western Periphery	11166	85825	0.0%	42.2%	31.3%	26.5%
Ghats	19175	135667	42.3%	38.5%	7.7%	11.5%
Core City	69745	498386	23.9%	60.2%	2.7%	13.3%

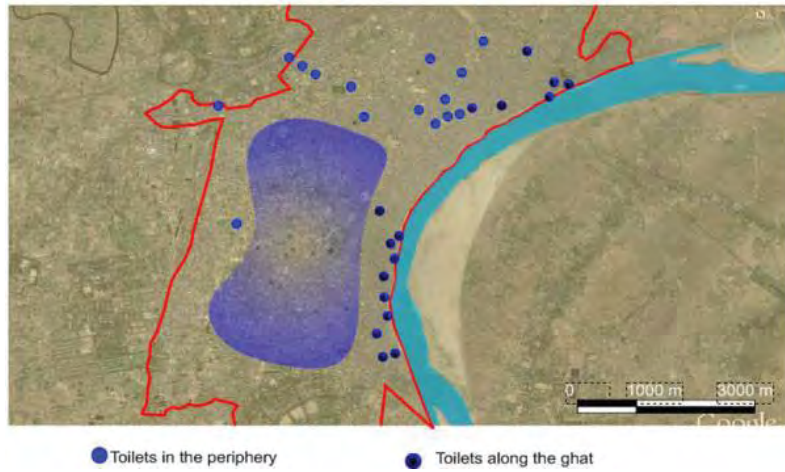
Source: City Sanitation, CEPT University, 2011

Table 58: Access to various types of toilets in non-slums from HH survey

Census 2001		Access to Various Types of Toilet- Non Slums				
Cluster Name	HH	Population	% Septic Tank	% Sewerage Connection	% Open Defecation	% Community
Northern Periphery	17641	135210	47.1%	33.9%	15.7%	3.3%
Varuna	22619	161578	6.5%	91.3%	0.0%	2.2%
Assi	9587	75252	25.0%	73.9%	1.1%	0.0%
Western Periphery	11166	85825	6.5%	88.6%	2.4%	2.4%
Ghats	19175	135667	0.4%	97.9%	0.0%	1.7%
Core City	69745	498386	0.5%	99.1%	0.0%	0.5%

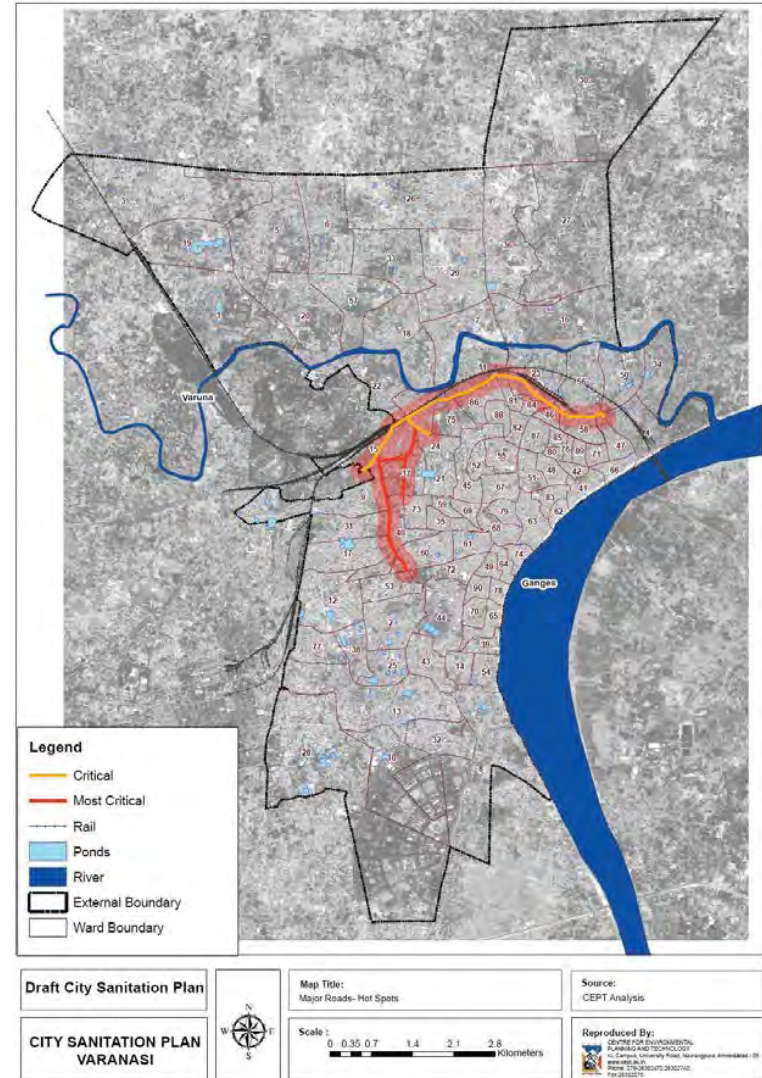
Source: City Sanitation, CEPT University, 2011

Figure 32: Sanitation Facilities Along Ghats



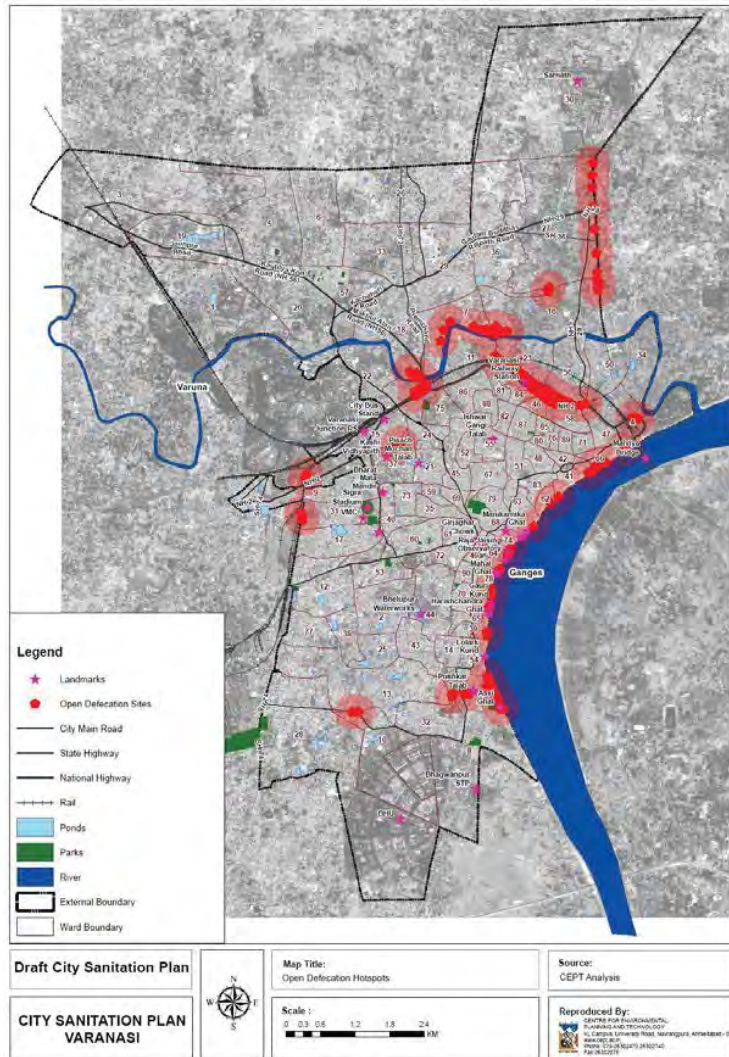
Source: City Sanitation, CEPT University, 2011

Figure 33: Open Urination Hotspots



Source: City Sanitation, CEPT University, 2011

Figure 34: Open Defecation



Source: City Sanitation, CEPT University, 2011

7.3.2 Future sewerage generation

Presently, the total sewerage generation is around 260 MLD and it is expected to reach 477 MLD.

Table 59: Sewerage generation

Year	2013 (Current)	2021	2031	2041
Sewerage generation (MLD)	260	320	405	477

Source – CRIS analysis

7.3.3 Critical analysis of sewerage and sanitation post 1st generation CDP scenario

The 1st generation CDP was prepared in year 2006. The box below provides an overview of the sewerage system at the time of preparation of the 1st generation CDP.

Key features of sewerage system:

Sewerage system	<ul style="list-style-type: none"> Only 30% of the total area is provided with underground sewer network with total length of about 400 km. Total sewage generated in the city is 240 MLD
Sewerage treatment plant	<ul style="list-style-type: none"> Only 90mld is treated in Sewage Treatment Plants (STPs) and the remaining 150mld is directly discharged into River Ganga and Varuna through open drains There are three Sewerage Treatment Plants (STPs) in Varanasi viz. Dinapur, Bhagwanpur and Diesel Locomotive Works (DLW) STP. Capacities of these STPs are 80 MLD, 9.8 MLD and 12 MLD respectively
Network coverage	<ul style="list-style-type: none"> The existing sewer network caters primarily to the old city, comprising mainly of the Ghat area Entire trans Varuna and nearly 50% part of Cis -Varuna area is not sewered
Household connections	Not available
User charges	Not available
Collection efficiency	Not available

Accordingly, to improve the sewerage system, the CDP envisaged an investment Rs. 864 crores covering following aspects: Renovation of existing system, network expansion; construction of treatment plants, branch sewers and community toilets.

The project worth Rs. 309 cr. were approved for sewerage treatment plant and sewerage network for Trans-Varuna area. These projects are in various stages of completion. As on December 2013, 52% physical completion was achieved.

7.3.4 Institutional arrangement

Jal Kal is responsible for the operations and maintenance of the sewerage network, while Jal Nigam is engaged in the planning, designing, and construction of the sewerage system; the Ganga Pollution Prevention Unit under Jal Nigam maintains the sewerage treatment plant (STP) of Dinapur and Bhawanpur, DLW (Railways) maintains the STP at DLW. In addition, the Health Department of VMC is involved in cleaning the drains.

7.3.5 Ongoing projects

In Varanasi, the work of sewerage system (sewer lines) at present are being carried out under three different schemes viz. **JnNURM, Japan International Co-operation agency and Ganga Action Plan - II**. The proposals under these schemes are given below.

Under JnNURM –

- Sewerage branch sewer lines
- Sewerage treatment plant and pumping station

Project status – the project is under implementation. Due to land acquisition issues, a new site for construction of sewerage treatment plant has been identified by the district administration. Meanwhile, 127 Km of sewer line has been laid. The project will get complete in next two years after land for STP is made available.

Under JICA –

- Construction of new sewerage treatment plant- 1 No (140MLD).
- Rehabilitation of existing sewerage treatment plant
- Pumping station- 3 No. (140 MLD, 3.7 MLD & 7.6 MLD)
- Community toilets
- Dhobi ghats
- Bathing ghats
- Interceptor Sewer along Assi river front bank upstream and downstream of left bank of Varuna river.
- Rising Main- 10.24 Km

Under GAP – II - The construction of sewer mains is being undertaken under this programme.

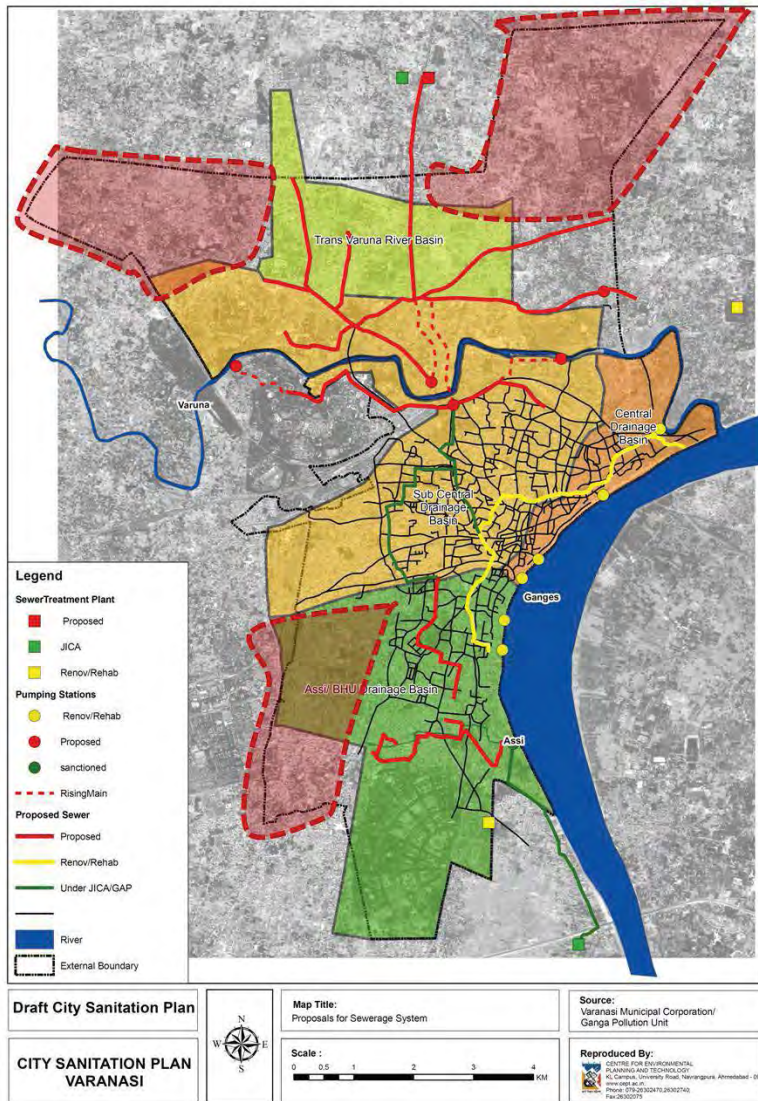
Once all these projects are complete, the sewerage treatment capacity will be augmented by 240 MLD, sewerage network by 650 Km, truck sewer by 7 Km and interceptor by 29Km. In addition, the existing sewerage treatment plants of 88 MLD will be rehabilitated.

1. STP

- a. JNNURM – construction of 120 MLD STP in Sathwa was approved. However, due to land acquisition issues the project could not be initiated. Recently the notification for land acquisition has been issued but the land owner has filed a written petition against the acquisition in Honble' High Court. After decision of Honble High Court further action will be taken up accordingly.
- b. JICA – under GAP-II, a 140 MLD STP was proposed. However, due to land acquisition issues the project could not be initiated. It has now been decided the new STP will be constructed at existing Dinapur STP. The construction will be initiated soon.

- c. Ramna STP – a 50 MLD STP has been proposed at Ramna. Ramna is located in the south of the city near BHU. Earlier a 37 MLD STP was proposed to be constructed by Sankat Mochan Foundation; however, now the STP will be constructed by Jal Nigam. Now a DPR for Ramna STP (capacity 50 MLD) has been sent for approval by VP Jal Nigam.
2. Sewerage Pumping Stations
 - a. Trilochan Ghat
 - b. Jalesen Ghat
 - c. Dr. R P Ghat
 - d. Mansarovar Ghat
 - e. Harishchandra Ghat
 - f. Nagwa
 - g. **Proposed** – Phulwaria (7.6 MLD), Chaukaghat (140 MLD), Saraiya(3.7 MLD)
3. Trunk sewer
 - a. Old Trunk Sewer (Rehabilitation) – Shivala to Konia. Length of sewer – 7.2 Km
 - b. Durgakund to Siga. Pipelines being laid. Length of network – 4.13 Km
 - c. Siga to Chetganj, Benia to Chetganj and Chetganj to Chaukaghat. Pipelines laid in 2009. Length of network – 5.016 Km
4. Interceptor
 - a. Varuna interceptor linking Phulwaria and Saraiya pumping station with Chaukaghat pumping station. Pipelines being laid. Length of network – 10.2 Km.
 - b. Assi interceptor near Bhikaripur to Nagwa and Samne Ghat to Nagwa. Pipelines being laid. Length of network – 8.5 Km.
5. Rising main – Nagwa pumping station to Ramna STP. Already laid. Length of network – 7 Km.
6. Districts/Zoning – Based on discussions with officials, it has been estimated that close to 600 Km of network needs replacement
 - a. 1 – Central City sewage district draining to Dinapur STP. The DPR is yet to be prepared.
 - b. 2A – Cis- Varuna. The DPR is yet to be prepared.
 - c. 2B – Trans-Varuna. Projects have been taken up under JNNURM.
 - d. 2C - Trans-Varuna. Projects have been taken up under JNNURM.
 - e. 3 – South of the city. A DPR has been prepared and an estimated 140 Km of new network has to be laid.
 - f. 4 – Future service areas
7. GAP II projects
 - a. Package 1
 - i. Assi Interceptor and Assi Secondary- 8.52 Km
 - ii. Rising mains- 10.24 Km
 - iii. Inceptors on right bank of Varuna- 5.13 Km
 - iv. Relieving trunk sewer- 4.13 Km
 - b. Package 2: Phulwaria (7.6 MLD), Chaukaghat (140 MLD) and Saraiya (3.7 MLD) pumping stations
 - c. Package 3: 140 MLD STP
 - d. Package 4
 - i. Condition assessment and rehabilitation of old trunk line
 - e. Package 5: Rehabilitation of existing STP and renovation 5 Nos. Ghat pumping stations and Konia main pumping station.

Figure 35: Proposals for Sewerage System



Source: City Sanitation, CEPT University, 2011

7.3.6 Key issues

The key issues related to the sewerage system include:

- The existing sewerage system is very old and dilapidated.
- Coverage of the sewerage network is low.
- Due to dumping of garbage in the sewer lines, the carrying capacity gets drastically reduced, resulting in overflow of sewage on roads.
- More than half of the sewerage discharged in water bodies is untreated.
- A separate financial account for sewerage not maintained.
- Involvement of multiple departments leads to co-ordination issues.
- Separate water supply and sewerage demand and collection heads are not maintained

The Key Issues with respect to Sanitation identified in the City Sanitation Plan are discussed in Table 60.

Table 60: Key Issues- Sanitation

Aspect	Issues
Open Urination	Areas like Ghats, Railway tracks, bus stands, Sunderpur market area, some major road stretches (like Vidyapith road, IP mall road, Lahartara Road, etc.) Overall Cleanliness and Maintenance of grossly inadequate, causing unhygienic and aesthetic problems. Toilets are not gender sensitive
Open Defecation	Areas like Ghats, Railway tracks, Assi nullah catchments, and other water bodies are major hotspots in the city The Open defecation in the city can be categorized as under: Slums HHs without Toilet Access/ Limited toilet access Pilgrims/ Floating Populations Cultural Habits of local residents
Household Toilets	Septage management in the city is a major issue The present system is very informal and involves a great deal of human interface leading to exposure to health risks.
Community Toilets	Cleanliness and Maintenance is substandard Water supply and disposal of these toilets is at times is not as per standards In case of family with more than 5 members, people have to spend more, as the card of Rs. 30 per month is for a family with 5 members only. This charge is a great hindrance for Slum CDS members, often resorting to open defecation
Public Toilets	Number and location of these facilities are not adequate Lack of surveillance for the maintenance of public toilets The basic requirement for the maintenance of public toilets is water. In case of unavailability of regular water supply from VMC, the operator has to depend on either ground water or bulk water supply which adds to the cost of maintenance.
Public Urinals	Overall cleanliness and maintenance is grossly inadequate The toilets are not gender sensitive.

Aspect	Issues
	Open and cause unhygienic and aesthetic problems.

Source: City Sanitation Plan, CEPT University, 2011

7.4 Solid waste management

7.4.1 Existing system

The solid waste management system in Varanasi is now being managed by VMC. Till recently, the waste management was being managed by A2Z Infrastructure Private Limited. The concessionaire was responsible for door-to-door collection, transportation, treatment and disposal of solid waste from all wards. However, due to non-payment of past dues by VMC, the concessionaire has abandoned the project and now the contract has been terminated. Now VMC is making use of its own resources to collect and transport the solid waste from other parts of the city to the dumping site in addition to street sweeping. The waste transported to the dumping site is not treated.

Table 61: Status of SWM

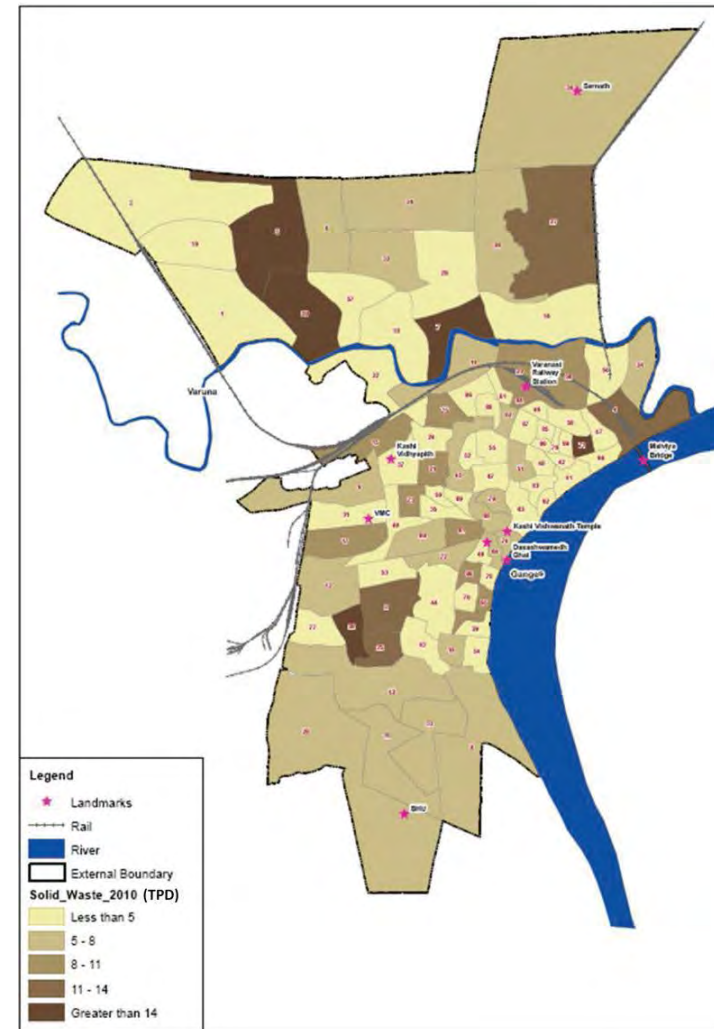
Sr. No.	Parameter	Present Status
1	Total household served with D2D collection	0%
2	Total waste generation	600 TPD
3	Total waste collected	480 TPD
4	Total number of dustbins	373
5	Total capacity of dustbins (cu.mt)	Data not available
6	Total number of vehicles	1000
7	Frequency of collection (trips/day)	2-3
8	No. of sweepers	2800

Source: VMC, 2013

7.4.1.1 Solid waste generation

Most of the waste generated comprises biodegradable, compostable, and recyclable materials. This is due to the high quantum of religious and vegetable waste the city generates along with a high amount of plastic waste. It is estimated that 600 TPD of waste is generated.

Figure 36: Solid Waste Generation



Source: City Sanitation Plan, CEPT University, 2011

7.4.1.2 Street sweeping

VMC employs 2,800 permanent and contractual employees for street sweeping. In the absence of door-to-door collection facility in all the wards and lack of practice of waste storage at source, majority of the waste is collected by street sweeping.

7.4.1.3 Solid waste collection and transportation system

Door to door collection facility has been withdrawn, due to termination of contract. Waste is collected from secondary collection points by VMC and transported directly to dumping grounds.

The vehicles listed in the Table 62, were procured under JNNURM and operated by the concessionaire and make 2-3 trips a day. Currently, most of the vehicles are not being operated as VMC employees do not have the skill to operate these vehicles. All these vehicles were procured under JNNURM in 2011.

Table 62: Vehicles

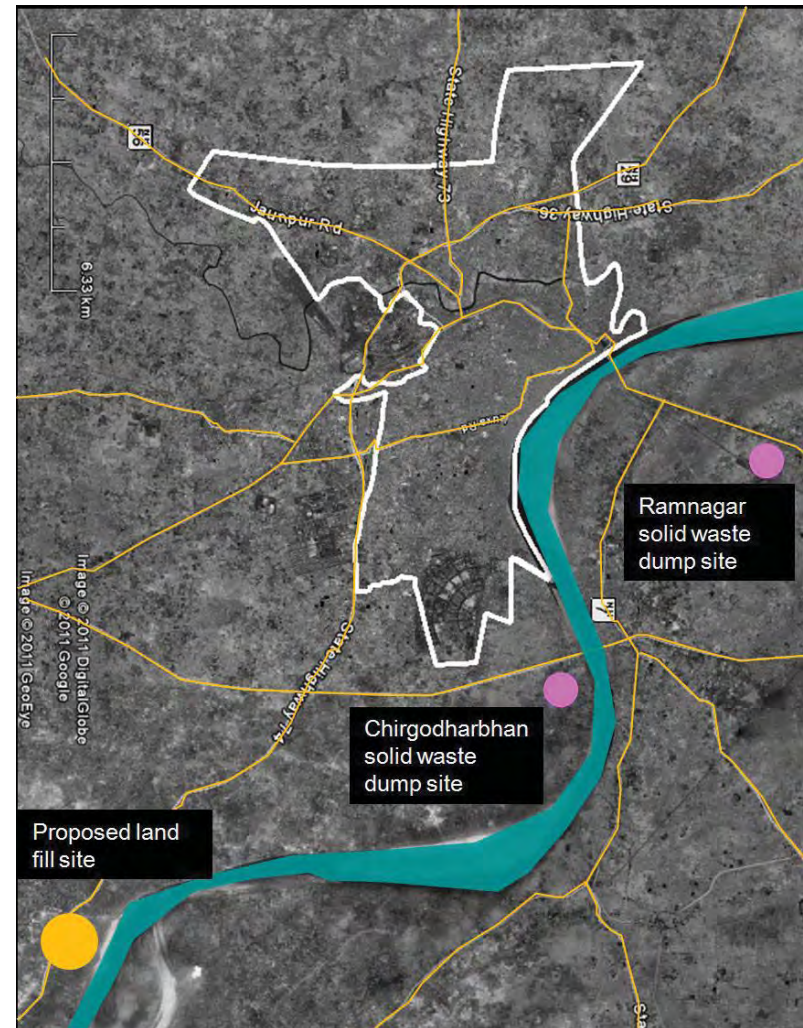
S. No	Particulars	Existing Number
1	Truck tippers	12
2	Compactor	35
3	Tricycles	800
4	JBC	3
5	Tata ace	150
Total number of equipment		1000

Source: VMC, 2013

7.4.1.4 Processing and disposal system

The treatment plant of 500 TPD is under construction. The treatment technology is RDF and windrow composting. The plant was expected to be fully operational by 31st January 2014. Construction of a treatment plant and landfill was planned under JNNURM. The cost of the project was Rs. 49 crores. However, no one of these is functioning at present. Waste is just openly dumped at the site. The equipment is lying without use.

Figure 37: Solid waste sites



Source – City Sanitation Plan, Varanasi

7.4.1.5 Landfill/dumping site

The disposal site is located 20 Km away from the city in Karsada on a 40 acre site. Currently, the site is not operational as it is still being developed. It is expected

Table 63: Disposal of treated waste

Location	Area (sq. m)/ Capacity (tons)	Distance from city km
Karsada	40 acres	20

Source: VMC, 2013

7.4.1.6 User charges

Though the user charge schedule has been approved by the VMC, the same are not being collected. Now that the concessionaire has initiated the work, it is expected that on increasing door-to-door coverage, the collection of user charges will be initiated.

Table 64: User charges – SWM

User fee	Domestic			Commercial	Others
	Residents	Small houses	Kachcha houses		
Rs. Per month	30	20	10	NA	NA

Source: VMC, 2013

7.4.1.7 Service level benchmarking

The service level benchmarks show that door-to-door collection is absent. Waste is collected from secondary collection points and dumped unscientifically without treatment.

Table 65: Service level benchmarks - SWM

Sr. No.	Indicators	Output	MOUD Benchmarks
1	Household level coverage of SWM services	0%	100%
2	Efficiency of collection of municipal solid waste (Waste collected – 480 TPD; Generated – 600 TPD)	80%	100%
3	Extent of segregation of municipal solid waste	0%	100%
4	Extent of municipal solid waste recovered	0%	80%
5	Extent of scientific disposal of municipal solid waste	0%	100%
6	Extent of cost recovery in SWM services	0%	100%
7	Efficiency in redressal of customer complaints	81%	80%
8	Efficiency in collection of SWM related user related charges	0%	90%

7.4.2 Future waste generation

The solid waste generation in 2041 is expected to be 1206 TPD. This has been calculated for the projected population, with waste per capita increasing from 400 grams in 2013 to 420 grams in 2041.

Table 66: Solid Waste future demand

Year	2013 (Current)	2021	2031	2041
Waste generation (TPD)	600	777	966	1206
Waste Generation per Capita	400	406	414	420

7.4.3 Critical analysis of SWM post 1st generation CDP scenario

The 1st generation CDP was prepared in year 2006. The box below provides an overview of the solid waste management at the time of preparation of the 1st generation CDP.

Key features of solid waste management system:

Generation	<ul style="list-style-type: none"> Total waste generated in Varanasi is 600 TPD Road sweeping waste and commercial waste comprises the maximum percentage of solid waste generated
Segregation and collection	<ul style="list-style-type: none"> Of the total waste generated, 450 TPD of waste is collected Segregation of waste was absent Door to door waste collection is absent
Treatment plant	<ul style="list-style-type: none"> Waste is collected from secondary collected and transported to dumping site by dumper trucks The disposal site was located along Ramnagar road near Mugal Sarai
User charges	Not available

Accordingly, to improve the solid waste management system, the CDP envisaged an investment Rs. 43 crores covering following aspects: bins, containers, vehicles, treatment plant and landfill.

The 1st generation CDP was approved by GOI and in case of solid waste management VMC had undertaken a project for Solid Waste Management in Varanasi for Rs 48 Cr. The construction of the project is 80% complete. The project facilities were handed over to the concessionaire on a management contract. However, the concessionaire has abandoned the project due to non-payment of tipping fee by VMC.

7.4.4 Institutional framework for SWM

Solid waste management is perhaps only sanitation service in the city which is being solely owned operated and maintained by VMC. It has been deputed under the health and sanitation head of the corporation, handled by the sanitary inspector, sanitary supervisor and the Safai Karamcharis. However, not all the sanctioned posts are occupied currently, out of 3200 sanctioned sanitary workers only 2800 are employed. In the category of the sanitary supervisors there are a total of 140 sanctioned posts. The number of vacant posts is 55. VMC does not have a specific department dedicated for environmental management; and the function has traditionally been performed by various departments in an ad-hoc manner. Environment management has a very important role to play in solid waste management in a city. The absence of this aspect of understanding has negative

bearing not only on the natural resources of the city but also on public health. Also the management of the solid waste in a scientific and technical manner becomes difficult as the Municipal Health officer including zonal health are from medical background than the rest of the staff members therefore it takes time for proper synchronization to happen.

7.4.5 Key issues

- All the service-level indicators are poor which indicates that the service delivery is not as per the benchmark.
- Many vehicles are unused as the condition of the vehicles handed over by concessionaire is not in good condition.
- Waste is not scientifically treated and dumped into dumping sites as it is
- VMC is not collecting user charges in spite of an order passed in this regard.
- An unaccounted amount of garbage consisting of flowers, pooja items and idol is being immersed into the rivers, which is a pressing issue. Also, human ashes that are brought to the ghats do not have any determined disposal methods.

7.5 Storm water drains

7.5.1 Existing system

Varanasi has a poor storm water drainage system. Storm water is drained off through a very old and incomplete underground and kachcha open drainage system. The underground drainage network is only 117 km long. Most of the drains have been connected to branch sewers, which leads to the mixing of sewage with storm water. This increases the load on the sewage pumps and the STPs, especially during the monsoons. Apart from this, some storm water drains also empty directly into river Ganga and river Varuna.

The open drains are unlined and contaminate the ground water owing to the porous nature of alluvium. These drains carry the grey water discharged from the settlements along their path and is also used as dumps for solid waste.

Most of the old drains are named after the Ghats where they discharge like Ghora Ghat drain, Trilochan Ghat drain, Mansarovar Ghat drain, Harischandra Ghat drain, Shivala Ghat drain, Brahma Ghat drain, Jawala Sen Ghat drain, Mani Karnika Ghat drain, Rajghat drain, Ganesh Ghat drain, Naradghat drain, Telia Nala drain. These drains are known as Nawabi drains. Apart from this Assi Nallah and Nakhi drain are two major drain discharge into river Ganga.

The Assi nallah acts as a major outlet for the city's storm and wastewater. The drains and nallahs of the city are prone to choking owing to the unregulated solid waste dumping by the citizens. This leads to stagnant puddles of water, which lead to health hazards, unhygienic conditions and act as breeding grounds for mosquitoes. The existing drain network cannot be used for water harvesting owing to the heavy siltation, quantum of grey water and solid waste in the drains.

The drains discharging in river Varuna are in the Table 67–

Table 67: Name of drains

Sr. No.	Name of drain	Type
1	Phulwaria Nallah	Open channel
2	Sadar bazaar Nallah	Open channel
3	Drain of hotels	Open channel
4	Raja Bazar Nallah	Open channel
5	Teliabagh Nallah	Open channel
6	Nallah near Nakighat	Open channel
7	Konia bypass	Open channel
8	Central Jail Nallah	-
9	Orderly Bazar Nallah	-
10	Chamrautia Nallah	-
11	Nallah of Kajuri Colony	-
12	Banaras Nallah No. 5	-
13	Hukulganj Nallah	-
14	Nallah of Nai Basti	-
15	Narokhar Nallah	-

Source – Storm water DPR, Varanasi

A detailed list of existing storm water drainage for the Varanasi has been attached in the annexure.

7.5.1.1 Water logging

Water logging in the monsoons is one of the major issues in the city. The areas prone to frequent water logging are the Chaukaghat Water Tank, Gurabagh, the Jal Kal area, Vikas Pradhikaran Colony, Shivpur, the Nakkighat area, Mahmoorganj, Ravindrapuri colony, Central Jail Compound area, Dingia Mohall area, Shivpurwa, Nawab Ganj, Bada Lalpur area, GT Road area, Nirala Nagar, Karaudi area, Chuppepur colony, Slaughter House area, Jaiprakash Nagar, Bazerdiha area, Khushall Nagar, Kamalagarha, Manduadih area, Brijenclave colony area, Paigamberpur, Salarpur, etc.

To solve the problem of water logging, pumps are installed to pull water from streets on a temporary basis. The list of pumping stations is as below –

- Deo Pokhari
- Jakha
- Moti Jheel
- Parch Perwa
- Sigra
- Manduadih
- Sivdaspur

7.5.2 Operations and maintenance of storm water drains

There is virtually no operation and maintenance of storm water drains in the city. Most of them are directly connected to sewers and discharge in River Varuna. **Whenever there is large scale flooding, the clogged drains are taken up for basic maintenance by the VMC.** Also, the drains are dumps for solid waste.

7.5.3 Critical analysis of drainage system post 1st generation CDP

Key features of storm water drainage system:

- Drainage network**
- Varanasi lacks a proper storm water drainage system
 - Most part of the city has open drains, which carry sewerage and storm water load
 - Most of the open drains are unlined and contaminate the ground water owing to the porous nature of alluvium

Accordingly, to improve the storm water drains in Varanasi, the CDP envisaged an investment Rs. 305 crores covering following aspects: network, equipment and capacity building of officials.

The 1st generation CDP was approved by GOI and in case of SWD, the VMC had undertaken a project for Rs 191 Cr. The construction of the project is in progress. Since, the project is still under implementation there has not been any change in the storm water drainage network in the city.

7.5.4 Service level benchmarks

Only 16% of the roads are covered by drains. Most of these drains are open unlined drains.

Table 68: Service level benchmarks – storm water drains

Sr. No.	Indicators	Output	Remarks	MOUD Benchmark
1.	Coverage of storm water drainage network	10%	117 km of storm water drains; road length – 1180 km	100%
2.	Aggregate number of incidents of water-logging reported in a year	Data not available		Zero
3.	Proportion of roads with pucca drains	16%	189 km of storm water drains; road length – 1180 km	-

7.5.5 Key issues

The key issues related to storm water drains include:

- The existing drainage network is grossly inadequate.
- Frequent clogging of drains due to dumping of solid waste in the drains reduces its rainwater carrying capacity.

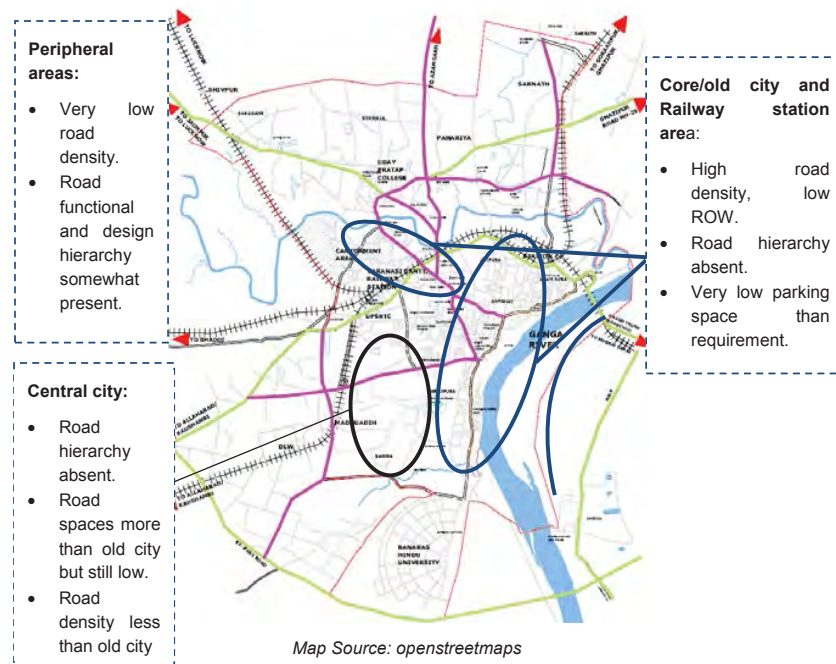
- Urbanization has reduced the natural drainage capacity of the various water bodies in the city.
- As the drains are connected to branch sewer lines, it puts strain on the STPs during the monsoon season

8. Traffic and transportation

8.1 Existing road infrastructure

The road structure of a city is an important part of its character. Roads are life lines of a city. While roads are just one parameter to understand a city's transport network and services, other parameters include the public transport system, the transport infrastructure (road quality, depots, etc.) and others. The city of Varanasi has grown outwards towards the west using the crescent shape of the River Ganga. This growth was facilitated by the growing transport network in this direction. As we move outwards it is observed that road spaces and their hierarchy with respect to road design and function starts to emerge. Though in case of old Varanasi, the road hierarchy and spaces are not as required. The map in Figure 38 shows how the character of the city can be defined with respect to its road network.

Figure 38: City character according to road structure



8.1.1 Road hierarchy

The total length of the roads within the VMC area is 1180 km, which constitute the roads maintained by NHAI i.e. Bye-Pass and the CPWD i.e. National Highways No.2, 29 and 56, roads maintained by the state PWD department and other roads maintained by the VMC. Out of total length of the roads, the VMC maintains approximately 70% roads, which are internal arterial roads & narrow streets in the old town. The VDA has proposed to undertake several road widening projects in draft Master Plan, 2031. Two ring roads are proposed:

- a. Inner Ring Road – The project is being implemented by PWD. The ring road alignment is Raj Ghat-Ramnagar-BHU-DLW-Cant Station-Raj Ghat. The bridge on river Ganga is being constructed. This project was expected to get complete by December 2014.
- b. Outer Ring Road – The project is being implemented by NHAI. The existing road is 2 lanes. Land is being acquired by NHAI for widening it to 4 lanes. The road will start from Kachua on NH2 and intersect Lucknow, Azamgarh and Ghazipur highways. Thereafter it will merge into the bye pass road. The road has been widened till Lucknow highway; the work on the remaining stretch is underway.

Table 69: Status of road network

Indicator	Value (KM)
Total length of city roads in VMC area	1180
WBM	362
Paved tar roads	724
Unpaved roads	94
Road area per capita	1 m

Source: Engineering Department, VMC, Varanasi

8.1.2 Important junctions

Traffic intersections and rotaries play an important role in better traffic management. Varanasi has no signalized intersections except four, namely MariMai Ka Temple, Kabir Chaura, Rath Yatra, and Maldahiya area. The remaining intersections are manually operated by the traffic police. There is no proper traffic management plan put in place for better traffic management, which is one of the major reasons for congestion in the city. The city lacks street furniture on almost all the roads of the city.



The junctions, having the highest traffic volume are identified as Kutchehri, Mint House, Varanasi Municipal Corporation main office, Mahmoorganj, Golghar Chowk, Chowka Ghat, Gadaulia, Ramapura, Kabir Chaura, Lanka, Maldahiya, Sigra, Golgadda and Rathyatra. These intersections are problem areas in terms of design and/or

management and are unsuitable to meet the rapidly changing requirements of vehicle traffic. Most of the intersections are full of encroachments and lack of traffic sense amongst the people, making it difficult to manage the traffic movement especially during peak hours.



In addition to congestion at junctions, congestions due to encroachment are also very common. For instance, motor workshops are occupying half of the width of roads in the areas like Nadesar.

Most junctions lack proper traffic management system. The traffic lights at most of the important junctions are missing and even if they are present they don't function. This leads the traffic to be managed manually by the traffic police. The fair way to deal with the traffic would involve proper signalized junctions with proper synchronization. City should also take measures to create proper designed junctions which include proper defined geometry of the junctions, street furniture, proper markings, proper space for pedestrians etc.

Table 70: Junctions in the city managed by the traffic police in peak hours

Project	Details
Junctions	Road crossing manned by traffic police (8 hours in 2 shifts). The number of policemen manning the crossing is mentioned. Other crossings are manned by 1 personnel. <ol style="list-style-type: none"> Bhojubir Crossing Galghar Crossing Andhra Pull Crossing - 6 Maldhaiya Crossing Chaukaghat Crossing - 8 BHU Gate Crossing Dharmshala Crossing - 5 Sigra Crossing Rathyatra Crossing Vijaya T-Point Benia Park T-Point Kali Mata Mandir Gadaulia Crossing Ramapura Crossing Madaigin Crossing Ram Das Gate Ardoli Bazaar

Source: CRIS

Junctions are critical points in the road network and the traffic streams will have to cross each other and change the directions of their travel. In the process of changing directions and crossing the paths, traffic experiences delay and conflicts resulting in accidents. The statistics reveal that 25 per cent of the road accidents are found to occur at the intersections and the delays at intersections account for 15 to 25 per cent of the travel time. These delays and traffic accidents can be reduced by properly designing the junctions in terms of geometrics and by application of regulatory and control measures. The following are the basic principles of intersection design.

- The design must be simple and easy to follow by the road users. This is to say that the traffic flows must be streamlined and the paths to be followed must be clear and simple.
- Conflicts must be separated either in space or by time of in both. This is to say the paths of travel need to be separated by providing appropriate channelizing or by installing traffic signals to allocate right of way separated in time.
- Reduce related speeds of traffic stream. This is to say that the speed of all the vehicles passing through the intersection should be uniform.
- Minimise skew angle and efforts must be made to make the traffic to meet the angle. This will enable to regulate the speeds to be reasonably at a level where the vehicles minimum damage will be caused and controlling in easy.
- Favour the Predominant or major flows. The predominant flows must be given priority and made to move easily when compared with minor flows.
- Coordinate the design and traffic controls. The geometrics design standards should conform to the type controls and regulatory measures adopted.
- Design must be consistent with local/ neighbourhood objectives. The proposed design must be conforming to the local operating conditions like speed, composition and volume of traffic.
- Provide adequate sight distances to ensure safety in operation. The approaching vehicles must have adequate right distance to safely bring the vehicles to stop in case of need.
- Geometric design / proposal confined to available space without going in for land acquisition
- Adequately addressing the pedestrian safety for road crossing.

For better assessment CRIS surveyed the important junctions in the Varanasi to check their status. Parameters like Traffic light presence, Zebra crossing presence, Sufficient turning radius and pedestrian facilities were analysed.

Table 71: Status of the Surveyed Junction

Sr. No.	Name of Junction	Traffic Signal Present	Traffic Signal Working	Zebra Crossing Available	Sufficient Turning Radius	Pedestrian Walkways	Remarks
1	Lanka Crossing (BHU)	N	N	Y	Y	Y	Parking and Encroachment at junction
2	Bhelupur Crossing	N	N	N	Y	N	Parking of Vehicles at junction.
3	Bhelupur Power House Crossing	N	N	N	Y	N	Light Encroachment at junction
4	Kamaccha Crossing	N	N	N	Y	N	Encroachment (Temple at the Junction)

Sr. No.	Name of Junction	Traffic Signal Present	Traffic Signal Working	Zebra Crossing Available	Sufficient Turning Radius	Pedestrian Walkways	Remarks
5	Gurubagh Crossing	N	N	N	N	N	--
6	Rathaytra Crossing	Y	N	Y	Y	N	Services like transformer/electric poles at Junction
7	Sigra Crossing	N	N	N	Y	N	Encroachment at junction
8	Sajan Crossing	N	N	N	Y	N	Encroachment and Services Aligned at junction
9	Englighiya line	N	N	N	Y	N	Parking along the junctions
10	Cannt Crossing	Y	N	Y	Y	N	Flyover ends just before the junction, further heavy pedestrian activity due to presence of railway station and bus stand
11	Andhra Pull Crossing	N	N	Y	Y	N	Bottleneck under ROB just after the junction
12	Chaukaghat Crossing	Y	N	N	Y	N	Multi-directional traffic flow
13	Adampur Crossing	N	N	N	Y	N	Autorikshaw and Rickshaw Parking at junction
14	Pilli Kothi Crossing	N	N	N	Y	N	Parking and Encroachment at junction
15	Laurabir Crossing	N	N	Y	Y	N	Parking and Encroachment at junction
16	Madaigin Crossing	N	N	N	Y	N	Parking and Encroachment Issues
17	PiplaniKatra Crossing	N	N	N	Y	N	--
18	KalBhaira Crossing	N	N	N	N	N	Encroachment at junction
19	Visheshwarganj Mandir Crossing	N	N	N	Y	N	Parking, Encroachments at junction further Freight Traffic mixes with the normal vehicular movement
20	Gadaulia Crossing	N	N	N	Y	N	Parking and Encroachment Issues
21	Sonarpura Crossing	N	N	N	Y	N	Parking and Services (Transformer) at Junction
22	Assi T-Point Crossing	N	N	N	N	N	Encroachment and Very Narrow Approach Road towards the junction
23	Girijaghar Crossing	Y	N	Y	Y	N	Parking and Services at Junction

Sr. No.	Name of Junction	Traffic Signal Present	Traffic Signal Working	Zebra Crossing Available	Sufficient Turning Radius	Pedestrian Walkways	Remarks
24	Nai Sadak Crossing	N	N	N	N	N	Parking and Encroachment Issues with Mix Traffic and Narrow Road
25	Sigra Thana Crossing	N	N	N	N	N	Parking Issues
26	Kachari Crossing	Y	N	N	Y	N	Parking and Encroachment Issues
28	Police lines Crossing	Y	N	N	Y	N	Parking and Encroachment Issues (Autostand and Temples at the Junctions)
29	Hokulgarj Crossing	N	N	N	Y	N	Parking at junction
30	Pandeypur Crossing	Y	N	N	Y	N	Parking of Autorikshaw at Junction
31	Kali Mandir Crossing	N	N	N	Y	N	Parking at junction
32	Nadesar Crossing	N	N	N	Y	N	Parking at junction
33	Machodari Crossing	N	N	N	Y	N	Parking at junction
34	Ravidas Gate Crossing	N	N	N	Y	Y	Encroachment at junction

Source: CRIS

Following were the observations:

- None of the junctions have pedestrian walkways. Pedestrian faces a lot of difficulty while approaching a junction or while walking away from any junctions on the roads. Proper footpath will make the approach of the junctions more pedestrian friendly.
- Few junctions like Lanka Crossing, Rathaytra crossing, cantt crossing have zebra crossing but it is missing in other majority junctions. Zebra Crossing and proper road markings make the junction more organized and pedestrian feel safe while crossing the junctions.
- Junction like Maldhaiya Crossing and Lanka Crossing have good turning radius but due to lack of setbacks and proper street design the turns of other junctions are narrow and critical. A proper spaced junction reduces the conflict points on the streets while vehicles cross the road also the visibility while turning is also considerable.
- Encroachment and parking on roads as well as on the junctions makes turning of vehicles more complicated. Due space constraint which is created due to the presence of encroachment the movement of the vehicle as well as pedestrians is hampered. Hence Junctions must be free of encroachments and parking.
- Services like transformers and electric poles occupy important space of the junctions. These immovable services, not only creates distraction to the moving traffic but also shrinks the limited space which should be utilised by the vehicles and pedestrians for a conflict free movement. Hence these services should be planned away from the junctions.

- Very few junctions have traffic lights and junctions which have traffic signals, non of them are operational. Due to the lack of traffic lights, the junctions have to be managed manually. For a better traffic movement every junction should be signalized and the use of IT to synchronise the traffic lights, should be used for better management of the traffic movement on the junctions.

The approaching roads also impacts the way traffic movement on a junction is operationalized. Some important observations of the road inventory that were made during the Survey were:

- No Uniform geometry of the roads on which heavy traffic moves. There are many bottlenecks which hampers the movement of the traffic. While moving from Belupura Powerhouse crossing to Bhelupura Crossing, Girja Ghar to Ghaudhulia, Gurudwara to Durga Kund Crossing the road becomes suddenly narrow. Due to the reduced carrying capacity of the roads in the bottleneck the high volume of traffic which the road is carrying from the approaching roads gets stuck in them and hence speed delays or traffic jams are caused.
- At Lanka Crossing, Chauka Ghat Crossing the traffic from various directions merges. Hence junctions like these should be managed with a proper traffic management plan. Alternate routes could be desided for bypassing the merging traffic.
- From Gaudhulia to Maidagin crossing the road is very conusted. No setbacks are observed and the entry point of the Kashi Vishvinath Temple is through this road. During the major festivals the queue of the devotees spills on this road and due to the traffic movement there arise a threat of the conflict between the pedestrian and vehicular traffic. Hence a proper traffic management plan with preference to the pedestrians could be planned for the area.
- Near Birla hospital busses and trucks parked along the road side are observed. Parking of bigger vehicles along the road side reduces the usable road width. Hence as per the requirement, parking for bigger vehicles like tourist buses should be planned as per the demand. If the parking is away from the desired destination then a route of public transport should be designed connecting the parking and the destination of the tourists.

In designing the junctions the geometric elements are very important. The Carriageways, corner kerb radii, widths of refuse islands, channelisers, sight distances etc. are to be provided with adequate dimensions for operating the junctions efficiently and safely. These dimensions are governed by operating speeds, dimensions of vehicles (horizontal and vertical dimensions) and volume of traffic. Based on studies and practices in India and overseas, codes and guidelines have been developed. The following codes/ guidelines should be followed in determining the geometrics and traffic control devices as published by Indian Road Congress (IRC), New Delhi.

- IRC:93-1985 – Guidelines on Design and Installation of Road Traffic Signals.
- IRC:92-1985 – Guidelines on Design and Interchanges in Urban Areas.
- IRC:3-1983 – Road Design Vehicles.
- IRC:66-1976 – Recommended Practice for Sight Distances on Rural Highways.
- IRC:70-1977 – Guidelines on Regulation and Control of Mixed Traffic in Urban Areas.
- IRC:103-1988 – Guidelines for Pedestrian Facilities.
- IRC:86-1983 – Geometric Design Standards for Urban Roads in Plains.
- IRC:65-1976 – Recommended Practice for Traffic Rotaries.
- IRC:35-1997 – Code of Practice for Road Markings.
- IRC:67-2010 – Code of Practice for Road Signs.
- IRC:79-1991 – Recommended Practice for Road Delineators.

- IRC:98-1988 – Guidelines for Accommodation of Underground Utility Services along and Across Roads in Urban Areas.
- IRC: SP: 12-1973 – Tentative Recommendations on the Provision of Parking Spaces for Urban Areas.
- IRC: SP 43 -1994 – Guidelines on low cost traffic management techniques for Urban Areas.

8.1.3 Bridges, flyovers and interchanges

Currently, there are seven rivers over bridges and three railway over bridges in Varanasi. In addition, there are several flyovers in Varanasi.

Table 72: Flyovers in City

Project	Details
Flyovers/Bridges	<ol style="list-style-type: none"> Cant Station/Gramin Bus Depot to Chaukaghat crossing Police lines to Ashapur Pandepur flyover to Ghazipur DLW to Daduadih Bazaar <p>Under implementation</p> <ol style="list-style-type: none"> 2 lanes bridge connecting BHU with Ramnagar. Length of bridge is 923 m Inner ring road – strengthening of road between Lahartara and BHU – 8.7 Km Four lane flyover from existing flyover Gramin Bus depot to Lahartara. Length of flyover – 3 Km
Bridges on river Ganga	<ol style="list-style-type: none"> Old NH2 road (near Raj Ghat) – it is located downstream Varanasi Pantoon bridge (seasonal) – it is located upstream Varanasi Bye pass road (NH2) – it is located upstream Varanasi
Bridges on river Varuna	<ol style="list-style-type: none"> VarunaPul (1 way – 2 bridges) Lahartara NakkiGhat Jaitpura

8.1.4 Intermediate public transport

Though the city has a formal network of public transportation, but it is not efficient enough for the public to be completely dependent on it. Limited route and irregular service delivery leads the intermediate public transport i.e. autos (for longer distances) and cycle rickshaws (for small distances) act as the most prominent means of transport for general trips which are not dependent on the private vehicles. The number of cycle rickshaws as well as the autorickshaws has increased considerably in past few years. On certain routes the autorickshaws carry passengers on sharing basics. Battery operated vehicles are also operating in the city at certain routes. These battery operated vehicles carry 5-6 passengers on sharing basis, in a single trip. Though the cycle rickshaw is considered as the most sustainable means of transport but due to the limited road space and mix traffic movement in the available right of way its slow movement hampers the movement of the other motorized vehicles. This creates delays and lowers the average speed of the moving motorized vehicles. As per the National Urban Transport Policy (NUTP), Non Motorised Transport (NMT) should

be promoted, therefore city should explore ways in which the conflict of slow and fast moving traffic is minimized. The autorickshaws could be regularized and should have dedicated parking spaces (Autostands) so that when parked they don't block the right of way for the moving traffic. VMC along with cantonment board has authority to issue new licenses and renew the old ones.

8.1.4.1 Non-Motorised Transport

Non Motorised Transport in Varanasi city comprises of modes like bicycle, cycle-rickshaws, tricycle trolleys and pedestrians. NMT is a pollution free mode of transport. It is given a special consideration for promotion in the National Urban Transport Policy of India. In Indian cities their number is declining drastically due to reasons of safety as slow moving traffic is more vulnerable to accidents, theft of the transport, social issues as motorized transport is considered as one of the major resemblance for the prosper life. Further the urban road network of the cities has not allocated any designated space for the movement of the NMT they have to share the same road space with the fast moving motorized vehicles, encroachments on the road side further pushes them to move in the middle of the roads where intensity and volume of motorized traffic is maximum. This makes them vulnerable to traffic accidents and due to this the average speed of the traffic also decreases.

Given the particular case of Varanasi, where the old city and adjoining areas have a compact urban form and shorter travel distances walking, cycling could prove to be economical and sustainable form of transport. NMT like bicycles and cyclerickshaws have been a major mode of travel in these areas hence a policy to safeguard their interest should be formulated. Also providing them a separate space in the right of way on the available road network will also ensure their safety and the reduced conflict between motorized and non-motorised traffic will result in increase in the average speed of the overall traffic movement.

8.2 Existing traffic and transportation system

8.2.1 Traffic volumes

The Regional Transport Officer, Varanasi maintains the records of vehicular data for Varanasi district. Total number of vehicles in the district is 6.89 lakhs. Of this, 79% of the vehicles are two-wheelers and cars constitute only 7% of the total vehicles. Hence, two-wheeler is the predominant mode of private transport. Since 2004, there has been a growth of 81% in number of vehicles. Although the number of vehicles has increased, the road length in the city has remained the same. This has led to choking of the road network across the city. The situation is further aggravated by the mixing of fast and slow moving traffic.

Table 73: Number of vehicles in Varanasi district

Sr. No.	Type of vehicles	2010-11	2012-13	2011-12	2013-14*	% of total vehicles
1	Multi axle vehicles	1,866	2,131	2,783	3,169	0.5%
2	Trucks	6,939	7,166	7,307	7,362	1.1%
3	Light motor vehicles (Goods)	15,551	16,266	17,699	18,423	2.7%
4	Buses	3,823	4,068	4,483	4,721	0.7%
5	Taxis	4,631	5,191	5,877	6,306	0.9%

Sr. No.	Type of vehicles	2010-11	2012-13	2011-12	2013-14*	% of total vehicles
6	Light motor vehicles (Passenger)	11,408	11,411	12,566	12,570	1.8%
7	Two wheeler	449,586	484,198	524,727	547,409	79.4%
8	Cars	42,143	45,319	49,220	51,023	7.4%
9	Jeeps	9,725	10,522	12,034	12,845	1.9%
10	Omni buses	346	354	379	423	0.1%
11	Tractors	14,222	14,696	15,419	15,814	2.3%
12	Trailers	9,315	9,326	9,345	9,354	1.4%
	Total vehicles	569,555	610,648	661,839	689,419	

Source – Regional Transport Office, Varanasi

8.2.2 Characteristic of Traffic and Transportation

The Old City Area

The old town area includes very congested areas like Chauk, Kotwali, Adampur, etc., having very narrow streets and mixed land use. Narrow, irregular lanes leading to the Ghats are typical of this area. The width of these lanes varies from 1 to 2 meters and only pedestrian movement is possible however, people do ply two wheelers making it difficult for the pedestrians to walk. The presence of wholesale trade and Mandis in the old city adds to the congestion. Commercial encroachments considerably reduce the available RoW on all the roads leading to the Ghats. There is a high degree of conflict between pedestrians and vehicles in the old city area. The high density of the area coupled with encroachment, heavy movement of cycle rickshaw and pedestrians make it the most chaotic and congested area in Varanasi.

This similar type of character is seen in area around the railway station also, owing to its high traffic generating use, thus attracting various activities that contribute to congestion of the area.

Figure 39: Characteristic of traffic and transportation in old city area



Central City Area

The second zone comprises of the area beyond the old town area up to G.T. road in the north. In this zone road widths are more as compared to the old town area, but the roads are still congested. The roads leading to the inner city are wider but are fully encroached on both sides creating chaos for the movement. Roadside parking and street vendors add to traffic problems in the area reducing the road width available for movement. The two central bus stands on G.T. road: one of U.P. State Transport Corporation and another private (Ghazipur bus stand) add to the problems of the traffic and restrict smooth vehicular movement on the main road.

Figure 40: Characteristic of traffic and transportation in the central city area



Peripheral Newly Developed areas

This area comprises of the Nadesar, Police lines, Tajpura etc. that characteristically have reasonable road widths with few encroachments but no traffic signals. The major problems areas in the zone are Pandeypur chowk, Andhra Bridge and Chauka Ghat.

8.2.3 Existing transportation infrastructure

8.2.3.1 Public Transport

Under JNNURM, VMC procured 130 buses and ferrying close to 20,500 passengers per day. VMC handed over the buses to Uttar Pradesh State Road Transport Corporation. The buses are plying from Kashi Depot and Gramin Depot. Most of the routes are in the peripheral areas of Varanasi, as the buses cannot ply in more dense parts of the city. In 2013, the average revenue per Km. was Rs.

22 and average expenditure per Km. was Rs. 25. To cut down on losses, UPSRTC has reduced the frequency of plying of buses.

The system is planned to serve 44 routes but at present 2 routes are shut down hence 42 routes are plying. The fleet of buses consists of 57 full size buses and 70 small sized buses (Mini Buses). Mini buses have routes such that they serve the reachable inner city areas (intra-city), while big buses connects the inner areas (trip starts from the Varanasi Bus stand) with the periphery areas (inter-city) like Gajokhar, Trilochan, Seakhar etc.

There are four bus depots in Varanasi. All these depots are located on the old Grand Trunk Road. The depots include:

- Intercity buses ply from Cantonment depot
- Local buses ply from Gramin depot
- Private buses ply from Golgatta depot
- Intercity buses ply from Chandauli depot

Though the Public Transport is present in the city but still the major intra-city trips are catered by the intermediate public transport system and the public transport is not able to cater to the trip demands of the public. The reasons for the present inefficiency in the public transport system are:

- The Right of Way is limited which is shared by the slow and fast moving traffic. There are no segregated lanes. Due to limited space the buses have to be deployed on the limited available routes and mixed traffic further decreases the average speed of the moving vehicles and hence leading to the inefficiency in the public transport system.
- The Right of Way is not regular throughout the route of the running public transport. There are many bottlenecks throughout the routes due to which the delay in the operation of the public transport arises.
- The junctions at few places are not efficiently designed. The junctions don't have a proper turning radius and if there is, they are many times encroached. This limits the approach and extension of the public transport routes through certain areas.
- The buses though are running on defined routes but their frequency is not regular, their headway count varies depending upon the time of the day. A regularized frequency should be there specially in the peak hours when the demand for efficient public transport is very high.
- They system though has definite boarding and alighting stops but for the convenience of the public the buses sometimes halts in the midway, causing increased in number of stops and also causes obstruction to the traffic moving along with the buses.
- The last mile connectivity from the bus stops to the destination is very poor. It has to be made on foot, but if the distance is too long then the general public have to opt for the intermediate public transport running in the city. This factor also sometimes increases the dependency of the public on the intermediate public transport then on the public transport.

During interaction with the people in the old city it became evident that the old city had public transportation system, but as the economy of the area increased the commercial activities in the area started expanding and hence encroachment activities on the road also increased. Due to this the road width in the area decreased. To compete with the existing situation city can explore the option of small buses with capacity of 20-25 passengers. This will fetch the ridership in very less time and their small size will enable them to move in the old city more easily. There is even option of battery operated mini buses which the city can explore.

8.2.3.2 Transport Nagar

There is no transport nagar as of now. However, a truck terminal is planned on the outskirts of the city on Allahabad highway. Currently, on both sides of this area heavy vehicles are parked, but it is yet to be developed. Official notification earmarking this area as transport nagar has been issued, but possession of land is pending. Entry of trucks on all the entry points is restricted during the day. Truck movement into and out of the city is possible between 10 PM and 8 AM. Allahabad highway is the main entry point, where close to 150-200 trucks are parked during the day. On other entry points 25-30 trucks are parked.

8.2.4 Parking facilities

Parking facilities constitute an important part of traffic management plan and better traffic management system. In Varanasi city, parking is done in very haphazard manner and generally roadside parking is preferred. There are very few authorized parking spaces in the town and no formal parking spaces for cycle rickshaws and autos. The congested lanes of old city, which is the main market area, have not been provided with any formal parking. Hence, conflict between roadside parking, commercial encroachments and pedestrians for the space availability are rather evident.

Curb parking are provided in the business areas like Chowk, old city area etc. The vehicles are parked on the carriageway resulting in traffic jams and congestion. Due to roadside parking, traffic movement in most of these areas is very slow and causes congestion. Systematic parking spaces in the business area are needed, especially during peak hours. City lacks clear parking policy and standards. Framing of a parking policy with proper standards can solve major problems city is facing.

Various typer of vehicle occupy the precious road spaces. They could be categorized as:

Motorised Vehicle

Private vehicles

- Car owners
- Two wheelwer owners

Commercial Vehicles

- Light Motor Vehicle
- Medium Motorised Vehicles
- Heavy motorized Vehicles

Public Transport

- Inter City Buses (Private and Government owned)
- Intra City Buses (Government owned)

Intermediatepara Transit

- Autorkshaws
- Light Vans (Tata Magic)

Non- Motorised Vehicles

- Pedestrians
- Bicycles
- Cycle Rickshaws
- Freight carrying tricycle rickshaws
- Specillyabled tricycles

Others

- Tanga Gadi (Horse Drawn Carriage)
- Bail Gadi (Ox Drawn Carriage)

Some Parking Issues in the City:

In Core City Areas

- i. There is varied landuse pattern which is not supplemented by the relative parking spaces for the Private vehicles.
- ii. Conflict in movement of traffic arises due to the narrow carriage way and bylanes where freight movement is observed even during the peak hours.
- iii. Lack of access to public transport and list mile connectivity to it is an issue.
- iv. There are no nodal points for the intermediate para transit parking and operations.
- v. Community parking areas for four and two wheelers are lacking due to compact urban form and dearth of open land.
- vi. No formal parking spaces provided in old city area at tourist centric areas like Dashashwamedh ghat and Asi ghat. There is conflict for the big size vehicles like buses which have no parking space near tourist centric areas.
- vii. Lack of parking for non motorised vehicles and security of vehicles.

Central City Area

- i. Lack of formal onstreet parking and offstreet parking vehicles park as per the available space on the road.
- ii. In Varanasi enforcement bylaws with respect to parking is negligible.
 - a. No setbacks are adhered to.
 - b. In case of tall/highoccupancy buildings provision of underground/stilt parking is absent.
 - c. Sometimes buildings have setbacks nor underground parking and directly eating into the neighbouring onstreet parking spaces.
- iii. Onstreet and offstreet standards are absent.
- iv. Enforcement mechanism for parking is absent.
- v. Stray animals like cows and bulls exacerbate the traffic movement.
- vi. Public awareness with respect to parking and it rules are lacking.
- vii. Due to increase commercial activities, private vehicle movement and lack of repective parking space results in spillover of parking onto the streets.
- viii. Right of way and relatively low parking spaces have bee taken over by rampened encroachment.
- ix. Lack of cycle rickshaw and autorickshaw parking spaces.
- x. No space available infront of the Bus Stops for the buses to stop and boarding & alighting of the passengers.
- xi. Lack of parking for non motorised vehicles and security of vehicles.

Peripheral Areas

- i. In perphiral areas in both commercial and residential zones enforcement bylaws with respect to parking are negligible.
 - a. No setbacks are adhered to.
 - b. In case of tall/highoccupancy buildings provision of underground/stilt parking is absent.
 - c. Sometimes buildings have setbacks nor underground parking and directly eating into the neighbouring onstreet parking spaces.
- ii. Space for formal parking is not defined. Tourist vehicles parks as per the spaces available onstreet or offstreet.
- iii. Though the contract for parking is awarded for a designated space by the corporation but the parking charges are collected far beyond the specified parking area.
- iv. The parking charges are not regularized and vary from area to area in the city.
- v. Parking signage and onstreet marking forparking areas is absent.

- vi. Absence of monitoring and evaluation of the parking areas after the contract is awarded to the contractor.
- vii. Lines for responsibility of parking contractor are not defined, resulting in conflict in the public interest.

Figure 41: Roadside parking in the city



8.2.5 Policy guidelines on Parking as per National Urban Transport Policy (NUTP)

- High parking fee should be charged in order to make the use of public transport attractive.
- The parking fee should reflect the value of the land that is occupied.
- Public transport vehicles and non-motorised modes of transport should be given preference in the parking space allocation. This along with easier access of work places to and from such parking spaces can encourage the use of sustainable transport systems.
- Park and ride facilities for bicycle users with convenient interchange are a useful measure.
- Adopt graded scale of parking fee that recovers the economic cost of the land used in such parking with the objective of persuading people to use public transport to reach city centers.
- The policy suggests that multilevel parking complexes should be made a mandatory requirement in city centres that have several high-rise commercial complexes and these can come up through public-private partnerships. These would be encouraged to go in for electronic metering so that there is better realization of parking fees to make the investments viable and also a better recovery of the cost of using valuable urban space in the parking of personal motor vehicles.
- In residential areas also, the policy suggests changes in byelaws to free the public carriageway from parked vehicles impeding the smooth flow of traffic. It suggests making provisions in the appropriate legislation to prevent the use of right of way on road systems for parking purposes.

For New Delhi UTTIPEC has formulated Parking Management Policy which could be referred while framing policy for parking.

8.2.6 Safety and traffic management measures

Traffic management is an important area of concern. Since a large part of city comprises congested roads, multiple modes of transport, and very less parking spaces, management of traffic becomes an important issue. Also, there is considerable tourist traffic which is required to be managed. As per the data available, the maximum number of accidents reported was in Pandeypur and maximum number of deaths was in Daphi. The location-wise details of accidents is provided in the Table 74.

Table 74: Location-wise number of accidents

Sr. No.	Location of accident	Number of accidents	of	Number of deaths	Number injured	of
1	Pandeypur	33		20		12
2	Tarna	27		22		13
3	Lahartara	25		16		10
4	Nadesar	25		8		16
5	Daphi	24		23		14
6	Kachua road	23		16		6
7	Bheti	21		19		4
8	Chandpur	20		11		9
9	Mohansarai	16		11		4
10	Dubkiya	16		11		4
Total		230		157		92

Source – Traffic police, Varanasi

8.3 Street light

The street lighting in Varanasi is planned and maintained by the Lighting Department, VMC. The composition of streetlight includes provision of tube lights, bulbs, sodium vapor lamps, metal high lamps and high mast installations and is as shown in the table below. The average distance between two street light poles is 50 m. This is way more than the norm of 30 m. More streetlights need to be erected to bring down the average distance between two street light poles.

Table 75: Street lighting

Description	Street Lights
High Mast Lamps – 400W	2,808
Sodium Vapour Lamps – 70 W	265
100 W Bulbs	1260
150 W Sodium Bulb	4668
250 W Sodium Bulb	4261
Tube lights 40 W	10,057
Total	23,319
Total road length (km)	1,180

Source – Lighting Department, VMC

8.3.1 Key issues

- The number of streetlights per km of roads length is low i.e. 50 m compared to benchmark of 30 m.
- The condition of the existing streetlights is also not good. Many poles need to be replaced
- No energy efficiency street lighting options have been explored

8.4 Review of institutional arrangement and investments

The engineering department of the VMC is responsible for the road sector in Varanasi. Figure 42 gives the organizational structure of the engineering department. Apart from this, there is a separate Bridge corporation that looks after the construction and maintenance of the bridges. Figure shows the institutional structure of the Bridge Corporation.

Figure 42: Engineering Department of VMC

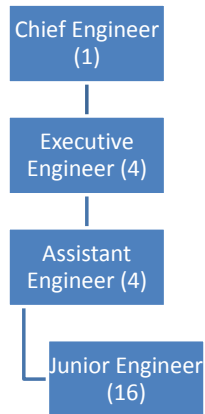


Figure 43: Bridge Department



8.5 Critical analysis of traffic and transportation system: 1st generation CDP scenario

Key features of roads and transportation:

Total length of the roads within the VMC area was 1170 km, which constitute roads maintained by NHA i.e. Bye-Pass and CPWD i.e. National Highways No.2, 29 and 56, roads maintained by state PWD department and other roads maintained by VMC. Out of total length of the roads, VMC maintains approximately 70% roads.

The total registered vehicles in Varanasi in the year 2001 were 3.3 lakh, which has increased to 3.88 lakh in the year 2004. The traffic survey conducted by traffic police at 13 intersections in 2002, which showed that slow moving vehicles constituted 40% to 80% of the total composition, of the vehicles.

In Varanasi city, parking is done in very haphazard manner and generally roadside parking is encouraged. There are no authorized parking spaces in the town and no formal parking spaces for cycle rickshaws and autos. The congested lanes of old city, which is the main market area, have not been provided with any formal parking. Hence, conflict between roadside parking, commercial encroachments and pedestrians for the space availability are rather evident.

Curb parking are provided in the business areas like Chowk, old city area etc. The vehicles are parked on the carriageway resulting in traffic jams and congestion. Traffic movement in most of these areas is very slow, due to roadside parking and causes congestion in the areas. Systematic parking spaces in the business area are needed, especially during peak hours.

The CDP was prepared in year 2006, the following table gives a snapshot of the transportation scenario of Varanasi during the preparation of the 1st CDP

Road	▪ Kuchha Roads – 104km (8%)
------	-----------------------------

network	<ul style="list-style-type: none"> ▪ Black Topped Road – 649 (55.4%) ▪ Other roads - 417 km (35.6%)
Modal split	At the 13 intersections studied in 2002. Slow moving vehicles (comprising by-cycles and cycle rickshaws) contributes maximum of the traffic volume (40% - 80%)
Parking	<ul style="list-style-type: none"> ▪ No authorized designated parking space in the city. ▪ Curb parking are provided in the business areas like Chowk, old city area. On the carriage way.
Registered vehicles	In the year 2002 approximately 82% of vehicles registered were two wheelers and 18% includes all others
Public transport	<ul style="list-style-type: none"> ▪ No proper city public transport system present ▪ City buses plying on GT Road cater to intercity transport. ▪ IPT is serving the local transport needs of the city
Bus terminal	<ul style="list-style-type: none"> ▪ Cantt bus terminal ▪ Ghazipur bus terminal (private)

8.6 Proposed Improvements in Road Sector

Table 76 gives the proposed improvements in road sector.

Table 76: Proposed Improvements in Road Sector

Sr. No.	Proposal
A	Flyover
A1	Maduadih railway station yard. Length of the flyover is 1 Km. The project is being planned again as there have been representations for increasing the length of the flyover
A2	Kajjapura Rail Over Bridge
A3	Replacement for old NH2 flyover (near NH2 flyover)
A4	Foot over bridge at Cant Station
B	New/Improvement of roads
B1	Sarnath, Pandeypur, Shivpur, Saraiya, Lahartara, Chittpur, Hokulganj, Jaiprakash Nagar, Chotalalpur, Indranagar, Tadai Chakbai etc. Estimated road length of these areas is 500 Km. New roads – 100 Km, improvement – 300 Km, Katcha to Pucca roads – 94 Km
C	Junction widening/improvement
	<ul style="list-style-type: none"> i. Lanka Crossing ii. Bhelupur Crossing iii. Bhelupur Power House Crossing iv. Kamaccha Crossing v. Gurubagh Crossing

Sr. No.	Proposal
vi.	Rathyatra Crossing
vii.	Sigra Crossing
viii.	Sajan Crossing
ix.	Englighiya line
x.	Cant Crossing
xi.	Andhra Pull Crossing
xii.	Chaukaghat Crossing
xiii.	Adampur Crossing
xiv.	Pilli Kothi Crossing
xv.	Laurabir Crossing
xvi.	Madaigin Crossing
xvii.	PiplaniKatra Crossing
xviii.	KalBhairo Crossing
xix.	Visheshwarganj Mandir Crossing
xx.	Badaulia Crossing
xxi.	Sonarpura Crossing
xxii.	Assi T-Point Crossing
xxiii.	Girjaghar Crossing
xxiv.	NaiSadak Crossing
xxv.	Sigra Thana Crossing
xxvi.	Kachari Crossing
xxvii.	Raj Shree Crossing (near L T College)
xxviii.	Police lines Crossing
xxix.	Hokulganj Crossing
xxx.	Pandeypur Crossing
xxxi.	Kali Mandir Crossing
xxxii.	Nadesar Crossing
xxxiii.	Machodari Crossing

The Draft master plan 2013 of Varanasi also suggests several projects. Table 77 below gives them in detail.

Table 77: Master Plan Proposals-Road Sector

Master plan proposals	Details
Proposed ring road	Start at NH2 Bhikripur to Varanasi-Janupur road, Varanasi-ghazipur road and will end at Village Jhansi. 58.7 km
Bus terminal	6 bus terminals have been proposed.
Truck terminal/transport nagar	Proposal of 5 truck terminal
Water transport terminal	5 hectare land has been allotted for this
Railway over bridge	Apart from existing 7 River over bridge and 3 railways over bridge, 3 river over bridge has been proposed. Other than this, there are proposals of 15 railway over bridge and 3 over bridge on Varuna River

Master plan proposals	Details	
Metro Rail	For the purpose of ensuring a rapid transportation system, four roads have been identified wherein metro rail or other rail has been proposed. These include	
	Cantonment to Lanka (Via Sagra – Rathyatra)	Underground metro rail w length
	Cantonment to Sarnath (Via Pandeypur)	Railway above – 9.5 km
	DLW to Mughal Sarai (Via Cantonment-Varanasi City Railway Station)	Railway Above-22.5 km
	Court to Babatpur (Via U. P. College)	Railway Above 18 km
Parking	Parking facilities proposed at: a) Sarnath b) Cantonment railway station c) Godaulieya d) Beniyabag e) DLW f) Court	

Source: Draft Master Plan, 2031

Apart from these the traffic police have suggested the need for educating the drivers about traffic rules, the need to strengthen the process of issuing driving license and educating rickshaw pullers on the risks faced by other vehicles. Also, they highlighted the need for parking facilities in Benia park, Maidagin, Mazda and Gadaulia and junction improvement in Rathyatra, Andhra pull and Chaukaghat power house.

8.7 Key issues

The key issues related to traffic and transportation sector include:

- Planning
 - ◆ The major planning perspective that the city is lacking is the Comprehensive Mobility Plan (CMP). A CMP will give the city a detailed glimpse of the traffic and transportation problem that the city is facing at the present moment. It will give the detailed analysis of the trip generation, trip demands and trip orientations in the Varanasi city. On the basis of its analysis the city will have a short term strategies in form of projects like road widening, flyovers junction improvement etc and long term strategies like how to cater to the trip demands, how to manage the number of increasing vehicles, how to reduce the carbon footprints of the transport sector in long run for the city.
 - ◆ Absence of footpaths; even on wide roads. Pedestrians have to walk on the roadside creating conflict with the vehicular movement
 - ◆ Projects are delayed due to land acquisition issues, ROW issues and coordination delays. The land acquisition for inner ring road took 6 years which delayed the project considerably.
 - ◆ The planning in old city is delayed due to lack of proper road maps. The existing maps are over 100 years old. Ownership of land is not known in many cases

- ◆ Flyovers have not been able to solve the traffic problems, as they are either too short (the Cantt Chaukaghat flyover) or their width is insufficient such that nothing can move under the flyovers (Pandeypur flyover).
- Road network
 - ◆ In Trans-Varuna area, there is gap in road infrastructure and they are not planned properly eg. Shivpur.
 - ◆ In the absence of ring roads, long distance vehicles have to pass through the city. This leads to traffic congestion on the Cantt -- Chaukaghat and Pandeypur road.
 - ◆ Arterial roads network is weak, the traffic is concentrated on few roads. The Arterial road network, needs to be strengthened..
 - ◆ The poor quality of roads and traffic congestion in many parts of the city causes inconvenience to local residents and tourists.
- Traffic congestion:
 - ◆ Increasing vehicular population and no strategy to manage it is leading to traffic congestion. This further leads to noise and air pollution..
- Public transport
 - ◆ There is Lack of efficient public transport facilities and the allied infrastructure in the main city. Most of the buses ply in the peripheral areas. In addition, the frequency of buses is erratic.
 - ◆ Existing bus routes are making losses.
- Parking
 - ◆ City lacks clear parking standards. Framing of a parking policy with standards can solve major issues the city is facing
 - ◆ Weak implementation of parking standards which are given in the building bylaws.
 - ◆ Unavailability of land in the old city for parking.
 - ◆ Parking charges are not regularized. Parking policy should be formulated and parking charges should be decided on rational grounds like time of parking, area of parking, type of vehicle parked etc.
 - ◆ Parking for Public Transport is not available on the streets. City should explore the same in the parking policy.
 - ◆ City should make provisions for the parking of heavy and light commercial vehicles plying in the city.
 - ◆ Commercial establishments attract a lot of motorized traffic. City should make provisions for the same and should ensure that prescribed norms for parking and mandatory setbacks are followed at the commercial places.
 - ◆ Parking provision should also be considered for the Non-Motorized and Freight Transport vehicles.

8.8 Development initiatives

In order to improve the situation in the city, several initiatives are being undertaken to widen the roads and removing encroachments to improve the flow of traffic. Some of the projects are listed below –

- Improvement in road from Cantonment bus depot to Rajghat via Andhrapul, and Chowkaghat Crossings

- To reduce congestion, service lane along Pandeypur flyover is being developed, and widening of Pandeypur road, Bhojubir Crossing and Lanka-Naria Road
- The Rathyatra-Mahmoorganj-Manduadih road is being widened to a four-lane road
- In addition, the Sajjan-Sigra Road and JP Mehta Inter College-Bhojubir Road are being widened
- The road between Chowkaghat and Rajghat would be also be widened by removing the encroachments by timber traders and motor garage operators.

Figure 44: Improvement initiative taken up by the city (Road Widening)



8.9 National Urban Transport Policy (NUTP)

In 2006 National Urban Transport Policy (NUTP) was formulated. It is in revision stage at present. The objective of the policy is to ensure safe, affordable, quick, comfortable, reliable and sustainable access for the growing number of city residents to jobs, education and recreation. The salient features of this policy include incorporating urban transportation as an important parameter at the urban planning stage, rather than being a consequential requirement. The focus of the policy is "to move people – not vehicle".

It emphasis on the following points:

- Equitable allocation of road space (public vs. private modes of transport).
- Priority to use of public transport (all million plus cities to plan for high capacity transport systems).
- Priority to non-motorized modes.
- Uses up available land a valuable and scarce urban resource (than in Parking).
- Enhance institutional and individual capacity of the ULBs.
- Promote the development of integrated land use and transport plans for the cities.
- Promote cleaner technologies
- Innovative financing mechanisms

As per the discussions with the ULB regarding the Issues city is facing, the city can look into the Parking Policy for Public Transport System. Few suggestions by them were:

- A bus station below shopping complex/mall/traffic Island.

- Buses interchange with minimum adjacent parking space for two buses in front or adjacent to large buildings.
- Multi story bus station in or near the railway station or any other interchange.
- A compulsory bus bay in front of a shopping mall, schools or colleges.
- A bus depot within the residential colonies or big townships.
- Bus station within a radius of 0.5 to 1 Km of residential/commercial/institutional areas and from there proper NMT infrastructure.

The policy should ensure that the provision or building of bus station or terminal (either underground or at surface) near all big development is made mandatory and additional FSI or TDR should be permitted in lieu of that by the city agencies as the case may be.

City should also look into the proper road design for the unrestricted and conflict free movement of the pedestrian and the non-motorised/motorised vehicles. Unified Traffic and Transportation Infrastructure (Planning & Engineering) Centre (UTTIPEC) have formulated street design guidelines which could be referred while designing the roads for the city.

Figure 45: Suggested Road Cross Section for 9M wide roads

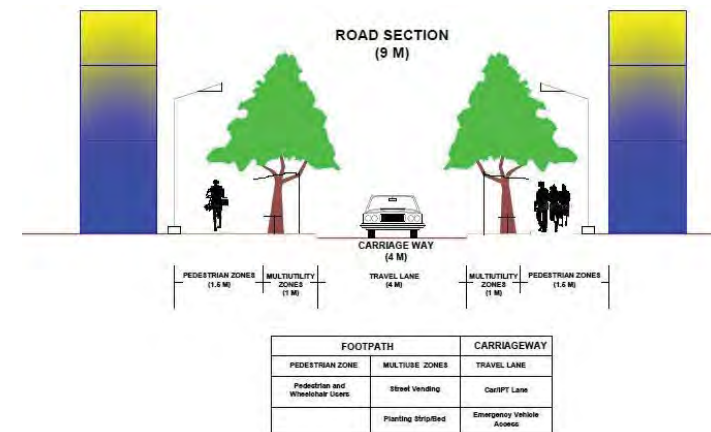


Figure 46: Suggested Road Cross Section for 18M wide roads

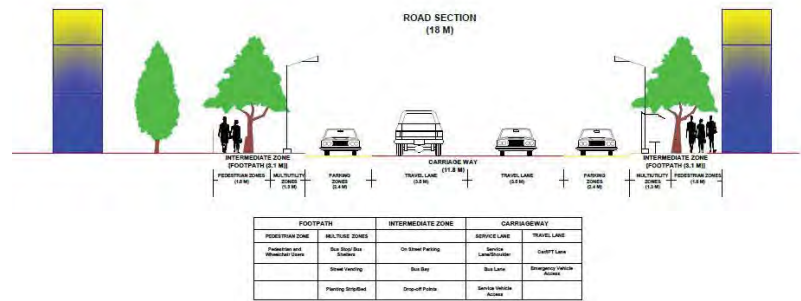
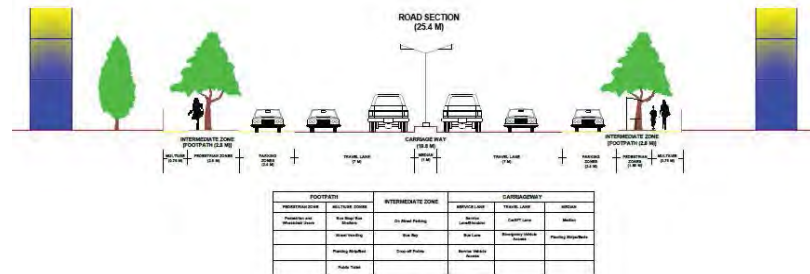


Figure 47: Suggested Road Cross Section for 24M wide roads



9. Housing and urban poverty

9.1 Overall housing scenario in Varanasi

Housing, one of the basic services, is to be provided for better quality of life, shall be given the importance in the city development plan. The increasing level of urbanization has created the stress on housing sector in Varanasi. As indicated by the last three decades population demographic data, it can be seen that there is a high increase of 20% population from 1981-1991 came down to 10% during 2001-2011, but the increase in housing cannot catch the pace of increasing population hence resulting in the housing gap.

The average housing density is approximately 2391 households per square km. The core area of the city is very congested, which is highly densified. Though there is no scope for further development in the old city area, developmental activities taking place in these areas are causing more stress on present infrastructure. As the city is growing, new extension areas has low housing densities, some of the people are shifting from old area to these areas in search of better living conditions.

As per the draft Master Plan-2031, a total area of 9886.54 hectare has been allocated for housing purposes. Of this, 60% of the area has been developed and the balance 40% will be inhabited over the period of time.

9.1.1 Present availability of housing stock

As per draft Master Plan, 2031 the available housing stock in 2001 was 1.62 lakhs in Varanasi planning area and the housing stock demand was estimated as 1.68 lakhs. For the availability of housing stock as of 2011, there is no documented source.

9.1.2 Housing densities

The average housing density is approximately 150 persons per hectare. The core area of the city has high density of population and is very congested. Though there is no scope for further development in the old city area, developmental activities taking place in these areas are causing more stress on the present infrastructure. As the city is growing, new extension areas have low housing densities, some of the people are shifting from old area to these areas in search of better living conditions. The Table 78 below shows the change in household densities for the last three decades.

Table 78: Housing density

Particulars	1991	2001	2011
Area	96.1	79.79	82.1
Number of households	143,453	172,975	190,835
Households per Sq. Km.	1492	2167	2202

Source- Census of India

9.1.3 Distribution of households by size

Due to shortage of housing, Varanasi city faces the problem of overcrowding. With the average household size of Varanasi being 6.2, the living condition is not conducive. There are 49% of the households, who live in one room or two rooms. Five and six dwelling rooms are found in only 6% and 11% of the households respectively. The Table 79 shows distribution of households by size and number of dwelling rooms.

Table 79: Distribution of households by size and number of dwelling rooms

Household size	Total number of households	No exclusive room	Households having number of dwelling rooms					
			One room	Two rooms	Three rooms	Four rooms	Five rooms	Six rooms and above
All Households	190,835	3,617	40,108	48,144	30,727	26,344	11,261	20,604
1	3,200	173	1,350	782	358	241	92	204
2	8,918	264	2,969	2,488	1,282	965	381	569
3	15,535	315	4,589	4,661	2,549	1,763	630	1,028
4	29,862	561	7,288	8,917	5,361	4,070	1,457	2,208
5	31,684	594	7,503	9,150	5,548	4,424	1,754	2,711
6-8	60,720	1,133	12,700	16,406	10,644	9,347	3,866	6,624
9+	30,886	577	3,709	5,740	4,985	5,534	3,081	7,260

Source-Census of India, 2011

9.1.4 Condition of housing stock

As per Census 2011, a 'Census House' is a building or part of a building used or recognized as a separate unit because of having a separate main entrance from the road or common courtyard or staircase etc. It may be occupied or vacant. It may be used for a residential or non-residential purpose or both. There are a total of 1,90,835 census houses as per the Census of India, 2011. From these 62% are in good conditions, 34% are in livable conditions and 3% are in dilapidated state and are not fit for living in. The condition of census houses is given in Table 80.

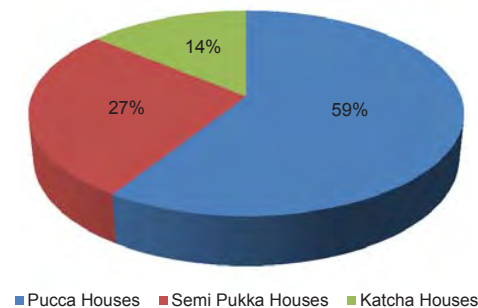
Table 80: Condition of census houses

Total	Good	Livable	Dilapidated
190,835	112,781	62,329	5,695
100%	62%	34%	3%

Source-Census of India, 2011

As per Slum Free City report, in slums, 59% of the dwelling units are pucca houses, 27% of the units are semi-pucca and 14% of the units are katcha. More than 70% of the units have connection to electricity; however 29% of the units do not have electricity connection.

Figure 48: Condition of houses in slums



Source: Slum Free City Report

9.1.5 Ownership status

Ownership status is one of the major components as it helps to determine the housing demand of the city in the future. It has been noted that 85% population owns the house, 13% people live in rental accommodation. Housing demand in the city is increasing at a higher pace but the supply is at very low pace. Table 81 shows distribution of HH by ownership and the number of dwelling rooms.

Table 81: Ownership status

Ownership	Total number of households	No exclusive room	Households having number of dwelling rooms					
			One room	Two rooms	Three rooms	Four rooms	Five rooms	Six rooms and above
Total households	190,835	3,617	40,108	48,144	30,727	26,344	11,261	20,604
Owned	153,985	2,833	29,059	39,203	27,408	24,836	10,758	19,888
Rented	23,160	603	9,399	7,999	2,830	1,293	439	597
Any other	3,660	181	1,650	942	489	215	64	119

Source-Census of India, 2011

9.1.6 Housing requirement

As per the Draft Master Plan, 2031, in 2001 housing stock availability was 1.62 lakhs against a demand of 1.68 lakhs. Hence, the housing stock shortage in 2001 was 6,000. In addition, houses which were in dilapidated condition and are not in livable condition; hence they need to be reconstructed. This leads to a total housing shortage of 14,441 as of today.

The population is expected to increase from 11.98 lakhs in 2011 to 19.44 lakhs in 2041. For a household of 5 persons¹⁷, there will be a requirement of 1.49 lakh housing stock. So on including the existing shortage, the total requirement of housing stock till 2041 will be 1.63 lakh.

9.1.7 Housing in inner city, urban villages and unauthorized colonies

Housing in inner city is largely made up of very old and unorganized houses. Several of them do not have any development permissions and their coming up has made the spaces within the old city more and more cramped. Such buildings are vulnerable in the event of a disaster. In outskirts of the city, there are several unauthorized colonies. These need to be regularized and provided services for.

9.1.8 Overview of growing housing sector

In order to reduce the density of the high density areas of the city, the VDA in its Draft Master Plan, 2031 has proposed new residential, commercial, roads and transportation, and recreational areas outside the existing city. Also, development in these areas till 12.50 m height and 1.5 FSI has been proposed. In light of this, the area under residential land use has been increased to 9886.5 hectare, out of this 6128.0 hectare of land has been developed under residential land use.

9.2 Urban poverty and slums

With increase in population of the city, housing needs grew, which could not be met by formal housing market. Migrant population, which could not avail the facilities of formal housing market, satisfied their needs by occupying vacant lands and resulted in formation of slums and more number of squatter settlements. Slums are spread all over the city but major concentrations can be found in the old city area near the ghats, near small scale industries especially handloom. The main factor attributing to this concentration is proximity to work place, religious and tourist traffic. The existing tourism base of the city creates opportunities for employment generation, especially for unskilled labor. With the overcrowding of slums, there is a general deterioration of the living environment and tremendous pressure on the city infrastructure and resources. The sections below discuss the condition of slums in detail.

9.2.1 Number of slums

As of 2014, there are a total of 210 slums¹⁸ in Varanasi. There are a total of 4,07,036 people living in 78,253 households in these slums¹⁹, which comprise 30% of the city population. A list of slums has been enclosed in the annexure to this report.

9.2.2 Spatial distribution of slums

Out of the 210 slums, 156 slums are found in core area such as central business districts, around temples and small scale industries, and remaining 54 are located in the urban fringe areas near agricultural lands. With respect to the physical location of the slums, around 14% are located along major transport alignments such as National Highways, 12% along the river and on river bed, 11%

¹⁷ Household size of 5 has been assumed for calculating housing shortfall in the Draft Master Plan, 2031

¹⁸ Source – Slum Free City Report and official notification of SLBs

¹⁹ Source - Slum Free City Report

along open and storm water drains, 8% along railway lines and remaining on other areas. The ward wise location of the slums has been provided in annexure to the report.

9.2.3 Average slum size

With a total slum population of 4.07 lakhs in 210 slums, the average population per slum is 1938 persons. The population per slum varies between 167 and 6875 persons. The average household size is 5.2. It is much lower than the city average.

9.2.4 Available infrastructure in slums

Water supply

Most of the slum households either have direct access to services or access through community or common facilities. Of the total slums, 26% are fully connected to the city wide water supply system, 56% are partially covered and remaining 18% do not have connectivity to city wide water supply network. It can be observed from the table below, that only 46% of the households have access to direct piped water supply connections. A significant 54% of the households are dependent on open wells, hand pumps and water tankers.

Table 82: Water supply connections in slums

Connection type	Individual taps	Public taps	Borewells/tube well/pump	Open wells	Tanks/ponds	River/Canal/Lake	Others
Number of households	36,218	13,468	15872	3343	20	25	9290
% of total connections	46.29%	17.21%	20.29%	4.27%	0.03%	0.03%	11.87%

Source – Slum Free City Report, Varanasi

Sewerage

There are three different systems of sanitation in Varanasi .i.e. public, private and shared. Under each category there are different toilet facilities in use such as pit, septic tank/flush and service toilet system. Most of the households have access to sanitation facilities within premises .i.e. 65% and 11% slums have access to public and shared toilets. Open defecation is prevalent in the city. 24% of the households do not have access to sanitation, thus causing surface water pollution.

Table 83: Sanitation in slums

Type of sanitation	Public toilets			Shared toilets			Private toilets			Open defecation
	Septic tanks	Service laterine	Pit	Septic tanks	Service laterine	Pit	Septic tanks	Service laterine	Pit	
Number of household	2797	813	690	3375	184	594	41,435	4828	4730	18807
% of total connection	3.6	1.0	0.9	4.3	0.2	0.8	53.0	6.2	6.0	24.0

Source – Slum Free City Report, Varanasi

Even though 76% of the households have access to some form of toilet, it is believed the existing toilet system is considered to be of primitive stage with no proper maintenance and lacks general hygienic condition, further deteriorating the environment.

Storm water drains

In the draft Slum Free City report, 28% of the slums are partially connected to storm water drainage, 16% are fully linked but the remaining 56% of the slums are not linked to city storm water network.

Solid waste management

Waste collection procedures have been put in place, and waste is collected from secondary points at an interval of 2 days from most of the slums. However, the slums are found to be affected with insanitary conditions and require immediate attention. As per the Slum Free City Report, majority of the waste collection is being undertaken by private contractors.

Roads and streetlights

By and large, 55% of the slums are provided with pucca roads and 20% of slums with kucha roads, and 25% of the slums have non-motorable pucca and kucha roads, making transportation difficult. Most of the slums have access to the nearest motorable road within 0.5 Km. Slums with access to nearest motorable road is more than 2 km include:

- Manikarnika
- Maheshpur
- Paramandpur
- Navalpur
- Navapura

9.2.5 Land and tenureship of slums

The age of the slum is one of the most important information to understand the condition of a slum in any city. Considering the fact that Varanasi is one of the oldest inhabited cities in India, slums came into existence over 60 years ago. As per the draft Slum Free City report, 99% of the slums came in to existence more than 20 years ago with remaining 1% of the slums less than 20 years old.

9.2.6 Housing stock in slums

On the basis of tenure status, tenability, density, housing type, housing condition and age of the structure, housing deficiency has been calculated. In-situ development has been considered in slums which have more than 75% semi-pucca and katcha houses. Relocation has been considered for slums which are along nallas, on hazardous sites, flood prone, land ownership is with VMC, not as per master plan land use and in close proximity to high transmission lines such as 220 KV. Up gradation has been considered for slums with less than 75% semi-pucca and katcha houses. Based on these assumptions, the draft Slum Free City report has calculated the total housing deficiency has been calculated to be 37,337. The breakup is as below Table 84:

Table 84: Housing stock rehabilitation in slums

	Relocation	In-situ	Up gradation
Number of households	1,057	8,754	27,526

Source – Slum Free City Report

9.2.7 Government initiatives in slum improvement

Schemes that are being implemented are Sarv Jan Hitay Gareeb Avas (Slum Area), Malikana Haq Yojna Manywar (MKDBBSVY), and Shri Kanshi Ramji Shahri Avas Yojna. DUDA is responsible for the implementation of such schemes. After implementing these schemes, DUDA hands over the responsibility of providing services to VMC and Jal Kal.

Swarna Jayanthi Shahari Rozgar Yojana (SJSRY) is the major poverty eradication programmes implemented through Gol funding. DUDA ropes in agencies to train slum dwellers for employment in areas of high demand. DUDA has constructed pucca housing units for the urban poor. The present length of pucca roads is 72 km in the slum areas, and the average distance of HH/slum clusters from a pucca road is 10 m. Further, DUDA has also prepared DPR for slum infrastructure facilities such as pucca roads, storm water, and street lights for 28 slums. VMC reported that storm water drains are a part of the storm water drainage project to be implemented under JNNURM. There are in all 5,692 streetlights with an average distance of 20-25 m between two streetlights. VMC reported a further need for 7,500 streetlights. The program wise details of the projects are in the Table 85.

Table 85: Government initiatives in slum improvement

Institutions	Programme	Status
Central Government	Basic services to urban poor (BSUP)	<ul style="list-style-type: none"> ▪ 5695 flats were planned to be constructed, however only 4651 flats were constructed and the funds for the remaining 1044 flats have been surrendered. ▪ The construction of remaining flats could not be completed because of unavailability of land, disputed property, small plots and low lying area
	Rajiv Awas Yojana (RAY)	<ul style="list-style-type: none"> ▪ DUDA plans to take three projects under RAY for 822 flats ▪ The draft report is pending for approval at the state level
State Government	Kanshi Ram Shahari Garib Awasiya Yojana (KRSGAY)	<ul style="list-style-type: none"> ▪ Projects were planned in three phases, in the first two phases 1500 flats each were approved ▪ 2704 flats have been constructed and allotted with preference to destitute widows, disabled and people below poverty line in the same sequence ▪ The third phase was not launched due to shortage of land
VMC	NA	

9.2.8 Policy, regulatory and institutional framework

Multiple agencies are involved in providing housing and infrastructure services to the urban poor. DUDA is the nodal agency for providing housing to the urban poor. It is undertaking various schemes

of the Government of India and the state government. It also develops the infrastructure for services like water supply, sewerage, drains, roads, and streetlights in housing projects and hands these over to VMC and Jal Kal.

Jal Nigam is responsible for providing water supply, sewerage network, drains, etc., in slum areas, which on completion are handed over to Jal Kal. The VMC is responsible for providing roads and streetlights in slums. Jal Kal maintains the water supply and drains developed by DUDA and Jal Nigam.

At the state level, the Government of Uttar Pradesh has launched several schemes for providing basic services to the urban poor, which include security of tenure and improved housing at affordable prices.

20% (twenty percent) of the saleable land and plots are being reserved for the economically weaker section (EWS) and low-income group (LIG) categories, for housing projects developed by VDA. Further, GoUP has issued a government order stating that such provision of reservation should be followed by private developers also.

9.3 Key issues

- The service level in slums is poor eg. Water supply, sanitation, sewerage, solid waste management etc.
- In as many as 28 slum clusters, slum dwellers are living without water supply and sanitation. The services are made operational once the construction of the entire cluster is complete.
- On the dwelling units, which have been handed over, illegal construction has been observed.
- Huge investment required for housing projects as the circle rates are high.
- Collection of beneficiary contribution is also a problem.
- Many in-situ projects are stuck due to land disputes.
- Lack of coordination between DUDA and VMC in forming a comprehensive development policy for the urban poor.

10. Baseline Environment: Urban Environment and Disaster Management

10.1 Pollution level in Varanasi

10.1.1 Air pollution

The air pollution levels in the city are high and significant concentrations can be witnessed at major traffic intersections during peak hours. The major contributor to air pollution in the city is construction, excavation work and vehicular emissions. The Suspended Particulate Matter (SPM) levels in the residential areas of Varanasi are high. High SPM levels in the city can be attributed to vehicular emissions, unpaved roads, high dust content in the air due to lack of plantation and proximity to the river.

The slow traffic movement speed in the old city area leads to discharge of harmful fumes from the vehicles leading to concentrated pollution loads. The compact built fabric of the city and narrow lanes lead to limited air circulations, thereby, acting as a hindrance to the dispersal of pollution load. Frequent power cuts in the city have propagated the use of diesel gensets, especially in the old city area, which add to air and noise pollution levels. Industrial pollution levels in the city are insignificant.

Further the use of genset, use of old vehicles and small bakery within the city limits area also source of air pollution.

The UPPCB study also shows that diesel powered vehicles are the most polluting vehicles in the city. Thus, there is a need to check the number of diesel autos and four wheelers plying in Varanasi. The air quality levels tested in two locations are presented in the Table 86. Therefore CNG operated vehicles and EURO-IV norms should be implemented by the city to improve the ambient air quality of Varanasi.

Table 86: Air quality, UPPCB - 2012

Sr. No.	Area	PM 10	SO ₂	NO ₂
1	Jawaharnagar (Residential)	139.3	17.7	21.0
2	Sigra (Commercial)	139.4	18.0	21.6
	Ambient conditions	60	20	30

Source – Uttar Pradesh Pollution Control Board

10.1.2 Noise pollution

The noise pollution levels in the city are also perceivable higher even outside the core city area. The major factors contributing to this are the heavy traffic volume on the narrow roads leading to persistent honking and the high intensity of commercial activities on the roads. Some other sources which add to the noise pollution levels are generator sets, power looms and use of the pressure horns in the motorized vehicles.

Ministry of Environment and Forest have issued Noise pollution regulation and control rules 2000 (amended in 2010). The salient features of it are:

1. Noise Pollution (Regulation and Control) Rules, 2000 relates to regulation and control of noise producing and generating sources.
2. Ambient air quality in respect of noise has been laid down.
3. State Governments shall take measures for abatement of noise including noise emanating from vehicular movements and ensuring that existing noise levels do not exceed the ambient air quality standards.
4. Area not less than 100 metres around hospitals, educational institutions and courts to be declared as silence area for the purpose of these Rules.
5. Restriction has been imposed on the use of loudspeakers/public address system.
6. Penal provisions have been provided in consequences of any violation of these rules Rules.

The other legislations issued by the Government to check noise pollution include the following:

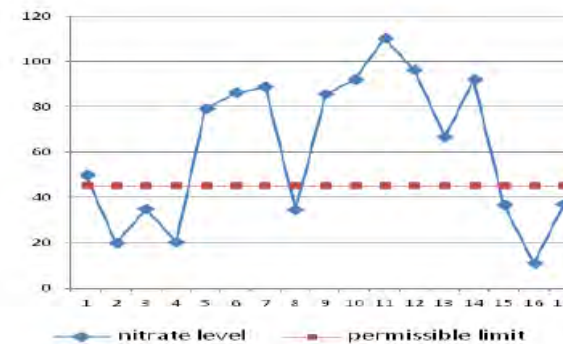
1. Ambient Air Quality standards in respect of noise for industrial, commercial, residential areas and silence zones have been notified vide GSR 1063(E) dated 26.12.1989.
2. Noise Limits for Automobiles at the manufacturing stage to be achieved by 1992 and domestic appliances and construction equipment at the manufacturing stage published under GSR 742(E) dated 30.8.1990. Noise standards for motor vehicles have been made more stringent vide notification GSR 742(E) dated 25.9.2000 (amendment).
3. Standards/Guidelines for Control of Noise Pollution from Stationary Diesel Generator (DG) Sets published under under GSR No. 7 dated 2.1.1999.
4. Noise Standards for fire-crackers published under GSR No. 682 (E) dated 5.10.1999.
5. Noise limits for generator sets run with petrol or kerosene published under GSR 742(E) dated 25.9.2000.

10.1.2.1 Water pollution

The River Ganga, though the lifeline of the city also has to face the brunt of city's pollution. Study undertaken by NRCDC (National River Conservation Directorate), under GAP (Ganga Action Plan), has revealed that a major contributor to the pollution load on Ganga is untreated sewage, which is discharged into the river from the open drains of the city.

As Varanasi does not have adequate sewerage system, a large quantity of untreated sewage is discharged directly into open drains connected to Varuna River. Waste water running in unlined open drains and faulty septic tank design causes ground water contamination in Varuna river basin. A study conducted in 2010, shows that there is high percentage of nitrate concentration. As per the discussion with the ULB it was conveyed that other heavy metals like Arsenic, Cadmium, Nickel and Lead has also entered into the river. A comprehensive study should be conducted on the same.

Figure 49: Nitrate concentration, Groundwater Quality in the Lower Varuna River Basin, 2010



Source: Study of Ground Water Quality in the lower Varuna River Basin, 2010.

As per data available with the Uttar Pradesh Pollution Control Board, the existing designated best use at Assi ghat (upstream) and Malviya Bridge (downstream) is D (fit for wildlife and fisheries) due to high levels of total Coliform and high DO levels. The table below shows the quality of water of river Ganga in Varanasi compared to standards. Religious activities like cremation, bathing, etc. are performed on the banks of the river contribute to the BOD and Coliform load on the river. The faecal Coliform load at the downstream end of the city has been recorded as 44,000/100 ml. Even the average BOD load in Varanasi exceeds the permissible bathing quality standards of 3 mg/l and is at times as high as 4.95 mg/l.

The Ghats of the river are exposed to the load of religious offerings and activities associated with the river, namely, offerings of flowers and diyas, bathing, washing, cremation, etc. These activities add to the waste content in the river, which requires regular cleaning.

Table 87: Norms for drinking water after disinfection (January-December, 2012)

Sr. No.	Source	Location/ collection point	Desired DO (mg/l)	Actual DO (mg/l)	Desired BOD (mg/l)	BOD (mg/l)	Desired Coliform (MPN/100 ml)	Total Coliform (MPN/100 ml)
1	River Ganga	Downstream	>=6	7.40	<=2	4.95	<=50	44,000
2	River Ganga	Upstream		7.88		3.20		9,167
3	River Varuna	Rameshwar Varanasi		7.53		3.45		14,175
4	River Varuna	Before getting into the Ganga river		5.10		14.77		1,12,583

DO-Dissolved oxygen; BOD - Biochemical oxygen demand

Source – Uttar Pradesh Pollution Control Board

As per the CPCB norms the Class of water for drinking purpose should be Class A, with DO greater than 6 and BOD less than 2mg/l

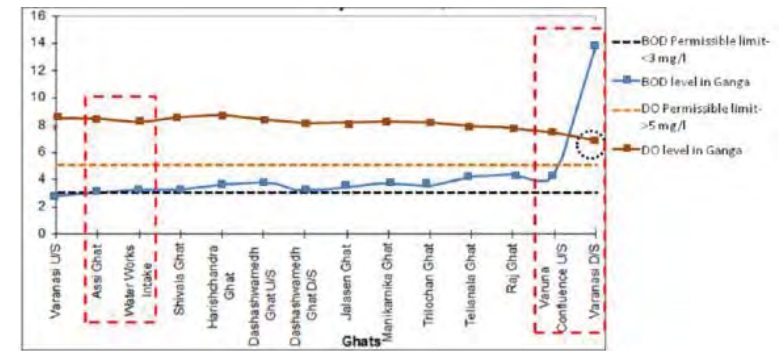
Table 88: Class of water as per the criteria and its designated best use as per CPCB

Designated Best Use	Class	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	1.Total Coliforms Organism MPN/100ml shall be 50 or less 2. Dissolved Oxygen 6mg/l or more 3. Biochemical Oxygen Demand 5 days 20 °C, 2mg/l or less
Outdoor bathing (Organised)	B	1.Total Coliforms Organism MPN/100ml shall be 500 or less 2. Dissolved Oxygen 5mg/l or more 3. Biochemical Oxygen Demand 5 days 20 °C, 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	1. Total Coliforms Organism MPN/100ml shall be 5000 or less 2. Dissolved Oxygen 4mg/l or more 3. Biochemical Oxygen Demand 5 days 20 °C, 3mg/l or less
Propagation of Wild life and Fisheries	D	1. Dissolved Oxygen 4mg/l or more 2. Free Ammonia (as N) 3. Biochemical Oxygen Demand 5 days 20 °C, 2mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	1. Electrical Conductivity at 25 °C micro mhos/cm, maximum 2250 2. Sodium absorption Ratio Max. 26 3. Boron Max. 2mg/l
	Below-E	Not meeting any of the A, B, C, D & E criteria

Source – CPCB

The impact on water quality can be summarized as below. The flow of Ganga from Assi Ghat to Varuna Confluence that is from Varanasi upstream to Varanasi Downstream can be clearly seen below. As Ganga enters Assi River, the BOD levels are no doubt high but when it leaves Varanasi they are at a much higher level but for the DO levels they are slightly highy at the upper stream than at the down stream. The spike in these levels shows how much Varanasi as a city is contributing to Ganga and its downfall in river water quality.

Figure 50: Water pollution levels



Source – Uttar Pradesh Pollution Control Board

There is a prominent reduction in DO level and a rise in BOD level due to Activities like sewage discharge, solid waste disposal, and open defecation. As can be judged from above the marked increase in water pollution can be seen as the river flows towards Raj Ghat, which is the last of the 84 ghats of Varanasi.

There has been a significant rise in water borne diseases in Varanasi. Many are related to the contaminated water supply issues, some are because of the ritual bathing in waters of Ganga by the residents and tourists. The number of cases, though have dwindled after the launch of GAP 1 and 2 however, the issues of contamination and disease are still present.

Apart from these there are various other sources of water pollution like the small scale printing and dyeing industry operating within the city limits, uses chemical based dyes and after using them they discharge the same into the sewage network. These hard chemicals need to be treated separately before being disposed into the normal sewage network. There are some electroplating units, silver refining units, pitumes which are operating to make the environment polluted. These should be banned to be operated within the city limits or should be given separate place for operation outside the city limit and effluents from these should be well treated in separate CETP before discharging into the water body.

10.2 Water bodies

10.2.1 List of water bodies in Varanasi

The list of major water bodies in Varanasi is given below-

- Pushkar Talab
- Kurukshehra Kund
- Durga Kund
- Sahotia Talab
- Kreem Kund
- Moti Jheel
- Bakara Kund
- Nadesar Tal
- Lahartara Talab
- Lahar Tara
- Surya Sarovar
- Sona Talab

- Sankuldhara Pokhra
- Ram Kund
- Lakshmi Kund
- Pitarkunda Talab
- Sonia Pokhara
- Chakra Tal
- Pishach Mochan Tal
- Ishwargangi Pokhra
- Ladhu Talab
- Sarang Kund
- Paharia Talab
- Daulatpur Pokhara
- Chancha Tal
- Gauri Kund
- Mansarovar Kund
- Pitri Kund
- Lotus Lake, BHU

10.2.2 Existing condition of water bodies/kunds

Today only about 88 kunds remain out of more than 100 kunds built across the city. This is due to neglect, unregulated construction in the catchment areas of the respective kunds, lack of awareness, among other causes. The access to the kunds is generally through narrow streets. The choking of the ducts through which the kunds were interconnected has made the flood management system dysfunctional.

Majority of the remaining Kunds suffer from water pollution and abundant growth of water hyacinth. Uncontrolled solid waste dumping is also prevalent. Edges are not properly lined, and walls and steps are damaged. Yet most Kunds are widely used for religious and cultural activities, and washing of clothes and routine bathing are common practices, despite their polluted conditions.

If all the existing Kunds in the city were to be rehabilitated, they would provide not only socio-cultural and recreational areas for the residents and believers, but would also again be a water source and contribute to a more effective flood management system in the city

10.3 Gardens, open spaces and urban forests

Gardens, open spaces and urban forests are important for mental and physical fitness, recreational purposes and prevent environmental pollution. The draft Master Plan, 2031 proposes 18.87% of the entire development area to be under open spaces and gardens. Some of the main gardens/parks in Varanasi are as follows:

- St. Ravi Das Park
- Dumraon Colony Park
- Anand Bagh
- Tulsi Manas Mandir Colony Park
- Gurudham Park
- Ratnakar Park
- Ravindra Jayanti Park
- Manohar Upvan
- Surbhi Park
- Gokul lawn
- Beiya Park
- Deshbandhu Chitranjan Park
- Srinagar Park
- Shaheed Udyaan
- Company garden
- Gandhi Park
- Gokul Chand Udyaan
- Azad Park
- Nadesar Park
- Nehru Park
- Cantonment Park
- Circuit House Garden

Since ancient times Varanasi is known as Anand Van or Forest of Bliss. For the ecological benefits and for the historic and cultural values the urban forests of ancient, medieval, modern origin should be

identified and be conserved. The city should frame some policy to safeguard them so that they remain healthy and survive for the future generations to come.

In addition, the development of green belt on both sides (100 m each side) of river Varuna, 20 m under high tension wires, 50 m on each side of NH-2 bye pass and 25 m on each side of Assi nalla has been proposed by the draft Master Plan, 2031. This constitutes 7.59% of the entire development area.

10.4 Identification of environmentally sensitive areas

Floods: In the year 2013, Varanasi witnessed heavy rainfall. This caused the flooding of ghats and the areas adjoining the river Ganga were submerged. Not only the bathing ghats were submerged but it also disrupted the "Ganga aarti" (worship of the river with lights) and cremations. All houses in low lying areas like Nagawan, Gangotri Vihar, Samne Ghat, Assi Ghat, Dashashwadedh Ghat and Sheelta Ghat were submerged. Hence, considering the past events, low lying areas near river Varuna such as Pulana Pul, Konia and Nakhhi Ghat, and Sarai Mohana low lying areas have a threat to get effected in case to floods, therefore these are environmentally sensitive areas.

Settlement on banks of river: Out of 210 slums in Varanasi, 22 are located along the banks of water bodies²⁰. These water bodies are rivers Varuna and Assi, and kunds. These slums are vulnerable to flood during monsoon season. Most of the slums are in the central and peripheral areas of the city. The list of slums and their location are provided in the Table 89.

Table 89: Slums lying along the river and other water bodies

Sr. No.	Name of Slum	Location	Ward No.
1	Lahartara Misirpur	Core city	9
2	Konia	Core city	34
3	Kajpura Khurd Jawahir Nagar	Core city	71
4	Nagwa Harijan Basti	Fringe Area	8
5	Revari Talab	Fringe Area	72
6	Shivpurwa Jai Prakash Nagar	Fringe Area	17
7	Bagavanala	Fringe Area	29
8	Pulkohna Rajbhar Basti	Core city	16
9	Pulkohna	Fringe Area	16
10	Lakshmighat	Core city	21
11	Shivpurwa	Core city	17
12	Jakhhasi	Core city	12
13	Tahirpur Nagwa	Core city	8
14	Ansarbad	Core city	71
15	Nakkhighat	Core city	11

²⁰ Slum Free City Report, Varanasi

Sr. No.	Name of Slum	Location	Ward No.
16	Bakriya kund	Core city	47
17	Fatak Taki Ali Khan Pakka Ghat	Core city	66
18	Pralhadghat Kaystha Tola	Core city	66
19	Ambedkar Mahal and Dithori Mahal	Core city	1
20	Golghar Kachachari Kasai Basti	Core city	1
21	Shivur Harjijan Basti Muslim Basti	Fringe area	19
22	Shivpur Kot Panchkoshi	Fringe area	19

Source: Slum Free Report

Sewerage treatment plant: The Draft Master Plan, 2031 has proposed a sewerage treatment plant south of the city on the Varanasi bye-pass road. The site is situated on the banks of the river Ganga. This may be identified as an environmentally sensitive area.

Figure 51: Proposed STP



10.5 Disaster proneness assessment of Varanasi

Varanasi district is in moderate risk zone III with respect to vulnerability to earthquakes. However, recently Varanasi is prone to urban flooding. The urban flooding is considered as a recent phenomenon by the National Disaster Management Authority (NDMA). According to NDMA's National Disaster Management Guidelines for management of floods, flooding in the cities and the towns is a phenomenon, caused by frequent instances of heavy rainfall in a short period of time, indiscriminate encroachment of waterways, and inadequate capacity of drains and lack of maintenance of the drainage infrastructure. Of late, it had aggravated. The urban areas of eastern UP in districts like Varanasi, Mirzapur, Ghazipur and Ballia are experiencing the worst floods after 1978. The highest flood point of Ganga was recorded at the level of 73.901 meters in Varanasi.

10.6 Disaster management mitigation measures

According to NDMA report, floods being the most common natural disaster, people have, out of experience, devised many ways of coping with them. However, encroachments into the flood plains over the years have aggravated the flood problem and a need to take effective and sustained flood management measures has been felt. Various measures, structural and non-structural, have been taken by the Central and state governments and as a result, considerable protection has been provided to the people. However, more efforts are required in this direction and there is a need to put in place a techno-legal regime to make structures flood-proof and regulate the activities in the flood plains and ghats along the Ganga River.

As disaster mitigation strategies, following steps should be taken:

- A comprehensive Emergency Response Plan, which is the first action post a hazard onset, should be prepared
- A comprehensive Disaster Management and Mitigation Plan, which shall include multi-hazard related planning, management and mitigation, should be prepared
- Standard operating plans prepared at State level are blanket prescriptions. Their interpretation at local level, localized response, management and mitigation measures are critical
- An emergency response team should be identified and adequate training shall be provided
- Key equipment and tools should be stocked in adequate numbers
- Community level capacity building should be targeted once institutional capacity is built

10.7 Key issues

The key issues with respect to urban environment are given in Table 90.

Table 90: Urban Environment Issues

Pollution type	Issue
Air pollution and Noise Pollution	<ul style="list-style-type: none"> ■ Due to the construction work across the city, air pollution has gone up. ■ The city's individualized and poorly managed traffic has led to frequent congestion and high levels of noise pollution, which negatively impacts the overall life and experience of both residents and visitors. ■ There is no enforcement of the ban on late night sound system during festive and function times. ■ Zero noise zones like hospitals and education system should be strictly followed.
Lack of green spaces	<ul style="list-style-type: none"> ■ Due to urbanization the green cover has been reducing. ■ The parks are poorly maintained. ■ The population density in this area is more than 500 persons/ per ha, and the number of persons per house is around 10. This zone is almost devoid of parks and open spaces.
Conservancy of Ponds	<ul style="list-style-type: none"> ■ Rain water should be discharges into the Ponds and Kunds so that they can be recharged by natural ways. But the sewage at many areas is discharged into the storm water drains which open into the ponds. This activity not only pollutes the water in it but also affects the existing patterns of biodiversity and ecology. Their flora and fauna should be conserved.
Pollution of River Ganga	<ul style="list-style-type: none"> ■ The river faces additional pressures on the days of the religious festivals when millions of devotees bathe in the Ganga. Besides these, the increasing use of plastics and un-dissolvable material clogs drains and contaminates the river water. ■ Majority of the total overall pollution concentrates in the Riverfront and

Pollution type	Issue
	<ul style="list-style-type: none"> nearby Old City heritage zone of Varanasi. The increasing impact of pollution is the decreasing volume of water in the Ganga.
Pollution due to solid waste	<ul style="list-style-type: none"> There does not exist any scientific provision for treating flowers from temples. Inadequate facilities for solid waste collection and sanitation have also imparted an unhealthy character to the city. Bio medical waste should be disposed properly. Mixing of Bio medical waste with solid waste creates health hazards. Waste from the slaughter house should not be dumped in open. This attracts scavengers and the unhygienic condition generated by it creates unhealthy character for the city.
Water Pollution	<ul style="list-style-type: none"> Due to excessive dependence on ground water and lack of water recharging, the ground water level has been dwindling. Due to encroachment several kunds have dried.
Sanitation	<ul style="list-style-type: none"> Pedestrians face the unsightly open defecation along the Ghats and urination in the nooks and corners of the streets – all of which adversely impact the overall character and conservation of the city's heritage. Public utilities such as toilets are not well maintained
Disaster management	<ul style="list-style-type: none"> There have been 43 water logging instances in the last 1 year Flooding of areas around Ghats in monsoon Disaster management plans have been prepared at state level, but information dispensed at the city level is not adequate No open spaces available for emergency situations No high altitude evacuation points available Disasters pose significant risk in case of a flood Emergency Management Plans are yet to be prepared Local capacity for handling emergency situation is absent Fire and hazard response systems weak; access for fire tenders in Old City restricted
No Powers to UPPCB	<ul style="list-style-type: none"> UPPCB established in the city which is there to monitor the pollution levels have no powers to enforce the laws. They are just involved in monitoring the existing pollution levels making framework of how to mitigate them. The other authorities then monitor whether these framework are implemented or not. Synchronised working of other agency with UPPCB could also improve the conditions.

11. Climate change and sustainable development

For centuries, human activities have released large amounts of carbon dioxide and other greenhouse gases into the atmosphere. Majority of greenhouse gases come from burning of fossil fuels like while producing electricity or smoke from transport vehicles. Deforestation, industrial processes, and some agricultural practices also emit gases into the atmosphere. This has led to climate change, which is refers to any significant change in the condition of climate lasting for an extended period of time.²⁴ In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer. Various evident impacts of the ongoing climate change at broad level are as follows:

- Rise in global average temperature near Earth's surface.
- Change in the monsoon pattern
- Change in the pattern of wind
- Increase in incidents of natural calamities like floods, droughts, earthquake, severe heat waves, and cyclones
- Effect on agriculture yields
- Melting of ice and rise in sea level, etc.

The impacts of the climate change are evident from various disasters events that have taken place and present challenges for the societies and environment. Planning to mitigate the impact of climate change and reduce the emission of greenhouse gases is becoming more important for sustenance of our present societies and to save for future generation. This is possible by adopting sustainable and low carbon emission development measures.

11.1 Climate change and urban cities

Given that half of the world's population started to live in cities by 2007, it is no exaggeration to say that the battle against climate change will be won or lost in our cities. To the extent that cities promote use of cars, urban sprawl is also often associated with climate change. That is, the wider the sprawl, the greater the use of cars and carbon emissions. Energy consumed in lighting of residential and commercial buildings generates nearly a quarter of GHGs globally and transport contributes 13.5%, of which 10% is attributed to road transport. We can safely assume that a sizeable portion of this volume of emissions is generated in cities. According to the Clinton Foundation, large cities are responsible for about 75% of the GHGs released into our atmosphere.

Since cities have a high concentration of population and economic activities, they are vulnerable to climate change. India's cities are characterized by high density of population and housing stock and poor infrastructure, which make them all the more vulnerable to climate change. Given that the most valued infrastructure is usually located in cities, the economic and social costs of climate change will be much higher in cities. For example, cities house valuable communication infrastructure as they do physical infrastructure such as buildings, roads, bridges, and flyovers. Hence, any climate change impacts will cause damage both physical and financial. Climate change impacts the physical assets used within cities for economic production, the costs of raw materials and inputs to economic production, the subsequent costs to businesses, and thus output and competitiveness.

11.2 Carbon footprint and heat island mapping

It is important to understand that all the emitted gases, which get trapped in the atmosphere, are called greenhouse gases (GHG). Carbon dioxide, methane, nitrogen oxide, and halocarbons are termed as GHGs. These GHG emissions stay in the atmosphere and the time of stay of various type of GHG emission also varies. As per the Inter Panel of Climate Change (IPCC), the approximate time of stay of various GHG emissions in the atmosphere is summarized in the Table 91 below.

Table 91: Carbon footprint and heat island mapping

GHG emission (Gas)	Approximate time of residence in the atmosphere	Global warming potential over 100 years
CO ₂	50-200 years	1
Methane (CH ₄)	12 years	21
Nitrous oxide (N ₂ O)	114 years	289
Halocarbons (others)	1-50,000 years	5-22,800

Source: Intergovernmental Panel on Climate Change, 2007, report

The warming impact of different types of GHGs varies according to the warming power of the gas and the length of time it stays in the atmosphere. As shown in the table above, carbon dioxide has an atmospheric life of 50 to 200 years. So once emitted into the atmosphere, it has a warming effect over a long period of time. Methane, for example, has a life of about 12 years, much shorter than carbon dioxide.

The warming power of each gas varies greatly. For example, methane is a much more powerful GHG than carbon dioxide. Over a 100 year period, a molecule of methane (CH₄) has 21 times the warming effect as a molecule of carbon dioxide (CO₂), even though it stays in the atmosphere for only about 12 years of the 100-year period.

To compare the impact of each gas, the warming potential of each gas is computed over a 100-year period, as shown in table above, the greenhouse warming potential (GWP) is computed for each gas based on its warming power and atmospheric lifetime. As a basis of comparison, carbon dioxide is assigned a GWP of one and the GWP of the other gases are computed in relationship to carbon dioxide. For example, relative to carbon dioxide, nitrous oxide has about 300 times the warming effect. The other gases (halocarbons, perfluorocarbons, and sulphur hexafluoride) are also powerful gases

11.2.1 Concept of carbon footprint and its impact

Carbon foot print is a measure to understand the per capita GHG emission levels for a specific area, which can be a block, city, region, state, country, etc., which also helps to understand its impact on the environment. It also helps in understanding the actual CO₂ emissions emitted by the actions of each individual and based on the carbon footprint, necessary steps should be taken to reduce the carbon footprint to make cities more sustainable. Socio-economic characteristics play an important role in GHG emissions (primarily consisting of CO₂). Increase in carbon footprint is having a direct and profound impact on the environment, human health, economy, flora and fauna, and ecosystems. Thus, understanding the impacts due to increasing carbon footprint are summarized in Table 92 below.

Table 92: Concept of carbon footprint and its impact

Sector to be affected	Probable affects due to climate change
Impact on Environment	<ul style="list-style-type: none"> Rising temperatures, shifting precipitation patterns are changing the growing patterns of plants, heat island effects Sea levels rise due to increase in temperature - warmer water occupies more space than cooler water (applicable for coastal cities) Increasing solid waste and sewage and dumping of waste without treatment posing a threat.
Impact on human health	<ul style="list-style-type: none"> Malnutrition caused by the result of climate change on food crops, such as drought that interferes with the growing season Chances of spread of diarrhea disease as access to safe water being compromised Vector-borne diseases such as malaria due to rising temperature Respiratory problems as asthma and allergies due to increased air pollution
Impact on Economy	<ul style="list-style-type: none"> Effect on local economies dependent on land and natural resources like agriculture, fishing industry, coral reefs Rise in prices of food grains, vegetables, fruits, etc.
Impact on Ecosystem	<ul style="list-style-type: none"> Erosion of shorelines, destruction of ecosystems, coastal cities and towns could be displaced by rising seas

Source: CRIS adaptation from the article by author Alyssa Morse: "The Importance of Reducing a Carbon Footprint", issued in 2010

Based on the various literature review; understanding of the emission pattern from various sectors at a city or urban area level in developed countries and Indian context is shown in the figure below.

11.3 Impact and imperatives

Impact on India

IPCC-2007 reports incorporate likely impacts of climate change in India that could materialize by 2030. Among those mentioned are:

- Himalayan glaciers will shrink in area from 5 lakh to one lakh sq. km.
- Per capita water availability will get reduced. It is about 1800 cum/year now. By 2050, it would come down to 1000 cum/year (which is clearly a water distress situation);
- Agriculture productivity is likely to shrink by up to 30%;
- There will be less snowfall and its melting will take place earlier than usual; and
- Rivers originating in Himalayas will carry much more water, earlier than usual. There will be more water in summers and flows will become thin before September. Consequently, flood intensities and frequencies and drought phenomena would increase. Also, there would be much less water in rivers during Rabi.

The estimated water flow changes in some important river basins of India have been worked out in the IPCC-2007 reports and are reflected in the Table 83.

Table 93: Impact of climate change on rivers

More Water			Less water		
Basin	Current flow (BCM/yr)	Change in flow (%)	Basin	Current flow (BCM/yr)	Change in flow (%)
Indus	+17.6%	73	Luni	15	-3.7%
Ganga	+9.7%	525	Sabarmati	4	-12.3%
Brahmaputra	+8.4%	586	Mahi	11	-8.1%
Mahanadi	+11.1%	67	Narmada	46	-3.4%
Godavari	+19.2%	110	Tapti	12	0.6%
Brahmni	+14.8%	28	Krishna	78	-6.3%
			Cauveri	21	-2.8%

Source: IPCC Report, (First) released in Feb. 07, at Paris

Impact on Uttar Pradesh and its cities

Varanasi falls in the northern region of India and, from the above discussion, it would be clear that it faces, comparatively, greater vulnerabilities in climate change contexts, some of the critical ones being:

- Loss of agricultural production impacting food security and nutrition levels;
- Water shortages;
- Changes in the hydrological cycle would give rise to bouts of droughts, floods and short-duration extra-heavy precipitation;
- More areas will be affected by malaria and other vector borne diseases;
- Risks of land degradation and adverse impacts on forests, wildlife and biodiversity would increase. There would be inevitable changes in vegetation zones and species mix and in pest distribution; and
- Comparatively higher average temperature rises would be experienced.

11.4 Climate resilience and carbon reduction strategies

A major challenge for cities facing rapid population growth is to maintain environmental sustainability. A review of a literature indicates that some factors that make cities sustainable include the presence of robust urban infrastructure, good governance and legal framework, participatory approaches for multi-stakeholder interactions, and replicability of best practices.

Given the nature of inter-linkages of services within an urban environment and consequently the highly connected nature of risks, policies relating to urban resilience and sustainability essentially need to address multiple sectors and dimensions. This includes, for example, land use planning, energy management, ecosystem services, housing and transport, water supply and sanitation, health services, and waste management, inter alia.

11.4.1 Available policies for climate change and disaster resilience

The national government's Ministry of Environment and Forests (MoEF) deals with climate change issues within the country. In June 2007, a high-level advisory committee called the Prime Minister's Council on Climate Change² was established to coordinate national action for assessment, adaptation, and mitigation. The committee's mandate is to develop a coordinated response on climate change at the national level, formulate action plans, and monitor the key policy decisions. The Indian government launched the National Action Plan on Climate Change on June 30, 2008. The plan provides a directional shift towards the development of a low-carbon economy through multi-pronged, long-term, and integrated strategies.

Table 94: Climate change and disaster management policies in India

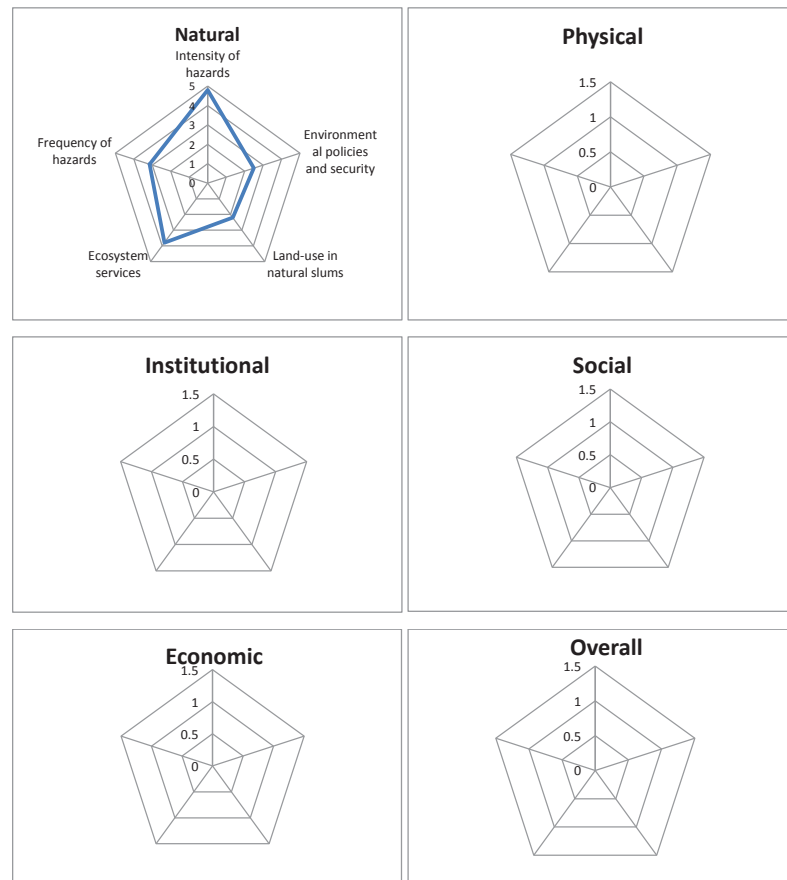
Climate change and disaster management policies in India
<ul style="list-style-type: none"> ▪ National Water Policy, 2012 ▪ Disaster Management Act, 2005 ▪ Energy Act, 2003, and National Electricity Policy, 2005 ▪ Energy Conservation Act, 2001 ▪ Coastal regulation policies ▪ Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2006 ▪ Nehru Rozgar Yojana ▪ MSW Management and Handling Rules, 2000 ▪ National Urban Transport Policy, 2006 ▪ National Housing Policy, 2007 ▪ National Task Force on Urban Perspectives and Policy ▪ National Action Plan on Climate Change to outline National Missions on key sectors: solar energy, enhanced energy efficiency, etc.

Source: Various climate change and disaster resilience reports

11.4.2 Varanasi's climate change resilience

All resilience dimensions (physical, social, economic, institutional and natural) are performing in similar strength in Varanasi. However, there are many deviations from the average results within the respective dimensions. The city may be characterized one experiencing regular (once a year) natural hazards in the form of moderate floods, heat waves, and droughts. It may also be in the process of developing many urban services like, for instance, better access to provision of electricity or providing roads with appropriate drainage systems to become more resilient to climate related disasters. There may also be some potential to make use of quite knowledgeable and literate communities to foster social cohesion and preparedness in case of approaching disaster. The institutions of the city play an important role and could be involved more in establishing the ideal environment for a strong and resilient city.

Figure 52: Varanasi's climate change resilience



▪ **Physical dimension**

- ◆ Availability and access to electricity is limited and sourced from other cities
- ◆ Water supplied to 75% of the city, but may be reduced in an event of disaster
- ◆ Solid waste is collected, but not recycled
- ◆ Though the roads are accessible at all times, but may increase in capacity if equipped with drainage system

▪ **Social dimension**

- ◆ Less than 23% of the population suffers from water-borne or vector-borne diseases
- ◆ Less than 75% of the population has access to primary health infrastructure

- ◆ Though the local population is aware of the disasters, but it would benefit further if public awareness/disaster drills are initiated by VMC
- **Economic dimension**
 - ◆ 24% are living below poverty line
 - ◆ Employment rate is 18%
 - ◆ Households have basic housing infrastructure
 - ◆ Residents are likely to benefit from an economic boom as they have a habit of saving, this may help them to recover quickly from a disaster in the future
- **Institutional dimension**
 - ◆ The emergency teams are limited in their capacity to deal with a disaster
 - ◆ Disaster management plan is not sufficiently implemented
- **Natural dimension**
 - ◆ City prone to floods, heat waves, and droughts
 - ◆ Quality level of urban biodiversity, soil, and water bodies are moderately affected by the ongoing development process

11.4.3 Review of various climate resilience frameworks

Through intense literature review for various climate resilience frameworks developed for assessing climate and disaster vulnerability of any city; following are the two climate resilience frameworks, which have been widely accepted and adopted for any climate resilience related studies.

As of now, no climate resilience framework has been prepared or adopted by VMC for Varanasi. Some strategies that VMC should adopt have been mentioned in the Table 95 below.

Table 95: Review of various climate change resilience frameworks

Sr. No.	Framework	Developed by	Dimensions/variables	Brief about framework
1	Climate and Disaster Resilience Index (CDRI)	Kyoto University, Christina Aid, NIDM, SEEDS	<ul style="list-style-type: none"> ▪ Physical ▪ Social ▪ Economic ▪ Institutional ▪ Natural 	Climate and Disaster Resilience Index (CDRI) is a framework that has 5 dimensions and 125 variables. The CDRI framework is more of a scoring method, which will score the responses based on the predefined values of each of the variables. The framework provides an overview of the existing scenario of the climate and disaster resilience of the city.

Sr. No.	Framework	Developed by	Dimensions/variables	Brief about framework
2	Hazard, Infrastructure, Socio-economic and Governance (HIGS)	Rockefeller Foundation, ACCCRN, IRADe	<ul style="list-style-type: none"> ▪ Hazard ▪ Infrastructure ▪ Socio-economic and Governance 	Hazard, Infrastructure, Socio-economic and Governance (HIGS) is a framework developed by consortium of iied, Rockefeller Foundation, ACCCRN, and IRADe, to assess the climate vulnerability and climate change resilience for cities, and a step towards the planning and enabling adaptation for better mitigation of the impacts. The framework has 4 dimensions and 23 variables.

12. Cultural resources, heritage and tourism

12.1 Historical importance

Varanasi is one of the oldest living cities in the world. Many Hindus believe that the city has been founded by Lord Shiva. Archaeological evidences suggest that the places in and around the city were inhabited circa 1000 BC. In the last 3,000 years of its existence, the city has seen periods of growth, prosperity, destruction and decay. It is believed that several such cycles have been experienced till date. However, historical records are not available in continuum to reconstruct the complete chronology. Most of the heritage properties and temples that exist today were constructed in the eighteenth and nineteenth century. The Ghats and the palaces along them have been constructed with the patronage of various princely states across India. The network of residential and market streets, the houses and other religious and secular properties were constructed mostly in this period. The influence of colonial era can also be observed in several properties. These unique assets of Varanasi have given meaning and significance to the city. Along with this built heritage is the non-material heritage which is intricately linked to the life and beliefs of its people and visitors.

12.2 Existing framework for heritage zones

Varanasi heritage entails not only the famous Ghats and the historic properties along them but also the houses and the streetscapes in the area adjoining the Ghats, temples, Kunds, and all cultural practices and expressions that take place in these properties and areas. The cultural significance of the city lies in its ever evolving character and living heritage assets and landscapes. There are in all 1564 number of heritage properties in Varanasi. They are listed in the Table 96 below.

Table 96: Type of heritage

Type of heritage	Number
Ghats	84
Kunds and water ponds	88
Other heritage properties	1370
Temples (approx. no of only prominent temples)	20
Mosques	2
Total	1564

Source: IHCDP 2012 – 13. (other heritage properties as listed in Cultural Resource Mapping & Inventorying)

The entire riverfront heritage zone can be divided into six sub-zones/ Districts: (i) Rural Buffer District, the green strip of 300m wide lying between the eastern bank of the Ganga river and the edge of the settlement area, (ii) Landscape conservation district, the sandy-silty loam area subject to annual inundation and seasonally used to cultivate summer vegetables and melons and for summer recreation, (iii) the 5.5 km long crescent shaped basin of the Ganga river from Nagwa to Raj Ghats, (iv) the 5.3 km stretch of 83 Ghats (stairways to the bank) along the western bank of the Ganga river, (v) the Urban Preservation Sub-Zone, the Old City Heritage Sub-Zone, and (vi) the Urban Buffer Sub-Zone, a strip of 50 m to 100 m wide from the western road marking the boundary, of course

sometimes its boundary goes the road towards west with a view to covering some very pertinent sites, e.g. Adi Vishvanatha and Razia Bibi Mosque in Banasphatak.

The core heritage area lies within the Old City Heritage Zone. The path linking Vishalakshi Devi, Dharmakupa, Vishvanatha, Annapurna, Adi Vishvanatha, and Razia Bibi Mosque demarcates it. The Vishvanatha temple is the nucleus. There are about 70 important shrines and temples in this area.

Figure 53: Varanasi heritage zones



Source: Heritage Development Plan for Varanasi

12.3 Heritage conservation initiatives

There are many initiatives proposed for the conservation of Varanasi heritage; though most focused on major structures or at regulatory level. Five projects are currently being implemented for the rehabilitation of individual properties and complexes:

- Dasashwamedh Cultural Quarter river front development;
- Panch koshi Yatra Halts (Rural Area Development);
- Conservation of water bodies Sarang, Pishachmochan & Pushkar Kunds;
- Adaptive reuse of the Chet Singh Ghat and palace as a cultural centre and of the Jagannath temple complex as art & craft center;

- Balaji Ghat, St. Mary Church & Tripolia gate.
- At the regulatory level, the following on-going initiatives have been proposed:
- Demarcation of Heritage Zones – Durga Kund - Sankatmochan Area, Kamachcha-Bhelupura Area, Kabir Math (Lahartara) Area and Sarnath in the Draft Master Plan (Figure).
- Cultural Resource Mapping and Listing, which identified several heritage properties.
- Regulations and guidelines in consonance with the cultural character of the city that may be processed as part of Master Plan/Zonal Plans, Zonal Regulations and Development Controls.

Figure 54: Varanasi heritage zones



Source: R.P.B.Singh

1. Riverfront Ghats

The area from the bank towards city covering a distance of 200 metres is declared as the riverfront heritage. The UP Government, order number 320/9-A-3-2000-127, dated 5 February 2000, states that, in all the towns situated along the river Ganga, no development activities can take place 200 metres from the riverbank. Eighty-four ghats cover a length of 6.8km along the crescent-shaped bank of the River Ganga, *Gangā-ji* (Ganges), from the confluence of Asi drain in the south to the confluence of the Varanā river in the north. Here the riverfront is marked by lofty palatial buildings built

mostly by kings and lords from different parts of India between eighteenth and twentieth centuries, and the area along the ghats is dominated by various shrines and temples



2. Durgakund-Sankatmochan Area

This area contains about twenty temples and shrines and the water pools of Durgakund and Kurukshetra *kundas*, which are two historic sacred tanks dating from the late eighteenth century. Every Tuesday, and more frequently in the month of *Shrāvana* (July-August), worshippers perform rituals in the Durga temple. This was built on the orthodox model of Hindu temples, but without the excessive display of minute carvings and sculptures. In this area also exist the temples of Tulasi Manas Mandir and Sankatmochan Hanuman Mandir. Towards the east near the River Ganga is the oldest sacred pond in Varanasi, Lolarka Kund, which was referred to in the *Mahābhārata* (2nd century BCE) and which still attracts a large mass of pilgrims.

3. Kamachcha-Bhelupura Area

This area records some of the old monasteries, ancient shrines and an ancient heritage site associated with the Jain Tirthankara Parshvanath, together with many monuments and buildings of the British period (18th – 19th centuries). The historically notable temples and shrines in this zone are: Kamachha Devi, Krodhan Bhairava, Angareshi Chandi, Vatuka Bhairava and Vaidyanath Shiva. The Dvarakadhisha (Vishnu) temple and the sacred pool of Shankhuhara are other heritage sites.

4. Kabir Math (Lahartara) Area

This was the birthplace of Kabir, a great saint-poet and social reformer of the sixteenth century. There are several monasteries in this area related to the life of Kabir. The Kabir Temple Complex is coming up as a great heritage and centre of solace and learning. Under the heritage complex development programme by the UP Government, a development plan has been prepared and some works have already been started.

5. Sarnath

This archaeological heritage site was famous for its sanctity, beauty and natural scenery, qualities that attracted the Buddha to give his first sermon here in 532BCE. Following Muslim invasions and the downfall of the Gahadavalas Kings, the site was left in ruins and only came to light in 1793. The principal site includes a well-preserved commemorative stupa (a decorated masonry tumulus) which dominates the site, the foundations of a reliquary stupa, the ruins of the temple complex and ancient monasteries, and a myriad of small votive stupas.

12.4 Tourism scenario

12.4.1 Major tourist spots

Ghats in Varanasi

Varanasi owes its existence to the Ganga river, considered to be the most holy river for the Hindu people and especially sacred in Varanasi where its course towards the Bay of Bengal suddenly turns north. Symbolically, the flow from south to north refers to the life cycle from death (south, the realm of death, Yama) to life (north, the realm of life, Shiva, i.e. Kailash). This unique directional change of the river course led to the development of the ancient city, Kashi, on the west banks of the river, facing the rising of the sun and making thus the ghats of Varanasi sacred for all Hindu rituals.

The ghats have been witness, through the centuries, to great saints like the Buddha and Mahavira, to poets like Kabir and Tulsidas, to religious philosophers like the Sankracharya and to millions of pilgrims who still carry the light of faith through generations and who make Banaras so special.

The old city heritage zone also includes the unique associative cultural landscape formed by the Ganga river, the riverfront ghats (stone steps that lead up from the river to the city) and the related cultural, religious and social life. A general study of the table of the Ghats prepared in different period by different persons gives some idea about the evolution of the Ghats of Varanasi. This list reveals that only 14 Ghats are more than 350 years old. These include

Kedar, dasashwamedh, manas sarovar, chaushatti yogini, agnishwar, mangala gauri, bindu madhav, durga, brahma, trilochan, ram and adi keshav. With the exception of few ghats, all the Ghats were named on Deities.

There are presently 84 ghats along the edge of the river, but there are five ghat (panchthirth) which are considered most sacred among all the ghats. These include:

- Assi Ghat
- Dasashwamedh ghat
- Manikarnika ghat
- Panchganga ghat
- Adikeshav ghat

Subdivisions of Ghats

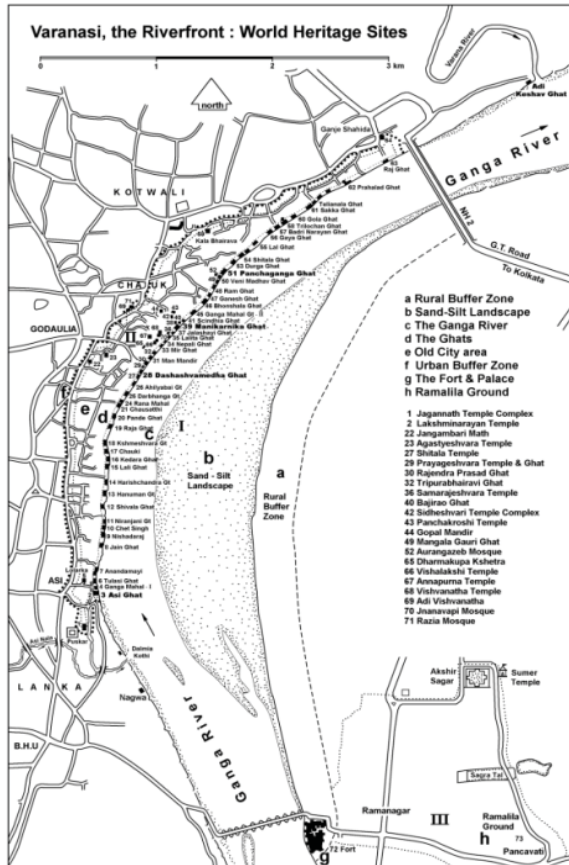
Varanasi has witnessed lot of subdivision of ghats which has been regular phenomenon, but what is actually the result of these subdivisions are:

- There are too many pilgrims approaching a smaller area which was originally capable of handling the population pressure. The risk factor increases in such cases.
- More concentration of activities at one place related to pilgrimage.

- Rapid transformation of the place.

Darbhangha to manikarnika ghat: Darbhanga to manikarnika forms the central portion of the 7 km stretch along the ghat area. This area has the highest concentration of tourists and pilgrims. This stretch also forms part of the internal circumambulation path antagriha which finally culminates at the vishwanath temple near dasashwamedh ghat. This stretch has twelve ghats including the two main ghats, dasashwamedh and manikarnika ghat, which are among the five main ghats on the river famous for the panchtirtha.

Figure 55: Varanasi ghats on the river front



Source: R.P.B.Singh

An attempt has been made to document the existing situation of some ghats with respect to some critical aspects such as sanitation, garbage disposal and availability of other amenities.

Table 97: Assighat-Field Notes

Name of ghat	Assighat
Morphology	Assi Ghat is the first ghat upstream of Varanasi. It is situated near BHU. Narrow lanes 10-15 ft wide lead upto the ghat. A ghat redevelopment work was undertaken a few years back. New railings, hawan mandap and similar structures were erected in the redevelopment work undertaken. However, there is a lot of silt deposited on the banks of the river. Hotels, daily needs stores and cyber cafes are located in the vicinity.
Sanitation	There are 12 urinals, but they are not in good condition. The toilets are maintained by Shulab International and users are Rs. 5 per usage. Due to clogging of sewer network, sometimes the sewerage overflows from the toilets and drains into the river.
Garbage	There are 4 bins on the ghat. In general there was no litter on the ghat, but there was cow dung everywhere on the ghat steps. There is a dairy farm located in the vicinity. VMC is responsible for sweeping, which is done in the morning.
Water supply	There is no drinking water facility on the ghat
Tourist facilities	There are no rest rooms, but there is one changing room. The changing room is maintained by VMC.
Activities	<ol style="list-style-type: none"> 1. Boating 2. Manglaarti is conducted by the in the morning at 5:30 AM and in the evening at 7 PM 3. The ghat is frequented by about 1000-2000 tourists 4. There is a parking facility on the ghat, around 50 vehicles can be parked here.





Table 98: Rajghat-Field Notes

Name of ghat	Raj ghat
Morphology	This is the last ghat in Varanasi. It is located near the NH2 bridge. There are two ways to reach the ghat. One is from the NH2 bridge and the other from Rabindranath Tagore Road. The ghat is being maintained by Lalit group. Work on the ghat steps and river front is being undertaken. There are many residential houses right on the ghat with stores selling goods of daily needs.
Sanitation	There are 6 urinals for male and females on the ghat. The toilets are maintained by Shulab International and users are Rs. 5 per visit. The toilets were not very clean, but were in usable condition
Garbage	There are 2 bins placed on the ghat. In general there was no litter on the ghat, but there was cow dung everywhere as there is a dairy farm nearby. VMC is responsible for sweeping, which is done in the morning. The bins are cleared by VMC twice a day.
Water supply	There was no water filter installed on the ghat, but there were 4 hand pumps. The hand pumps are used by the locals living in the vicinity. The area around the hand pump was not hygienic.
Tourist facilities	There are no rest rooms, but there are 5 five changing rooms with doors. 2 of the changing rooms are new. The changing rooms are maintained by VMC and the condition is good.
Activities	1. Boating 2. Ganga aarti in the evening – 6:00 PM

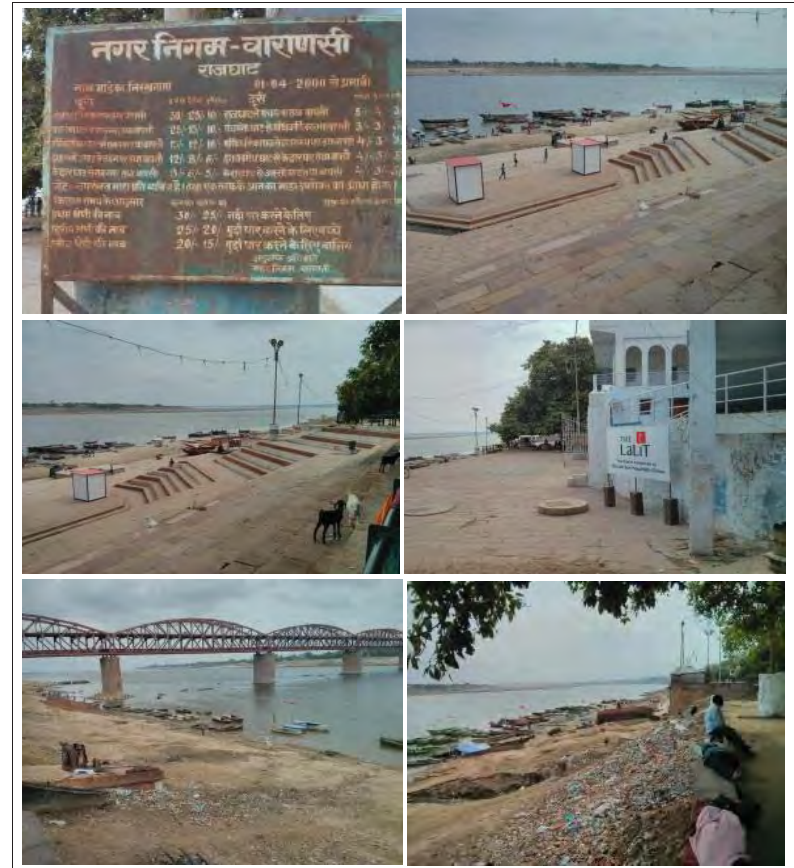


Table 99: Kedarghat-Field Notes

Name of ghat	Kedar ghat
Morphology	The ghat is located near Kedareshwar temple. The ghat is situated next to the Harish Chandra Ghat. There are two ways to reach the ghat either through the Kedareshwar temple or through Harish Chandra Ghat. No major work has been undertaken in the recent past. Tourists and boatmen at the ghat stated cleanliness, garbage on the banks, awareness among people to use dustbin for throwing waste as some of the areas which need to be improved.
Sanitation	There is a urinal, but it is not functional. The toilets are maintained by VMC and users are Rs. 5 per visit.

Garbage	There is 1 bin placed on the ghat. In general there was no litter on the ghat. VMC is responsible for sweeping, which is done in the morning. The bins are cleared by VMC twice a day. Little is thrown mostly by locals and domestic tourists.
Water supply	There was no water filter installed on the ghat, but there is one in the Kedareshwar temple.
Tourist facilities	There are no rest rooms, but there is a changing room for females. The changing room is maintained by local pundits. There is parking facility near the ghat at Lalita Cinema which can house 25-30 vehicles.
Activities	<ol style="list-style-type: none"> 1. Boating 2. Aarti is conducted by the Kedareshwar temple in the evening – 6:30 PM 3. During peak season the ghat is frequented by about 1500-2000 tourists and during lean season by around 200-250 tourists.



Table 100: Dashashwamedh Ghat-Field Notes

Name of ghat	Dashashwamedh ghat
Morphology	<p>This is the main ghat of the 84 ghats in Varanasi. The ghat is located near Gaudaulia chowk. This is one of the most densely populated areas of the city. In the ghat's vicinity is located the Vishwanath Temple. Only pedestrians and 2 wheelers are allowed beyond Chowk crossing. Most of the tourists stay in nearby dharamshalas and lodges.</p> <p>Minor maintenance works of the ghats have been frequently taken up. Recently, stone on the ghat steps was replaced. Tourists and boatmen at the ghat stated drinking water, cleanliness, garbage on the banks, awareness among people to use dustbin for throwing waste are some of the areas which need to be improved.</p>
Sanitation	There are 25 urinals, which are in good condition. The toilets are maintained by Shulab International and users are Rs. 5 per usage.
Garbage	Bins could not be located on the ghat. In general there was no litter on the ghat, but there was garbage on the banks of the river. VMC is responsible for sweeping, which is done in the morning.
Water supply	There are two water filter installed on the ghat, but they were not functional. The filter is maintained by VMC.
Tourist facilities	There are no rest rooms, but there were several changing room. The changing rooms are maintained by local pundits and charged per use. Tourists cited the changing rooms are less in number.

Activities	<ol style="list-style-type: none"> 1. Boating 2. Aarti is conducted by the in the morning at 5:30 AM and in the evening at 7 PM 3. There is a tourist assistance booth on the ghat and water police control room 4. There are over 150 shops in the ghat's vicinity. Most of the stores sell sarees and touristy stuff, or are eating joints 5. Also a sewerage pumping station is located on site. The boatmen on the ghat stated that sewerage is allowed to overflow in the river Ganga during power cuts. 6. During peak season the ghat is frequented by about 5 lakhs tourists and during lean season by around 1 lakh tourists
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Kunds

The Kunds are an important part of the natural and cultural heritage of Varanasi. They are not only heritage assets but also represent the ancient knowledge of storm water management. Many Kunds are located in the route of three yatras conducted in Varanasi, as represented in the map below. The Panchkoshi Yatra covers the largest number of Kunds. Bathing in these Kunds during such various auspicious days has major religious and cultural significance.

The Kunds are also an endogenous example of an elaborate flood control and storm water management system of the city. During heavy rains, the Kunds used to act as points of drainage for surrounding areas. In the past, each Kund had a catchment area in its immediate surroundings and were interconnected by underground channels through which surplus water was drained into the river Ganges.



Today only about 88 Kunds remain out of more than 100 Kunds built across the city. This is due to neglect, unregulated construction in the catchment areas of the respective kunds, lack of awareness, among other causes. The access to the Kunds is generally through narrow streets. The choking of the ducts through which the kunds were interconnected has made the flood management system dysfunctional.

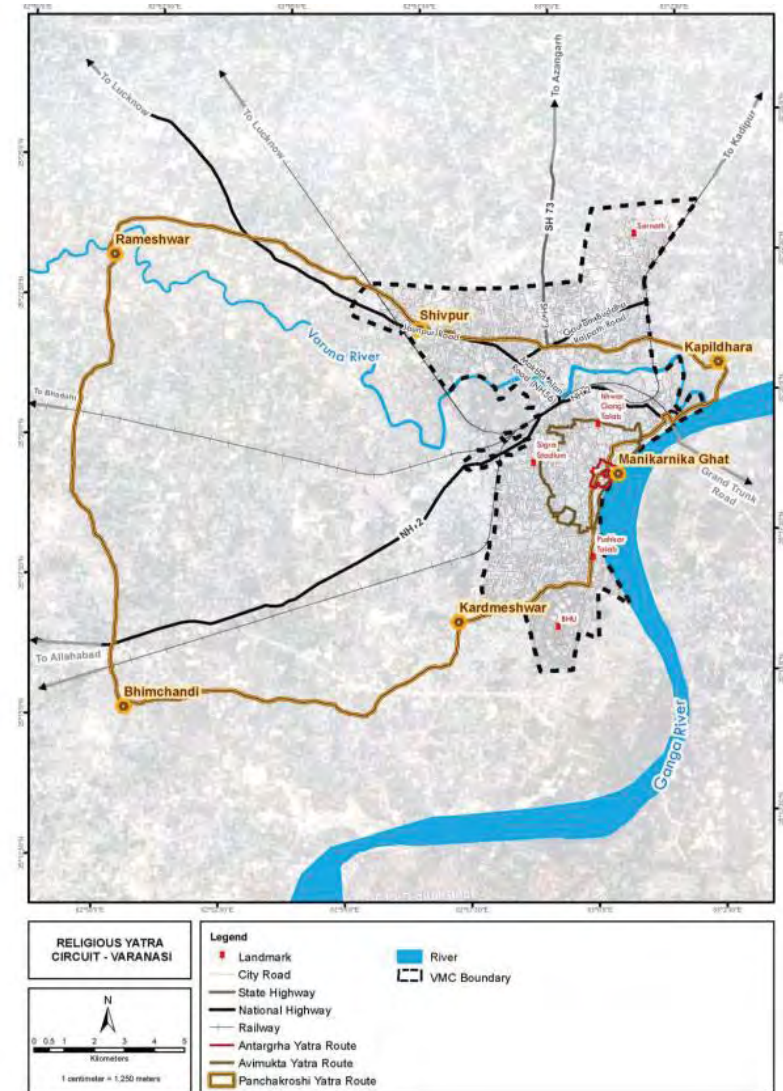
Majority of the remaining Kunds suffer from water pollution and abundant growth of water hyacinth. Uncontrolled solid waste dumping is also prevalent. Edges are not properly lined, and walls and steps are damaged. Yet most Kunds are widely used for religious and cultural activities, and washing of clothes and routine bathing are common practices, despite their polluted conditions.

If all the existing Kunds in the city were to be rehabilitated, they would provide not only socio-cultural and recreational areas for the residents and believers, but would also again be a water source and contribute to a more effective flood management system in the city.

Panchakosi Yatra

This pilgrimage circuit symbolising the cosmo-spatial *māndalic* territory (*kshetra*) of Kashi is a unique attribute of Varanasi. The total route covers 88.5km (25 kroscha) and is divided into five parts marked by overnight stops (Figure 56). At these five spots there are 44 *dharmashālās* (rest houses) for pilgrims. In every intercalary month, *malamāsa* (e.g. the current one covers a period of 18 Sept to 16 Oct 2001), over 45,000 devotees perform this pilgrimage (cf. Singh, 2002). Under the recently initiated heritage development project, a part of the Master Plan, partial works like improvement of roads, cleaning of the water pools and repairing of roads are completed.

Figure 56: Yatras conducted in Varanasi



Source: Heritage Development Plan for Varanasi

Temples

Apart from the Ghats, there are around 2000 temples, small, medium and big in size throughout the city. Many important temples are located along the ghats of Ganga River, adding to the religious value to the holy river. Some of the important temples are Kashi Vishwanath, the Sankat Mochan temple, The Tulsi Manas temple, the Durga temple, the Kal Bhairav temple and the Mritunjaya temple.



Core Heritage Area

The core heritage area lies within the Old City Heritage Zone. It is demarcated by the path linking Vishalakshi Devi, Dharmakupa, Vishvanatha, Annapurna, Adi Vishvanatha and Razia Bibi Mosque. The Vishvanatha temple is the nucleus. There are about 70 important shrines and temples in this area.

Outer Heritage Property, across the river

This outer circuit is demarcated by the pilgrimage path that covers 88.6 Km, starting from the Manikarnika Ghat, going south, south-west, then north-west and covering 108 shrines and temples and 4 major temple complexes.



Sarnath

The spiritual magnetism of Varanasi had attracted Lord Buddha here in the 6th century BC to 'Turn the Wheel of Law'. By the turn of 3rd century BC, the great Buddhist king Ashoka had built a monastery township that flourished till 11th century. Now, the restored Sarnath has become a place of pilgrimage for Buddhists, and a place of spiritual tourism for others.

The Sarnath zone, which is within the wider city precincts, is extremely important for Buddhists, the world over. The culture as seen and lived here is a rare heritage asset for Indians and for the citizens of the world, contributing to the cultural, philosophical and intellectual knowledge of Indian culture and the cultural community of the world.



Ramnagar

For a 17th century fort, this one is seriously well preserved, probably because the king -- the former king -- still resides here. 14 km from Varanasi the fort at Ramnagar houses a museum displaying the Royal collection which includes old silver and brocade palanquins for the use of the ladies of the court, elephant howdahs made of silver brocades, a replica of the royal bed and an armoury of swords and guns, vintage cars, royal palkies, an armoury of swords and old guns, ivory work and antique clocks. Ramnagar Fort was the home of the Maharaja of Banaras. The Durga Temple and Chhinnamastika Temple are also located at Ramnagar.

Located across the river, on the Ram Nagar road that leads east from the BHU, the fort comes into its own during the annual Dussehra festival. Ramnagar houses the palace of the king of Banaras, which is presently being used as a museum (exhibiting palanquins, swords, etc.). Dussehra celebrations at Ramnagar are worth watching. Ramnagar fort and palace was built in 1750 A.D. by the king of Banaras. This fort located on the right bank of Ganga is primarily made of red sandstone. Apart from this, the fort also houses an astronomical clock, which transpires several astronomical wonders.

12.4.2 Traditional Heritage

Varanasi's intangible heritage comprises a variety of evolving arts, expressions and traditions. These include:

Scholastic Traditions

In the 2nd Century BC, Patanjali wrote his famous work Mahabhashya on Panini's grammar propounding a unique phonetically organized alphabet system. It triggered a discussion on grammar and linguistics which continued in an unbroken trend up to the end of the 17th Century BC.

Similarly in the field of speculative philosophy a strong tradition of scholastic discourse developed. The debates amongst various schools enriched the tradition. Many of the concepts developed and methodologies propounded are getting rediscovered today, by both eastern and western scholars.

Mughal prince Dara Shikoh initiated a project of translation of the Upanishads, the foundational books of the Hindu School of the Vedanta, in Persian. These translations were further rendered into Latin

putting across the thoughts of the Vedanta to the western world. The French traveler Bernier who has left some account of this project also translated Descartes in Persian in Kashi in 1656 for the benefit of some Indian scholars. It was some 10 years before Descartes was translated in English.

The ritualistic Hinduism for which Varanasi was the important center produced a counter moment of non-ritualistic and humanistic creeds, the best face of which was Kabir whose poems set to tune are sung even today. A vast number of people still show their allegiance to this creed.

Performing Arts

In the areas of Jaunpur, Kashi and Lucknow, a genre was developed which classicized the existing folk forms to Thumri, Dadra, Kajri and Katthak. Kashi (Varanasi) amongst these towns gave a special character to these forms particularly to the accompanying percussion instrument of tabla.

Many great musicians and artists were born in Varanasi and still regularly return to visit and to perform their art for the public as tribute to the "spirit of the soil". Pandit Ravi Shankar, Ustad Bismillah Khan, Kishan Maharaj among others, is internationally acclaimed virtuosos.

Silk weaving

Varanasi is known for its silk weaving since ancient times. Lord Buddha's mortal remains, according to legend, were covered by silk cloth woven in Kashi (Varanasi). The fine weaving, with rich complicated decorative elements, has won acclaims all over the world

12.4.3 Tourist arrivals

The data compiled in the table below is on the basis of tourists staying in authorized hotels and guest houses. The data is collected by the UP Tourism Department, Varanasi. September to March is the peak season and is lowest tourist inflow is in the months of June to August. It can be observed from the Table 101 below that growth in number of tourists has reduced over the years and over the last five years (2008-2012) it grew at a CAGR of 10%.

Over the period (2003-2012), the number of incoming tourists (domestic and foreign) increased at a CAGR of 9%. The inflow of tourists has consistently remained robust; however, not many initiatives have been taken to improve the existing tourism infrastructure. In fact, there is no practice of maintaining database of tourist related infrastructure. Of the tourists visiting Uttar Pradesh, Varanasi's share is between 2% and 3%.

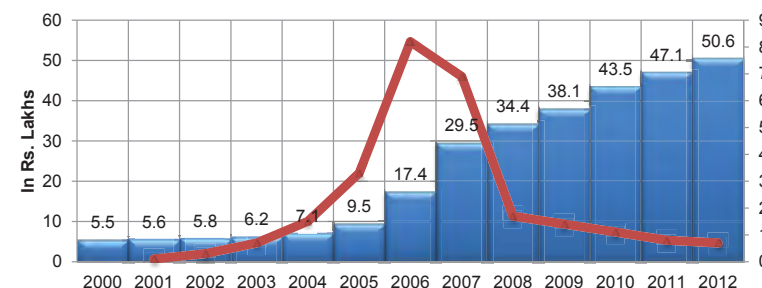
Table 101: Tourist statistics – Varanasi

Sr. No.	Year	Number of tourist visiting Varanasi excluding Sarnath (in lakhs)	Number of tourist visiting Sarnath (in lakhs)	Total number of tourists	Growth (%)	Number of tourist visiting Uttar Pradesh (in Lakhs)	Growth (%)	% share of tourists visiting Varanasi
1	2002	26.8	5.8	32.7	-	-	-	-
2	2003	28.1	6.2	34.3	5	808.3	-	4.2
3	2004	29.5	7.0	36.5	7	894.0	11	4.1
4	2005	31.9	9.5	39.7	9	966.1	8	4.1
5	2006	33.5	17.4	41.7	5	1068.7	11	3.9
6	2007	36.7	29.5	45.7	9	1177.3	10	3.9
7	2008	38.9	34.4	48.5	6	1177.6	0	4.1

Sr. No.	Year	Number of tourist visiting Varanasi excluding Sarnath (in lakhs)	Number of tourist visiting Sarnath (in lakhs)	Total number of tourists	Growth (%)	Number of tourist visiting Uttar Pradesh (in Lakhs)	Growth (%)	% share of tourists visiting Varanasi
8	2009	40.8	38.1	50.9	5	1264.5	7	4.0
9	2010	43.5	43.5	54.3	7	1363.6	8	4.0
10	2011	47.1	47.1	58.6	8	1464.3	7	4.0
11	2012	50.6	50.6	62.5	7	1703.7	16	3.7
12	2013	52.5	22.8	64.5	3	2285.9	34	2.8

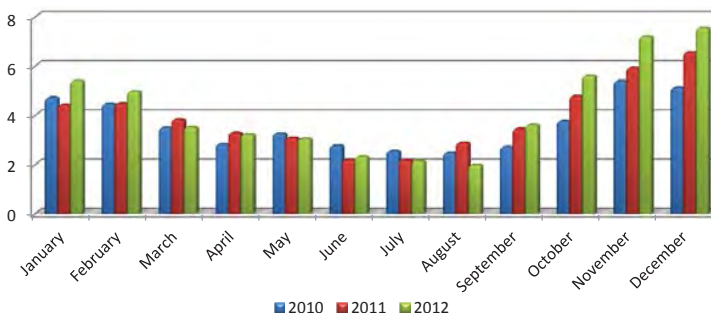
Source – UP Tourism Department, Varanasi and Ministry of Tourism, Government of India

Figure 57: Tourist inflow number and growth



Source – UP Tourism Department, Varanasi and Ministry of Tourism, Government of India

Figure 58: Month Wise Tourist Inflow



Source – UP Tourism Department, Varanasi and Ministry of Tourism, Government of India

12.4.4 Existing tourist supported infrastructure

The state tourism department authorized guides are available for hire; however, they are very less in number. In addition, there are four tourist information centres. They are –

- Government of India Tourist Office, 15B, The Mall, Cantt, Varanasi
- Government of India Tourist Office, Varanasi Airport
- UP Government Tourist Office, Tourist Bungalow, Near Varanasi Cantt. Railway Station
- UP Government Tourist Information Counter, Near Railway Station, Varanasi
- Modern Reception Centre, Samath

It can be observed from the image below that most of the information centres are located at the main tourist entry points; however, they are all concentrated in the northern part of the city. So the tourist will have to travel all the way to the northern part to seek assistance. There are no tourist information centres near ghats.

Figure 59: Tourist information centres



Image Source: Google Maps

While entering the tourist site such as Vishwanath Temple or Samath, there are ample numbers of signages; however, they are lacking in other parts of the city on roads which lead up to it. The city lacks eco-friendly tourist infrastructure.

12.4.5 Role of agencies involved in tourism development

Table 102 below gives the roles and responsibilities of agencies involved in tourism development. As can be seen there are multiple agencies for the same and therefore, coordinated efforts are lacking.

Table 102: Tourism and heritage – Roles and responsibilities

Department	Department & establishment / jurisdiction	Major functions	Sources of fund
Archaeological Survey of India	<ul style="list-style-type: none"> ▪ Under Ministry of Culture ▪ 112 nationally protected monuments in Uttar Pradesh, of which 20 in Varanasi 	<ul style="list-style-type: none"> ▪ Excavation ▪ Conservation ▪ Preservation and Restoration Maintenance ▪ Education 	Ministry of Culture
Ministry of Tourism	Nodal agency for the formulation of policies and programs and for the coordination of activities of various agencies, State UTs and the private sector for the development and promotion of tourism in the State	<ul style="list-style-type: none"> ▪ Tourism infrastructure development ▪ Hotels, restaurants and other logistics arrangements ▪ Publicity, marketing and promotion of heritage ▪ Market research and statistics ▪ National and International cooperation ▪ Human resource development 	State Government Budgets and grants from the Ministry of Tourism and Ministry of Culture for projects and schemes.
Regional Cultural Centre	One in the seven regional cultural centers of autonomous nature; established in 1986 by the Cultural Department of Govt. of India, primarily based in Allahabad	<ul style="list-style-type: none"> ▪ Preservation and promoting of tribal art, classical & semi-classical music, performances, fine arts and handicrafts. ▪ Organization of handicrafts fairs, workshops, kavi sammelans & mushairas to promote talents. ▪ Rescue of different art forms which are disappearing through publications, exhibitions. 	Ministry of Tourism and Culture
Directorate of Archaeology, Uttar Pradesh	Established in 1951	<ul style="list-style-type: none"> ▪ Conduct archaeological excavation, 	State government

Department	Department & establishment / jurisdiction	Major functions	Sources of fund
		<ul style="list-style-type: none"> ▪ Conserve and protect ▪ ancient monuments, ▪ Publish archaeological literature ▪ Create awareness about archaeology 	
Varanasi Development Authority	<p>1948 Varanasi Master Plan for improvement trust.</p> <p>1958 – Varanasi administration boundary established</p> <p>1973- Varanasi development Authority established with 460 villages with 141 villages form surrounding districts</p> <p>1991-Varanasi Development Authority implemented 1974 Master Plan</p> <p>2001- Master plan approved and accepted by U.P. Govt. ,</p> <p>2011-Master Plan prepared</p>	<p>Planning the development of the city (Master plan and Heritage development plans)</p> <p>Regulation & control (Granting No Objection Certificates & protection of Heritage zones, Layout approvals and Building permissions.</p>	<p>Revenues, development charges, processing fees, sale on receipts besides annual grants and transfers for special purposes from state and central governments.</p>
Varanasi Municipal Corporation	<p>1959- Establishment of Varanasi Municipal Corporation under the Uttar Pradesh Municipal Corporation Act of 1959</p> <p>1994- Varanasi Nagar Mahapalika Converted in to Varanasi Municipal Corporation under the U.P. Government Act -2 with area of 82.10 sq.km.</p>	<ul style="list-style-type: none"> ▪ Provide civic services to rural and urban villages, ▪ Resettlement of Colonies ▪ Primary Collection of Solid Waste ▪ Maintenance of Storm Water Drains ▪ Maintenance of internal roads ▪ Collection of Property tax and O&M of internal sewers and community toilets ▪ Management of Ghats ▪ Construction of Community Toilets 	<p>Municipal revenues (taxes, Building fee etc) State Government grants for projects from Central Government such as JNNURM etc.</p>

Department	Department & establishment / jurisdiction	Major functions	Sources of fund
Varanasi Heritage Cell	Formed in Nov 2012, its members include officials from VMC, VDA, ASI, Regional Cultural Center, Tourism Dept, DUDA, Experts and Senior Academicians.	Shall provide expert support to VMC, VDA and other key agencies on how best to protect and manage Varanasi heritage	Multiple agencies, public and private

12.4.6 Proposed Projects for Tourism Development

Proposals worth Rs. 18 Cr. have been made by state tourism department. The components of the proposal include:

- Floating jetties – 68 lakhs
- Decentralized drinking water facilities – 98 lakhs
- Improvement of steps and pathways – 22 lakhs
- Changing room on ghats – 50 lakhs
- Umbrella on ghats – 2 lakhs
- Stone takht with carved legs on ghats – 16.5 lakhs
- Stone cladding of sewerage pumping wells – 11 lakhs
- Underground cabling by cable trench for electrical distribution system – 1217 lakhs
- High mast on ghats (20) – 190 lakhs
- Small sign board - 0.59 lakhs
- Large sign board – 2 lakhs
- Dustbins - 4 lakhs
- 3 seat urinals -18 lakhs
- 3 seat RCC bench -13 lakhs

Signage in various places in the city needs to be put in. Work already taken up for the following locations:

- | | |
|-----------------------------|---|
| ▪ Airport | ▪ Chaukaghat |
| ▪ NH-56, Babatpur | ▪ Marimai Mandir |
| ▪ Lamahai, Azamgarh road | ▪ Teliabagh |
| ▪ Ghazipur, near Ashapur | ▪ Sigh Medical Hospital |
| ▪ Ramnagar fort | ▪ Near City Station |
| ▪ Rajghat bridge | ▪ Kajakpura Railway Crossing |
| ▪ Sarnath T-Point | ▪ Purava |
| ▪ Chittpur | ▪ Kachairi (near SBI) |
| ▪ Kariappa Marg | ▪ Post and telegraph office, Cantonment |
| ▪ Police lines crossing | ▪ Near government of India tourism office |
| ▪ Lakshmi Memorial hospital | ▪ Patel Nagar, near Church |
| ▪ Urban Haat | ▪ Nadesar |
| ▪ Hokulganj T-Point | ▪ Near Varuna bridge T-Point |

Place identification marks being prepared for 40 locations

Projects which should be taken up include:

- Cleaning of Vishwanath Gali
- Cleaning of Annapurna Gali
- Mobile toilets
- Changing rooms
- Sanitation and drinking water facilities on ghats
- Promotion of ecofriendly tourism
- Resting rooms
- Sound and light show in Sarnath.
- Development work on Ramnagar's Ram lella asthals
- Development of Markande Mahadev ghat, which is located 27 km from Varanasi
- Sarnath internal roads. Rough estimate of length of roads – 3-4 Km
- Dharmshala renovation (10 each) on 5 locations on Panchkoshi parikrama marg
- Sanitation facilities on tourist locations

Tourist police: mainly present on Dashashwamedh ghat, Sarnath and railway stations

12.5 Fairs and festivals

Varanasi, the sacred corridor (tirtha) is the embodiment of living sacred heritage and hosts a large number of fairs and festivals throughout the year. The importance of these festivals can be seen from the number of pilgrims arriving and attending the fairs. The self-organization of the Varanasi pilgrimage system intensifies partially due to increased mutual interaction of pilgrims who arrive in informal groups of family and friends or various kinds of pilgrimage tours. The Table 103 below shows the fairs and festivals that take place in Varanasi, with their venue and period during which they occur.

Table 103: Important festivals and the venue in Varanasi city

Festivals	Venue	Period of Occurrence
Paush Poonima	Ghats	January
Makar Sankranti	Ghats	January
Mauni Amavasya	Ghats	January/February
Magh Poonima	Ghats/Ravidas Mandir	February
Ganga Water Rally	Ghats	February
Dhrupad Mela	Tulsighat	March
Mahashivaratri	Ghats & temples	March
Navratra (Chaitra)	Ghats / Temples	April
Ram Navami	Tulsi Manas Mandir & Ghats	April
Sankat Mochan Music Festival	Sankat Mochan Mandir	April
Buddha Poonima	Sarnath	May
Ganga Dussehra	Ghats	June

Festivals	Venue	Period of Occurrence
Ramlila, Ramnagar	Ramnagar	September-October
Dhanush Yagya	Ramnagar	September
Ram Vivah	Ramnagar	September
Nakkataiya	Ramnagar	September
Pitra Visarjan	Ghats	September
Navaratra(Ashwin)	Ghats & Temples	October
Vijaya Dashmi / Dussehra	Ramnagar D.L.W Vidyapeeth	October

Source – UP Tourism Department, Varanasi and Ministry of Tourism, Government of India

Ganga Mahotsav

Ganga Mahotsav is organized every year by Mahotsav Samiti, Varanasi on the holy bank of Ganga to showcase & promote Cultural Tourism. It also offers one of the most comprehensive windows to the world of Handicrafts.



Dev Deepawali is organized on the last day of Ganga Mahotsav, which may rightly be called as pinnacle of the event. Millions of earthen Lamps (Diyas) are not only floating on the holy water but also incense the beauty of the all 84 Ghats of river Ganga. Aroma of mesmerizing incense and the sacred chants make you believe that you are in heaven, witnessing a celestial happening.

Boudh Mahotsav

This festival celebrates the birth of Lord Buddha with traditional religious fervor. A large fair is held at Sarnath and the relic of the Buddha are taken out for public display in a procession on this day in the month of May. The beauty of this event is amplified by millions of earthen lamps "Diyas" placed dotted in Mulgand Kuti Vihar and two days Cultural Programmer organized by U.P. Tourism adds the magnificence to the event.



Kajari Mahotsav (Mirzapur)

It is among the famous festivals of Mirzapur. Respected all over India, kajali took birth here. King Kantit Naresh's daughter Kajali loved her husband very much and sang songs in the moment of separation from her husband, although she could not meet her husband throughout her life and died, yet she remains alive through these deep sad-love songs. Her voice and songs impress Mirzapur locals very much, so they remember her through this festival paying homage to her.

Kajari, derived from the Hindi word Kajra, or Kohl, is a genre of Hindustani classical music singing, popular in Uttar Pradesh and Bihar. It is often used to describe the hanging in the summer skies, and the style is notably sung during the rainy season.

It comes in the series of season songs, like Chaiti, Hori and Sawani, and is traditionally sung in the villages and towns of Uttar Pradesh: around Banaras, Mirzapur, Mathura, Allahabad and the Bhojpur regions of Bihar.

UP Tourism along with District Administration organizes a two days cultural Programme at Govt. Inter College in Mirzapur as a tribute to this exclusive musical art form of Mirzapur in the month of August or Akshay Tritiya of Bhado Month of Indian Calendar.

Ganga Water Rally (Allahabad-Mirzapur-Chunar-Varanasi)

Exploring scenic beauty along with river Ganga with historical ghats on its bank, Ganga water rally develops adventure tourism in India. It is an event of complete adventure and fun. The Boat Club Allahabad patronizes this event and the participants coming from all the corners of India and abroad use kayaks, canoes or row boats in this nomadic sport. Occurring in the month of November Ganga Water Rally is the first major water sporting events of its kind in the state. Here, the adventurous persons would be taken on a nerve rattling sojourn down the Ganga from Allahabad to Varanasi through Mirzapur and Chunar.

Dhrup Mela

A five days music festival of Dhrup is performed by renowned artistes at Tulsi Ghat. It is very popular among foreign visitors.

Mahashivaratri

On this day, every Shiv Mandir is decorated. In Varanasi a marriage procession of Lord Shiva is taken out starting from Mahamrityunjaya Temple, Daranagar to Kashi Vishwanath Temple via Chowk.

Nag Nathaiya Leela

In a performance, Lord Krishana jumps into Ganges for Nag Nathan at the local Tulsi Ghat. It is famous as Nag Nathaiya Leela. Many people congregate to see this event, held during the month of November - December.

Hanuman Jayanti

Janmotsav of Lord Hanuman is celebrated at Sankat Mochan Temple for five days, with cultural & musical programs by renowned artistes from all over India.

Ramleela of Ramnagar

Ramleela of Ramnagar has been nominated by the GOI in 2005 as the intangible cultural heritage in the UNESCO's representative list from India. In order to get the UNESCO listing the "Indra Gandhi National Centre for the Arts" had to film a documentary with 200 minutes of footage to convince UNESCO panel of the great world cultural heritage significance of Ramnagar's Ramleela.

It is a renowned performance that takes place annually in the Hindu month of Ashvina (Sep-Oct) over a period of 31 days. People from neighbouring villages and towns travel all the way to Ramnagar to watch it. People collect at different places as per the lila is progressed from one place to other. The entire town of Ramnagar becomes the backdrop for the performance of various episodes of Ramayana. The Ramleela is an example of environmental theatre in a natural setting which takes place at 20 locales across town (Singh R.P.B, 2009)

Udit Narayan Singh (1796-1835), the former king of Varanasi started the Lila performance in 1800 but the location sites and scenes were finalized only in 1825, when the Girja (Durga) temple was built. Later during the time of Ishvari Narayan Singh(1835-1889) all the dialogues and citation were finally composed with the help of scholars and priests most notable among them being the renowned Hindi writer Bhartendu Harishchandra. The last King Vibhuti Narayan Singh (1927-2000) was the lifelong patron of the ramlila and was the key figure in making this internationally acclaimed and known and hence came to be referred as the Maharaja's Ramlila.

The pre-performance preparation are also unique in themselves. The ramlila does not use any sound or light and various places of the Ramayana like Chitrakoot, Ayodhya, Lanka, Mt. Kailash and Mt. Sumeru etc are created in Ramnagar. Artists performing various characters in the Ramlila are drawn from local villages and trained in their parts for few months in the gurukul system of learning.



The total area of the lila spreads across 260 ha. Appx. 10,000 people watch the performance each day, but on special episodes like the killing of Ravana and Bharat Milap the number of spectator reaches over 50,000. Some stages are in mid of the town, other are in the deep dense wooded areas or grassy hillsides and in open fields.

Each episode is called a Lila which generally begins at around 5PM in the evening and continues until 10 PM at night. Some of the acts go on into the night finishing early in the morning. The stage design is simple and draws upon iconography and images from twmplws, religious paintings and popular posters. The costumes are richly woven silk fabric in bright gold and reds. The faces of the some actors are adorned with glittering jewels whereas other character sdorn large colorful masks made of paper mache that help make the performance lively and interesting.

The episode of Bharat Milap takes place at Nati Imli neighbourhood of Varanasi City. The Nakkataiya of Chetganj hold aspecial place for the people of Varanasi. The Bharat Milap receives a royal patronage from the king of Varanasi. Citizens follow him throughout the town. In Nati Imli the king and his procession wait on one side to witness this meeting of four brothers. Nearly half a million people gather in this neighborhood to witness the event year after year. For Nakkataiya of Chetganj thousand of people gather in Chetganj. The act is followed by a procession of people dressed as various Hindu Gods like Shiva, Durga, Kali etc to symbolize the victory of good over evil.

12.6 Key concerns/issues

■ Tourism

- ◆ The number of tourists has reduced year on year (2012 to 2013) due to pollution, traffic congestion, flood like situation and poor roads.
- ◆ Lack of guided tours and information centres.
- ◆ City guides or brochures not easily available to tourists
- ◆ Though the number of hotels was not available, while discussing with stakeholders it was made aware that during peak rush months, there is shortage of hotel rooms
- ◆ Lack of authorized parking stands for overnight parking of taxis and buses
- ◆ Lack of signage in city 'Galis'

■ Heritage

- ◆ There is lack of protection to heritage sites and its conservation, which can in turn endanger the religious atmosphere
- ◆ Natural decay and damage to properties also occur with time. Many are in dilapidated conditions, and repair works or maintenance is not carried out as needed.

- ◆ The number of kunds is reducing every year is due to neglect, unregulated construction in the catchment areas of the respective kunds, lack of awareness, among other causes.
- ◆ Most of the heritage properties in the inner city area face vague ownership. Their ownership status is complex with properties, including religious structures, being managed by multiple individuals and private organizations. In many cases, properties have been subdivided amongst multiple owners. In others, the ownership rights are divided according to the floors of the property.
- ◆ **Increasing population:** the increase in population density, particularly, in the old city areas are being felt on the heritage sites. The built heritage of the city, which is a priceless non-renewable resource, is seriously threatened today.
- ◆ Multiple agencies are involved in the conservation of heritage sites with overlapping jurisdictions.
- ◆ There is need for review of existing bye-laws to bar construction of properties near heritage sites.
- **Shrinking spaces:** the population growth is increasing demand for utilizing available land, creating pressure on the substituting existing spacious architectural forms with optimal space utilization plans. These trends are increasingly disturbing and destroying the existing architectural beauty and harmony of heritage properties.
- **Threat to river Ganga:** About a decade ago the width of the river had been 225-250m, however it reached to around 60-70m. The main stream has lost the high speed of the current due to less volume and pressure of water. The depth of the bed is drastically became victim of deposition. The natural capacity of the river to maintain its speed of the flow is now checked. Close to the Assi Ghat, the first one, the river has already left the bank about 7-8m. The existence of Ghats in Varanasi is in danger because the existence of the Ganga is in danger.

13. Assessment of institutions, systems and capacities

The urban governance sector is one of the most complex areas because it has wide range of factors and players that make the sector so challenging. Complexity of systems varies from the range of stakeholders, rigid framework conditions and the strength of the linkages between these factors. The effective coordination between the factors is critical to economic growth, inclusiveness and overall quality life in the city.

13.1 Urban governance system

The urban governance system of Varanasi consists of various departments. These departments like tax department, audit department, engineering department, accounts department, animal husbandry department and liscence department works directly under the additional municipal commissioner. Municipal commissioner is in operation as the head of the whole system.

13.1.1 Varanasi Municipal Corporation

The Varanasi Municipal Corporation was established on 24th January, 1959 under the Uttar Pradesh Municipal Corporation Act of 1959 as a Nagar Mahapalika. In 1994 it was converted into a Municipal Corporation under the U.P. Government act -2. It falls under the Department of Urban Development. The 90 wards of the city are grouped into five different zones. At present total area under VMC is 81.1 Sq. Km. with a total population of 12 lakhs as per census 2011.

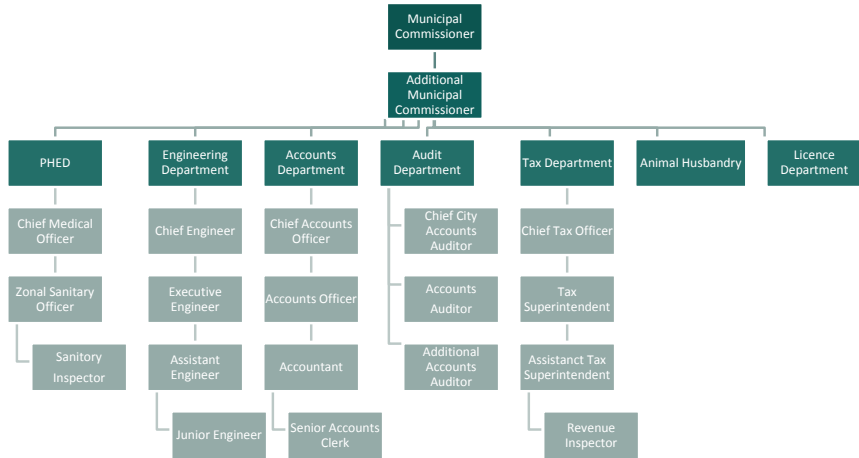
13.1.1.1 Organization Structure and functions

A total of 90 councilors are elected, which form the general body of the VMC who work in tandem with the executive staff. The functions related to sanitation are as follows:

- Monitor the functioning and finance of Jalkal (after merger in Feb 2010)
- Provide and maintain public toilets and sanitation facility in the city
- Provide facilities for solid waste collection and disposal
- Collection of medical waste from hospitals
- Operations and maintenance of Storm water drains



Figure 60: VMC's organization structure



There is a shortage of manpower in the VMC due to retirements and halting of new recruitments. This has led to pressure on the existing manpower to perform the same tasks, to achieve the desired service levels and outputs.

Currently, there is no new policy to reduce the salary expenditure. However, to meet the gap at the lowest level, VMC outsources the work of safai karamcharis and computer operators. The Table 104 below provides the number of filled and vacant posts, category wise.

Table 104: Category-wise manpower strength

Sr. No.	Designation/Category	Total	Filled	Vacant
1	Senior officers	10	8	2
2	Department heads	31	16	15
3	Engineers	100	52	48
4	Clerks – I	159	143	16
5	Clerks – II	210	145	65
6	Safai karamcharis	3420	2209	1211
	TOTAL	3930	2573	1357

GoUP constituted a committee under the chairmanship of the Director of Local Bodies (DLB) in 2006 to establish norms for categorization, up-gradation, reorganization, and rationalization of human resources in VMC.

The committee has already submitted its report to GoUP. The Finance Department of GoUP has approved the recommendations of DLB. Approval from the cabinet is awaited. Upon approval from the cabinet, many posts such as those of an accounting cadre, a revenue cadre, an IT cadre, environment engineers, and city managers shall be created at the VMC level.

13.1.1.2 Transfer of functions as per 74th constitution amendment act

Out of the 18 functions mentioned in the 12th Schedule, 12 functions have already been devolved to VMC. The state government has taken a stand against transferring fire services to ULBs because, as of today, the functional domain of fire services stretches beyond the limits of local bodies and is being managed by the Police Department.

It was informed during discussions that the state government is considering handing over some responsibilities to the VMC, like planning and housing, which currently are not under VMC's purview. But there is no clarity as to when and how this will happen.

13.1.2 Jal Kal

UP Jal Nigam had previously created infrastructure for water supply and sewerage, whose ownership has been transferred to Jalkal. Planning and/or construction of new infrastructure are not a mandate of the department. The private sector is involved in the operation and maintenance of the tube wells and vehicles, and cleaning works of campus through service contracts for certain areas only.

The Varanasi Jal Kal (Jalkal) was disintegrated from VMC in 1974, by a mandate in one of the World Bank schemes, in order to avail funds for improvement in water supply facilities. Later in 2010, it was merged with the VMC, continuing to undertake responsibility for water supply and sewerage discharge. Though it continues to have a large amount of autonomy with regards to administrative and financial functions, the Municipal Commissioner is responsible its performance.

Functions

- Draw water from the Ganges River and tube wells
- Provide water supply and undertakes operation and maintenance of water supply network
- Undertakes operation and maintenance of sewerage network (Except STP)
- Construct new water supply and sewer lines at micro level
- Solely authorized to collect taxes and user charges for water supply and sewerage
- Redressal of complaints regarding its services
- Installation of new hand pumps, tube wells etc, in certain rare cases, with help of MP and MLA LAD funds.

Finances

After the merger with VMC, budget sanctions are made for Jalkal by VMC in March – April and revised in September – October. Monetary supervisions are also conducted by VMC. The General Manager of Jalkal has powers to sanction a project with a maximum budget of Rs 5 lacs, but projects involving more than Rs 5 lacs have to be sanctioned by VMC. Jalkal has a computerized billing system; and charges water tax at 12.5% and sewerage at 4% of Annual Rental Value of the property. Its major expenditure is O & M costs of water supply and sewerage system, as well as on staff salaries.

13.1.3 Parastatals

13.1.3.1 Jal Nigam

Realizing the urgency to supply safe drinking water, a separate department in the name of Local Self Government at Secretariat Level was to be created in the year 1949. For this purpose, a Public Health Engineering Department was re-christened as Local Self Government Engineering Department in the same year. The State Government decided to finance such sanitation projects, keeping in mind the increasing demands and pressures on providing other civic amenities as well. It would provide a component of loan which would be repayable in easy installments, to a category of towns which had repayment potential. In order to supplement the funds, efforts were also made to seek soft term loans from International Monetary Fund/ World Bank.

However, World Bank put forward a condition that, in order to get soft term loans, it would be essential for the State Government to constitute an independent body in the State. This body would be responsible for repayment of loan and execution of projects as financed by the Bank. As a consequence to this condition the State Government promulgated an ordinance in February 1975 and converted Local Self Government Engineering Department into a corporation by the name of Uttar Pradesh Jal Nigam. This ordinance was subsequently converted into an Act named as Uttar Pradesh Water Supply & Sewerage Act, 1975. In pursuance of this Act, Uttar Pradesh Jal Nigam came into existence with effect from 18th June 1975.

Functions of Jal Nigam

- To maintain the Sewerage Treatment Plant (STP)
- To collect water on all the Ghats and transfer to Koniya STP and then at Dinapur
- To plan and construct all infrastructure related to water supply and sewerage
- To drill tube wells and hand pumps in the city
- Preparation, execution, promotion and financing schemes for water supply and sewage disposal

13.1.3.2 Varanasi Development Authority (VDA)

VDA has a physical jurisdiction over the VMC area and an additional peripheral belt of 8 km from the VMC boundary. It falls under the department of Housing and Urban Planning, and has no overlaps with any other organization on issues of water supply, sewerage and solid waste.

Functions

The role division of VDA and VMC has been done on functional basis. VDA undertakes all the activities related to land use, zoning, development, implementation of DCRs, and providing building permission. It also prepares DP for the city at an interval of every 10 years. It also has to make sure that all regulations and building bylaws are being adhered to.

13.1.3.3 State Urban Development Authority (SUDA)

The institutional responsibility for slum improvement vests with the SUDA that operates through a network of the District Urban Development Authorities (DUDA). SUDA executes various government schemes for urban renewal like – JNNURM, Rajiv Aawas Yojna, Balmiki Ambedkar Awas Yojana, Integrated Urban Slum Sewerage Plan, National Slum Development Program, and Golden Jubilee Urban Employment Scheme etc.

The State Secretary for Urban Employment and Poverty Alleviation is appointed as Chairman SUDA and is responsible for the acceptance and approval of all the schemes being implemented by SUDA. Other members in SUDA are Secretaries for Health, Education, Urban Development, Housing, Youth-development and Social Development. SUDA operates through a series of community structures like–

- Community Development Societies (CDSs) – (1350 in the state)
- Neighborhood Committees (NHCs) – (10009 in the state)
- Neighborhood Groups (NHGs) – (100963 in the state)

SUDA executes all its programs using beneficiaries for prioritization of needs and execution of schemes.

13.1.3.4 District Urban Development Authority (DUDA)

The District Magistrate is the chairman of DUDA. His responsibility is coordination, in order to avoid functional overlaps amongst various agencies. The VMC has its representatives in member body of DUDA, so overlaps are taken care during project sanctioning. The functions of the DUDA are:

- Execute various government schemes for urban development and employment generation
- Create urban infrastructure, including water supply
- Undertake tasks related to urban infrastructure to generate local employment
- Construct community toilets and link it to sewer lines etc. Sewers are laid according to plan made by VMC.

13.1.3.5 Public Works Department

The State PWD is primarily responsible for construction and maintenance of roads, state government institutions and state government housing in the city. The CPWD is responsible for the construction and maintenance of only central government buildings and institutions.

The PWD operates under the State PWD Minister and State-level Secretary and Principle Secretary. At the district level the Superintending Engineer heads either one or two districts. There is one Executive Engineers (Ex En) for every 3 to 4 election constituencies.

The PWD is responsible for the maintenance of the main city roads with the VMC responsible for the internal roads. There are no criteria for categorizing the roads to be maintained by PWD or VMC. The District Magistrate assigns the responsibility to either of the departments based on the primacy of the road stretch.

13.1.3.6 Uttar Pradesh Awas Vikas Parishad

The UP Awas Vikas Parishad (AVP) is the nodal agency for housing in the state. It was established in April 1966 to work towards housing solutions. Besides housing projects it has diversified its activities to planning, designing, construction and development of almost all types of urban development projects throughout the state. In addition, AVP plans and executes projects for the development of health and education. It is also handling new district headquarters projects with the execution of large number of schemes. AVP has constructed multi storied office buildings and commercial towers for its own and public use. Providing public facilities is also a priority function of AVP. It develops market areas and convenient shopping. AVP also indulges into housing for the shelter-less.

The AVP is an autonomous and raises its own resources. AVP is a professionally managed organization with specialists working in different fields viz – Architecture, Town Planning, Construction Technology, Infrastructure Design, Execution and Maintenance, Estate and Financial Management etc. The AVP has an Engineering, and Architecture & Planning wing.

The functions, roles and responsibilities of all the departments is mentioned in the Table 105 below.

Table 105: Functions, roles, and responsibilities

Sr. No.	Key Infrastructure Services	Planning and Design	Construction/ Implementation	O&M
1	Water Supply	UP Jal Nigam, Jal Sansthan (small projects)	UP Jal Nigam, Jal Sansthan (small projects)	Jal Sansthan
2	Sewerage	UP Jal Nigam, Jal Sansthan (small projects)	UP Jal Nigam, Jal Sansthan (small projects), DUDA	UP Jal Nigam, Jal Sansthan, VMC, DUDA
3	Storm Water Drains	UP Jal Nigam, Jal Sansthan (small projects)	UP Jal Nigam, Jal Sansthan (small projects), DUDA	UP Jal Nigam, Jal Sansthan, VMC, DUDA
4	Solid Waste Management	VMC	VMC	VMC
5	Urban Transport – City Bus Service	UPSRTC	UPSRTC	UPSRTC
6	Street Lighting*	VMC, VDA, PWD	VMC, VDA, PWD	VMC, VDA, PWD
7	Preparation of Master Plan/ Development Plan	VDA, TCPD	VDA	-
8	Housing for the Urban Poor	DUDA, VDA, VMC	DUDA, VDA, VMC, UP Jal Nigam	VMC, Jal Sansthan, UP Jal Nigam

DUDA – District Urban Development Authority, VMC – Varanasi Municipal Corporation, VDA – Varanasi Development Authority, UPSRTC – Uttar Pradesh State Road Transportation Corporation, TCPD – Town and Country Planning Department
*in respective jurisdiction

13.2 Urban reforms/transfer of functions (CDP 1st generation scenario)

13.2.1 Progress of implementation of reforms – state level reforms

Uttar Pradesh has made significant progress in the implementation of the state-level reforms. The key achievements and the implementation status of the reforms are highlighted in the following sections.

Table 106: State level reforms

State level reforms	Target year	Current status	Remarks
Rent Control Reforms	2009-10	Achieved	Rent control legislation already has enough provisions relating to protection mechanisms for landlords and tenants.
Rationalization of Stamp Duty	2009-10	Achieved	Stamp Duty has been reduced to 5%.
Repeal of Urban Land Ceiling and Regulation Act (ULCRA)	No timelines indicated	Achieved	ULCRA has been repealed.
Community Participation Law	2008-09	Achieved	Amendments to the act have been made and ward committees have been constituted.
Public Disclosure Law	2007-08	Act Amendment – Completed Actual Disclosures – Completed and continuing	Amendments to the act made. Disclosure by ULBs made; balance sheets (OBS and provisional Balance Sheets) uploaded on their websites
Transfer of 12th Schedule Functions	2005-06	In Progress	Functions relating to fire and public transport services are with para-statal agencies. Urban planning and building regulation functions are yet to be transferred to 106 ULBs. The state government has reiterated that these functions will not be transferred to the ULB.
Transfer of Urban Planning Functions	2011-12	In Progress	Fire and public transport services are yet to be transferred to ULBs. The state government has reiterated that fire service and public transport functions will

			continue to be performed by the police and Uttar Pradesh State Road Transport Corporation (UPSRTC), respectively.
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13.2.2 VMC level reforms

Table 107: City level reforms

Reform milestones	Target year	Current status	Remarks
E-governance	2011-12	In progress	Of the 8 modules, 6 are operational and 2 modules i.e. building plan approval and e-procurement are pending
Municipal accounting	2009-10	Complete	VMC has migrated to DEAS, although approval of accounting manual from state is pending
Property tax	2010-11	Complete	The taxation system is based on ARV method. VMC has been able to cover ~100% of the properties and collection efficiency is 95% Setting up non-discretionary method for determination of property tax (unit area method or capital value method) is pending
User charges	2010-11	In progress,	In terms of water supply, the cost recovery is close to 60%. VMC has notified user charges for SWM. However actual collection is yet to begin
Internal Earmarking of Funds	2011-12	In progress	Funds have been earmarked as a part of the budget
Basic Services to Urban Poor	2011-12	In progress	VMC has taken up initiatives to provide services to the urban poor.

13.3 Key issues

- It is observed that in Varanasi there are many agencies that are involved for provision of services delivery, and there is lack of coordination among them, which is one of the major reasons for delay in the implementation of reforms.
- Dissemination of information with regard to the citizen's charter is absent, and is also not displayed anywhere within the ULB or at citizen facilitation centres of VMC.
- VMC is facing severe capacity constraints both in terms of availability of manpower and skill set to monitor and maintain the e-governance modules that have already been implemented.
- Many obligatory standalone modules such as SWM and Finance are yet to be implemented.
- Frequent transfer of key officials such as Municipal Commissioner and Additional Municipal Commissioner is a matter of concern. As a result of the transfers, priorities of VMC keep changing affecting the overall efficiency of the system.

- The state government is not willing to transfer some of the functions to VMC as the ULB does not have adequate staff with required skill sets.

13.4 Overlapping of roles and accountability

Within the VMC at the departmental level, there are functional overlaps; for example, both PWD and the Street Lighting departments are undertaking the construction and maintenance of streetlights and municipal properties; VMC as well as PWD clean drains; etc. These overlaps cost the VMC in terms of revenues as well as manpower and are often subject to problem arising from a lack of coordination – a situation that is not conducive to institutional efficiency.

The VMC faces a shortage of sanitation staff. The Public Health Department is responsible for cleanliness in several wards. The numbers of sweepers available in the VMC and the PHE are way below the standards set in the Government Health Manual. The key issue is to decide on the trade-offs between hiring full time staff versus outsourcing. The latter will mean that the liabilities of the VMC will be reduced but, experience of similar attempts in other municipalities have shown that outsourcing is difficult to implement both because of the legal aspects involved as well as the opposition from existing staff. While this is difficult to implement, the long term advantages of outsourcing definitely outweigh the initial teething troubles.

Despite the very large size of the VMC, all functions are performed out of the main office of the VMC. There is little decentralization and therefore no Zonal Offices or Ward Committees. This centralized approach is not very amenable to efficient working.

Quite like the other development authorities, the VDA functions as the 'Developer to the Government'. Functional overlaps are seen between the VDA and the TCPD with both being responsible for spatial planning. Functional overlaps are also seen in the implementation and maintenance functions that are performed by both the VDA and the VMC. As a parastatal, the VDA is supposed to hand over sectors that have already been devolved to the VMC for service provision and in order to ensure that levels of service are satisfactory, it needs to take the VMC into confidence while developing sectors. There is a possibility that sectors be developed in places where infrastructure is deficient.

The VDA is focusing on developing the outlying areas since the inner areas of the city are already developed. While planned development is taking place there is a high possibility that this is encouraging unplanned growth with unauthorized colonies coming up through the conversion of designated agricultural land to residential use.

This lack of accountability arises from a lack of role separation since the UP Jal Nigam is responsible for both policymaking for the sector as well as implementation of the policy – therefore regulation is non-existent. Being a state department, its functioning is also subject to a high degree of political interference. Dependence on state budgets means that there are limited resources available for capital investment for preventive maintenance and its functioning is therefore more reactive.

The functions of the AVP, the VDA and the VMC are similar. All the three agencies are involved in planning and development of land for residential and commercial purposes. The linkage of these agencies with the TCPD is also indicative of overlaps.

13.5 Public private partnership

The GoUP amended the UP Municipal Act, 1916, in September 2009 and empowered the ULBs to enter into PPP agreements with the private sector, to implement the infrastructure projects and

discharge the services. Further, GoUP issued a government order to each ULB for the development of the following facilities on PPP basis: parking places, modernization of slaughter houses, and an electric crematorium.

In the past, VMC has undertaken various PPP initiatives. They are as follows:

- VMC signed a contract with M/s A2Z Infrastructure from 1st May 2010 to undertake collection, transportation, treatment, and disposal of SWM. Though the contract was signed by VMC, the state government provided support to sign the contract.
- VMC is in an advanced stage of selecting an operator for the management of waste from slaughter houses.
- VMC has prepared the DPR for setting up a street food. The DPR has been submitted to the government for approval.
- Efforts are being initiated to renovate, operate, and maintain an electric crematorium at Harishchandra Ghat under PPP.

14. Municipal finances

This Chapter focuses on the financial assessment of Varanasi Municipal Corporation for the analysis period of 2008-09 to 2012-13. For this CRIS team had carried out data collection and also conducted meetings with the Accounts Department, VMC in order to understand their accounting and budgeting system. On that basis, CRIS has prepared financial assessment report for which brings out details of VMC's financial statement, its revenue account & capital account and key financial performance indicators in detail.

14.1 As-is-assessment of municipal finances

The Accounts Department plays crucial role for ULB. It has the highest importance in any ULB. The Accounts Department administers the finances of VMC. The department is headed by a Chief Accounts Officer. The Chief Accounts Officer is usually a state government cadre officer. VMC has moved to the double-entry accounting system.

14.1.1 Overview of the Accounting and Budgeting System

The Accounts Department plays crucial role for ULB. It has the highest importance in any ULB. The Accounts Department administers the finances of VMC. The department is headed by a chief accounts officer. The chief accounts officer is usually a state government cadre officer. VMC has moved to the double-entry accounting system. The balance sheets of 2007-08 and 2008-09 have been audited. However, VMC is also maintaining the accounts on the cash-based entry system. The municipal corporation got a credit rating of B+ in 2008-09, but the municipal corporation has zero debt on its balance sheet. So, the relevance of credit rating to the municipal corporation is minimal.

14.1.2 Municipal fund statement

As the starting point of our analysis of VMC's financials, we have presented below, VMC's municipal fund statement for the period Financial Year (FY) 2008-09 till 2012-13. The statement is a snapshot of the financial position of VMC during the analysis period i.e. FY 2008-09 till 2012-13. The statement has been prepared based on the financial information provided in the budget documents of VMC. Further, for the purpose of this analysis, CRIS has restated the financials of VMC as provided in the budget documents so as to bring them in line with prudent accounting norms.

The total revenue of VMC grew from Rs. 224 Cr. to Rs. 459 Cr., over the five year period. This represents a healthy CAGR growth of 20%. However, due to several capital works the total expenditure outpaced total revenue in two years of the five year period. The total expenditure increased from Rs. 210 Cr. in 2008-09 to Rs. 439 Cr. in 2012-13 i.e. at a CAGR of 20% over the period under review. This trend has been represented in the Figure 61 below and the financial statement in the Table 108 below.

Figure 61: Overview of financial position of VMC

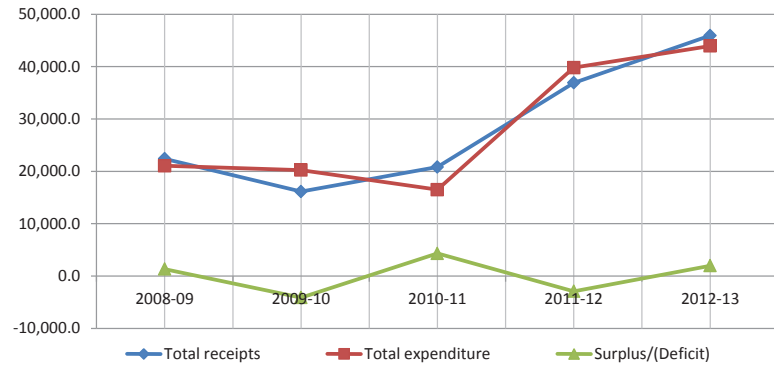


Table 108: Financial Statement of VMC for analysis period (2008-09 to 2012-13) in Rs. lakhs

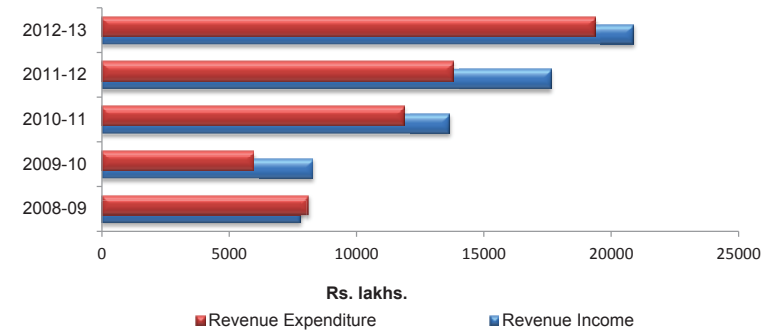
Head of account		2008-09	2009-10	2010-11	2011-12	2012-13
Opening Balance		3,889	5,232	1,130	5,452	2,551
Revenue receipts						
A	Own sources	3,778	4,675	5,721	10,126	12,117
B	Assigned revenues and grants	4,015	3,581	7,909	7,498	8,720
Total		7,794	8,256	13,630	17,624	20,837
Revenue expenditure						
A	Salaries	6,357	5,204	7,681	9,163	10,446
B	Operations and maintenance	1,741	731	4,183	4,629	8,903
Total		8,098	5,935	11,864	13,792	19,349
Capital income		14,612	7,886	7,195	19,270	25,085
Capital expenditure		12,965	14,309	4,638	26,003	24,604
Closing balance incl. opening balance		5,232	1,129	5,452	2,551	1,969

14.2 Revenue account

Revenue account consists of two components Revenue Receipts and Revenue Expenditure. Revenue receipts and expenditure are linked to the daily administration of VMC. Revenue account of VMC over last five years is shown in the figure below. It is seen that VMC has revenue deficit accounted in one of the five years under review. The maximum surplus was in the year 2011-12.

The revenue receipts have increased year-on-year basis from 2009 to 2013 from Rs 78 Cr. to Rs 208 Cr. at a CAGR of 28% and revenue expenditure has increased from Rs 81 Cr. to Rs 193 Cr. at a CAGR of 24%.

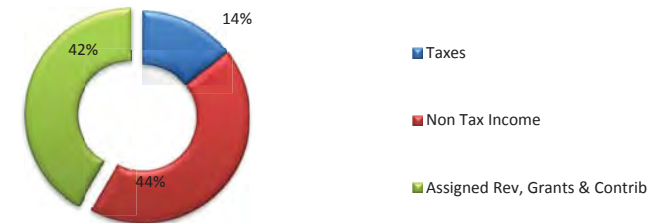
Figure 62: Trends in revenue receipt and expenditure



14.2.1 Revenue receipts

Revenue receipts for VMC consists of own sources of revenue and revenue from grants & contributions. Further, own sources of revenue comprises of tax revenues and non-tax revenues. Revenue from own sources was 58% of the total revenue receipts.

Figure 63: Sources of revenue income



Tax revenue

- ◆ Property tax
- ◆ Boat tax
- ◆ Publication tax
- ◆ Theatre tax
- ◆ Tax of pilgrims

Non-tax revenue

- ◆ Rent from municipal properties
- ◆ License fees
- ◆ Registration fees

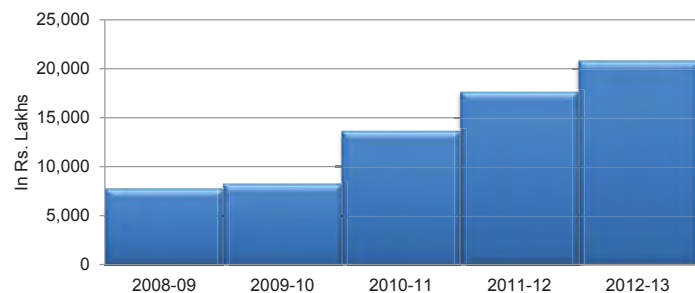
- ◆ Road cutting
- ◆ Water tax and charges
- ◆ Sewerage tax and charges

■ Assigned revenue

- ◆ General programs
- ◆ Life insurance fees for government employees

The increase in revenue receipt is primarily on account of property tax and water charges. Revenue under both these heads has more than doubled. Over the years, the revenue contribution, in percentage terms, has increased for non-tax items. It was 32% in 2008-09 and in 2012-13 it was 44%. However, the contribution for tax items has reduced from 17% in 2008-09 to 14% in 2012-13. Contribution by assigned revenues and grants has reduced from 52% in 2008-09 to 42% in 2012-13.

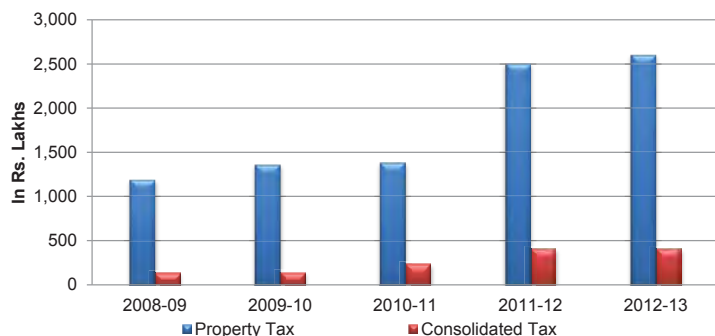
Figure 64: Revenue receipt



14.2.1.1 Tax income

During the period under review, the tax income grew at a CAGR of 23%. The main components of tax income are property tax. Tax income contributes to 14% of the revenue receipt. Property tax has over the period under review has increased from Rs. 12 Cr. to Rs. 26 Cr.

Figure 65: Tax income



The tax income increased from Rs. 13 Cr. in 2008-09 to Rs. 30 Cr. in 2012-13. The table below shows the breakup of tax income during the period under review. The maximum increase in absolute terms and percentage terms was property tax. A substantial increase was seen between 2010-11 and 2011-12, on account of increase in number of properties under tax net.

Table 109: Tax income in Rs. lakhs

	2008-09	2009-10	2010-11	2011-12	2012-13	CAGR %
Property tax	1,186	1,358	1,384	2,500	2,600	22
Consolidated Tax	133	138	234	408	408	32
TOTAL	1,318	1,496	1,617	2,908	3,008	23

14.2.1.2 Non-tax income

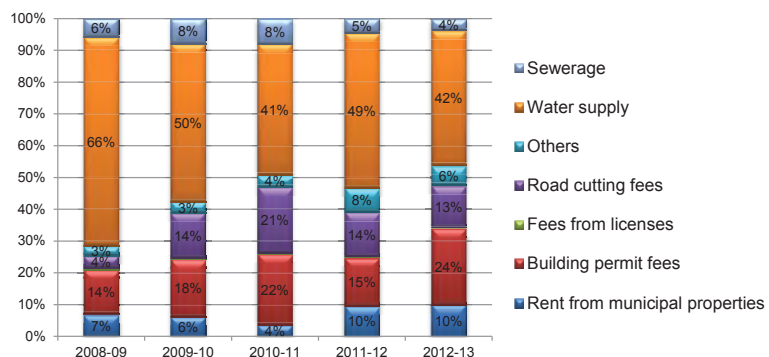
On an average non-tax income has contributed 44% of revenue receipt over the period of analysis years. For VMC, non-tax income increased from Rs 24 Cr. in 2008-09 to Rs 91 Cr. in 2012-13 growing at CAGR of 39% in the analysis period, major contribution of 42% in non-tax income is contributed by water supply and sewerage tax and charges.

Table 110: Non-tax income in Rs. Lakhs

	2008-09	2009-10	2010-11	2011-12	2012-13	CAGR %
Rent from municipal properties	170	196	147	695	905	52
Building permit fees	347	576	917	1,100	2,200	59
Fees from licenses	13	13	15	22	22	15
Road cutting fees	96	450	849	1,000	1,200	88
Water taxes and charges	1,616	1,582	1,692	3,515	3,865	24
Sewerage taxes and charges	142	251	331	328	340	24
Others	76	111	153	558	577	66
Total	2,460	3,179	4,104	7,218	9,109	39

The composition of non-tax revenue sources is shown in the table below for analysis period. Major contribution in the non-tax revenue has been by water supply tax and charges.

Figure 66: Composition of non-tax revenue income



14.2.1.3 Assigned grants and contributions

Assigned grants and contribution constitute the 42% of the revenue receipts. Over the period of analysis, on an average it constitutes 47% of the revenue income and grew at a CAGR of 34%. State finance commission grants constitute the largest part of the assigned grants and contributions. In the year 2009-10, there was an outflow of Rs. 7 Cr. under the head, other state government grants, on account of return of grant. Due to which the year 2009-10, witnesses negative income.

Table 111: Assigned grants and contribution income in Rs. Lakhs

	2008-09	2009-10	2010-11	2011-12	2012-13	CAGR %
General programs	28	4	2,282	750	750	126.9
Life insurance for state govt. employees	19	18	4	30	30	11.8
Education grant	6	24	10	38	40	59.4
Other state government grants	154	-710	206	300	300	18.1
Family planning	70	50	90	80	100	9.3
State Finance Commission	3,738	4,196	5,317	6,300	7,500	19.0
Total	4,015	3,581	7,909	7,498	8,720	21.4

14.2.2 Revenue expenditure

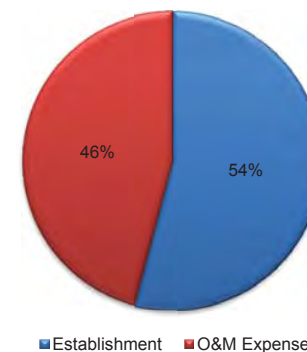
Revenue expenditure covers expenditure incurred by VMC on its day to day administrative operations. Key components of revenue expenditure are:

- Salary, Allowances & pension;
- Operations and Maintenance

Establishment expenses constitute more than half of the expenses. The establishment expense has drastically come down from 78% in 2008-09 to 54% in 2012-13. In the year 2009-10, establishment

expense constituted 88% of the revenue expenditure. This was on account of payment under 6th pay commission.

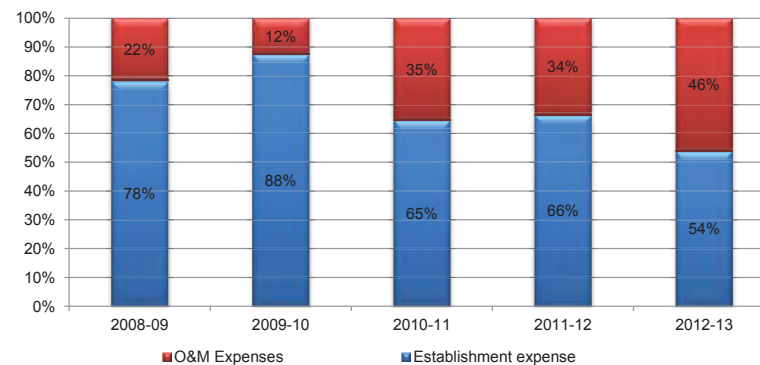
Figure 67: Sources of revenue expenditure



Revenue expenditure composition trend of analysis years from 2008-09 to 2012-13 is shown in the figure below with each components percentage share. Major share that is 70% of the revenue expenditure of VMC is incurring in making payments of salaries to employees. Rest 30% share for revenue expenditure is towards expenditure for Operations & Maintenance.

Revenue expenditure increased from Rs. 81 Cr. in 2008-09 to Rs. 193 Cr. in 2012-13 registering a CAGR of approximately 24%. The share of O&M expense has gradually increased over the years vis-à-vis establishment expense, from 22% in 2008-09 to 46% in 2012-13.

Figure 68: Revenue expense



14.2.2.1 Establishment expense

The establishment expense increased from Rs. 63 Cr. in 2008-09 to Rs. 104 Cr. in 2012-13, at a CAGR of 13%. The share of establishment expense was 54% in 2012-13, down from 79% in 2008-09. Public health department contributed for maximum establishment expense as it employs most number of employees in VMC. The department is responsible for street sweeping and other health prevention programmes run across the city, due to its nature of work, it employs high number of people.

Figure 69: Establishment expense

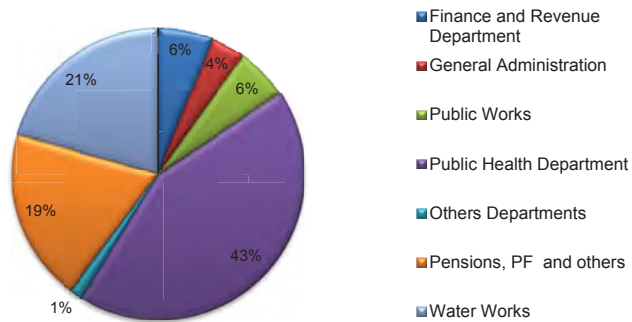
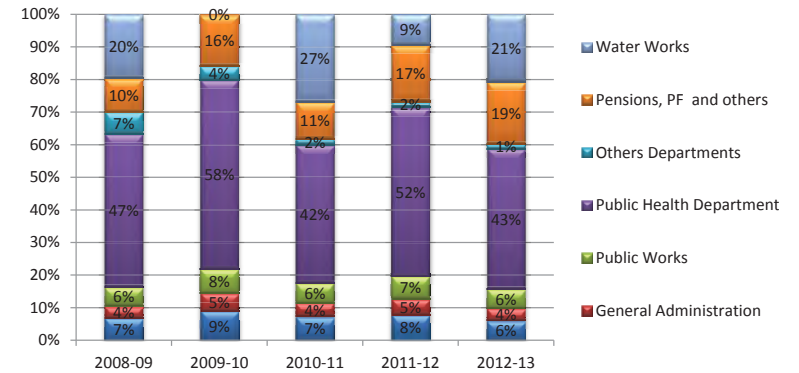


Table 112: Establishment expense in Rs. lakhs

	2008-09	2009-10	2010-11	2011-12	2012-13	CAGR %
Finance and Revenue Department	432	464	561	725	635	10
General Administration	243	285	323	443	396	13
Public Works	363	393	471	642	605	14
Public Health Department	2,990	3,014	3,254	4,740	4,505	11
Others Departments	428	222	140	160	150	(23)
Pensions, PF and others	659	826	859	1,600	2,000	32
Water Works	1,242	0	2,073	853	2,155	15
Total	6,357	5,204	7,681	9,163	10,446	13

Contribution of each component accounted for Revenue Expenditure is shown in the chart below.

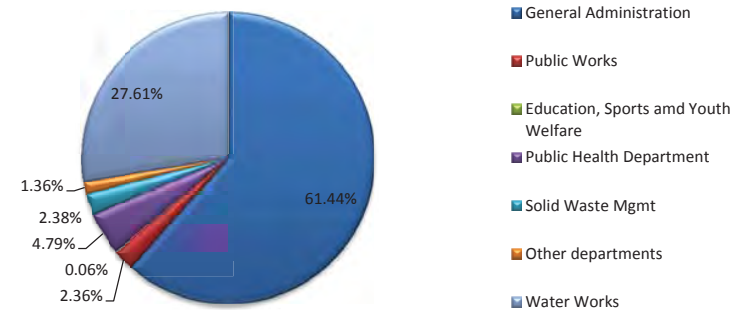
Figure 70: Contribution of Different Department in Salary Expenditure



14.2.2.2 O&M expense

For operation & maintenance, expenditure incurred by different department of VMC, is shown in the Table 113 below. Major share of 62% in O & M expenses has been incurred by General Administration department, followed by Water Works at 27%. O&M expenses of other departments are in the range of 1% to 4%.

Figure 71: Share of O&M expenditure



Expenditure incurred by VMC in the analysis period is shown in the table shown below. Expenditure under general administration has increased the most. Due to which, the O&M expense increased at a CAGR of 50%.

Table 113: O&M expense

	2008-09	2009-10	2010-11	2011-12	2012-13	CAGR %
General Administration	373	320	1,044	3,538	5,470	96%
Public Works	117	120	148	225	210	16%
Education, Sports and Youth Welfare	1	1	1	6	6	57%
Public Health Department	47	25	12	446	426	74%
Solid Waste Management	210	197	215	212	212	0%
Zonal & Others Departments	74	69	49	128	121	13%
Water Works	920	0	2,714	74	2,458	28%
Total	1,741	730	4,183	4,629	8,903	50%

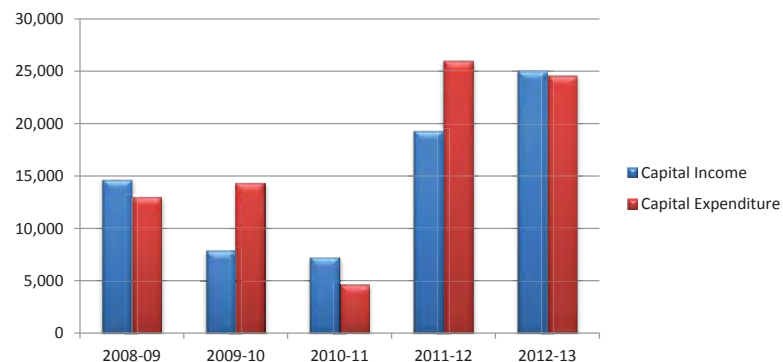
14.3 Capital account

Capital Account comprises of following two components:

- Capital Income &
- Capital Expenditure

Capital income and expenditure of VMC from 2008-09 till 2012-13 is shown in the figure below. Over the analysis period all the periods witnessed capital surplus. The capital income increased substantially on account of JNNURM grants from government of India and state government. In addition, the ULB's share for JNNURM projects was also covered by state government, so capital income is more than expenditure over the analysis period.

Figure 72: Capital account



14.3.1 Capital income

Capital Income consists of grants received by VMC under various schemes for capital works for various projects. The capital income breakup is in the table below. The income increased from Rs. 146 Cr. in 2008-09 to Rs. 250 Cr. in 2012-13, which represents a CAGR of 14%. The increase in capital income is on account of projects being implemented on account of JNNURM programme. Capital Income has shown varying levels of growth rate over the analysis period from 2008-09 till 2012-13 and is shown in Table 114 below.

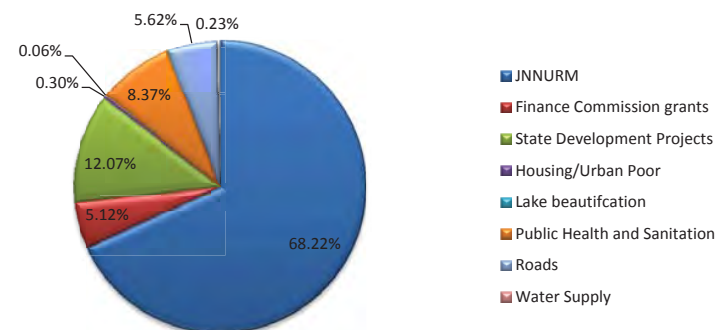
Table 114: Capital income in Rs. lakhs

	2008-09	2009-10	2010-11	2011-12	2012-13	CAGR %
JNNURM grants	0	5,669	6,102	13,624	13,624	34
Finance Commission grants	161	474	862	1,060	1,260	67%
State government Grants	14,471	1,761	311	4,496	6,141	(19)%
JICA	0	0	0	0	2,000	-
Net EMD	21	32	24	40	40	16%
Lake beautification grants	0	0	0	0	2,000	
Total	14,612	7,886	7,195	19,270	25,085	14%

14.3.2 Capital expenditure

Capital Expenditure consists of capital expenses incurred by VMC for carrying out various regular capital works and other capital works under State & Central Schemes. Breakup of capital expenditure as per programme is shown in the figure below. Capital expenditure has increased from Rs 130. Cr. from 2008-09 to Rs 246 Cr. in 2012-13.

Figure 73: Capital expenditure



Major share of capital expenditure incurred by VMC is dedicated for various works proposed under JNNURM scheme, which contributed to 68% of the capital expenditure and other scheme of State Government accounted for 12% of capital expenditure. Roads related capital works accounted for 6% of the total capital expenditure. Another major share in expenditure is works for sanitation and public health related projects, accounting for 8%. Contribution of each component over the analysis period is shown in the Table 115 below.

Table 115: Capital expenditure

	2008-09	2009-10	2010-11	2011-12	2012-13	CAGR %
JNNURM	9,936	9,901	6,109	16,785	16,785	14
Finance Commission grants	652	374	7	900	1,260	18
State Development Projects	1,572	1,043	350	2,529	2,969	17
Housing/Urban Poor	0	0	0	200	75	(62)
Lake beautification	0	0	0	15	15	-
Public Health and Sanitation	109	106	51	60	2,060	108
Roads	720	630	860	1,780	1,383	18
Water Supply	94	0	150	7	57	(12)
Total	12,965	14,309	4,638	26,003	24,604	17

14.4 Key financial indicators

Table 116: Key financial indicators

Key Indicator	Performance of MC of Varanasi
Operating Ratio (<1)	Operating ratio (OR) is the ratio of revenue expenditure to revenue income and indicates financial status or 'profitability' of the local body operations. Sound financial management requires that this ratio should be less than unity. For the last five years, the average OR of VMC was at 0.87, indicating a healthy financial position. A minimum ratio of 0.72 has been recorded for 2009-10 and maximum ratio of 1.04 in 2008-09.
Property tax collection efficiency (85%)	VMC has a very good property tax collection efficiency of 97% in 2012-13 and 89% over the last 5 year period.
Water charges collection efficiency (85%)	During the analysis period, the water charge collection was at 66% per annum, indicating a significant scope for improvement.
Share of own sources in revenue income	This indicator provides the details of ULB's reliance on its own sources of income. This indicator also shows the stability of the revenue stream for ULB; higher the percentage better is the stability. VMC's own revenue sources account for about 58% of its total revenue income during review period, indicating high dependence on grants and contributions for its regular O&M and establishment cost.

Key Indicator	Performance of MC of Varanasi
Growth in Per Capita Property Tax Income	The growth in per capita property tax income indicates the performance of VMC with respect to its performance in tax realization. It is directly dependent on property tax assessment, which is a direct function of population increase and collection efficiency. The per capita property tax income of VMC has increased from Rs.150 in 2008-09 to Rs.268 in 2012-13, at a CAGR of 16%.
Growth in Per Capita Tax Own Income	Per capita tax income has grown at a CAGR of 22% during the analysis period from Rs. 261 in fiscal year 2008-09 to Rs. 584 in 2012-13. The major contribution came from property tax.
Growth in Per Capita Non-Tax Own Income	Per capita non-tax income has grown significantly during the review period from Rs. 60 in 2008-09 to Rs. 398 in 2012-13, at a CAGR of about 61%.
Share of Establishment Expenditure to Total Revenue Income	The share of establishment expense of revenue income has come down from 82% in 2008-09 to 50% in 2012-13. The establishment expenditure (including salaries and wages, pension, reimbursement, etc.) was accounted at 60% of the total revenue income during the past five years. The balance income was utilized for administration and general expenses, repair and maintenance, service related expenses, and other miscellaneous expenses. After meeting all the obligatory expenditure, the revenue surplus has been transferred to capital account to carry out capital expenditure.
Growth in Per Capita O&M and capital Expenditure	Per capita O&M and capital expenditure has grown exponentially from Rs. 1,250 in 2008-09 to Rs. 2,716 in 2012-13, at a CAGR of about 21%.

15. SWOT Analysis

The competitive position of the city in terms of efficiency in governance, complete economic growth, sustainable development, and infrastructure efficiency, skilled labour has been analysed to under the strengths, weakness, opportunities and threats in the city. The competitive position increases or decreases based on the projects/initiatives taken up by VMC and other parastatal agencies. The present competitive position of VMC (as identified by city stakeholders) has been presented in the Table 117 below.

Table 117: Competitive position of the city

Parameter	Scale	Remarks
Efficiency in Governance	High	E – Governance mechanisms like online consumer complain cell, property tax collection system, and birth and death registration.
Sustainable environment	Low	Lack of waste treatment facilities, and encroachment on Kunds
Efficient Infrastructure	Low	Lack of Unger ground drainage system and disposal mechanism
Skilled and motivated workforce	Medium	One third of the workforce involved in informal sector, and a significant number is involved in making sarees, and other forms of crafts
Protected Heritage	Low	Lack of heritage management of non-ASI protected monuments

15.1 SWOT Analysis

The SWOT analysis gives a cursory snapshot of existing potentials that favour growth in the city. Further, issues curbing the city development are discussed. The ranking of importance in a scale of High to medium has been developed through interactions with stakeholders and officials. In case of opportunities and threats, the possibility of occurrence has also been identified. The Table 118 below presents the strength and weakness in the city.

Table 118: Strength and weakness in the city

Strengths	Importance
Religious, spiritual and educational centre	High
Heritage treasures of the city	High
Agrarian based surroundings support the trade and commerce of cash crops	Medium
Varanasi city is the regional centre for Purvanchal districts	Medium
The city is well connected with road and railway network	Medium
Weakness	Importance
Lack of coordination between ULB and Parastatals agencies with respect to Urban transport management	High

Basic services such as water supply, sewerage and sanitation are lacking	High
Core city is already saturated with high density and congestion related issues	High
Conducive environment for habitation and Industrial activity	Medium

Also, the likeliness of the city to be selected for New Urban Mission (NUM)/Smart city development would certainly have a positive impact on the service delivery.

On the other hand, the city suffers from lack of proper disposal facilities for sewerage and solid waste generated. The current practice of disposal could create environmental hazard. Also, the growing number of slums in the city is emerging as a major concern. The following Table 119 presents the ranking of identified opportunities and threats in terms of impact on the city and the possibility of occurrence.

Table 119: Opportunities and threats in the city

Opportunities	Possibility of occurrence	Impact on city
CBUD project and potentiality to be receive funds under NUM/Smart city.	High	High
Threats	Importance	Impact on city
Ineffective disposal system could create environmental hazard	High	High
Spurring squatter settlements due to seasonal migration of unskilled labour force	High	High

15.2 SWOT

Table 120: SWOT Analysis

Strengths	Weakness
<ul style="list-style-type: none"> ▪ The core of the city houses the population that is part of the urban fabric of the city ▪ The old city is a compact city. Its strength lies in its demarcated area with a dynamic set of activities and buildings that attract people from far and wide ▪ Tourism potential: For all religions, River Ganga, the Ghats and other sites-Ashoka Pillar, Samath etc. ▪ Weaving industry is a major contributor to local economy ▪ A perennial water source in River Ganga so availability of water will never be a problem ▪ Tremendous amount of heritage treasures 	<ul style="list-style-type: none"> ▪ Old city of Varanasi has very cramped spaces. The streets of this city are just wide enough for two people to walk shoulder to shoulder. There is immense pressure from tourism, economic development and population on the ghat area ▪ Lack of support infrastructure such as quality roads for better access and facilities for tourists-rest rooms, toilets, hotels, etc. ▪ Infrastructure services are poor such as high water losses, poor coverage of toilets, and absence of door to door waste collection ▪ Lack of coordination while planning and initiating development work among authorities

Opportunities	Threats
<ul style="list-style-type: none"> ▪ The old city consists of the population that has been there for generations. These people are part of the cultural fabric of the city. It is important to provide better facilities to these people. ▪ Population growth in old city has saturated and the growth of population is decelerating ▪ Tourism: Varanasi is the most important pilgrim place for both the Hindus and the Buddhists. Therefore, this established tourism base has to be used well. In addition, Varanasi also attracts a large number of foreign tourists for its religious as well as spiritual importance. ▪ Not only assured water supply for several decades, appropriate measures such as conservation and rain water harvesting can recharge the ground water as well 	<ul style="list-style-type: none"> ▪ Quality of life might decline further ▪ In the event of any natural disaster, the core area without any planning would be impacted most. ▪ Traffic management is crucial during fairs and festivals else the high number of tourists can cause severe issues such as stampede as witnessed in several pilgrim sites. ▪ Social hygiene and sanitation methods too are beginning to bend under the pressure of a growing resident population and a constant large floating population ▪ This increasing population is over burdening the carrying capacity of the urban environment and the river ecosystem and unplanned mass tourism could potentially have a hard impact on the cultural carrying capacity of the old city centre ▪ Non availability of toilets and prevalence of open defecation and open urination makes the city a big toilet. There are bad smells at every nook and corner. This creates a bad environment that is disliked by both the residents and the tourists.

16. Stakeholder Consultations

16.1 Consultative Meetings

The Government of India has envisaged the revised CDP preparation process through consultative and participatory approach and it requires the involvement of various stakeholders at the ULB, regional and state level. At this phase, the CRIS team conducted consultative meetings and focus group discussions with various stakeholders to discuss about the status and performance of service delivery mechanism, aspirations of the citizen on the city development and to ensure a participatory and inclusive development process.

16.2 Focus Group Discussions

The first step in identifying the stakeholders was to understand the city in the context of its economy, its situation in the region and to some extent its legacy as a religious and pilgrim centre of prime importance in the country. It took several rounds of talking in the city to identify some stakeholders. These include:

- a. Weavers;
- b. Hotel associations;
- c. Commercial people (shops at tourist sites);
- d. Tourists (informal discussions);
- e. Educational institutions/representatives; and
- f. Boat men who are an important part of the landscape.

The meetings conducted with each of these groups have been documented and presented in tables below. Annexure – I gives the date, time and the names of persons who were consulted.

Table 121: Focus Group Discussions-Boatmen and Fishermen

Aspect	Stakeholder Views
Priorities	<ol style="list-style-type: none"> 1. River and ghat cleanliness 2. Better maintenance of the ghats 3. Quick excavation of silt brought by the river after monsoon 4. Issuance of license for motor boats
Varanasi in next 20 years	<ol style="list-style-type: none"> 1. More cleanliness on ghats 2. Development of the ghats 3. Steps should be made to beautify the ghats
Specific questions	
Number of boats operational and number of people employed	<p>There are close to 1500 boats on the ghats. The main route is from Assi Ghat to Dashashwamedh Ghat.</p> <p>Close to 20,000. Most of them are from the Mallahs and Nishads community</p>

Aspect	Stakeholder Views
Average income and seasonal changes	The average daily income changes with the change in season. April to September is lean season and peak season is from October to March. Boating is not allowed during monsoon months (July to September) The boatmen charge about Rs. 50 per person from Assi to Dashashwamedh Ghat. Boatmen make about 300-500 per day during peak season and during off-season it goes down to as much as Rs. 200 per day and nil during the monsoon months.
Mechanisation of boats	Some of the boats are mechanized; however motor boats are not legalized as there is a tortoise sanctuary on the other bank of the river Ganga. Boatmen want motor boats as the boat can accommodate more tourists, hence revenue per trip is more and turnaround time is less.
Facilities required	<ol style="list-style-type: none"> Ghat maintenance is poor The excavation work should be taken up immediately after monsoon. The general practice is that this work is completed around Diwali. Though the sanitation facilities have improved, but there are several ghats where sanitary facilities are inadequate
Major problems	<ol style="list-style-type: none"> Due to boating restrictions during monsoon season, there is no employment during these months. Many of the boatmen and fishermen find it difficult to feed their kin during this period Government employment and fair remuneration for divers who assist the police in retrieving the bodies of the drowned after a boating accident With increasing competition, daily income is reducing Delay in initiating excavation work after monsoon. This leads to loss of business Motorboats are not being given license due to tortoise sanctuary. To reduce the contamination in the river Ganga caused by the immersion of human remains, in 1989, the Uttar Pradesh Forest Department began introducing a species of turtle that feeds on decomposing flesh. To encourage the propagation of this turtle species, the state government designated the entire length of the river passing through the city as a wildlife sanctuary. But many of the boatmen and fishermen claimed there are not many turtle in the sanctuary. Divers from these communities are not being considered for jobs in water police.
Family and Children	The boatmen and fishermen community is very poor and most of the people are illiterate. In addition, reservation in government institutions and jobs has been extended to their community, so their children are also taking up the same profession.



Table 122: Focus Group Discussions-hotel association

Aspect	Stakeholder Views
Main character of Varanasi	Benaras is a heritage town, with many mythological beliefs attached to it. Its existence goes back to 6 BC. The city's cultural and heritage resources should be protected.
Problems/Issues	<ol style="list-style-type: none"> Off street parking lacking in all commercial areas in all pockets of the city. This leads to traffic congestions Encroachment on roads by street vendors In the 80's and 90's the number of nights spent by tourists in Varanasi used to be 3 to 4. Now this number has reduced to 1 to 2 nights. This has led to less business for the tourism sector Flight connectivity to Bhubaneswar (for Jagannath Temple), gulf (for employment) and Agra (tapping tourists with higher spending) is lacking. Ghats are not properly maintained, and cleanliness and hygiene is a major problem. Several ghats have cow dung lying around There are very limited spaces for sports. Many government schools do not have adequate grounds for sports. Health infrastructure is poor, medicines are inadequately stocked and some hospitals like BHU hospital and district hospitals are overcrowded In spite of paying water charges to the authorities, hotels and other commercial properties are dependent on private sources of water as water supply is erratic High pressure on the existing city to meet the needs of the existing population and the peri-urban areas are growing in an unplanned manner. Most of this new development is unauthorized Drug menace is spreading across the city particularly on ghats and in Chetganj
Suggestions/Proposals	<ol style="list-style-type: none"> Road street parking can be planned near Queens college Hawker's zone need to be identified Roads can be identified and designated as Tourist roads. Particular attention should be paid to these roads to ensure they are encroachment free and without potholes. Two roads which may be implemented on pilot basis are Circuit House-Nadesar-Taliabagh-Lahurabir-Gadaulia-Mandanpura-Sonarapura-BHU and Circuit House to Sarnath Police should be made responsible for ensuring there is no encroachment To increase number of nights spent by tourists in Varanasi, regional tourist sites should be developed such as Chunnar Fort, Chandraprabha Wildlife Sanctuary, Baradari Dam, Vindam Fall, Jaunpur Mosque etc. Corporates may be encouraged to adopt a few ghats and maintain them through CSR funds. In return a small board may be erected by the corporate staying the ghat is being maintained by it. Clinical physiological test should be conducted to gauge students' interest areas. In addition special emphasis should be put on teaching students moral sciences and giving sex education Dhobi ghats should be moved from the banks of river Ganga. Dhobi ghats discharge caustic soda and detergent in the river Dredging of river Ganga is required to reduce the level of river and protect ghats Land should be acquired and new Varanasi should be developed in a planned manner

Aspect	Stakeholder Views
Priorities	<ol style="list-style-type: none"> 5. Cleanliness – scientific disposal of solid waste, and educating locals and tourists 6. Adequate health infrastructure for poor 7. Water supply to commercial properties
Varanasi in next 20 years	Conserve the existing city and develop a new Varanasi in a planned manner to provide all basic infrastructures, and enabling Varanasi to be the tourism capital of the country.

Table 123: Focus Group Discussions-INTACH

Aspect	Stakeholder Views
Problems/Issues	<ul style="list-style-type: none"> ▪ The coverage of water supply and sanitation is low ▪ The quality of water is poor in the city due to mixing of sewer water with drinking water. This happens particularly in summer months ▪ Mixing of water with sewer is a major issue ▪ Rain water harvesting implementation is poor in the city ▪ Some of the trunk sewer network is so old that the network is clogged ▪ Due to low sanitation level in Varanasi, open defecation is a common phenomenon ▪ Most of the streets do not have footpaths ▪ Arterial road network is poor, most the traffic of the city is concentrated on 2-3 roads ▪ High rise housing societies in the city are leading to traffic snarls in the vicinity ▪ Public transport system is poor. Most of the existing buses are plying in the outer part of the city ▪ Green cover/parks - The green cover in the city is limited to BHU, DLW and Cantonment areas. Parks are poorly maintained. Due to shortage of land, OHTs have been constructed in the parks, which have further reduced the area of parks. ▪ Recreation – facilities are lacking for the locals. There are very limited sports grounds and water sports. The existing public library is not functional. Also there are no facilities for senior citizens.
Suggestions/Proposals	<ul style="list-style-type: none"> ▪ Studies on ground water should be undertaken to ascertain its quality and long term sustainable water supply source ▪ Financial estimate of impact of the project on the environment should be included in the project cost ▪ Kunds should be recharged with rain water ▪ Treated waste water should be put to use for gardening and industrial purposes ▪ Sector wise plans need to be prepared ▪ Widening of roads needs to be undertaken and quality should be improved ▪ A Comprehensive Mobility Plan needs to be planned ▪ A foot over bridge should be planned at Cantt station ▪ A separate plan should be prepared for the old city area

Aspect	Stakeholder Views
	<ul style="list-style-type: none"> ▪ Wherever possible electric wires should be underground ▪ Open defecation and washing of clothes should be checked on ghats in particular ▪ Arterial road network needs to be strengthened ▪ More busses should be procured and bus stops should be planned ▪ Rickshaws should be banned in some parts of the city ▪ Auto and rickshaw parking stands should be identified ▪ Efforts should be put to ensure Varanasi is plastic free and no sewerage is disposed untreated into river Ganga ▪ Heritage plan should be prepared for Durga Mandir and Durga Kund ▪ Provisions should be made to restrict the flow of flowers in the river Ganga by planning collection points to collect flowers thrown in the river. ▪ Adequate number of dustbins should be placed on the ghats ▪ Vermicomposting technology may be explored for treating waste from temples
Priorities	<ul style="list-style-type: none"> ▪ Heritage plan for the old city areas ▪ Improving service delivery in the city ▪ Cutting off disposal of waste in river Ganga ▪ Planning new areas to cater to the future growth of the city

Table 124: Focus Group Discussions-Traders association

Aspect	Stakeholder Views
Main character of Varanasi	Varanasi is a tourist city and also the regional trading hub. In addition, Varanasi is an educational hub and attracts students primarily from eastern Uttar Pradesh and Madhya Pradesh, Bihar and Nepal. It is also a destination for religious tourism for Buddhists, Hindus and Jainis
Problems/Issues	<ul style="list-style-type: none"> ▪ Varanasi is the trading capital of Purvanchal belt. The wholesale mandis are located in Visheshwarganj, which is near Dashawamedh Ghat. Though most of the loading and unloading takes place after 8 PM. However, movement of trucks and inflow of large number of traders leads to traffic jams. ▪ Off-street and multi-level car park is lacking. Due to which most of the two wheeler vehicles are parked on road side ▪ The quality of roads laid is not good, and requires re-carpeting every two years ▪ Flooding happens during monsoon season ▪ Supply of electricity is a major problem. Though the supply varies between 14-15 hours a day, but there are no planned load shedding ▪ Quality of primary education is an issue. Not much has been done to improve the infrastructure in last two decades ▪ Tourism – tourist grievance redressal is lacking, many ill-informed tourists are not able to get information once they reach Varanasi, basic services like drinking water, toilets, information centres etc.

Aspect	Stakeholder Views
	<p>are inadequate, local commute is a problem as harassment by auto rickshaw is common etc.</p> <ul style="list-style-type: none"> Industrial and trade districts are neglected. Basic services like good roads, adequate water supply and sanitation facilities are lacking. For instance in Ramnagar and Chandpur industrial areas. Roadside storm water drains have not been laid in most part of the city Road side plantation is lacking in almost entire city. The only areas with some green cover are BHU, Cantonment Board and DLW.
Suggestions/Proposals	<ul style="list-style-type: none"> Two plans should be prepared for Varanasi – one for heritage city and the second for the remaining part of the city. Additionally a separate authority should be constituted to conserve heritage and provide services in old city area Shifting the mandis (Clothing, Galla, Paan, wooden toys and food grains) outside the city is not a solution. There is a need to better manage the traffic and movement of goods in the city. Also encroachment on the streets should be controlled. One way traffic should be explored wherever possible to check traffic congestion At Gadaulia chock there is a tanga stand, which can be used for parking of vehicles A plan for re-densification of Varanasi should be undertaken by planning a new Varanasi Road dividers have improved the flow of traffic Hawkers' street may be identified near Benia Park Trees should be planted on road side along main roads at least
Priorities	<ul style="list-style-type: none"> Cleanliness. Solid waste should be better managed. Traffic management Off-street and multi-level car park Removing encroachment by hawkers
Varanasi in next 20 years	A clean and developed Varanasi, whilst protecting and conserving the heritage of the city.

Table 125: Focus Group Discussions-Tours and Travel Operators

Aspect	Stakeholder Views
Problems/Issues	<ul style="list-style-type: none"> During peak season there is a shortage of rooms Very few recreational facilities in the city Plan of cruise was not approved due to turtle sanctuary on the banks on river Ganga The transportation system in the city needs to be improved There are no guided tours Information centres are lacking. Also the brochures for tourists are in short supply Parking facilities for buses and cars are limited. Currently parking is being managed in laws and parks

Aspect	Stakeholder Views
	<ul style="list-style-type: none"> Tourist infrastructure like drinking water and sanitation facilities are inadequate.
Suggestions/Proposals	<ul style="list-style-type: none"> Better flight connectivity is required Provisions for sound and light shows should be provided More ghats need to be developed Guided tours should be planned and initiated Parking areas need to be earmarked in areas like Vishwanath Temple, BHU and Ramnagar Battery operated vehicles may be made mandatory near ghats A plan for eco-friendly tourist friendly city should be initiated
Priorities	<ul style="list-style-type: none"> Tourist infrastructure Better road quality Initiatives to make city safe for tourists

Table 126: Focus Group Discussions-Weavers

Aspect	Stakeholder Views
Main character of Varanasi	Varanasi grew as an important industrial centre and is famous for its silk industry, perfumes, ivory works, and sculpture
Problems/Issues	<ul style="list-style-type: none"> There is no separate industrial park for silk industry. The Chandpur Industrial Park developed by DIC and the Ramnagar Industrial Park developed by UPSIDC are not dedicated to the silk industry. Further, these industrial parks lack water supply, have open drains, no CETP, are bottlenecked by poor road networks; proper facilities are not available for the silk industry Inadequate provision for common effluent treatment plant. The units liable to undertake primary treatment ignore the same due to the high costs involved and space constraints in small-scale industries Drainage networks are carrying partially treated effluents. Power distribution network is obsolete. Electricity supply in summers and winters is for about 12-14 hours and 16-18 hours respectively Shortage of trained labour. The majority of the workforce is illiterate and has not undergone any formal training, which often impacts the productivity of the industries and product quality as a whole Inadequate technology and lack of modernization. The units are using old and obsolete machinery resulting in low-scale production and inferior quality of products which leaves scope for improvement in quality as well as quantity. During discussions, industry representatives revealed that old techniques also impacted the health of the weavers as the machines were operated manually, resulting in various diseases such as backbone tuberculosis The silk industry is constrained by the absence of quality convention/exhibition centres
Suggestions/Proposals	<ul style="list-style-type: none"> A common integrated facility for primary and secondary

Aspect	Stakeholder Views
	<p>treatment of waste water should be developed and the silk dying units should be shifted away from housing areas / premises</p> <ul style="list-style-type: none"> ▪ There is an urgent need to promote short-term training courses wherein the weavers would be trained and made acquainted with modern techniques of production ▪ There is a need to upgrade the distribution infrastructure and ensure 24X7 hours uninterrupted power supply. This will reduce the cost of production as there will be no need to generate costly power by individual units through diesel generators ▪ There is a need to develop technology dissemination centres to demonstrate and facilitate the transfer of new technologies ▪ There is a need to develop a world-class marketing facility to facilitate marketing of silk products to the wider world through exhibitions, fairs and industry meets ▪ Need for widening and improvement of internal road network in industrial areas.

16.3 Workshop process

The 1st city level stakeholder workshop conducted at meeting room, VMC on 18th December 2013 at 1 PM was presided by Hon'ble Mayor of VMC. The workshop had a turnout of more than 30 participants from Parastatal agencies like VDA, Jal Nigam, UPSRTC, UP Tourism Department, Indian Railways, Traffic Police, DUDA and Jal Kal. The CRIS team has made a presentation on the city level assessment and SWOT analysis. During the presentation, brief discussions were held to address the concerns on the stakeholders.

Inception meeting 6th September 2013





City development plan to be revised by admin

VARANASI The city will now have a revised city development plan (CDP) as the authorities are of the view that old development plan was not sensitive enough to ensure the development of the city in line with what a heritage city requires.

The CDP under which different development works are being carried out at present, came into effect in 2008.

The model officer for the revised CDP will be the acting additional municipal commissioner, Arunach Kumar.

In a meeting held at the head office of the Varanasi Municipal Corporation (VMC) on Friday, the city mayor Ramgopal Mishra emphasised on the fact that the development plan for the city of Kashi should necessarily be in line with its intrinsic heritage value. "Kashi is famous across the globe for its ghats and temples and for the music that have sprung up in the city in recent years. I will ensure that the revised city development plan takes into account this aspect. Apart from this, there should be

To provide an inclusive and extensive approach to the CDP, two committees have been formed. One will be an administrative committee that will be involved in the policy decisions based on the inputs from the other committee which will be a technical committee.

assessment of those schemes and plans that have proved a burden on the shoulders of the local body as they could not be implemented successfully in the absence of sensitive planning on the part of concerned authorities," said Mayor while talking to IOL.

To provide an inclusive and extensive approach to the CDP, two committees have been formed. One will be an administrative committee that will be involved in the policy decisions based on the inputs from the other committee which will be a technical committee.

The administrative committee will have on board, heads of the various government departments like VDA, VMC, Area Officer, Jai Nigam, Jai Kashi, Environment and Pollution Control Board, archaology department, department of traffic, fire

and other departments whereas the technical committee will consist of the technical heads of these departments.

According to the municipal commissioner R.P. Singh the revised plan will include public participation as an additional element along with the administrative and technical inputs for the policy making in the revised CDP.

"This is one aspect that we are very optimistic about as it will allow us to have the pulse of the people as to what elements they want to be included in the CDP."

The official website of the VMC will have a platform where opinions will be conducted about a particular plan that the authorities have finalised along with the detailed new suggestions. Help of media will also be taken for the purpose," said the official.

नगर विकास के लिए बनीं तीन कमेटियां

जागरण संवाददाता, वाताणली : नगर विकास की योजनाओं को द्रुत गति से क्रियान्वित करने के लिए तीन कमेटियों का गठन किया गया है। महापौर रामगोपाल मोहले की पहल पर बनी कमेटियां प्लान बनाने के साथ ही तकनीकी जानकारियां भी मुहैया कराएगी। शुक्रवार को महापौर की अध्यक्षता में हुई बैठक में निगम के अधिकारियों ने शहर के विकास से जुड़ी योजनाओं पर मंथन किया। नवसृजित कमेटियों में पहली कमेटी प्लान तैयार करेगी। दूसरी तकनीक उपलब्ध कराएगी जबकि तीसरी कमेटी क्षेत्रीय जन प्रतिनिधियों की होगी। यह कमेटी विकास के लिए सुझाव देगी।

गौरतलब है कि नगर निगम ने सन् 2005 में भी सिटी डेवलपमेंट प्लान तैयार किया था। उस पर भारी भरकम बजट खर्च किया गया। अब उसी योजना को मानक बनाकर नए सिरे से विकास की योजनाएं बनाई जाएगी जिसमें सड़क, सीवर, पेयजल, पार्क आदि के निर्माण को प्राथमिकता दी जाएगी। तीनों कमेटियां मिलकर योजना तैयार करेगी। बजट के लिए ब्रह्म प्लान नगर निगम राज्य सरकार के माध्यम से केंद्र को भेजेगा। केंद्र की मंजूरी मिलने पर ही योजनाएं मूर्तरूप लेगी।

बैठक में नगर आयुक्त आरपी सिंह, प्रभारी आगर नगर आयुक्त अविनाश कुमार, नगर स्वास्थ्य अधिकारी डा. एसएलपी वर्मा, कीडीए के अधिशासी अभियंता इसके उपाध्यक्ष समेत अन्य अधिकारी थे।

1st Stakeholder presentation





Prior to the stakeholder workshop, CRISIL undertook individual discussions on various issues faced in the city today. The discussions were held with the following –

- Mr. Pradeep Chaurasia, Member, Uttar Pradesh Travel Agent Association
- Prof. Rana P. B. Singh, Head, Department of Geography, Faculty of Science, Banaras Hindu University, Varanasi
- Mr. Kalu Bhai, Ex-Councillor, Varanasi
- Mr. Narayan Singh, Member, Varanasi Hotel Association, Varanasi
- Mr. R K Aggarwal, Co-convenor, INTACH
- Mr. R K Chaudhary, Member, Varanasi Vikas Samathi
- Project Leader and Deputy Project Leader, JICA, Varanasi
- CAFO, VMC
- Project Officer, DUDA
- Chief Engineer, Jal Nigam
- Executive Engineer, VMC
- Executive Engineer, Jal Kal
- Regional Tourist Officer, UP State Tourism Department
- Station Officer, UP Fire Service, Chet Gunj
- Assistant Engineer, VDA
- Deputy Education Officer, VMC

16.4 Issues Identified

The issues identified in the first workshop is given in the Table 127 below

Table 127: Sector wise issues

Sector	Issues identified
Water Supply	<ul style="list-style-type: none"> ▪ Some of the distribution lines are as old as 100 years and are deep down in the ground; these are difficult to maintain and need to be replaced. ▪ Storage capacity is insufficient in the new extension areas of the city. ▪ Non-revenue water is high at ~58%. ▪ There is delayed and minimal revision in user charges tariff schedule due to political resistance. ▪ As Jal Kal has not been paying electricity charges, the cost recovery indicator does not reflect the true picture. ▪ Jal Kal is facing difficulty in even paying salaries to its permanent employees. ▪ Jal Kal, which was earlier an independent body, is now a part of VMC, thus institutional-level issues need to be addressed
Sewerage & Sanitation	<ul style="list-style-type: none"> ▪ The existing sewerage system is very old and dilapidated. ▪ Coverage of the sewerage network is low. ▪ Due to dumping of garbage in the sewer lines, the carrying capacity gets drastically reduced, resulting in overflow of sewage on roads. ▪ More than half of the sewerage discharged in water bodies is untreated. ▪ A separate financial account for sewerage not maintained. ▪ Involvement of multiple departments leads to co-ordination issues. ▪ Separate water supply and sewerage demand and collection heads are not maintained
Solid Waste Management	<ul style="list-style-type: none"> ▪ All the service-level indicators are poor. ▪ Many vehicles are unused; the VMC staff lacks the skill to operate the vehicles handed over by the concessionaire. ▪ The condition of the vehicles handed over by concessionaire is also poor. ▪ There is no scientific treatment of waste. The waste is dumped untreated. ▪ VMC is not collecting user charges in spite of an order passed in this regard. ▪ An unaccounted amount of garbage consisting of flowers and pooja wastes is being thrown into the rivers, which is a pressing issue. Also, human ashes that are brought to the ghats do not have any determined disposal methods
Storm water drainage	<ul style="list-style-type: none"> ▪ The existing drainage network is grossly inadequate. ▪ Frequent clogging of drains due to dumping of solid waste in the drains reduces its rainwater carrying capacity. ▪ Urbanization has reduced the natural drainage capacity of the various water bodies in the city. ▪ As the drains are connected to branch sewer lines, it puts strain on the STPs during the monsoon season
Traffic &	<ul style="list-style-type: none"> ▪ Poor quality of roads and traffic congestion causing inconvenience to

Sector	Issues identified
Transportation	<p>locals and tourists</p> <ul style="list-style-type: none"> ▪ In many places (excluding old city) roads are very narrow ▪ Arterial roads network is weak; traffic concentrated on a few roads ▪ High rise building leading to a traffic congestion in some areas ▪ Lack of public transport facilities ▪ Existing bus routes making heavy losses ▪ Lack of parking facilities in bus depot ▪ Lack of parking stands for three wheelers and rickshaws ▪ Absence of footpaths; even on wide roads
Municipal finance & Governance	<ul style="list-style-type: none"> ▪ Municipal finance ▪ The accounts department is highly dependent on the chartered accountant for data entry, validation and bank reconciliations for maintaining the double entry accounting system. Also, no municipal staff is involved in accounting activities; their role is limited in implementation of the accounting reforms. ▪ It is observed that the financial capacity of VMC is weak, and it would be difficult for VMC to fund any new projects. Currently, the share of VMC's component for JNNURM projects is funded by the state government. ▪ There is no systematic approach for the preparation of budget and forecast of income/expenditure ▪ Due to lack of relevant training programmes, most of the officials lack basic understanding of the accrual based accounting system ▪ Self-assessment for commercial buildings is yet to be introduced ▪ There is no clear vision or plan to further enhance revenue from own sources. ▪ The outcome and performance budgets are yet to be prepared for VMC. Hence, VMC is unable to prepare the outcome of each budget head/ outcome of the work such as improvement of services ▪ Municipal governance ▪ It is observed that in Varanasi there are many agencies that are involved for provision of services delivery, and there is lack of coordination among them, which is one of the major reasons for delay in the implementation of reforms. ▪ Dissemination of information with regard to the citizen's charter is absent, and is also not displayed anywhere within the ULB or at citizen facilitation centres of VMC ▪ VMC is facing severe capacity constraints both in terms of availability of manpower and skill set to monitor and maintain the e-governance modules that have already been implemented. ▪ Many obligatory standalone modules such as SWM and Finance are yet to be implemented ▪ Frequent transfer of key officials such as Municipal Commissioner and Additional Municipal Commissioner is a matter of concern. As a result of the transfers, priorities of VMC keep changing affecting the overall efficiency of the system ▪ The state government is not willing to transfer some of the functions to VMC as the ULB does not have adequate staff with required skill

Sector	Issues identified
	sets
Urban Environment	<ul style="list-style-type: none"> ▪ Over the years, due to urbanization the green cover has been reducing ▪ The parks are poorly maintained ▪ Due to excessive dependence on ground water and lack of water recharging, the ground water level has been dwindling ▪ Due to encroachment several kundus have dried ▪ There does not exist any scientific provision for treating flowers from temples ▪ Due to the construction work across the city, air pollution has gone up
Urban Poverty & Social Infrastructure	<ul style="list-style-type: none"> ▪ Lack of support from guardians leading to less sincerity of students ▪ Shortage of land for existing and new schools ▪ Land needs to be made available for new fire stations ▪ Fire brigade cannot reach places in old city ▪ Existing fire hydrants not in usable condition
Spatial planning & Environment	<ul style="list-style-type: none"> ▪ Overcrowding in the residential areas of the city. Although highest priority given to residential area development in the plan period of master plan 2011 (64%). Still no re densification took place in the area. This poses threats like high pressure on existing facilities, high response time to act against disasters like fire and earthquake and low standard of living. ▪ Population densities is very high in inner city (1000 to 1500 people per hectare), this creates high pressure on existing facility. In the inner city major land use category is commercial and heritage tourism, this further increase the pressure on existing facilities. ▪ The city has major area under unplanned residential housing, and very high number of slums (201) as per the slum free city report. ▪ Land use under recreational (green spaces) is very low and totally missing in inner city. It is observed that during the master plan 2011 period green area/ recreational area in the city has grown but the total requirement is not served as there are several ward that have no green areas, as in case of inner city wards
Tourism & Heritage	<ul style="list-style-type: none"> ▪ The number of tourists has reduced drastically year on year (2012 to 2013) due to pollution, traffic congestion, flood like situation and poor roads ▪ There is lack of recreational facilities for tourists like water activities ▪ Lack of guided tours and information centres ▪ City guides or brochures not easily available to tourists ▪ There is shortage of hotel rooms during peak time ▪ Lack of authorized parking stands for overnight parking of taxis and buses ▪ Lack of signage across city

16.5 Stakeholder Suggestions

The key points of the discussions with the officers are as follows -

- **Tourism**
 - ◆ Though the flight connectivity has improved over the years, however, there is need of better flight connectivity
 - ◆ Promotion through sound and light and sound shows
 - ◆ There is lack of recreational facilities for tourists like water activities
 - ◆ Lack of guided tours and information centres
 - ◆ City guides or brochures not easily available to tourists
 - ◆ There is shortage of hotel rooms during peak time
 - ◆ Lack of authorized parking stands for overnight parking of taxis and buses
 - ◆ Need to develop better transportation facilities
 - ◆ Developing more ghats to cater to higher incoming tourists
- **Water supply**
 - ◆ Low pressure in many parts of the city, in particular for multi-storey building
 - ◆ High dependence on ground water as source of water
 - ◆ The cost recovery of water services is low
 - ◆ In the absence of metering throughout the city, volumetric bills are being generated
 - ◆ Many kunds earlier used as storage reservoirs, have dried
 - ◆ Mapping of all the services should be done
- **Sewerage**
 - ◆ City wide sewerage network coverage low
 - ◆ Open defecation is a big problem
 - ◆ No means for disposal of septic tank waste
 - ◆ Sewerage mixed with rain water
 - ◆ Untreated waste being dumped in river Ganga
 - ◆ On-going work should be completed on priority
 - ◆ Use of treated water shall be promoted
- **Storm water drains**
 - ◆ No separate storm water drainage network
 - ◆ Storm water not being used for recharging ground water
 - ◆ Kunds prone to encroachment
- **Roads and transportation**
 - ◆ Poor condition of roads
 - ◆ Need to implement the comprehensive mobility plan
 - ◆ Need to widen several roads
 - ◆ Ring roads should be developed
 - ◆ Strengthening of arterial roads is required
 - ◆ Public transport needs to be strengthened
 - ◆ There should be more bus stops
 - ◆ Plying of rickshaw should be restricted in some areas
 - ◆ Battery operated vehicles may be operated near ghats
 - ◆ No designated overnight parking spots. Autos, taxis and buses being parked in lawns and parks
- **Solid waste management**
 - ◆ The treatment plant and landfill is being developed. The construction work is in its last stages.

- ◆ Meanwhile the secondary collection and dumping of waste is being done by VMC on its own
- ◆ Littering of waste around secondary collection points
- ◆ Clogging of open drains with waste
- ◆ Biomedical waste is a problem
- ◆ There is no separate mechanism for treating waste generated by temples
- ◆ Decentralized waste treatment plants shall be planned
- **Urban poor**
 - ◆ With the support of central and state government, several employment initiatives are being implemented by DUDA. Close to 2000 to 3000 slum dwellers are being imparted employable skills.
 - ◆ Efforts should be undertaken for provision of better infrastructure facilities in slums
 - ◆ The education level and availability of healthcare facilities is low
- **Recreation**
 - ◆ Very few facilities for recreation
 - ◆ Lack of water sports
 - ◆ No operational public libraries
 - ◆ Poor maintenance of public parks and lack of security for the one's developed
 - ◆ Lack of community centres
 - ◆ Very few facilities for senior citizens
- **E-governance**
 - ◆ Need of additional manpower
 - ◆ E-governance should be made an integral part of VMC. Currently most of the staff is temporary.
 - ◆ Need for second round of GIS.
 - ◆ GIS maps for the city have been shared.
 - ◆ Need for enterprise LAN connectivity as zones have not been linked with the main office
 - ◆ Need to redesign the website and development of personnel information system
 - ◆ Procurement of hardware
 - ◆ A GIS based system can be developed to approve all civil work
- **Others**
 - ◆ Electric poles should be underground
 - ◆ Protection of ghats from pollution, open defecation and bathing
 - ◆ A separate heritage plan for the old city shall be prepared
 - ◆ The city has potential to become a medical treatment hub in the region
 - ◆ A separate policy shall be prepared for weavers

16.6 Stakeholder workshop at Draft stage

The stakeholder workshop at draft stage was conducted on 20th March 2015 at council hall of the Varanasi Municipal Corporation. The workshop had about 60 participants included officials from various departments of VMC, PIU Cell, Jal Sansthan, Jal Kaal, other parastatal agencies, NGO, RWA, business representatives and other stakeholder, the detailed list of participants is in the annexure.

The workshop was chaired by Mr. B.K Dwivedi, Additional Commissioner, Varanasi Municipal Corporation and coordinated by Mr. Atul Gautam, Urban Planning Officer, PIU Cell of VMC.

Table 128: Presentation on Draft City Development Plan

Session	Discussion On
Morning Session	Urban Infrastructure and Urban Finance
	Urban Planning and Urban Transport
Afternoon Session	Housing & Urban Poor, Local Economic Development, Socio-cultural Infra, Heritage and Tourism
	Environment and Disaster Management

CRIS team made a detailed presentation on key issues, strategies and projects identified under the CDP were discussed in detail and further suggestions were sought from the stakeholder. Following are the suggestions given by various stakeholders during the workshop:

- Projects like Museum and Sports Stadium should be incorporated.
- Provision for Night Shelters to be included.
- Old City should have a Fire Hydrant line as fire engine cannot enter the old city
- New 50 MLD STP is required
- Desired benchmark in NRW to be attained
- Necessity of mechanised and travelator equipped footover bridge in front of cantt railway station to bus stand.
- Decentralised Solid Waste treatment plant to be used to treat th organic waste.
- Institute for Skill improvement of Guides, Artesians, Craftmen and Hanndloom workers to be constructed.

Detailed Minutes of the meeting are attached in the Annexure – I.

Figure 74: Media Coverage of the Workshop



16.7 Vision formulation

Subsequent to the group discussion on the issues and strategies, discussion on the city vision was carried out. Based on the discussion, stakeholders felt the need to revise the vision statement.

The city vision has to be based on the need to improve the infrastructure, increasing employment opportunities, while conserving the heritage, and culture of the city.

Vision Framing of Varanasi



To **RETAIN THE ANTIQUITY** and flavor of Varanasi as a living heritage city and to ensure an **EXPERIENTIAL VISITATION** to those desiring a deeply unique **SACRED FEEL** of the city.

Vision Framing of Varanasi



To strengthen the esteem of the **INTENSE CONNECTION** between **VARANASI AND THE PURIFIED RIVER GANGA**.

To **PREVENT DECAY** and subvert attempts by which **LOSS OF PRICELESS HERITAGE** can result.

Examples :
 Weavers, Informal Economy, Heritage Buildings, Ghats and River Front Rituals and Practices, Kabir Legacy, Temples, Tanks, Sculptures and Carvings, Buddhist Relics and Sarnath, Jain Monuments, Music, Dance, Fine Arts, Palaces, Mosques, Tombs, Gurudwaras etc.

Vision Framing of Varanasi



To Position **TOURISM** as a contributor to the **LOCAL ECONOMY**.

The vision statement has been framed to balance the competing demands rising from the various sectors as well as from the different stakeholders in the city. Keeping in view the various economic activities in the city and the existing infrastructure status in the city, the vision for Varanasi city has envisaged as:

“To revive the glory of Varanasi by conserving and promoting its heritage and protecting its cultural and traditional environs to boost tourism and employment, provide quality urban services, accountable governance to enhance the quality of life of residents”

The vision statement has been further translated into specific development goals.

16.8 Approach to Varanasi City Planning

It was considered important to develop an overall comprehensive approach to the city planning for Varanasi. The city is a living and vibrant city and is known for so many of its unique features. It is the most important religious place for the Hindus as well as the Buddhists. If on the one hand, it is an educational hub, on the other it is an important centre for silk weaving industries. It attracts tourists as well as saints. The River Ganga provides the city its raison-de-etre. However, despite all this the city presently faces a most crushing need for rejuvenation and revitalization. Most of its problems are interlinked and each is dependent on the successful amelioration of the other. The approach to the planning for Varanasi is detailed below.

16.8.1 Service Integration

Critical lack of development of infrastructure and in some cases its non-functioning (example, the solid waste management system) has resulted in poor quality of life in the city. More so along the river

ghats, wherein the load of sewerage and solid waste of the entire city is dumped. Therefore, the infrastructure sector is the prime focus area. The city already has several projects in its pipeline to improve the water supply and sewerage systems. These need to be implemented on priority. Apart from these, the focus sectors have to be:

- Storm water drains
- Quality of Roads
- Solid waste management

16.8.2 Area Integration

Apart from integration of services and its provision, the city needs an area integration approach for its development. The temple precincts and their zones, for instance, need to be looked at in a holistic manner. Similarly, the River ghats, the river front and the river cleaning need to be taken up in an integrated manner.

16.8.3 Activity Integration

Varanasi has several activities that need to be developed and encouraged. Several of these activities such as silk weaving, the horticultural production areas, etc need a coordinated approach that can help in their development. For instance, the industrial areas needs better roads, water supply, effluent treatment plant and power supply. Each one of the components is important for the development of the place. Similarly, the tourist circuits need to be developed with appropriate facilities such as signboards, rest rooms, changing rooms, kiosk facilities for guides, tour operations, etc.

The above mentioned approach has been translated into specific development goals. These have been described in the following section.

16.9 Development Goals

16.9.1 Development Goal 1: Clean Varanasi-Clean Ganga

- **Water supply improvement**
 - ◆ Provide 24x7 water supply
 - ◆ Water quality to be improved to provide pure drinking water for all
- **Sewerage system**
 - ◆ 100% coverage of households by sewerage connections in the city
 - ◆ Re-use of treated sewerage for non-potable uses
- **Sanitation**
 - ◆ To completely stop open defecation and urination
- **Storm water drains**
 - ◆ Improve drainage network to prevent water logging and safeguard quality of roads
 - ◆ Constructing new drains integrated with the new roads development
 - ◆ Perforated tiles footpaths to allow penetration rain water into ground
- **Solid waste management**
 - ◆ Entire city to be covered under door to door collection
 - ◆ 100% segregation of waste; recycle and reuse waste; start mechanisms to convert waste to wealth

- ◆ Promote awareness on cleanliness and against dumping of waste on road side drains and river

16.9.2 Development Goal 2: Make Varanasi Economically Vibrant

- **Economic development**
 - ◆ Tourism promotion through better facilities
 - ◆ Industrial facilitation and growth
 - ◆ Focus on informal sector regulation
- **Infrastructure**
 - ◆ Development of roads
 - ◆ 24X7 power supply

16.9.3 Development Goal 3: Retain the religious and cultural pre-eminence of Varanasi in India

- **Heritage**
 - ◆ Retain the character of old city while providing it all basic infrastructure facilities
 - ◆ Initiate coordinated approach to heritage area conservation and planning
 - ◆ Planning and service provision in ghat areas
- **Religious sites**
 - ◆ Ensure round the clock cleanliness in temple complexes
 - ◆ Create awareness drives for cleanliness
- **River Ganga**
 - ◆ Completely stop waste and sewerage disposal into the river

16.9.4 Development Goal 4: Make Varanasi an economically sustainable city

- **Environment management**
 - ◆ Increase the green spaces in the city and integrate them
 - ◆ Pollution control through multi-pronged strategies
- **Water body management**
 - ◆ Integration and protection of kunds in the city
- **River front development**
 - ◆ Activity zoning regulations on the river side

17. Sector Plans, Strategies and Investment Plan

Sector plans in line with the identified vision for the city has been prepared through a comprehensive process of gap assessment and through stakeholder consultation. This assessment has also led to the identification of sector specific strategies, implementation actions, and associated reforms with specific inputs from stakeholders too.

The strategies adopted primarily have three dimensions: improving the service delivery by efficiency measures, improving service delivery by creating infrastructure assets: and improving the governance aspects. This section summarises the sector plans and capital investments required for creating infrastructure assets and various strategic interventions required in the implementation of such projects.

The need for the CIP is on account of:

- Assessment of city growth and infrastructure needs
- Scheduling of investments for on-going projects
- Assigning of priorities within the constraints of available financial resources

The CIP is the multi-year scheduling of identified and prioritized investments. The scheduling or phasing of the plan is based on:

- Assessment of city growth and infrastructure needs
- Scheduling of investments for on-going projects
- Assigning of priorities within the constraints of available financial resources

17.1 Institutionalizing CIP

The CIP is an important element and is significant in terms of the city's management process and sustainability with regard to the delivery of basic services. The CIP also provides a framework for the annual budget cycle for the future 6-10 year period. The CIP identifies the roles and responsibilities of various stakeholders in the implementation of identified projects. The CIP involved the identification of public capital facilities to cater to the demand of the city population for the medium and long term infrastructure needs.

The project identification has been carried out through a demand-gap analysis and the stakeholder consultation. Further, project prioritisation and strategizing of the investments/phasing of investment are based on the strategies listed out under each service sector as identified through stakeholder consultations. The projects derived are aimed at ensuring the optimal and efficient utilisation of existing infrastructure systems and enhancing the capacity of the systems/services to cater to the demands of future population additions. Certain projects have been identified in consultation with the stakeholders.

The phasing of the identified projects and investments is based on the following principles:

- Priority needs, with developed areas receiving priority over future development area
- Inter and intra-service linkages, viz. water supply investments shall be complemented by corresponding sewerage/sanitation improvements
- Size and duration of the requirements, including preparation and implementation period
- Project-linked revenue implications

The CIP and forecasted future needs for provision of capital facilities under each identified sector are presented below. These assets will help to universalise services for the current population as well as accommodate the expected increase in population.

In sectors where long-term planning is required (for example, source development for water supply, sewerage, etc.), a 25-year planning horizon is considered. Assets created in such sectors consider the projected population in this horizon. These infrastructure assets would not only guarantee services to the citizens but also signal a proactive commitment to potential investors considering the region.

17.2 Water supply sector plan

As discussed in the water supply section, the key challenges in water supply sector are that about 30% of the distribution lines are as old as 100 years and need to be replaced. Further, the existing storage capacity is inadequate to meet the requirements of the newly added areas of the city; the non-revenue water is high at ~58%.

In order to estimate the investment priorities in this sector, the gap analysis has been carried out to analyse the current deficit in the system and future requirement for the design year 2041. The sector plan for water supply improvement in the city has been presented in the Table 129 below.

Table 129: Water supply sector plan

Water Supply Sector								
Sector goals	<ul style="list-style-type: none"> ▪ 100% coverage of piped water supply network ▪ Provide 24 X 7 water supply ▪ The quality of the water should meet the CPHEEO standards. ▪ Reduction of NRW to less than 20% ▪ Undertake tariff revision and reduction to achieve 100% O&M cost recovery 							
Design parameters	<ul style="list-style-type: none"> ▪ Base year as 2014 and design year as 2041 ▪ Demand estimation based on the projected population for Varanasi and additional 10% of the population considered as floating population. ▪ Daily water supply demand (172.5 LPCD) calculated on the basis of daily per capita water supply norm (150 LPCD +15% Un accounted for Water) ▪ Quality of water as per CPHEEO standards ▪ 100% treatment capacity ▪ 33% of water supplied as storage capacity ▪ Distribution network coverage – 100% in habitable areas. ▪ Cost recovery through user charges (100% O&M expenses) 							
Demand gap assessment	Component	2014	Ongoing projects	Current gap	2021 (Short term)		2041 (long term)	
					Demand	Gap	Demand	Gap

Water Supply Sector								
Source (Daily Supply in MLD) ²¹	590	200	-	324	-	487	-	
Refurbishment of source ²²	-	-	-		40		40	
Distribution network coverage (km)	1500	700		1280	-	1280	-	
Refurbishment of old network (in Km)		-	-		800 ²³		800	
Elevated Storage capacity (MLD)	159	80	-	108	-	162	-	
Refurbishment of ESR (MLD)		-			80		80	
Treatment capacity (MLD)	410	100	-	324	-	447	77	
Desired outcomes		2014	2017	2019	2021	Remarks		
	Network coverage to households	69%	80%	90%	100%	-		
	Per capita supply (LPCD)	186	135	135	135	-		
	24x7 water supply	0%	50%	70%	100%	-		
	Quality of water	96%	100%	100%	100%	-		
	Non-revenue water	30%	30%	25%	20%	-		
	Consumer metering	0%	50%	100%	100%	-		
	Cost recovery	61%	70%	100%	100%	-		
	Action Plans	Activities						
	Increase the household level coverage	<ul style="list-style-type: none"> Increase water supply coverage through individual service connections. Provide water supply to newly developed/developing areas and uncovered areas. 						

²¹ With the completion of ongoing works, there will not be any demand for water supply source augmentation

²² The life of tube wells is estimated to be till 2031. Hence, to meet the water demand in addition to 325 MLD (from intake well) new water source will have to be developed.

²³ The existing distribution network is 1500 kms. Out of which 700 Kms is being refurbished under JNNURM. The balance has been considered to be refurbished by 2021.

Water Supply Sector			
Water Supply System Rehabilitation Plan	<ul style="list-style-type: none"> This focuses on partial or complete refurbishing of the existing water distribution pipeline. The old, defunct, and inadequate piping system needs to be replaced by a proper distribution network. 		
Comprehensive Water Supply Plan	<ul style="list-style-type: none"> This focuses on source augmentation, adequate storage, and distribution network and treatment facilities for future requirement. 		
Operation and Maintenance Plan	<ul style="list-style-type: none"> This focuses on development of the asset inventory Introduction of flow meters, bulk meters and consumer end metering system will ensure judicious usage of water Implementation of service information improvement plan Conducting workshops on water supply and other services to educate the citizens. Preparation of training calendar to impart training to all the staff members throughout the year on O&M of assets Trainings for expenditure control and reduction of O&M cost on key services. 		
Unit Rates	Component	Unit	Unit Cost (Rs in Lakhs)
	Rehabilitation of existing WTPs	MLD	50
	Treatment Gap -New WTP requirement	MLD	50
	Replacement of ESR (capacity)	MLD	80
	Refurbishment of old network	KM	50
	Domestic Meters	Rs.	4500
	Electrical works	Per MLD	5
	SCADA	Lump Sum	500
	Water Audit	Lump Sum	200
	Water quality monitoring	Lump Sum	200
	Institutional training	Lump Sum	2100

17.2.1 Capital Investment Plan

Based on the above key requirements in the water supply sector, the capital investment plan for water supply project is presented in the below Table 130.

Table 130: Water supply capital investment plan

Project	Sub project	Estimated cost in Rs. Crores	Remarks
Water source	Refurbishment of intake well in Bhadaini	7	VMC is implementing projects under JNNURM. The projects are
Storage reservoirs	Refurbishment of 80 MLD of existing OHTs	64	

Project	Sub project	Estimated cost in Rs. Crores	Remarks
Distribution network	Refurbishment of 800 Km of old distribution network to reduce leakages in the system	175	expected to be complete by December 2014. Hence, these projects are in addition to the on-going projects.
Metering and leak detection and installation of SCADA system	Installation of 2 lakh lakhs domestic water meters across the city ²⁴	90	
	House connections for households already having water supply connection	40	
	Installation of SCADA system to monitor the water supply losses in distribution network and source. This also includes bulk flow meters on tube wells, intake wells, and storage reservoirs	70	
Water quality assessment units	System for monitoring water quality	2	
Training	Institutional level training	21	
Total investment identified 2021		469	
Total investment required for 2041		773	

17.2.2 Project details

The key projects and project details in water supply sector is presented in the below Table 131.

Table 131: Water supply project details

Project	Project details
Augmentation of Water supply source	<ul style="list-style-type: none"> At present there is no gap in the supply of water. There is construction of intake well going on and with the completion of construction of intake well, there will be no deficiency of availability of water for the requirement of the population of 2041. The life of tube wells is estimated to be till 2031. Hence, to meet the water demand in addition to 325 MLD (from intake well) new water source will have to be developed in Bhadaini. NRW is high @ 58%. This should be brought to the desired benchmark of 20% before adding capacity to the system. In this way actual requirement could be calculated in a fair way.
Rehabilitation of Elevated storage capacity	<ul style="list-style-type: none"> At present there is no gap in the provision of elevated storage capacity. With the completion of on-going OHTs, the total storage capacity will be more than 33% of the water supplied. Therefore

²⁴Metering was a component of the on-going JNNURM project; however procurement of meters has not been done. So, a provision equivalent to the cost of meters has been made in revised CDP.

	<p>present capacity can easily fulfil the requirement of population of 2041</p> <ul style="list-style-type: none"> However, there will be demand to rehabilitate the OHT's by 2021. For proper functioning of the system the existing 80 MLD of OHTs need to be rehabilitated.
Refurbishment of old distribution network	<ul style="list-style-type: none"> The distribution network is the most critical component in the water supply system for Varanasi city As the distribution network is very old, a substantial part of the network needs to be replaced. Based on discussions with officials, the length of distribution network to be replaced has been assumed to be 800 Km. However, the exact length of the distribution network to be replaced may be less. A detailed study of the same could give a clear picture of the present situation and hence on that basis the exact demand could be estimated
Installation of domestic water meters across the city and installation of SCADA system	<ul style="list-style-type: none"> One of the key strategies suggested by the stakeholders is to develop the existing water supply system to 24x7 water supply system. This suggested system would be sustainable only if 100% metering is achieved at intake and outflow points and at the consumer end. For households already having connections, the cost of connection will be borne by VMC. Further, in order to prevent transmission and distribution losses, regular water monitoring and SCADA system has been proposed.
Establishment of Water quality assessment units	<ul style="list-style-type: none"> Apart from the quantity of water supplied it becomes important to monitor the quality of water supplied to the consumers. Therefore, to monitor the quality of water, water quality assessment units needs to be setup at various ends of the branched netwrk, which can monitor the quality of watter at the consumer end.
Training of the staff members	<ul style="list-style-type: none"> With the discussion from the stakeholders it was identified that, JICA has assessed the institutional level training needs of Jal Kal officials so that the system requirement and various other aspects could be handled by the department is a fair and efficient way. Accordingly the provision of training of staff members is proposed and hence its cost provision has been made.

17.2.3 Phasing of investment

The phasing of projects has been detailed out in the table Table 132.

Table 132: Water Supply Phasing

Sector/Component	Implementing agency	Total (Rs. Crores)	2015-	2016-	2017-	2018-	2019	202	
			16	17	18	19	-20	0-21	
			(in Rs. Crores)						
A	Refurbishment of old pipes	Jal Nigam	175	35	70	70	-	-	-
B	Refurbishment of intake well	Jal Nigam	7	3.5	3.5	-	-	-	-
C	Refurbishment of storage capacity	Jal Nigam	64	13.5	25.5	25	-	-	-
D	House connections	Jal Nigam	40	0	20	20	-	-	-
E	Metering of connections	Jal Nigam	90	-	45	45	-	-	-
F	SCADA system	Jal Nigam	70	21	21	28	-	-	-
G	Water quality assessment units	Jal Nigam	2	2	-	-	-	-	-
H	Training	Jal Nigam	21	4	4	4	4	5	-
Total			469	79	189	192	4	5	-

17.2.4 Possibility of PPP

The entire project from source augmentation to metering of water connections can be developed on the public-private partnership mode.

Under PPP, VMC would undertake implementation of O&M of water supply system which involves the following steps:

- VMC shall fix the tariff for water user charges.
- Handover the assets to the operator for operation and maintenance
- Billing and collection of the water charges should be done by the private operator.
- The assets would be maintained by the private operator, and VMC shall pay revenues to the private operator.

Under the PPP model, the developer would have the following responsibilities

- The entire project can be awarded for a period of 30 years
- Developers can bid on either tariff required to operate and maintain the project or annuity support from VMC

Key service level parameters

VMC need to set performance parameters for the private developer to be obliged during the contract period. The performance parameters would in the area of;

- daily hours of supply
- supply levels as stipulated by VMC
- quality of water as per CPHEEO norms

- Improvement in coverage of water supply connections
- Reduction in non-revenue water
- Improvement in collection efficiency
- Frequency of billing of water bills
- No. of complaints received

Key note:

VMC would require to appoint a transaction advisor to undertake a detailed feasibility assessment, preparation of bid documents (request for qualification – RFQ, request for proposal – RFP), and bid process management leading to award of contract to private developer

17.3 Sewerage and Sanitation

As mentioned in the sewerage and sanitation chapter, the underground sewerage network coverage is approximately 30%, existing network is old and dilapidated and more than half the sewerage waste collected is discharged into water bodies untreated. Open defecation and urination is common and the condition of existing community and public toilets is not good. As per the gap analysis, the city requires additional 600 Km of sewerage network including replacement of some existing sewerage network, and reuse of treated water. In addition, to provide good sanitation conditions to the citizens, public toilets and community toilets have been proposed. Also, mechanized equipment has been proposed for cleaning of drains. The sector plan for sewerage and sanitation system in the city has been presented in the Table 133 below.

Table 133: Sewerage sector plan

Sewerage and sanitation								
Sector goals	<ul style="list-style-type: none"> 100% coverage of households by sewerage connections in the city To stop disposal of untreated waste water into River Ganga Re-use of treated sewerage Improving access to toilets in slum and tourist areas 							
Design parameters	<ul style="list-style-type: none"> Base year as 2014 and design year as 2041 Treatment capacity: 80% of water supply Sewer network would cover 90% of road network in the city Household level coverage: Sewerage connections as percentage of water supply connections (80-90%) Community toilets: proposed for slums, till all slums do not individual toilet connection. Assumptions – 30% population lives in slums, 1 toilet seat per 50 persons, and 20 seats per community toilet Public toilets: 10 seat toilets on 7 main Ghats and 4 seat toilets on remaining 77 Ghats, facility for specially abled people. 							
Demand-gap assessment	Component	2014	Ongoing projects	Current gap	2021 (Short term)		2041 (long term)	
					Demand	Gap	Demand	Gap
	UGD network (km)	810	142	200	1152	200	1152	200
Refurbishment of UGD network (km)	-	-	810	-	810	-	-	

Sewerage and sanitation								
	Sewerage Treatment Plant (MLD)	102	260	-	239	-	359	-
	Pipelines for treated waste (km)	-	-	230	230	230	1152	1152
	Community toilets in slums	96	85	203	432	251	-	-
	Public toilets on Ghats and Kunds	12	-	-	42	30	42	30
	Public toilets/ urinals spread across the city	75	-	-	131	56	131	56
	Improvement of community toilets/public toilets	-	-	-	-	108	-	-
Action plan	Activities							
Comprehensive sewerage plan	<ul style="list-style-type: none"> Construction of underground sewerage network and revamping / refurbishment of defunct sewers in the city Covering the areas not connected to the sewerage network Ensuring collection of all the sewage into the treatment plants Segregation of sewerage and storm water drainage Appropriate separation of water supply pipelines from sewerage lines Provision of community toilets in slum areas to check open defecation Construction/improvement of public toilets/community toilets/ urinals/ mobile toilets To bring about awareness against open defecation and open urination. Bring about PPP mechanisms for construction, operation and maintenance of toilets especially in the Ghat areas. 							
	Institutional strengthening and capacity building	<ul style="list-style-type: none"> To develop sludge management in initial phase and phase out onsite sewage disposal mechanisms. Increase the sewerage user charges to meet the O&M expenses for new infrastructure to be developed 						
Operation and maintenance plan	<ul style="list-style-type: none"> Develop the asset inventory Conduct the workshops on sewerage sector to educate the citizens Prepare the training calendar and provide trainings to all the staff members throughout the year on O&M of assets 							
Faecal sludge management	<ul style="list-style-type: none"> Carry out mapping of onsite sanitary disposal systems in the city Faecal sludge management to be carried out at regular intervals which will be done by registered private operators and does not involve investment of the ULB. 							
	<ul style="list-style-type: none"> Regular check of septic tanks and faecal sludge management to be taken by ULB till complete UGD network is achieved 							

Sewerage and sanitation			
Unit rates		Unit	Unit Cost (in Rs Lakhs)
	Replacement of branch sewerage network	Km	90
	New Branch sewerage lines	Km	50
	Community toilets/public toilets	LS	15
	Pipelines for carrying treated waste water	Km	45
	Capacity building	LS	500
	Sewerage Cleaning Equipment	LS	100
	Sewerage Treatment Plant	MLD	40

17.3.1 Capital investment plan

On the basis of gaps identified in sewerage and sanitation sector, the capital investment plan for 2021 and 2041 has been estimated and presented in the below Table 134.

Table 134: Projects identified and phasing – Sewerage and sanitation

Projects	Sub project	Investment (in Rs. Cr.)
Construction of Under Ground Sewerage network for 2041 for Varanasi	1. Laying of 200 Km of network in areas not yet covered	80
	2. Refurbishment of existing sewerage network	729
Laying of pipelines for reuse of treated waste water	Laying of 230 Km of pipelines	103
Procurement of Sewerage cleaning equipment	Procurement of 10 sewerage cleaning equipment	5
Development of public sanitation facility	Construction of public and community toilets	55
Capacity building and awareness campaigns	Educating people and trainings for VMC employees	5
New Sewerage Treatment Plant	Construction of New Sewerage Treatment Plant 50 MLD capacity	20
Total investment identified 2021		997
Total investment required for 2041		1480

17.3.2 Project details

The key projects and project details in sewerage sector have been presented in the below Table 135

Table 135: Projects Details – Sewerage and sanitation

Project	Project Details
Construction of Under Ground Sewerage network for 2041 for Varanasi	<ul style="list-style-type: none"> It has been estimated that a network of 1152 km of branch/house sewers would be required by 2041. At present there is 810 Km of line laid and 142 Km is in progress. For covering the future population, further 200 Km of sewerage line needs to be laid. Therefore the the project for construction of underground sewerage for 200 Km is identified and further refurbishment of 810 km of pipelines in cis-Varuna areas would be required by 2041. The exact length of the line which needs to be refurbished with time would be calculated by doing a detailed study of the same.
Laying of pipelines for reuse of treated waste water	<ul style="list-style-type: none"> At present, Varanasi does not have any provisions for reuse of treated waste water. This project identifies the requirement of laying of 230 Km of the pipeline to carry the treated waste water. This would be done in phases. In phase I, 20% of the required network will be developed to carry treated waste water and remaining in phase II.
Procurement of Sewerage cleaning equipment	<ul style="list-style-type: none"> Due to insufficient velocity of the water, the carrying capacity of the drains reduces. Hence the siltation process gets started in the drains and further reduces the capacity of the system to carry the sewerage, which leads to overflow of the system. Hence based on the discussion, to mitigate this, the project for procurement of 5 sewerage cleaning equipment by 2021 and 10 (Nos) by 2041 to carry out desiltation of drains has been identified.
Development of public sanitation facility	<ul style="list-style-type: none"> The present condition of the public and community toilets is very poor. It is not according to the standers and their number is not sufficient as per the requirement. Hence, Investment has been identified for the development of community toilets in identified public areas, tourist spots, Ghats and slums
Capacity building and awareness campaigns	<ul style="list-style-type: none"> There is a requirement for the capacity building of the ULB. Also there is a need of an awareness campaign for the residents about the proper use of the Sanitation facilities. Hence, lump sum for capacity building of VMC officials and awareness campaigns has been identified.
New Sewerage Treatment Plant	<ul style="list-style-type: none"> As per the discussion with the ULB officials there has been an investment identified for the construction of New Treatment plant. The requies capacity of the STP to be constructed is 50 MLD.

17.3.3 Phasing of investment

The phasing of investment has been carried out for short term horizon (2021). The sewerage project components have been divided into various components and timelines have been proposed for implementation purpose. The phasing of investment and implementing agency for sewerage and sanitation sector for 2021 has been presented in the Table 136 below.

Table 136: Project Phasing – Sewerage and sanitation

Sector/Component	Implementing agency	Total	201	201	201	201	201	202	202	
			5-16	6-17	7-18	8-19	9-20	0-21	1-22	
(Rs. Crores)										
A	Construction of Under Ground Sewerage network for 2041 for Varanasi	Jal Nigam	80	16	32	32	-	-	-	-
B	Refurbishment of old pipelines	Jal Nigam	729	145	365	219	-	-	-	-
C	Laying of pipelines for reuse of treated waste water	Jal Nigam	103	-	21	41	41	-	-	-
D	Procurement of Sewerage cleaning equipment	VMC	5	3	2	-	-	-	-	-
E	Development of public sanitation facility	VMC	55	0	2	26	27	-	-	-
F	Capacity building	VMC	5	1	1	1	1	1	-	-
G	New 50 MLD STP	Jal Nigam	20	-	10	10	-	-	-	-
Total			997	165	433	330	69	1	-	-

17.3.4 Possibility of PPP

O&M of STPs and construction of the public toilets/community toilets can be explored on PPP mode. Under the PPP model the developer would

- Undertake O&M of STP and construction and maintenance of public toilets/community toilets
- ◆ The project can be awarded for a period of 10 years
- ◆ VMC can ask private developer to consider selling of treated water as part of contract
- ◆ Developers can bid on annuity support from VMC
- ◆ VMC needs to set performance parameters for the private developer to be obliged during the contract period. The annuity payment should be a factor of performance parameters achieved by the developer
- The performance parameters would be quality of treated water

The above model is indicative. VMC would require appointing a transaction advisor to undertake detailed feasibility and preparation of bid documents (request for qualification – RFQ, request for proposal – RFP) and bid process management leading to award of contract to private developer

Best Practices-Waste Water For Reuse-Navi Mumbai

The Navi Mumbai Municipal Corporation took several initiatives. In the first instance, three sewerage treatment plants using the latest technology were commissioned in 2011-12. This was later expanded through use of JnnURM funds. The whole system was revamped to move towards a 100% UGD system for sewage collection and adopting advanced technologies for sewage treatment. The quality of the treated water from the sewage treatment plants is better than the norms prescribed by the Maharashtra Pollution Control Board. The increased spending on waste water treatment has gone hand in hand with aggressive campaign on the part of the corporation to spread awareness about the importance of sanitation. The NMMC has built several low maintenance toilets. The cleaning, operation and maintenance of the public toilet blocks has been outsourced to NGOs. 75% of toilets are connected to UGD network and it is a city free of open defecation. The city won the Best City Award for Improvement in waste water and sanitation services from GoI in 2009-10.

Source: Ahluwalia, Isher Judge, *Transforming our Cities: Postcards of Change*, Harper Collins India, 2014

17.4 Solid Waste Management

The solid waste management system in Varanasi at present can at best be described as 'not yet taken off'. There is no door to door waste collection system and also there is not scientific waste disposal mechanism. The key challenge with respect to solid waste management in Varanasi is to devise a plan to implement the waste management system. A concessionaire was appointed to implement the integrated SWM system; however, the contract has been terminated. The sector plan for Solid Waste Management in VMC has been presented in the Table 137 below.

Table 137: Solid Waste Management sector plan

Solid Waste Management Sector							
Sector goals	<ul style="list-style-type: none"> Effective implementation of outreach mechanisms to improve door-to-door collection and segregation at source Improve the infrastructure related to treatment of waste (to ensure recovery of at least 50% waste collected) Scientific treatment and disposal of waste 100% cost recovery of solid waste 						
Design parameters	<ul style="list-style-type: none"> All the households should be covered with the door-to-door waste collection system. Segregation of waste at source – (ensure 70 % of waste would be segregated at the source) Optimum fleet utilization (No. of trips/ vehicle/ day - average minimum of 2) Desired SWM treatment capacity – 80% of generated waste Desired landfill site– 20% of the waste generated 						
Demand gap assessment	Component	2014	Current gap	2021 (Short term)		2041 (long term)	
				Demand	Gap	Demand	Gap

Solid Waste Management Sector							
	Vehicle capacity required ²⁵	489	-	743	743	1727	1727
	Waste Treatment Plant (Tonnes)	600	-	777	177	1206	606
	Landfill (in acres)	38	-	77	39	190	150
Desired outcomes		2014	2017	2019	2021	Remarks	
	Door-to-door waste collection	0%	100%	100%	100%	-	
	Segregation at source	0%	60%	80%	100%	-	
	Mechanised waste handling	0%	60%	80%	100%	-	
	Waste treatment capacity	75%	100%	100%	100%	-	
	Scientific waste disposal	0%	50%	80%	100%	-	
	Cost recovery of O&M	0%	50%	100%	100%	-	
	Private sector participation			Complete collection, transport, treatment, and disposal			-
Action Plans	Activities						
Door-to-door waste collection	<ul style="list-style-type: none"> An NGO needs to be engaged for door to door collection of waste 						
Source segregation and collection of commercial waste	<ul style="list-style-type: none"> The segregation of biodegradable and non-biodegradable wastes should be done at the source level. This segregation of waste would improve the recovery from waste collected since the calorific value of the dry waste is not affected. 						
Scientific landfill	<ul style="list-style-type: none"> The on-going work on scientific landfill needs to be completed to ensure complete scientific disposal of waste 						
IEC	<ul style="list-style-type: none"> For effective solid waste management in the city, regular awareness campaigns have to be conducted in the city on 4R strategy (reduces, reuse, recycle, and recover). 						
Decentralised Waste	<ul style="list-style-type: none"> There is now technology available from which organic waste could easily be converted into manure in 24 hrs, which could be used 						

²⁵ The existing fleet for secondary transportation is about 5 to 10 years old. Hence the existing capacity has not been considered while estimating demand for 2021 and 2041.

Solid Waste Management Sector			
management	afterwards.		
Unit rates	Component	Unit	Unit Cost (Rs in Lakhs)
	Vehicle capacity	Per ton	5
	Treatment plant	Per ton	25
	Landfill	Acre	30

17.4.1 Capital investment plan

Based on the above key requirements in the SWM sector, the capital investment plan for Solid waste management is presented in the below Table 138.

Table 138: Projects identified – Solid waste management

Project	Sub project	Investment estimated in Rs. crores
A. Vehicles	1. New vehicles will be required every 10 years, so the rated capacity of vehicles required is 743 tonnes	82
	2. Other equipment	
B. Capacity building	1. Awareness campaigns	5
C. Improvement of current landfill sites	1. Improvement of current landfill sites so that solid waste could be managed into some more productive usage	15
Total investment required for 2021		102
Total investment required for 2041		299

17.4.2 Project details

The key projects and project details in SWM sector is presented in the below Table 139.

Table 139 Projects Details – Solid waste management

Project	Details
A. Fleet augmentation for Secondary transportation	No gap is identified at present in the fleet used for carrying solid waste. But with the increasing population there will be a demand of carrying 743 tones of SW. Hence, a project for the procurement of new vehicles to replace the existing ones and additional vehicles is identified which will cater the total requirement of 971 tonnes of SW.
B. Capacity building and awareness campaigns	There is a need for the capacity building of the existing employee taking care of SWM in the ULB. Further strong awareness campaigns are needed to educate the citizens about the benefits of hygiene. Hence project for capacity building of employees and awareness campaigns has been identified.
C. Improvement of current landfill sites	The project has been identified so that there could be management and improvement of current landfill sites so that solid waste sites and solid waste could be managed into some more productive usage.

17.4.3 Phasing of investment

The SWM project components have been divided into various components for implementation purpose. Further, the timeliness and implementing agency have been proposed for each component, and the same have been presented in the Table 140 below.

Table 140: Phasing of investment – Solid waste management

Sector/Component	Implementing agency	Total	2015	2016	2017	2018	2019	2020	2021
			-16	-17	-18	-19	-20	0-21	
(Rs. In Crores)									
A	Vehicle Capacity Required (Vehicle Carrying Capacity)	VMC	49	-	-	-	24	24	-
A	Development of Disposal and Landfillsite (2031)	VMC	11	-	-	2	2	7	-
	Treatment plant	VMC	5	-	-	-	3	3	-
	Other equipment	VMC	16	-	-	-	8	8	-
B	Capacity building	VMC	5	1	1	1	1	1	-
C	Improvement of current landfill sites	VMC	15	1.5	4.5	4.5	4.5	-	-
Total			102	2.5	5.5	7.5	42.5	43	-

17.4.4 Possible PPP intervention

- **PPPs in SWM are in accordance to nature of work, viz.,**
 - ◆ Collection and transportation of waste
 - ◆ Landfilling
 - ◆ Composting
- **VMC can explore PPP in collection and transportation of waste under which**
 - ◆ VMC would procure the vehicles or can ask a private developer to deploy vehicles and manpower
 - ◆ Undertake door to door collection of waste from all residential and commercial premises
 - ◆ Such contracts can be awarded for 1 or 2 years and can be renewed based on performance
 - ◆ The private operator can bid on the tipping fee per ton of waste collected
 - ◆ VMC need to set performance parameters for the private developer to be obliged during the contract period. The tipping fee should be a factor of performance parameters achieved by the developer
 - ◆ The performance parameters would in the area of
 - Coverage of door to door collection of waste
 - Amount of waste collected
 - Complaints received
- **Landfilling** – This can be developed on BOT basis. VMC would provide the land to the developer, and the developer shall be responsible for the construction and O&M of the facility. The private developer can bid on annuity support required to construct and operate and maintain the project.

- **Composting** – VMC may create market by floating tenders wherein the developer can be asked to set up a composting facility, and the maximum contribution from the revenues bid by the developer shall be the winning bid.

VMC would require appointing a transaction advisor to undertake detailed feasibility and preparation of bid documents (request for qualification – RFQ, request for proposal – RFP) and bid process management leading to award of contract to private developer.

17.5 Urban roads, traffic and transportation sector plan

The city does not have 100% coverage of Cement Concrete /Bitumen Tar surface roads. Pedestrian safety and increasing accident rate are the other major concerns. Lack of foot over bridges and zebra crossing on major congested roads is an issue in the city. The city doesn't have a proper public transport system. All the major roads have on-street parking, which reduces the effective right of way.

Table 141: Urban Roads and Traffic and Transportation

Urban Roads and Traffic and Transportation	
Sector goals	<ul style="list-style-type: none"> ▪ Improve traffic management ▪ Maximize the share of public transport and reduce traffic congestion ▪ Minimize road accidents and improve the pedestrian related infrastructure ▪ Improve parking facilities across the city
Design parameters	<ul style="list-style-type: none"> ▪ As per Development Plan, 7% of land use to be under roads. ▪ All roads have to be surfaced with about 15% being concrete roads ▪ All major roads should have utility corridors for laying of telecom, gas, and electrical infrastructure in future ▪ Streetlight spacing – should be 30 m between the poles
Action Plans	Activities
Integrated transport plan for Varanasi	<ul style="list-style-type: none"> ▪ Ensuring good roads by extension of road network system has been proposed in hierarchical manner comprising arterial, sub arterial, collector and local roads within a radial ring system. ▪ Encouraging public transport by developing Public transport network and development of bus bays, bus stands/shelters ▪ Regularisation of hawking zones and parking management ▪ Encouraging Non-motorised traffic including development of cycle tracks, pedestrian crossings, walkways in the city. ▪ Dedicated intra city public transport by Development of Bus Rapid Transit System (BRTS) in the city ▪ Prohibition of truck traffic in the city during day time by developing logistic parks ▪ Current road network has missing links at various places. To have a uniform traffic movement along the main arteries missing links should be identified and should be replaced. Traffic management plan for smooth flow of traffic should be structured. It will have strategy like identification of one way routes and defined flow of traffic in the city.
Comprehensive mobility plan	<ul style="list-style-type: none"> ▪ Comprehensive mobility plan to be prepared in consultation with

Urban Roads and Traffic and Transportation			
	various stakeholders of the cities.		
	<ul style="list-style-type: none"> ▪ The dedicated cell/department for effective implementation of CMP in consultations with various departments concerned in the city ▪ Need to create a dedicated fund under the UMT and ensure regular allocation of the funds for urban transport system. 		
Unit Rates	Component	Unit	Unit Cost (Rs in Lakhs)
	Upgrade bitumen road to concrete	Km	60
	Upgrade to bitumen	Km	15
	New concrete road formation	Km	75
	New bitumen road formation	Km	30
	Junction improvement	LS	500
	Widening of road	Km	300
	Widening of road under rail	LS	3000
	Multilevel car parking	LS	2000
	Subway	LS	2000
	Rail over bridge	LS	10000
	Buses	LS	50
	Truck terminal	LS	1000
	Bus terminal	LS	3000
	Flyover	Km	10000
Mass transport	Km	5000	
Bus Stations	Per Station	10000	

17.5.1 Capital investment plan

Based on the above key requirements in the traffic and transportation sector, the capital investment plan for traffic and transportation is presented in the below Table 142.

Table 142: Projects identified – Traffic and transportation

Project	Sub project	Estimated cost in Rs. Crores
CMP study to be prepared and Road Widening and up gradation to be done	1. Cant station to Rathyatra	300
	2. Rathyatra to Bhelupur Police Station	
	3. Bhelupur to Durgakund to Lanka crossing	
	4. Rathyatra to Girijaghar	
	5. Godowlia via Sonpura Road to Kreem Kund	
	6. Maidagin crossing to Vishwshvarganj post office	
	7. Girijaghar to Bhelupur police station	
	8. IP Mall to BHU Gate via Ravendrapuri	
	9. Visheshwarganj to Rajghat	
	10. Lahurabir crossing to Varuna Pul via Andhra Pul	
	11. Ashapur crossing to Pandeypur	

Project	Sub project	Estimated cost
	12. Ashapur to Sarnath	
	13. Ashapur to Varuna Pul	
	14. Chaukaghat to Raj Ghat	
	15. Rathyatra to Mahmorganj	
	16. UP College to Pandaypur crossing	
	17. Chaukaghat to police line t-point	
	18. Police lines crossing to Bhojuvir	
	19. Kachari State Bank to Pandyapur	
	20. Hukulganj t-point to Pandyapur	
	21. Pandyapur crossing to Bye-pass road	
	22. Ashapur marg to Ghazipur road	
New road network system	100 Km of roads in Sarnath, Pandeypur, Shivpur, Saraiya, Lahartara, Chittpur, Hokulganj etc.	30
Upgraded road network system	WBM to BT	71
	Earthen to BT	
Procurement and operationalization of public transportation system for the city	1. Procurement of 300 buses	390
	2. Mass transport to link Girigaghar with Laurabir	
	3. Bus terminals – Chunar Road, National Highway 2 and Varanasi-Sindhora Road (Ring Road)	
	4. 43 Bus Shelter on the new identified bus routes	
	5. Workshop cum Parking for city bus operations	
Junction improvements	Enclosed in Annexure	165
Road under rail	Widening of road in Chaukaghat	20
Multilevel parking	1. Sarnath	120
	2. Kacharri	
	3. Cant railway station	
	4. Beniabagh	
	5. DLW	
Subway and machanised footover bridges	1. Rathyatra crossing	40
	2. Machanised footover bridge at Cant. Station	
Flyover/bridges	Replacing old NH-2 bridge on river Ganga	100
Rail over bridge	Kajjapura	100
Transport Nagar	On Allahabad highway	10
Streelight	Improvement in streetlights	30
Total investment required for 2021		1390
Total investment required for 2041		1814

17.5.2 Project details

The key projects and project details in traffic and transportation is presented in the below Table 143.

Table 143: Projects Details– Traffic and transportation

Project	Project Details
Widening and up gradation of 100 Km roads	Due to increased motorised traffic and delays the short term strategy for widening the road has been identified. Uniform with of the road could be obtained by widening them. Hence widening of around 100Km roads has been proposed. The list of roads to be widened is in the Table 186 in annexure.
New roads of road network system	To have a hassle free journey and increasing the connectivity of the neighbouring and extending places a road network of 100 Km of in Sarnath, Pandeypur, Shivpur, Saraiya, Lahartara, Chittpur, Hokulganj etc. has been identified in the project component, which needs to be developed.
<ul style="list-style-type: none"> ■ Procurement and operationalization of public transportation system for the city ■ Construction of 43 bus station ■ Construction of parking cum workshop for the same 	<p>As per the estimated demand, there is a need for the procurement of close to 300 small buses by 2021 for an efficient public transport system, a mass transit system like electric cabs, trams etc. for Girigaghar with Laurabir stretch. In addition, 3 additional bus stands need to be constructed on Chunar Road, National Highway 2 and Varanasi-Sindhora Road.</p> <p>Also as per the discussion with the officials, to strengthen the public transport of the city there is need to construct 43 bus stations on new identified bus routes.</p> <p>Further Parking cum workshop to be provided for city bus services</p>
Junction improvements	There is a need for proper designing, widening, and beautification of 33 junctions across the city. The junction needs to be made more pedestrian friendly and should be able to accommodate sufficient amount of traffic upto desire amount of time. Further traffic lights should be installed with proper synchronization depending on the peak hour traffic and volume of traffic which a junction can hold. Hence a project for junction improvement has been identified. The present status of the junctions are given in Table 71
Multilevel parking	With increased motorized traffic in the city there is a need for provision of Multi-level car parking. These multi-level car parkings to be provided at 5 locations as per the demand and the availability of land. Hence this project has been indentified.
Subway and footover bridge	The city lacks proper and safe road crossing infrastructure for the pedestrian. Based on the discussion from the officials and demand based on the number of footfall in any area there is a need for provision of Underground subways for pedestrians at Rathyatra crossing and a mechanized footover bridge with travelator at Cant Railway station extending to Opposite Bus stand. (Mechanised travelator will encourage the pedestrian to use the footover bridge instead of crossing road directly. The footover bridge could be installed with advertisement sites for the VMC to enhance their revenues streams by lending these advertisement sites.)
Flyover/bridges	As per the discussion with the officials it was conveyed that the existing NH-2 flyover at Raj ghat is old and needs to be replaced. Hence this project is identified as one of the component.
Rail over bridge	As per the demand of the city a requirement of 1 Km rail over bridge at Kajjapura is identified by the stakeholders of the city during discussions, hence this project is identified in the project component

Project	Project Details
Transport Nagar	Through the discussion with the officials and stakeholders it was identified that there is a requirement of a transport nagar and is already been proposed on Allahabad Highway. Therefore this component is identified in the projects.

17.5.3 Phasing of investment

The traffic and transportation project components have been divided into various components for implementation purpose. Further, the timeliness and implementing agency have been proposed for each component, and the same have been presented in the Table 144 below.

Table 144: Phasing of investment – traffic and transportation

Sector/Component	Implementing agency	Total	2015	2016	2017	2018	2019	2020	2021	
			-16	-17	-18	-19	-20	-21	-22	
(Rs. In Crores)										
A	New Black Top Roads	VMC	30	-	-	-	10	10	10	-
B	Upgrade WBM to BT	VMC	54	-	-	-	18	18	18	-
C	Upgrade Earthen to BT	VMC	17	-	-	-	5.5	6	5.5	-
D	Rotary, Junction Improvements Signals Flyovers etc	VMC	165	-	-	82.5	82.5	-	-	-
E	Widening of roads	VMC	300	-	99	99	102	-	-	-
F	Widening of rail under bridge	VMC	20	8	12	-	-	-	-	-
G	Multilevel parking	VMC	120	36	48	36	-	-	-	-
H	Subway	VMC	40	12	28	-	-	-	-	-
I	Rail over bridge - Kajjapura	PWD	100	-	-	33	33	34	-	-
J	Buses	UPSRTC	150	-	-	-	-	105	45	-
K	Truck terminal/transport Nagar	PWD	10	4	4	2	-	-	-	-
L	Bus terminal	UPSRTC	90	-	-	36	36	18	-	-
M	Flyovers - NH2 old flyover	PWD	100	-	-	20	40	40	-	-
N	Mass transport to link Girigaghar with Laurabir	VMC	150	23	45	45	37	-	-	-
O	43 Bus Stand	UPSRTC	4.3	4.3	-	-	-	-	-	-
P	City Bus Workshop	UPSRTC	10	5	5	-	-	-	-	-
Q	Streetlights	VMC	30	10	10	10	-	-	-	-
Total			1390	102	251	363.5	364	231	78.5	-

Mass Rapid Transit Project

There is a constant increase in the trip generation of the citizens of the Varanasi city. The trips are either work trip or leisure trips. Further there is an increase in the number of vehicles in the city due to the tourist activities and the percapita vehicle ownership is also increasing. This increased motorized traffic and limited road space has lead to congestion and delays. Hence city should look into the longterm solution which will insist on movement of people instead of movement of vehicle. One such solution is the establishment of a reliable mass rapid transit like metro/monorail which can run along the city without obstructing the traffic. Hence looking a long term strategy city can look into the Merto Project in the near futur. The costing of the metro for a 30 KM stretch (as suggested by the stakeholders) will cost around Rs. 7500. A alternative analysis could be done to ge the feasible technology for running in a Mass Rapid Transit System also route rationalization process should be tken up get the exact route for running a Mass Rapid Transit.

17.6 Storm Water Drainage

As discussed in the sector assessment, Varanasi does not have adequate drainage network. The trunk network to carry storm water has been laid, but underground branch network is absent. Water logging is reported in several locations across the city.

Table 145: Storm Water Drainage sector plan

Storm Water Drainage sector							
Sector goals	<ul style="list-style-type: none"> Improve the storm water collection efficiency with proper drainage system Rejuvenate the existing natural drainage course in the city Minimize the water logging areas and flooding incidence in the city 						
Design parameters	<ul style="list-style-type: none"> Storm water network on all roads and link to major channels. Storm water drains as percentage of road length is considered as 100%. Roads with dividers should have drains on either side of the road. 80% of the storm water drains as pucca closed Size of drains to be designed according to the rainfall and runoff. 						
Demand gap assessment	Component	2014	Current gap	2021 (Short term)		2041 (long term)	
				Demand	Gap	Demand	Gap
	Pucca closed drains (km)	117	1062	1024	906	1024	906
Desired outcomes		2014	2017	2019	2021	Remarks	
	Storm water drainage network coverage	17%	30%	60%	100%	-	
	Rehabilitation of existing primary	-	40%	60%	100%	-	

Strom Water Drainage sector			
	nallahs and primary drains		
Action Plans	Activities		
Storm water drainage rehabilitation plan	<ul style="list-style-type: none"> Assessment of percentage of pucca and kutchra surface drains within VMC limits Identification of water logging areas, contour survey of areas Development of pre-monsoon maintenance plan to include cleaning and desilting of the surface drains 		
Rehabilitation and strengthening of nallahs	<ul style="list-style-type: none"> Unregulated constructions and siltation along these channels hamper the drainage system during the monsoon. Hence, it is important that these nallahs to be mapped and developed with retaining walls 		
Up-gradation of roadside storm water drains	<ul style="list-style-type: none"> Upgrade and extend the road side surface drains across the city 		
Unit Rates	Component	Unit	Unit Cost (Rs in Lakhs)
	Rehabilitation of pucca open drains	Per km	30
	Pucca closed drains	Per km	50
	Desilting of drains	Per km	10

17.6.1 Capital investment plan

Based on the above key requirements in the storm water drainage sector, the capital investment plan for storm water drainage is presented in the below Table 146.

Table 146: Projects identified – Storm water drainage

Project	Sub Project	Estimated cost in Rs. Crores
A. Pucca closed drains	1. Construction of 900 km closed pucca drains	453
B. Rehabilitation of surface drains	2. Rehabilitation of 256 Km of surface drains	76
C. Desilting of existing closed drains	3. Desilting of 117 km of drains	12
Total investment required for 2021		541
Total investment required for 2041		646

17.6.2 Project details

The key projects and project details in storm water drainage is presented in the below Table 147.

Table 147: Projects Details – Storm water drainage

Projects	Project Details
A. Construction of pucca closed drains	At present there is only 117 Km of covered pucca closed drian in the city which is very less as per the requirement of the city hence to fulfil the gap a project for laying of 900 km of underground drainage network is proposed for construction of pucca closed storm water drains. The network will be connected to the trunk network already laid.
B. Rehabilitation of surface drains	As per the discussion with the officials there is a need of rehabilitation of 256 km of surface drains. These drains needs to be rehabilitated and will be planned to be connected with the upcoming storm water drain network. Hence this component is identified in the projects.
C. Desilting of drains	As per the regular requirement and discussion with the official desilting of 117 km of drains network has been identified as the component in the projects.

17.6.3 Phasing of investment

The storm water drainage project components have been divided into various components for implementation purpose. Further, the timeliness and implementing agency have been proposed for each component, and the same have been presented in the Table 148 below.

Table 148: Phasing of Investment – Storm water drainage

Sector/Component	Implementing agency	Total	2015	2016	2017	2018	2019	2020	2021	2022
			-16	-17	-18	-19	-20	-21	-22	
(Rs. In Crores)										
A	New network	Jal Nigam	453	45	136	181	91	-	-	-
B	Rehabilitation of surface water drains	Jal Nigam	76	7	23	31	15	-	-	-
C	Desilting of drains	VMC	12	6	6	-	-	-	-	-
Total			541	58	165	212	106	-	-	-

17.7 Basic Services for Urban Poor

With respect to housing and basic services for the urban poor, the key challenges are dilapidated housing and lack of service coverage in terms of individual toilets and social infrastructure facilities. The sector plan for basic services for urban poor has been presented in the Table 149 below.

Table 149: Basic Services for Urban Poor sector plan

Basic Services for Urban Poor						
Sector goals	<ul style="list-style-type: none"> Improve the access to physical and social infrastructure to slum dwellers Develop livelihood strategies to improve the work force participation 					
Design parameters	<ul style="list-style-type: none"> New houses to households living in kutchha houses and dilapidated structures in merged areas Water Supply – Individual house service connections to all the slum households or group connections Sewerage - Individual house service connections Sanitation – Community toilets Solid Waste Management - Coverage of all slum households under door-to-door collection and awareness campaigns on source segregation 					
Desired outcomes		2014	2017	2019	2021	Remarks
	Pucca housing for the urban poor	20%	40%	70%	100%	-
	Allied infrastructure	20%	40%	70%	100%	-
Action Plans	Activities					
Categorization of slums	<ul style="list-style-type: none"> The slums in new areas are to be surveyed to understand the status of infrastructure 					
Integrated development of slums	<ul style="list-style-type: none"> Slum networking strategies to be adopted to improve the services in the slums. This would help in building the low cost service in the slums (especially in water supply, sewerage, and SWM sector). 					
Rehabilitation of slums	<ul style="list-style-type: none"> Pucca housing with infrastructure facilities to be developed in feasible locations. 					
Construction of housing	<ul style="list-style-type: none"> The slums in low lying areas and along the natural drains could be proposed for relocation. A suitable financing strategy could be developed to minimize the burden on the beneficiaries. The beneficiaries could be provided access to banks for availing the long-term housing loans. 					
Access to health and education	<ul style="list-style-type: none"> The health action plan should control the prevalent diseases and reduce the infant mortality rate. Access to emergency medical services should be provided to the BPL population. The education action plan should involve renovation of existing municipal schools and regular awareness campaigns to limit the dropout rates. 					

Basic Services for Urban Poor			
Livelihood restoration	<ul style="list-style-type: none"> Activity centres to be established for skill development programmes 		
Unit Rates	Component	Unit	Unit Cost (Rs in Lakhs)
	Housing along with Infrastructure development (New layouts)	Per dwelling unit	5
	Vocational training/Livelihood improvement	Per slum	5
	Development of social infrastructure	Per slum	25

17.7.1 Capital investment plan

Based on the above key requirements in the basic services to urban poor sector, the capital investment plan for basic services for urban poor is presented in the below Table 150.

Table 150: Urban poverty alleviation – Projects identified

Project	Sub project	Estimated cost in Rs. Crores
A. Development of affordable Housing and infrastructure development	1. Construction of 36,759 dwelling units for the Urban poor in the city	1838
B. Livelihood development in the city slums	1. Establishment of vocational training institutes enhance the skill of slum dwellers	10
C. Development of Social infrastructure in the slums of the city	1. Construction of Anganwadi and primary schools in slums of the city	52
	2. Construction of primary health centres in the slums of the city	
	3. Establishment of community halls in the slums	
Total investment required for 2041		1900
Total investment required for 2021		1900

17.7.2 Project details

The key projects and project details in basic services to urban poor is presented in the below Table 151

Table 151: Urban poverty alleviation – Projects Details

Projects	Details
A. Development of affordable Housing and infrastructure development	From the demand gap analysis it is identified that there is requirement of new housing and infrastructure for 36,759 dwelling units which has been projected for the year 2041. Hence this component is identified in the projects. Also It is recommended that in slums where relocation is possible it should be considered otherwise, <i>in-situ</i> up-gradation may be taken up.
B. Livelihood development in the city slums	From the women representatives of the NGO's working under DUDA it was conveyed that there is a requirement of Vocational training for employment generation and development of social security mechanisms. Hence this component is identified in the projects.
C. Development of Social infrastructure in the slums of the city	From the representatives of the NGO's working under DUDA it was conveyed that there is need for the development of primary schools, health care centres, and community halls in the slums of the city hence a provision of this component is identified in the projects.

17.7.3 Phasing of investment

The basic services to urban poor project components have been divided into various components for implementation purpose. Further, the timeliness been proposed for each component, and the same have been presented in the Table 152 below.

Table 152: Urban poverty alleviation – Phasing of investment

Sector/Component	Implementing agency	Total	201	201	201	201	201	202	
			5-16	6-17	7-18	8-19	9-20	0-21	
(Rs. In Crores)									
A	Development of affordable Housing and infrastructure development	DUDA	1837	183	551	551	551	-	-
B	Livelihood development in the city slums	DUDA	10	2	2	2	2	2	-
C	Development of Social infrastructure in the slums of the city	DUDA	52	5	15	15	15	-	-
Total			1900	191	569	569	569	2	-

Satellite Townships

There are few areas in city especially in the old city, which are very congested and highly dense. There is a need to decongest the already congested wards/areas with high density. Therefore, for this purpose VMC/VDA should identify some land parcels within the city limits where satellite townships could be built for relocating the people of these wards. Hence, by providing some incentives the people from the highly densely populated area can shift to these developed townships. The cost of developing these townships for an area of 250 Ha will be Rs. 660 crores.

17.8 Social infrastructure and Heritage Sector Plan

As discussed in the assessment chapter, the key challenges are lack of adequate education infrastructure for pre-primary, primary, and higher secondary education. There is a need for health care infrastructure at both neighborhood and city level. Socio-cultural infrastructure like community centres are to be developed in identified wards. Further, as discussed in the cultural resources section, integrated heritage linked city development strategies are also proposed to preserve and reuse the identified heritage structures in the city.

Table 153: Social infrastructure sector plan

Social infrastructure						
Design parameters	Schools, hospitals, socio cultural and parks and playground requirements assessed as per URDPFI guidelines					
Component	Existing	2021		2041		
		Demand	Gap	Demand	Gap	
Demand gap assessment for education infrastructure	Primary school	235	376	141	565	330
	Senior secondary school	71	251	180	377	306
	School for physically challenged	-	42	42	63	63
	School for mentally challenged	-	2	2	3	3
Component	Existing	2021		2041		
		Demand	Gap	Demand	Gap	
Demand gap assessment for healthcare infrastructure	Dispensary	49	125	76	188	139
	Polyclinic	15	19	4	28	13
	Intermediate Hospital (Category B)	8	19	11	28	20
	Intermediate Hospital	-	19	19	28	28

Social infrastructure						
	(Category A)					
	Multi-Specialty Hospital (NBC)	4	19	15	28	24
	Veterinary Hospital for pets and animals	2	4	2	6	4
	Dispensary for pet animals and birds	-	19	19	28	28
Demand gap assessment for Socio cultural infrastructure	Component	Existing	2021		2041	
			Demand	Gap	Demand	Gap
	Community hall, mangal karyayala, barat ghar/ library	150	376	226	565	415
	Music, dance and drama centre	-	125	125	188	188
	Meditation and spiritual Centre	-	19	19	28	28
	Recreational Club	2	19	17	28	26
	Old age home	-	4	4	6	6
	Temporary resting sheds for boatmen	-	42	42	42	42
	Cattle shelters	-	2	2	4	4
	Action Plans	<ul style="list-style-type: none"> Identification of areas for development of new schools and hospitals. Development of schools with hostel facilities and schools for specially abled children. Development of ward level community centers Development of night shelters, old age home in the city limits. Mapping of health care facilities in the city 				
Heritage Management	<ul style="list-style-type: none"> Establishment of heritage cell at VMC headed by an architect to carry out listing of heritage structures. Undertake preparation of DPRs for restoration and refurbishment of listed heritage structures on priority basis. Creation of heritage fund to undertake small scale restoration works of the identified heritage structures. Installation of direction signage and information boards at appropriate locations in the city. 					

Social infrastructure			
Unit rates	Component	Unit	Unit Cost (Rs Lakhs)
	Primary school	LS	6
	Senior secondary school	LS	10
	School for mentally challenged	LS	8
	Intermediate Hospital (Category B)	LS	100
	Intermediate Hospital (Category A)	LS	250
	Multi-Specialty Hospital (NBC)	LS	600
	Veterinary Hospital for pets and animals	LS	30
	Dispensary for pet animals and birds	LS	30
	Temporary resting sheds for boatmen	LS	10
	Community halls	LS	8
	Music, dance and drama center	LS	8
	Meditation and spiritual Centre	LS	8
	Recreational Club	LS	8
	Old age home	LS	10
	Cattle shelters	LS	500

17.8.1 Capital investment plan

Based on the above key requirements in the social infrastructure sector, the capital investment plan for sociocultural infrastructure is presented in the below Table 154.

Table 154: Socio cultural infrastructure – Projects identified

Project	Sub Project	Estimated cost in Rs. Crores
A. Education Sector	Development of school infrastructure	29
B. Health Sector	Development of hospital infrastructure	172
C. Fire stations	Development of fire services infrastructure	54
	Laying 50 Km Water Hydrat line in old city	15
D. Socio cultural infrastructure	Development of socio cultural infrastructure	30
E. Resting sheds for boatmen	Resting sheds along with allied infrastructure such as drinking water, sanitation etc. for boatmen	4
F. Old age home	Development of Old age homes	0.3
G. Development of heritage listing and conservation of Heritage structures	Listing, notification and restoration of non-ASI listed monuments	50
H. Renovation of parks	Renovation of existing 126 parks	6
I. Cattle shelters "Kaamdhenu Nagar"	2 cattle shelters outside the city	10

Project	Sub Project	Estimated cost in Rs. Crores
J. Training Institutes	For Guides, Artesians, Craftmen and Handloom workers	10
K. Museum cum Interpretation Centre	Museum cum Interpretation Centre	75
L. Sports Complex/Stadium	Sports Complex and Sports Stadium	150
M. Night Shelters	Construction and Providing Night Shelters	5
Total investment required for 2021		612
Total investment required for 2041		862

17.8.2 Project details

The key projects and project details in social infrastructure is presented in the below Table 155.

Table 155: Socio cultural infrastructure – Projects Details

Project	Details
A. Education Sector	There is demand of 330 primary schools, 306 senior secondary schools and 3 schools for mentally challenged children upto 2041 and further from discussion with the stakeholders it is identified that there is a need for Renovation of existing dilapidated schools and construction of new schools in the newly added areas. Therefore this component is considered in the project
B. Health Sector	Being an important node for the nearby places the development of urban health centres, intermediate hospitals, super speciality hospitals, veterinary hospitals and dispensary within the VMC limits is a need as per the demand upto 2041, hence this component is considered in the project.
C. Fire services	As per the gap assessment and discussions with the fire department officials there is a requirement of development of Fire stations and related infrastructure. Further due to limited space in the old city area fire vehicle cannot enter there; hence fire hydrant line should be laid in the area for a quick response to any fire accidents. Hence this component is identified in the projects.
D. Socio cultural infrastructure	As per the URDPFI guidelines and discussion with various stakeholders, construction of ward level community centres, meditation and spiritual centres, libraries is a requirement of the city. Hence, it is identified as a component in the project list.
E. Resting shelters for boatmen	As per the discussion with the boatmen at ghat there is requirement for provision of clean resting place for boatmen. Hence temporary shelters near every alternate Ghat have been proposed.
F. Old age home	For taking care of the old people there is a requirement of old age homes. These have been proposed to be constructed and maintained by the VMC.
G. Development of heritage listing and conservation of	Varanasi is known for its living heritage and culture both tangible and intangible therefore there should be a

Project	Details
Heritage structures	mechanism for identification, notification and restoration of non-ASI monuments which have importance in the built environment of the city. Hence, this component is considered in the projects.
H. Renovation of parks	As per the discussion with the stakeholders from R.W.A and officials there is requirement of landscaping and renovation of existing 126 parks in the VMC limits. Hence tis component is considered in the projects.
I. Cattle shelters“Kamdhenu Nagar”	There are lots of cattles wandering in the streets of the Varanasi creating obstruction to the moving traffic also injurious to them too hence 2 cattle shelters outside the city have been identified as a component
J. Training Institutes	For the training of Guides, Artesians, Craftmen and Handloom workers a training institute for them is identified as a component in the projects
K. Museum cum Interpretation Centre	Museum cum Interpretation Centre is identified as the requirement of the city by the stakeholders hence this component is considered in the projects
L. Sports Complex/Stadium	For promotion of event based tourism stakeholders and officials have identified Sports Complex and Sports Stadium as a component in the projects.
M. Night Shelters	Stakeholders have identified Night shelters for the dilapidated and vulnerable population of the city as one of the components of the projects

17.8.3 Phasing of projects

The social infrastructure project components have been divided into various components for implementation purpose. Further, the timeliness been proposed for each component, and the same have been presented in the Table 156 below.

Table 156: Socio cultural infrastructure – Phasing of projects

Sector/Component	Implementing agency	Total	2015	2016	2017	2018	2019	2020	
			-16	-17	-18	-19	-20	-21	
(Rs. In Crores)									
A	Development of school infrastructure	State government	29	2	8	8	8	-	-
B	Development of hospital infrastructure	State government	172	17	51	51	51	-	-
C	Development of fire services related infrastructure	State government	70	10	20	20	20	-	-
D	Development of socio cultural infrastructure	State government	30	3	9	9	9	-	-
E	Resting shelters for boatmen	VMC	4	1	3	-	-	-	-
F	Old age homes	VMC	0.3	0.03	0.15	0.18	-	-	-
G	Development of heritage listing and conservation of Heritage structures	VDA	50	12	20	17	-	-	-

	Implementing agency	Total	2015 -16	2016 -17	2017 -18	2018 -19	2019 -20	2020 -21
H	Renovation of parks	VMC	6	0.6	3	2	-	-
I	Cattle Shelters "Kamdhenu Nagar"	VMC	10	1	3	4	2	-
J	Training Institutes	State government	10	5	3	2	-	-
K	Museum cum Interpretation Centre	VDA	75	15	30	30	-	-
L	Sports Complex/Stadium	VDA	150	50	50	50	-	-
M	Night Shelters	VMC	5	1	2	2	-	-
Total		612	118	202	195	90	-	-

17.9 Urban Environment and Disaster Management Sector Plan

The present status of urban environment is very poor in Varanasi. On the one hand, the highly venerated Ganga is increasingly getting polluted, and on the other hand, the inner city with lack of services has a poor quality of life.

Table 157: Urban environment sector strategy

Urban Environment						
Sector goals	<ul style="list-style-type: none"> Develop green zones/breathing spaces in the city to improve the quality of the life Utilize the potential for ecosystem service to improve resilience, subsistence and livelihoods in the city VMC to formulate disaster management and mitigation policy Conserving water bodies and increasing green cover across the city 					
Desired outcomes		2014	2017	2019	2021	Remarks
	Preservation of water bodies as listed in following section	Nil	40%	70%	100%	
	Mapping of water bodies, urban forests, and buildings along Ghats	Nil	60%	80%	100%	
	Ducts/Conduits	Nil	30%	60%	90%	
Action Plans	Activities					
Mapping of water bodies, urban forests and buildings along Ghats	<ul style="list-style-type: none"> Mapping of water bodies and urban forests to be carried out to assess the physical extent, cultural, natural and social values Mapping of buildings along Ghats to assess safety 					
Pollution mitigation strategies	<ul style="list-style-type: none"> Increasing the green cover and buffer zones in the city to mitigate air pollution in the city 					
Impact assessment and	<ul style="list-style-type: none"> Regular monitoring of air quality, water quality (surface and ground), 					

Urban Environment			
monitoring	and noise pollution		
	<ul style="list-style-type: none"> Carrying out environmental impact assessment prior to implementation of infrastructure projects 		
Disaster Management	<ul style="list-style-type: none"> Developing Varanasi as disaster resilient city Development of control room or city level service center Development of emergency control responsive system Mapping of water inundation areas in the city 		
Unit Cost	Component	Unit	Unit Cost (Rs in Lakhs)
	Panch Pandav Kund	Lump Sum	800
	Pushkar Kund	Lump Sum	200
	Trilochan-Gola-Nandeshwar Ghat	Lump Sum	550
	Studies to be undertaken	Lump Sum per study	500
	Tree plantation	Lump Sum	50
	Ducts/conduits	Per Km	15

17.9.1 Capital investment plan

Based on the above key requirements in the urban environment sector, the capital investment plan for urban environment is presented in the below Table 158.

Table 158: Urban environment- Projects identified

Project	Sub project	Estimated cost in Rs. Crores
A. Rejuvenation of Water Bodies	1. Kunds: Rejuvenation of Panch Pandav Kund, Pushkar Kund and Trilochan-Gola-Nandeshwar Ghats	15
B. Mapping of water bodies and urban forests Studies to be undertaken.	1. GIS mapping of water bodies within VMC limit	15
	2. Mapping of urban forests within the city	
C. Disaster management cell	3. Documentation of buildings along Ghats	10
	1. Environmental studies to explore the possibility to relocate tortoise sanctuary	
	2. Emergency Management Plan and Disaster Management and Mitigation Plan	
	2. Establishment of Disaster management cell at VMC with Emergency response system	5
D. Tree cover	1. Plantation of trees	1
E. Ducts/conduits	1. Ducts/ Conduits to house various cables	96
F. Rejuvenation of Varuna River	1. Varuna River: De-silting, construction of embankment, footpaths, streetlight, benches, drinking water facilities and toilets on both sides	350
Total investment required for 2021		492
Total investment required for 2041		590

17.9.2 Project Details

The key projects and project details in urban environment is presented in the below Table 159.

Table 159: Urban environment– Projects Details

Project	Details
A. Rejuvenation of water bodies	The old kunds of Varanasi are not taken care of hence some access roads, storm water drains, solar lighting, parking, toilets, de-silting of kunds, construction of steps, edge improvement, ceremonial gates and signage should be put up to uplift their conditions and accessibility.
B. Urban pollution mitigation	Urban Pollution could be mitigated by creating buffer zones by plantation of trees along the roads and other areas. Hence this strategy is taken as a component in the projects.
C. Studies to be undertaken	There is need for the mapping of urban forests, water bodies and buildings along Ghats of Varanasi for conservation and other purpose. Hence this is taken as a component. There is need for preparation of Emergency Management Plan and Disaster Management and Mitigation Plan so that a action plan could be framed for the emergency situations
D. Disaster management cell	Disaster management cell to be established at VMC to act as the nodal point for all emergency related activities in the city. Installation of communication devices to facilitate information dissemination on natural disasters. As per the Civil Defence Act 1968, civil defence institute should be established as an institute for training citizens and officials to be ready for the situations at the time of disaster. City should look into the establishment of this institute. Hence this component is taken up in the projects
E. Conduits/Ducts	To provide underground facilities, to the services and utilities, survey to estimate the exact length of conduits/ducts required in VMC area and hence the project for laying of conduits/ducts on 50% of the road length is identified.
F. Rejuvenation of Varuna River	Rejuvenation of Varuna River is considered as the need br the stakeholders and officials of the city hence, de-silting, construction of embankment, footpaths, streetlight, benches, drinking water facilities and toilets on both sides of the Varuna river is considered as a project.

17.9.3 Phasing of investment

The urban environment project components have been divided into various components for implementation purpose. Further, the timeliness been proposed for each component, and the same have been presented in the Table 160 below.

Table 160: Urban Environment– Phasing of investment

Sector/Component	Implementing agency	Total	2015	2016	2017	2018	2019	2020	
			-16	-17	-18	-19	-20	-21	
(Rs. In Crores)									
A	Rejuvenation of water bodies	VMC	15	3	4	4	4	-	-

Sector/Component	Implementing agency	Total	2015 -16	2016 -17	2017 -18	2018 -19	2019 -20	2020 -21	
B	Urban pollution mitigation	VMC	1	0.25	0.25	0.25	0.25	-	-
c	Studies to be undertaken	VMC	25	10	12	3	-	-	-
D	Disaster management cell	VMC	5	0.5	3	1.5	-	-	-
E	Conduits/Ducts	VMC	94	10	28	28	28	-	-
F	Rejuvenation of Varuna River	State Irrigation Department	350	35	70	70	70	105	-
Total			492	59	117	107	102	105	-

17.10 Local Economic Development Sector Plan

The projects under Local Economy Development have been identified in view of the vision formulated for the city development.

Table 161: Local Economic Development sector strategy

Local Economic Development	
Sector goals	<ul style="list-style-type: none"> Development of a dedicated industrial park for silk weavers on Ghazipur Road Convention centres for marketing of goods De-congesting the city, by relocating warehouses
Action Plans	Activities
Industrial park for weavers	<ul style="list-style-type: none"> Dedicated industrial park for weavers on Ghazipur Road
Convention centre	<ul style="list-style-type: none"> The project involves development of indoor exhibition areas, conference halls and accommodation units with services
Relocation of warehouses	<ul style="list-style-type: none"> Relocation of warehouses to outskirts of the city, on the proposed ring road
Regularising street vending in line with Protection of Livelihood and Regulation of Street Vending Act, 2014	<ul style="list-style-type: none"> Survey and identification of hawkers in the city Development of infrastructure for regularised street vending activity

17.10.1 Capital Investment Plan

Based on the above key requirements in the local economic development sector, the capital investment plan for local economic development is presented in the below Table 162.

Table 162: Local Economic Development – Projects

Project	Estimated cost in Rs. Crores
A. Industrial park for weavers	100
B. City convention cum business center and cultural hub	25

Project	Estimated cost in Rs.
C. Relocation of warehouse	10
D. Survey of hawkers in city and development of required infrastructure	5
Total investment required till 2021	140
Total investment required for 2041	175

17.10.2 Project Details

The key projects and project details in local economic development is presented in the below Table 163.

Table 163: Local Economic Development – Project Details

Project	Details
A. Industrial park for weavers	For the upliftment of the weavers of the city a dedicated industrial park for weavers is proposed with all the facilities, healthy and hygienic condition of living.
B. City convention cum business center and cultural Hub	The project involves development of indoor exhibition areas, conference halls and accommodation units with services for the cultural events to happen. Hence it is taken up as a component.
C. Relocation of warehouse	For decongesting the old city and avoid the unnecessary freight movement in the city a provision of basic infrastructure and relocation of warehouse on the outskirts of the city is made as a component in the projects
D. Survey of hawkers in city and development of required infrastructure	For allocating better space for vending purpose, Survey of hawkers in the city needs to be conducted and the space allocated should have all required infrastructure for doing their business with ease. Hence it is considered as a component

17.10.3 Phasing of investment

The local economic development project components have been divided into various components for implementation purpose. Further, the timeliness been proposed for each component, and the same have been presented in the Table 164 below.

Table 164: Local Economic Development – Phasing of investment

Sector/Component	Implementing agency	Total	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
			(Rs. In Crores)						
A. Industrial park for weavers	State government	100	10	30	30	30	-	-	-
B. City convention cum business center and cultural hub	VMC	25	2	7	10	5	-	-	-
C. Relocation of warehouse	VMC	10	1	3	3	3	-	-	-
D. Survey of hawkers in city	VMC	5	0.5	2	2	0.5	-	-	-

	Implementing agency	Total	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
and development of required infrastructure									
Total		140	16	42	44	39	-	-	-

17.11 Tourism Sector Plan

Tourism is one of the most important economic sectors for Varanasi. It employs more than 30% of the city's population. There are several tourist spots within Varanasi and outside the city²⁶. Several projects have been proposed under tourism sector.

Table 165: Tourism Development sector strategy

Tourism Sector	
Sector goals	<ul style="list-style-type: none"> Providing adequate facilities to tourists Development of local tourist points in the city
Action Plans	Activities
Maintenance of Ghats	<ul style="list-style-type: none"> Ghats may be maintained by private companies by CSR funds
Developing new attractions	<ul style="list-style-type: none"> Sound and light show, and laser show on Ghats Developing 'Bunkar City' Audio-guides for all historical monuments Ramlia of Ramnager to be added in the heritage.
Improving infrastructure	<ul style="list-style-type: none"> Providing basic infrastructure on all Ghats Linking Ghats to make them pedestrian friendly Floating jetties on Ghats Pankroshi Yatra sthals

17.11.1 Capital Investment Plan

Based on the above key requirements in the tourism sector, the capital investment plan is presented in the below Table 166.

Table 166: Tourism Development sector – Project detail

Project	Sub project	Estimated cost in Rs. Crores
A. Comprehensive heritage management plan	Preparation of comprehensive management plan	5
B. Website and mobile app	Developing tourism specific website and mobile app for Varanasi	0.25

²⁶ The detailed list of the tourist locations has been provided in the sector assessment.

Project	Sub project	Estimated cost in Rs.
C. Audio-guides	1. Procurement of audio guides, and preparing their material 2. Kiosks for giving audio-guides on rentals	4.5
D. Lighting	1. Aesthetic lighting of Ghats (Assi, RajGhat, Dashashwamedh, and Jain) 2. Identification and lighting of building on important junctions (ManMahal, Aangiri Mosque, Kangan Haveli etc.)	35
E. Infrastructure on Ghats	1. Provisioning of infrastructure such as drinking water, toilets, benches, and changing room on Ghats 2. Benches on approach roads to Ghats	13
F. Pedestrian friendly facilities	1. Linking Ghats with pedestrian walkways 2. Travellers on select Ghats (Assi, Jain, Manikarnika, Harish Chander, Dashashwamedh Ghats) for senior citizens	7
G. 'Bunkar City'	Haat near Ramnagar which can be promoted as 'Bunkar City'	50
H. Activities on Ghats and Sarnath	Sound and light, and laser show in on two Ghats and Sarnath	60
I. Panchkroshi Yatra Sthals	1. Development of dedicated pilgrim avenue on Panchkroshi road, provision of basic amenities, maintenance of destinations along the route and signage 2. Renovation of 10 dharamshalas' each on five locations	15
J. 'Gali' rejuvenation	Rejuvenation of Vishwanath and Annapurna 'Galies'	10
K. Mausoleum	Mausoleum of Ustad Bismillah Khan	2
L. Weavers market	Weavers market for showcase their goods	15
M. Floating jetties	Floating jetties on all the Ghats for tourists to board the boats	13
N. Craft Tour Facility	Craft Tour Facility provision	10
Total investment required till 2021		240
Total investment required for 2041		289

17.11.2 Project Details

The key projects and project details in tourism sector is presented in the below Table 167.

Table 167: Tourism Development sector – Project detail

Project	Details
A. Comprehensive heritage and tourism management plan	To manage the city in a better way and availing the tourist with all the necessary facility there is a need for preparation of a comprehensive heritage and tourism management plan. Hence this is considered as a component
B. Website and mobile app	A website and mobile app specifically for tourism needs to be developed. This website will guide tourists to plan their travel Bookings may also be made on the website. It will ease the tourists who want to visit the city. Hence this is taken as a component
C. Audio-guides	For better tourism facility Audio guides shall be available on rent. These guides will enhance the tourism of the city. Hence taken as a

Project	Details
	component
D. Lighting	There is a need for Aesthetic lighting of Ghats (Assi, Raj Ghat, Dashashwamedh, and Jain) and identification and lighting of building on important junctions (ManMahal, Aangiri Mosque, Kangan Haveli etc.) hence this is taken as a component
E. Infrastructure on Ghats	Provisioning of infrastructure such as drinking water, toilets, benches, and changing room on Ghats and benches on approach roads to Ghats is taken as a component of the proposed projects.
F. Pedestrian friendly facilities	Provision to connect all the Ghats, so they are more pedestrian friendly way, this will make the movement along the ghats more friendly and easy. Hence it is considered as a component.
G. 'Bunkar City'	A Bunkar city could be developed as a new tourist spot on Ramnagar side of the city. This will be a live demonstration of the works of the weavers along with the display of heritage of the Ramanagar area. Therefore it is taken up as a project.
H. Activities on Ghats and Sarnath	To expand the scope of tourism and to increase the duration of stay of tourist in the city activities like sound and light show, and laser show on two Ghats and Sarnath could be setup. Hence it is taken up as one of the component.
I. Panchkroshi Yatra Sthals	Development of dedicated pilgrim avenue on Panchkroshi road, provision of basic amenities, maintenance of destinations along the route and signage is taken up as a component.
J. 'Gali' rejuvenation	Procurement of equipment to clean the Ghats, and signages on streets. And making them more walkable friendly for the tourists is taken up as a component.
K. Mausoleum	As per the stakeholders suggestions, construction of Mausoleum of Ustad Bismillah Khan will retain the history through it, hence is considered as a component.
L. Floating jetties	Procurement of floating jetties for Ghats so that the boat alighting and boarding becomes safe for the tourists is considered as a component
M. Weavers Market	Construction and provision of weavers market where they can directly display and sell their manufactured goods will boost the weaving trade of Varanasi city, hence is considered as the component
N. Craft Tourism Facility	To facilitate the activities related to the arts and craft of the old city should be rejuvenated and craft routes could be identified where tourist can see how the goods are made. This is therefore taken up as a component.

17.11.3 Phasing of investment

The tourism sector project components have been divided into various components for implementation purpose. Further, the timeliness been proposed for each component, and the same have been presented in the Table 168 below.

Table 168: Tourism Development sector – Phasing of investment

Sector/Component	Implementing agency	Total	2015	2016	2017	2018	2019	2020-	2021	2022
			-16	-17	-18	-19	-20	-21	-22	
(Rs. In Crores)										
A	Comprehensive heritage management plan	State tourism department	5	2	3	-	-	-	-	-
B	Website and mobile app	State tourism department	0.25	0.25	-	-	-	-	-	-
C	Audio-guides	State tourism department	4.5	4.5	-	-	-	-	-	-
D	Lighting	State tourism department	35	3	10	10	12	-	-	-
E	Infrastructure on Ghats	State tourism department	13	1	4	4	4	-	-	-
F	Pedestrian friendly facilities	State tourism department	7	1	2	2	2	-	-	-
G	'Bunkar City'	State tourism department	50	5	15	15	15	-	-	-
H	Activities on Ghats and Sarnath	State tourism department	60	20	20	20	-	-	-	-
I	Panchkroshi Yatra Sthals	State tourism department	15	1	7	7	7	-	-	-
J	'Gali' rejuvenation	State tourism department	10	1	3	3	3	-	-	-
K	Floating jetties	State tourism department	13	1	4	4	4	-	-	-
L	Mausoleum	State tourism department	2	0.2	0.6	0.6	0.6	-	-	-
M	Weavers market	State tourism department	15	1	4	5	5	-	-	-
N	Craft Tour Facility	VMC	10	1	3	3	3	-	-	-
Total			240	42	76	74	48	-	-	-

17.12 Urban Governance

Under Urban Governance, hardware and software, capacity building and training have been considered.

Table 169: Urban governance sector strategy

Urban Governance	
Action Plans	Activities
Infrastructure	<ul style="list-style-type: none"> Procurement of hardware and software for VMC and its zonal offices
Capacity building and training	<ul style="list-style-type: none"> Preparation of training needs assessment, training curriculum, identification of training institutions. Support is also required in preparation of IEC material on various subjects. Trainings to be imparted for preparation of note sheets, measurements book and various business rules.

17.12.1 Capital Investment Plan

Based on the above key requirements, the capital investment plan is presented in the below Table 170.

Table 170: Urban Governance sector – Project detail

Project	Estimated cost in Rs. Crores
Procurement of hardware and software	20
Capacity building and training	2
Total investment required till 2021	22
Total investment required for 2041	66

17.12.2 Phasing of investment

Table 171: Urban governance sector – Phasing of investment

Urban Governance	Total	2015	2016	2017	2018	2019	2020	2021	
		-16	-17	-18	-19	-20	-21	-22	
(Rs. In Crores)									
1	Procurement of hardware and software	20	10	10	-	-	-	-	-
2	Capacity building and training	2	0.4	0.4	0.4	0.4	0.4	-	-
Total		22	10.4	10.4	0.4	0.4	0.4	-	-

17.13 Summary of Investments

The total estimated capital investment required for providing efficient services to the present population and future population of the city by the year 2041 is Rs. 8,894 crores. A total of Rs. 6,905 crores is proposed for investment by 2020-21 to cater to infrastructure requirement. The Table 172 below presents the summary of sector-wise total investment need and investments.

Table 172: Summary of investments (in Rs. Cr.)

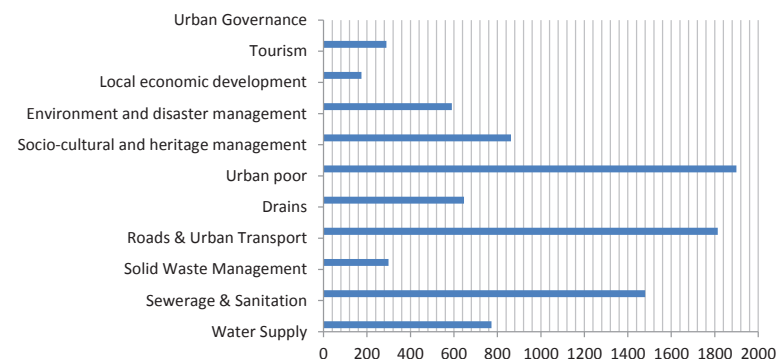
	Phase I	Phase II	Total
Water Supply	469	304	773
Sewerage & Sanitation	997	483	1,480
Solid Waste Management	102	197	299
Roads & Urban Transport	1,390	424	1,814
Drains	541	105	646
Urban poor	1,900	0	1,900
Socio-cultural and heritage management	612	255	867
Environment and disaster management	492	98	590
Local economic development	140	30	170
Tourism	240	49	289
Urban Governance	22	44	66
Total	6,905	1,989	8,894

Source: CRIS Analysis

About 21% of the investment has been identified housing and basic services for urban poor; 20% of the investment has been identified towards roads and urban transport; 9% of the investment has been identified towards water supply; 7% of the investment has been identified towards storm water drains; 10% each towards socio-cultural and heritage management, 7% towards urban environment; 3% of the investment is towards solid waste management.

The rest of the investment is towards local economic development and urban governance. The sector-wise breakup of investment identified for 2021 is presented in the graph below.

Figure 75: Investment needs in Rs. Cr.



17.14 Summary of investment phasing

The phasing of projects has been made in consultation with VMC officials. While doing the phasing, the timeline for preparation of detailed project reports and necessary approvals has been considered. The project prioritization and detailed project phasing have been discussed in the Table 173 below.

Table 173: Project phasing

Sr. No	Sector	Total investment	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
			(Figures in Rs. Crores)						
1	Water Supply	469	79	189	192	4	5	-	-
2	Sewerage & Sanitation	997	165	433	330	69	1	-	-
3	Solid Waste Management	102	2.5	5.5	7.5	42.5	43	-	-
4	Storm Water Drains	541	58	165	212	106	-	-	-
5	Urban Roads, Traffic & Transport	1390	102	251	364	364	231	79	-
6	Housing & basic services for urban poor	1900	191	569	569	569	2	-	-
7	Urban Environment and disaster management	492	59	117	107	102	105	-	-
8	Social Infrastructure, Heritage and Socio Culture	612	118	202	195	90	-	-	612
9	Local Economic Development	140	16	42	44	39	-	-	-

Sr. No	Sector	Total investment	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
			(Figures in Rs. Crores)						
10	Tourism Development	240	42	76	74	48	-	-	-
11	Urban Governance	22	10	10	0.6	0.6	0.6	-	-
	Total	6905	843	2060	2095	1434	388	79	-

17.15 Composition of phasing

The following agency would be responsible for implementing the projects identified in the CDP.

- VMC: VMC** would be responsible for planning, operation, and maintenance of water supply, sewerage system, SWM, SWD, municipal roads, parks, and playgrounds. VMC would be the implementing agency for the projects identified in the above mentioned sectors. In the overall investment, VMC has to contribute 53% of total investment.
- District Urban Development Authority: DUDA** would be responsible for planning, designing, and constructing slum households. In the overall investment, DUDA has to contribute 21% of total investment.
- Uttar Pradesh State Tourism Department: UPSTD** would be responsible for construction, operation and maintenance of tourist points within the state. Hence UPSTD has been identified as responsible agency for the tourism development projects identified in the CDP. In the overall investment, UPSTD has to contribute 3% of total investment.
- State Public Works Department: PWD** would be responsible for construction of flyovers and bridges. Hence PWD has been identified as the agency for flyovers and bridges. In overall investment, PWD has to contribute 4% of total investment.
- State Irrigation Department: Irrigation Department would be construction for Varuna river department.** In overall investment, state Irrigation Department has to contribute 4% of total investment
- Department of Education and health:** The state department for education and health would be responsible for development of the education and health facilities identified as per the URDPFI guidelines. In the overall investment, the education department has to contribute 7% of the total investment and health department has to contribute 5% of the total investment
- Uttar Pradesh State Industrial Development Corporation:** The state department is responsible for provisioning of industrial parks and allied infrastructure. In overall investment, UPSIDC's share is 1%.

Table 174: Implementing agency wise breakup of investment

Sr.No	Name of Agency	2021		2041	
		Investment Estimated	%	Investment Estimated	%
1	VMC	3,277	47%	4,701	53%
2	PWD	210	3%	320	4%
3	Irrigation Department	350	5%	350	4%
4	Health, Education department and UPSIDC	412	6%	623	7%
5	VDA	275	4%	325	4%
6	UPSRTC	254	4%	404	5%
7	DUDA	1,900	28%	1,900	21%
8	Tourism department	230	3%	271	3%
	Total	6,905	100%	8,894	100%

17.16 VMC Investment

The overall the investment required for the year 2041 is Rs 8,894 crores. However, VMC would be responsible to take-up the projects worth Rs 4,701 crores and the remaining investment to be taken-up by the Parastatals/state government departments. The sector wise breakup of VMC's investment for 2021 and 2041 has been presented in the Table 175 below.

Table 175: Sector wise breakup of VMC investment

Sector	2021 (Investment estimated in Rs. Crores)	2041 (Investment estimated in Rs. Crores)
Water supply	469	773
Sewerage & Sanitation	997	1481
Urban Roads, Traffic & Transport	926	1090
Storm Water Drains	541	646
Solid waste management	102	299
Urban environment	140	240
Social Infrastructure, Heritage and Socio Culture	21	21
Local economic development	45	75
Urban Governance	22	66
Tourism	10	10
Total investment	3277	4701

18. Financial Operating Plan

The investment capacity of VMC is assessed through a financial operating plan (FOP), which gives a multi-year forecast of finances for the medium term. In line with the phasing of identified in the capital investment (CIP), the FOP has been generated for the same period for VMC. A salient feature of the FOP is that all outstanding dues, including debt and non-debt liabilities if any, are also taken into account.

18.1 Financial plan for the city

ULB: VMC is the sole responsible for provision of basic services such as water supply, sewerage, solid waste management, storm water drainage, roads and basic services for urban poor within its jurisdictions. Therefore, VMC accounts have been reviewed and further the accounts have been forecasted to prepare the financial plan for the city.

Accordingly, the annual accounts of VMC for the period between the financial years 2008-09 and 2012-13 are used to determine past trends for both revenue and expenditure items and to arrive at appropriate growth assumptions for each of the income and expense items. After forecasting the revenue account, the CIP has been loaded on to cash flow. The FOP is generated to assess the investment sustaining capacity of VMC.

Parastatals: Jal Nigam is the parastatal agencies involved in the provision of basic services within the VMC jurisdiction and in the Varanasi planning area. The scope of Jal Nigam and DUDA is restricted to the creation of infrastructure assets for basic urban services; later the assets are handed over to VMC for operation and maintenance. But, based on VMC's past experience, in case the project's implementation is taken up under the Central Government's mission programme, then all the funding will be routed through VMC and VMC will be the lead authority for project implementation, as it was observed during the JnNURM phase. Hence, the financials of parastatals are not included in the City Financial Plan (CFP).

18.2 Methodology

For the preparation of FoP for VMC, we have adopted the following methodology as provided in the revised CDP toolkit. The stage wise methodology and the key references has been presented in the below Table 176.

Table 176: Methodology for City Financial Plan for Varanasi

Task	Step	Key Stages	Description	Remarks
Task1	Step 1	Defining Objectives	The key objectives have been defined for following key areas. Revenue enhancement initiatives Expenditure management initiatives	The sub sections 18.9 to 18.12 has provided the details.

Task	Step	Key Stages	Description	Remarks
			Asset management initiatives Financial Management initiatives Further, it has been discussed in detailed in the subsequent sections.	
Task2	Step 2	Data Collection	The annual accounts, balance sheets, debt schedules, DCB statements for water and sewerage have been collected from VMC for the past five years. The recasting and trend analysis has been carried and the findings have been presented in the financial assessment chapter above.	Chapter 14 has detailed out the recasting and trend analysis.
	Step3	Business-As-Usual scenario --- CFP Version I	As a first step in preparation of FoP for the city, we have prepared the Business-As-Usual scenario and provided the overall capacity of VMC to take-up the infrastructure projects. The scenario has been discussed in the section FOP scenario considered	The sub section 18.6 has provided the details.
	Step 4	Analysis / Interpretation of the results	Post finalization of Business-As-Usual scenario, we have carried out the analysis on the revenue and expenditure to check the performance of key items. The same has been presented in the annexure 22.5.	
Task3	Task5	Identification of areas of improvement / reforms	We have identified the property tax and water charges are the key revenue source where the reforms can be explored to improve the coverage and collection efficiency and the same has been detailed out in the Revenue enhancement initiatives	The sub sections 18.7 and 18.9 have provided the details.
	Step6	Select / priorities areas of improvement / reforms	Under the revenue enhancement initiatives, we have identified the key reforms to be implemented in the property tax and user charges.	The sub section 18.9 has provided the details.
Task4	Step7	Finalizing basic assumption	Key assumptions for the income and expenditure side have been presented in the key assumptions section.	The sub section 18.4.1 has provided the

Task	Step	Key Stages	Description	Remarks
		s for resource mobilization forecast		details.
	Step8	Ascertain investible surplus for ULB / Parastatals / Development authority	Ascertain investible surplus for VMC has been discussed in the investible surplus section.	The sub section 18.5 has provided the details.
Task5	Step9	Ascertain combined investible surplus CFP Version II	Not Applicable	Not Applicable
	Step10	Component-wise allocation of combined investible surplus	Not Applicable	Not Applicable
Task6	Step11	Listing of Project Proposals – linkage to CDP	The priority project as identified in the CIP section has been linked with the FOP. Further, VMC investment capacity has been tested on various scenarios.	Chapter 17 has detailed out the CIP for VMC.
	Step12	Priorities Project Investments	The priority project investment has been finalized in the CIP section further it has been linked with the financial model for the city.	
Task7	Step13	Preparation of draft CFP --- CFP Version III & Financial Plan report (prioritized project investment loaded on	The current chapter has detailed out the overall financial plan for the city under various scenarios.	Chapter 18 has detailed out the FoP for VMC.

Task	Step	Key Stages	Description	Remarks
		combined investible surplus)		
Task8	Step14	Ascertain source and amount of funding, external borrowing, debt servicing mechanism, etc.	Under the Improved investment capacity with grant plus debt support, we have tested the capacity of VMC to go for debt and external borrowing.	The sub section 18.8 has provided the details.
Task9	Step15	CFP Appraisal and Public Verification	We have presented the findings to the stakeholder during the final city level workshop and accordingly gathered suggestions on the overall financial plan for the city.	Annual revision of CFP discussed in section 19.
Task10	Step16	Finalization of CFP report	Subsequent to the final workshop, we have discussed with VMC officials to finalize the financial plan for the city	
Task10	Step17	Annual revision of CFP (linkage to annual capital investment and improvements achieved)	We have suggested this step in the way forward section.	

18.3 Financing strategies for CIP

The project funding structure comprises grants under the NUDM framework²⁷ (accounting for 70% of the funding as per JNNURM-I structure has been assumed); internal surplus and debt are considered

²⁷ Based on the past trends, it is assumed the funding structure would remain same as it was in the JNNURM 1; the revised funding structure is yet to be announced by the ministry.

to meet the balance fund requirement. The level of investment that VMC can sustain is determined by studying the overall surpluses/year-to-year opening balance and debt-service coverage ratio (DSCR).

If DSCR (amount of surplus available to pay interest and to repay principal that is due) falls below 1.25 (i.e., less than 25% cushion), then the investments are reduced gradually till DSCR exceeds 1.25 in all the years in the forecast period. The main items of income and expenditure, classified into the revenue account and the capital account, are projected in the FOP under the following categories. Categories of FOP Projections are as follows.

Revenue Account Receipts

- Taxes, Non-Tax sources, and
- Grants, contribution, and subsidies

Revenue Account Expenditure

- Establishment
- Operation and Maintenance
- Debt servicing - Existing and new loans
- Phasing of Non-debt Liabilities, and
- Additional O&M for new assets created

Capital Income

- JNNURM capital grants
- Regular State or central grants
- Debt

Capital Expenditure

In determining a long-term financial strategy, VMC should plan to raise resources and fund for CIP through:

- Grants and grant-in-aid available under various programmes
- JnNURM programme's Phase II (as percent of investment proposed for funding from 2013-14 for urban infrastructure sectors and other projects - 50 percent Central Government grants and 20 percent state government grants)
- Available internal resources and improving upon the same through:
 - ◆ Revision of area-based property taxation at certain levels by VMC
 - ◆ Revision of water charges on year-on-year basis
 - ◆ Improvement of the collection performance of taxes and charges against both current and arrears' demand.
 - ◆ Market borrowings – loans
 - ◆ Public-Private Partnerships for asset creation, service delivery, and O&M of the assets

18.3.1 Financial projections

Current revenue sources are projected under built-in growth assumptions for income and expenditure items, to assess the impact of each such revenue enhancement measure being suggested. The projections also aim at estimating the surplus that will be available for servicing new debt. Part of the surplus, after meeting the additional O&M expenses on newly created assets and infrastructure, is translated into debt size and project size (grant component plus debt component) based on certain assumptions regarding interest rate, repayment method and loan-grant mix.

A spread sheet of FOP from model has been customized to depict the financial position of VMC. The investment-sustaining capacity of VMC is assessed based on the FOP assumptions. The model was used to calculate future surpluses under various scenarios involving combinations of internal revenue improvement, state support, financing terms, etc.

The standard assumptions under which the projections are carried out and certain expenditure control and revenue augmentation measures proposed in line with the mandatory and optional reforms under the JnNURM programme are presented below.

18.4 Investment sustenance capacity

Given the existing financial position of VMC, the revenue and capital accounts of VMC are projected against the growth scenario and assumptions presented above. The FOP is generated from the sustainable investment point of view in line with current growth trends against the identified investment. It has been estimated that VMC would require about 2,900 Rs²⁸ crores to improve the infrastructure for meeting the current gap and future short-term requirement out of all the different scenarios of sustainable investment capacity.

18.4.1 Key assumptions

Table 177: Key Financial Assumption for FOP projections

Head	Assumptions
Guiding Factor for Assessing the Sustaining Capacity	
Surplus	Positive surplus - year on year basis
DSCR	More than 1.25 (ideal)
Project Financing – for admissible Components under JnNURM	
Project costing	Project cost are based on the detailed cost estimates carried out in the various sector's master plan, DPR, technical documents, etc. Also, the cost escalation year-on-year basis for the cost estimates which are carried out in the past have been considered.
New/Additional O&M (for the proposed capital works in this CDP)	Water supply : 3% of capital cost Sewerage : 6% of capital cost Roads : 4% of capital cost Drains : 1% of capital cost Solid waste management : 8% of capital cost Others : 1% of capital cost

²⁸ Overall the investment required for the year 2021-22 is Rs 6,255 crores. However, VMC would be responsible to take-up the projects worth Rs 2,900 crores and the remaining investment to be taken-up by the Parastatals/state government departments. Therefore, the financial operating plan has been prepared for VMC with an estimated investment for Rs 2,900 crores.

Head	Assumptions
For projects approved under JnNURM	
Grant from GoI	50% of sanctioned cost
Grant from GoUP	20% of sanctioned cost
For projects approved under National River Conservation Plan (NRCP)	
Grant from GoI	70% of sanctioned cost
Grant from GoUP	30% of sanctioned cost (10% contribution from VMC to ensure public participation)
For slum and Housing projects to be approved under Rajiv Awas Yojana (RAY)	
Grant from GoI	50% of sanctioned cost (for Housing and Infrastructure development)
Grant from GoUP	25% of sanctioned cost (for Housing and Infrastructure development)
	Remaining 25% will be shared between VMC and beneficiaries. VMC – 25% for provision of Infrastructure Beneficiaries – 25% for construction of houses
If Loan for balance funding	
Regular CAPEX	Projection of regular capital expenditure with a base growth rate
Old Outstanding loans if any	Nil
Revenue Expenditure	
Growth in Expenditure	Regular growth rate of 8% to 10% considered for all the revenue expenditure heads for projections.
Pay Commission Revision	7th Pay Commission revision from 2016 – 2022 (As on date the salaries are being paid by VMC on the basis of 6 th pay commission)
Assumption for assessment of VMC's sustainability	
Income Items	
Growth in revenue income	Actual average growth with a minimum 8% and maximum of 10% (based on last five years trend) In case of Improved case, the growth rate considered is 15%
Land revenue	
Property Tax	
Annual growth in Assessment	1.75% per annum
Revision of Tax	25% increase in the ARV every five years starting from FY 2015-16
Collection Performance	95% (Improvement on yearly basis considered from FY 2013-14 to FY 2025-26)
New Taxes (considered as improved case)	In order to achieve financial sustainability, improve the city's infrastructure, and improving civic administration. The new taxes which are possible to be levied has been identified based on the applicable act.

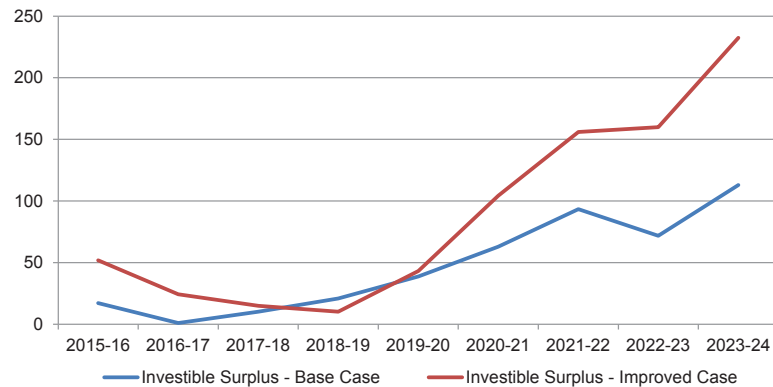
Head	Assumptions
Increasing the tax base of existing taxes (considered as improved case)	In order to achieve financial sustainability, improve the city's infrastructure, and improving civic administration. Increase/revision of tax base which are possible has been identified based on the applicable act.
Income Items- Water Supply	
Individual Water Connections	To achieve 100% individual water connections provision in all the properties in Varanasi
Water Tariff revision	30% annual hike in water user charges every five years
Next Revisions	Once in five year
Collection Performance	85% by FY 2025-26 (Improvement in current collection on yearly basis by 5% considered from FY 2013-14 to FY 2025-26) 80% by FY 2025-26 (Improvement in arrears collection on yearly basis by 5% considered from FY 2013-14 to FY 2025-26)
Income Items- Sewerage	
Sewerage Connections	To achieve 100% coverage by providing sewerage connections
Sewerage Tax	12% of the ALV value for property value.
Collection Performance	85% by FY 2025-26 (Improvement in current collection on yearly basis by 5% considered from FY 2013-14 to FY 2025-26) 80% by FY 2025-26 (Improvement in arrears collection on yearly basis by 5% considered from FY 2013-14 to FY 2025-26)

18.5 Investible surplus

Based on the various assumptions, the investible surplus²⁹ has been estimated for the city on the base and improved case scenarios. As per the base case scenario, on an average, VMC will have investible surplus of Rs. 44 crores over the next ten years. This surplus would be transferred to the capital account, to take up capital works. At the same time, in the improved case scenario, on an average, VMC will have investible surplus of Rs. 81 crores. The following figure presents the investible surplus in the base and improved case scenarios.

²⁹ The investible surplus = "(Revenue (own sources of income) income + capital (own sources of income) - Revenue expenditure". And, excluding the revenue and capital grants received for specific purpose

Figure 76: Investible surplus during 2014-2024 in Rs. Cr.



The spread sheets of the FOP are presented in the Annexure. The following are the results drawn with respect to investment capacity of VMC. Various possible scenarios for VMC towards sustainable investment for short-term investment have been generated. Also two predetermined cases built, which are Base case and improved case are explained as below:

- **Base investment capacity** – This scenario is built on the past trends as the case is.
- **Improved investment capacity** – This scenario is built on the presumption that VMC is going to undertake reforms leading to its improved financial sustenance capacity. The reforms are especially in the areas of property tax and water charges.

Property Tax

- VMC should take maximum benefit from “improvement of property tax collection” project under CBUD project.
- Widening/ improving the coverage of the property tax and maximise the no of properties under property tax net
- Widen the tax base and change in revision of property tax policy
- 100% computerization of all the records and database
- Introduction of online assessment and payment gateway
- Introduction of robust monitoring and dispute resolution mechanism
- Restructuring of the administrative system of department

Further, within the above mentioned both cases, various options have been looked at, like VMC’s contribution without any grant support or debt; and VMC’s contribution along with various government grants. These scenarios have been tried and tested for both the discussed cases and based on the FOP projected and various financial assumptions, the following results have been drawn with respect to the investment capacity of VMC.

Total investment requirement (Short-term) – Rs 3277 crores

Based on the availability of grants, VMC can take up priority projects in the area of urban transportation, storm water drainage, water supply and housing for urban poor. Different possible sustainable investment scenarios to maximise the project implementation capacity for VMC have been worked out and the details of each provided below.

18.6 Business-as-usual scenario

Business-as-usual scenario: This scenario is built on past trends, based on as-is case. In this scenario, it is assumed that VMC shall do business as usual and endeavour to implement the capital projects. This scenario will indicate the overall capacity of VMC to take up projects on business-as-usual basis.

Investment capacity: Rs. 0 crores

The key considerations in this scenario are as follows:

- In this scenario, VMC cannot contribute from its own revenues for the implementation of projects
- VMC will not take up any reform measures to improve the revenues.
- The income and expenditure growth would follow the past trends.
- The regular capital expenditure would grow at 3% on year-on-year basis.
- VMC should maintain the minimum closing balance of Rs 1 Crores on regular basis

Figure 77: FoP: Base Case

Financial Year	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
<i>Figures in Rs. Lakh</i>																
	<i>Revenue</i>				<i>Expenditure</i>				<i>Revenue</i>				<i>Expenditure</i>			
1	1,130	5,452	2,551	2,520	6,542	9,530	9,639	5,380	6,096	13,720	23,556	36,842	53,830	69,365	89,806	116,209
2	13,640	17,624	20,837	21,319	23,934	26,818	30,565	34,468	38,701	43,787	49,795	56,739	64,760	74,055	84,796	97,222
3	11,864	13,792	19,349	21,089	22,986	25,132	30,564	33,660	36,910	40,213	43,856	47,787	58,007	63,209	68,876	75,054
a	1,766	3,831	1,488	230	948	1,686	1	808	1,791	3,554	5,939	8,952	6,762	10,846	15,920	22,169
b	0.87	0.78	0.93	0.99	0.96	0.94	1.00	0.98	0.95	0.92	0.88	0.84	0.90	0.85	0.81	0.77
c	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	7,189	19,270	23,083	8,996	9,677	10,723	11,232	12,175	13,138	14,075	15,172	16,330	17,565	18,914	20,362	21,927
5	7,527	22,276	24,604	5,204	7,638	12,300	15,492	12,267	7,306	7,793	7,825	8,294	8,792	9,320	9,879	10,471
d	-333	-3,006	-1,519	3,792	2,040	-1,577	-4,260	-92	5,832	6,282	7,347	8,036	8,773	9,595	10,483	11,450
e	1,433	825	-31	4,022	2,987	109	-4,259	716	7,623	9,836	13,286	16,988	15,335	20,441	26,401	33,618
f	5,452	2,551	2,520	6,542	9,530	9,639	5,380	6,096	13,720	23,556	36,842	53,830	69,365	89,806	116,209	149,827

18.7 Improved case scenario – Reforms Implementation and debt

In this scenario, it is assumed that VMC shall take up fiscal and civic management-related reforms, which will improve its revenues from property tax and water charge by improving coverage and collection efficiency, levy of user charges, and new taxes along with revising the base rate of existing taxes as per the applicable act. Also, under the improved case, the growth in revenues due to various reforms that VMC will undergo will lead to a 15% growth year-on-year. Further, it is assumed that VMC shall receive capital grants from the state and Central governments.

Improved Revenues

- Levy of new taxes like water benefit tax, sewerage benefit tax
- Widening of existing tax base of property tax
- Improved growth rate of all the revenue streams assumed to be between 10% to 15%, due to various reforms and implementation of various suggested strategies within VMC like
 - administrative restructuring of system
 - Online payment facilities for payment of all taxes, user charges and rents, etc
 - robust collection system, penalties to defaulters
 - Tax rebate to the loyal tax payers

Investment Capacity: Rs. 1572 crores (at Constant)

- In the improved scenario, it is assumed that VMC will implement mandatory and optional reforms which will improve the overall governance of VMC resulting in better growth rate for all the revenue sources. The growth rate considered for the improved case is 10% to 15%. Also without any support from grants, VMC can do the sustainable investment of upto 48% of the total short term investment which is worth Rs. 1572 crores.

The key considerations in this scenario are as follows:

- VMC is going to undertake reforms leading to improved financial sustenance capacity.
- The reforms are especially in the areas of property tax and water charges.
- VMC shall receive grant from the state and central governments for the approved projects (New Urban Renewal Mission).
- The regular capital expenditure would grow at 3% on year-on-year basis.
- VMC should maintain the minimum closing balance of Rs 1 Crores on regular basis.

Figure 78: FoP: Improved case scenario – Reforms implementation

Financial Year	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
	<i>Figures in Rs. Lakhs</i>															
	<i>Actuals</i>			<i>Estimate</i>			<i>Projection</i>									
Opening Balance	1,130	5,452	2,551	2,520	6,911	11,843	18,847	22,455	26,814	33,849	44,658	62,426	86,060	110,818	143,649	186,352
1 Revenue Income	13,630	17,624	20,837	21,687	24,770	30,980	33,603	40,887	45,791	52,844	63,072	72,577	83,610	96,524	111,675	132,882
2 Revenue Expenditure	11,864	13,792	19,349	21,089	22,986	25,797	31,176	39,384	44,764	48,530	52,622	56,979	67,625	73,289	79,454	86,170
3 Surplus/Deficit- Revenue Account	1,766	3,833	1,488	590	1,784	5,183	2,428	1,503	1,026	4,314	10,421	15,598	15,985	23,235	32,220	46,712
3.1 Operating Ratio	0.87	0.78	0.93	0.97	0.93	0.83	0.93	0.96	0.98	0.92	0.83	0.79	0.81	0.76	0.71	0.63
3.2 Debt Servicing Ratio	0.0%	0.0%	0.0%	0.0%	0.0%	1.1%	3.7%	6.9%	8.2%	7.2%	6.1%	5.3%	4.6%	4.0%	3.4%	2.9%
3.3 Capital Income	7,195	19,270	23,085	8,996	19,816	41,608	56,655	39,977	14,805	16,082	15,172	16,330	17,565	18,914	20,362	21,921
4 Capital Expenditure	7,527	22,276	24,604	5,204	16,768	39,787	55,475	37,122	8,796	9,587	7,825	8,284	8,792	9,320	9,879	10,471
4.1 Surplus/Deficit- Capital Account	-333	-3,006	-1,519	3,792	3,149	1,822	1,180	2,856	6,009	6,495	7,347	8,036	8,773	9,595	10,483	11,450
4.2 Overall Surplus/Deficit- Municipal Account	1,433	825	-31	4,390	4,933	7,004	3,608	4,358	7,035	10,809	17,768	23,634	24,758	32,830	42,703	58,162
7 Closing Balance	5,452	2,551	2,520	6,911	11,843	18,847	22,455	26,814	33,849	44,658	62,426	86,060	110,818	143,649	186,352	244,512

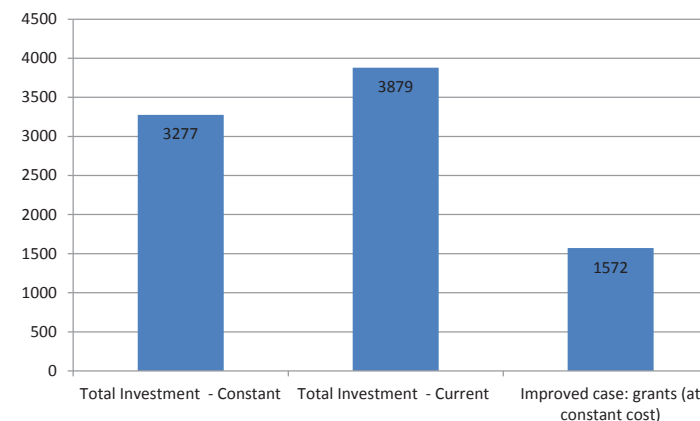
18.7.1 Key Summary

Further, the results of the above scenarios have been presented in the figure below. The overall investment estimated is Rs. 3277 crores (on constant prices). However, as per the current prices, the estimated investment would be Rs. 3879 crores (which includes the cost escalation and physical

contingencies). It is observed that without any grant support, VMC cannot implement any projects. Based on the availability of Central/state government grants, VMC can take up priority projects in the areas of traffic and transportation, solid waste management, sanitation, and storm water drainage.

- Improved investment capacity with grant support: Rs. 1572 Cr.

Figure 79: Various scenarios for financial operating plan for short-term investment in Rs. Cr.



18.8 Revenue enhancement initiatives

Table 178: Revenue enhancement measures for various sectors

Area	Existing revenues	Task	Estimated Revenue potential
Property tax	Rs 1865 lakhs (2012-13)	<ul style="list-style-type: none"> ▪ Improving coverage of the properties and updating the assessment register. ▪ Improving the Collection efficiency through awareness campaigns towards use of online payment gateway for paying of property tax. ▪ Separate cell for appellate to deal 	Rs 5338 lakhs (2025-26)

Area	Existing revenues	Task	Estimated Revenue potential
		with defaulters and resolving the long pending arrears due to litigation cases.	
Water and charges	Rs 3852 lakhs (2012-13)	<ul style="list-style-type: none"> ▪ Existing coverage of functional metered connection is nil. 100% metering of all the water connections should be carried out. ▪ Also, to create awareness campaigns towards use of online payment gateway for payment of charges online. 	Rs 8,844 lakhs (2025-26)

18.9 Expenditure management initiatives

Over the review period, the revenue and capital expenditure of VMC have been increased. In order to reduce the revenue and capital expenditure at VMC, the following key initiatives are to be taken up by VMC.

Reduction in establishment expenditure

- Outsourcing of certain functions: VMC should explore outsourcing of some functions in order to reduce the establishment expenditure.
- Moreover, VMC can outsource the clerical posts such as those of data entry operators and clerks to reduce the establishment cost.

Reduction in capital expenditure

- VMC is implementing projects through their municipal funds on a regular basis and also has a financial commitment of 30% towards projects being implemented under JnNURM.
- VMC has explored the PPP option for implementation of SWM project in the past. It is recommended that the PPP option should be explored further for projects in the social sector and other sectors.

18.10 Asset management initiatives

The establishment of linkages between asset creation and asset management should be through a series of reforms that will ensure project sustainability. Also, ensuring adequate funds to meet the deficiencies in urban infrastructural services is recommended.

In order to maintain the assets over the project's life-cycle, VMC should allocate a certain percentage of funds for the operation and maintenance of the project components. For instance, as regards the water supply project, the O&M cost would be 5% of the project cost and this would be on a recurring basis.

Depreciation account/fund

VMC should ideally try to maintain the depreciation account in order to replace the existing asset with a new asset post its life-cycle.

Key steps to be taken by VMC for better management of assets

- VMC should focus on department wise budget preparation for O&M cost for newly created assets, and provide the best practice to reduce the O&M cost on sewerage and solid waste management
- Carry out water and energy audit to reduce the O&M cost and water leakages (NRW)
- Study the existing status of the assets of key sectors, prepare a tangible action plan for the maintenance of assets, and provide the replacement list for the assets
- Conduct workshops/trainings for the staff on management of O&M and best practices across the states
- Organize study tours for the staff and elected representatives for effective implementation of reforms, for full O&M recovery
- Latest techniques and technology to be adopted for management (inventory, maintenance cycle, replacement time, etc.) of municipal assets
- Conduct trainings in the area of asset management, new techniques for operation and maintenance of assets

18.11 Financial management initiatives

In order to implement the identified projects over the project cycle, VMC has to take up financial management initiatives for smooth implementation of the projects. The key initiatives are as follows:

- First and foremost, the accounts department of VMC should maintain a separate account for all projects. Financial transactions such as deposits, grants and release of payments should be carried out through the project account.
- Carry out all the above-mentioned functions through e-governance modules developed by VMC.
- Transfer a part of the revenue surplus (own source of revenues) to the project account to implement the project. A record of such transactions should be maintained.
- Internal audit of the project accounts should be carried out on a quarterly basis. External audit has to be carried out on an annual basis.

18.12 Projects on PPP basis

VMC may explore the PPP route in the case of the following projects. The details of each component have been provided in the Table 179 below.

Table 179: Projects on PPP basis

Sector	Development	Possible PPP interventions	Key Aspects
Sewerage	Construction, operation, and maintenance of STPs	Construction and O&M of STPs and selling of treated sewerage water to potential users	<ul style="list-style-type: none"> VMC shall handover the land for construction of STPs O&M of STPs has to be carried out by private operator as per the contract period The operator would be responsible for the O&M of STPs and further selling of the treated sewerage water to potential users <p>The revenue sharing between VMC and the private operator can be explored, like royalty on land and revenue sharing from sell of treated waste water</p>
Traffic and transport	Multilevel car parking complex on PPP basis and O&M contracts	Land to be provided on lease basis	<ul style="list-style-type: none"> The feasibility to be improved by introducing a mixed use – shops & offices Handing over the O&M function to the contractor for the infrastructure like flyovers, ROB, RUBs, FoBs.³⁰ Installation and O&M of the street lights
Housing for Urban poor	Construction of houses for urban poor	Construction of houses for urban poor	<ul style="list-style-type: none"> VMC has already explored the option of PPP based implementation of BSUP project Same way implementation of projects for developing houses under the RAY should be explored
Rehabilitation of Heritage Structures	Cultural events organising Heritage walk	Cultural and events organising	<ul style="list-style-type: none"> Exploring the possibilities of involving private organisations and corporates to host cultural events To manage heritage walks in the city and exhibitions

³⁰ Example of Mumbai flyovers - which are constructed and managed by private operator through collection of tolls. VMC can levy toll or user fee on the heavy traffic entering the city or parking of trucks in the goods terminal and same revenue to be used by the private operator for managing the infrastructure. Review of the model adopted by MSRDC should be carried out.

Sector	Development	Possible PPP interventions	Key Aspects
Social Infrastructure	Asset creation and maintenance of the assets and service contract for provision of services	Construction, operation, and maintenance of schools, hospitals, gardens, parks, convention centre	<ul style="list-style-type: none"> VMC shall handover the land for construction of infrastructure or existing infrastructure Service contract for provision of services like education, health and medical facilities, etc. The revenue sharing between VMC and the private operator can be explored, like royalty on land and sharing of revenues generated from provision of services

18.13 Land resource leveraging

VMC should focus on preparing an inventory of available land in the city, to explore land-based financing offers for implementing the infrastructure projects. The following steps are recommended to VMC;

- VMC should initiate an inventory of land parcels available in the city. Further, VMC should create a database of the same and a land bank
- VMC should crosscheck the proposed land use as per the development plan. If required, VMC needs to initiate land use revision in the records
- VMC may explore available land parcels that can be used for development of affordable housing projects, parking projects, real estate projects and convention centers. Even these projects can be implemented on PPP basis

18.14 Key Conclusions

Overall, VMC requires around Rs. 2900 crores improving the core services in the city. However, in a business-as-usual scenario, VMC can make Rs. 990 Cr. of investment to take up infrastructure projects. While in improved case with grants from central and state government it can do sustainable investment of Rs. 2053 Cr.

Given the importance of Varanasi in the region, it is very important to improve the infrastructure facilities to attract investment and industries in the city and further to boost the economic development in the region.

Therefore, VMC should target to achieve the improved investment capacity (Rs. 2053 crores) with grant support from the state and Central Government. The following key steps need to be taken by VMC to achieve the improved case scenario investment.

- New tax and revision of base for existing taxes:** VMC should explore or propose the levy of a new tax, which will be as per the applicable act. Also, regular revision of the tax base of existing taxes and rates for rent should be exercised.

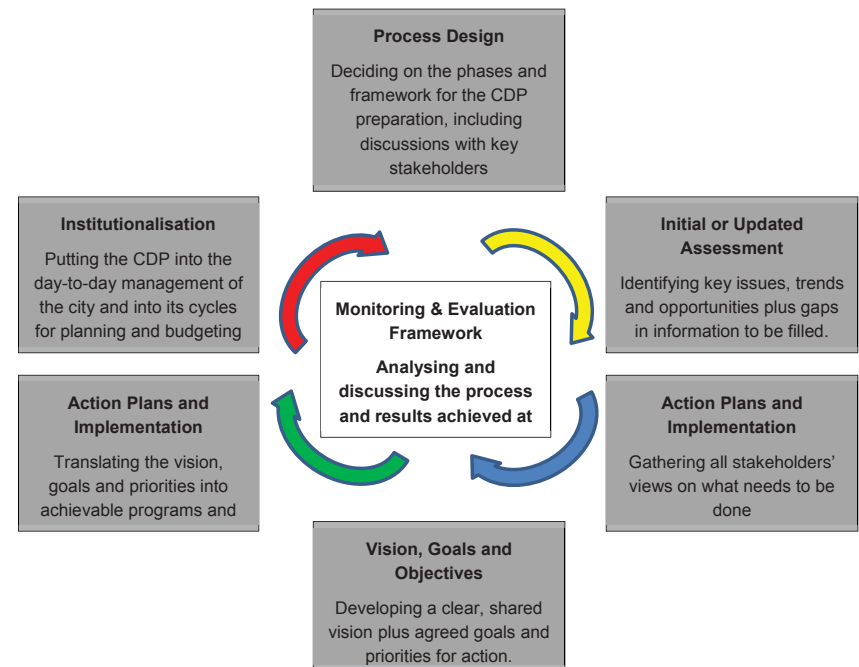
- **Property tax:** On an immediate basis, the reforms to be implemented in property tax to improve the coverage and collection efficiency; the reforms must start with restructuring of the department.
- **Water and sewerage:** Water and sewerage tariff structures must be revised immediately. VMC should explore the volumetric tariff structure for metered water connections
- **SWM charges:** VMC should levy user charges on SWM services – VMC may explore this initiative as part of property tax.
- **Establishment expenditure:** The outsourcing option should be explored in the establishment department as well as in the operation and maintenance of assets. If possible, reduction of staff and optimum resource utilisation through the use of sophisticated technology should be explored
- **PPP route:** VMC should explore the PPP route to implement either the projects or project components.
- **O&M new assets:** VMC should ensure that the contractor/private operator appointed will carry out O&M of the assets (WTP and STP plant) for a period of 5-8 years after completion of the test runs.
- **Regular capital works:** VMC should curtail its regular capital expenditure over the next 5-10 years. VMC should take up only priority works first and also projects possible on PPP basis.
- **Capacity-building:** It is very important that VMC should keep on imparting training to the staff on various aspects, from technical to managerial skills.
- **Study tours:** VMC should organise study tours to know the best practices carried out for some of the core services and also to understand the challenges faced by other cities in the implementation of projects and reforms.

19. Review and Monitoring framework

The monitoring and evaluation (M&E) framework has been designed to help cities integrate M&E into their city development plan (CDP) from the initial phases. M&E is important to enable cities determine whether their CDP is achieving its vision and goals and realising its intended outcomes or not. It is a tool that shall enable cities to monitor the progress on the plan at regular intervals.

The information generated by M&E can be used to provide information and support for the implementation of CDP. It shall help in strengthening the downstream project implementation, undertaking programme and investment activities, and devising strategies for future planning initiatives. A basic principle of the CDP approach is that the way in which the CDP is developed and the development issues that it addresses, are determined by each city and community to meet their own needs. There is no 'one size fits all' approach to designing and implementation of CDP.

The framework mentioned below clearly lays down the broad principles that need to be fine-tuned based on the city specific needs and inputs from various officials at the city level to develop for each city.



19.1 Framework for Review and monitoring

In the context of the ever changing landscape of the developments in the city, the impacts on the growth of the city will have wide ramifications if it is not factored into the City Development Planning process in a dynamic manner. The CDP should have a fixed time frame for its implementation, and shall be followed by a review to study and analyse the impact of the implementation of the plan, in order to make mid-term course corrections, wherever necessary. A monitoring mechanism should also be established for measuring the identifiable indicators provided in the CDP for each sector and there after implementation of CDP can be measured.

The table below gives a framework for updating and reviewing CDPs; this needs to be followed as per the revised tool kit.

Table 180: Framework for Monitoring and Evaluation of various components in the CDP

Sr. No.	Framework for Updating and Reviewing City Development Plan (CDP) to make it a living document							
	Activity	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
1	Reviewing CDP Document	√					√	
2	Community and Stakeholder Consultation	√	√	√	√	√	√	√
3	Data Update and Mapping the City	√				√		
4	Capacity Building	√	√	√	√	√		
5	Planning Building Regulations Reforms	√				√		
6	Property Tax Reforms	√	√	√	√	√	√	
7	Institutional Reforms	√	√	√	√	√		
8	Financial Reforms	√	√	√	√	√		
9	Sectoral/Ward Development Plans	√				√		
10	Review of Project Priorities	√		√		√		
11	Financial Operating Plan	√				√		
12	Capital Investment Plan	√				√		

Source: Revised City Development Plan toolkit

19.1.1 Timeline and Periodicity of review

To make CDP as a living document, it is essential to understand that the city landscape, growth source as well as direction keep changing with time. Hence, the CDP should have a fixed time frame for its implementation, and shall be followed by a review to study and analyse the impacts of the implementation in order to make mid-course corrections, wherever necessary. The monitoring mechanism should be on the activities based on the identified indicators in each sectors in the CDP. Some of the identified activities that could be monitored are given below.

19.2 Reviewing of the CDP Document

The foremost thing that comes up is the reviewing of the CDP document. As the city's conditions may change after few years, the CDP needs to be reviewed and evaluated after a particular time before a new development plan is proposed. It is necessary to identify the sectors that are growing and sectors that are lagging, to achieve the vision framed for the city. The CDP is prepared for a long term vision for 30 years and the investment plan is prepared for a time frame for 7 years. Thus it mandatory that review of the City Development Plan is taken up after every five years.

19.2.1 Engaging with Community and Stakeholders' Consultation

CDP focuses on the holistic development and betterment of the city as looked upon by various communities and stakeholders. Therefore, it is very important to keep consulting with them about the process of the work to be undertaken to achieve the framed vision for the city. This could be done by conducting a meeting every alternate year, i.e., once in every two years. The feedback should be incorporated and the shared with citizens through a common platform like website etc.

19.2.2 Data Update and Mapping of the City

In case of any major changes in the city limits/boundaries, a complete data updation exercise should be carried out for effective implementation. Therefore, data updates and mapping of the city become very essential. This should always be done before the preparation of the CDP.

19.2.3 Capacity Building

Capacity building initiatives should focus on understanding the areas where in capacity needs to be built in terms of project implementation, reform implementation etc. The regular assessment of the needs can ensure better capacity building measures to be adopted by city.

19.3 Review and Monitoring of Reforms and Project Implementation

The CDP Technical and Policy Committee should be involved in the monitoring and evaluation of the CDP across various components.

19.3.1 Assessment of Reforms and Project Implementation

- Regular assessment of reform and project implementation is necessary for the city to achieve its vision.
- Reforms should be framed for all the institution responsible for the development process of any city. These reforms are very important for all the institution to work in a synchronized manner for the development of the city. **Hence, they must be monitored every year.**

19.3.2 Financial Reforms

- Finance being a most important part for any ULB of the city. The funds are to be utilized according to the kind of development approach adopted to achieve the city vision. **Therefore, financial reforms must be monitored and evaluated on yearly basis.**

19.3.3 Property Tax Reforms

- All the properties abiding under the ULB should be carefully mapped and marked, as it is an important source of revenue for a city. Hence it should be prepared before the implementation of the CDP and monitored at frequent intervals.

19.3.4 Sector /Ward Development Plans

Vision of the city could only be implemented at a macro level only if there is prominent change at the micro level like at the ward level or the sectoral block level planning. To make a CDP document comprehensive in approach, the M&E of these micro level plans should be evaluated at the very beginning and impact should be reviewed in the very first year.

19.3.5 Review of the Project Priorities

The project prioritized in the CDP to achieve the vision may have to undergo changes in their priority order once the implementation of the CDP starts. The reason may be due to any practical issues that arise during project implementation or any other complication. Hence, it is very important to monitor and evaluate the projects that are underway and projects that need to be taken up for the development of the city. The updating process should be regular, but M&E should be done every alternate year.

19.4 Monitoring of Financial Operating Plan and Capital Investment Plan

A capital investment plan (CIP) provides a detailed understanding of anticipated investments into tangible capital assets. The assets include basic facilities, services, and installations needed for the functioning of the community, such as bridges, roads, water, and wastewater systems. This helps the ULBs to formalize their priority setting and decision making process. Therefore, the M&E of CIP should be done on regular basis every year.

A financial operating plan (FOP) outlines the revenues and expenses over a period of time. An FOP uses past performances, incomes, and expenses to forecast what to expect in the following years. It then incorporates the past and recent trends into the planning so as to most accurately forecast what is to come. Therefore, for city development plan in a proper way, it is necessary to monitor and evaluate the FOP regularly every year.

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- *Reort on Non Revenue Water, Varanasi (2013), CBUD*
- *Cultural Landscapes and the Lifeworld (2004), (Prof.) Rana P. B. Singh*
- *Banaras Region: A Cultural Guide (2002), P.S. Rana and (Prof.) Rana P. B. Singh*

Annexure – I

Kick-off meeting with MoUD, Government of India

Meeting Agenda	Kick Off Meeting
Assignment Title	Preparation and Revision of City Development Plans for 13 Selected Cities Package 1 (13 cities) Preparation and Revision of City Development Plans for 17 Selected Cities Package 2 (17 cities)
Name of Client	Ministry of Urban Development
Date of meeting	8 th August 2013, 4 p.m
Place/Location	Ministry of Urban Development, New Delhi
Participants	<p>Ministry of Urban Development Ms. Nisha Singh, IAS, Joint Secretary and Mission Director Mr. Prem Narayan, Director (JnNURM) Mr. Sanjay Kumar, Under Secretary (JnNURM) Officials from TCPO, CPWD, CPHEEO</p> <p>CBUD PMU Team</p> <p>CRISIL Risk and Infrastructure Solutions Limited (CRIS) Mr. Ravi Poddar, Director, Urban Practice Mr. Brijgopal Ladda, Urban Planning Expert Mr. Abhay Kantak, Municipal Finance Expert Mr. K.K Shrivastava, Municipal Engineering Expert Mr. Tapas Ghatak, GIS Expert Mr. Appeeji Parasher, Associate Director Ms. Monika Bahl, Manager</p>
<p>CRISIL Risk & Infrastructure Solutions Limited (CRIS) has been appointed by Ministry of Urban Development (MoUD) for the Preparation and Revision of City Development Plans for 13 Selected Cities under Package 1 and 17 selected cities under Package 2. A kick-off meeting was organized by MoUD to review the work plan and approach for the assignment. The meeting was chaired by Ms. Nisha Singh IAS, Joint Secretary and Project Director and was attended by senior officials from MoUD, PMU from CBUD and officials from TCPO, CPWD.</p> <p>CRIS Team made a presentation on the following aspects</p> <ul style="list-style-type: none"> ▪ Our Experience in Preparation of CDPs ▪ Details of Assignment Coverage ▪ Our Approach - Revised CDP toolkit ▪ Proposed Teaming ▪ Work Plan ▪ Support from MoUD <p>Following were the key points suggested by MoUD /CBUD PMU team and other key officials present during the meeting</p> <ol style="list-style-type: none"> 1. Various recommendations were made by the participants for preparation of CDP. The Mission 	

Director however suggested that the CDPs shall be prepared in line with the revised tool kit issued by MoUD and also mentioned that MoUD has prepared a comparison of variance between the first generation and 2nd generation CDPs and it shall provide a copy of the same.

2. It was also mentioned that an inclusive approach should be adopted as specified in the tool kit and sufficient emphasis should be made on strategies addressing urban poverty issues.
3. It was also suggested that cities have prepared other plans like CSP, CMP, disaster management etc. The interventions, projects, costing etc. suggested in this studies should be incorporated in the CDP. MoUD also suggested for sharing information from ISNA study to consultant for CDP such to synchronize the two reports.
4. The Mission Director also stressed on to focus on efficiency improvement related aspects while identifying projects in cities.
5. It was discussed that the population projection in all the CDPs shall be for a period of 30 years i.e. 2041 whereas the FOPs can be made for a period of 20 years to be realistic. All CDPs should have same time line for projections and should be based on Census 2011.
6. Some other aspects discussed were as follows
 - ◆ 24x7 Water Supply and implementation of SCADA and other new system to bring in efficiency, 100% metering etc.
 - ◆ Linkages with existing Development Plan or Master Plan
 - ◆ CDP should also endeavor to mention of suitable technologies based on the geographical condition of the cities.
 - ◆ Local Economic Development – Enlist the key thrust areas of economic development and broad level strategies
 - ◆ Map preparation
 - ◆ Smart cities concepts should be explored
7. It was suggested that CDPs should be made through rigorous stakeholder consultations and the ownership should be ensured at the city level.
8. It was suggested to have the executive summary to the Final CDP in vernacular language.
9. The timelines proposed for the assignment were found to be in line with that mentioned in the RFP.

During the presentation CRIS suggested the following points for support from MoUD

1. The team would require a letter of Introduction from MoUD to ensure that all the ULBs can assist the team in the following
 - ◆ Designate an "Officer-In charge" responsible for management and coordination of consultants
 - ◆ Constitute multi-stakeholder City Level Steering Committee and working groups.
 - ◆ Nominate officers from relevant sections of ULB to participate in the process of stakeholder consultation and CDP preparation.
 - ◆ Provide the consultant with information, maps and relevant data and documents on ULB.
 - ◆ Provide the consultant with necessary authorization to procure information from the line departments
1. Introducing the consultants to the Urban Local Bodies
2. Facilitate and expedite approvals from ULB.

The meeting ended with a vote of thanks to all participants.

Stakeholder interactions: Inception meeting

Minutes of inception meeting

Table 181: Minutes of meeting

Meeting Agenda	Inception meeting for Revised City Development Plan of Varanasi city
Place/ Location/ Date/ Time	Nagar Nigam Varanasi Office, Sigra on 6 th September 2013 at 12:00 PM
Participants	<p>Varanasi Nagar Nigam and Parastatals</p> <ul style="list-style-type: none"> ▪ Mayor, VNN ▪ Municipal Commissioner, VNN ▪ Additional Municipal Commissioner, VNN ▪ General Manager, Jal Sansthan ▪ Executive Engineer, Jal Nigam ▪ Project Officer, DUDA ▪ Representatives from VDA ▪ Representatives from UP State Roadways and Transportation Corporation ▪ Member of PIU, VNN <p>CRISIL Risk and Infrastructure Solutions Limited:</p> <ul style="list-style-type: none"> ▪ Mr. Tapas Ghatak, Sector Expert ▪ Mr. Rahul Sethi, Consultant

Meeting Agenda	Inception meeting for Revised City Development Plan of Varanasi city
	<p>Following were the key discussions during the meeting</p> <ul style="list-style-type: none"> ▪ The meeting was chaired by the Honourable Mayor and attended by the Municipal Commissioner, department heads, and representatives of various parastatals. ▪ The Project Implementation Unit team briefed the officials about the agenda of the meeting and all the members present introduced themselves. ▪ The CRISIL team initiated the meeting by giving a brief about the CBUD programme and the need to revise the CDP. Thereafter, the CDP preparation process was detailed to the officials present, including key CDP highlights, guidelines, and our approach and methodology for the revision of CDP. ▪ During the discussion, CRISIL team requested the officials to share their experiences during the preparation of the old CDP. ▪ The senior officials have changed over the last five years, so the officials present were not aware of the details of the CDP preparation process followed earlier. ▪ Stakeholder workshop is the central idea around which the preparation of CDP revolves. The CRISIL team requested the officials present to ensure stakeholder participation by identifying stakeholders to be present in the workshops to share their views. The Honourable Mayor was also of the view that importance should be given to the stakeholder workshops and suggestions provided by the stakeholders should be taken into account while preparing the CDP. He also suggested representing the aspirations of the citizens of the city by undertaking realistic and relevant projects in the CDP. ▪ Thereafter, the CRISIL team requested the Honourable Mayor and Municipal Commissioner to appoint a nodal officer for coordinating in all aspects of CDP, form CDP policy and technical committees, and identify stakeholders to participate in the stakeholder meetings/workshops. ▪ In this regard, Mr. Abhinash Kumar, Tahsildar, Nagar Nigam, was appointed as the interim nodal officer till further notice. ▪ It was also decided that list of stakeholders for the workshops will be prepared in the due course of time. ▪ In addition, the CDP policy and technical committees were also constituted ▪ The meeting ended with a vote of thanks to all participants
	Photographs

Meeting Agenda Inception meeting for Revised City Development Plan of Varanasi city



Meeting Agenda Inception meeting for Revised City Development Plan of Varanasi city



Newspaper cuttings

VARANASI MUNICIPAL CORPORATION TO REVISE THE CITY DEVELOPMENT PLAN SOON | 3

संशोधित होगा सिटी डेवलपमेंट प्लान

अभ्युक्त आरपी सिंह ने बताया कि सीटीडीपी तैयार करने के लिए महापौर की अध्यक्षता में तकनीकी व सम्बन्धित समितियों के गठन पर सहमति बनी है। सम्बन्धित समिति में संशोधित विभागों के विभागाध्यक्ष तथा तकनीकी समिति में अभियंता शामिल होंगे।

अभ्युक्त आरपी सिंह ने बताया कि सीटीडीपी तैयार करने के लिए महापौर की अध्यक्षता में तकनीकी व सम्बन्धित समितियों के गठन पर सहमति बनी है। सम्बन्धित समिति में संशोधित विभागों के विभागाध्यक्ष तथा तकनीकी समिति में अभियंता शामिल होंगे।

Meeting Agenda Inception meeting for Revised City Development Plan of Varanasi city

City development plan to be revised by admin

TIMES NEWS NETWORK

Varanasi: The city will now have a revised city development plan (CDP) as the authorities are of the view that old development plan was not inclusive enough to ensure the development of the city inline with what a heritage city requires.

The CDP under which different development works are being carried out at present, came into effect in 2006.

The nodal officer for the revised CDP will be the acting additional municipal commissioner, Avinash Kumar.

In a meeting held at the head office of the Varanasi Municipal Corporation (VMC) on Friday, the city mayor

Ramgopal Mohan emphasised on the fact that the development plan for the city of Kashi should necessarily be inclusive of its immense heritage value. "Kashi is famous across the globe for its ghats and temples not for the malls that have sprang up in the city in recent years. I will ensure that the revised city development plan takes into account this aspect. Apart from this, there should be

To provide an inclusive and extensive approach to the CDP, two committees have been formed. One will be an administrative committee that will be involved in the policy decisions based on the inputs from the other committee which will be a technical committee

assessment of those schemes and plans that have proved a burden on the exchequer of the local body as they could not be implemented successfully in the absence of sensible planning on the part of concerned authorities," said Mayor while talking to ToI.

To provide an inclusive and extensive approach to the CDP, two committees have been formed. One will be an administrative committee that will be involved in the policy decisions based on the inputs from the other committee which will be a technical committee.

The administrative committee will have on board, heads of the various government departments like VDA, VMC, Awas-Vikas, Jal Nigam, Jal-Kal, Environment and Pollution Control Board, archaeology department, department of traffic, for-

est department, whereas the technical committee will consist of the technical heads of these departments.

According to the municipal commissioner RP Singh the revised plan will include public participation as an additional element along with the administrative and technical inputs for the policy making in the revised CDP.

This is one aspect that we are very optimistic about as it will allow us to have the pulse of the people as to what elements they want to be included in the CDP.

The official website of the VMC will have a platform where opinions polls will be conducted about a particular plan that the authorities have finalised along with the detailed new suggestions. Help of media will also be taken for the purpose," said the official.

Meeting Agenda Inception meeting for Revised City Development Plan of Varanasi city

नगर विकास के लिए बनीं तीन कमेटीयां

आगरा संवाददाता, गुरुगामी : नगर विकास को योजनाओं को दुरुत गति से क्रियान्वित करने के लिए तीन कमेटीयां का गठन किया गया है। महापौर रामगोपाल मोहाने की पहल पर बनी कमेटीयां प्लान बनाने के साथ ही तकनीकी जानकारियां भी मुहैया कराएगी। गुरुगवार को महापौर की अध्यक्षता में हुई बैठक में निगम के अधिकारियों ने शहर के विकास में जुड़ी योजनाओं पर संघन किया। नवसृजित कमेटीयां में पहली कमेटी प्लान तैयार करेगी। दूसरी तकनीक उपलब्ध कराएगी जबकि तीसरी कमेटी शैक्षीय व जन प्रतिनिधियों को होगी। यह कमेटी विकास के लिए सुझाव देगी।

गौरवलय है कि नगर निगम ने सन् 2005 में जो सिटी डेवलपमेंट प्लान तैयार किया था। उस पर भारी भारकम बजट खर्च किया गया। अब इसी योजना को मानक बनाकर नए सिरे से विकास की योजनाएं बनाई जाएंगी जिसमें सड़क, सीवर, पेयजल, पार्क आदि के निर्माण को प्राथमिकता दी जाएगी। तीन कमेटीयां मिलकर योजना तैयार करेंगी। बजट के लिए यह प्लान नगर निगम राज्य सरकार के माध्यम से केन्द्र को भेजेगा। केन्द्र की मंजूरी मिलने पर ही योजनाएं पूर्णरूप लेंगी।

बैठक में नगर आयुक्त आरपी सिंह, प्रभारी अपर नगर आयुक्त अविनाश कुमार, नगर स्वास्थ्य अधिकारी डा. एसएसपी वर्मा, सीडीए के अधिष्ठाता अभिषेक एसके उपाध्यक्ष समेत अन्य अधिकारी थे।

सिटी डेवलपमेंट प्लान का जिन्न बोटल से होगा बाहर महापौर ने तीन प्रकार की समिति के गठन का दिया निर्देश

नगर निगम सिटी डेवलपमेंट प्लान के जिन को बोटल से बाहर करने के लिए महापौर रामगोपाल मोहाने की अध्यक्षता में अधिकांशों की निर्मित कम में बैठक हुई। बैठक में प्रमुख रूप से शहर में विकास कर्तव्यों को व्यवस्थित ढंग से करने के लिए कार्यवाही करने की विचार-विमर्श हुआ। सी.डी.पी. तैयार करने वाली पंचेनी क्रिमीय के प्रतिनिधि गजल मेठी ने प्रोब्लम के जटिल विकास कर्तव्यों को रिपोर्ट दिखायी। सिटी डेवलपमेंट प्लान पर वर्ष 2004 में तैयार की गयी सी.डी.पी. को जल्द करने में ध्यान दिया गया है, जबकि महापौर इस बात को अधिकारियों से निर्दिष्ट करती कि वर्ष 2004 की सी.डी.पी. को नवी प्रस्तुत हुई है। महापौर ने कहा कि सिटी डेवलपमेंट प्लान के तहत परिवार, तकनीकी और शैक्षीय जनप्रतिनिधि, सार्वजनिक नगरपालिका की तीन प्रकार की समिति गठित होगी। पहली समिति में निगम, नगर निगम, जनकल, जननिगम गुरुगवार विभाग, गंगा प्रदूषण, ट्रांसपोर्ट विभाग, लोक निर्माण विभाग के अधिकारी शामिल होंगे। तकनीकी समिति में उच्च विभागों के अधिकारियों को सम्मिलित किया जाएगा। इसके अलावा शैक्षीय जनप्रतिनिधियों और नगरपालिका की समिति गठित होगी। उच्च प्रतिनिधि शहर को प्रभारित सुझाव देगी। महापौर ने कहा कि समिति के सदस्यों को संभव और नगरी को योग्यता को ध्यान में रखकर विकास में मदद करनी चाहिए। इसी आधार पर कार्यवाही करने की निर्देश दी। तैयार करेगी। महापौर ने कहा कि सिटी डेवलपमेंट प्लान के तहत इस प्रकार की कार्यवाही तैयार होना चाहिए, जिसका लाभ नगरपालिका को मिले। से न हो कि वे पुरु,पुन,पु,आर.व्य. को तरह अभी तक जो भी कार्य कराने पर उसका लाभ नगरपालिका को नहीं मिले। गौरवलय है कि केन्द्र सरकार के सहयोग से शहर में नवीनन अधिकांश के तहत विकास कर्तव्यों को करने के लिए सिटी डेवलपमेंट प्लान पर कार्यवाही करवाई चुक चुकी है। वर्ष 2004 में इस विषय को लेकर कार्यवाही ने सी.डी.पी. पर कोई कार्रवाई नहीं हुई। पुरानी सी.डी.पी. तैयार करने की जिम्मेदारी क्रिमीय नामक संस्था को दी गयी है। अब पुरानी बोटल में नए समिति लगाकर सिटी डेवलपमेंट प्लान तैयार किया जाएगा। बैठक में प्रमुख रूप से नगर आयुक्त आर.पी.सिंह, जनकल महाप्रबंधक बी.के.पाण्डेय, प्रभारी अपर नगर आयुक्त अविनाश कुमार, नगर स्वास्थ्य अधिकारी डा.एस.एस.पी. वर्मा, सीडीए के अधिष्ठाता अभिषेक एसके उपाध्यक्ष समेत अन्य अधिकारी शामिल रहे।

Meeting Agenda | Inception meeting for Revised City Development Plan of Varanasi city

रिवाइज सीडीपी बनाने के लिए हुआ मंथन

वाराणसी | कार्यालय संवाददाता

2014 का लक्ष्य

शहर की विकास योजनाओं को मूर्त रूप देने से पहले जरूरत और क्षमता के आकलन के लिए नगर निगम प्रशासन ने 2014 को लक्ष्य मानकर रिवाइज सिटी डेवलपमेंट प्लान (सीडीपी) बनाने की कवायद शुरू कर दी है। शुक्रवार को महापौर रामगोपाल मोहले की अध्यक्षता में नगर निगम में विभागों की बैठक हुई। रिवाइज सीडीपी हैदराबाद की क्रिसिल संस्था बनाएगी।

बैठक की शुरुआत में ही उस समय हास्यास्पद स्थिति पैदा हुई जब महापौर ने 2006 में बनी सीडीपी मांगी। अधिकारी बगले झांकने लगे और अंत तक नगर निगम प्रशासन 2006 में बनी सीडीपी उपलब्ध नहीं करा सका। सीडीपी की सॉफ्ट कॉपी उपलब्ध कराई गई। क्रिसिल के कंसल्टेंट राहुल सेठी ने पॉवर प्वाइंट प्रजेंटेशन के माध्यम से सीडीपी का उद्देश्य तथा इसके महत्वपूर्ण पक्षों से अवगत कराया। महापौर ने कहा कि प्लान तैयार करने में काशी की ऐतिहासिकता, पौराणिकता को ध्यान में

- महापौर की अध्यक्षता में बनी दो कमेटीयां, एक और का होगा गठन
- सुझाव पर 10 माह में तैयार होगा डेवलपमेंट प्लान

रखा जाएगा। सीडीपी तैयार करने के लिए पॉलिसी कमेटी, तकनीकी कमेटी और नागरिक कमेटी बनाने का निर्णय हुआ। पॉलिसी कमेटी में महापौर की अध्यक्षता में नगर आयुक्त और सभी संबंधित विभागों के प्रमुख होंगे। तकनीकी कमेटी में सभी विभागों के इंजीनियर होंगे। जो पॉलिसी कमेटी के प्रोजेक्ट के तकनीकी पक्ष की जांच करेगी। इसके साथ ही शहर के प्रबुद्ध लोगों की नागरिक कमेटी का भी गठन होगा। रिवाइज सीडीपी 10 माह में तैयार होगी। बैठक में नगर आयुक्त आरपी सिंह, जीएम जलकल वीके पांडेय, नगर निगम, वीडिए, पीडब्ल्यूडी, पर्यटन, परिवहन, जलनिगम, गंगा प्रदूषण नियंत्रण इकाई, डूडा, ट्रैफिक, आदि विभागों के प्रतिनिधि उपस्थित थे।

Formation of committees

The process for preparation of the CDP is based on the principles of participation, stakeholder involvement and greater interaction between the various urban institutions. Given the complex institutional arrangements for planning, implementing and managing urban infrastructure and service delivery, VMChas constituted two committees - CDP Policy Committee and CDP Technical Committee for preparing the CDP.

The members of these committees are listed below –

CDP Policy Committee

- Mayor, VMC
- Municipal Commissioner, VMC
- Add. Municipal Commissioner, VMC
- Secretary, Varanasi Development Authority
- Project Officer, DUDA
- General Manager, Jal Kal
- Chief Engineer, Jal Nigam
- Regional Manager, Transport
- Health Officer/CMO, Health Department, VMC
- Chief Town Planner, Town and Country Planning Department
- Chief Engineer, VMC
- Project Manager, C&DS
- Superintending Archaeologist, Archeological Survey of India
- Regional Tourist Officer, Tourism Department
- Regional Officer, UP Pollution Control Board
- Dy. Controller Civil Defense, Disaster Management Department
- Chief Treasury Officer, Accounts, VMC
- CTAO, Taxation, VMC
- ADMC, District Administration
- SP, Traffic
- Chief Fire Officer
- Nodal Officer, VMC
- Project Implementation Unit (PIU), Varanasi
- Any other representatives which VMC may wish to include at a later stage, for example local NGOs.

CDP Technical Committee

- Land Use and Infrastructure
 - ◆ Chief Engineer, VMC
 - ◆ Superintendent Engineer, PWD
 - ◆ Executive Engineer, VDA
 - ◆ Project Manager, C&DS
 - ◆ Divisional Engineer, North Eastern Railways
 - ◆ Divisional Engineer, Northern Railways
 - ◆ Assistant Engineer, DUDA
 - ◆ Regional Manager, Transport
- Municipal Institutional Strengthening
 - ◆ Municipal Commissioner, VMC
 - ◆ Additional Municipal Corporation, VMC
 - ◆ Chief Accounts and Finance Officer, VMC
- Environment, Sustainable Development & Disaster Mitigation
 - ◆ Regional Officer, UP Pollution Control Board
 - ◆ Dy. Controller Civil Defense, Disaster Management Department
- Social & Livelihoods and Local Economic Development
 - ◆ Executive Engineer, Housing Board Department
 - ◆ Assistant Engineer, DUDA

- Heritage, Conservation, Culture & Tourism Development
 - ◆ Regional Tourist Officer, Tourism Department
 - ◆ Superintending Archaeologist, Archeological Survey of India
- Water supply, sewerage and SWM
 - ◆ Superintendent Engineer, Jal Nigam
 - ◆ General Manager, Ganga Pollution Board
 - ◆ Executive Engineer, Jal Kal
 - ◆ Project Manager, C&DS
- Nodal Officer, VMC
- Project Implementation Unit (PIU), Varanasi
- Any other representatives which VMC may wish to include at a later stage

Attendance Sheet

नगर निगम, वाराणसी

पुनिरिक्षित सिटी डेवलपमेंट प्लान की बैठक दिनांक : 06.09.2013 का कार्यवृत्त


सी0बी0यू0डी0 योजनान्तर्गत किसिल एडवाइजरी द्वारा तैयार की जा रही पुनिरिक्षित सिटी डेवलपमेंट प्लान के सम्बन्ध में मा0 महापौर महोदय के अध्यक्षता में बैठक आयोजित की गयी जिसमें निम्नलिखित अधिकारी उपस्थित रहें।

1. मा0 महापौर, नगर निगम, वाराणसी।
2. नगर आयुक्त, नगर निगम, वाराणसी।
2. सचिव, विकास प्राधिकरण, वाराणसी।
3. अपर नगर आयुक्त, नगर निगम, वाराणसी।
4. महाप्रबन्धक जलकल, नगर निगम, वाराणसी।
5. महाप्रबन्धक जलकल, भगवानपुर, नगर निगम, वाराणसी।
6. निदेशक, अर्बन प्रेविटस, किसिल, हैदराबाद।
7. नगर स्वास्थ्य अधिकारी, नगर निगम, वाराणसी।
8. मुख्य अभियन्ता, नगर निगम, वाराणसी।
9. मुख्य वित्त एवं लेखाधिकारी, नगर निगम, वाराणसी।
10. मुख्य नगर लेखा परीक्षक, नगर निगम, वाराणसी।
11. परियोजना अधिकारी, डूडा, विकास भवन, वाराणसी।
12. श्री एस0के0 उपाध्याय, सहायक अभियन्ता, विकास प्राधिकरण, वाराणसी।
13. परियोजना क्रियान्वयन इकाई, जे0एन0एन0यू0आर0एम0।

बैठक में किसिल टीम द्वारा वर्तमान सी0डी0पी0 के रिवीजन की आवश्यकता एवं निर्माण की चरणबद्ध प्रक्रिया के विषय में विस्तृत जानकारी दी गयी। बैठक में निम्नलिखित निर्णय लिये गये।

- 1- अपर नगर आयुक्त, नगर निगम, वाराणसी को उक्त कार्य हेतु नगर आयुक्त द्वारा नोडल अधिकारी नामित किया गया।
2. बैठक में सी0डी0पी0 पालिसी कमेटी के गठन हेतु निम्नलिखित सदस्यों के नाम प्रस्तावित किये गये।
 - मा0 महापौर, नगर निगम, वाराणसी।
 - नगर आयुक्त, नगर निगम, वाराणसी।
 - अपर जिला मजिस्ट्रेट, नगर, वाराणसी।
 - पुलिस अधीक्षक, यातायात, वाराणसी।

क्रमशः


 अपर नगर आयुक्त, वाराणसी

Interim Stage Workshop

Minutes of the meeting

Venue Varanasi Municipal Corporation

Held on Wednesday, 18th December 2013

- The meeting was chaired by Honorable Mayor and attended by Assistant Municipal Commissioner, department as well as para-statal representatives and PIU members.
- The CRISIL team initiated the meeting by giving a brief about the CBUD programme and the need to revise the CDP. Thereafter, the CDP preparation process was presented to the including key CDP highlights, guidelines and the approach and methodology being adopted for revision of CDP.
- CRIS team presented the current status and key issues for the following sectors –
 - ◆ Water supply
 - ◆ Sewerage and sanitation
 - ◆ Storm water drain
 - ◆ Roads and transportation
 - ◆ Solid waste management
 - ◆ Basic services to urban poor
 - ◆ Land use
 - ◆ Tourism
 - ◆ Municipal finance
 - ◆ Social services – education, fire, recreation etc.
 - ◆ Environment
- Representatives from Jalkal suggested that some of the data being used for analysis may need to be re-verified. It was suggested that CRISIL team members would discuss with General Manager, Jalkal for all data points related to Water Supply and Sewerage and finalize the data points. It was further suggested that CRISIL team should get a sign-off from all respective department/para-statal heads on all data-points
- Based on the city level assessment, the SWOT analysis was discussed. The committee members were in agreement to the findings and suggested a few additions like including availability of water as strength and 30% of the population living in slums as a weakness.
- The vision and status of the existing CDP was also discussed
- The Honorable Mayor asked CRIS and PIU, VMC to organize a similar meeting wherein all the key department/para-statal heads are present. The agenda for the meeting should be shared in advance and circulated to all concerned so that meaningful contributions may be made by everyone present

Attendance

विशेष सभासदों द्वारा किया गी या सके नियुक्त की वी पी की संख्या केस विना 18.12.2013

क्र.सं.	नाम	पदा का नाम	स्थिति
1	श. मन्मथ शर्मा	श. मन्मथ शर्मा	
2	श. मन्मथ शर्मा	अध्यक्ष	
3	श. मन्मथ शर्मा	CRISIL	
4	श. मन्मथ शर्मा	CRISIL	
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20	श. मन्मथ शर्मा	श. मन्मथ शर्मा	

क्रिसिल एडवाइसरी द्वारा किया गया - ...
क्रिसिल द्वारा किए गए या की विचारणा की गई थी, जो नवीका केक विभाग 08/12/2014

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Focused group discussions (FGDs)

Focused group discussions were held in Varanasi between 17th and 19th September 2014. Six sessions were conducted over three days.

Focused group discussions	
Meeting Agenda	Group I: Water supply Group II: Sewerage, solid waste management, and storm water drains, and Municipal Finance Group III: Urban planning, urban poor and housing Group IV: Urban transport Group V: Environment, heritage, tourism and disaster management Group VI: Local economic development
Date of meeting	17 th September to 19 th September 2014
Place/Location	Meeting Room, Varanasi Development Authority, Varanasi
Discussion Notes	The agenda of the FGDs was to present CRISIL's findings on sector issues, and discuss the strategies and projects to mitigate the sector issues with the stakeholders. The suggestions provided by the stakeholders are listed in the table below:

Sector	Issues	Suggestions	Projects
WATER SUPPLY			
	<ol style="list-style-type: none"> Land acquisition for treatment plants Absence of 24X7 water supply leads to disruption of supply of water supply User charges have not been revised since 1998; Absence of political will in revising user charges Separate account for water supply and sewerage are not being maintained. So it is not possible to exactly estimate cost recovery for water supply and sewerage individually Quality of ongoing works is not good because of insufficient number of technical staff and lack of technical capacity Quality of drinking water is an issue. There are instances of drinking water mixing with sewerage Complete asset inventory is not available and Autocad drawings of water supply network is also not available Lack of awareness camps to educate people to pay user charges Lack of coordination between VMC, VDA and Jal Nigam leading to road cutting multiple times 	<ol style="list-style-type: none"> Water supply production and metering of connections should be synchronized Recommendation/strategies of ongoing NRW study should be incorporate in CDP 24X7 water supply on pilot basis should be explored in Konia Existing system should be upgraded for 24X7 water supply system Tender for metering has not been awarded, so the cost should be included in the projects proposed under CDP Early commissioning of projects will support the political will to revise tariff and also increase the willingness to pay for user charges 	<ol style="list-style-type: none"> Revise cost estimates of replacement of old water supply pipelines from Rs. 120 Cr. to Rs. 170 Cr. Cost of house connections i.e. Rs. 40 Cr. to be included SCADA system worth Rs. 70 Cr. proposed Rs. 21 Cr. for institutional level training and governance Water quality assessment units proposed
SEWERAGE			
	<ol style="list-style-type: none"> Current sewerage network coverage is only 40%; existing system is unplanned 203 community toilets are to be constructed under JICA project, however, only 85 sites are identified so far, lack of availability of land is an issues 	<ol style="list-style-type: none"> Community toilets should be spread across city, and not just in slums For future requirement, the option of decentralized STPs should be explored Synchronized planning while commissioning of any project ie. STP to 	<ol style="list-style-type: none"> 50 MLD STP at Ramnagar needs to be removed from the proposal list Mechanized equipment required for cleaning of drains Replacement of sewerage network

Sector		
Issues	Suggestions	Projects
3. Complete asset inventory is not available and Autocad drawings of sewerage network is also not available 4. Sewer lines laid but are not connected to houses as the STP is not ready 5. Inadequate number of public toilets in Shivpur area	start treatment first and then the connections in it could be added in phases 4. Development Control Rules (DCR) document should mention that the housing complex/townships above 3000 Sq. M to have a in-house STP 5. If land is not available, VMC should explore leasing of land for construction of community toilets 6. Avoid dumping of garbage in sewer lines or regular cleaning of sewer lines 7. The flow of waste water on Ramnagar side into river Ganga should be restricted	in cis-Varuna - Rs. 765 Cr. (includes branch sewer and STP of 50 MLD) 4. Pipelines for reuse of treated water should be laid. 20% in phase I and 80% in phase II.
SOLID WASTE MANAGEMENT		
1. No public campaigns for waste management	1. Door to door collection can be explored with the help of an NGO such as Chetna Bharti etc. 2. For future requirement, decentralized approach for treatment plants may be explored 3. Sensitization drives should be undertaken to promote segregation of waste 4. Fines should be enforced for littering on waste on streets	1. Mechanized slaughter houses should be planned
STORM WATER DRAINS		
1. Storm water drains are not connected as per contours 2. There are still 8-9 drains on Ghats leading to river Ganga. These drains carry waste water in them.	1. Realignment of existing drains is required as per contour maps 2. Secondary and tertiary drainage network needs to be developed further 3. To avoid flow of waste in drains, filters should be placed 4. The silt cleared from	1. De-silting of existing ponds

Sector		
Issues	Suggestions	Projects
	drains shall be disposed and not just left on road side, so accordingly estimates should be prepared	
Traffic and transportation		
Issues	Suggestions	Projects
1. Varanasi doesn't have a Comprehensive mobility plan (CMP) 2. Inadequate public transport 3. No Public transport in old city 4. Due to narrow lanes and mixed traffic it is difficult to drive motor vehicles in Rajghat, Machoddri, Golghar, Chowk, Gadaulia, Sonarpura and Lanka 5. Lack of designated parking lots in old city area 6. Auto-rickshaws <ul style="list-style-type: none"> a. Auto-rickshaw are not allowed in Chowk and Gadaulia area b. Also not permitted to ply in areas outside VMC limits c. Parking stands for autos need to be developed 	1. CMP should be prepared 2. GIS survey of all the roads should be undertaken 3. Some roads should be earmarked only for pedestrians 4. One way option for rickshaws and auto-rickshaw can be explored on Laurabir-Chowk and Maidagin road etc 5. To improve public transport in old city small buses should be explored 6. Rail connectivity between Sarnath and Cant Station, and Babatpur and Sarnath should be explored 7. Road widening – Ranvir Sanskrit School, Sheesh Mahal Road and Cant station to Lanka 8. All Ghats need to be linked with some form of public transport (e-rickshaw, travellers or bicycling) 9. Bus parking at various places to be explored 10. Around 270 buses ply to Shakti Nagar daily and leading to traffic congestion. The bus stand needs to be shifted to reduce congestion 11. To improve traffic flow, signalization to be done at all important junctions 12. New bridges to be built across river Ganga so that the city could be easily be connected and	1. Traffic management on Dashashwamedh Ghat-Girigaghar-Laurabir stretch should be improved on priority 2. Road from Cant. Station to BHU via Sagra, Kamachha, Bhelupur and Lanka shall be widened and developed as the main road of the city 3. Subway for pedestrians on Rathyatra Crossing 4. Rail over bridge from Kajjapura to Sahipul (1 Km) 5. Mass transport system such as electric coaches needs to be explored on Laurabir to Girijaghar road 6. Flyover from Ashapur to Kajjapura 7. The existing bridge on river Ganga is over 100 years old. A new bridge needs to be planned in its place.

Sector		
Issues	Suggestions	Projects
	<p>sprawled to the other side of the river</p> <p>13. Connectivity of Varanasi with the other neighboring areas to be improved</p>	
Urban planning		
Issues	Suggestions	Projects
<p>1. Lack of funds for implementation of projects proposed in the previous Master Plans</p> <p>2. Since zonal plans are not prepared, the projects have not been implemented</p>	<p>1. Need to decongest old city and mandis</p> <p>2. There is need for cluster development for mandis to reduce congestion in the city</p> <p>3. Open areas shall be planned in pockets of city and not just on the outskirts</p> <p>4. No construction should be allowed in the existing parks</p> <p>5. Transfer development rights (TDR) policy should be promoted and implemented</p> <p>6. New development shall be in conformity with existing structures</p>	
Tourism and heritage		
Issues	Suggestions	Projects
<p>1. There are no facilities on ghats for handicapped and senior citizens</p> <p>2. There is need to improve maintenance of 'Galis'. The 'Galis' as it is are not properly maintained</p> <p>3. Tourist coaches are not allowed to ply in city</p> <p>4. There are no shelter facilities for boatmen on Ghats</p> <p>5. Signage in 'Galis' of old city are lacking.</p>	<p>1. Tourism should be promoted on both sides of the river</p> <p>2. Ghat mobility plans should be prepared</p> <p>3. Additional tourist avenues to be created to attract and retains tourists</p> <p>4. After monsoon/rains, de-silting on ghats needs to be done frequently</p> <p>5. Non-ASI monuments need to be identified, listed, notified and conserved</p> <p>6. Cultural landscapes are spread across the city. There should be identified and protected</p>	<p>1. Ramps to connect all ghats and escalators on ghats</p> <p>2. Electric rickshaws on ghats for handicapped and senior citizens</p> <p>3. Motor boats to cross the river</p> <p>4. Haat near Ramnagar which can be promoted as 'Bunkar City'</p> <p>5. Sound and light show in Samath/Ghats</p> <p>6. Laser shows on Ghats</p> <p>7. Auditorium for</p>

Sector		
Issues	Suggestions	Projects
	<p>7. 'Muths' should be identified and protected</p> <p>8. Original painting should not be disturbed. White washing and painting of heritage structures should not be allowed.</p> <p>9. Structures on Panchkoshi Yatra and Chaurasi Kos Yatra should be conserved</p> <p>10. Pre-paid taxi points should be planned in several locations across the city.</p> <p>11. Boatmen should be engaged for disaster management activities</p> <p>12. Heritage properties along Ghats should be put to some use such as orientation centres, museums etc.</p> <p>13. All buildings including toilets on Ghats should have the same façade</p> <p>14. Need for better flight connectivity with south Indian cities such as Chennai</p> <p>15. Area in and around Samath should be developed to increase number stay period of tourists in Varanasi</p>	<p>cultural shows</p> <p>8. Lighting of monuments such as ManMahal, Aangiri Mosque, Kangan Haveli etc.</p> <p>9. Panchkrosi yatra sthals needs improvement</p> <p>10. Adequate sheds for sitting for boatmen, drinking water and sanitation facilities</p> <p>11. Benches may be placed on the approach roads to Ghats</p> <p>12. Aesthetic lighting on Ghats</p> <p>13. Need to rejuvenate the 'Galis'</p>
Local economic development		
Issues	Suggestions	Projects
<p>1. Mandis and wholesale markets in old city lead to traffic congestion due to loading and unloading of stock</p> <p>2. Lack of hygienic condition in weavers colonies</p> <p>3. Due to frequent power cuts the cost of production of goods goes up</p> <p>4. Traditional craft works such as wood sculptures, stone elephants,</p>	<p>1. Power handlooms can be shifted outside the city in a planned and dedicated cluster with complete infrastructure</p> <p>2. Godowns/warehouse of mandis can be relocated outside the city. This will lead to less traffic congestion and more cleanliness</p> <p>3. Exhibitions should be organized to better market Banarasi Saris</p>	<p>1. Dedicated industrial park for silk weavers on Ghazipur road</p> <p>2. Convention centre in Chaukaghat needs to be renovated</p>

Sector		
Issues	Suggestions	Projects
trademark umbrella etc. are reducing due to lack of marketing support and lack of remunerative prices	<ol style="list-style-type: none"> 4. A marketing platform for vessel making (Thatheri) makers should be provided to market their goods 5. Appropriate training shall be provided to craftsmen and provisioning of better marketing facilities 6. Private operators or PPP may be explored for construction, operation and maintenance of exhibition centres 7. Informal markets could be set up for Hawkers 8. The process of weaving and sale of saris should be decentralized 	
Social infrastructure		
Issues	Suggestions	Projects
<ol style="list-style-type: none"> 1. Lack of facilities for widows, who come from various parts of the city 2. Accessibility for handicapped and senior citizens at government offices is a problem 	<ol style="list-style-type: none"> 1. Lack of public hospitals and schools lacking, particularly in trans-Varuna area 2. Government buildings shall have ramps and lifts to provide better access to handicapped and senior citizens 3. Electric crematoriums should be promoted and the existing electric crematorium should be operationalized 4. In the absence of 24X7 power supply, subsidy on generators should be provided to make the produce competitive 5. Non-renewable source of energy should be promoted 	<ol style="list-style-type: none"> 1. Provisioning of public hospitals and schools 2. Provisioning of housing and basic facilities for widows on Ghats 3. Old age home must be planned
Environment/Disaster Management		
Issues	Suggestions	Projects
<ol style="list-style-type: none"> 1. All ongoing OHTs are constructed in existing parks thus reducing the open spaces and availability of parks 	<ol style="list-style-type: none"> 1. Documentation of buildings along Ghats should be undertaken and weak and dilapidated structures to be identified 	

Sector		
Issues	Suggestions	Projects
<ol style="list-style-type: none"> 2. Inadequate civil defense staff for Disaster Management 	<p>to avoid any disasters</p> <ol style="list-style-type: none"> 2. Fitness certification of buildings should be done frequently to prevent any loss of life 3. Kunds need to be maintained properly 4. Service lift shall be part of building bye-laws 5. There is need to educate people on various disaster response measures 6. Urban forests and Kunds to be mapped and rejuvenated 	
Slums		
Issues	Suggestions	Projects
<ol style="list-style-type: none"> 1. Poor quality of housing 2. Lack of basic infrastructure in many slums 	<ol style="list-style-type: none"> 1. Provisioning of housing facilities and allied infrastructure for people living in slums 2. Need for better employment for people living in slums 	
General		
Issues	Suggestions	Projects
<ol style="list-style-type: none"> 1. Quality of works undertaken under JNNURM is not good 	<ol style="list-style-type: none"> 1. Environmental studies to be undertaken to explore the possibility to relocate tortoise sanctuary 3. Currently as per High Court order, no renovation and new construction can take place within 200 m from the river banks. There is need to relook this order at least renovation and development of infrastructure to be allowed (parking lots, public convenience etc.) 4. Relocation of stray cattle in designated location 5. People owning animals should have license. This will help in estimating their exact number and adequate facilities may 	<ol style="list-style-type: none"> 1. Ambulance for animals 2. Cattle to be relocated to a centralized location (Kamdhenu Nagar/Dudh Nagar)

Sector		
Issues	Suggestions	Projects
	be created	
Municipal Finance		
Issues	Suggestions	Projects
1. VMC's share of 30% for JNNURM projects has been funded by the state government. As per state government it's a loan, However, VMC is treating it as grant. If the amount is treated as grant then it will have huge impact on VMC's finances	1. Property tax should be revised every two years 2. Land monetization can be explored for generating funds 3. There is high potential of rentals from VMC halls 4. Tax on electricity poles shall be levied	



Sector		
Issues	Suggestions	Projects



Attendance

Urban infrastructure and municipal finance

FGD Programme for City Development Plan

Date: 17/9/14 Time: 10:30 Subject: Water Supply Infrastructure

Sl. No.	नाम	पदनाम	विभाग	हस्ताक्षर
1	Apur Singh	Asst. Commr.	Water Supply	[Signature]
2	Balraj Prasad	Asst. Commr.	Water Supply	[Signature]
3	Deep Singh	Asst. Commr.	Water Supply	[Signature]
4	Mahesh Singh	Asst. Commr.	Water Supply	[Signature]
5	Bhaskar Kumar	Asst. Commr.	Water Supply	[Signature]
6	Kamal Prasad	Asst. Commr.	Water Supply	[Signature]
7	N.S. Parikh	Asst. Commr.	Water Supply	[Signature]
8	S.K. Singh	Asst. Commr.	Water Supply	[Signature]
9	Kumar Ram	Asst. Commr.	Water Supply	[Signature]
10	Sudhansu Kumar	Asst. Commr.	Water Supply	[Signature]
11	Pragya Singh	Asst. Commr.	Water Supply	[Signature]
12	Prakash Singh	Asst. Commr.	Water Supply	[Signature]
13	Ravi Singh	Asst. Commr.	Water Supply	[Signature]
14	R.P. Singh	Asst. Commr.	Water Supply	[Signature]

FGD Programme for City Development Plan

Date: 17/9/14 Time: Subject: Water Supply + Infrastructure

Sl. No.	नाम	पदनाम	विभाग	हस्ताक्षर
15	R.S. Singh	Asst. Commr.	Water Supply	[Signature]
16	R.S. Singh	Asst. Commr.	Water Supply	[Signature]
17	B.K. Pandey	Asst. Commr.	Water Supply	[Signature]
18	Suresh Singh	Asst. Commr.	Water Supply	[Signature]
19	Atul Singh	Asst. Commr.	Water Supply	[Signature]
20	S.K. Singh	Asst. Commr.	Water Supply	[Signature]
21	Om Prakash	Asst. Commr.	Water Supply	[Signature]
22	Manish Kumar	Asst. Commr.	Water Supply	[Signature]
23	S.P. Singh	Asst. Commr.	Water Supply	[Signature]
24	S.K. Singh	Asst. Commr.	Water Supply	[Signature]
25	Om Prakash	Asst. Commr.	Water Supply	[Signature]
26	Sandeep Singh	Asst. Commr.	Water Supply	[Signature]
27	Deep Singh	Asst. Commr.	Water Supply	[Signature]
28	Suresh Singh	Asst. Commr.	Water Supply	[Signature]
29	Vijay Singh	Asst. Commr.	Water Supply	[Signature]

FGD Programme for City Development Plan

Date: Time: Subject: Water Supply + Infra

Sl. No.	नाम	पदनाम	विभाग	हस्ताक्षर
30	Manish Kumar	Asst. Commr.	Water Supply	[Signature]
31	Raj Kumar	Asst. Commr.	Water Supply	[Signature]
32	Prakash Singh	Asst. Commr.	Water Supply	[Signature]
33	Suresh Singh	Asst. Commr.	Water Supply	[Signature]

Urban transport

FGD Programme for City Development Plan

Date: 18/9/14 Time: Subject: Urban Transport

Sl. No.	नाम	पदनाम	विभाग	हस्ताक्षर
1	Ravi Singh	Asst. Commr.	Urban Transport	[Signature]
2	Prakash Singh	Asst. Commr.	Urban Transport	[Signature]
3	Deep Singh	Asst. Commr.	Urban Transport	[Signature]
4	Manish Kumar	Asst. Commr.	Urban Transport	[Signature]
5	B.K. Singh	Asst. Commr.	Urban Transport	[Signature]
6	A.K. Singh	Asst. Commr.	Urban Transport	[Signature]
7	Prakash Singh	Asst. Commr.	Urban Transport	[Signature]
8	TP Singh	Asst. Commr.	Urban Transport	[Signature]
9	Atul Singh	Asst. Commr.	Urban Transport	[Signature]
10	Shankar Singh	Asst. Commr.	Urban Transport	[Signature]
11	Kamal Singh	Asst. Commr.	Urban Transport	[Signature]
12	Suresh Singh	Asst. Commr.	Urban Transport	[Signature]
13	Sandeep Singh	Asst. Commr.	Urban Transport	[Signature]
14	Veena Garg	Asst. Commr.	Urban Transport	[Signature]
15	Prakash Singh	Asst. Commr.	Urban Transport	[Signature]

Urban planning and urban poor

FGD Programme for City Development Plan

Date: _____ Time: _____ Subject: Urban Planning + Housing

क्र.सं.	नाम	पदनाम	विभाग	हस्ताक्षर
1.	सत्यनारायण	ज्येष्ठ अभियंता	वाणिक्य विकास	[Signature]
2.	सत्यनारायण	ज्येष्ठ अभियंता	वाणिक्य विकास	[Signature]
	U.S. Barchau	P.O.	DUDA	[Signature]
	S. K. Singh	A.E.	DUDA	[Signature]
	T.P. Singh	A.P.D.	V.D.A.	[Signature]
	m. tomic	Asst. Pln.	T.C.P.	[Signature]
	R. H. Singh	Technology	Development	[Signature]
	K. P. Singh	Asst. Pln.	U.P. Urban	[Signature]
	A.D. Nishu	Asst. Pln.	U.P. Urban	[Signature]
	V.P. Singh	Secretary	U.P. Urban	[Signature]
	Kedar Singh	A.S.	V.D.A.	[Signature]
	S. C. Pandey	Asst. Pln.	V.D.A.	[Signature]
	Manoj Kumar	NGO	H.W.A.	[Signature]
	Prakash Singh	NGO	V.D.A.	[Signature]

FGD Programme for City Development Plan

Date: 18/9/14 Time: _____ Subject: Urban Planning

क्र.सं.	नाम	पदनाम	विभाग	हस्ताक्षर
	Kailash Singh	Asst. Pln.	Urban Planning	[Signature]
	Ashu Kumar	Asst. Pln.	Urban Planning	[Signature]
	Prakash Singh	Asst. Pln.	Urban Planning	[Signature]
	Manoj Kumar	Asst. Pln.	Urban Planning	[Signature]
	Suresh Singh	Asst. Pln.	Urban Planning	[Signature]
	C.P. Singh	Asst. Pln.	Urban Planning	[Signature]
	R.K. Singh	Asst. Pln.	Urban Planning	[Signature]
	Prakash Singh	Asst. Pln.	Urban Planning	[Signature]
	Manoj Kumar	Asst. Pln.	Urban Planning	[Signature]
	Suresh Singh	Asst. Pln.	Urban Planning	[Signature]
	Sudant Singh	Asst. Pln.	Urban Planning	[Signature]
	A.K. Pandey	Asst. Pln.	Urban Planning	[Signature]
	Prakash Singh	Asst. Pln.	Urban Planning	[Signature]

FGD Programme for City Development Plan

Date: 19/10/2014 Time: 11:30 AM Subject: Urban Planning, Housing, DUDA, etc.

क्र.सं.	नाम	पदनाम	विभाग	हस्ताक्षर
	Rajesh Singh	CRISIL		[Signature]
	Uma Chandra	Asst. Pln.	Urban Planning	[Signature]
	Prakash Singh	Asst. Pln.	Urban Planning	[Signature]
	Manoj Kumar	Asst. Pln.	Urban Planning	[Signature]
	Suresh Singh	Asst. Pln.	Urban Planning	[Signature]
	C.P. Singh	Asst. Pln.	Urban Planning	[Signature]
	R.K. Singh	Asst. Pln.	Urban Planning	[Signature]
	Prakash Singh	Asst. Pln.	Urban Planning	[Signature]
	Manoj Kumar	Asst. Pln.	Urban Planning	[Signature]
	Suresh Singh	Asst. Pln.	Urban Planning	[Signature]
	Sudant Singh	Asst. Pln.	Urban Planning	[Signature]
	A.K. Pandey	Asst. Pln.	Urban Planning	[Signature]
	Prakash Singh	Asst. Pln.	Urban Planning	[Signature]

Economic local development

FGD Programme for City Development Plan

Date: 18/9/14 Time: 2:00 PM Subject: Economic Development

क्र.सं.	नाम	पदनाम	विभाग	हस्ताक्षर
	Rajesh Singh	CRISIL		[Signature]
	Uma Chandra	Asst. Pln.	Urban Planning	[Signature]
	Prakash Singh	Asst. Pln.	Urban Planning	[Signature]
	Manoj Kumar	Asst. Pln.	Urban Planning	[Signature]
	Suresh Singh	Asst. Pln.	Urban Planning	[Signature]
	C.P. Singh	Asst. Pln.	Urban Planning	[Signature]
	R.K. Singh	Asst. Pln.	Urban Planning	[Signature]
	Prakash Singh	Asst. Pln.	Urban Planning	[Signature]
	Manoj Kumar	Asst. Pln.	Urban Planning	[Signature]
	Suresh Singh	Asst. Pln.	Urban Planning	[Signature]
	Sudant Singh	Asst. Pln.	Urban Planning	[Signature]
	A.K. Pandey	Asst. Pln.	Urban Planning	[Signature]
	Prakash Singh	Asst. Pln.	Urban Planning	[Signature]

FGD Programme for City Development Plan

Date: _____ Time: _____ Subject: Economic Development II

क्र.सं.	नाम	पदनाम	विभाग	विवरण
1	DR. B. K. DWIVEDI	AC	VMC	CHAIRMAN
2	DR. ATUL GAUTAM	UPP	VMC	MEMBER
3	DR. JAL SANSTHAN	OFFICER	JAL	MEMBER
4	DR. JAL KAAL	OFFICER	JAL	MEMBER
5	DR. JAL NIGAM	OFFICER	JAL	MEMBER
6	DR. JAL STATE ROADWAYS AND TRANSPORT CORPORATION	OFFICER	JAL	MEMBER
7	DR. JAL JICA	OFFICER	JAL	MEMBER
8	DR. JAL TCPO	OFFICER	JAL	MEMBER
9	DR. JAL TRAFFIC POLICE DEPARTMENT	OFFICER	JAL	MEMBER
10	DR. JAL CRISIL	CONSULTANT	CRISIL	MEMBER

Final Workshop

Minutes of the meeting

Date	20 th March 2015
Time	Morning Session- 10:30 AM to 1:30 PM; Afternoon Session- 2:30 PM to 4:30 PM
Place	Karyakarini, Varanasi Municipal Corporation Office, Sigra, Varanasi
Agenda of meeting	Stakeholder discussion on Draft CDP for Varanasi

The workshop was chaired by Mr. B.K Dwivedi, Additional Commissioner, Varanasi Municipal Corporation and coordinated by Mr. Atul Gautam, Urban Planning Officer, PIU Cell of VMC. The participants included officials from various departments of VMC, Jal Sansthan, Jal Kaal, other parastatal agencies, NGO, RWA, business representatives and other stakeholder like:

- Additional Municipal Commissioner, Varanasi
- General Manager, Jal Sansthan
- Chief Fire Officer, Uttar Pradesh Fire Service Department.
- Officials from Jal Nigam
- Officials from UP State Roadways and Transport Corporation
- Representatives from JICA
- Officials from TCPO
- Officials from Traffic Police Department of Varanasi

- Officials from Health Department, VMC
- Officials from UPPCB
- Officials from Audit Department, VMC
- Officials from Finance Department, VMC
- NGO and Officials of DUDA
- Members of Various R.W.A
- Members from Boatman Association
- Members from Autorickshaw Association
- Representative of the Varanasi Vikas Samiti
- Representatives from Various Religious Groups
- Members of PIU, VMC

The detailed list of participants is in the attached attendance sheets.

The consultants CRISIL Risk and Infrastructure Solutions Limited were represented by:

- Brijgopal Ladda, Director
- Sushant Sudhir, Associate

Proceedings:

The stakeholder workshop for Draft CDP of Varanasi was conducted on 20th March 2015 to discuss the views of stakeholder on proposed projects and other strategies suggested in Draft City Development Plan for Varanasi.

The consultants made a detailed presentation on key issues, strategies and projects identified under the CDP were discussed in detail and further suggestions were sought from the stakeholder which shall be incorporated in the final report. Following are the suggestions given by various stakeholders during the workshop:

Discussion points for Varanasi

Meeting Session	Sr. No	Observations	To be incorporated as strategies	Additional Projects to included - Rs. Crores
Session on: Urban Infrastructure, Urban Finance, Urban Planning and Urban Transport	1	With growth in population, vehicular traffic and sprawl of the city, there will arise a future demand for a reliable mass transit project. Hence Metro rail project could be explored by the city.	Feasibility study/alternate analysis to be conducted well in time for the available mass transit facility, to meet the travel demands of the citizens of Varanasi.	30 Km Metro Rail project connecting important destinations could be considered. The cost of Metro for a length of about 30 Km is estimate at Rs. 7500 Cr.
	2	With increasing population and high population density in the city specially in the old areas, the city would be required to be decongested. Therefore a project on Satellite	People could be incentivised in various aspects so that they can relocate from the high density areas of old city into the satellite townships	The total estimated area for development of new township is about 250 Ha. VMC/VDA may explore to develop such township at one or multiple locations based on demand and land availability. The development of Satellite township for an area of

Meeting Session	Sr. No	Observations	To be incorporated as strategies	Additional Projects to included - Rs. Crores
		Township could be included.		250 Ha is estimate at Rs. 660 crores,
	3	As the current landfill site is not in use for quite some time. Improvement of existing landfill and processing plant provision in costing need to be made		A provision of Rs. 15 Cr is made for improvement of the existing landfill site.
	4	Sewage and solid waste has to be carried from various secondary points to the dumping/processing sites. This requires lot of time. Decentralised sewage and solid waste treatment plants could be explored for processing waste on various locations.	At various locations there is huge quantum of generation of organic solid waste, like temples, ghats etc . At these points decentralised solid waste treatment plant could be installed. Certain treatment plants can convert organic waste into manure in 24hrs which could be utilised further.	
	5	Desired benchmark in NRW to be attained.	NRW should be brought to the desired benchmark and then the capacity of water system should be increased as per the demand.	
	6	Need of 50 MLD STP	Through the discussion there has been a need for 50 MLD STP been identified.	The cost of providing 50 MLD STP will be Rs 20 Cr.
	7	Due to the heavy footfall of the pedestrians at the railway station and bus stand, which are located opposite to each other. Footover bridge with mechanised travelator and escalator project could be installed.	Mechanised travelator will encourage the pedestrian to use the footover bridge instead of crossing road directly. The footover bridge could be installed with advertisement sites for the VMC to enhance their revenues streams through	At the desired location installing a mechanised footover bridge will cost Rs 10 Cr which has already been considered in the current CIP.

Meeting Session	Sr. No	Observations	To be incorporated as strategies	Additional Projects to included - Rs. Crores
			ending this advertisement site.	
	8	Identified Auto rickshaw, Taxi stand at various locations to be provided with basic amenities.	VMC need identify spaces for provision of Auto rickshaw, Taxi stand at various locations and at those location amenities like public toilet, resting shelters and drinking water facilities needs to be provided	
	9	Missing links in the current road network, alternate routes, substitute roads, traffic management plan.	Current road network has missing links at various places. To have a uniform traffic movement along the main arteries missing links should be identified and should be replaced. Traffic management plan for smooth flow of traffic should be structured. It will have strategy like identification of one way routes and defined flow of traffic in the city.	
	10	43 Bus shelters on the new routes, workshop and parking for buses.		<p>a) Provision of 43 in number of bus shelters at Rs 4.3 Cr</p> <p>b) Workshop cum parking to be established for the city bus operations at Rs. 10 Cr</p>
	Session on:			
	Local Economic Development, Housing, Urban Poor, Environment, Disaster, Heritage & Tourism	1	Need to establish an Institute for skill development of the guides, arts & crafts and handloom.	Construction of Institute for training and skill development of guides, workers in the industry of arts & craft as well as in handloom at Rs 10 Cr
		2	A project for construction of Museum cum Interpretation centre	Construction of Museum cum Interpretation centre as important socio cultural centre at Rs. 75 Cr.
		3	Project construction for of	Library and Community Centres At the desired location construction of

Meeting Session	Sr. No	Observations	To be incorporated as strategies	Additional Projects to Included - Rs. Crores
		library and community centre for Senior Citizens and facilities for Childrens to de-veloped at appropriate locations - Parks may be explored for developing such facilities.	for senior citizens and facility for children like baalbhawan to be developed at appropriate locations- Parks may be explored for developing such facilities. These parks could also be used for underground community parking space	community centres and library will cost Rs 30 Cr which has already been considered in the current CIP. Renovation of existing parks is also considered in the current CIP at Rs.6 Cr.
	4	City has a need for state of art Sports Complex/Stadium.	For the promotion of event based tourism the city needs 2 state of art sports complex/stadium.	At the desired location construction of good sports complex/stadium will cost Rs. 150 Cr
	5	Night shelters for urban poor.	For urban poor and vulnerable population night shelters should be provided at the desired locations	At desired location VMC/VDA can construct night shelters at Rs.5 Cr
	6	Ramnagar as a heritage city	Ramnagar with a historic background and famous for its Ramlila should be promoted for the heritage and event based tourism.	
	7	Light and sound show at Sarnath		To promote the tourism of Samath light and sound show could be arranged. It would be added along with the provision of light and sound show at ghats in the current CIP at Rs.20 Cr.
	8	Fire hydrant line to be laid/revamped in old city.	The streets of old city are very narrow in which fire vehicle cannot enter therefore provision for the fire hydrant should be there in the old city OHT to be equipped with flange valve so that fire vehicles can have water from the OHT.	Laying of 50 Km of fire hydrant line at Rs. 15 Cr
	9	No cattle bathing in river.	To mitigate rivers from getting polluted the	

Meeting Session	Sr. No	Observations	To be incorporated as strategies	Additional Projects to Included - Rs. Crores
			cattle should not be allowed to bath in the river.	
	10	Civil defence cell to be established as an institute to be added in the strategy.	As per the Civil Defence Act 1968, civil defence institute should be established as an institute for training citizens and officials to be ready for the situations at the time of disaster. City should look into the establishment of this institute	
	11	Craft tour facility to be organised.	City has lot of craft and handloom activities which happens in the old city area. These activities could be trapped by organising a craft tour.	A project on Craft tour facility could be organised at Rs. 10 Cr in the tourism sector

Attendance

Figure 80: Urban Infrastructure and Finance

Sl. No	नाम	पदनाम	विभाग	हस्ताक्षर
1	महेश कुमार	जूनियर सिविल	प्लानिंग	
2	अशोक कुमार	असिस्टेंट	प्लानिंग	
3	बालकृष्ण लाल	सेक्टर	CRISIL	
4	अनिल कुमार	सी.ई.	VMM	
5	अनिल कुमार	प्लानिंग ऑफिसर	प्लानिंग	
6	सुभाष कुमार	असिस्टेंट	प्लानिंग	
7	S. K. Dasgupta	A. A. O.	Regulation	
8	ABHIJIT SINGH	A. A. O.	MINU	
9	Ravi Prakash Singh	SENIOR	आर.ई.डी.	
10	Pratik Dasgupta	असिस्टेंट	जलकर्म	
11	R. S. Dasgupta	असिस्टेंट	जलकर्म	
12	सुभाष कुमार	असिस्टेंट	प्लानिंग	
13	D. S. Dasgupta	असिस्टेंट	प्लानिंग	
14	सुभाष कुमार	असिस्टेंट	प्लानिंग	
15	असिस्टेंट	असिस्टेंट	प्लानिंग	
16	असिस्टेंट	असिस्टेंट	प्लानिंग	

V.P. Dubey	C.D.S. U-24	
Raj Kumar Bose	U.P. and Nigam Varanasi	
Nalanda	F.O. and Nigam Varanasi	
Abhishek Kumar	C.D.S. U-24	
Shri Prasad	HL&O	
Vivek Rai (Civil Engg)	SICA (PMU)	
Sanjay Tripathi	Nigam Varanasi	
Sanjay Kumar (A.O)	SICA (PMU)	
A.K. Swarnam	RS, U-24	

Figure 81: Urban Planning and Urban Transport

CITY DEVELOPMENT PLAN FINAL WORKSHOP
 DATE : 20-03-2015 TIME : SUBJECT: Urban Planning & Transport

क्र. सं.	नाम	पदनाम	विभाग	हस्ताक्षर
1.	Apar Nigam	AMC	V.N.N	
2.	Sushant Saha	Associate	CR&I	
3.	Rajeshwari	Director	C&I	
	Atul Kantam	Urban Planning officer	VMC	
	B.K. Dubey	A.A.O	N.N.V.S	
	Arun Singh	A.O.	N.N.V.	
	Ravi Kantam	Officer	AMC	
	B.K. Pandey	C.M.	N.N.V.	
	R.S. Swarnam	Gen (Urban)	U.P. and Nigam	
	Sanjay Tripathi	Manager	Nigam	
	J.B. Rai	Senior Manager	Nigam	
	Sanjay Kumar	Project Manager	Nigam	
	Harish	Officer	C.A.	
	Atul Kantam	Accountant	Nigam	
	V.P. Dubey	Officer	Nigam	
	Raj Kumar Bose	Officer	Nigam	

V.P. Dubey	C.D.S. U-24	
Raj Kumar Bose	U.P. and Nigam Varanasi	
Nalanda	F.O. and Nigam Varanasi	
Abhishek Kumar	C.D.S. U-24	
Shri Prasad	HL&O	
Vivek Rai (Civil Engg)	SICA (PMU)	
Sanjay Tripathi	Nigam Varanasi	
Sanjay Kumar (A.O)	SICA (PMU)	
A.K. Swarnam	RS, U-24	

Figure 82: Heritage and Economic development Attendance Sheet

CITY DEVELOPMENT PLAN FINAL WORKSHOP
 DATE : 20-03-2015 TIME : SUBJECT: Local Economic Development

क्र. सं.	नाम	पदनाम	विभाग	हस्ताक्षर
	Atul Kantam	Urban Planning officer	VMC	
	Sushant Saha	Associate	CR&I	
	Rajeshwari	Director	C&I	
	Ravi Kantam	Officer	AMC	
	B.K. Pandey	C.M.	N.N.V.	
	R.S. Swarnam	Gen (Urban)	U.P. and Nigam	
	Sanjay Tripathi	Manager	Nigam	
	J.B. Rai	Senior Manager	Nigam	
	Sanjay Kumar	Project Manager	Nigam	
	Harish	Officer	C.A.	
	Atul Kantam	Accountant	Nigam	
	V.P. Dubey	Officer	Nigam	
	Raj Kumar Bose	Officer	Nigam	

The meeting of Technical Advisory Committee (TAC) was conducted on 28th January 2015 to discuss the Draft City Development Plan for Varanasi. The meeting was attended by Officials from MoUD, TCPO officials, VNN officials, CBUD – PMU and CRISIL team.

During the meeting CRISIL team presented the progress update on the Preparation and Revision of City Development Plan for 30 cities. The team leader conveyed that the initiative taken by MoUD in communicating to ULBs on approvals has been positive. Mr. Dinesh Kumar, Director (N-V) discussed city's key issues and hence forward projects linked to it were discussed. Further he made a remark that projects should be identified that provides best solution to the city and also enhances the accessibility of the citizens.

Further detailed discussion on the draft report was held and areas which can help to make the report better were discussed. Officials from VMC provided their comments which were useful in shaping the report in a better format and were successfully incorporated in the report.

Annexure - II

Data gaps

Sr. No	Section	Data gaps as per revised toolkit	Remarks	Criticality information of
1	Demographic profile	Age distribution sex	The latest information on age sex distribution is not available	Medium relevance in CDP
		Migration	The latest information on migration trends is not available	Medium relevance in CDP
		Ward wise population density	Ward wise area is not available with VMC.	High relevance in CDP.
2	Land	Efficiency of the land market and its environmental sustainability	Limited information is available in this regard	Low relevance
3	Social environment	Information pertaining to social inclusion, gender sensitivity and human rights	There is no data pertaining to these topic	Low relevance
4	Infrastructure services	Water supply		
		Breakup of type of connections	The breakup of number of domestic and commercial connections is not available with VMC	Low relevance.
5	Cultural resources	Data on crafts people, heritage professionals	The data on workers specifically involved in crafts making is not available.	Medium relevance. From the data on workers involved in HH industries, no. of heritage and craft professions has been derived through discussions with DIC.

List of ULB Projects and Sub Projects and their Costs

Projects	Investment (Rs. Lakhs)
Water Supply Total	46,900
Refurbishment of old Pipelines	17,500
Refurbishment of intake well	700
Refurbishment of OHTs	6,400
House connections	4,000
SCADA system	7,000
Metering	9,000
Water quality assessment units	200
Training	2,100
Sewerage Sector Total	99,788
UGD Network/ Road Length Covered	8,000
Sewerage Treatment (water supply)	0
Community toilets (in slums)	4,333
Refurbishment/replacement of STP	0
Refurbishment of old pipes	72,900
Public toilets	1,188
Capacity Building	500
Laying of pipes for carrying treated waste water	10,368
Mechanized equipment for sewerage cleaning	500
Construction of New STP (50 MLD)	2,000

Traffic and Transport Total	1,36,052
New Black Top Roads	3,000
Upgrade WBM to BT	5,430
Upgrade Earthen to BT	1,692
Rotary, Junction Improvements Signal Flyovers etc	16,500
Widening of roads	30,000
Widening of rail underbridge - Chaukaghat	2,000
Multilevel parking	12,000
Subway	4,000
Mass transport to link Girigaghar with Laurabir	15,000
Street Lighting	2,964
Storm Water Drain Total	54,185
New Pucca Open Drains	7,680
New Pucca Closed Drains	45,332
Desilting of drains	1,174
Solid Waste Management Total	10,168
Vehicle Capacity Required (Vehicle Carrying Capacity)	4,856
Development of Disposal and Landfillsite (2031)	1,160
Treatment plant	541
Other equipments	1,611
Capacity Building and awareness programme	500
Improvement of Existing Landfil Site	1,500

Other Projects Total	24,038
Old age home	38
Development/renovation of Parks & Play Grounds	630
Resting sheds	420
Urban Governance/ System Modernisation	2,000
Urban Governance - Capacity building	200
Rejuvenation of Panch Pandav Kund, Pushkar Kund and Trilochan-Gola-Nandeshwar Ghats	1,550
GIS Mapping and other studies	2,500
Tree plantation	100
Ducts/Conduits	9,600
DM cell in VMC	500
Convention centre	2,500
Relocation of warehouses	1,000
Street vendors	500
Cattle Shed "Kamdhenu Nagar"	1,000
Night Shelters	500
Craft tour facility	1,000
Total ULB Share	3,277

District wise population

Table 182: District wise population

Name of district	Population as per Census 2001	Population as per Census 2011	% growth in population (2001-11)
Uttar Pradesh	166,197,921	199,812,341	20%

Name of district	Population as per Census 2001	Population as per Census 2011	% growth in population (2001-11)
Allahabad	4,937,266	5,954,391	21%
Moradabad	3,810,983	4,772,006	25%
Ghaziabad	3,314,070	4,681,645	41%
Azamgarh	3,939,916	4,613,913	17%
Lucknow	3,647,834	4,589,838	26%
Kanpur Nagar	4,167,999	4,581,268	10%
Jaunpur	3,911,679	4,494,204	15%
Sitapur	3,619,661	4,483,992	24%
Bareilly	3,618,589	4,448,359	23%
Gorakhpur	3,769,456	4,440,895	18%
Agra	3,621,702	4,418,797	22%
Muzaffarnagar	3,543,362	4,143,512	17%
Hardoi	3,398,306	4,092,845	20%
Kheri (Lakhimpur Kheri)	3,207,232	4,021,243	25%
Sultanpur	3,214,832	3,797,117	18%
Bijnor	3,131,619	3,682,713	18%
Budaun	3,069,426	3,681,896	20%
Varanasi	3,138,671	3,676,841	17%
Aligarh	2,992,286	3,673,889	23%
Ghazipur	3,037,582	3,620,268	19%
Kushinagar	2,891,667	3,564,544	23%
Bulandshahr	3,009,860	3,499,171	16%
Bahraich	2,701,478	3,487,731	29%
Saharanpur	2,896,863	3,466,382	20%
Meerut	2,973,877	3,443,689	16%
Gonda	2,765,586	3,433,919	24%
Rae Bareli	2,872,335	3,405,559	19%
Bara Banki	2,673,581	3,260,699	22%
Ballia	2,760,667	3,239,774	17%
Pratapgarh	2,731,174	3,209,141	18%
Unnao	2,700,324	3,108,367	15%
Deoria	2,714,179	3,100,946	14%
Shahjahanpur	2,464,930	3,006,538	22%
Mahrajganj (Maharajganj)	2,173,878	2,684,703	23%
Fatehpur	2,308,384	2,632,733	14%

Name of district	Population as per Census 2001	Population as per Census 2011	% growth in population (2001-11)
Siddharthnagar	2,040,085	2,559,297	25%
Mathura	2,074,516	2,547,184	23%
Firozabad	2,081,752	2,498,156	20%
Mirzapur	2,074,709	2,496,970	20%
Faizabad	2,088,928	2,470,996	18%
Basti	2,084,814	2,464,464	18%
Ambedkar Nagar	2,026,876	2,397,888	18%
Rampur	1,923,739	2,335,819	21%
Mau	1,854,950	2,205,968	19%
Balrampur	1,682,350	2,148,665	28%
Pilibhit	1,728,108	2,031,007	18%
Jhansi	1,744,931	1,998,603	15%
Chandauli	1,643,251	1,952,756	19%
Farrukhabad	1,570,408	1,885,204	20%
Mainpuri	1,596,718	1,868,529	17%
Sonbhadra	1,504,852	1,862,559	24%
Amroha (Jyotiba Phule Nagar)	1,499,068	1,840,221	23%
Banda	1,501,602	1,799,410	20%
Kanpur Dehat	1,563,336	1,796,184	15%
Etah	1,531,645	1,774,480	16%
Sant Kabir Nagar	1,420,226	1,715,183	21%
Jalaun	1,454,452	1,689,974	16%
Kannauj	1,388,923	1,656,616	19%
Gautam Buddha Nagar	1,105,292	1,648,115	49%
Kaushambi	1,291,993	1,599,596	24%
Etawah	1,338,871	1,581,810	18%
Sant Ravidas Nagar (Bhadohi)	1,353,705	1,578,213	17%
Hathras (Mahamaya Nagar)	1,336,031	1,564,708	17%
Kasganj (Kanshiram Nagar)	1,228,705	1,436,719	17%
Auraiya	1,179,993	1,379,545	17%
Baghpat	1,163,991	1,303,048	12%
Lalitpur	977,734	1,221,592	25%
Shrawasti (Shravasti)	855,985	1,117,361	31%
Hamirpur	993,792	1,104,285	11%
Chitrakoot	801,957	991,730	24%

Name of district	Population as per Census 2001	Population as per Census 2011	% growth in population (2001-11)
Mahoba	758,379	875,958	16%
<i>Source – Census of India</i>			



Ward wise information

Table 183: Ward wise information

Ward No.	Population	Density	Household	Household size	Ward No.	Population	Density	Household	Household size	Ward No.	Population	Density	Household	Household size
1	16890	582	2841	5.95	31	17512	372	3059	5.72	61	12775	136	2072	6.17
2	15411	66	2474	6.23	32	23401	288	3769	6.21	62	8653	865	1541	5.62
3	20303	2255	3270	6.21	33	18923	316	3285	5.76	63	9375	284	1725	5.43
4	8784	47	1614	5.44	34	17985	339	3040	5.92	64	10073	126	1835	5.49
5	16772	39	2667	6.29	35	11845	1076	1791	6.61	65	11663	114	1980	5.89
6	12508	160	1969	6.35	36	18487	1321	3196	5.78	66	13262	1474	2203	6.02
7	17005	106	2554	6.66	37	17363	868	2645	6.56	67	9619	1069	1580	6.09
8	21036	701	3394	6.20	38	15318	104	2229	6.87	68	10046	183	1582	6.35
9	16260	508	2755	5.90	39	9673	440	1473	6.57	69	11167	620	1796	6.22
10	15991	262	2522	6.34	40	9665	604	1610	6.00	70	7628	587	1260	6.05
11	12904	759	2155	5.99	41	9467	451	1716	5.52	71	15368	96	2150	7.15
12	20188	505	3549	5.69	42	11666	1945	1917	6.09	72	10966	161	1611	6.81
13	24582	229	4086	6.02	43	11707	1952	1762	6.64	73	10022	83	1515	6.62
14	8040	103	1374	5.85	44	11044	1578	1859	5.94	74	9889	183	1929	5.13
15	10037	106	1515	6.63	45	10461	227	1703	6.14	75	13957	118	2341	5.96
16	12868	2145	1990	6.47	46	14294	550	1959	7.30	76	12174	870	1959	6.21
17	25862	294	4367	5.92	47	12194	452	1831	6.66	77	14521	315	2484	5.85
18	13512	1689	1950	6.93	48	11243	562	1956	5.75	78	9025	752	1528	5.91
19	19662	158	2912	6.75	49	6854	343	1262	5.43	79	7676	148	1153	6.66

Ward No.	Population	Density	Household	Household size	Ward No.	Population	Density	Household	Household size	Ward No.	Population	Density	Household	Household size
20	13826	42	2039	6.78	50	17037	2434	2267	7.52	80	10161	424	1299	7.82
21	9760	66	1685	5.79	51	11890	126	2027	5.87	81	9404	448	1288	7.30
22	16255	625	2679	6.07	52	13298	1023	2335	5.70	82	9880	130	1408	7.02
23	18840	167	2628	7.17	53	9545	597	1717	5.56	83	10760	537	2006	5.36
24	8513	774	1301	6.54	54	7698	769	1303	5.91	84	7780	63	1015	7.67
25	28986	59	4012	7.22	55	12664	633	1949	6.50	85	12328	169	1711	7.21
26	15020	653	2456	6.12	56	16519	255	2326	7.10	86	11723	234	1630	7.19
27	16438	22	2515	6.54	57	15147	1166	2537	5.97	87	8092	622	1133	7.14
28	19951	190	3167	6.30	58	14665	863	2033	7.21	88	7845	117	1115	7.04
29	15805	1756	2581	6.12	59	10469	523	1658	6.31	89	10236	640	1395	7.34
30	13552	521	2089	6.49	60	10214	162	1828	5.59	90	8614	84	1439	5.99

Varanasi Urban Agglomeration Population

Table 184: Varanasi UA population

Sr. No.	Name	Houesholds	Population
1	Asapur (CT)	971	6,153
2	Bhagawanpur (CT)	1,232	7,269
3	Chandpur (CT)	1,050	6,427
4	Chhitpur (CT)	1,925	12,156
5	Kakarmatta (CT)	1,141	7,377
6	Kotwa (CT)	834	5,825
7	Lahartara (CT)	792	5,124
8	Lerhupur (CT)	1,057	6,934
9	Maheshpur (CT)	866	5,553
10	Maruadih (CT)	1,689	11,228
11	Maruadih Railway Settlement (ITS)	3,284	14,298
12	Phulwaria (CT)	3,282	20,466
13	Ramnagar (NPP)	7,729	49,132
14	Salarpur (CT)	1,656	10,126
15	Sarai Mohana (CT)	761	4,824
16	Shivdaspur (CT)	2,614	16,405
17	Sir Gobardhan (CT)	1,708	11,350
18	Susuwahi (CT)	1,781	10,454
19	Varanasi (CB)	2,760	14,119
20	Varanasi (M Corp.)	190,835	1,198,491
	Total	227,967	1,423,711

Storage reservoirs

Table 185: Storage reservoirs

Sr. No.	Location	Storage type	Capacity	Areas Covered
1	Bhelupur	UGR	2 nos X 25 ML	Bhelupur ward, Part of Nagwa ward, Chauk, Chetganj, Jaitpura, Kotwali and Adampur ward.
2	Maidagin Old	UGR	1.5 ML	Daranagar, Ausanganj, Maidagin, Ishwariganga, Jaitpur, Salempura, Madhyameshwar and other Mahals
3	Maidagin New	UGR	1.5 ML	
4	Rajghat	UGR	1.5 ML	Rajghat, Pralhad ghat, Part of Madhyameshwar, Kayastha tola,

Sr. No.	Location	Storage type	Capacity	Areas Covered
				Chhitanpura, Jalalipura
5	Gopal Bagh	UGR	1.25 ML	Sheshman Bazar, part of Ishwariganga, Udhavpura, Gopal Bagh, Dingiaagaganj, Azad park
6	Beniya	UGR	0.75 ML	Muletan, Haripura, part of Chauk, Resham Karta, Thatheri Bazar, Golagali Mikhadidas, Nandan Sahu lane, Hadaha Sarai
7	Bhelupur	OHT	1.14 ML	Bhelupur and Water works area
8	Tulsipur	OHT	1.0 ML	Sundarpur, Brig enclave colony, Sundarpur village, Dashmi, Batuapura, Gayatri nagar colony, Teliyana square
9	Mogawir area	OHT	1.0 ML	Mogawir colony, Nariya area, Rashmi nagar colony, part of Lanka, Shukulpura, Sankatmochan area
10	Sundarpur area	OHT	1.0 ML	Sundarpur, Brig enclave colony, Sundarpur village, Dashmi, Batuapura, Gayatri nagar colony, Teliyana square
11	Nagar Nigam Park	OHT	1.0 ML	Madhopur
12	Lahartara area	OHT	1.0 ML	Lahartara complete area
13	Sonia area	OHT	1.5 ML	Sonia, Kazipura, Lallapura, part of Aurangabad
14	Beniya area	OHT	1.5 ML	Badi Piyari, part of Kabir chura, Chetganj
15	Banaras Club	OHT	1.2 ML	Golghar, Pakki Bazaar, DIG colony, Varuna Pul, Sikril village, Ardali Bazaar, Khajuri, Makbul Alam road, Pahadpura
16	Mint House area	OHT	0.80 ML	Nadesar, Raj Bazaar, Ghausabad, Mint house area
17	Maladhiya	OHT	1.25 ML	Maladhiya
18	Natiniya Dai	OHT	1.0 ML	Nitiniya Dai, Gautam Vihar, Mirapur Basahi, Taktakpur
19	UP college	OHT	1.0 ML	Bhojubar, Chuppepur, Sushma nagar, Laxmanpur
20	Kadipur	OHT	1.0 ML	Kadipur, Shivpur Bazaar, Shivpur kote, Bharlai
21	Lalpur	OHT	1.0 ML	Pandaypur, Chota Lalpur, Soyepur, Pandaypur colony
22	Pahadiya	OHT	1.0 ML	Ashapur, Mawaiya, Sarnath, Purana pul, Pulkohana, Ashok Vihar, Chanda Chauraha, Paigambarpur
23	Chaukaghat	OHT	1.25 ML	Dhelwariya, Nakkhighat, Shakkar talab, Badi Bazaar, Usmanpura, Kamalgaddha,

Sr. No.	Location	Storage type	Capacity	Areas Covered
				Sanjay Apartment, Aghaganj, Nagkuan, Alayipur
	TOTAL	24	79.8 ML	

Right of way

Table 186: Right of way

Sr. No.	Name of road	Actual in 2011 (m)	Proposed in Draft Master Plan, 2031 (m)
1	Cant station to Rath yatra crossing	15	24
2	Rath yatra crossing to Bhelupur police station	12	18
3	Bhelupur to Durgakund	18	24
4	Durgakund to Lanka crossing	18	18
5	Vjay cinema to BHU gate	-	30
6	Girjaghar to Bhelupur police station	9	18
7	Main post office to Machodari crossing	11	18
8	Rathyatra to Dashashwamedh ghat	12	18
9	Girjaghar to Lahurabir	18	18
10	Kabirchaura women hospital to Vidhyapeeth	-	9
11	Englishiya lines crossing to Lahurabir crossing	24	24
12	Lahurabir crossing to Midagin crossing	-	18
A	Midagin crossing to Kabir crossing	15	18
B	Kabir crossing to Lahurabir crossing	18	18
13	Midagin crossing to main post office	-	24
A	Midagin crossing to Vishwshvarganj post office	14	24
B	Vishvarganj to Golgadda crossing8	20	24
14	Vishvarganj to Rajghat	11	18
15	Lahuravir crossing to Varuna bridge	18	24
16	SSVV to GT road	-	24
17	Shastrinagar crossing to Meramai t-point	18	24
18	Piplani katra to GT road	-	12
19	Lohtiya to GT road	-	12
20	Chaukaghat water reservoir to GT road	-	9
21	Sigra to Aurangabad T-Point	-	18
22	Aurangabad to Nai Sadak	-	12
23	Aurangabad to Laksa Police Station	-	12
24	Byepass Pull to DLW T-Point	24	30

Sr. No.	Name of road	Actual in 2011 (m)	Proposed in Draft Master Plan, 2031 (m)
25	Nariya T-Point to Panchkoshi Marg	-	24
26	Panchkoshi Marg to Jal Sansthan	-	18
27	Byepass to DLW Marg	-	18
28	Byepass to Old Octroi collection point, Lanka	-	18
29	Chhitupur to Aashram	-	18
30	Byepass road to Nayapura Marg	-	18
31	Byepass marg to Ravidas temple	-	18
32	Narrotampur to Byepass marg	-	18
33	Chunar road to Vishwanathpuri	-	18
A	Chunnar road to Sasuvahi marg	-	18
34	Byepass to Chunnar road	-	18
35	Panchkoshi marg to PACC	-	18
36	DLW to Panchkoshi marg	-	24
37	Panchkoshi marg to NH-2	-	30
38	Proposed transport nagar to Byepass	-	18
39	Byepass to NH-2 road	-	18
A	Lahartara to Andhra Pull	24	36
B	Andhra Pull to Rajghat	30	36
40	Lahartara to DLW	-	30
A	NH-2 to Manduadeh railway crossing	18	30
B	Manduadeh to Bajardeha railway crossing	15	30
C	Bajardeha to DLW	18	30
41	DLW to Byepass road	30	45
42	Byepass road to Chunnar road	-	45
43	Rathyatra crossing to overbridhe via Manduadeh railway crossing	21	24
A	Sigra to Mehmurganj	-	12
44	Manduadeh to Madauli GT road	-	30
45	Manduadeh to Lohata railway station	-	24
46	Byepass road to Badhohi road	-	24
47	Lahartara to old NH-2 road	45	66
48	NH-2 govindpur to Dayapur marg	-	24
49	Manoharsarai to NH-56	-	30
50	Lahartara boliya to Vidhaptipur	-	24
51	Sirsa to Sanvarpur to 30 m marg	-	24
52	Bhel to NH-56	-	18

Sr. No.	Name of road	Actual in 2011 (m)	Proposed in Draft Master Plan, 2031 (m)
53	NH-56 to Sirsa via Varuna river	-	24
54	Shivpur railway station to Badohi road	-	24
55	Shivnagar Colony, Badohi road to Harijanpur	-	24
56	Gopalpur, Badohi road to Vidhaptipur	-	24
57	Harua to Ring road to NH-56 to UP College	-	24
58	UP College to Pandaypur crossing	15	24
59	Ardali Bazaar to Sindhaura road	-	18
60	Natiniya dai temple to Shivpur railway crossing	-	18
61	Bhojibir to Marg on Sindhaura marg	-	24
62	Atulanand t-point to railway crossing on bye-pass road	-	36
63	Varunapull to Atulanand t-point	-	30
A	Atulanand t-point to Shivpur School	-	24
64	J P Mehta t-point to Old octroi collection point	18	24
65	Normal school to Shivpur bazaae	12	18
A	Shivpur bazaar to NH-56	-	66
66	Hatiya to Ring road	-	18
67	Chaukaghat to Nadesar t-point	-	24
68	Chaukaghat to police line t-point	21	30
A	Police lines crossing to Bhojuvir	12	24
B	Kachari State Bank to Pandyapur	18	24
69	Makbul Alam Road to Pandyapur	-	18
70	Hukulganj t-point to Pandyapur	12	18
71	Kalimandir to Azamgarh marg	-	18
72	Pandyapur crossing to Bye-pass road	15	24
73	Bye-pass road to Azamgarh marg	24	66
74	GT Marg to Panchkoshi marg	18	18
75	Panchkoshi marg to road towards Chaubepur	-	24
76	Pandyapur to Panchkoshi marg	12	24
77	Aktha Nalla to Balua ghat marg	-	24
A	Gazipur marg to Ashapur marg	18	24
B	Akashpur marg to Balua ghat marg	18	24
78	Kajjakpura to Chaubepur-Babatpur road	-	24
A	Sarnath to Akashpur marg	24	30
B	Akashpur marg to Varunapull	30	30
C	Varunapull to GT Road	15	30

Sr. No.	Name of road	Actual in 2011 (m)	Proposed in Draft Master Plan, 2031 (m)
79	Old pull to nalla meeting Varanasi river	-	18
80	Habailiya marg to 18 m road opposite Varuna river	-	18
81	Pandyapur to Ashapur marg	21	30
82	Ashapur marg to Ghazipur road	-	45
83	Ghazipur road to ring road	-	24
84	Baluaghat to Khalispur	-	18
85	Panchkoshi marg to Kotva	-	18
86	Ghazipur road to 24 m marg	-	18
87	Ghazipur road to Parvatpur marg	-	18
88	Ghazipur road to Sarnath railway station	-	18
89	Sarnath railway station to Sarnath museum	-	24
90	Rangoli garden to village Khaduhi	-	24
91	Baluaghat to Mustafabad marg	-	24
92	Mustafabad marg to Panchkoshi marg	-	18
93	Jaunpur marg to planned ring road	-	45
94	Ghazipur NH-29 to planned ring road	-	45
95	Jaunpur NH-56 to planned ring road	-	45
96	Azamgarh marg to DLW colony	-	18

Source- Master Plan, 2031

Junction improvement required

Table 187: Junction Improvement

Sr. No.	Name of Junction
1	Lanka Crossing
2	Bhelupur Crossing
3	Bhelupur Power House Crossing
4	Kamaccha Crossing
5	Gurubagh Crossing
6	Rathyatra Crossing
7	Sigra Crossing
8	Sajan Crossing
9	Englighiya line
10	Cant Crossing
11	Andhra Pull Crossing

Sr. No.	Name of Junction
12	Chaukaghat Crossing
13	Adampur Crossing
14	Pilli Kothi Crossing
15	Laurabir Crossing
16	Madaigin Crossing
17	PiplaniKatra Crossing
18	KalBhairo Crossing
19	Visheshwarganj Mandir Crossing
20	Gadaulia Crossing
21	Sonarpura Crossing
22	Assi T-Point Crossing
23	Girijaghar Crossing
24	NaiSadak Crossing
25	Sigra Thana Crossing
26	Kachari Crossing
27	Raj Shree Crossing (near L T College)
28	Police lines Crossing
29	Hokulganj Crossing
30	Pandeypur Crossing
31	Kali Mandir Crossing
32	Nadesar Crossing
33	Machodari Crossing

List of Ghats in Varanasi

Table 188: List of ghats in Varanasi

Sr. No.	Name of Ghat	Sr. No.	Name of Ghat	Sr. No.	Name of Ghat
1	Adi Keshava Ghat	29	Jain Ghat	57	Pancaganga Ghat
2	Ahilya Ghat	30	Jalasyai Ghat	58	Panchkota
3	Ahilyabai Ghat	31	Janaki Ghat	59	Pandey Ghat
4	Assi Ghat	32	Jatara Ghat	60	Phuta Ghat
5	Badri Nayarana Ghat	33	Karnataka State Ghat	61	Prabhu Ghat
6	Bajirao Ghat	34	Kedar Ghat	62	Prahalada Ghat
7	Bauli /Umaraoogiri / Amroha Ghat	35	Khirkia Ghat	63	Prayaga Ghat
8	Bhadaini Ghat	36	Khori Ghat	64	Raj Ghat built by

Sr. No.	Name of Ghat	Sr. No.	Name of Ghat	Sr. No.	Name of Ghat
					Peshwa Amrutrao
9	Bhonsale Ghat	37	Lala Ghat	65	Raja Ghat / Lord Duffrin bridge / Malaviya Bridge
10	Brahma Ghat	38	Lali Ghat	66	Raja Gwalior Ghat
11	Bundi Parakota Ghat	39	Lalita Ghat	67	Rajendra Prasad Ghat
12	Chaowki Ghat	40	Mahanirvani Ghat	68	Ram Ghat
13	Chausatthi Ghat	41	Mana Mandira Ghat	69	Rana Mahala Ghat
14	Cheta Singh Ghat	42	Manasarovara Ghat	70	Rewan Ghat
15	Dandi Ghat	43	Mangala Gauri Ghat	71	Sakka Ghat
16	Darabhanga Ghat	44	Manikarnika Ghat	72	Sankatha Ghat
17	Dashashwamedh Ghat	45	Mata Anandamai Ghat	73	Sarvesvara Ghat
18	Digpatia Ghat	46	Meer Ghat	74	Scindia Ghat
19	Durga Ghat	47	Mehta Ghat	75	Shitala Ghat
20	Gaay Ghat	48	Munshi Ghat	76	Shivala Ghat
21	Ganga Mahal Ghat (I)	49	Nandesavara Ghat	77	Sitala Ghat
22	Ganga Mahal Ghat (II)	50	Narada Ghat	78	Somesvara Ghat
23	Genesha Ghat	51	Naya Ghat	79	Telianala Ghat
24	Gola Ghat	52	Naya Ghat	80	Trilochana Ghat
25	Gularia Ghat	53	Nepali Ghat	81	Tripura Bhairavi Ghat
26	Hanuman Ghat	54	Niranjani Ghat	82	Tulsi Ghat
27	Hanumanagardi Ghat	55	Nishad Ghat	83	Vaccharaja Ghat
28	Harish Chandra Ghat	56	Old Hanumanana Ghat	84	Venimadhava Ghat

Existing storm water drainage network

Table 189: Existing storm water drriage network

Sr. No.	Description	Size (m)	Nature Drainage of	Year laid
A Bhelupur & Dashashwamedh Zone				
1	Main drainage from Sarai Nandan market to Assi Nala via Kabir Nagar	1800x1.50x1.80	Channel coveredwith RCC slab	1986
A	Road side drain connected with main drain from Sudamapur, Bezardiha, Duhiapond to Sarai Nandan	1800x0.60x1.20	Channel with RCC slab	1989

Sr. No.	Description	Size (m)	Nature of Drainage	Year laid
	market via Kirihiya.			
B	Teliyana to Sarai Nandan	1100x0.45x0.75	Channel with RCC slab	2000
2	Main drainage from SheelNagar Colony to Assi Nala at the point of SunderpurTihara viaManduadih railway station DLW road	2100	Hume-pipe with dia 1200mm	2002
A	Road side drain connected with main drain fromBazerdiha police chowki toDLW road via Deo Pokhariand Lakharaon.	1200	Hume-pipe with dia. 600mm dia.	2002
3	Main drain from Chetmani to Assi Nala via Ravindrapuri colony.	600	Hume-pipe with dia. 600mm dia.	2002
		300	Hume-pipe with dia. 900mm dia.	2002
4	Road side drain connected with railway main drain from Nirala Nagar to railway colony via lane no. 6	800	Hume-pipe with dia. 300mm dia.	2000
5	Road side drain connected with railway main drain from Chhittipur Tiraha to railway drain via Ghantimill road.	400x0.45x0.45	Open channel	1998
6	Main drain from Hotel Padmini Mahmoorganj to Chaukaghat Vruna river via Shastri Nagar, Sgra Thana	2300x2x(0.9+3.0)/2	Channel with cover slab	1986
A	Road side drain connected with main drain from Lallapura muslim school to Sgra Thana	1000x0.30x(0.60+1.8)/2	Channel with cover slab	1998
B	Road side drain connected with main drain from Chittipur Telephone colony to Sgra Thana	350x0.60x(0.90+1.80)/2	Channel with cover slab	1989
C	Road side drain connected with main drain from Bhadshahbagh colony to Fathamam road	150x0.60x(0.60+0.75)/2	Channel with cover slab	1998
B Adampur Zone				

Sr. No.	Description	Size (m)	Nature of Drainage	Year laid
1	Road side drain from Saraiya Nala police chawki to Varuna River	300x (0.60+(0.9)/2)x1.5	Open channel	1997
		350	Kachcha drain	-
2	Road side drain from Kamali Baba Mazar near Chaukaghat water tank to Nakki ghat turning.	300x0.60x1.2	Open channel	1980
3	Storm water drainage connected with Bakariya Kund from Doshipura ground	140x1.2x1.2	'U' shape openDrain	1982
4	Drainage from Kali Mandir temple to Dhelwaria crossing the G.T. road Chaukaghat	200x1.5x(1.2+1.5)/2	Open Drain	1982
5	Drainage from Kazishahdullapura tube-well to Varuna River via Chaukaghat water tank	950x0.60x1.0	'U' shape pucca	1990
		650	Hume-pipe with dia. 600mm dia.	1990
6	Drainage from Chhohara Chhamuhani to Kamal Garha Slaughter House and from GT road to Vauma River via Shakkar talab pullia	250x0.90x(0.90+1.5)/2	Channel with covered slabs	1972
		320x(1.8+2.75)/2 x2.5	Channel with covered slabs	1972
		600x2.5	Covered slab	-
		400x1.2(1.2+1.5)/2	Kachcha drain	-
		518x1.2x1.5	Kachcha drain	-
7	Drainage from Jalalipura railway line to Shakkar talab pullia	400x0.60x1.0	'U' shape pucca	1987
C Trans Varuna Zone				
1	Road side drainage from Shivpur Safai chauki to Varuna River via Central Jail Road, Sikaural Village and Bheem Nagar.	135x0.60x0.90	Deep drain	1990
		255x0.65x1.00	Deep drain	1990
		570x1.00x1.20	Deep drain	1990
2	Road side drain from Shivpur Lal Kuan to Shivpur Safai Chauki	300x0.45x0.45	Deep drain	1990
	Road side drainage from Natiniadai (Khushahal Nagar) to Varuna River via Bhojuveer Crossing	650x0.45x0.45	Deep drain	1998
		900	Hume-pipe with dia. 600mm dia.	1998
		1100 x 0.90	Open drain	1998

Sr. No.	Description	Size (m)	Nature of Drainage	Year laid
		(0.60+1.20)/2		
3	Road side drainage from Tulsi Vihar Colony to Varuna River via Laxmanpur, Uchawan Lodge colony, Gilat Bazar and Sadar Tehsil	1500	Hume-pipe with dia. 450mm dia.	1997
4	Drainage from Mental Hospital Pullia to Maqbool Alam Road petrol pump near pullia via Police line	400	Hume-pipe with dia. 1600mm dia.	1998
		800	Hume-pipe with dia. 1400mm dia.	1998
5	Drainage from Kharbuja Sayeed Marge to Railway pullia through behind Dainik Jagaran press	600	Hume-pipe with dia. 600mm dia.	2006
6	Drainage from Sanskrit University Main Gate to Chaukaghat Nala	300	Hume-pipe with dia. 900mm dia.	2000
		600	Hume-pipe with dia. 600mm dia.	2001
7	Drainage near from Chandra Chauraha to Narokhar Nala through main road.	600	Hume-pipe with dia. 900mm dia.	2003
		600	Hume-pipe with dia. 600mm dia.	2004
8	Road side drain from Yadav Basti (Ghazipur Road) to Narokhar Nala (Pucca drainage till Income-tax colony)	800	Hume-pipe with dia. 600mm dia.	2004
9	Road side drainage from Pandeypur Crossing near Sudhakar Mahila Mahavidyalaya to Baghawa Nala via Panchkoshi Road	800x1.20x2.1	Open channel	1986

List of slums

Table 190: List of slums

Sr. No.	Name of slum	Ward No.	Population	HHs	Sr. No.	Name of slum	Ward No.	Population	HH	Sr. No.	Name of slum	Ward No.	Population	HH
1	Lacchipura Hukulganj	7	2100	350	71	Murgla tola	25	1030	206	141	Oripura	46	2500	350
2	Hukulganj	7	2000	270	72	Bazardiha	25	5000	1000	142	Amanullapura	46	2635	270
3	Mallahi tola Ghausabad	11	2000	360	73	Jolha	25	2850	570	143	Dulhigadi	46	1000	360
4	Delwariya	11	7175	1328	74	Saraysurjan	13	3599	803	144	Bandhu Kacchibagh	46	1810	1328
5	Guddarpur	10	1182	220	75	Choti Patiya	77	1170	267	145	Lallapura Musalman Basti Lahangpura	37	1050	220
6	Tadiva Sundarpur	10	620	101	76	Badi Patiya	77	2080	440	146	Beniabagh Hariaganj Basti	64	550	101
7	Koyla bazar	42	475	95	77	Shivratapur	77	3190	786	147	Mirbagh Katikan	64	800	95
8	Chittipur Harijan Basti	9	1200	200	78	Lakhrav	77	2860	572	148	Matakund Lallapura Kund	37	700	200
9	Lahartara Bauliya	9	2000	250	79	Navapua Daranagar	22	175	35	149	Sonia west amarnagar hariganj basti	35	355	250

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Sr. No.	Name of slum	Ward No.	Population	HHs	Sr. No.	Name of slum	Ward No.	Population	HH	Sr. No.	Name of slum	Ward No.	Population	HH
10	Lahartara Nai Basti Kabirmath	9	1500	320	80	Choli Maldahiya	45	325	65	150	Lallapura Bada Chakara	37	1350	320
11	Lahartara Misirpur	9	1700	390	81	Madhopur	17	250	40	151	Lallapura Musliman Basti Nai Pokhri	37	1060	390
12	Kamalgadaha	46	3000	600	82	Shivpurva Jai Prakash Nagar	17	3000	500	152	Chandupura	71	900	600
13	Konia Mahmaddpura	34	670	134	83	Sigra Harijan Basti Chandua	17	4500	700	153	Sugga Gadhai	71	1900	134
14	Palangshahi	34	2900	380	84	Chandua	17	1000	150	154	Aalampura	71	2500	380
15	Konia Satti	34	3300	550	85	Chittupur Dayanagar	17	700	140	155	Pathani Tola Chaunhatta Lal Khan	71	4750	550
16	Konia	34	6200	1057	86	Tadiya Chakbihi Gadighat	27	2500	420	156	Sonabhadra Shivala	8	3170	1057
17	Naharpura	41	720	127	87	Nanhupur	29	396	79	157	Kameshwar Mahadev Trilochan Bazaar	41	412	127
18	Fulwaria Dhobiyana	46	1405	281	88	Paigambarpur	27	2717	517	158	Katuapura	42	2165	281

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Sr. No.	Name of slum	Ward No.	Population	HHs	Sr. No.	Name of slum	Ward No.	Population	HH	Sr. No.	Name of slum	Ward No.	Population	HH
19	Senpura Harijan Basti	41	2400	435	89	Bagavanala	29	6875	1112	159	Kudman Shahid	42	3190	435
20	Rajamandir Unchwala	62	167	30	90	Nai Basti Hukulganj	29	3258	611	160	Hasanpura	41	1970	30
21	Kajpura Khurd Sonia	37	4000	800	91	Anaula	26	1540	260	161	Salempura	41	1375	800
22	Faridpur	64	1500	300	92	Mirapur Basahi	6	3859	724	162	Macchodari Park	41	330	300
23	Lahangpura Aurangabad	41	1000	200	93	Maheshpur	3	930	164	163	Naya Mahadev Bhaissaur	66	1640	200
24	Saray Govardhan	41	300	80	94	Paramandpur	3	554	106	164	Bachui Tola Lalghat	41	912	80
25	Manikarnika	41	900	200	95	Navalpur	3	3176	708	165	Trilochan Bazar	41	410	200
26	Kajpura Khurd Jawahir Nagar	71	4920	896	96	Sarouli	6	2327	466	166	Golaghat Kameshwar Mahadev	41	2070	896
27	Pitarkunda Matakund	71	1786	310	97	Narayanpur	5	3250	577	167	Fatak Takli Ali Khan Pakka Ghat	66	570	310
28	Sonia west sonkar basti	71	2833	565	98	Gilat Bazar Kushfal	20	1320	280	168	Teliyanala	41	380	565
29	Bunkar colony nao basti emli	41	1330	320	99	Dindyalpur	16	1963	390	169	Pralhadghat	66	1650	320

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Sr. No.	Name of slum	Ward No.	Population	HHs	Sr. No.	Name of slum	Ward No.	Population	HHs	Sr. No.	Name of slum	Ward No.	Population	HHs
30	Lobor colony	41	1175	235	100	Dayanagar	16	1500	250	170	Bhadasu Ghasiyari tols	47	2100	235
31	Teliabagh	41	1360	240	101	Rasulgadh	16	975	197	171	Rajghat/Kidki yaghat	4	480	240
32	Piyariya pokhari	41	835	160	102	Ruppanpur	16	1442	200	172 and 173	Ambedkar Mahal and Dithori Mahal Ardali Bazar	1	878	194
33	Birdopur	53	1910	376	103	Pulkohna Rajbhar Basti	16	2000	500	174	Khajuri Pakkibazar	1	1632	286
34	Goyanaka Gali	54	750	160	104	Pulkohna	16	1584	281	175	Nadesar chamrouiya rajabazar	15	2225	445
35	Ghasiyari Tola	14	1180	212	105	Varunapul	21	1125	220	176	Golghar kachachari Kasai Basti	1	1583	412
36	Sundarpur	10	1137	235	106	Lakshmi gh at	21	1412	293	177	Gilat Bazar Khatikana	1	2545	509
37	Sundarpur Harijan Basti	10	745	150	107	Nadesar	21	4150	830	178	Suvarbadwa, Sikruai	1	887	203
38	Bhikaripur	13	1160	300	108	Teliabagh Badi Maldahiya	21	2415	483	179	Aktha	36	2932	600
39	Chitapur	28	700	145	109	Jagatganj	21	4000	800	180	Parsurampur	30	2000	317
40	Nevada Nat Basti Patel Basti	28	2880	475	110	Shivpurva	17	2799	585	181	Benipur	30	2000	400

Sr. No.	Name of slum	Ward No.	Population	HHs	Sr. No.	Name of slum	Ward No.	Population	HHs	Sr. No.	Name of slum	Ward No.	Population	HHs
	Guddarpur													
41	Karmajipur	12	2028	448	111	Tulsipur Harijan Basti Panchped wa	12	1558	250	182	Ramrepur	26	1800	350
42	Adityanagar II	28	2143	518	112	Jakhha	12	2090	458	183	Daulatpur	29	1332	350
43	Karoudi	12	3943	801	113	Ranipur	12	7028	900	184	Pandeypur	33	1938	385
44	Adityanagar I	8	1900	469	114	Tahirpur Nagwa	8	1000	200	185	Lalpur Pishaharia	33	500	100
45	Nagwa Harijan Basti	44	1500	250	115	Shakkar Talab	47	4750	950	186	Taktakpur	33	1200	300
46	Bhadaini Daviyarbir	10	2800	450	116	Fulwaria	48	1700	330	187	Pagalkhana chamrouiya	33	550	150
47	Saraynandan ABCDE	10	3900	806	117	Navapura	47	600	120	188	Sarang Talab	27	1000	160
48	Saratnandan Khurd	10	749	140	118	Om Kaleswar	47	1500	300	189	Pahadiya	36	1560	214
49	Batuapura	10	950	200	119	Chittanpur a	47	2775	445	190	Kajishahdullapur	27	4598	1275
50	Saraynandan Shukulpura	10	1560	255	120	Adampura	47	340	68	191	Mawaiya	27	3420	650
51	Shukulpura	10	4700	910	121	Ansarabad	71	1250	250	192	Baratpur	30	1116	206
52	Badi Gaibi	53	2587	504	122	Kajatpura	71	210	44	193	Khajuhi	30	1804	264
53	Vinayaka Harijan Basti	53	1500	300	123	Laat Bhairav	50	2730	502	194	Singhpur Harijan Basti	30	1000	133

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Sr. No.	Name of slum	Ward No.	Population	HHs	Sr. No.	Name of slum	Ward No.	Population	HH	Sr. No.	Name of slum	Ward No.	Population	HH
						Saraiyya								
54	Khojwa	43	2451	453	124	Saraiyya Malibagh	50	2450	490	195	Ghurahapur	30	1840	300
55	Jyodhipur	25	2000	527	125	Saraiyya Bharouti	50	2675	535	196	Haweliya	27	1400	244
56	Jivadhipur	10	523	110	126	Rajbhanda r	50	2000	400	197	Kadipur	1	1090	218
57	Manikpur	2	605	110	127	Saraiyya Dakshini	50	2750	550	198	Chataripur	3	530	103
58	Sudamapur	2	2237	403	128	Saraiyya Uttari	50	2500	500	199	Shivpur Harijan Basti Muslim basti	19	1230	246
59	Shankuldhar a	2	615	108	129	Amarpur Batlohiya	11	7650	1530	200	Chupperur	5	1231	261
60	Nawabganj	14	3085	617	130	Shaitputri	11	4800	700	201	Shivpur Kot Panchkoshi	19	2075	427
61	Durgakund	14	2000	354	131	Nakkhighat	11	4050	810	202	Indrapur	1	1525	305
62	Bhogabir	32	2000	470	132	Jalalipura Alaipura	71	4750	950	203	Indrapur Harijan Basti	1	272	61
63	Nariya harijan Basti Sakethnagar	32	6273	1477	133	Ausanganj Chohara	41	1400	260	204	Tarna	3	474	90
64	Sonarpura	64	750	150	134	Jainpura chohara	47	1950	390	205	Bharlai	3	1854	406
65	Jangambadi Dashshwamedh	64	2159	475	135	Usmanpura	47	1095	219	206	Usarpurwa	3	455	83

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Sr. No.	Name of slum	Ward No.	Population	HHs	Sr. No.	Name of slum	Ward No.	Population	HH	Sr. No.	Name of slum	Ward No.	Population	HH
66	Ramapura	64	2000	450	136	Khwajapura	47	1225	245	207	Shuddhipur	3	1657	284
67	Revadi Talab	72	350	70	137	Salarpura	47	2500	500	208	Kathautliya	3	1040	188
68	Tulasipur Harijan Basti	77	1810	331	138	Bakriya Kund	47	1945	389	209	Bhaktapura	3	677	122
69	Makdumbaba	13	205	41	139	Rasulpura	47	3750	750	210	Lakshmanpur	5	1357	271
70	Karukhinagar	13	1355	271	140	Bakrabad	27	2435	487					

Source – draft Slum Free City, Varanasi

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City Development Plan for Varanasi

List of ASI protected monuments

Table 191: List of ASI protected monuments

Sr. No.	Name of monument	Location
1	Cemetery	Chaitganj
2	Remains of a Fine Massive brick fort	Chandravati
3	Ancient Buddhist Site known as Cahukhandi stupa	Ganj and Baraipur
4	Old Ruined Kot (Fortress)	Hatimpur
5	Ancient buddhist site of Sarnath, including the Dhamek stupa, Jagat Singh Stupa, the monastery of Major Kitlee and all the monuments excavated by Mr. Certal in 1984-85 with an area of 53.04 acres, including government land measuring 21.94 acres	Paraipur, Khajuhi Ganj(Varanasi)
6	Closed Cemetery	Rajghat
7	Tomb of Lal Khan	Rajghat
8	The whole area to the east of the buddhist site explored by the Archaeological department extending upto the limits of the lake named Narokhar	Sarnath
9	Graves of European Officers	Shivala
10	Ancient Mound	Tilmapur
11	Dharahra Mosque (Aurangzeb Mosque)	Varanasi
12	Lt. Col. Pogson's Tomb	Varanasi
13	Mutiny Monuments	Varanasi
14	Observatory of Mansingh	Varanasi
15	Pahlapur inscribed Lat or monolith now standing in the compound of the Queen's College	Varanasi
16	Tablet on the Treasury Building	Varanasi
17	Telia Nala Buddhist Ruins	Varanasi
18	Two Graves at Old Artillery lines	Varanasi
19	Victoria Memorial	Varanasi
20	Dharahra Mosque (Aurangzeb Mosque)	Varanasi
21	Lt. Col. Pogson's Tomb	Varanasi
22	Mutiny Monuments	Varanasi
23	Observatory of Mansingh	Varanasi
24	Pahlapur inscribed Lat or monolith now standing in the compound of the Queen's College	Varanasi
25	Tablet on the Treasury Building	Varanasi
26	Telia Nala Buddhist Ruins	Varanasi
27	Two Graves at Old Artillery lines	Varanasi

Sr. No.	Name of monument	Location
28	Victoria Memorial	Varanasi

Source - Archaeological Survey of India

Municipal finance

Table 192: Municipal finance

S. No.	Account Head	Income and Expenditure Statement					Growth in Income & Expenditure					
		2008-09	2009-10	2010-11	2011-12	2012-13	2008-09 to 2009-10	2009-10 to 2010-11	2010-11 to 2011-12	2011-12 to 2012-13	SAGR (2008-09 to 2012-13)	CAGR (2008-09 to 2012-13)
		Rupees Lakh					Percentage per Annum					
	Opening Balance	3,888.8	17,819.7	12,656.2	9,368.4	12,839.7						
Part I - Revenue Account												
I	Revenue Income											
	A Own Sources											
	Tax Revenue											
	1 Property Tax	1,185.9	1,358.2	1,383.5	2,500.0	2,600.0	14.5	1.9	80.7	4.0	25.3	21.7
	2 Consolidated Tax	132.6	138.1	233.9	408.0	408.0	4.1	69.4	74.4	0.0	37.0	32.5
	Sub-Total (Tax Revenue)	1,318.4	1,496.3	1,617.4	2,908.0	3,008.0	13.5	8.1	79.8	3.4	26.2	22.9
	Water Account											
	1 Water Charges	1,538.0	1,444.9	1,593.4	3,360.5	3,700.0	-6.1	10.3	110.9	10.1	31.3	24.5
	2 Water Tax						-	-	-	-	-	-
	3 Other income (Surcharge, New Connection Fee etc)	77.6	137.1	98.1	154.0	165.0	76.8	-28.4	56.9	7.1	28.1	20.8
	Sub-Total (Water Account)	1,615.5	1,582.0	1,691.5	3,514.5	3,865.0	-2.1	6.9	107.8	10.0	30.6	24.4
	Sewerage Account											

S. No.	Account Head	Income and Expenditure Statement					Growth in Income & Expenditure					
		2008-09	2009-10	2010-11	2011-12	2012-13	2008-09 to 2009-10	2009-10 to 2010-11	2010-11 to 2011-12	2011-12 to 2012-13	SAGR (2008-09 to 2012-13)	CAGR (2008-09 to 2012-13)
		Rupees Lakh					Percentage per Annum					
1	Sewerage/Sanitation Tax	142.5	250.8	330.6	327.7	340.0	76.0	31.8	-0.9	3.8	27.7	24.3
	Sub-Total (Sewerage Account)	142.5	250.8	330.6	327.7	340.0	76.0	31.8	-0.9	3.8	27.7	24.3
	Non Tax Revenue- Others											
1	Rent from municipal properties	179.5	223.6	159.8	1,117.2	1,327.4	24.5	-28.5	599.3	18.8	153.5	64.9
2	Building permit fees	346.9	576.0	917.4	1,100.0	2,200.1	66.0	59.3	19.9	100.0	61.3	58.7
3	Fees from licenses	12.5	12.6	14.5	22.1	22.3	0.4	15.7	52.0	0.7	17.2	15.5
4	Road cutting fees	96.4	450.5	849.4	1,000.0	1,200.0	367.4	88.6	17.7	20.0	123.4	87.8
5	Others	24.7	31.7	35.4	86.3	74.5	28.3	11.8	143.4	-13.7	42.5	31.8
	Sub-Total (Non Tax Revenue)	660.0	1,294.3	1,976.6	3,325.6	4,824.2	96.1	52.7	68.2	45.1	65.5	64.4
-	Tax + Non-Tax Revenue	3,736.5	4,623.4	5,616.2	10,075.8	12,037.2	23.7	21.5	79.4	19.5	36.0	34.0
	B Assigned Rev, Grants & Contributions											
1	General programs	28.3	3.8	2,282.2	750.0	750.0	-86.6	59,957.6	-67.1	0.0	14,951.0	126.9
2	Life insurance for state govt. employees	19.2	17.6	4.3	30.0	30.0	-8.2	-75.4	591.2	0.0	126.9	11.8
3	Education grant	6.2	24.0	10.0	38.0	40.0	287.7	-58.4	280.0	5.3	128.7	59.4
4	Other state government grants	154.0	-709.9	205.8	300.0	300.0	-560.9	-129.0	45.8	0.0	-161.0	18.1
6	Family planning	70.0	50.1	89.7	80.0	100.0	-28.5	79.2	-10.8	25.0	16.2	9.3
	Total Grants	277.7	-614.4	2,592.0	1,198.0	1,220.0	-321.2	-521.9	-53.8	1.8	-223.8	44.8

S. No.	Account Head	Income and Expenditure Statement					Growth in Income & Expenditure						
		2008-09	2009-10	2010-11	2011-12	2012-13	2008-09 to 2009-10	2009-10 to 2010-11	2010-11 to 2011-12	2011-12 to 2012-13	SAGR (2008-09 to 2012-13)	CAGR (2008-09 to 2012-13)	
		Rupees Lakh					Percentage per Annum						
	& Contributions												
	Total Revenue Income	4,014.2	4,009.1	8,208.2	11,273.8	13,257.2	-0.1	104.7	37.3	17.6	39.9	34.8	
II	Revenue Expenditure												
	A												
	Salaries/ Wages												
1	Finance and Revenue Department	432	464	561	725	635	7.5	20.8	29.3	-12.4	11.3	10.1	
2	General Administration	243	285	323	443	396	17.3	13.4	37.0	-10.7	14.3	13.0	
3	Public Works	363	393	471	642	605	8.3	19.9	36.3	-5.8	14.7	13.6	
4	Public Health Department	2,990	3,014	3,254	4,740	4,505	0.8	7.9	45.7	-5.0	12.4	10.8	
5	Solid Waste Management						-	-	-	-	-	-	
6	Others Departments	428	222	140	160	150	-48.2	-36.8	14.3	-6.3	-19.2	-23.0	
7	Pensions, PF and others	659	826	859	1,600	2,000	25.2	4.0	86.3	25.0	35.1	32.0	
8	Water Works	1,242	0	2,073	853	2,155	-100.0	-	-58.9	152.7	-2.0	14.8	
9	Sewerage/Sanitation						-	-	-	-	-	-	
	Total Salary Expenses	6,356.7	5,204.2	7,681.4	9,163.1	10,446.3	-18.1	47.6	19.3	14.0	15.7	13.2	
	B												
	Operation & Maintenance												
1	General Administration	373	320	1,044	3,538	5,470	-14.2	226.5	239.0	54.6	126.5	95.7	
2	Public Works	117	120	148	225	210	2.4	23.1	52.1	-6.7	17.7	15.7	

S. No.	Account Head	Income and Expenditure Statement					Growth in Income & Expenditure						
		2008-09	2009-10	2010-11	2011-12	2012-13	2008-09 to 2009-10	2009-10 to 2010-11	2010-11 to 2011-12	2011-12 to 2012-13	SAGR (2008-09 to 2012-13)	CAGR (2008-09 to 2012-13)	
		Rupees Lakh					Percentage per Annum						
3	Education, Sports and Youth Welfare	1	1	1	6	6	-24.2	-27.5	1,000.0	0.0	237.1	56.8	
4	Public Health Department	47	25	12	446	426	-47.6	-49.4	3,495.9	-4.5	848.6	73.7	
5	Solid Waste Management	210	197	215	212	212	-6.2	9.5	-1.4	0.0	0.4	0.3	
6	Zonal & Others Departments	74	69	49	128	121	-6.5	-28.8	159.5	-5.5	29.7	13.0	
7	Water Works	920	0	2,714	74	2,458	-100.0	-	-97.3	3,216.2	1,006.3	27.9	
8	Sewerage/Sanitation						-	-	-	-	-	-	
	Total O&M Expenses	1,741.4	730.9	4,183.0	4,629.2	8,903.1	-58.0	472.3	10.7	92.3	129.3	50.4	
	Total Revenue Expenditure	8,098.1	5,935.1	11,864.4	13,792.3	19,349.4	-26.7	99.9	16.2	40.3	32.4	24.3	
		-4,084.0	-1,926.0	-3,656.1	-2,518.5	-6,092.2							
	Part II - Capital Account												
I	Capital Income												
	A												
	Grants & Contributions												
1	JNNURM grants	0	5,669	6,102	13,624	13,624	-	7.6	123.3	0.0	43.6	33.9	
2	Finance Commission grants	3,738	4,196	5,317	7,360	8,760	12.3	26.7	38.4	19.0	24.1	23.7	
3	State government Grants	14,471	1,761	311	4,496	6,141	-87.8	-82.4	1,347.8	36.6	303.5	-19.3	
4	Lake beautification grants	0	0	0	0	2,000	-	-	-	-	-	-	



S. No.	Account Head	Income and Expenditure Statement				Growth in Income & Expenditure						
		2008-09	2009-10	2010-11	2011-12	2012-13	2008-09 to 2009-10	2009-10 to 2010-11	2010-11 to 2011-12	2011-12 to 2012-13	SAGR (2008-09 to 2012-13)	CAGR (2008-09 to 2012-13)
		<i>Rupees Lakh</i>				<i>Percentage per Annum</i>						
Total Capital Income		18,208.3	11,626.4	11,729.8	25,480.2	30,525.0	-36.1	0.9	117.2	19.8	25.4	13.8
II Capital Expenditure												
1	JNNURM	9,935.6	9,901.5	6,109.0	16,785.0	16,785.0	-0.3	-38.3	174.8	0.0	34.0	14.0
2	Finance Commission grants	651.6	374.1	7.0	900.0	1,260.0	-42.6	-98.1	12,757.1	40.0	3,164.1	17.9
3	State Development Projects	1,570.7	1,038.0	346.1	2,505.0	2,945.0	-33.9	-66.7	623.8	17.6	135.2	17.0
4	Housing/Urban Poor	0.0	0.0	0.0	200.0	75.0	-	-	-	-	-62.5	-62.5
5	Lake beautification	0.0	0.0	0.0	15.0	15.0	-	-	-	0.0	0.0	0.0
6	Public Health and Sanitation	109.1	106.2	51.4	60.0	2,060.0	-2.7	-51.6	16.7	3,333.3	823.9	108.4
7	Roads	720.5	630.4	860.0	1,780.0	1,382.5	-12.5	36.4	107.0	-22.3	27.1	17.7
8	Water Supply	93.8	0.0	150.0	7.5	57.0	-100.0	-	-95.0	664.1	156.3	-11.7
Total Capital Expenditure		13,081.3	12,050.1	7,523.5	22,252.5	24,579.5	-7.9	-37.6	195.8	10.5	40.2	17.1

Financial Operating Plan

Table 193: Base Scenario

Financial Year	Figures in Rs. Lakhs															
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
	<i>Actuals</i>			<i>Estimate</i>			<i>Projection</i>									
Opening Balance	1,130	5,452	2,551	2,520	6,542	10,161	12,283	10,861	13,443	21,465	31,746	45,389	62,762	78,714	99,688	126,494
1 Revenue Income	13,630	17,624	20,837	21,119	23,934	26,814	30,565	34,468	38,703	43,787	49,792	56,739	64,769	74,055	84,796	97,222
2 Revenue Expenditure	11,864	13,792	19,349	21,089	22,986	25,107	30,465	33,446	36,612	39,907	43,498	47,402	51,590	62,579	68,390	74,529
a Surplus/Deficit- Revenue Account	1,766	3,831	1,488	230	948	1,710	100	1,022	2,091	3,880	6,296	9,337	7,179	11,296	16,406	22,693
b Operating Ratio	0.87	0.78	0.93	0.99	0.96	0.94	1.00	0.97	0.92	0.91	0.87	0.84	0.89	0.85	0.81	0.77
c Debt Servicing Ratio	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3 Capital Income	7,195	19,270	23,085	8,996	9,677	10,723	11,232	12,175	13,138	14,075	15,172	16,330	17,565	18,914	20,362	21,921
4 Capital Expenditure	7,527	22,276	24,604	5,204	7,006	10,342	12,724	10,616	7,207	7,674	7,825	8,294	8,792	9,320	9,879	10,471
d Surplus/Deficit- Capital Account	-333	-3,006	-1,519	3,792	2,671	381	-1,492	1,560	5,931	6,401	7,347	8,036	8,773	9,595	10,483	11,450
e Overall Surplus/Deficit- Municipal Account	1,433	825	-31	4,022	3,619	2,092	-1,392	2,582	8,022	10,281	13,643	17,373	15,952	20,891	26,889	34,143
f Closing Balance	5,452	2,551	2,520	6,542	10,161	12,283	10,861	13,443	21,465	31,746	45,389	62,762	78,714	99,688	126,494	160,637

Table 194: Improved Scenario

Financial Year	Figures in Rs. Lakhs															
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
	<i>Actuals</i>			<i>Estimate</i>			<i>Projection</i>									
Opening Balance	1,130	5,452	2,551	2,520	6,911	11,843	18,847	22,455	26,814	33,849	44,658	62,426	86,660	110,818	143,649	186,352
1 Revenue Income	13,630	17,624	20,837	21,687	24,770	30,980	35,603	40,887	45,791	52,844	63,072	72,577	83,610	96,324	111,675	132,382
2 Revenue Expenditure	11,864	13,792	19,349	21,089	22,986	25,797	33,176	39,384	44,764	48,530	52,652	56,979	67,625	73,289	79,454	86,170
a Surplus/Deficit- Revenue Account	1,766	3,831	1,488	599	1,784	5,183	2,428	1,503	1,026	4,314	10,421	15,598	15,985	23,235	32,220	46,712
b Operating Ratio	0.87	0.78	0.93	0.97	0.93	0.83	0.93	0.96	0.98	0.92	0.83	0.79	0.81	0.76	0.71	0.65
c Debt Servicing Ratio	0.0%	0.0%	0.0%	0.0%	1.1%	3.7%	6.9%	8.2%	7.2%	6.1%	5.3%	4.6%	4.0%	3.4%	2.9%	2.9%
3 Capital Income	7,195	19,270	23,085	8,996	19,916	41,608	58,655	39,977	18,805	16,082	15,172	16,330	17,565	18,914	20,362	21,921
4 Capital Expenditure	7,527	22,276	24,604	5,204	16,768	39,787	55,475	37,122	8,796	9,587	7,825	8,294	8,792	9,320	9,879	10,471
d Surplus/Deficit- Capital Account	-333	-3,006	-1,519	3,792	3,149	1,822	1,180	2,856	6,009	6,495	7,347	8,036	8,773	9,595	10,483	11,450
e Overall Surplus/Deficit- Municipal Account	1,433	825	-31	4,390	4,933	7,004	3,608	4,358	7,033	10,309	17,768	23,634	24,758	32,330	42,701	58,162
f Closing Balance	5,452	2,551	2,520	6,911	11,843	18,847	22,455	26,814	33,849	44,658	62,426	86,660	110,818	143,649	186,352	244,513

Action Taken Report

Sl No	Chapters/Contents	CDP Analysis	Appraisal Comments	Remarks	CRISIL Response
1.	Executive Summary	-	This is a welcome addition and all the CDPs should include Executive Summary.	-	
2	Project Background	CDP is formulated based on the revised CDP preparation Toolkit, April 2013. The Chapter discusses the revised CDP under CBUD Project, key areas of emphasis, objectives, approach and methodology for CDP preparation. It has also included brief on 1 st Generation CDP and projects proposed thereof. The Chapter has reported wide range of Stakeholder consultations.	The Chapter has reviewed the projects proposed in the 1 st Generation CDP. It has also mentioned about the stakeholder consultations and status of formation of CDP policy and technical committee. It has also given the details of Focus Group discussions, interim stage workshop and kickoff meeting in M/o UD.	The minutes of the inception meeting and minutes of the interim stage workshop have been incorporated in Annexure	Incorporated
3	Introduction	CDP has given an overview of the Regional setting, Administrative boundary, Location and connectivity, defining the study area and physical setting of the city.	The Chapter has covered more or less all the aspects. However, information on relative humidity, wind direction and circulation may also be added.	Map shown at Fig 6, 7 & 8 should be clearer.	Clear maps incorporated.

Sl No	Chapters/Contents	CDP Analysis	Appraisal Comments	Remarks	CRISIL Response
4	Demographic Profile	The profile briefly discusses about population growth trends and urbanisation, density and population distribution, average household size, literacy rate, sex-ratio, religion, language, SC/ST Population, migration and population projections for 2041.	The Chapter is well compiled and has given information on all demographic parameters.		
5	Economic Profile of the Town	CDP has given an overview of State and District Economic Profile, work force participation rate, workers classification, key observation and issues.	The chapter has given the District Economic Profile; however, it would be desirable that major industries located within Varanasi city may also be highlighted. It also needs to attempt detailed sectoral analysis clearly indicating the contribution of sectors like primary, secondary and tertiary in strengthening the economic base of the city. Presence of household industries, unplanned industrial areas and related problems may be highlighted.		Detailed list of major industries located in Varanasi district is incorporated in Table 25 of the revised draft. However the data for the industries present in the city is very limited. Primary secondary and tertiary sector of economy incorporated The key issues incorporated.
6	Physical Planning	The Chapter discusses	The chapter needs to clearly highlight the		Section 6.4

Sl No	Chapters/Contents	CDP Analysis	Appraisal Comments	Remarks	CRISIL Response
	and Growth Management.	about constituents of Planning area, projected population under Development Plan, spatial growth trends, Land use analysis, Urban Planning Functions and Reforms and roles and responsibilities of ULBs and parastatals.	availability of developed land and assessing the potential for further development through extension of infrastructure. Further, the Chapter should also analyse the role of future urbanisable area as defined by the Master Plan of Varanasi-2031. Since Varanasi has already crossed 1 million population, the CDP should clearly suggest planned development in metropolitan perspective.		describes about the potential zones of the city. The development of Varanasi a metropolitan city is considered while preparing CDP.
7	Social and Cultural resources	The CDP discusses Health facilities, educational facilities, fire services and recreation facilities	Table 7.6 of the Chapter mentions about norms and standards as per URDPFI Guidelines, 2014. For other social facilities, the norms may be correlated. A separate section may also be included clearly mentioning about social environment in the city in terms of social inclusion, gender sensitivity and human rights. Similarly, for cultural environment, cultural aspects of the city may also be discussed.	Maps have been included showing the water network, underground sewage network.	URDPFI Guidelines are considered as benchmark to crosscheck the gaps in various sectors where ever it is relevant.
8.	Assessment of Urban Services	The CDP has analysed existing scenario in terms of water supply, sewerage and sanitation, solid waste management and storm water drainage.	The Chapter is very well compiled. However, it would be desirable to assess the intra-city deficiency in the water supply. Further, it has to be clarified whether the entire water supply i.e., 330 MLD including the ground water is treated as mentioned in the Chapter which appears to be doubtful. The Chapter mentions about Draft City Sanitation Plan and since Varanasi is getting prominence in view of Hon'ble PM constituency, the CDP should clearly identify		The section is refined as suggested. The exact data of the number of open drain opening into the river ganga is

Sl No	Chapters/Contents	CDP Analysis	Appraisal Comments	Remarks	CRISIL Response
			the number of open drains falling into River Ganges and how the wastewater can really be intercepted. To overcome the huge deficiency in underground sewerage network, what could be the options in terms of developing decentralised waste water treatment be recommended so as to ensure a minimum possible waste water discharge into the river. With regard to Solid Waste Management, deficiency in terms of collection, segregation and disposal may be highlighted.		not available. However the issue is addressed in the strategies considering all the parameters. The deficiency is highlighted in the key issues.
9	Traffic Transportation and System	The Chapter discusses existing road infrastructure, existing traffic and transportation system, street lights, review of institutional arrangement and investments, critical analysis of Traffic and Transportation System: 1 st Generation CDP Scenario, proposed investment in road sector, key issues and development initiatives.	In overall, the Chapter covers most of the aspects of Traffic & Transportation. However, possibility of introducing BRTS may also be highlighted. It is observed from the Table-70 that 80% of the traffic volume is constituted by two wheelers. This implies that there is overdependence on personal mode and city requires a dedicated public bus transport.		Procurement of Buses which would be used as public transport is taken up as project in the CIP.
10	Housing and Urban Poverty	The chapter discusses overall Housing scenario, urban poverty and slums, and key issues.	In Section 10.1.6 the total requirement housing stock will be 1.63 lakh. How the housing stock will be augmented with the help of private sector may be highlighted. It		The following point has been Addressed.

Sl No	Chapters/Contents	CDP Analysis	Appraisal Comments	Remarks	CRISIL Response
			has been mentioned the Slum initiatives under BSUP /RAY and KRSGAY, the targeted number of flats were not constructed due to litigations, unavailability of land and small plots. The augmentation of housing stock especially in satellite towns needs to be highlighted as within the Varanasi MC, land availability will always be a constraint.		Project for satellite township is considered in the Capital Investment Chapter.
11	Baseline Environment: Urban Environment and Disaster Management	The chapter discusses pollution level, water bodies, garden, open spaces and urban forests, identification of environmentally sensitive areas, disaster proneness assessment and mitigation measures.	With regard to Disaster Mitigation and Management, only descriptive assessment has been done. What measures have been taken by the district authorities for preparing the Disaster Management Plan as both District and the city falls in moderated Seismic Risk Zone –III.	Images shown in Section 11.2 cannot be read.	The section is updated as per the availability of the information, Image quality is further improved.
12	Climate change and Sustainable Development	The Chapter discusses about climate change and urban cities, Carbon Footprint and heat Island Mapping, Impact and imperatives, Climate resilience and carbon reduction strategies.	With regard to climate change, it has to be seen whether the average mean temperature of the city and district has increased in the recent past to assess the adverse impact of climate change. Further, the incidence of floods should have also been mentioned in the chapter.		In section12.3 the impacts of the climate change in the rivers has been addressed. Further the impact on Uttar Pradesh cities is incorporated.
13	Cultural Resources, Heritage and Tourism	The Chapter discusses the historical importance, existing framework for heritage zones, Heritage Conservation initiatives, Tourism Scenario, Fares and Festivals, and Key	The Chapter is very well compiled. It is a matter of concern that the number of Tourists arrival is on decline with slight increase during 2012-13. It has to be ensured that tourist infrastructure to be strengthened especially with reference to involvement of private sector.	The Chapter should include the map which should clearly show the location of both ASI protected monuments and non-ASI Heritage structures.	The section is further detailed. A heritage map for the Varanasi City is incorporated.

Sl No	Chapters/Contents	CDP Analysis	Appraisal Comments	Remarks	CRISIL Response
		considerations.	As Varanasi is to be covered under HRIDAY Scheme, a section on the same may also be included with recommendations of components to be covered under the same.		The components and its recommendations are taken up in the Capital Investment Chapter of the report.
14	Assessments of Institutions, Systems and Capacities.	The Chapter discusses about Urban Governance System, Urban Reforms/Transfer of functions, key issues, overlapping of roles and accountability and Public Private Partnership.	The Chapter has more or less covered the Institutional framework of Varanasi, however needs to highlight problems being faced in inter-departmental coordination. It would also be desirable to discuss the enforcement mechanism and to what extent both VMC and VDA are effectively tackling the encroachment and unauthorized developments in the city.	Table 99 gives manpower strength in VMC and the same should also be given for VDA.	Encroachment and unauthorised development are mentioned as key issues in the sections. However the enforcement mechanism taken up by VMC and VDA to check it is incorporated in the strategy.
15	Municipal Finances.	The Chapter has discussed Assessment of Municipal Finances, Revenue Account, Capital Account and key financial indicators..	The Chapter has given the details of recent status of Municipal Finances .As per Table 110, both operating ratio and property tax collection efficiency have shown favourable position but at the same time VMC own resource generation is 58% share of the total revenue income which indicates dependence on grants and contributions. The Chapter should suggest other options of		The suggestion to increase the revenue share is provided in the section 19.8 to section 19.14 of the revised draft.

Sl No	Chapters/Contents	CDP Analysis	Appraisal Comments	Remarks	CRISIL Response
			revenue generation especially if city goes for mixed landuse/relaxation of FSI or even transit oriented development.		
16	SWOT analysis	The Chapter has discussed SWOT analysis.	The Chapter has more or less identified the strength and weaknesses of the city along with opportunities and threats based on certain parameters. However, there is a need to analyse that how city will grow to its full potential as it has to emerge as world class touristic and education hub		The aspect is looked into through various parameters in tourism chapters Projects and strategies are identified for the same.
17	Stakeholder Consultations	The Chapter discusses about consultative meetings focussed group discussions, workshop process, key issues, stakeholder suggestions and vision formulation, approach and developmental goals for the city.	The Chapter has highlighted the stakeholder view on issues and challenges in the key areas of City Development. The issues identified are relevant to the holistic development of the city.		
18.	Sector Plan, Strategies and Investment Plan	The Chapter discusses about institutionalising CIP, water supply sector plan, sewerage and sanitation, solid waste management, urban roads, traffic and transportation sector plan, storm water drainage.	The Chapter is quite comprehensive. And the strategies for the entire project components have been correlated with the attainment of benchmarks.		

Sl No	Chapters/Contents	CDP Analysis	Appraisal Comments	Remarks	CRISIL Response
		basic services for urban poor, social infrastructure and heritage sector plan, Urban Environment and Disaster Sector Plan, Local Economic Development Sector Plan, Capital Investment Plan and Urban Governance.			
19.	Financial Operating Plan	The chapter discusses about methodology for FOP. Financing Strategies for CIP, Investment Sustenance Capacity, Reforms Implementation and Depth, Expenditure Management Initiatives, Asset Management Initiatives, Projects on PPP Basis and land Resource leveraging.	The Chapter has dealt in detail with regard to financial plan and clearly assess the revenue generation from various options. The city is likely to benefit from Central Government grants especially under the Swatch Bharat Mission and HRIDAY Scheme. This may be mentioned in the Chapter.		This is incorporated
20	Review and Monitoring Framework	The chapter discusses about framework for review and monitoring.	The chapter is more or less appropriately dealt with the framework for reviewing and monitoring. However, the VMC, has to be made accountable with regard to project implementation as well as undertaking the urban reforms.		The chapter lays emphasis on the "one umbrella" approach with VMC as the head institution.
21	Annexure-Stakeholder interactions	The Chapter gives the detail of focus group discussions and consultations.	--		



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**ANNEX E Twelfth Five Year Plan
(2012–2017) of the Government of
India**

Twelfth Five Year Plan (2012–2017)

Faster, More Inclusive and
Sustainable Growth

Volume I



सत्यमेव जयते

Planning Commission
Government of India

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Twelfth Five Year Plan (2012–2017) Economic Sectors

Volume II



सत्यमेव जयते

Planning Commission
Government of India

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Twelfth Five Year Plan (2012–2017) Social Sectors

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Planning Commission
Government of India

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